



Enviroguide
CONSULTING

Volume 2

Environmental Impact Assessment Report

FOR

Proposed Anaerobic Digestion Development

AT

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ON BEHALF OF

College Proteins

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Appendix E Annual Environmental Report

Appendix F Noise Survey

Appendix G Traffic Data

1 INTRODUCTION AND METHODOLOGY

1.1 Introduction

This Environmental Impact Assessment Report (EIAR) has been commissioned by the Applicant, College Proteins, in respect of a Proposed Development at College Road, Nobber Co. Meath.

This EIAR has been compiled in accordance with all current legislation and best practice guidance. This Chapter describes the methodology by which the Environmental Impact Assessment (EIA) was carried out and the EIAR was completed. The methodology used is broadly consistent across all Chapters in order to ensure the EIAR is clear and easy to navigate.

1.1.1 Quality Assurance and Competence

Synergy Environmental Ltd., T/A Enviroguide Consulting, is a wholly Irish Owned multi-disciplinary consultancy specialising in the areas of the Environment, Waste Management and Planning. All of our consultants carry scientific or engineering qualifications and have a wealth of experience working within the Environmental Consultancy sectors, having undergone extensive training and continued professional development.

Enviroguide Consulting as a company remains fully briefed in European and Irish environmental policy and legislation. Professional memberships include the Institute of Geologists of Ireland (IGI), Chartered Institution of Wastes Management (CIWM), the Irish Environmental Law Association and Chartered Institute of Ecology and Environmental Management (CIEEM).

This Chapter was prepared by Louise Hewitt, Environmental Consultant, Enviroguide Consulting. Louise has a Master of Science (Hons) in Environmental Resource Management from University College Dublin and a Bachelor of Science (Hons) in Biology from Maynooth University. Louise has experience preparing Environmental Impact Assessment (EIA) Screening Reports, Introduction Chapters, Population and Human Health Chapters and Archaeology and Cultural Heritage Chapters of EIARs.

1.1.2 Description of the Proposed Development

The Proposed Development (as detailed in Chapter 2) comprises of:

- Anaerobic Digestion (AD) Plant Reception building (food waste reception)
- Reception hall for solid feedstock (silage & Maize)
- Borger Fibre separation for digestate
- Workshop
- Office, control room, toilets and changing rooms
- Biobed
- 4 No. Liquid reception tank- 113m³ tanks
- 1 No. Glycerine tank- 78m³
- 1 No. Buffer tank – 983m³

- 1 No. Pasteurisation tank - 247m³
- 2 No. Digesters - 3682m³
- 2 No. Digestate Storage tanks – 2500m³
- Gas Flare
- Biogas Combined Heat and Power (CHP) Plant

1.2 Definition of EIA and EIAR

EIA is a systematic examination of the potential impacts of a Proposed Development on the environment. In assessing the environmental impacts this EIAR will evaluate the existing situation and assess any potential impacts of the Proposed Development. Where potential impacts are identified mitigation measures will be proposed. In addition, the in-combination effects of any other known plans or projects will be identified and assessed.

Under Schedule 5 of the Planning and Development Regulations 2001, as amended (the Planning Regulations), an EIAR (formerly an EIS) is required to accompany certain planning applications for specified projects as part of the EIA process.

The EIAR describes the outcomes of the iterative EIA process which was progressed in parallel with the project design process. In doing so, it forms the first part of the EIA process that will be completed by Meath County Council, as the competent authority, which in turn will be required to examine, analyse, and evaluate the direct and indirect effects of the development on the various factors listed in Directive 2011/92/EU, as amended by 2014/52/EU (the EIA Directive).

"The EIAR should be prepared at a stage in the design process where changes can still be made to avoid adverse effects. This often results in the modification of the project to avoid or reduce effects through redesign" (EPA, 2022)

Where significant and likely environmental effects are identified that are unacceptable, the EIA process aims to quantify and minimise the effects of the impact that the specified development has on the environment through appropriate mitigation measures and where necessary, subsequent monitoring.

This process is illustrated in Figure 1-1.

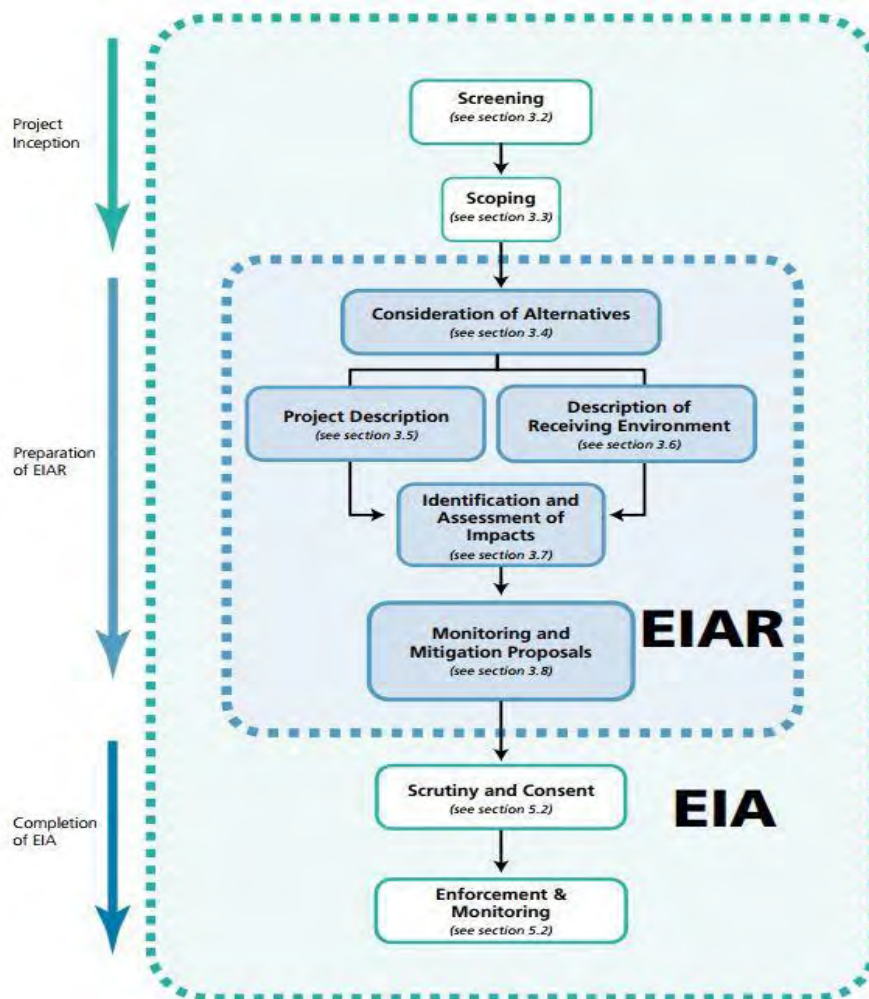


Figure 1-1: EIA Process

The purpose of the EIAR is to provide the Planning Authority with information on the likely and significant effects on the environment by the Proposed Development. This EIAR was prepared in parallel with the project design process and reflects the potential cumulative impact of other developments.

1.3 EIA Legislation

The EIA Directive requires EIA to be carried out for certain projects as listed in Annex I of the Directive. The EIA Directive is transposed into Irish law through the Planning and Development Act 2000 (as amended) (the Planning Act) and the Planning Regulations.

1.4 EIA Guidelines

This EIAR has been prepared in accordance with all relevant guidance. The documents listed below are common to all Chapters. Additional specific guidelines will be referred to in each specific Chapter.

Guidelines on the Information to be contained in Environmental Impact Statements (EPA 2002);

Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA 2003);

Draft Advice Notes for Preparing Environmental Impact Statements (EPA draft September 2015a);

Draft Revised Guidelines on the Information to be Contained in Environmental Impact Statements (EPA draft September 2015b);

Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR) (EPA May 2022);

Environmental Assessments of Plans, Programmes and Projects – Rulings of the Court of Justice of the European Union (European Union 2017);

Environmental Impact Assessment of Projects – Guidance on Scoping (Directive 2011/92/EU as amended by 2014/52/EU) (European Union 2017);

Guidance of Integrating Climate Change and Biodiversity into Environmental Impact Assessment (European Union 2013);

Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report (European Union 2017);

Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Environment, Community and Local Government 2013);

Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Government of Ireland 2018);

Key Issues Consultation Paper on the Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licencing Systems; (Department of Housing, Planning, Community and Local Government 2017);

Circular PL 05/2018 -Transposition into Planning Law of Directive 2014/52/EU amending Directive 2011/92/EU on the effects of certain public and private projects on the environment (the EIA Directive) And Revised Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government 2018);

Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (European Communities 1999);

Implementation of Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (European Communities 2003).

Appropriate Assessment Screening for Development Management; OPR Practice Note PN01(Office of the Planning Regulator March 2021); and
Environmental Impact Assessment Screening; Office of the Public Practice Note (PN02) (June 2021)

The EIA Directive defines EIA as a process. Article 1(2)(g) states that EIA means:

“(i) the preparation of an environmental impact assessment report by the developer, as referred to in Article 5(1) and (2);

(ii) the carrying out of consultations as referred to in Article 6 and, where relevant, Article 7;

(iii) the examination by the competent authority of the information presented in the environmental impact assessment report and any supplementary information provided, where necessary, by the developer in accordance with Article 5(3), and any relevant information received through the consultations under Articles 6 and 7;

(iv) the reasoned conclusion by the competent authority on the significant effects of the project on the environment, taking into account the results of the examination referred to in point;

(iii) and, where appropriate, its own supplementary examination; and

(v) the integration of the competent authority's reasoned conclusion into any of the decisions referred to in Article 8a”.

The EIA Directive requires the EIAR to identify, describe and assess, in an appropriate manner and in light of each individual case, the direct, indirect, and cumulative significant effects of the Proposed Development on factors of the environment including:

- Population and human health
- Biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC (respectively, the Habitats Directive and the Birds Directive)
- Land, soil, water, air and climate
- Material assets, cultural heritage, and the landscape
- The interaction between the factors referred to in points (a) to (d)

1.5 Screening for EIA

'Screening' is the term used to describe the process for determining whether a Proposed Development requires an EIA by reference to mandatory legislative threshold requirements or in the case of sub threshold development, by reference to the type and scale of the Proposed Development and the significance or the environmental sensitivity of the receiving baseline environment.

Annex 1 of the EIA Directive requires as mandatory an EIA for all development projects listed therein.

Schedule 5, Part 1, of the Planning Regulations transposes Annex 1 of the EIA Directive directly into Irish planning legislation. An EIAR is required to accompany a planning application for development of a class set out in Schedule 5, Part 1 of the Planning Regulations which exceeds a limit, quantity or threshold set for that class of development.

Schedule 5, Part 2 of the Planning Regulations defines projects that are assessed on the basis of set mandatory thresholds for each of the project classes including:

"Schedule 5, Part 2 - Infrastructure projects

11(b) Installations for the disposal of waste with an annual intake greater than 25,000 tonnes not included in Part 1 of this Schedule.

The proposed feedstock for the AD Plant includes an intake of waste products greater than 25,000 tonnes per annum and as such is over the 11(b) threshold. Accordingly, a mandatory EIAR is required.

1.6 Scope of the EIAR

'Scoping' is a process of deciding what information should be contained in an EIAR and what methods should be used to gather and assess that information. It is defined in EC Guidance on EIA Scoping 2001 as:

'Determining the content and extent of the matters which should be covered in the environmental information to be submitted in the EIAR'

The content of this EIAR was informed by a scoping process carried out by the Applicant, design team and EIAR consultants to identify the core issues likely to be most important during the EIA process.

The EIAR prepared for the Proposed Development has endeavoured to be as thorough as possible and therefore all of the issues listed in Schedule 6, Sections 1 and 2 of the Planning Regulations have been addressed in the EIAR.

The scope of this EIAR has had regard to the documents listed in Section 1.4, together with:

- The requirements of Part X of the Planning Act and also Part 10 of the Planning Regulations;
- The requirements of the Meath County Council Development Plan 2021-2027;
- Relevant Regional and National Planning Policy Documents;
- The receiving environment and any vulnerable or sensitive local features and current uses;
- Previous relevant planning history and applications that have been submitted on the subject and adjoining lands;
- The likely and significant impacts of the Proposed Development on the environment; and
- Available mitigation measures for reducing or eliminating any potentially significant undesirable impacts.

In addition, the individual Chapters of this EIAR should be referred to for further information on the documents consulted by each individual consultant.

1.7 Purpose and Objectives of the EIAR

The purpose of this EIAR is to assist in the EIA process, by identifying likely significant environmental impacts resulting from the Proposed Development, to describe the means and extent by which they can be reduced or mitigated, to interpret and communicate information about the likely impacts and to provide an input into the decision making and planning process.

The fundamental principles to be followed when preparing an EIAR are:

- Anticipating, avoiding, and reducing significant effects;
- Assessing and pursuing preventative action;
- Maintaining objectivity;
- Ensuring clarity and quality;
- Providing relevant information to decision makers; and
- Facilitating public and stakeholder consultation.

EIA is an iterative process. The EIAR captures this assessment process and describes its outcomes. The EIAR documents the consideration of environmental effects and provides transparent, objective and replicable documentary evidence of the EIA evaluation and decision-making processes.

The EIAR provides information on any identified effects arising as a consequence of the Proposed Development and which:

- Are environmentally based;
- Are likely to occur; and
- Have significant and adverse effects on the environment.

It also documents how the design of the Proposed Development incorporates measures for the purposes of impact avoidance, reduction, or amelioration; as well as to explain how significant adverse effects will be avoided.

The key objective of this EIAR is to inform the Planning Authority on the acceptability of the Proposed Development, in carrying out an EIA, in order to reach a decision in the full knowledge of the Proposed Development's likely significant impacts on the environment, if any.

1.8 Format and Structure of this EIAR

The formation of an EIAR necessitates the co-ordination and collation of associated, yet diverse specialised areas of assessment. The EIA approach involves the examination of each environmental factor, describing the existing baseline environment, the Proposed Development, its likely impacts, and direct and indirect significant effects pertaining to that environmental factor and mitigation measures, where appropriate.

The topics examined in this EIAR are categorised under the environmental factors prescribed under the EIA Directive:

- Population and Human Health

- Biodiversity
- Land & Soils
- Water
- Air
- Climate
- Material Assets
- Cultural Heritage
- Landscape

The expected effects deriving from the vulnerability of the Proposed Development to risks of major accidents and/or disasters must also be examined.

The structure of the EIAR is set out in Table 1-1.

Table 1-1: Structure of the EIAR

Chapter	Title	Content
1	Introduction and Methodology	Chapter 1 sets out the purpose, methodology and scope of the document.
2	Description of the Proposed Development & Assessment of Alternatives	As required under Article 5(1)(a) of the EIA Directive 2014/52/EU (subsequently referred to as the Directive), Chapter 2 provides a description of the site, design, and scale of Proposed Development, and as required under Article 5(d), an evaluation of the reasonable alternative design approaches.
3	Planning and Development Context	Chapter 3 sets the national, regional, and local policy framework for the Proposed Development.
4	Population and Human Health	Chapter 4 addresses the requirement for assessment on potentially significant effects to population and human health as required under Article 3(1)(a) of the Directive.
5	Biodiversity	Chapter 5 addresses the requirement of Article 3(1)(b) of the Directive to assess potentially significant effects on biodiversity (which previously referred only to 'fauna and flora'), having particular attention to species and habitats protected under the Habitats Directive and the Birds Directive.
6	Land and Soils	Chapter 6 addresses the requirement under Article 3(1)(c) of the Directive on Land and Soil to assess the type of soil and geology in the area of the Proposed Development and identifies any potentially significant effects.
7	Hydrology and Hydrogeology	Chapter 7 addresses the requirement under Article 3(1)(c) of the Directive to assess potentially significant effects to water quality arising from the Proposed Development. This Chapter will assess any potential effects from pollution and discharges to surface water.
8	Air Quality and Climate	Chapter 8 addresses the requirement under Article 3(1)(c) of the Directive on Air and Climate to assess potentially significant effects to air quality in the surrounding environment.

9	Noise and Vibration	Chapter 9 addresses the requirement to assess potentially significant effects from airborne noise and vibration as required under Article 3(1)(a) of the Directive on Human Health.
10	Landscape and Visual Impact Assessment	Chapter 10 addresses the requirement under Article 3(1)(d) of the Directive to assess potentially significant effects on the landscape. This Chapter will assess any potential visual impacts to landscape caused by the Proposed Development.
11	Archaeology and Cultural Heritage.	Chapter 11 addresses the requirement under Article 3(1)(d) of the Directive to assess potentially significant effects on cultural heritage.
12	Material Assets – Traffic, Utilities and Waste Management	Chapter 12 addresses the requirement under Article 3(1)(d) of the Directive to assess potentially significant effects on material assets. This Chapter will identify impacts to existing utilities and infrastructure from the development of the Proposed Development. Article 5(1), Annex IV, point 1(d) of the Directive requires estimates of quantities and types of waste produced during Construction and Operation Phase. Chapter 12 presents an assessment of how resources and waste will be managed for the Proposed Development.
13	Risk Management	Chapter 13 addresses the requirement under Article 3(2) of the Directive to include the expected effects deriving from the vulnerability of the Proposed Development to risks of major accidents and/or disasters.
14	Interactions	As required under Article 3(1)(e) of the Directive, Chapter 14 provides an assessment of the interaction between all of the environmental aspects referred to in this EIAR.
15	Mitigation and Monitoring Measures	Chapter 15 describes mitigation and monitoring as required under Article 5(1) of the Directive in order to avoid, prevent, reduce, or if possible, offset any identified significant adverse effects on the environment and, where appropriate, describes any proposed monitoring arrangements.

This approach employs standard descriptive methods, replicable prediction techniques and standardised impact descriptions to provide an appropriate evaluation of each environmental topic under consideration.

1.9 Methodology Used to Produce this EIAR

The methodology employed to produce this EIAR is detailed in Table 1-2. The objective is to evaluate each environmental topic, both individually and collectively, in a systematic and objective manner.

The methodology will outline the methods used to describe the baseline environmental conditions as well as predict the likely impacts on the environment of the Proposed Development. The data and survey requirements for each Chapter will vary depending on the environmental topic and will be chosen by the particular specialist based on relevant

legislation, best practice guidance, policy requirements, and professional judgement. Similarly, the study area is also defined for each environmental topic based on professional judgement and experience.

All environmental topics require desktop reviews of all relevant data at a minimum. These desktop studies are then supplemented by field studies and consultations with relevant stakeholders, for example interested parties, statutory bodies, and local authorities, as required for each environmental topic.

An outline of the methodology employed consistently in each Chapter of the EIAR to examine each environmental topic is provided in Table 1-2:

Table 1-2: Methodology Employed to Produce each EIAR Chapter.

Introduction	Provides an overview of the specialist area and specifies the specialist who prepared the assessment.
Study Methodology	This subsection outlines the method by which the relevant impact assessment has been conducted within that Chapter.
The Existing Receiving Environment (Baseline Situation)	This section will describe and assess the receiving environment, the context, character, significance, and sensitivity of the baseline receiving environment into which the Proposed Development will fit. This analysis also takes account of any other Proposed Developments that are likely to proceed in the immediate surroundings.
Characteristics of the Proposed Development	Consideration of the '<i>Characteristics of the Proposed Development</i>' allows for a projection of the '<i>level of impact</i>' on any particular aspect of the environment that could arise. For each Chapter, those characteristics of the Proposed Development which are relevant to the area of study are described; for example, the Chapter on landscape and visual impact addresses issues such as height, design and impact on the surrounding landscape.
Potential Impact of the Proposed Development	This section provides a description of the specific, direct, and indirect, effects that the Proposed Development may have. This analysis is provided with reference to both the Existing Receiving Environment and Characteristics of the Proposed Development sections, while also referring to the: (i) magnitude and intensity, (ii) integrity, (iii) duration and (iv) probability of impacts. The assessment addresses whether the impacts are direct, indirect, secondary, or cumulative in nature. It also looks at the timescale of such impacts e.g. are they short, medium, long-term, and are they of a temporary, permanent, continuous or intermittent nature, and are they positive or negative impacts. The impact interactions are also addressed.
Do Nothing Impact	In order to provide a qualitative and equitable assessment of the Proposed Development, this section considers the Proposed Development in the context of the likely impacts upon the receiving environment should the Proposed Development not take place.
Avoidance, Remedial and Mitigation Measures	This section of each Chapter describes the mitigation measures which are required. The requirement to describe mitigation measures is laid out in the EIA Directive, as implemented by the Planning Act and the Planning Regulations. Avoidance, remedial and mitigation measures describe any corrective or mitigative measures that are either practicable or reasonable, having regard to the potential

	impacts of the Proposed Development. This includes avoidance, reduction and remedy measures as set out in Section 4.7 of the Development Management Guidelines 2007, to reduce or eliminate any significant adverse impacts identified.
Residual Impacts of the Proposed Development	This section allows for a qualitative description of the resultant specific direct, indirect, secondary, cumulative, short, medium and long-term, temporary, permanent, continuous, or intermittent, positive and negative effects as well as impact interactions which the Proposed Development may have, assuming all mitigation measures are fully and successfully applied.
Monitoring	This involves a description of monitoring in a post-development phase, if required. This section addresses the effects that require monitoring, along with the methods and the agencies that are responsible for such monitoring.
Reinstatement	While not applicable to every aspect of the environment considered within the EIAR, certain measures may need to be proposed to ensure that in the event of the proposal being discontinued, there will be minimal impact to the environment.
Interactions	This section provides a description of impact interactions together with potential indirect, secondary, and cumulative impacts.
Difficulties Encountered in Compiling Information	The EIA Directive requires that the EIAR includes ' <i>details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information, and the main uncertainties involved</i> ' (EIA Directive, Annex IV, Part 6). Each Chapter that contains an environmental baseline and assessment contains a section outlining any difficulties encountered in compiling that Chapter.

1.10 EIAR Project Team

Table 1-3 EIAR Project Team

Chapter	Consultant Name and address	Specialist Area
1.0 Introduction and Methodology including Non-Technical Summary	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Louise Hewitt	Multidisciplinary Planning and Environmental Consultants
2.0 Description of the Proposed Development & Assessment of Alternatives	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Nikita Coulter	Multidisciplinary Planning and Environmental Consultants
3.0 Planning & Policy Context	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Mairead Foran Tom Phillips + Associates, 80 Harcourt Street, Dublin 2, D02 F449	Multidisciplinary Planning and Environmental Consultants Town Planning Consultants

Chapter	Consultant Name and address	Specialist Area
	Stephen Barrett	
4.0 Population and Human Health	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Louise Hewitt	Multidisciplinary Planning and Environmental Consultants
5.0 Biodiversity	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Charlotte Lawler Greene	Multidisciplinary Planning and Environmental Consultants
6.0 Land and Soils	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Gareth Carroll	Multidisciplinary Planning and Environmental Consultants
7.0 Hydrology and Hydrogeology	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Gareth Carroll	Multidisciplinary Planning and Environmental Consultants
8.0 Air Quality & Climate	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Laura Griffin	Multidisciplinary Planning and Environmental Consultants
9.0 Noise and Vibration	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Laura Griffin	Multidisciplinary Planning and Environmental Consultants
10.0 Landscape & Visual Impact Assessment	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Nuno Costa	Multidisciplinary Planning and Environmental Consultants
11.0 Archaeology and Cultural Heritage	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Louise Hewitt	Multidisciplinary Planning and Environmental Consultants
12.0 Material Assets – Traffic, Waste, and Utilities	<u>Traffic</u> Stephen Reid Consulting Traffic and Transportation, Estuary House, New Street, Malahide, Co Dublin <u>Waste & Utilities</u> Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN	Traffic Consultant Multidisciplinary Planning and Environmental Consultants

Chapter	Consultant Name and address	Specialist Area
	Nikita Coulter	
13.0 Risk Management	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Nikita Coulter	Multidisciplinary Planning and Environmental Consultants
14.0 Interactions	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Arthur Greene	Multidisciplinary Planning and Environmental Consultants
15.0 Mitigation and Monitoring Measures	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Arthur Greene	Multidisciplinary Planning and Environmental Consultants

1.11 Non-Technical Summary

A Non-Technical Summary of the EIAR has also been prepared. The EIA Directive states that one of the objectives of the EIA process is to ensure that the public are fully aware of the environmental implications of any decisions. EPA Guidelines note that the non-technical summary of the EIAR should facilitate the dissemination of the information contained in the EIAR and that the core objective is to ensure that the public is made as fully aware as possible of the likely environmental impacts of projects prior to a decision being made by Meath County Council. A Non-Technical Summary of the EIAR has therefore been prepared which summarises the key environmental impacts and is provided as a separately bound document.

1.12 Links between EIAR and Appropriate Assessment

A Screening Report for Appropriate Assessment (AA) has been carried out for the Proposed Development to determine if there is a risk of effects to any Natura 2000 site. As the AA screening screened out potential impacts on any Natura 2000 sites, a full Natura Impact Statement (NIS) was not required.

While AA is required by the proposer of any plan or project likely to have an adverse effect on a Natura 2000 site, EIA is required for projects listed in Annex I of the EIA Directive. The requirement for EIA relative to projects listed in Annex II of the EIA Directive is determined on a case by case. While these two different types of assessment are independent and are required by separate legislation, namely the Birds and Habitat Directives (i.e., AA) and the EIA Directive (i.e., EIAR) there is a degree of overlap, particularly in the biodiversity Chapter of the EIAR.

1.13 Availability of EIAR Documents

A copy of this EIAR document and Non-Technical Summary is available for purchase at the offices of Meath County Council at a fee not exceeding the reasonable cost of reproducing the document.

1.14 Public Consultation

A public consultation took place on the 9th June 2022 in the village hall Nobber from 15.00 - 20.00, and the project received positive feedback from members of the local community's.

1.15 Statement of Difficulties Encountered

No exceptional difficulties were experienced in compiling the necessary information for the Proposed Development. Where any specific difficulties were encountered these are outlined in the relevant Chapter of the EIAR.

1.16 Quotations

The application is also accompanied by a Non-Technical Summary of the EIAR, which is laid out in a similar, but condensed format to the main EIAR. The structure, presentation, and the Non-Technical Summary of the EIAR, as well as the arrangements for public access, all facilitate the dissemination of the information contained in the EIAR. The core objective is to ensure that the public and local community are aware of the likely environmental impacts of the Proposed Development prior to the granting of consent.

However, it is important to acknowledge that the EIAR by its nature contains statements about the Proposed Development, some of which are positive and some less than positive. Selective quotation or quotations out of context can give a very misleading impression of the findings of the study. Therefore, the study team urge that quotations should, where reasonably possible, be taken from the conclusions of specialists' sections or from the Non-Technical Summary and not selectively.

The EIA Regulations require that difficulties such as technical deficiencies, lack of information or knowledge encountered in compiling any specified information for the EIAR be described. There were no such difficulties encountered in the production of this EIAR.

2 PROJECT DESCRIPTION & DESCRIPTION OF ALTERNATIVES

2.1 Introduction and Terms of Reference

This Chapter provides a detailed description of the Proposed Development together with details of the existing environment. In accordance with Article 5(1)(a) of the EIA Directive, the description of the project should comprise:

‘...information on the site, design, size and other relevant features of the project’.

A description of the Proposed Development and its surroundings is provided in this Chapter, together with the proposed design parameters. This description sets the basis against which the specialist assessments presented in this EIAR have been undertaken.

The EIAR must contain information in relation to the environmental impact of both the Proposed Development and all other "reasonable" alternatives studied. An indication of the main reasons for the option chosen must be given, taking into account the effects of the Proposed Development on the environment.

2.1.1 Quality Assurance and Competence

This Chapter was prepared by Enviroguide Senior Environmental Consultant Nikita Coulter. Nikita Coulter has a B.Sc. in Zoology (Hons) from University College Dublin, an M.Sc. in Biodiversity and Conservation and a Postgraduate Diploma in Environmental Engineering from Trinity College Dublin, and a NEBOSH accredited International Diploma in Environmental Risk Management. Nikita has 8 years professional experience as an Environmental Compliance Specialist.

2.2 Site Location

The site of the Proposed Development, College Proteins, is located to the west of College Road, in the townland of Nobber, Co. Meath (Eircode A82 XT61). The site of the Proposed Development is 5.31 hectares. The overall landholding is 218.92 hectares. This is made up of the existing operational site of 11.64 Hectares; a solar farm of 7.83 hectares and farmland comprising 199.45 hectares. The site can be accessed from the southwest via the R162, or from the northeast via the R165. The town of Nobber, County Meath, lies approximately 3km south of the site of the Proposed Development. The town of Kingscourt, Co. Cavan lies approximately 7km northwest of the site on the R162, the village of Drumconrath, Co. Meath, lies approximately 6km to the east of the site on the R165, and the village of Kilmainhamwood, Co. Meath lies approximately 6km to the west of the site on the L6802. The landscape surrounding the site of the Proposed Development is rural, comprised of grazing and arable lands, divided by frequent mature hedgerows, and scattered with small farms and residential dwellings.

2.3 Site History / Background and Description

College Proteins is a leading Bio-Waste Management Company which collects and treats animal by-products and food wastes from abattoirs, meat plants, butchers, and poultry plants, and has been operating since 1989. Category 1 (Cat 1) is the highest risk category for rendering. College Proteins render Specified Risk Material (SRM) linked with prion diseases

(also known as transmissible spongiform encephalopathies (TSEs), for example, fallen stock with SRM, international catering waste, and any material handled with Cat 1 material.

The main raw materials are inputted into the existing plant and cooked and separated to produce Cat 1 Tallow and Cat 1 Meat and Bone Meal (MBM). These two products produced from the process are renewable indigenous, carbon neutral fuels. The Cat 1 Tallow is made from rendered animal fat and is used for the production of biofuels, while the Cat 1 MBM is primarily used as a carbon-neutral fuel in steam raising boilers, particularly in cement manufacturing. The site of the Proposed Development also has a biodiesel facility that produces 25,000 tonnes of biodiesel per annum. The Cat 1 Tallow produced from the rendering operations is used as a feedstock in the biodiesel facility. This enhances the value of the Cat 1 Tallow and produces a green biofuel. This biofuel is sent off-site as an ingredient to be blended with white diesel to reduce carbon emissions from vehicles. The biodiesel facility has recently been extended under Planning Permission Reference 21/1221, which was granted, subject to conditions, by Meath County Council (MCC) on the 23rd of June 2021.

A solar farm has also been constructed by the Applicant under Planning Permission Reference KA/190754, which was granted, subject to 20 no. conditions, by Meath County Council (MCC) on the 22nd of November 2019. The solar farm is situated adjacent to the northern boundary of the site of the Proposed Development and produces 3 million kWh of 100% green electricity for consumption by on-site operations.

The College Proteins facility operates under the EU Regulation S.I. No. 187/2014 (European Union (Animal By-Products) Regulations 2014) and in accordance with EC Regulation 1069/2009 and EU 142/2011. The facility currently operates under an Industrial Emissions (IE) Licence from the Environmental Protection Agency (EPA), IE register number P0037, which was originally issued to the facility on the 2nd of February 1996, and a Greenhouse Gas Emissions (GHG) Permit Register No. IE-GHG123-10405, which was originally issued to the facility on the 23rd of December 2013. The current IE Licence is version P0037-04, which was revised and reissued to College Proteins by the EPA on the 3rd of June 2021, and the GHG Permit for the facility is version IE-GHG123-10405-03, which was reissued to the College Proteins Facility by the EPA on the 21st of January 2020. The company have a Waste Collection Permit NWCPO-08-06361-03. The facility is also approved by the Department of Agriculture as a Category 1 Rendering Plant, Approval No. R911.

The Environmental Management System (EMS) in place at the facility is certified to International Standard 14001:2015. In addition to this the Hazard Analysis & Critical Control Point (HACCP) system has been implemented to ensure controls are in place at all levels of operation. The Environmental Management System and HACCP controls are designed to foster improved environmental performance.

Figures 2-1 and 2-2 detail the Site Location and the Proposed Site Layout Plan, respectively.

Site Location Map

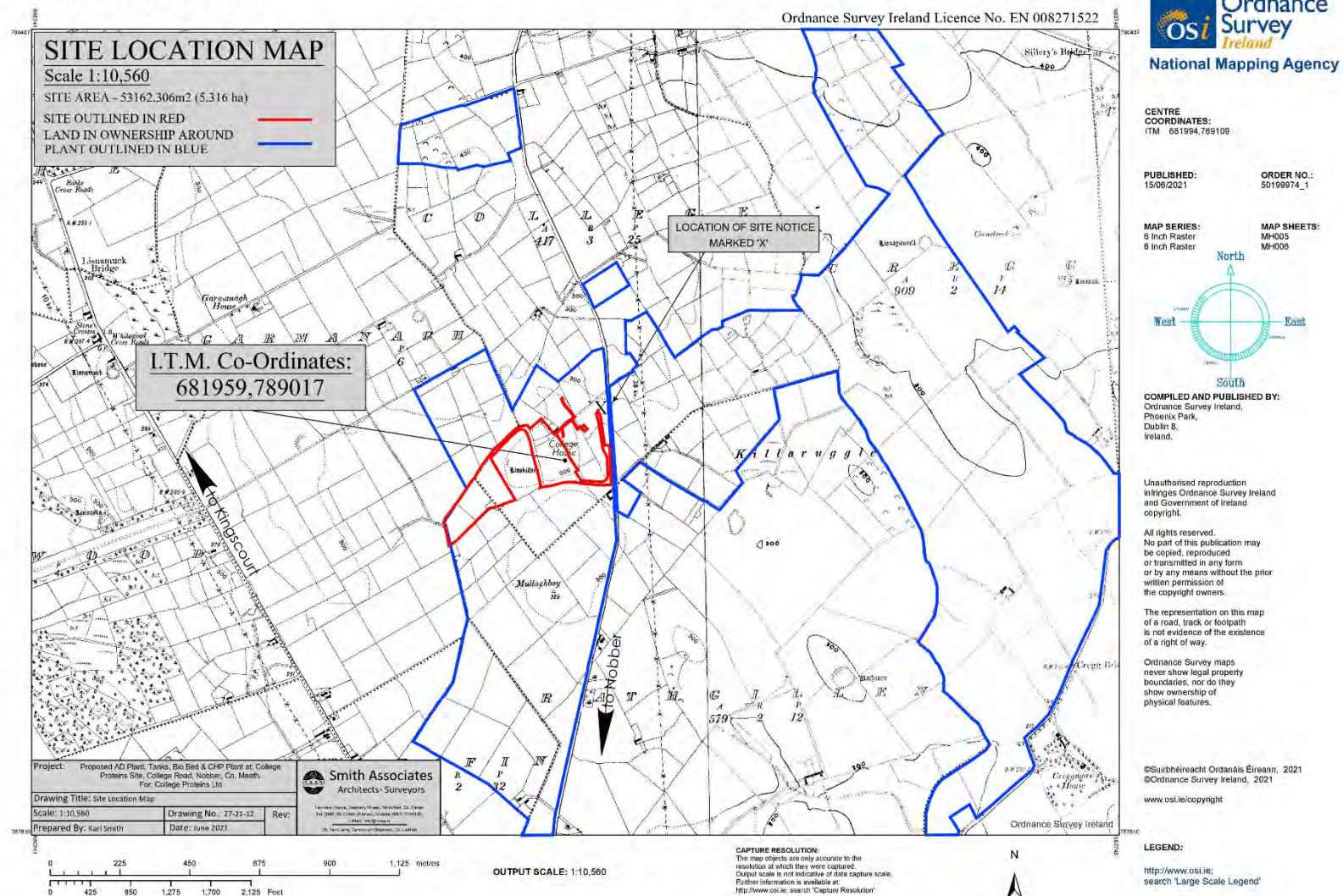


Figure 2-1 Site Location Map (Drawing no. 27-21-12, Smith Associates Architects)



2.3.1 Site Planning History

The site of the Proposed Development lies within the administrative jurisdiction of Meath County Council. A full review has been conducted on Meath County Council and An Bord Pleanála's (ABP) online planning portals to establish the site planning history. Table 2-1 details the applications as follows:

Table 2-1 Site Planning History

Application Reg. Ref. No.	Summary of Development Proposal	Decision and Status
88402	The construction of a meat and bone meal production facility	Decision: Grant Permission Date: 11/05/1988 Status: Complete
89870	Retention of plant rooms and ancillary services	Decision: Grant Permission Date: 28/09/1989 Status: Complete
97269	The retention of 5 tallow tanks, a condenser, covered unloading area, chimney stack, bunding of storage tanks, aeration tank, effluent tank, DAF unit, retention & completion of foundations, road slab and drainage work, new works comprising a factory extension	Decision: Grant Permission Date: 20/08/1997 Status: Complete
971848	An extension to the factory consisting of a single storey store and boiler house with a total floor area of 158 sq.m and a chimney 21 metres in height.	Decision: Grant Permission Date: 07/05/1998 Status: Complete
971871	To construct a storage lagoon for treated effluent with protective structure and hydraulic connections at the existing production plant.	Decision: Grant Permission Date: 07/05/1998 Status: Complete
9856	A two-storey office block of 468 square metres and a car park of 14 spaces at the factory.	Decision: Grant Permission Date: 13/03/1998 Status: Complete
FS98083	Portal frame extension to building	Decision: Grant Permission Date: 06/11/1998 Status:
982049	To use 78 hectares of land for land spreading final treated effluent in conjunction with continued use for agricultural purposes.	WITHDRAWN

Application Reg. Ref. No.	Summary of Development Proposal	Decision and Status
99702	To construct a storage lagoon for final treated effluent with protective structure & hydraulic connections	WITHDRAWN
992252	The retention of the existing BBK Bio-filter and planning permission of a new BBK Bio-filter.	Decision: Grant Permission Date: 28/02/2000 Status: Complete
1878	Construction of a security hut	Decision: Grant Permission Date: 27/11/2000 Status: Complete
FS103	Construction of a security hut	Decision: Grant Permission Date: 22/02/2001 Status: Complete
11363	An increase in capacity of their meat rendering plant from a permitted 75000 tonnes per annum (reg ref 97/269) to 125,000 tonnes per annum & the construction of 4 No. tallow storage silos each with a capacity of 200 cubic metres to facilitate this increase in capacity. Permission is also sought for the retention of a bunded area for the proposed tallow tanks with an area of 210m ² , a cooker room extension & store to the north western side of the main process building with a gross floor of 233m ² , a laboratory building with a gross floor area of 24m ² , an extension to the administration building to provide a canteen for employees with a gross floor area of 27.2m ² , a DERV tank with a capacity of 35.6 cubic metres, a final effluent storage tank with a capacity of 290 cubic metres, a weighbridge & internal access road parallel to College Road, the relocation of the approved BBK Biofilter No 2 by 14m approximately to the north east, BBK Biofilters No 3 (floor area 106m ² , 4 metres high) & 4 no.	Decision: Grant Permission Date: 23/05/2002 Status: Complete
KA20256	Construction of an extension to the existing main processing building for the provision of a second processing line which will process Class 1 and Class 2 animal by-products not intended for human consumption. Raw materials that come within Class 1 and 2 are defined by Com/2000 / 0574 Final - COD 2000 / 0259. This is proposed for a regulation of the European Parliament and of the Council. The extension will include an airlock reception area (120 sq. m.), a raw materials intake area (289 sq. m) containing a raw materials intake hopper, primary and secondary crushers, a cooker which is to be moved from the existing processed building and all associated ancillary plant and machinery including pumps and pipe work. The extension to the existing main processing building also provides for an access corridor to connect the raw materials reception area to a new process building. The proposed new processing building (518 sq. m) will be 16m in height over two floors.	Decision: Grant Permission (Conditional) Date: 17/12/2002 Status: Complete
FS4070	Extension to Building	INCOMPLETE APPLICATION
KA60283	A temporary wind monitoring mast and monitoring system with a height of 50m.	Decision: Grant Permission (Conditional) Date: 14/07/2006 Status: Complete

Application Reg. Ref. No.	Summary of Development Proposal	Decision and Status
KA70425	The retention of 4 no. existing structures on site including: a workshop building for the manufacture of plant and machinery, located to the west of the main process building (540 sq.); a building for the maintenance of haulage vehicles, located to the east of the main process building (400 sq.); a bio-filter structure to facilitate the control of odour, located to the east of the main process building (225 sq.); and an ancillary storage building, located to the rear of the main office building (22sq.m). These structures are all single-storey and are used in connection with an on-going meat rendering operation.	Decision: Grant Permission (Conditional) Date: 02/08/2007 Status: Complete
17.PA005	Strategic Infrastructure Application to obtain permission for a biomass CHP Plant and associated ash landfill as lodged with An Bord Pleanála on 7TH May 2008.	WITHDRAWN
17.PA0013	Construction of a biomass combined heat and power (CHP) plant and associated ash landfill facility adjacent to the existing meat rendering plant on the College Proteins site, located in the townlands of College and Rathgillen. The application site extends approximately 19.25 Hectares. The Biomass CHP plant, when operating at full capacity, will be capable of processing 105,000 tonnes of biomass per annum. the proposed CHP plant has been designed to process a maximum of 52,500 tonnes per annum of meat and bone meal (MBM) and 52,500 tonnes per annum of waste organic liquids (derived from the agriculture, food and drink industries). The plant will generate some eight megawatts of electricity and will provide a net export of six megawatts for use outside the plant. The CHP plant will be housed in a single building (3130 Square metres) designed with concrete and steel structural framework and covered in metal profiled cladding. This building will house an unloading bay and fuel reception area, a fluidised bed combustion (FBC) system, a boiler system, a turbine/alternator set, a fabric filter system, a service building and an office building. There will be an induced draught (ID) fan and a flue stack for emissions to atmosphere, approximately 40 metres in height, located outside. The proposed development also provides for two pipe connections within the existing rendering facility and the CHP plant. The new plant facility will be located to the rear (south/west) of the existing industrial plant buildings on site. The proposed process building will be approximately 96 metres in length, 36 metres in width with a ridge height of 18.4 metres. A separate metal profiled clad enclosure (490 Square metres) will house an air-cooled condenser immediately adjacent to the main process building. The condenser structure will be 35 metres in length, 14 metres in width and 15.2 metres in height. The proposed ash landfill will be located in the south-western part of the application site and will be connected to the proposed process buildings by an internal access road measuring approximately 100 metres in length. The landfill will cater for non-hazardous bed ash generated in the combustion process. It will also comprise the following elements: construction of engineered dry storage ash cells. These cells will be constructed and filled one at a time; a landfill runoff water lagoon; a temporary soil deposition area, a separate weighbridge and control office (57 square metres).	Decision: Grant Permission (Conditional) Date: 28.02.2013 Status: Not Progressing
KA160786	The application site comprises an area of c.1.47 hectares. Permission is sought for the construction of a biodiesel manufacturing facility producing up to 25,000 tonnes of biodiesel per annum. The facility comprises: a process building (maximum height of c. 23m) of c. 3,284 sqm Gross Floor Area (GFA) and associated tank farm (consisting of 12 No. external storage tanks, cooling unit, fertiliser silo, loading/uploading station); weigh	Decision: Permission Granted (Conditional) Date: 14/09/2016 Status: Complete

Application Reg. Ref. No.	Summary of Development Proposal	Decision and Status
	bridge; security building (c. 33 sqm GFA); 22 No. car parking spaces; 5 No. HGV parking spaces; overground pipe racks linking to the existing rendering plant and wastewater treatment plant; a pipe bridge linking the process building and tank farm; and all ancillary site development, landscaping and boundary treatment works above and below ground. The maximum height of the proposed development is the c. 25 m stack adjoining the column tower of the process building. The application relates to development which comprises or is for the purposes of an activity requiring an Industrial Pollution Prevention and Control Licence (now replaced by an Industrial Emissions Licence). An Environmental Impact Statement (EIS) will be submitted to the Planning Authority with the application.	
1313	Application made directly to An Bord Pleanála under Section 37E of the Planning and Development Act 2000, as amended, including an EIS by College Proteins, for Development at College Road, Nobber, Co Meath.	Decision: Permission Granted Date: 25/02/2018 Status: Not Progressing
KA180183	Extension of Duration of Planning Application Registration Reference Number 17.PA0013	Decision: Extension of Duration Granted Date: 22/04/2018 Status: Not Progressing
KA180354	To amend a permitted Biodiesel Manufacturing Facility (Meath County Council Reg. Ref. KA/160786), on a site of 1.49 hectares. The development will consist of the reconfiguration of the process building and associated tank farm and the provision of a new gas electricity generation unit with heat recovery. The reconfiguration on site will consist of: A revised configuration of the process building, resulting in an increase of c.53 sqm in the gross floor area of the building from c. 3,284 sqm to c. 3,337 sqm. There is no increase in the overall height of the building; An increase in the footprint of the tank farm and number of external storage tanks from 12 no. to 21 no.; Amendments to the permitted drainage layout; The proposed amendments do not result in an increase in the overall permitted production of 25,000 tonnes of biodiesel per annum. The following works will be completed as enabling works (as permitted under Reg. Ref. KA/160786): Site access works, excavation works and gravel infill to allow for the provision of foundations for the permitted layout of the process building. The application relates to development which comprises or is for the purpose of an activity requiring an Industrial Pollution Prevention and Control Licence (now replaced by an Industrial Emissions Licence). An Environmental Impact Statement (now referred to as an Environmental Impact Assessment Report (EIAR) will be submitted to the Planning Authority with the application.	Decision: Permission Granted (Conditional) Date: 06/06/2018 Status: Complete
KA190754	A 10-year permission for the construction of a Solar PV Energy Development comprising installation of Solar Photovoltaic (PV) panels on ground mounted frames/support structures within existing field boundaries; underground cabling and ducting (including cable link to main College	Decision: Permission Granted (Conditional) Date: 22/11/2019

Application Reg. Ref. No.	Summary of Development Proposal	Decision and Status
	Proteins plant); 1 No. customer control building, 2 No. switchgear and transformer buildings, site perimeter (stock proof) security fence, CCTV security cameras; site access tracks; and all associated site development works. A temporary construction compound will be provided and vehicular access is via existing main access serving College Proteins. The application site includes a proposed cable route and vehicular access through the College Proteins facility that relates to development which comprises or is for the purposes of an activity requiring an Industrial Pollution Prevention and Control Licence (now replaced by an Industrial Emissions Licence)	Status: Complete
KA200727	Planning permission is sought for the following: A. Construct new 6 bay workshop extension to existing engineering workshop. B. Retain existing electrical panel room, together with carparking and site development works.	Decision: Permission Granted (Conditional) Date: 05/08/2020 Status: Complete
211221	Planning permission to amend a permitted Biodiesel Manufacturing Facility (Meath County Council Reg. Ref. KA/160786; as amended by Reg. Ref. KA/180354), on a site of c. 0.62 hectares at College Road, College, Nobber, Co. Meath. The development will consist of the extension to the existing Biodiesel Manufacturing Facility across all 3 no. floor levels resulting in an increased floor area of c. 354sqm; the provision of an external stairs; the provision of an off-loading bund area and all ancillary site development works above and below ground. The application relates to development which comprises or is for purposes of an activity requiring an Industrial Pollution Prevention and Control Licence (now replaced by an Industrial Emissions Licence).	Decision: Permission Granted Date: 17/08/2021 Status: Under Construction
22/696	Planning permission for the development will consist of the provision of a maintenance workshop and a lorry wash either side of the existing garage and an associated internal access road; provision of a store extension and an amenity block / office extension to the existing engineering workshop; provision of a chemical store and 2 No. chemical storage tanks within bunded area; provision of a security building at the site entrance; car parking, and all associated site development and infrastructure.	Decision: Permission Granted Date: 20.07.2022 Construction due to commence in Q4 of 2022

2.4 Characteristics of the Proposed Development

The Proposed Development will consist of the demolition of an existing garage and the provision of an Anaerobic Digestion Facility with an intake of up to 50,000 tonnes of organic feed-stock material per annum. The Facility will comprise a waste reception building (incorporating workshop, control room and welfare facilities), 2 No. digester tanks, 2 No. digestate storage tanks, glycerine tank, buffer tank, pasteuriser tank, 4 No. liquid reception tanks; all of the above tanks located within a fully bunded concrete area; associated biofilter, gas flare, biogas combined heat and power plant, internal access roads, weighbridge, truck loading area and soil deposition area. The Proposed Development will also include all associated site development,

drainage and infrastructure works above and below ground. The maximum height of the Proposed Development is the chimney stack associated with the biofilter at c. 18m above ground level.

The application relates to development which comprises or is for the purposes of an activity requiring an Industrial Emissions Licence.

2.5 Project Overview

Recognising the climate emergency and the responsibility to address it, College Proteins are striving to reduce their carbon footprint and become a carbon neutral operation by investing in a greener future, through sustainable projects.

College Proteins are proposing to construct an AD Facility to produce approx. 1,102 m³/hr of green Biogas, this equates to 5,610 kw/hr of energy. This would off-set approx. 45% of fossil fuels used on-site currently. This can be compared to producing enough gas energy for 4,500 households. The company's carbon footprint would be greatly reduced, saving 8,876 tonnes of carbon per annum. This is the equivalent of taking 1,930 cars off the road. The biogas produced from the AD Facility can be used in the on-site steam boilers and Combined Heat and Power (CHP) plants to generate steam and electricity to run the production facilities on-site.

College Proteins are committed to sustainability and maximising the resource value of organic material from all sources. The Proposed Development will reduce the requirement for natural gas use on-site which will aid the company's self-sufficiency in this regard.

As published in The Farmers Journal (23rd June 2021), AD is a well-established technology in many European countries. Approximately 19,000 AD plants are in operation around Europe, producing 167 terawatt hours (TWh) of biogas.

According to the UK's biogas map on www.biogas-info.co.uk in June 2019 there were 76 operational AD facilities in Northern Ireland and 31 no. AD plants are located in the Republic of Ireland (ref: report in Irish Independent dated January 5th 2019).

AD is a sustainable form of renewable energy production through a naturally occurring biological process in which micro-organisms break down biodegradable material in the absence of oxygen in an enclosed system. The process produces a methane-rich biogas and a nutrient rich fertiliser known as 'digestate'. The biogas can be converted into renewable electricity, or it can be upgraded to biomethane for use in on site boilers, as a vehicle fuel or for injection directly into the gas network to provide a source of renewable heat.

Feedstocks proposed for biogas production include grass and maize silage, food waste, slurry, sludges from food processing plants. AD is a proven technology that extracts energy from organic materials in the form of biogas. It is the biological conversion of the organic fraction of waste to simple end-products. The process takes place in an airtight vessel, with feedstock fed into the vessel and biogas and nutrient rich digestate taken out. Biogas is made up mostly of methane (about 60-65%), the main constituent of natural gas, and carbon dioxide (about 35-40%) with minor traces of other compounds such as hydrogen sulphide, hydrogen and ammonia. A benefit of AD is that it allows both a mass and a volume reduction of the waste

input as much of the organic matter in the process is converted to biogas, the rest is left as nutrient rich digestate with significantly reduced odour potential and increased nutrient availability.

AD can make a significant contribution to the management of organic wastes in Ireland. Biodegradable food waste must be diverted from landfill to alternative more sustainable waste management methods, such as AD, to achieve national recycling targets. AD will also reduce reliance on landfill capacity which will become an increasingly scarce outlet in the coming years.

AD not only recovers energy from organic waste, but it also produces a nutrient rich digestate which is suitable for use as a biofertiliser. This reduces reliance on artificial fertilisers that are becoming increasingly expensive to manufacture. The nutrients in digestate, particularly nitrogen, are more freely available for plant uptake than in untreated organic waste sources leading to improved recycling of nutrients. Thus, the use of digestate has water and air quality environmental benefits as it decreases organic pollution potential. AD can also reduce odours from slurry spreading as the concentration of odour in the air is significantly lower when digestate, instead of untreated slurry, is applied on the fields.

Replacing fossil fuels with renewable energy generated by AD also reduces Greenhouse Gas Emissions (GHG). The Sustainable Energy Authority of Ireland (SEAI) recently predicted that AD in Ireland could realise carbon savings of up to 0.7 Mt CO₂ e per year by 2030 and 2 Mt CO₂ e per year by 2050.

2.6 Design and Construction Phase

The Proposed Development comprises two digestion and two storage tanks; a waste reception building, incorporating both office and welfare facilities; biofilter (for filtration of the air in the reception building); a weighbridge; one gas engine CHP unit; access road; car parking area; and ancillary development.

The layout of the site has been designed to meet operational, amenity and landscaping requirements. The site itself is positioned close to the existing rendering buildings on site, the proposed built development will be of an agricultural appearance and coloured dark green so as not to stand out in the local environment. The tanks and reception building are positioned close to each other and to the existing rendering buildings, thereby reducing the potential visual impact. The four digesters and digestate storage tanks will have diameters of 25 and 21 metres. They will be cylindrical in shape to a height of 8 metres from which point they will rise in a dome fashion to a point at approximately 16 metres high (including the gas filled dome roof). They will be constructed of concrete walls to 8m, which will be sheet clad, while the roofs are constructed of a double membrane, the internal membrane rises and falls with the biogas, while the outer sheet provides protection against the elements.

The reception building will cover a ground area of 34.4 metres by 66 metres with a ridge height of 13.1 metres. The height of the reception building is required in order to accommodate the Collection Vehicles which deliver the feedstock. The building proposed will be steel framed, with concrete lower 'push' walls up to 2.7m high and profiled metal sheet insulated cladding.

The reception building and liquid feedstock intake tanks, glycerine tank and pasteurisation tank will be ventilated by a woodchip biofilter located to the west of the intake building. The biofilter will be 390m² (19.5m x 20m) and 2.4 m in height, with 1.6m depth of woodchip.

A weighbridge will be located inside the site entrance for weighing vehicles as they enter the site. The same weighbridge will be used for exiting vehicles.

Car parking spaces for up to 18 No. vehicles will be provided inside the main gate in the visitor's carpark for construction staff and visitors. After the plant is constructed 12 No. carparking spaces will be provided to the north of the biofilter. In order to comply with the Animal By-Products Regulations (ABPR) and prevent cross-contamination, the facility is designed to keep the 'dirty' parts of the process separate from the 'clean' parts. For example, the incoming 'dirty' waste material is received within the western section of the reception building, while the final product or digestate, having been processed and pasteurised, is collected from the eastern outbound section of the same building.

In terms of scale, the site has been designed to minimise its footprint and height as much as possible, however ultimately this is controlled by the process and proposed capacity of the facility. The largest aspect of the Proposed Development is the reception building, required to accommodate the tipping of large feedstock vehicles. The tanks have an agricultural appearance to them, resembling silos or similar storage facilities. It is not therefore anticipated that the Proposed Development will look out of keeping in its proposed location. The proposed lighting, which is required for safe working outside of daylight hours, particularly during the winter months, will have hoods to direct light downwards and into the site, thereby minimising light spill and pollution.

The Construction Phase for the Proposed Development will involve the removal of an existing building, removal of soil from the site of the Proposed Development, the construction of the Anaerobic Digestion plant and raising the level of land near the solar farm with the excavated soil.

Phase 1 – The existing building garage and concrete tank on site will be demolished. The garage currently used for maintaining College Proteins vehicles has a floor area of 545.67m² and the building is 8.3 meters to the apex. The building is constructed from concrete, steel and Kingspan sheeting. The Kingspan sheeting, purloins and steel work will be carefully removed and stored to be re-used on other buildings in future projects. The concrete tank (bund area) has never been in use, therefore there is no chance of any soil contamination under this tank. This has a floor area of 178.79m² and a wall height of 2 meters. The concrete floors and walls of the existing building garage and concrete tank (totalling approx. 840m³ volume) will be removed off site for disposal in a licenced facility. The gravel from the yard surrounding the garage and concrete tank will be dug up and kept to one side pending testing for contamination and then will be re-used as filling on site if it is suitable. If not, the material will be treated in an authorised facility. The garage & concrete tank bund are detailed on drawing No. 21-21-23 attached in Appendix A.

Phase 2 – The soil (77,804.15m³) will be removed from the Site and will be infilled to fields to the west of the site. Ref. drawing 21-21-18 in Appendix A. The soil that will be excavated is surplus soil that will be re-used onsite, within the site boundary. As the material will be used for the purpose that soil is intended (i.e. used on land that will be reseeded with grass seed)

the activity will not be subject to waste legislation. A new weighbridge will be installed beside the existing rendering weighbridge, this will be separated with a fence and signage to direct traffic on site. There will be a new two-way road constructed on site separated from the rendering plant with a fence to access the proposed AD plant area. 21,500 tonnes approx. of stone filling and concrete will be brought to the site to create a base for building the road, yard, tank foundations, walls of the reception hall and AD tanks and bunded walls.

Phase 3 - The AD plant intake buildings, tanks, bund wall and road will be constructed. The intake building will be of steel frame construction, shuttered concrete walls, olive green insulated Kingspan sheeting and purloins. The olive green sheeting was selected to blend the colours into the agricultural surroundings around the site and therefore cause less visual impact. The AD tank bund will be a concrete wall construction with a concrete floor, the roadway to the plant will be a constructed from concrete. The intake tanks and glycerine tank will be constructed from stainless steel. The buffer tank, digesters and digestate storage tanks will be constructed from concrete. The pasteurisation tank will be constructed from glass lined steel.

The Proposed Development comprises of:

- Anaerobic Digestion (AD) Plant Reception building (food waste reception)
- Reception hall for solid feedstock (silage & Maize)
- Borger Fibre separation for digestate
- Workshop
- Office, control room, toilets and changing rooms
- Biobed
- 4 No. Liquid reception tank- 113m³ tanks
- 1 No. Glycerine tank- 78m³
- 1 No. Buffer tank – 983m³
- 1 No. Pasteurisation tank - 247m³
- 2 No. Digesters - 3682m³
- 2 No. Digestate Storage tanks – 2500m³
- Gas Flare
- Biogas Combined Heat and Power (CHP) Plant

Refer to Site Layout Plan drawing 21-21-14 in Appendix A.

Phase 4 – The fields where the soil will be deposited will be re-seeded and planted with grass and returned to agricultural use. Please see filling area on drawing ref. 21-21-18 in Appendix A.

2.7 Operational Phase

The existing facility will continue to operate as an animal by-product rendering plant, a biodiesel production facility and a solar farm, with the addition of an anaerobic digestion facility. The existing facility is currently operational under IE Licence (P0037-04) and Greenhouse Gas Permit (GHG Permit) No. IE-GHG123-10405-03. Subject to the grant of permission for the Proposed Development, the Applicant intends to apply to the EPA for a

review of their current licences to cover all existing on-site activities with the addition of the AD activities.

An application for a review of the existing IE License will be made to the Environmental Protection Agency as the introduction of an anaerobic digestion facility will result in changes to the environmental emissions from the facility. The GHG Permit will be revised, and the EMS will be updated accordingly.

The Proposed Development will be operated in accordance with the requirements of the planning grant conditions and updated requirements of the reviewed IE Licence, GHG Permit, EMS and Safety Report for the facility.

2.8 Summary of the Existing Process

2.8.1 Existing process

2.8.1.1 Rendering Plant

Raw material is received into the factory and off-loaded in the raw material building. From there it is fed through crushers to reduce the particle size. The crushed material is fed via a pump to a preheating system. Wastewater from the raw material area and crushing area is collected in an isolated sump and fed into the pre-heating system. All areas in the factory are kept under negative pressure at all times and the malodorous air is treated in the bio filters.

The material is pressed after pre-heating, the solids go to the driers and the liquid is tricanted. The oil is sterilised before it is sent to tallow storage tanks. The waste liquid (stick water) is sent to a waste heat evaporation plant to be evaporated and the solids are conveyed to the drier. The evaporated / concentrated liquid is then sent to the drier for further processing. Once in the drier the material is heated according to Department of Agriculture and EC regulations (1069/2009).

After drying, the material now called meal is discharged and goes on to be sterilised, cooled, milled and stored for dispatch. Vapours which are driven off at the drying stage are drawn by a fan to a waste heat evaporator, while excess vapours go to the thermal oxidiser. There is backup alternative abatement in the form of air-cooled condensers, boilers and biofilters which can be used in the event of a thermal oxidiser malfunction. The condensate liquid generated in the evaporation plant condenser is directed to the Wastewater Treatment Plant (WWTP).

The process area where these processes take place is ventilated by the bio filter system and thus kept under negative pressure.

Both the process in the rendering plant and the WWTP are controlled by a modern automated siemens control system. This system ensures that all processes are readily monitored and controlled thus minimising any impact on the environment through human error.

2.9 Biodiesel Plant

2.9.1 Biodiesel Process Description

Biodiesel is manufactured from renewable feedstock, which is animal or vegetable-based tallow or used cooking oil for example, via a catalytic reaction known as transesterification. It

can then be used directly in any diesel engine either as a blend or 100%. Minor modifications (seals, piping) are required for use at 100% pure, unless specifically guaranteed by car manufacturers.

Biodiesel is a clean burning fuel which runs in any unmodified diesel engine. This fuel is an environmentally friendly alternative to the higher emission petroleum diesel used in large transport vehicles and some cars and trucks. In addition, biodiesel can be made from renewable resources such as vegetable oil or animal fat and even from used cooking oil, an abundant waste product.

The Transesterification process is the reaction of a triglyceride (fat/oil) with methanol to form esters and glycerol. A triglyceride has a glycerine molecule as its base with three long chain fatty acids attached. During the esterification process, the triglyceride is reacted with methanol in the presence of a catalyst (Acid). The methanol reacts with the fatty acids to form the mono-alkyl ester, or biodiesel and crude glycerol.

This glycerol can be then used as a feedstock in the proposed AD plant.

2.9.2 AD Plant Proposed Feedstocks

Table 2-2 details the Proposed Feedstock for the AD Plant.

Table 2-2 Proposed Feedstock for the AD Plant

Item No.	Feedstock	Approx. Tonnes/annum	Type	Storage Location	Source	
1	MONG/ Glycerine	2,500	liquid	Glycerine Tank	Currently a by-product of College Biofuels Nobber.	Currently removed off site, now to be diverted to AD plant.
2	Sludge	2,000	liquid	Liquid Reception tanks	From food process Plants in a 70km radius	New deliveries to site
3	Food Waste	35,000	solid	Hoppers in Intake building	From food processing plants, restaurants and supermarkets within a 70 km radius	New deliveries to site
4	Poultry Litter	2,500	solid	Reception hall for solids	From Poultry farms within a 70 km radius	New deliveries to site
5	Belly Grass	2,500	solid	Reception hall for solids	From abattoirs within a 70 km radius	New deliveries to site
6	Waste from Food and drinks manufacturing waste from dairies, brewing.	1,500	liquid	Liquid Reception tanks	From food processing plants breweries within a 70km radius	New deliveries to site
7	Silage/ Maize/ fodder Beat/ Slurries	4,000	Solid/ liquids	Reception hall for solids/ Liquid reception tanks for slurries	From farms within a 70 km radius	New deliveries to site

	Total	50,000				

There would be approx. 3,500 tonnes/ annum of cardboard/plastic packaging from the food waste to be sent off site for recycling locally.

Offsite Management of AD Digestate

The process will generate approximately 46,500 tonnes of digestate (this figure includes washdown water from feedstock trailers in reception hall that gets sent through the AD plant, rainwater collection from foul drainage in AD tanks bund and loading area and the digestate that's recycled back through the infeed to assist pumping dry feedstock) which will be sent off site to be spread on farmers land as organic fertiliser. This spreading will be subject to a nutrient management plan carried out by the farmer on their landbank.

Approximately 10% (4,650 tonnes) of the digestate that leaves site will be in solid fibre form the remaining 90% (41,850 tonnes) will be in liquid form. Both forms can be used as a valuable organic fertiliser on farmlands. The farmer using the digestate will manage the land spreading. This is consistent with current best practice in the industry and is subject to additional controls set out in the European Union (Good Agricultural Practice for Protection of Waters) Regulations 2017, which include rate, timing, minimum distances from watercourses, circumstances under which organic fertiliser cannot be applied (e.g. land that is likely to flood, on steeply sloping ground) and record keeping.

2.10 Anaerobic Digestion (AD) Plant Process Description

The AD system is designed by Marches Biogas. Marches Biogas design and supply several items associated with the digester tank. These include the following:

- Tank-specific process pipework
- Level instrumentation for monitoring and control of tank contents
- Temperature instrumentation for measuring temperature of the tank contents.
- Pressure relief valve fitted to the digester roof

2.10.1 Liquids reception tank

The Liquid feedstock will enter the site through the main entrance across the new weighbridge along the new two way road to the liquid feed off loading area along the side of the liquid feed reception tanks. Liquid feed (sludges, slurries and liquid waste from food and drink manufacturing) will be transferred directly into 4 No. (113m³) liquid reception tanks; these tanks will be constructed from stainless steel. They will be covered and connected to the biofilter ventilation system. The tankers will off load these liquids from the loading area next to the intake building.

2.10.2 Glycerine and oils nurse tank

The Glycerine will be moved by tanker internally from the biodiesel site across the new weighbridge along the new two way road to the liquid feed off loading area along the side of the liquid feed reception tanks. Glycerine will be delivered into the Glycerine Tank (78m³) and will be pumped into the digester on a controlled basis. The management of the glycerine and oils is critical to prevent foaming and process inhibition. The glycerine tank will also be

constructed from stainless steel and will be covered and connected to the biofilter ventilation system.

2.10.3 Solids Reception Hall

The solid feedstock will enter the site through the main entrance across the new weighbridge along the new two way road to the solids reception hall for crops. Solid feedstocks (maize, silage, belly grass, poultry litter & fodder beat) are delivered to a bulk feeder/mixer hopper located within the reception hall and fitted with weigh cells to enable the plant operator to load the correct quantity of feed. The bulk feeder mixes the feedstock via two vertical augers and cuts up any long fibres before discharging into the Vogelsang Quickmix or Pre-Mix solids feeder. The twin horizontal augers further chop the solid feedstock and combine with liquid feedstock (or recirculated liquid digestate) to produce pumpable 'slurry'. The 'slurry' is pumped into the digester via a Vogelsang macerator which reduces the particle size to a maximum 20mm, presenting a greater surface area for bacterial activity to take place and ensuring efficient digestion.

The solids feeder will be capable of feeding on a batch basis to achieve suitable feed rates. The process control allows for accurate measurement of feedstock into the digester at intervals predetermined to maintain optimum gas production.

Refer to Figure 2-3 for the AD Plant Process Flow Diagram.

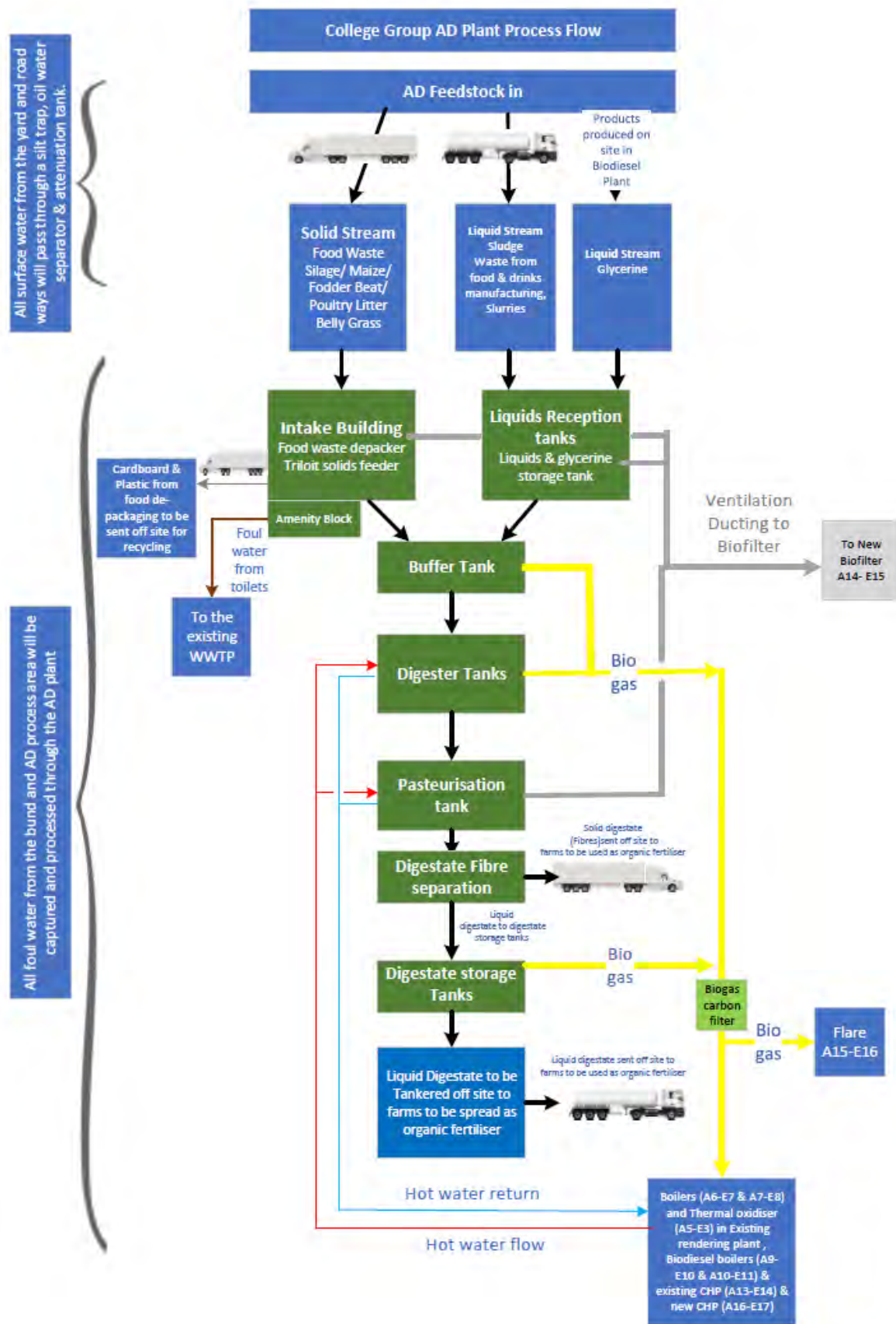


Figure 2-3: AD Plant Process Flow Diagram

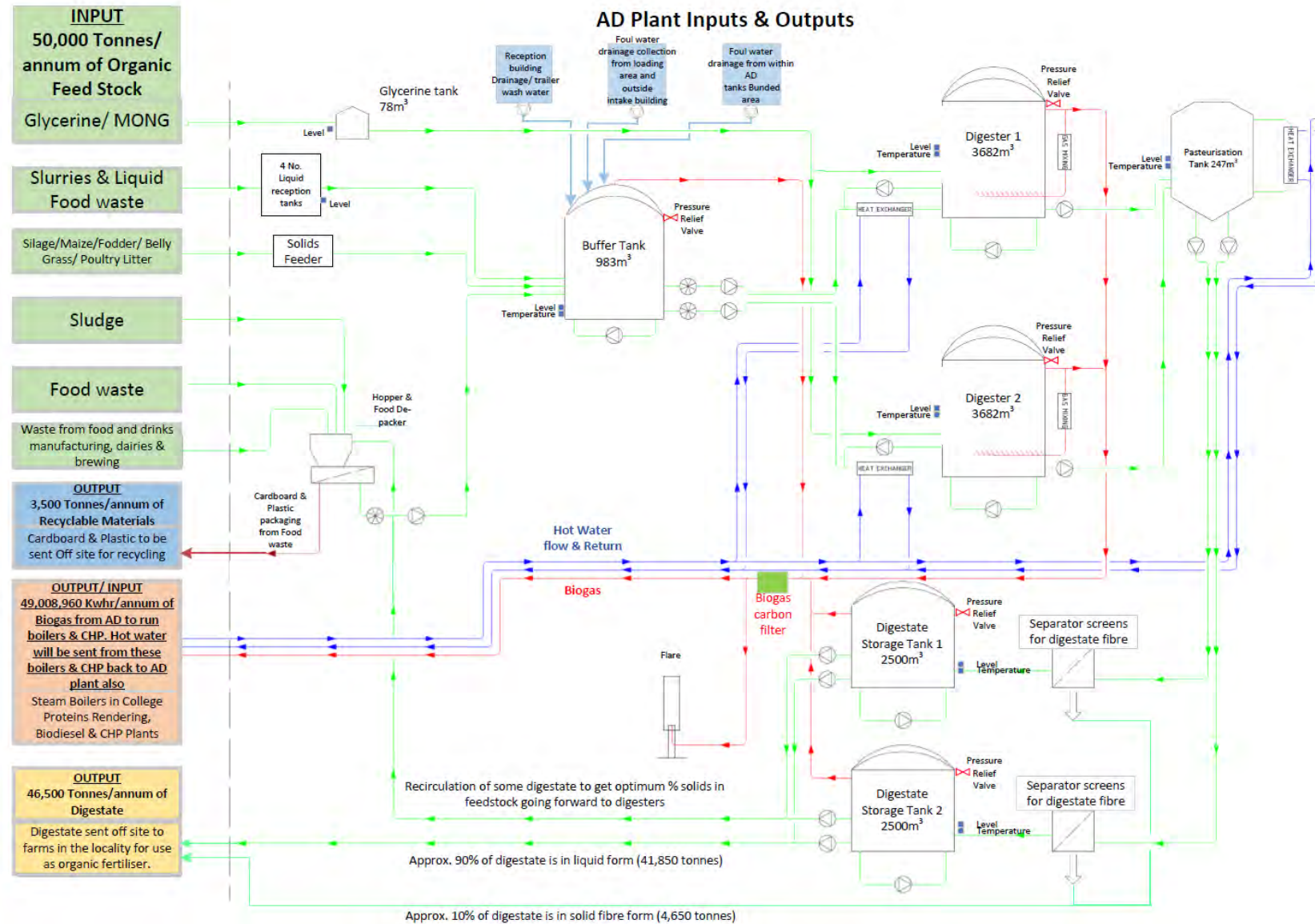


Figure 2-4 AD Plant Inputs and Outputs Schematic

2.10.4 Main Feedstock Reception Hall

The food waste will enter the site through the main entrance across the new weighbridge along the new two way road to the main hall of the feedstock intake building. Food waste will be received into a reception hall with hoppers to allow separation and inspection of deliveries. There will be a dedicated odour control system installed within the building this will be connected to a new biofilter.

The food waste will be loaded into a shredder and depackager using screw conveyors, which will then be mixed with return liquors and pumped through a macerator to the raw waste buffer tank together with associated floor drainage.

The plastic and paper from the food waste depacker will be sent off site for recycling.

The other solid material e.g. silage, maize, belly grass, poultry litter will also be delivered to the solids handling area of this reception intake building.

The intake building will be constructed with a steel frame, shuttered concrete wall, concrete floor and olive green Kingspan cladding.

2.10.5 Sealed Buffer Tank (for feedstocks)

The buffer storage tank (983m³) includes a fixed sealed roof connected to the biogas system to collect gas generated in the tank and to prevent emissions of gas to atmosphere.

The buffer storage tank is constructed on a reinforced concrete base which slopes to a central discharge point depending on ground conditions. The walls of the buffer tank will be constructed from shuttered concrete.

The buffer storage tank is mixed thoroughly. The digester feedstock is discharged from the buffer storage via an in-line macerator which reduces particle size to a maximum of 12mm by a lobe-pump. The discharge from this tank is at an invert level above floor level. This enables settled grit to be collected from the central discharge hopper, which is a manually operation carried out once per week.

2.10.6 Continuously Stirred Tank Reactor (CSTR) Digester

The CSTR digester tanks No. 1 & 2 (3,682m³ each) are constructed on a reinforced concrete base which slopes to a central discharge point depending on ground conditions. The walls of the digester tanks will be constructed from shuttered concrete.

They have a sealed flexible membrane roof which acts as biogas storage. The digester includes a gas pressure/vacuum relief valve and an emergency liquid relief valve. They are connected to the biogas system.

The feedstock enters digester No. 1 first and then moves into digester No. 2.

The primary digesters have inspection windows which are checked once a day in accordance with Daily Checks within AD Maintenance schedule.

The SCADA system ensures that the digesters operate in the thermophilic temperature range at 37-42°C.

The digesters all have pressure and vacuum relief valves (PRVs) which will release biogas or take in air in the event of an overpressure or under pressure biogas situation respectively.

The PRVs are a necessary safety feature for an AD plant; but will only be used as a contingency to maintain structural integrity of the tank and dome structures. During normal operation the PRVs will not operate.

2.10.7 Digester Heat Exchange System

The digester temperature is independently maintained within the temperature range of 37-42°C.

The digester tank is heated by the circulation of its contents through an external concentric-tube heat exchanger. The digestate is circulated through the heat exchanger by a suitable pump. Hot water is circulated through the heat exchanger by a centrifugal pump. Hot water will be re-circulated through the heat exchanger via a dedicated circulation pump from the hot water header.

2.10.8 Digester Mixing System

The contents of the Digester Tank are mixed by a combination of re-circulating biogas through a series of nozzles attached to the tank base and additional hydraulic mixing. The mixing nozzles are fed by independent mixing systems manufactured by Marches Biogas Ltd, each including:

- Skid-mounted rotary-vane compressor set, driven by a 5.5kW motor, with rotary valve, driven by 0.25kW motor
- Set of inlet pipework, diameter 50mm, complete with isolation valve
- Set of pipework between compressor, pressure gauge and rotary valve, diameter 32mm, each complete with isolation valve, non-return valve and pressure relief valve
- 18-off individual gas mixing pipes, diameter 32mm, each complete with isolation valve, and polyethylene pipe attached to the tank base
- Hydraulic distribution manifold

2.10.9 Gas Holder

The gas holders are roof mounted double membrane vessels. The inner and outer membranes will be fabricated from PVC-coated polyester fabric. The outer membrane is permanently inflated by means of an air blower, to maintain a positive pressure on the inner membrane. A pressure relief valve maintains the pressure. The pressure on the inner membrane is sufficient to supply gas to the gas booster unit prior to its supply to gas consumers.

The inner membrane provides containment for the biogas and inflates or deflates according to biogas production and demand. A level controller is installed to control the operation of the gas consumers and gas mixing system.

The total biogas storage capacity spread across the 2 digester tanks is approximately 2,200m³ which approximates to 2-3 hours of production. This storage capacity allows for planned routine maintenance events when the gas storage levels will be reduced prior to shut down.

The digesters tanks are equipped with desulphurisation nets and low-level oxygen injection to encourage microbial growth to reduce hydrogen sulphide (H₂S) levels and precipitate sulphur into the digestate below.

The biogas passes from the storage domes through a condensate collection pipe to remove any moisture, through a chiller to reduce the temperature and then through a carbon filter to remove any excess hydrogen sulphide (H₂S).

The SCADA system manages the biogas treatment, gas distribution system and flare if required.

The biogas will be consumed by our onsite steam and thermal oil boilers in the existing rendering and biodiesel plant. If there is excess gas, or, during shutdowns of biodiesel and rendering together, then the biogas CHP plant engine will run on the biogas produced as a backup system. The electricity produced from the CHP will be used to power the plant on site. If there is any issue with the steam boilers, thermal oil boiler and CHP all at the same time which is unlikely, then the Flare would be activated.

2.10.10 Surplus Gas Burner (Flare)

In the unlikely event that there is excess biogas or other gas consumers are not operational the biogas will be automatically diverted to a BAT compliant Medium Temperature Non-Visible Surplus Gas Burner (Flare) to prevent an overpressure situation arising within the gas holder and to ensure no unburned gas is released to the atmosphere.

The flare ignites automatically and is sized appropriately; it can burn up to 1,300m³/hr, the maximum production of biogas is approx. 1,102m³/hr from the AD plant.

The control of the biogas plant and of the flare stack is interlocked on the dedicated SCADA system such that if the gas pressure reaches a trigger level of approximately +3.0 mbar in any one of the gas storage domes the flare will automatically start. This is below the set point at which the PRVs release biogas (4.0 mbar).

Enclosed flares contain burners, enclosed within a cylindrical enclosure and lined with refractory material. The enclosure prevents quenching and, as a result, the combustion is much more uniform, and the emissions are low. A typical layout of an enclosed flare is indicated in Figure 2-5. The enclosed flare system has a non-visible flame and quiet operation of less than 80 db. when in operation.

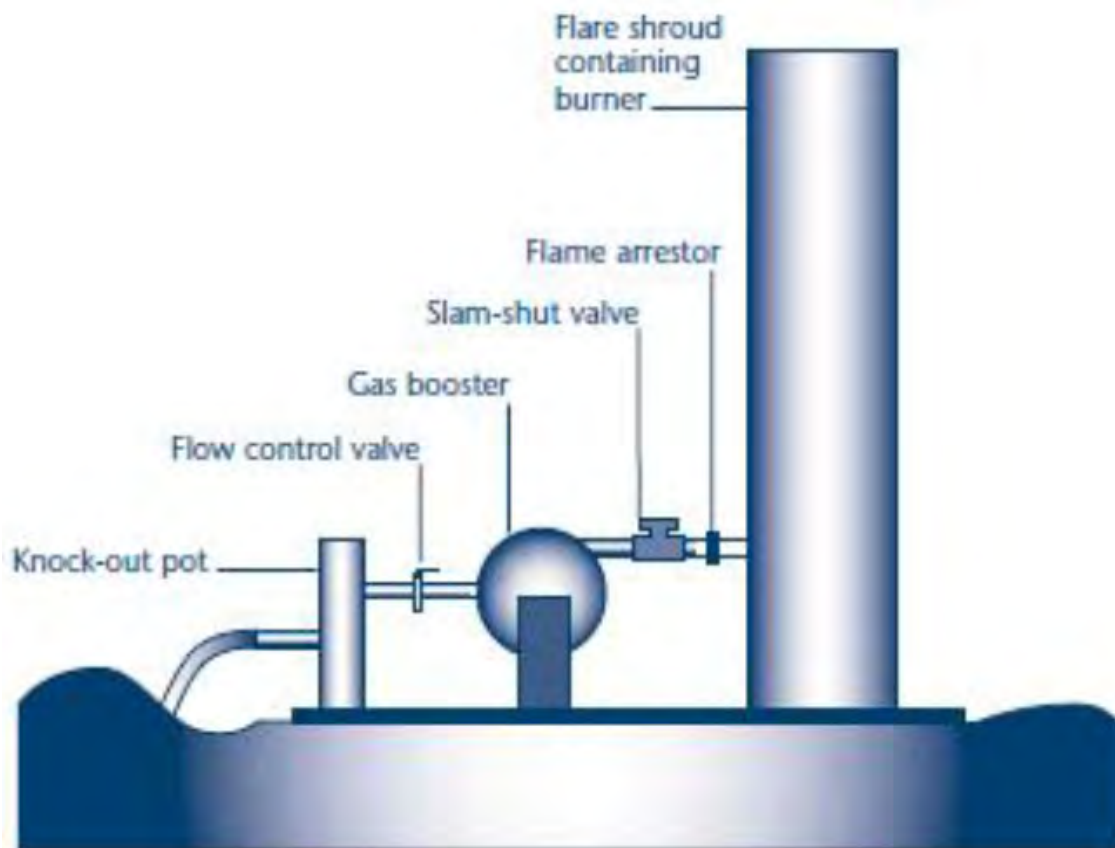


Figure 2-5 Enclosed Flare

2.10.11 Pasteurisation Tank

The digestate will exit digester No. 2 and enter the Pasteurisation Tank (247m³). This tank includes a fixed sealed roof which is connected to the biofilter ventilation system.

The Pasteurisation Tank is insulated with 100mm of mineral wool protected with plastic-coated steel sheets. The insulation ensures that the heat within the system is retained.

The Pasteurisation Tank is mixed thoroughly and heated by the circulation of its contents through an external concentric-tube heat exchanger. The digestate is circulated through the heat exchanger by a suitable pump. Hot water is circulated through the heat exchanger by a centrifugal pump.

The digestate is pasteurised in batches, each batch will be heated to over 70°C for a minimum of one hour prior to being cooled via a heat exchanger. Pasteurised digestate is discharged from the base centre of the pasteurisation tank by a lobe-pump through a screw press separator.

Digestate Fibre Separation

The fibres are separated from the digestate after pasteurisation. This is done in the fibre separation area in the reception building using a screw press separator. The separated fibre falls into trailers below the separator and will then be removed off site for use as an organic fertiliser by farmers. This is in solid form and can be spread on land as an organic fertiliser.

The Digestate separation and the storage of fibre is fully contained within the Reception Building in the digestate fibre separation area, which is connected to the biofilter odour control ventilation system.

Separated liquor will be pumped from the separator to the dedicated onsite covered digestate storage tanks, where it can then be sent off site to farms to be used as an organic fertiliser or blended back into the feedstock to assist pumping dry feedstocks into the digesters. Approx. 10% (4,650 tonnes) of the digestate that leaves site will be in solid fibre form the remaining 90% (41,850 tonnes) will be in liquid form. Both forms can be used as a valuable organic fertiliser on farmlands.

2.10.12 Digestate Storage tanks

The 2 No. digestate storage tanks (2,500m³ each) are constructed on a reinforced concrete base which slopes to a central discharge point depending on ground conditions. The walls of the tank will be constructed from shuttered concrete.

They have a flexible membrane roof which acts as biogas storage. The digestate tanks include a gas pressure/vacuum relief valve and an emergency liquid relief valve. They are connected to the biogas system.

The digestate from digestate storage tank is pumped into tankers and leaves the site as an organic fertiliser. The digestate is then stored off site on farms, where it will be managed and landspread by the farmers on their own landbank. Digestate is rich in plant nutrients, particularly nitrogen, phosphorous and potassium, and remaining organic matter, and can be used as an organic fertiliser on agricultural land in a similar way to animal manures and slurries. This digestate requires land for spreading but offers many cost and nutritional advantages over the use of raw slurries and chemical fertilisers.

2.10.13 Control System

The operation of the biogas plant is fully automated from an on-site central control panel which monitors information transmitted from field instrumentation around the plant. The system will provide a remote monitoring service via an internet connection so that critical alarms can be sent to operators and changes can be made to ensure optimisation of the AD process. The system also allows the operator to monitor the site remotely.

The Control System is bespoke design for College Protein and operators will receive formal training in use of the HMI system. The Control System facilitates optimal operation the AD plant and provides a constant communication portal with Marches Biogas engineers.

Biogas generated as a product of the process is collected in the gas holder positioned above the digester tank. A proportion of the biogas is recirculated throughout the digester to uniformly agitate the contents to prevent stratification, 'dead zones' and the build-up of a floating layer. The gas mixing system optimises biogas production and is integral to the outstanding performance of Marches Biogas digesters. Biogas from the process is piped to the gas consumers.

Included within the digester is de-grit pipework, liquid level control, digester temperature control and gas holder level control.

There are no moving parts within the digester.

The design of the system is such that it is capable of establishing and maintaining the AD process on a continual 24 hours/day, 365 days/year basis.

Marches Biogas Key Design Principles

- To design a plant which is robust, reliable and safe.
- To design a plant which is easy to operate and removes the complexities which are often inherent in the design of anaerobic digesters.
- All mechanical equipment requiring maintenance is accessible.
- Equipment is chosen for ease of maintenance as well as performance.

Engineering Standards

- All interconnecting pipework is in stainless steel.
- Exposed slurry pipework is insulated.
- All steelwork is hot dip galvanised.
- All electrical work is carried out to IEE Regulations.
- All Plant, materials and equipment that come into contact with the process feedstock and digestate will be designed to withstand any corrosion properties of the material.

2.11 Process Control Equipment

2.11.1 Odour Control

To reduce the risk of odour or spillages during delivery of the raw materials, the following provisions are undertaken on site:

- All transporting trailers are fitted with waterproof rollover cover and splash plates.
- Penalties are imposed on hauliers who cause any spillage or odours.
- All containers, skips and vehicles used in the transportation of raw materials are washed thoroughly each time and sprayed with disinfectant (within a bunded area draining to the AD plant).
- All trailers and skips are kept in good order and are regularly checked. A monthly visual inspection record is filed for each container transporting raw materials to the site.

Reduction/removal of trace Hydrogen sulphide gases through the carbon filter in the biogas reduces the potential emissions from burning biogas within the boilers, CHP and biogas flare.

The intake building will be maintained under negative pressure and will be vented to a new biofilter on site. There will be no feedstock stored outside as all will be contained in the intake building. The solids reception hall which is part of the intake building will be for silage, maize, belly grass, poultry litter. The main Feedstock reception building will be for food waste. The digestate separation will take place inside the digestate separation area which is also part of the intake building. All intake tanks, glycerine tank and pasteurisation tank will be connected to the biofilter ventilation system and will be used for the intake of liquid feedstocks. The buffer tank, digesters, digestate storage tank will be connected to the closed biogas system off the tops of the sealed tanks. The biogas will then be cleaned and used in the onsite boilers and CHP plants. In the event that there is excess biogas or other gas consumers are not operational the biogas will be diverted to Medium Temperature Non-Visible Surplus Gas Burner (Flare) to prevent an overpressure situation arising within the gas holder and to ensure no unburned gas is released to the atmosphere.

2.11.2 Biogas Foam Control / Liquid Overflow Control

Overfill and overflow protection is intrinsic to the design of the Biogas AD plant vessels and associated components. This is achieved through a combination of active and passive measures with high level mitigation and overfill/ overflow protection built into every Biogas designed AD plant vessel. Where process control and biological monitoring is correctly maintained, including organic loading rate, feed rate consistency, operating temperature, tank mixing, feed input, discharge ratio, the incidence of tank overfilling or digestate foaming is significantly reduced. It cannot however be completely discounted so design considerations need to be made to allow overfill/ foaming to occur without risk to tank and other plant asset integrity or other safety systems or operator health and safety while minimising the impact of overflow.

2.11.2.1 Automatic Passive Control Measures:

Sealed Vessel Pressure Relief

- All sealed vessels will have a minimum of two pressure/ vacuum relief valves (PRV) each sized in excess of 100% of potential gas production capability for the vessel.
- These PRVs will not share a common tank connection/ flange.
- Typically, one valve will be fitted to a fixed roof at high level or where a flexible roof is used, at the highest position at or close to the tank wall.
- One valve will be fitted at the highest point on the gas take off pipework which will penetrate the tank wall at a lower position than the higher PRV connection.
- Neither PRV will be installed with a manually operated valve between PRV and tank gas space.
- All gas pipework will be sized to a diameter the same as or greater than the PRV flange diameter.
- At least one PRV will be installed downstream of a vertical overflow/ condensate drop pipe to protect the PRV from any physical material travelling to it from the tank.

Vessel Overflow

- For every sealed tank, the lowest point of the gas take off pipework will incorporate a vertical overflow/ condensate drop pipe in the full diameter (200mm diameter minimum).
- There will be no elevation in the gas pipe between the tank flange and the condensate/ overflow drop pipe.
- Flow of foam/liquid into the pipework will enter the vertical drop pipe and not restrict gas passage to the installed PRV.
- The drop pipe will terminate at ground level within a water filled open foam / condensate / spill detection vessel (bucket) the pipe opening will not be obstructed.
- The bucket will incorporate a 25mm diameter condensate drain at a set height to meet the specified pipe insertion as called for by secondary tank pressure relief requirements.
- The bucket will be open topped to allow unrestricted overflow of tank contents to the ground in the event that the overflow may overwhelm the condensate drain. Additional overflow penetrations in the bucket may be incorporated to provide visual advanced warning of overflow. This overflow is collected in a bunded area and returned to the AD buffer tank.

2.11.2.2 Automatic Active Control Measures:

High Level Foam / Overflow Detection

- Each process vessel will be fitted with a suitably rated high level detection switch installed at a height to activate above full working volume and at a point which should be no less than 300mm below the lowest gas take off flange.
- As described in the relevant process control specification, activation of this high-level switch will inhibit all digester input of solid and liquid feed by both automatic and manual means, only to be reset by operator input. Operator alerts will be activated.
- Each condensate/ overflow vessel (bucket) will be fitted with a suitably rated high level detection switch installed at a height to activate above working condensate volume and below the open top overflow level of the bucket.
- As described in the relevant process control specification, activation of any condensate high level switch will inhibit all digester input of solid and liquid feed by both automatic and manual means, only to be reset by operator input. Operator alerts will be activated.

Overflow/ Bund Spill Presence Detection

- Where the overflow/condensate drains are located within a bunded area, bund level/ spill presence detection will be installed to activate in the event of a build-up of tank contents in the bund.
- Activation of any bund high level switch will inhibit all process vessel input of solid and liquid feed by both automatic and manual means, only to be reset by operator input. Operator alerts will be activated.
- The AD and intake tanks are all located inside a bunded area, this bunded area is surrounded by a 1.2-meter-high wall with a capacity of 4,492.63m³, this will contain all surface water runoff and potential spills from the AD tanks within the main plant area, which has a volume equivalent to the capacity of the largest of the AD tanks (3,926m³) with an allowance of 10% in accordance with EPA guidelines on the 'Storage and Transfer of Materials for Scheduled Activities' (EPA, 2004).
- All drainage within this area is collected and returned to the AD buffer tank for processing.
- There is a gravel area to the north of the AD bund for the lorries to turn. This is drained to ground.
- Surplus Gas Burner (Flare) – in the event that there is excess biogas or other gas consumers are not operational, the biogas will be diverted to Medium Temperature Non-Visible Surplus Gas Burner (Flare) to prevent an overpressure situation arising within the gas holder and to ensure that no unburned gas is released to the atmosphere.

2.12 Hours of Operation

The AD process, once initiated, will process continuously i.e. 24 hours a day, however waste will only be accepted between the hours of 0700 and 1800 Monday to Friday, 0700 to 1600 on Saturday.

2.13 Site Security

The site will benefit from perimeter fencing, a locked gate at entrance, entrance barrier, a CCTV system which can be remotely monitored and alarms in the office.

2.14 Health, Safety & Environmental Management

College Proteins will ensure the EMS requirements are operationally maintained through a process of regular site visits and internal auditing.

This will include checking that relevant training and competencies are maintained for operational staff; and ensuring integration of the Environmental Management System (EMS) within the business is achieved. The EMS as an overarching operational document and will be integrated within overall site management systems alongside the Health and Safety and Quality Management systems for the business.

2.15 Pest Control

During the Operational Phase of the Proposed Development, pest control measures will be put in place to ensure that pests such as flies, rodents or other vermin will not give rise to nuisance at the facility or any facility surrounds. Pest control procedures will be put in place at the facility and rodent activity will be monitored during routine housekeeping checks. A professional pest control company will be employed by the applicant if required.

2.16 Statutory Planning Context

The site of the Proposed Development is subject to National, Regional and Local level planning policy. The following outlines the key planning policy documents of relevance to the Proposed Development.

This section will not address in detail the policies and objectives contained in the various plans / policies that are relevant to the Proposed Development. These are addressed in Chapter 3 (*Planning and Policy Context*).

2.16.1 National

- Project Ireland 2040: National Planning Framework (2018)
- National Development Plan 2021-2030
- European Communities (Waste Directive) Regulations 2011, S.I. No. 126 of 2011-2020
- Climate Action Plan 2019
- A Waste Action Plan for a Circular Economy – Ireland's National Waste Policy 2020-2025
- National Strategy on Biodegradable Waste (2006)
- Animal By-Products Regulation 2002

2.16.2 Regional

- Regional Waste Management Plan Eastern Midlands Region (2015-2021)

Local

- Meath County Council Development Plan 2021-2027

2.17 Description of Alternatives

2.17.1 Introduction

Consideration of reasonable alternatives is an important aspect of the EIA process and is necessary to evaluate the likely environmental consequences of a range of development strategies for the site of the Proposed Development within the constraints imposed by environmental and planning conditions. This section provides a description of the reasonable alternatives that have been considered.

Article 5 of the EIA Directive requires that the EIAR contain:

“A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the Proposed Development and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.”

This section of the EIAR provides an explanation of the reasonable alternatives examined throughout the design and consultation process. This serves to indicate the main reasons for choosing the Proposed Development, taking into account and providing a comparison of the environmental effects. The alternatives may be described at four levels:

- Alternative locations
- Alternative designs
- Alternative layouts
- Alternative processes

Pursuant to Section 3.4.1 of the Environmental Protection Agency (EPA) *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (EPA, 2022), the consideration of alternatives also needs to be cognisant of the fact that *“in some instances some of the alternatives described below will not be applicable - e.g. there may be no relevant ‘alternative location’...”*

In accordance with EPA Guidelines (EPA, 2022), different types of alternatives may be considered at several key phases during the process. As environmental issues emerge during the preparation of the EIAR, alternative designs may need to be considered early on in the process or alternative mitigation options may need to be considered towards the end of the process.

The EPA Guidelines (EPA, 2022) states:

“The objective is for the developer to present a representative range of the practicable alternatives considered. The alternatives should be described with ‘an indication of the main reasons for selecting the chosen option’. It is generally sufficient to provide a broad description of each main alternative and the key issues associated with each, showing how environmental considerations were taken into account in deciding on the selected option. A detailed assessment (or ‘mini-EIA’) of each alternative is not required.”

Thus, the consideration and presentation of the reasonable alternatives studied by the project design team is an important requirement of the EIA process.

2.17.2 Alternative Locations

The purpose of the AD plant is to produce green biogas from organic waste feedstock to offset the use of fossil fuels at the existing College Proteins site in Nobber, Co. Meath. The process will reduce the facility's carbon footprint, as the biogas produced from the AD plant will be used in the on-site steam boilers and CHP plants to generate steam and electricity to run the production facilities on-site.

AD not only recovers energy from organic waste, but it also allows both a mass and a volume reduction of the waste input as much of the organic matter in the process is converted to biogas, and the rest is left as nutrient rich digestate with significantly reduced odour potential and increased nutrient availability, suitable for use as a biofertiliser. AD also reduces reliance on landfill capacity which will become an increasingly scarce outlet in the coming years.

The glycerine produced in the existing Biodiesel plant can be used as a feedstock to the AD, therefore the site located in Nobber was identified as the best location to construct it. An alternative site, Farragh Proteins in Cavan, was also considered, however with some of the feedstock already located in Nobber, it was concluded that the Nobber site was situated in a better location.

In addition, as the site of the Proposed Development also operates under an Industrial Emissions (IE) Licence and is licenced by the EPA to accept the waste streams required as feedstock for the AD plant, it was not considered necessary to consider alternative locations for the Proposed Development.

Furthermore, were the AD facility to be constructed off-site, the biogas would have to be transported to the rendering facility and biodiesel facility for use. As such, the proposal ensures there are limited transportation impacts.

2.17.3 Alternative Uses

The site of the Proposed Development is currently a fully operational animal by-product rendering plant, a biodiesel production facility and a solar farm. The Proposed Development seeks to add an AD plant to the on-site activities to produce green Biogas to be used on-site to generate steam and electricity to run the production facilities on-site.

Also taking into account the current operations at the site (i.e. the production of raw inputs like the 2,500 tonnes of glycerine from the biodiesel plant that can be used as a feedstock for the AD). This is a big advantage as it saves both disposal and transport costs on the glycerine.

Likewise, the ability to generate gas for use in existing processes was deemed the most efficient use of the biogas produced from an AD. The ability to burn the gas directly in the steam boilers on site is more efficient than burning in a CHP therefore there are more advantages of locating the AD beside the existing rendering plant and not on a green field site. If AD is located in a green field site, then the only use for the gas would be in a CHP.

Alternative Design & Layouts

During the design process for the Proposed Development, a number of iterations of the site layout and alternative designs have been prepared and considered. The development proposals for the site were the subject of detailed discussions with the relevant Project Team prior to the Proposed Development project plan being prepared. These detailed discussions highlighted the operational, health and safety and environmental issues to be addressed, which informed the design process. These considerations have informed the consideration of alternative layouts and designs up to the formalisation of the final scheme. The IE Licence and GHG Permit requirements also informed the design by the Project Team. The layout detailed in Figure 2-6 was considered. However, access through the site to this location was difficult and the site was limited space wise around the tanks, therefore this design/ location/ layout was not used.

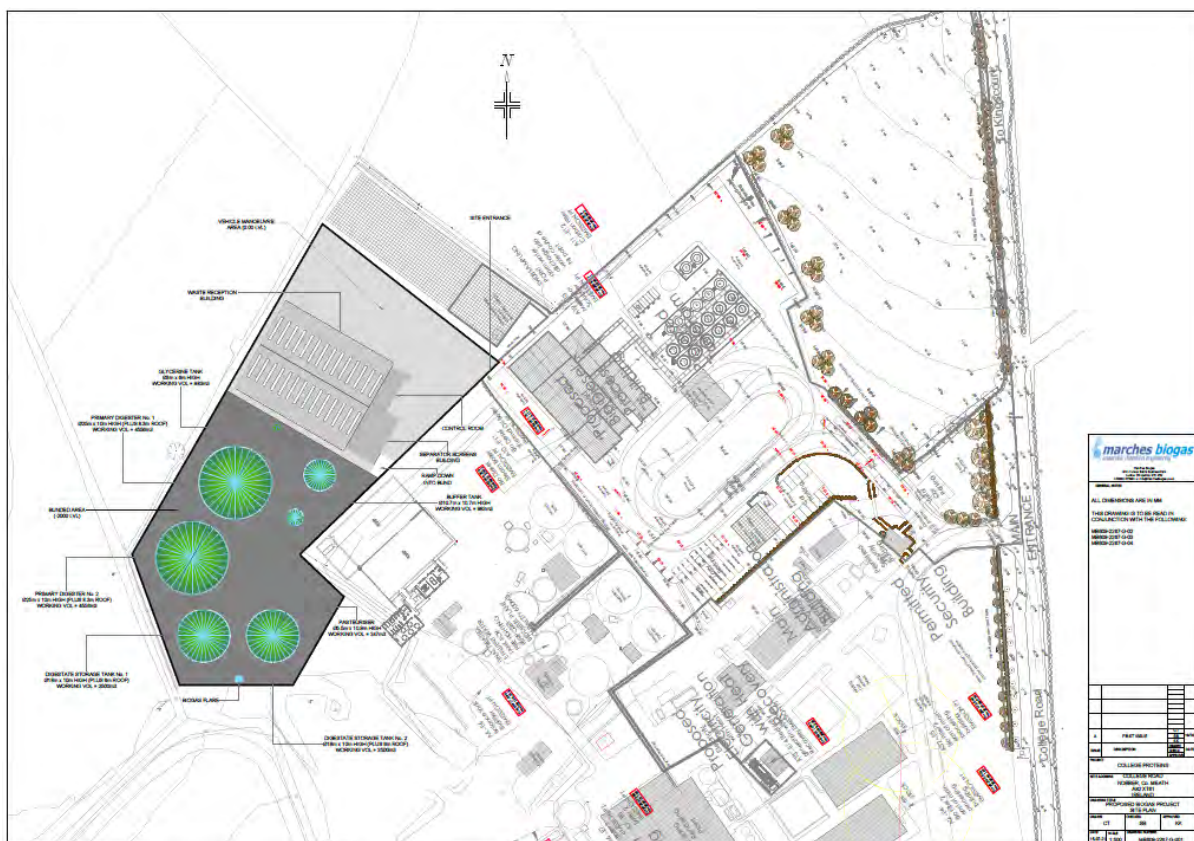


Figure 2-6 Design considered for the AD plant and alternative location on site (This plan was not feasible)

2.17.4 Alternative Process

Biomass Combined Heat and Power (CHP) was previously considered as an alternative process for the site of the Proposed Development. A Strategic Infrastructure Application was made to An Bord Pleanála (ABP) on the 8th of May 2009, planning application registration reference number 17.PA0013, for the provision of a biomass CHP plant and associated ash landfill adjacent to the existing meat rendering plant. An Bord Pleanála granted permission for the Strategic Infrastructure Application on 28th February 2013 subject to 12 No. conditions, including Condition No. 4(a) which omitted Cell 4 from the proposed landfill. In 2018 College Proteins applied for an extension of duration for the biomass CHP plant under planning reference KA18/0183. The permitted input of raw materials was 125,000 tonnes per annum,

of which it was proposed to transfer 17,500 tonnes of organic liquids (including blood) from the existing meat rendering plant directly to the CHP plant, with a subsequent increase in the amount of solid material processed at the rendering plant (while staying within the 125,000 tonnes per annum permitted). This would have resulted in an increase in the amount of Meat and Bone Meal (MBM) produced on site from 34,500 tonnes per annum to 38,750 tonnes per annum.

CHP technology produces heat and power in a single process. Using biomass instead of fossil fuels for CHP, further reduces the environmental costs associated with electricity power production, with reduced emissions and improved environmental life cycle for power generation. The CHP plant would have used a fluidised bed combustor (FBC) system with MBM as the primary fuel and the organic liquids acting to condition the flame (solid feedstocks require conditioning with liquids prior to combustion in order to improve combustion efficiency). In the FBC, the fuels would have been converted into heat, ash and combustion gases. Heat released by the combustion process would have been used to generate steam (within a waste heat recovery boiler system) which would have been used in the existing rendering plant and to drive a steam turbine and alternator set for the production of electricity for export to the National Grid. The plant would have produced approximately 8MW of electricity.

The main reason for the Biomass CHP plant was a route for disposal of Cat 1 meat and bone meal, as the requirement for incineration of this product still exists. Currently College Proteins export the Cat 1 meat and bone meal they produce to incineration plants in the UK & Europe. Steam & electricity production from the Biomass CHP plant would have supplied the rendering and biodiesel process on site.

However, technology has changed over the past number of years since permission was sought for the Biomass CHP plant and College Proteins feel that Anaerobic Digestion to supply biogas to the existing process on site is a good sustainable project to undertake. It is a green technology using waste to produce green biogas which will offset the fossil fuel usage on site.

Ireland has a long-term vision for a low-carbon energy system. Its goal is to reduce greenhouse gas emissions from the energy sector by 80-95% (compared to 1990 levels) by 2050. To achieve this, Ireland will need to radically transform its energy system: reducing energy demand and moving away from fossil fuels to zero or low-carbon fuels and power sources.

Around 19,000 AD plants are operational in Europe, producing 167 TWh of biogas per year, with the vast majority of these plants producing biogas for combustion to generate steam or renewable electricity.

AD is now being strongly supported by Government on all scales for reducing emissions and generating low-carbon renewable energy (note the *Anaerobic Digestion (National Strategy) Bill 2022*).

2.18 The Existence of the Project

The Construction Phase will last approximately 12 months. During the Construction Phase of the Proposed Development, there will be approximately 50 jobs created directly by the construction works. Hence, for the duration of the Construction Phase of the Proposed

Development there will be a short-term increase in construction employment in the area, which will have a positive impact, both directly and indirectly, on the local economy.

There are currently 145 people employed in College Proteins across 3 sites College Rendering/ Biodiesel Nobber, Co. Meath, Farragh Proteins, Monery, Co. Cavan and Soil works in Mayobridge, Co. Down. The Operational Phase of the Proposed Development will result in increased employment levels at the facility and contribute to sustaining the existing jobs. There will be another 20 No. jobs created in transport, operations, maintenance.

The primary likely significant environmental impacts of the Proposed Development are fully addressed in the relevant specialist Chapters of this EIAR. These impacts relate to Population and Human Health, Land and Soil, Hydrology and Hydrogeology, Landscape and Visual, Noise and Air Quality, and Climate associated with the Proposed Development.

The Proposed Development has the potential for cumulative, secondary, and indirect impacts, these can be difficult to quantify due to complex inter-relationships. All interactions and cumulative impacts have been addressed in Chapter 14 (Interactions) with cumulative impacts and interactions fully addressed in the relevant specialist Chapters of this EIAR.

3 PLANNING AND POLICY

3.1 Introduction and Terms of Reference

The planning and policy context gives an overview of the relevant legislation that supports the Proposed Development at a local, regional and national level, and sets out the strategic and statutory context governing the planning and development of the Proposed Development. College Proteins is a leading Bio-Waste Management Company which collects and treats animal by-products and food wastes from abattoirs, meat plants, butchers and poultry plants, and has been operating since 1989. Category 1 (Cat 1) is the highest risk category for rendering. College Proteins render Specified Risk Material (SRM) linked with prion diseases (also known as transmissible spongiform encephalopathies (TSEs), for example, fallen stock with SRM, international catering waste, and any material handled with Cat 1 material.

The facility currently operates under an Industrial Emissions (IE) Licence from the Environmental Protection Agency (EPA), IE register number P0037, which was originally issued to the facility on the 2nd of February 1996. The current IE Licence is version P0037-04, which was revised and reissued to College Proteins by the EPA on the 3rd of June 2021.

3.1.1 Quality Assurance and Competence

This Chapter of the EIAR was prepared by Mairéad Foran (Enviroguide Consulting) and Stephen Barrett (Tom Phillips and Associates (TPA)). Mairéad Foran has a B.A. (Moderatorship) in Environmental Sciences from Trinity College Dublin, and an Advanced Diploma in Planning and Environmental Law from King's Inns College, Dublin. Mairéad has 4 years professional experience as an Environmental Consultant and has experience working on a large number of EIARs and EIA Screening Reports for projects of a similar scale to that of the Proposed Development. Stephen Barrett holds a Diploma in Environmental Resources Management (2002) and a BSc in Spatial Planning (2004) from Dublin Institute of Technology (DIT). Stephen joined TPA in 2014, having previously worked in a senior role in the private sector. Stephen has experience in a range of project types including: the provision of strategic planning advice; the preparation and management of planning applications; planning appeals; Environmental Impact Assessments; feasibility studies; and submissions to Development Plans/Local Area Plans. He is responsible for large and small-scale developments within numerous sectors, such as Commercial/Office; Residential; Extractive and Waste; Renewable Energy and Biodiesel; Industrial Development; and Hotel and Tourism. Stephen is a Member of the Irish Planning Institute.

3.2 Proposed Development

Recognising the climate emergency and the responsibility to address it, the Applicant is striving to reduce their carbon footprint and become a carbon neutral operation by investing in a greener future, through sustainable projects.

The Applicant is proposing to construct an AD Facility to produce green Biogas which will offset the use of fossil fuels on-site, therefore reducing the company's carbon footprint. The biogas produced from the AD plant can be used in the on-site steam boilers and Combined

Heat and Power (CHP) plants to generate steam and electricity to run the production facilities on-site.

The Applicant is committed to sustainability and maximising the resource value of organic material from all sources. The Proposed Development will reduce the requirement for natural gas use on-site which will aid the company's self-sufficiency in this regard.

The Proposed Development will consist of the demolition of an existing garage and the provision of an Anaerobic Digestion Facility with an intake of up to 50,000 tonnes of organic feed-stock material per annum. The Facility will comprise a waste reception building (incorporating workshop, control room and welfare facilities), 2 No. digester tanks, 2 No. digestate storage tanks, glycerine tank, buffer tank, pasteuriser tank, 4 No. liquid reception tanks; all of the above tanks located within a fully bunded concrete area; associated biofilter, gas flare, biogas combined heat and power plant, internal access roads, weighbridge, truck loading area and soil deposition area. The Proposed Development will also include all associated site development, drainage and infrastructure works above and below ground. The maximum height of the Proposed Development is the chimney stack associated with the biofilter at c. 18m above ground level.

The following sections describe how the Proposed Development complies with the stated and statutory requirements of Meath County Council (MCC) with respect to planning and sustainable development, as well as national and regional planning policies and objectives. The relevant local planning policy with which the Proposed Development complies primarily comprises the Meath County Development Plan 2021-2027.

The site of the Proposed Development, College Proteins, is located to the west of College Road, in the townland of Nobber, Co. Meath (Eircode A82 XT61). The landscape surrounding the site of the Proposed Development is rural, comprised of grazing and arable lands, divided by frequent mature hedgerows, and scattered with small farms and residential dwellings.

The Proposed Development is located on land zoned "RA - Rural Area", with a zoning objective *"To protect and promote in a balanced way, the development of agriculture, forestry and rural-related enterprise, biodiversity, the rural landscape, and the built and cultural heritage."*

3.3 National and Regional Planning Policy Context

3.3.1 National Planning Context

3.3.1.1 National Framework Plan

The *Project Ireland 2040: National Planning Framework* (NPF), published on 16th February 2018, replaces the previous National Spatial Strategy. It is the Government's high-level strategic plan for shaping the future growth of the country to the year 2040. It will guide public and private investment and create and promote opportunities for people, and to protect and enhance the environment. The companion to this document is the National Development Plan (NDP), a ten-year strategy for public capital investment of almost €116 Billion.

The NPF outlines key future planning and development place making policies for the Eastern and Midland Regions and outlines the National Strategic Outcomes and Priorities of the National Development Plan. These include the following:

- Compact Growth;
- Enhanced Regional Accessibility;
- Strengthened Rural Economies and Communities;
- High-Quality International Connectivity;
- Sustainable Mobility;
- A Strong Economy, supported by Enterprise, Innovation and Skills;
- Enhanced Amenities and Heritage;
- Transition to a Low Carbon and Climate Resilient Society;
- Sustainable Management of Water, Waste, and other Environmental Resources; and
- Access to Quality Childcare, Education and Health Services.

The Proposed Development will assist in meeting and achieving these shared set of goals, as set out in the Plan. A Strategic Outcome of particular note in the context of the Proposed Development includes:

- **National Strategic Outcome 9**

Sustainable Management of Water, Waste, and other Environmental Resources:

Ireland has abundant natural and environmental resources such as our water sources that are critical to our environmental and economic wellbeing into the future. Conserving and enhancing the quality of these resources will also become more important in a crowded and competitive world as well as our capacity to create beneficial uses from products previously considered as waste, creating circular economic benefits.

In addressing the environmental challenges, and in support of environmental policy at European and national level, the Strategy promotes the aim of Resource Efficiency and Transition to a Low Carbon Economy by:

Sustainable Land Management and Resource Efficiency - Adopting the principles of the circular economy to enable more sustainable planning and land use management of our natural resources and assets;

Low Carbon Economy - Our need to accelerate action on climate change;

Renewable Energy - Our transition to a low carbon energy future; and

Managing Waste - Adequate capacity and systems to manage waste in an environmentally safe and sustainable manner.

It is predicted that a population increase of around one million people, alongside economic growth to 2040, will increase pressure on waste management capacity. The NPF supports circular economy principles that minimise waste going to landfill and instead focuses on maximising waste as a resource. This means that prevention, preparation for reuse, recycling and recovery are prioritised over the disposal of waste. The Proposed Development Site is currently operating as a leading Bio-Waste Management Company which collects and treats animal by-products and food wastes from abattoirs, meat plants, butchers and poultry plants, and has been operating since 1989. Therefore, this will support the circular economy through

maximising waste as a resource, ensuring it is re-used to provide a valuable biodiesel product. The NFP recognises that the value of bio-based products, materials and resources provide an essential contribution to our national goal of developing a sustainable, low carbon, resource efficient and competitive economy.

The Proposed Development also supports National Policy Objective 53:

“Support the circular and bio economy including in particular through greater efficiency in land management, greater use of renewable resources and by reducing the rate of land use change from urban sprawl and new development.”

The Proposed Development is in line with National Policy Objective 56:

National Policy Objective 56 – *“Sustainably manage waste generation, invest in different types of waste treatment and support circular economy principles, prioritising prevention, reuse, recycling and recovery, to support a healthy environment, economy and society.”*

It also supports National Policy Objective 23 and National Policy Objective 24.

National Policy Objective 23 - *“Facilitate the development of the rural economy through supporting a sustainable and economically efficient agricultural and food sector, together with forestry, fishing and aquaculture, energy and extractive industries, the bio-economy and diversification into alternative on-farm and off-farm activities, while at the same time noting the importance of maintaining and protecting the natural landscape and built heritage which are vital to rural tourism.”*

National Policy Objective 24 – *“The Department of Rural and Community Development, the Department of Agriculture, Food and the Marine, and other relevant Departments and Agencies will continue to invest in rural Ireland, including through the Rural Regeneration and Development Fund, and will work together to establish a mechanism to co-ordinate structures for funding rural development to align with other national strategies.”*

The Proposed Development will assist with the Plan Objectives through both the Construction and Operational Phase activities and is in line with the vision of future proposals within this sector.

3.3.1.2 National Development Plan 2021-2030

The National Development Plan is considered the companion document to the National Planning Framework. Their joint publication as Project Ireland 2040 aims to align our investment strategy with our strategic planning documents with a goal to create a unified and coherent plan for the country, therefore ensuring our investment strategy supports spatial planning behind a shared set of strategic objectives for rural, regional and urban development. In terms of waste management and achieving the National Strategic Outcome (NSO) 9 *Sustainable Management of Water, Waste, and other Environmental Resources*, it states:

“Investment in waste management infrastructure is critical to our environmental and economic well-being for a growing population and to achieving circular economy and climate objectives. Capacity will continue to be built in waste facilities, including anaerobic digestion, hazardous waste treatment, plastics processing, recycling, waste to energy, and landfill and landfill

remediation, to meet future waste objectives. The infrastructure to deliver waste management policy has been, to date, largely delivered through private investment with some public sector investment. Significant infrastructure capacity development will be required to separate and process various waste streams at municipal and national levels to achieve new EU legally-binding targets and the additional investment may include a potential role for public investment.”

This highlights the role “private investments” have contributed to waste management and recycling, such as that of the Proposed Development.

3.3.1.3 EU Waste Framework Directive and European Community (Waste Directive) Regulations 2011

The Waste Framework Directive 2008/98/EC (as amended by Waste Framework Directive 2018/851/EU) was enacted on the 12th December 2010 and introduced new provisions in order to boost waste prevention and recycling as part of the waste hierarchy and clarifies key concepts namely, the definitions of waste, recovery and disposal and establishes a legal framework for the treatment of waste both in Europe and Nationally. The Waste Framework Directive (WFD) made it mandatory for member states to implement a five-step waste hierarchy instead of the outdated six steps and obliges Member States to move towards self-sufficiency. This Directive was transposed into Irish Law by the European Communities (Waste Directive) Regulations 2011, S.I. No. 126 of 2011-2020. The WFD encourages the prevention of waste through recovery, re-use and recycling as outlined in Article 10 and Article 11 of the Directive.

The Directive also provides a definition on the term recovery in the context of waste:

“...recovery’ means any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy.”

Section 21(A) of the Waste Management Act has been amended by the European Communities (Waste Directive) Regulations 2011 which updates the waste hierarchy and is represented in Figure 3-1. In order of priority and as shown in the Figure, waste must be reduced, prepared for re-use, recycled/composted, recovered (including energy recovery) or disposed/used for landfill.



Figure 3-1 Waste Hierarchy

The Waste Framework Directive encourages the treatment of biodegradable waste in order to produce resource efficiency products.

This is outlined in Article 22 of the Directive which states that measures will be taken to encourage:

*“...the recycling, including composting and digestion, of bio-waste in a way that fulfils a high level of environment protection and results in output which meets relevant high-quality standards;
home composting; and
promote the use of materials produced from bio-waste.*

This Proposed Development is fully in line with the new waste hierarchy and it is also diverting materials from disposal to landfill.

3.3.1.4 Climate Action Plan 2021

The Climate Action Plan 2021 sets out a course of actions over the coming years to address the impacts on Ireland's environment, society, economic and natural resources. The Plan outlines the current state of play across key sectors including electricity, transport, built environment, industry and agriculture and charts a course towards ambitious decarbonisation targets.

A detailed sectoral roadmap has been set out, which is designed to deliver a cumulative 51% reduction in greenhouse gas (GHG) emissions, over the period 2021 to 2030.

Sectoral goals and policy roadmaps, vital to the progress and success of achieving cumulative reduction in emissions, over the period 2021 to 2030, include objectives in a range of sectors including Electricity, Buildings, Transport, Agriculture, Land Use and Land Use Change, and Waste and Circular Economy. The Proposed Development will assist in achieving the objectives and targets of the Action Plan.

College Proteins are proposing to construct an Anaerobic Digestion (AD) Plant to produce green Biogas. Anaerobic digestion (AD) is a sustainable form of renewable energy production through a naturally occurring biological process in which micro-organisms break down biodegradable material in the absence of oxygen in an enclosed system. Replacing fossil fuels with renewable energy generated by AD also reduces Greenhouse Gas Emissions (GHG). SEAI recently predicted that AD in Ireland could realise carbon savings of up to 0.7 Mt CO₂ e per year by 2030 and 2 Mt CO₂ e per year by 2050.

The Planning Report for the Proposed Development (Tom Phillips + Associates, 9th September 2022) states that the importance of Anaerobic Digestion is recognised in the Plan through its stated inclusion in a series of previous and current support schemes for renewable energy, including the REFIT 3 (Renewable Energy Feed-in Tariff) scheme and the Support Scheme for Renewable Heat. It is also mentioned as an innovative new technology that could bring new business opportunities as the sector reaches maturity through the transition to a low carbon energy system.

It is clear that the Ireland's National Energy and Climate Plan 2021-2030 sets out a supportive policy context towards the Proposed Development.

3.3.1.5 A Waste Action Plan for a Circular Economy – Ireland's National Waste Policy 2020-2025

A Waste Action Plan for a Circular Economy – Ireland's National Waste Policy 2020-2025 was published by the Department of Environment in 2021 and sets out the National Policy on waste management. The plan identifies opportunities for the application of circular economy principles across a range of areas such as food, or end-of-waste and by-products, where improvements in the regulatory regime can divert material from waste to beneficial reuse. The Plan is an action focused plan and is a roadmap for Ireland to embrace the opportunities in becoming a circular economy in the decade ahead, and it is a founding document in achieving the objectives as set out in the EU's new Circular Economy Action Plan (published March 2020) There are three main guiding principles outlined in this Waste Action Plan which are as follows;

- Shift the focus away from waste disposal and treatment to ensure that materials and products remain in productive use for longer thereby preventing waste and supporting reuse through a policy framework that discourages the wasting of resources and rewards circularity;
- Make producers who manufacture and sell disposable goods for profit environmentally accountable for the products they place on the market; and
- Ensure that measures support sustainable economic models (for example by supporting the use of recycled over virgin materials).

The policy document sets out a series of measures to achieve optimum results in the transition to a circular economy. The document states:

“...despite the proximity principle which suggests that waste should generally be disposed of as near to its place of origin as possible, we do not have the power to direct waste to particular facilities or even to keep it in Ireland for treatment. Ireland is reliant on exports of municipal, C&D, packaging and other wastes in order to manage the waste we produce – estimated at 9.5 million tonnes in 2020. This leaves the State potentially exposed if there are external

shocks to the export market beyond our control. It also means that we are exporting materials, energy and jobs that could be harnessed here."

The Proposed Development will assist in providing a resource for AD and College Proteins are committed to sustainability and maximising the resource value of organic material from all sources. AD can make a significant contribution to the management of organic wastes in Ireland. Biodegradable food waste must be diverted from landfill to alternative more sustainable waste management methods, such as AD, to achieve national recycling targets. AD will also reduce reliance on landfill capacity which will become an increasingly scarce outlet in the coming years. The Proposed Development will therefore assist in helping to achieve the principles of the Action Plan and achieving the objectives as set out in the EU's Circular Economy Action Plan, helping to further aid the legal obligations associated with the waste hierarchy.

3.3.2 National Strategy on Biodegradable Waste

The National Strategy on Biodegradable Waste, published in April 2006 by DoEHLG, sets out the Government policy for its diversion from landfill in order to achieve the targets as set out in the Landfill Directive 1999/31/EC. This strategy is based on the key objectives established in policy documents *Changing Our Ways* (1998), *Delivering Change - Preventing and Recycling Waste* (2002) and *Waste Management: Taking Stock and Moving Forward* (2004).

The policy sets out a range of measures to meet diversion targets. The fundamental principles of the strategy include:

- *"employing a combination of instruments to promote waste reduction – including awareness measures, economic incentives, and regulatory measures;*
- *continuing to develop an integrated waste system building on proposals and policies in regional waste management plans and strengthening these where necessary;*
- *emphasis on source separation of biodegradable wastes by the producer, followed by separate collections by the collector, enabling high quality recyclables to be recovered;*
- *striving to maximise the recovery of materials firstly, and energy secondly as a sustainable means of treating waste, rather than diverting from landfill to other forms of disposal; and*
- *developing partnerships with other sectors (industry, agriculture, fisheries etc.) enabling cost effective treatment systems to be established suited to Irish conditions".*

The Proposed Development is in line with the National Strategy on Biodegradable Waste through the proposed provision of an Anaerobic Digestion (AD) Plant. Feedstocks proposed for biogas production include energy crops (e.g., grass and maize silage), food waste, slurry, sludges from food processing plants, therefore significantly contributing to organic waste management in Ireland, and reducing reliance on landfill capacity.

3.3.3 Animal By-Products Regulation 2002

In 2002 the European Parliament and the Council adopted EU Regulation 1774/2002 for the handling of animal by-products. This legislation, which came into force on 1st May 2003, introduces stringent conditions and procedures throughout the food and feed chains which require safe production, handling, storage and disposal of animal by-products. Regulation

1774/2002 establishes a classification system for animal by-products based on their potential risk to animals, the public or the environment, and clearly sets out how each category must be disposed of. The Regulation sets out three different categories which deal with all possible waste material from animal by-products. These are as follows:

Category 1 Material:

- Material presenting the highest risk such as Transmissible Spongiform Encephalopathies (TSEs).
- Material containing residues of prohibited substances, such as hormones used for growth promotion or environmental contaminants.
- SRM, including dead ruminants (animals which die without ante mortem checks, i.e. fallen animals).

Category 1 material may be disposed of by incineration or co-incineration. The Regulation also provides for burial or burning in remote areas but only in emergency circumstances.

Category 2 Material:

- Animal by-products presenting a risk of contamination with other animal diseases (e.g. animals which die on farm or are killed in the context of disease control measures on farm).
- Animal by-products at risk of residues from veterinary drugs.

Category 2 material may be disposed of in the same manner as Category 1 material and it may also be sent – provided it is subjected to the heat treatment prescribed – for processing in either a Category 2 or oleo-chemical plant or in bio-gas and composting plants for subsequent use as a land fertiliser. The spreading of such fertilisers on land is required to be carried out in accordance with stringent conditions as specified in EC Regulations.

Category 3 Material:

- Animal by products derived from healthy animals fit for human consumption in accordance with community legislation but not intended for human consumption.

College Proteins operates under the EU Regulation S.I. No. 187/2014 (European Union (Animal By-Products) Regulations 2014) and in accordance with EC Regulation 1069/2009 and EU 142/2011.

3.4 Regional and Local Planning Context

3.4.1 Regional Waste Management Plan Eastern Midlands Region (2015-2021)

Regional Planning Guidelines (RPGs) were first adopted in March 2004 as a key implementation mechanism of the Government's overall framework for achieving more balanced regional development and more strategic physical and spatial planning. The RPG were developed directly from the Government's 2002 National Spatial Strategy (NSS). The principal function for RPGs is to link national strategic spatial planning policies to the planning process at City and County Council level by co-ordinating the Development Plans through the Regional Planning Guidelines.

The Proposed Development sits within the Eastern–Midlands Waste Management Region. The Eastern–Midlands Region Waste Management Plan 2015–2021 (DCC 2015), compiled by Dublin City Council on behalf of all local authorities in the Eastern and Midlands Region, and commits to a large and varied number of waste management policies, targets and objectives for the region to achieve waste management in a sustainable and viable manner.

The Plan notes that:

“Group 5 facilities are authorised to treat biowaste, agri-sludges, and other organic materials. Group 5 includes 12 facilities in the region and the rate of utilisation in 2012 was recorded at 70%. The biological waste recovery appears to be buoyant in the region. A shortage of capacity particularly for the treatment of biowaste would be a concern given the need to divert increasing quantities of biowaste from the residual waste stream”.

The Plan contains several general policies and objectives aimed at generally improving waste management in the region. These include:

- Policy A.1 which calls for the region to ‘Take measures to ensure the best overall outcome by applying the waste hierarchy to the management of waste streams’ (DCC 2015, p.212).
- Policy A.3 which sets out the need to ‘Contribute to the improvement of management performance across all waste streams through the implementation of policy actions and monitor progress towards national targets’ (DCC 2015, p.213).
- Policy E17 states that the “waste plan supports the development of at least 75,000 tonnes of additional biological treatment capacity in the region for the treatment of bio-wastes (food waste and green waste) primarily from the region to ensure there is adequate active and competitive treatment in the market. The development of such treatment facilities needs to comply with the relevant environmental protection in the plan”.
- Strategic Objective A states that ‘The region will implement EU and national waste and related environmental policy, legislation, guidance and codes of practice to improve management of material resources and wastes’ (DCC 2015, p.212).
- Strategic Objective E states that “The region will promote sustainable waste management treatment in keeping with the waste hierarchy and the move towards a circular economy and greater self sufficiency” (DCC 2015, p.221)
- Strategic Objective G states that the region is to ‘Apply the relevant environmental and planning legislation to waste activities in order to protect the environment, in particular European sites, and human health against adverse impacts of waste generated’ (DCC 2015, p.225).

The Proposed Development will result in the operation of a licensed facility for an Anaerobic Digestion (AD) Plant to produce green Biogas and is in line with the waste management policies, targets and objectives as set out in the Regional Waste Management Plan Eastern Midlands Region (2015-2021).

3.4.2 Meath County Development Plan 2021-2027

The Meath County Council Development Plan 2021-2027 is the statutory planning policy document for the County and sets out the policies and objectives for the proper planning and sustainable development of the County.

As demonstrated below the Proposed Development directly supports the policies and objectives as set out in the Development Plan and will help to achieve the policies and objectives outlined in the Development Plan as follows:

INF POL 34

To promote sustainable energy sources, locally based renewable energy alternatives, where such development does not have a negative impact on the surrounding environment (including water quality), landscape, biodiversity, natural and built heritage, residential or local amenities.

INF POL 35

To seek a reduction in greenhouse gases through energy efficiency and the development of renewable energy sources utilising the natural resources of the County in an environmentally acceptable manner consistent with best practice and planning principles.

INF POL 36

To support the implementation of the National Climate Change Strategy and to facilitate measures which seek to reduce emissions of greenhouse gases.

INF POL 38

To encourage that new development proposals maximise energy efficiency through siting, layout, design and incorporate best practice in energy technologies, conservation and smart technology.

INF OBJ 39

To support Ireland's renewable energy commitments outlined in national policy by facilitating the development and exploitation of renewable energy sources such as solar, wind, geothermal, hydro and bio-energy at suitable locations within the County where such development does not have a negative impact on the surrounding environment (including water quality), landscape, biodiversity or local amenities so as to provide for further residential and enterprise development within the county.

INF OBJ 41

To promote the generation and supply of low carbon and renewable energy alternatives, having regard to the opportunities offered by the settlement hierarchy of the County and the built environment.

INF POL 63

To encourage the development of waste infrastructure and associated developments in appropriate locations, as deemed necessary in accordance with the requirements of the current Eastern Midlands Region Waste Management Plan and the Draft Waste Facility Siting Guidelines 2016 (when finalised) or any subsequent replacement guidelines.

INF POL 65

To adopt the provisions of the waste management hierarchy and implement policy in relation to the County's requirements under the current or any subsequent Waste Management Plan. All prospective developments in the County shall take account of the provisions of the regional waste management plan and adhere to the requirements of the Plan. Account shall also be taken of the proximity principle and the inter-regional movement of waste.

INF OBJ 55

To facilitate the provision of appropriate waste recovery and disposal facilities in accordance with the principles set out in the appropriate Waste Management Plan applicable from time to time made in accordance with the Waste Management Act 1996 (as amended).

INF OBJ 56

To support developments necessary to manage food waste in accordance with the requirements of the current Waste Management (Food Waste) Regulations and the regional Waste Management Plan.

INF OBJ 60

To promote and facilitate high-quality sustainable waste recovery and disposal infrastructure/technology including composting (anaerobic digester) plants for managing organic solid waste, at appropriate locations, with the County subject to the protection of the amenities of the surrounding environment including European Sites, and in keeping with the EU waste hierarchy.

INF OBJ 66

To support the development of infrastructure necessary to meet the objectives of the Meath's Sludge Management Plan having regard to the Waste Facility Siting Guidelines (when adopted).

The Proposed Development is consistent with the above policies and objectives, with reference to the technical information provided in Chapter 2, as well as the following Chapters in this EIAR. The Proposed Development is also compliant with the *Guidelines for Anaerobic Digestion in Ireland* (Cré Composting & Anaerobic Digestion Association of Ireland, January 2018).

3.5 Who can Benefit from Anaerobic Digestion?



Local Community



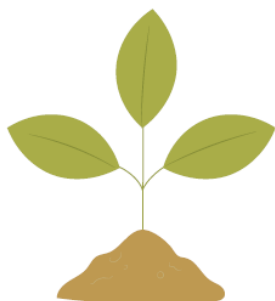
Potential for food waste collections
Energy from a local, renewable source
New jobs
Cleaner environment

Environment



Reduces emissions of methane, a potent greenhouse gas
Produces renewable energy
Reduces the amount of biodegradable waste sent to landfill
Produces an excellent organic fertiliser, reducing the demand for petrochemical-derived fertilisers
Can reduce nitrate pollution by decreasing run-off

Farmers and Energy Entrepreneur



1 tonne of artificial fertiliser replaced with digestate saves 1 tonne of oil, 108 tonnes of water and 7 tonnes of CO₂ emissions. Liquid digestate has a saving of €100/acre compared with chemical fertilizer prices.
Supports livestock sector
Digestate provides more nitrogen to crops than slurry
Helps to deal with Nitrate Directives
Kills pathogens in the feedstock, reducing potential diseases
Kills seeds in the feedstock, preventing the spread of weeds

Government



Green Economy

Helps to meet environmental targets
Contributes to the renewable energy targets in the Renewable Energy Strategy
Helps to meet the Landfill Directive
Can help meet Nitrates Directive implementation requirements
Can help Local waste authorities with the Landfill Allowance Trading Scheme

Industry



Better organics recycling is a good message for customers
Easier waste recycling compliance
Easier rodent and vermin control for food processing industry

Digestate

Digestate typically contains:

6kg N/t
1.2kg P/t
2.27kg K/t

Nutrient values based on 2021 compound fertiliser prices:

- N – €1/kg
- P – €2/kg
- K – €1/kg

Digestate applied at 9 Tonne/ Acre (Value based on 2021 chemical fertiliser cost)

N – 57kg/acre (€1/kg) €57
P – 10.3 kg/acre (€2/kg) €20.6
K – 20.8 kg/ acre (€1/kg) €20.8

Total value/acre - €98.4

Source for above info. www.fwi.co.uk

3.5.1 Biogas Plant Graphic

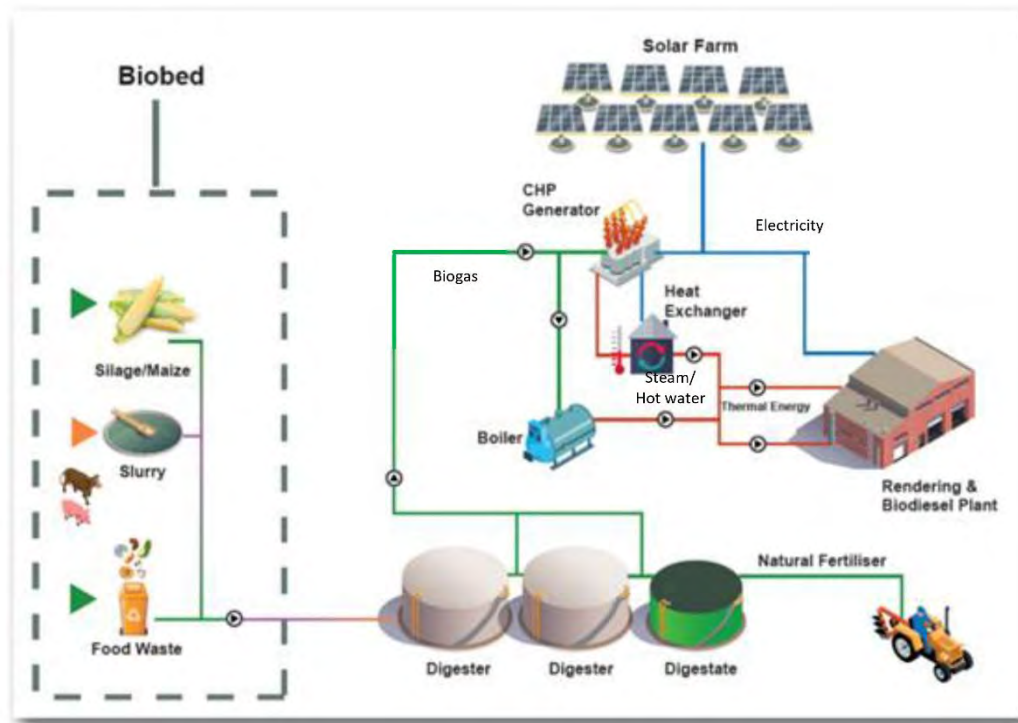


Figure 3-2 Biogas Plant Graphic

3.5.2 Circular Economy of Sustainability Graphic

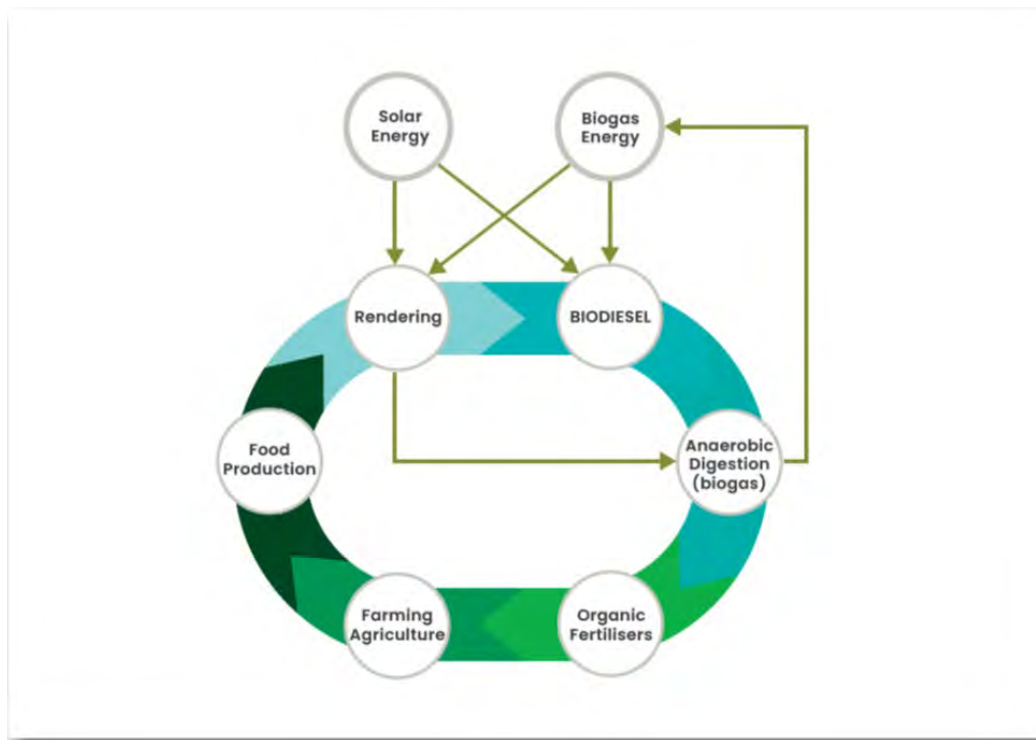


Figure 3-3 Circular Economy of Sustainability Graphic

3.6 The EIA Directive

The EIA Directive (85/337/EEC) is in force since 1985 and applies to a wide range of defined public and private projects. The EIA Directive was amended in 1997, 2003, 2009, 2011 and 2014 by Directives 97/11/EC; 2003/35/EC, 2009/31/EC, 2011/92/EU and 2014/52/EU. The EIA Directive requires environmental impact assessments to be carried out for certain projects as listed in Annex I of the Directive. The EIA Directive, and amendments, are transposed into Irish law through the Planning and Development Acts 1996 to 2019 in particular S.I. No. 296 of 2018.

Schedule 5, Part 1, of the Planning Regulations transposes Annex 1 of the EIA Directive directly into Irish planning legislation. An EIAR is required to accompany a planning application for development of a class set out in Schedule 5, Part 1 of the Planning Regulations which exceeds a limit, quantity or threshold set for that class of development.

Schedule 5, Part 2 of the Planning Regulations defines projects that are assessed on the basis of set mandatory thresholds for each of the project classes including:

"Schedule 5, Part 2 - Infrastructure projects

11(b) Installations for the disposal of waste with an annual intake greater than 25,000 tonnes not included in Part 1 of this Schedule.

Draft "Guidelines on the Information to be contained in Environmental Impact Assessment Reports" published by the Environmental Protection Agency (EPA) in August 2017 detail the

key changes made by the amended 2014 EIA Directive. In August 2018, the Department of Housing, Planning and Local Government published a document entitled '*Guidelines for Planning Authorities and An Bord Pleanála' on carrying out Environmental Impact Assessment.*' This document has been consulted in the preparation of this EIAR.

In May 2022, the EPA published the Final "*Guidelines on the information to be contained in Environmental Impact Assessment Reports*". The Guidelines have been updated following the introduction of transposing legislation and are now formally adopted. The preparation of these updated Guidelines has involved extensive consultation. Participants in this consultation included government departments, national agencies, regional and local government, independent statutory bodies, non-governmental organisations, members of the public, developers and bodies representing various professional, industrial and sectoral groups. The Guidelines emphasise the importance of the methods used in the preparation of an EIAR to ensure that the information presented is adequate and relevant. This document has been used in the preparation of this EIAR.

The Revised EIA Directive defines EIA as a process. Article 1(2) (g) states that EIA means:

"(i) the preparation of an environmental impact assessment report by the developer, as referred to in Article 5(1) and (2);

(ii) the carrying out of consultations as referred to in Article 6 and, where relevant, Article 7;

(iii) the examination by the competent authority of the information presented in the environmental impact assessment report and any supplementary information provided, where necessary, by the developer in accordance with Article 5(3), and any relevant information received through the consultations under Articles 6 and 7;

(iv) the reasoned conclusion by the competent authority on the significant effects of the project on the environment, taking into account the results of the examination referred to in point

(iii) and, where appropriate, its own supplementary examination; and

(v) the integration of the competent authority's reasoned conclusion into any of the decisions referred to in Article 8a".

The Revised EIA Directive requires the EIA to identify, describe and assess, in an appropriate manner and in light of each individual case, the direct and indirect significant effects of the Proposed Development on factors of the environment including:

- a) Population and Human Health;
- b) Biodiversity, with particular attention to species and habitats protected under the Habitats and Birds Directives;
- c) Land, Soil, Water, Air and Climate;
- d) Material Assets, Cultural Heritage and the Landscape; and
- e) The Interaction between the factors referred to in points (a) to (d).

The requirements of the Revised EIA Directive in relation to each Chapter are addressed in the EIAR as follows:

- Chapter 2: Description of Development
- Chapter 3: Planning and Policy Context
- Chapter 4: Population and Human Health
- Chapter 5: Biodiversity
- Chapter 6: Land and Soils
- Chapter 7: Hydrology
- Chapter 8: Air Quality and Climate
- Chapter 9: Noise and Vibration
- Chapter 10: Landscape and Visual Amenity
- Chapter 11: Archaeology and Cultural Heritage
- Chapter 12: Material Assets – Traffic, Waste and Utilities
- Chapter 13: Risk Management
- Chapter 14: Interactions
- Chapter 15: Mitigation and Monitoring Measures.

4 POPULATION AND HUMAN HEALTH

4.1 Introduction

This Chapter of the EIA Report considers the potential effects of the Proposed Development on human beings, living, working and visiting in the vicinity of the Proposed Development site at College Road, Nobber, Co. Meath. The Chapter details the potential direct and indirect effects of the Proposed Development on population and human health.

Human beings are one of the most significant elements of the environment to be considered, therefore any potential impact on the status of humans by a development proposal must be comprehensively addressed. One of the principal concerns in any proposed development is that the local population experiences no reduction in the quality of life as a result of the development on either a permanent or temporary basis. This Chapter also examines the socio-economic impacts of the development proposal focusing on pertinent issues such as residential amenity, economic activity, tourism, population levels, and agriculture.

The section on Population and Human Health is broad ranging and covers the existence, wellbeing, and activities of people through the format of considering people as 'groups' or 'populations'. The assessment of impacts on human beings involves the identification of relevant key populations that may be affected by the proposal and quantifiable documentary research.

Key populations have been identified as persons residing and engaging in activities near the application site, persons with a stake in the general economy of the local and regional area, and persons enjoying the recreational and cultural amenities of the area.

4.1.1 Quality Assurance and Competence

This Chapter was prepared by Louise Hewitt, Environmental Consultant, Enviroguide Consulting. Louise has a Master of Science (Hons) in Environmental Resource Management from University College Dublin and a Bachelor of Science (Hons) in Biology from Maynooth University. Louise has experience preparing Environmental Impact Assessment (EIA) Screening Reports, Introduction, Population and Human Health and Archaeology and Cultural Heritage Chapters of EIARs.

4.2 Study Methodology

A desk-based study was undertaken in June 2022 to assess information regarding population, age structure, economic activity, employment, and unemployment within the vicinity of the Proposed Development.

The scope of the evaluation is based on a review of data available from the Central Statistics Office (CSO), legislation, guidance documents and EIARs. Consultation was carried out with prescribed bodies to consider the likelihood of significant impacts arising, having regard to the receiving environment and the nature and extent of the Proposed Development. The aim of the study was to assess the current baseline environment.

The potential impact of the Proposed Development on the local population is assessed in this EIAR in relation to:

- Population;
- Socio Economic impacts;
- Tourism and Amenity;
- Air quality;
- Water;
- Noise;
- Traffic; and
- Risk

4.2.1 Information Sources

The principal sources of information are as follows;

- Census and employment information published by the Central Statistics Office (CSO). Available at <https://data.cso.ie/#>
- Meath County Development Plan 2021-2027, Available at: <http://countydevelopmentplanreview.meath.ie/>
- Regional Planning Guidelines of the Greater Dublin Area 2010-2022, and
- Ordinance Survey Ireland (OSI) mapping and aerial photography.

The 2022 Census of Ireland was held on Sunday the 3rd of April 2022. The preliminary results were released on the 23rd of June 2022 however the main results will be published over several months commencing in April 2023. The preliminary 2022 census results have been reviewed however they do not contain the required region-specific information for the purpose of this EIAR Chapter. As such, the more robust and complete 2016 census result have been used in this assessment.

In line with the EPA Guidelines (EPA, 2022), the following terms are defined when quantifying the quality of effects. See Table 4-1.

Table 4-1: Definition of Quality of Effects

Quality	Definition
Positive Effects	A change which improves the quality of the environment
Neutral Effects	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error
Negative/adverse Effects	A change which reduces the quality of the environment

In line with the EPA Guidelines (EPA, 2022), the following terms are defined when quantifying the significance of impacts. See Table 4-2.

Table 4-2: Definition of Significance of Effects

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

In line with the EPA Guidelines (EPA, 2022), the following terms are defined when quantifying duration and frequency of effects. See Table 4-3.

Table 4-3: Definition of Duration of Effects

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

4.3 The Existing and Receiving Environment (Baseline Situation)

County Meath is situated in north Leinster, along the east coast of Ireland. The county occupies a land area of over 230,000 hectares and is the second largest county in Leinster. It adjoins Dublin to the south and this geographical proximity and the strong functional relationship between the two counties results in Meath being a vital component of the Greater Dublin Area. County Meath is also bounded by Louth, Monaghan, Cavan, Westmeath, Offaly and Kildare. Meath is serviced by a number of major road and rail lines which pass through the county. These include the M1, M2/N2 and the M3 motorways which connect the Greater Dublin Area with the rest of the country.

The College Proteins site is located 3km north of Nobber, in north County Meath in the catchment area of the River Dee. Nobber is located along the R162 Regional Route, from Navan to Kingscourt in County Cavan. The surrounding landscape is rural, and is comprised mostly of grazing and arable lands, divided by frequent mature hedgerows, and scattered with small farms and residential dwellings. The subject site is adjoining lands which are already in use as a meat rendering plant.

The site of the Proposed Development is located to the west of College Road, in the townland of Nobber, Co. Meath (Eircode A82 XT61). The site is approximately 5.31 hectares and can be accessed from the southwest via the R162, or from the northeast via the R165. The town of Nobber, County Meath, lies approximately 3km north of the site of the Proposed Development. The town of Kingscourt, Co. Cavan lies approximately 7km northwest of the Site on the R162, the village of Drumconrath, Co. Meath, lies approximately 6km to the east of the Site on the R165, and the village of Kilmainhamwood, Co. Meath lies approximately 6km to the west of the Site on the L6802. The landscape surrounding the Site of the Proposed Development is rural, comprised of grazing and arable lands, divided by frequent mature hedgerows, and scattered with small farms and residential dwellings.

4.3.1 Population and Demographic Analysis

In terms of the County, Region and the State, population structure and change are more strongly influenced by migration and emigration rates than by birth and death rates. The mid to late 1980s in Ireland was a period of heavy population outflow, mainly due to the poor economic and employment situation in the country at that time. The most recent population estimates (June 2022) published by the Central Statistics Office indicate that the combination of a net inward migration and high birth rates have resulted in the population of Ireland has exceeded 5 million for the first time since 1851. Population projections for Ireland up to 2046 anticipate a population of approximately five million under the most pessimistic scenario and over 6.7 million under the most optimistic scenario. Population projections for Northern Ireland up to 2034 anticipate a population of approximately two million.

The Preliminary Census 2022 results show that County Meath has the third highest net inward migration between 2016 and 2022 with an increase of 14,921 people. Along with County Kildare, County Meath also had the highest average natural increase (births minus deaths) gaining 9 persons per 1,000 of population per year between 2016 and 2022.

According to Preliminary CSO figures from the 2022 Census, the total population of Meath is 220,296.

- Between 2016 and 2022 the population increased by 25,252 or 12.9% compared to an average for the State of 7.6%.
- The main population growth was concentrated in the east of the county and in close proximity to the main urban settlements;
- Relatively speaking, there are high levels of young people and fewer older people in Meath. An age breakdown comparison is detailed in Table 4-4.

Table 4-4: Population Change in Greater Dublin Area, 2016 to 2022 Census (Source: CSO)

County	Population 2016 Census Data	Preliminary 2022 Census Data	Change in Number of Persons	Percentage change in Population
Dublin	1,347,359	1,450,701	103,342	7.7
Kildare	222,504	246,977	24,473	11.0
Meath	195,044	220,296	25,252	12.9
Wicklow	142,425	155,485	13,060	9.2
Total	1,907,332	2,073,459	166,127	40.8

4.3.2 Population and Age

The social and community needs are assessed based on consideration of the existing and potential population growth and best practice provision. Census data for Small Area Population (SAP's) was used to study the existing demographics. Of most relevance to the Proposed Development are the population numbers and structure relating to settlement in Nobber, in the vicinity of the Proposed Development. Urban settlements generally include a range of residential, commercial and community facilities. Smaller villages typically include a school, church, local shops as well as other community and recreational facilities. Nobber is located approximately 3 km from the Proposed Development and is identified as a key village in the Meath County Development Plan.

In CSO data for 2016, the population of the town of Nobber was recorded at 323. The population of the Nobber Electoral Division (ED), which includes the village, was recorded at 763 in the 2016 census. The closest large town to Nobber in County Meath is Kells which is a more appropriate representation of the population of the area and subsequently has been used as a reference town for the purpose of this assessment.

Table 4-5 shows the breakdown of the population of Kells based on their age range during the 2016 Census against the Meath County and State averages. This table is further broken down into percentages of the population within these age ranges.

Table 4-5: Town, County and National Population Categorisation by Age

Age Range	Town (Kells)		County (Meath)		Ireland	
	No. of People	% of People	No. of People	% of People	No. of People	% of People
0-4 years	521	8.5	15,736	8.1	331,515	7
5-24 years	1,670	27.2	55,561	28.5	1,251,489	26.3
25-34 years	814	13.3	23,787	12.2	659,410	13.8
35-44 years	1,027	16.7	33,467	17.2	746,881	15.7
45-54 years	802	13.1	26,911	13.8	626,045	13.1
55-64 years	571	9.3	18,794	9.6	508,958	10.7
65-74 years	428	7.0	12,937	6.6	373,508	7.8
75 years and over	302	4.9	7,851	4	264,059	5.5
Total	6,135		195,044		4,761,865	

As evident from Table 4-5, the population of Kells has a higher proportion of younger age groups (0-4 years and 5-24 years) and a lower proportion of aging people than the State averages (55-64 years, 65-74 years and 75 years and over).

In the town of Kells, the largest portion of the population ranges from between 5 to 24 years (27.2% in total), which is slightly higher than the State average of 26.3%. The percentage of the population in Kells ranging between 25 to 34 years is 13.3% which is lower than the State average of 13.8%. The percentage of the population in Kells ranging and between 35 to 44 years is 16.7% which is higher than the State average of 15.7%. The percentage of the population in the Electoral Division who are aged 75 and over is 4.9% which is lower than that of the State average of 5.5%. Children ranging from 0-4 years in the Electoral Division comprise 8.5%, higher than the State average of 7% and the average for County Meath of 8.1%.

4.3.3 Economic Activity & Employment

The labour force is defined by the number of people above the legal working age that are available to work. The labour force participation rate is the number of people who are employed and unemployed but looking for a job, divided by the total working-age population.

In 2016, there were 2,304,037 persons in the labour force in Ireland. This represented an increase of 71,834 (3.2%) on 2011 statistics. The substantial increase in retired persons (up 19.2% to 545,407) has impacted on the labour force participation rate, which fell to 61.4%.

Nobber is identified as a level 4 retail centre in the County Retail Hierarchy. It has a range of retail services, including but not limited to a convenience store, butchers, pharmacy, hairdresser, bookmakers, restaurant, café, car dealership, beauty salon, auction house, veterinary surgery, agricultural supply depot and two public houses (Meath County Development Plan 2021-2027).

Nobber provides a limited amount of employment opportunities compared to its relative population base. The relative proximity of the surrounding towns to Nobber both within and outside of the County has allowed for a commuting pattern to emerge with an obvious leakage of associated expenditure to areas outside of the village.

The Proposed Development will create approximately 50 jobs during the Construction Phase and 20 jobs will be created during the Operational Phase of this development in transport operations. There will be a small benefit to the local economy as a result of employees availing of local products and services while working in the locality.

Table 4-6 shows the percentage of the total population aged 15+ who were in the labour force during the 2016 Census. This figure is further broken down into the percentages that were at work or unemployed. It also shows the percentage of the total population aged 15+ who were not in the labour force, i.e., those who were students, retired, unable to work or performing home duties.

Table 4-6: Economic Status of the Population Aged 15+ in 2016 (Source: CSO)

Status		Kells	% of People	Meath	% of People	State	% of People
% of population aged 15+ who are in the labour force		No. of People	% of People	No. of People	% of People	No. of People	% of People
% of which are	Employer or own account worker	270	5.8	13,562	9.3	313,404	8.3
	Employee	2046	44.0	69,519	47.6	1,688,549	45.0
	Unemployed looking for first regular job	55	1.2	1,092	0.7	31,434	0.8
	Unemployed having lost or given up previous job	492	10.6	9,431	6.5	265,962	7.1
	Assisting relative	7	0.2	178	0.1	4,688	0.1
Total population aged 15+ who are in the labour force		2,870.0	61.8	93,782	64.2	2,304,037	61.4
% of population aged 15+ who are not in the labour force		No. of People	% of People	No. of People	% of People	No. of People	% of People
% of which are	Student or pupil	468	10.1	16,065	11.0	427,128	11.4
	Looking after home/family	419	9.0	13,236	9.1	305,556	8.1
	Retired	639	13.8	17,481	12.0	545,407	14.5
	Unable to work due to permanent sickness or disability	238	5.1	5,124	3.5	158,348	4.2
	Other economic status	13	0.3	425	0.3	14,837	0.4
Total population aged 15+ who are not in the labour force		1,777	38.2	52,331	35.8	1,451,276	38.6

When assessing the percentage of people in the labour force it is noted that 61.8% of the population aged 15+ in Kells are in the labour force. This reflects the high number of people of a working profile living within the area.

The labour force statistics for Kells are on par with the National statistics for those that are unemployed looking for first regular job, unemployed having lost or given up previous job and assisting a relative. The percentage of people working (employer or own account worker and employee) is 49.8% for the Kells area, compared to a higher percentage for the State of 53.3%.

The percentage of students or pupils in the Kells area is 10.1% which is marginally lower than the percentage for the State of 11.4%. The percentage of retired people in the Kells area is 13.8%, again marginally lower than the percentage for the State of 14.5%.

According to the CSO Census 2016 data, a total of 1,338 people in the Kells area, aged 15 years and over, have obtained a Third Level Qualification.

*Table 4-7: Population Aged 15 Years and Over with a Third Level Qualification in Meath
(Source CSO Census 2016)*

Population Aged 15 Years and Over with a Third Level Qualification in Meath	No. of People
Total persons	52,431
Education	4,749
Arts	1,823
Humanities	2,082
Social sciences, business and law	15,111
Science, mathematics and computing	4,646
Engineering, manufacturing and construction	8,706
Agriculture and veterinary	1,781
Health and welfare	6,926
Services (incl. other subjects)	3,925
Not stated (including unknown)	2,682

Table 4-8 details the most recent information available from the CSO from June 2022 on the number of persons on the Live Register in Ardee (which includes the Nobber area). In June 2022, 855 people were on the Live Register in the Ardee area.

Table 4-8: Number of Persons on Live Register, Ardee (Source: CSO)

Month	December 2021	January 2022	February 2022	March 2022	April 2022	May 2022	June 2022
Number of Persons on Live Register, Ardee	719	691	688	777	795	784	855

The most recent publication of monthly unemployment statistics was issued by the CSO in July 2022 for reference month June 2022. The monthly unemployment release contains a

series of monthly unemployment rates and volumes. These series are based primarily on the Labour Force Survey and are compiled in accordance with agreed international practice. These statistics are the definitive measure of monthly unemployment. The Live Register is used to provide a monthly series of the numbers of people (with some exceptions) registering for Jobseekers Benefit or Jobseekers Allowance or for various other statutory entitlements at local offices of the Department of Social Protection.

The most prevalent broad industrial area of employment is within *Wholesale and retail trade; repair of motor vehicles and motorcycles*. Other predominant areas of employment in Kells include *Manufacturing, Human health and social work activities, Construction and Public administration and defence; compulsory social security*. Table 4-9 also shows that 492 people in Kells are unemployed, having lost or given up previous job and 55 are unemployed looking for their first regular job.

Table 4-9: Population Aged 15+ in the Labour Force in Kells by Broad Industrial Group

Broad Industrial Group	No. of People
Agriculture, forestry and fishing	66
Mining and quarrying	18
Manufacturing	245
Electricity, gas, steam and air conditioning supply	11
Water supply; sewerage, waste management and remediation activities	21
Construction	196
Wholesale and retail trade; repair of motor vehicles and motorcycles	330
Transportation and storage	131
Accommodation and food service activities	133
Information and communication	44
Financial and insurance activities	89
Real estate activities	10
Professional, scientific and technical activities	94
Administrative and support service activities	67
Public administration and defense; compulsory social security	152
Education	194
Human health and social work activities	228
Arts, entertainment and recreation	57
Other service activities	61
Activities of households as employers producing activities of households for own use	1
Activities of extraterritorial organisations and bodies	0
Industry not stated	175
Unemployed looking for first regular job	55
Unemployed, having lost or given up previous job	492
Total in labour force	2870

(Source CSO 2016)

As with employment, the number of persons in the labour force is also influenced by changes in the size of the working age population (demographic effect). Up to the start of 2008 this demographic effect had been adding at least 30,000 to the labour force, nationally, on an annual basis, primarily driven by net inward migration. The decline in inward migration saw the positive demographic effect starting to fall in the second half of 2007. Inward migration continued to decline throughout 2008 and 2009 before becoming negative in Q3 2009. The negative demographic effect continued for each quarter until Q1 2014. The demographic effect has been positive since Q2 2014 and in Q1 2019 a positive demographic effect contributed an increase of 36,000 to the overall change in the labour force.

The Proposed Development will allow for the creation of new employment. It is proposed that approximately 50 jobs will be created during the Construction Phase of this development and 20 jobs will be created during the Operational Phase of this development having a positive impact, both directly and indirectly to the local economy and employment.

4.3.4 Tourism and Amenities

The Meath County Development Plan, 2021-2027 states that *'The County has much to offer as a tourist destination, in particular its rich heritage, quality rural landscape, attractive towns and villages, and its appealing coastline* (Ref Section 4.24.1). Meath is known as the Heritage Capital of Ireland and has one of Europe's best collections of prehistoric sites and monuments and a unique blend of history and culture. Fáilte Ireland list Meath as being in the Mid-East Tourist Region. Other counties in this region include Kildare and Wicklow. Fáilte Ireland estimates that 638,000 overseas tourists visited the Mid-East region in 2016 generating €249 million in revenue, 155,000 of these visited Co. Meath in 2016 generating €48 million in revenue.

It is essential that the tourism industry of the county is protected and promoted. The Meath County Development Plan 2021-2027 features a number of objectives and policies in relation to Tourism (Section 4.27). In line with the County Development Plan, The Boyne Valley Tourism Strategy 2020 states that the immediate goal of the plan *"is to support the creation of employment through increased tourism activity."*

Figures 4-1 and 4-2 show the main tourist and historical attractions in County Meath, none of which are in the immediate vicinity of the Proposed Development.



Figure 4-1: Boyne Valley Map of Tourist Attractions (Source Boyne Valley Tourism)



Figure 4-2: Boyne Valley Historical Tourist Attractions (Source Boyne Valley Tourism)

The nearest tourist attraction to the subject site is Robertstown Castle, a 17th Century house spanning three storeys. Recently several "high crosses" were discovered in old cemetery in

Nobber (St. Johns) dating from possibly the 10th century. These are much smaller and less ornate than typical Celtic high crosses. This find is significant because it suggests that a hitherto unrecorded monastic settlement once existed on the site of the village.

Moynagh Lake west of the village is the site of a crannog which dates to Neolithic times.

The Proposed Development Site is not located on a main tourist corridor. There are no rights of way located on the Proposed Development Site and it is not currently used as an area of amenity nor is it situated in close proximity or adjoining any tourist attractions.

The existing facility has had no impact on these structures to date nor is it envisaged that there will be any cumulative impacts from the proposed expansion of existing operations.

A full assessment of the potential impact of the Proposed Development on the heritage sites and surrounding areas is carried out under Chapter 10 (Landscape and Visual) and Chapter 11 (Archaeology and Cultural Heritage) of this EIAR.

4.3.5 Travel and Commuting

Table 4-10 shows that 1,197 people (32.4% of people) travel for less than 15 minutes on their commute to school or work. A total of 1,133 people (30.7% of people) travel between 15 minutes and 30 minutes and the remaining 1,146 people (31% of people) travel for longer than 30 minutes on their commute to work or school. 218 people have not stated their commute time (5.9%).

Table 4-10: Duration of Commute from Kells (Source CSO Census 2016)

Duration of Travel Times	No. of People (Total)	Percentage	No. of children at school aged between 5 and 12 years	No. of students at school or college aged between 13 and 18 years	No. of students at school or college aged 19 years and over	No. of People aged 15 years and over at work
< ¼ hour	1,197	32.4	360	200	19	618
¼ hour - < ½ hour	1,133	30.7	352	191	33	557
½ hour - < ¾ hour	361	9.8	27	24	13	297
¾ hour - < 1 hour	212	5.7	5	9	20	178
1 hour - < 1½ hours	381	10.3	15	17	37	312
1½ hours and over	192	5.2	1	7	42	142
Not stated	218	5.9	46	16	10	146

Most people (23.9% of people) leave home to travel to school or work between 8:31 and 09:00. A total of 1,420 people (27.8% of people) leave home before 08:00. A further 835 people (22.6% of people) leave home between 08:01 and 08:30.

Table 4-11: Time Leaving Home, Kells (Source CSO Census 2016)

Time of Travel	No. of People (Total)	Percentage	No. of children at school aged between 5 and 12 years	No. of students at school or college aged between 13 and 18 years	No. of students at school or college aged 19 years and over	No. of people aged 15 years and over at work
Before 06:30	415	11.2	2	2	7	404
06:30 - 07:00	270	7.3	3	3	29	235
07:01 - 07:30	342	9.3	8	19	31	284
07:31 - 08:00	393	10.6	38	39	27	289
08:01 - 08:30	835	22.6	304	203	24	304
08:31 - 09:00	884	23.9	388	186	27	283
09:01 - 09:30	155	4.2	30	2	11	112
After 09:30	247	6.7	0	1	10	236
Not stated	153	4.1	33	9	8	103
	*Excludes those who work mainly at or from home					

Table 4-12 shows that the most popular mode of transport is Motor car: Driver (39%) followed by Motor car: Passenger (17%).

Table 4-12: Means of Travel from Kells (Source CSO Census 2016)

	No. of People (Total)	Percentage	No. of children at school aged between 5 and 12 years	No. of students at school or college aged between 13 and 18 years	No. of students at school or college aged 19 years and over	No. of people aged 15 years and over at work
On foot	826	22	287	273	31	235
Bicycle	26	1	6	2	3	15
Bus, minibus or coach	406	11	138	38	79	151
Train, DART or LUAS	6	0	0	0	4	2
Motorcycle or scooter	5	0	0	0	0	5
Motor car: Driver	1446	39	0	3	41	1402
Motor car: Passenger	655	17	335	137	9	174
Van	180	5	2	0	0	178
Other, incl. lorry	10	0	0	0	0	10
Work mainly at or from home	58	2	0	0	1	57
Not stated	134	4	38	11	7	78
Total	3752	101	806	464	175	2307

4.3.6 Landscape and Visual

The Proposed Development is located on the College Road to the north side of the small village of Nobber, Co. Meath. It is adjacent to a well-established existing Rendering Plant owned by the Applicant College Proteins who have been on site for nearly 30 years.

The landscape adjacent is rural in nature, grazing and arable lands, separated by mature hedgerows with small farms and dwellings in the area. The site is well screened from views by the undulating nature of the drumlin topography thus the impact on the visual amenity is less likely to be significant.

There are four protected views defined by the MCDP in the broader landscape; Protected View 16, 17, 18 and 19. The impacts of the Proposed Development on protected views in the surrounding area is fully assessed in the Landscape and Visual Chapter of this EIAR.

4.3.7 Human Health

Health, as defined by the World Health Organization (WHO), is "*a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity*". The Healthy Ireland Framework 2013-2025 defines health as '*everyone achieving his or her potential to*

enjoy complete physical, mental and social wellbeing. Healthy people contribute to the health and quality of the society in which they live, work and play'. This framework also states that health is much more than an absence of disease or disability, and that individual health, and the health of a country affects the quality of everyone's lived experience.

Health is an essential resource for everyday life, a public good and an asset for health and human development. A healthy population is a major asset for society and improving the health and wellbeing of the nation is a priority for Government. Healthy Ireland Framework 2013-2025 is a collective response to the challenges facing Ireland's future health and wellbeing.

Table 4-13: Health Status of Meath & Kells, 2016 (Source CSO)

Health Status	Kells No. of People	Meath No. of People
General health - Very good	3537	123,170
General health - Good	1815	51,649
General health - Fair	509	13,037
General health - Bad	91	2,019
General health - Very Bad	12	395
Not stated	171	4,774

Table 4-13 shows that the majority of people in County Meath (174,819 people) and Kells (5,352 people) have self-identified themselves in the 2016 Census as having 'very good health' or 'good health'.

4.3.8 Social Health

According to the World Health Organisation, poor social and economic circumstances affect health throughout life. Good health involves reducing levels of educational failure, reducing insecurity and unemployment and improving housing standards.

Health is influenced, either positively or negatively, by a variety of factors. Some of these factors are genetic or biological and are relatively fixed. '*Social determinants of health*' arise from the social and economic conditions in which people live. They are not so fixed such as type of housing and environments, access to health or education services, incomes generated and the type of work people do, can all influence a person's health, and the lifestyle decisions people make.

A range of factors have been identified as social determinants of health, these generally include the wider socio-economic context, inequality, poverty, social exclusion, socio-economic position, income, public policies, health services, employment, education, housing, transport, the built environment, health behaviours or lifestyles, social and community support networks and stress.

People who are less well off or who belong to socially excluded groups tend to fare badly in relation to these social determinants. Being at work on the other hand provides not only an income, but also access to social networks, a sense of identity and opportunities for development or progression.

Section 4.3.3 of this Chapter states that 61.8% of the population in the Kells area are in the labour force. This reflects the high number of people of a working profile living within the area. The percentage of people working (employer or own account worker and employee) is 49.8% for the Kells area, which is slightly lower than the percentage for the State of 53.3%.

Figure 4-3 presents the social determinants of health adapted from Dalghren and Whitehead (1991) and Grant and Barton (2006) as presented in Healthy Ireland.

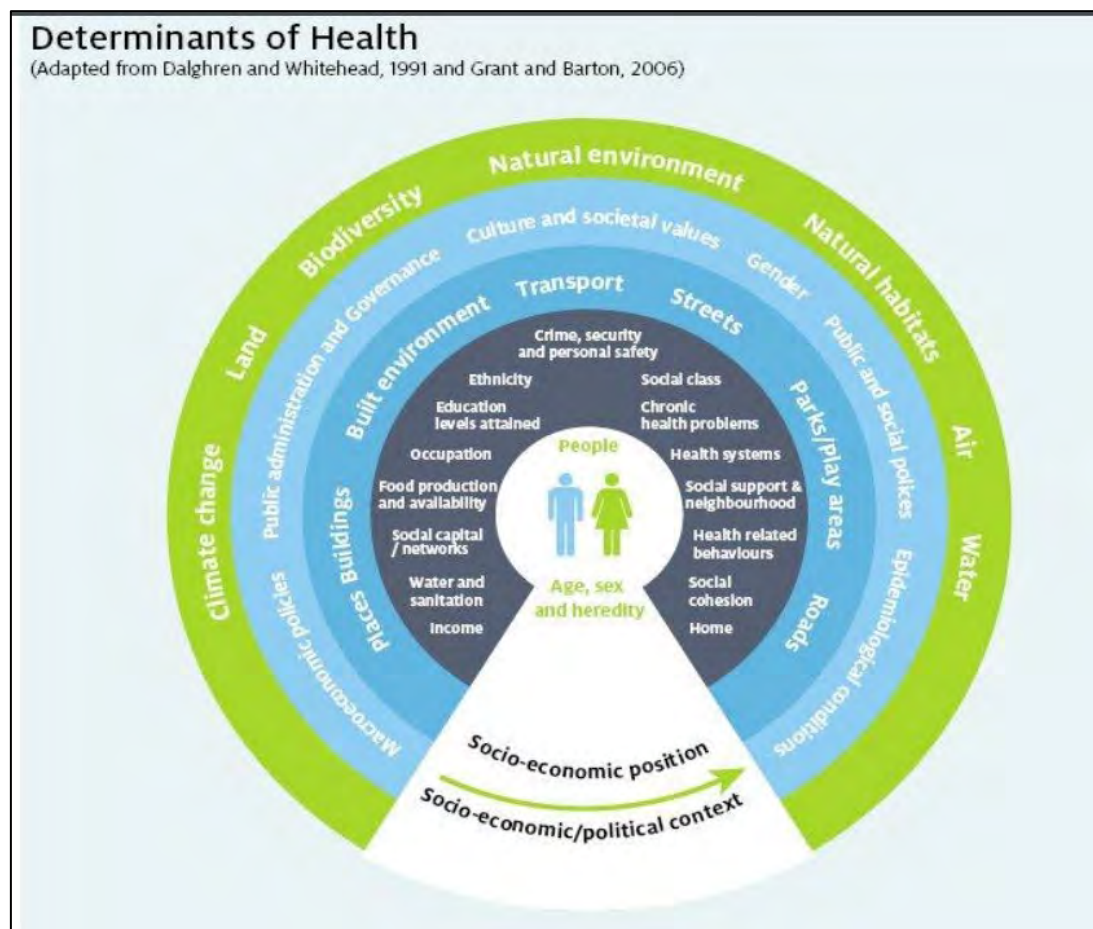


Figure 4-3: Social Determinants of Health (Healthy Ireland, DOH 2013)

The Proposed Development will allow for the creation of new employment. It is proposed that approx. 50 jobs will be created during the Construction Phase of this development and 20 jobs will be created during the Operational Phase of this development having both a direct and indirect positive impact on the local economy and employment.

As detailed in Table 4-13, the majority of people in County Meath (174,819 people) and Kells (5,352 people) have self-identified themselves in the 2016 Census as having 'very good health' or 'good health'. The high employment levels, coupled with the self-identification of

health status in both Kells and County Meath, indicating that positive social health conditions exist.

4.4 Characteristics of the Proposed Development

College Proteins are proposing to construct an Anaerobic Digestion (AD) Facility to produce green Biogas which will off-set the use of fossil fuels on-site, therefore reducing the company's carbon footprint. The biogas produced from the AD Facility can be used in the on-site steam boilers and Combined Heat and Power (CHP) plants to generate steam and electricity to run the production facilities on-site.

College Proteins are committed to sustainability and maximising the resource value of organic material from all sources. The Proposed Development will reduce the requirement for natural gas use on-site which will aid the company's self-sufficiency in this regard.

The Proposed Development will consist of the demolition of an existing garage and the provision of an Anaerobic Digestion Facility with an intake of up to 50,000 tonnes of organic feed-stock material per annum. The Facility will comprise a waste reception building (incorporating workshop, control room and welfare facilities), 2 No. digester tanks, 2 No. digestate storage tanks, glycerine tank, buffer tank, pasteuriser tank, 4 No. liquid reception tanks; all of the above tanks located within a fully bunded concrete area; associated biofilter, gas flare, biogas combined heat and power plant, internal access roads, weighbridge, truck loading area and soil deposition area. The Proposed Development will also include all associated site development, drainage and infrastructure works above and below ground. The maximum height of the Proposed Development is the chimney stack associated with the biofilter at c. 18m above ground level.

4.4.1 Details of Construction Phase

The Construction Phase for the Proposed Development will involve the removal of an existing building, removal of soil from the site of the Proposed Development, the construction of the Anaerobic Digestion plant and raising the level of land near the solar farm with the excavated soil.

Phase 1 – The existing building garage and concrete tank on site will be demolished. The garage currently used for maintaining College Proteins vehicles has a floor area of 545.67m² and the building is 8.3 meters to the apex. The building is constructed from concrete, steel and Kingspan sheeting. The Kingspan sheeting, purloins and steel work will be carefully removed and stored to be re-used on other buildings in future projects. The concrete tank (bunded area) has never been in use, therefore there is no chance of any soil contamination under this tank. This has a floor area of 178.79m² and a wall height of 2 meters. The concrete floors and walls of the existing building garage and concrete tank (totalling approx. 840m³ volume) will be removed off site for disposal in a licenced facility. The gravel from the yard surrounding the garage and concrete tank will be dug up and kept to one side pending testing for contamination and then will be re-used as filling on site if it is suitable. If not, the material will be treated in an authorised facility. The garage & concrete tank bund are detailed on drawing No. 21-21-23 attached in Appendix A.

Phase 2 – The soil (77,804.15m³) will be removed from the Site and will be infilled to fields to the west of the site. Ref. drawing 21-21-18 in Appendix A. A new weighbridge will be installed beside the existing rendering weighbridge, this will be separated with a fence and signage to direct traffic on site. There will be a new two-way road constructed on site separated from the rendering plant with a fence to access the proposed AD plant area. 21,500 tonnes approx. of stone filling and concrete will be brought to the site to create a base for building the road, yard, tank foundations, walls of the reception hall and AD tanks and bunded walls.

Phase 3 - The AD plant intake buildings, tanks, bund wall and road will be constructed. The intake building will be of steel frame construction, shuttered concrete walls, olive green insulated Kingspan sheeting and purloins. The olive green sheeting was selected to blend the colours into the agricultural surroundings around the site and therefore cause less visual impact. The AD tank bund will be a concrete wall construction with a concrete floor, the roadway to the plant will be a constructed from concrete. The intake tanks and glycerine tank will be constructed from stainless steel. The buffer tank, digesters and digestate storage tanks will be constructed from concrete. The pasteurisation tank will be constructed from glass lined steel.

The Proposed Development comprises of:

- Anaerobic Digestion (AD) Plant Reception building (food waste reception)
- Reception hall for solid feedstock (silage & Maize)
- Borger Fibre separation for digestate
- Workshop
- Office, control room, toilets and changing rooms
- Biobed
- 4 No. Liquid reception tank- 113m³ tanks
- 1 No. Glycerine tank- 78m³
- 1 No. Buffer tank – 983m³
- 1 No. Pasteurisation tank - 247m³
- 2 No. Digesters - 3682m³
- 2 No. Digestate Storage tanks – 2500m³
- Gas Flare
- Biogas Combined Heat and Power (CHP) Plant

Refer to Site Layout Plan drawing 21-21-14 in Appendix A.

Phase 4 – The fields where the soil will be deposited will be re-seeded and planted with grass and returned to agricultural use. Please see filling area on drawing ref. 21-21-18 in Appendix A.

4.4.2 Details of Operational Phase

The existing facility will continue to operate as an animal by-product rendering plant, a biodiesel production facility and a solar farm, with the addition of an anaerobic digestion facility. The existing facility is currently operational under IE Licence (P0037-04) and Greenhouse Gas Permit (GHG Permit) No. IE-GHG123-10405-03.

An application for a review of the existing IE License will be made to the Environmental Protection Agency as the introduction of an anaerobic digestion facility will result in changes to the environmental emissions from the facility. The GHG Permit may also need to be revised, and the EMS will be updated accordingly.

The Proposed Development will be operated in accordance with the requirements of the planning grant conditions and updated requirements of the reviewed IE Licence, GHG Permit, EMS and Safety Report for the facility.

4.5 Potential Impact of the Proposed Development

The population in the vicinity of the site of the Proposed Development has been assessed in terms of demography, economic activity and employment, tourism and amenity, landscape and visual, human health and social health.

'Environmental factors play a central role in human development, health and disease. Broadly defined, the environment, including infectious agents, is one of three primary factors that affect human health. The other two are genetic factors and personal behaviour. As the impact of the environment on human health is so great, protecting the environment has long been a mainstay of public health practice. National and local efforts to ensure clean air and safe supplies of food and water, to manage sewage and municipal wastes, and to control or eliminate vector-borne illnesses have contributed a great deal to improvements in public health' (Centre for Environmental Research, 2010).

The Proposed Development has the potential to provide employment opportunities. Employment and income are among the most significant determinants of long-term health, influencing a range of factors including the quality of housing, education, diet, lifestyle, coping skills, access to services and social networks.

Therefore, the Proposed Development will have a significant, permanent, positive effect on Population and Human Health in terms of additional direct and indirect employment and on the local socio-economic environment.

4.5.1 Construction Phase

The Proposed Development has the potential to cause additional traffic, noise, dust, odour or landscape and visual impacts. Each of these impacts has been assessed in full in the respective Chapters of this EIAR - Chapter 8 (Air Quality) Chapter 10 (Noise and Vibration), Chapter 11 (Landscape and Visual Amenity) and Chapter 12 Material Assets: Traffic. The impact of these on the population or human health during the Construction Phase will be negative, short-term and localised.

4.5.1.1 Socio-economic

The Proposed Development will allow for the creation of direct employment. There will be approximately 50 workers directly employed during the Construction Phase of the project. The Proposed Development will also create additional indirect positive impacts for local shops and other businesses in the surrounding areas which will benefit the local economy. Therefore, the Proposed Development will have a significant positive effect in terms of additional direct and

indirect employment and on the local socio-economic environment and will be short-term in duration.

4.5.1.2 Human Health

The Proposed Development has the potential to provide health improvements due to the creation of additional employment. Employment and income are among the most significant determinants of long-term health. It is anticipated that approx. 50 no. construction personnel will be employed during the Construction Phase which is anticipated to extend over a period of approximately 12 months. This will be a positive, short-term impact due to the creation direct and indirect employment during the Construction Phase.

During the Construction Phase of this Proposed Development any HSE guidelines in place at the time of construction will be adhered to in relation to social distancing, cough and sneeze etiquette, face masks and hand washing. Appropriate welfare facilities will be provided at the facility. Frequently touched objects and surfaces such as door handles, machine steering wheels and gear levers will be cleaned and disinfected frequently.

The Preliminary Construction Environmental Management Plan (CEMP) for the Proposed Development will ensure that all applicable environmental health and safety regulations are complied with throughout the Construction Phase thereby ensuring that this phase of the Proposed Development will not result in significant effects on human health or the environment.

The Proposed Development has the potential to result in the spread of COVID-19 if social distancing and hygiene measures are not adhered to at the facility. During the Construction Phase of this Proposed Development any HSE guidelines in place at the time in relation to social distancing, cough and sneeze etiquette, face masks and hand washing will be adhered to. If all COVID-19 safety protocols and hygiene measures are adhered to it is considered that the Proposed Development poses no additional COVID-19 risk.

The impact from the Construction Phase is considered to be negligible and short term.

4.5.1.3 Air Quality and Climate

There is potential for construction related air emissions to impact on local air quality and subsequently the surrounding population and human health as a result of the Proposed Development. Potential impacts are expected to be short-term and of a temporary nature. The primary sources of dust identified include soil excavation works, demolition, bulk material transportation, loading and unloading, stockpiling materials, cutting and filling, and vehicular movements (HGVs and on-site machinery). The nearest sensitive receptor relating to air quality (a residential dwelling) is located approximately 190m from the site.

According to the Health Service Executive (HSE), the health effects associated with the main pollutants of concern are:

- Nitrogen Dioxide, Sulphur Dioxide, Ozone - Irritate the airways of the lungs, increasing the symptoms of those suffering from lung diseases.

- Particles (PM10, PM2.5) - Can be carried deep into the lungs where they can cause inflammation and a worsening of heart and lung diseases.
- Carbon Monoxide - Prevents the uptake of oxygen by the blood and poses a greater risk to those suffering from heart disease.

Construction vehicles and machinery during this phase will temporarily and intermittently generate exhaust fumes and consequently potential emissions of volatile organic compounds, nitrogen oxides, sulphur oxides, and particulate matter (dust). Air pollutants may increase marginally due to construction-related traffic and machinery from the Proposed Development. However, any such increase is not considered significant and will be well within relevant ambient air quality standards.

If construction traffic is to lead to a significant change (> 10%) in Annual Average Daily Traffic (AADT) flows near to sensitive receptors, then concentrations of nitrogen dioxide, PM₁₀ and PM_{2.5} should be predicted in line with the methodology as outlined within Transport Infrastructure Ireland guidance. Construction traffic is not expected to result in a significant change (> 10%) in AADT flows near to sensitive receptors. Therefore, a detailed air quality assessment is not required. It is therefore considered unlikely for significant air quality impacts to occur as a result of increased traffic flow and a quantitative assessment is not required in this case.

Chapter 8 of this EIAR has concluded that there will be no significant impacts on air quality as a result of the Proposed Development and as such there will be no significant impact on human health.

4.5.1.4 Noise

The noise-generating activities associated with the Site during the Construction Phase are as follows:

- Site clearance, including demolition works of the existing garage;
- Building construction works;
- Mobile plant and equipment used in anaerobic digestive (AD) operations;
- Traffic movements internally;
- Trucks entering and exiting the site.

The nearest noise sensitive location is a residential property which is located approximately 100m from the Proposed Development Site Boundary.

Noise from onsite plant and equipment has been assessed in Chapter 9 Noise and Vibration, and it is not envisaged that any excessively noisy activities will be carried out over extended periods of time during the construction stage.

4.5.1.5 Traffic

Construction activities will involve the movement of construction workers, trucks and other HGVs which has the potential to impact on the population and human health by causing congestion on the local road network. The construction of the AD Plant involves the following total deliveries:

860 trucks (civil works); - Stone, concrete

25 trucks (mechanical); - steel, cladding
3 trucks (electrical); - electrical panels & cables
25 trucks (equipment) – pumps, valves, instrumentation, food waste handling equipment.

There will be relatively low numbers of construction workers on site during the Construction Phase, approximately 10-20 per day during the peak of construction and commissioning of the AD Plant. There will be different trades on site at different stages of the project totalling approximately 50 workers.

According to Chapter 12.1 of this EIAR, the percentage impacts on the R162 are below the +5% lower threshold criteria and the increases are not significant in relation to the capacity of the R162/College Road junction. Therefore, there is no requirement to undertake detailed junction capacity assessment and there will be no significant impacts on the population and human health of the surrounding area.

4.5.2 Operational Phase

4.5.2.1 Socio-economic

The Proposed Development will allow for sustaining the existing jobs at the site and also the creation of new employment with 20 people being employed during the Operational Phase in transport, operations, maintenance having a positive impact, both directly and indirectly to the local economy and employment.

4.5.2.2 Human Health

The Proposed Development has the potential to provide health improvements due to the creation of additional employment. Employment and income are among the most significant determinants of long-term health. This will be a positive impact due to the creation of 20 jobs during the Operational Phase.

The Proposed Development may result in the spread of COVID-19 if social distancing and hygiene measures are not adhered to at the facility during the Operational Phase. During the Operational Phase of this Proposed Development HSE guidelines will be adhered to in relation to social distancing, cough and sneeze etiquette, face masks and hand washing. Appropriate welfare facilities will be provided at the facility.

If all COVID-19 safety protocols and hygiene measures are adhered to it is considered that the development poses no additional COVID-19 risk.

Due to the proposed activities, there is potential for an increased level of vermin or rodent activity on-site which, if uncontrolled, may have the potential to pose a negative impact on human health.

Radon is a radioactive gas that causes lung cancer. It is formed in the ground by the radioactive decay of uranium which is present in all rocks and soils. Chapter 6 Land and Soil of this EIAR has identified the Site as being located within a High Radon Area. The design and specification of the Proposed Development will be in accordance with current Building Regulations and therefore any potential issues associated with radon will be addressed and

avoided. For buildings built since 1st July 1998 in High Radon Areas the installation of a radon membrane is required and all buildings will be fitted with a standby radon sump (Environmental Protection Agency, EPA).

4.5.2.3 Air Quality and Climate

Odour

The Proposed Development will involve the processing of organic materials with the potential to cause odours. The potential odour-related impacts of the Operational Phase have been evaluated by means of an air dispersion model. The aim of the assessment is to predict odour concentrations from the new AD plant and to take account of potential combined odour impacts from the existing installation. The model indicates that the predicted odour emissions from the Site will be less than the criterion of 1.5 One European Odour Unit (OU_E/m^3) at the nearest sensitive receptors. Therefore, odour as a result of Site operations will not have a significant impact on the local environment and the surrounding population and human health. The full Air Quality Impact Assessment report can be found in Appendix B of this EIAR.

Dust

The greatest potential effect on air quality during the Operational Phase of the Proposed Development is from traffic-related air emissions.

Operational traffic will use regional and local roads to access the facility with potential increases of traffic flow on some roads and subsequent associated emissions of VOCs, nitrogen oxides, sulphur dioxides and increased particulate matter concentrations.

As per Chapter 8 Air Quality and Climate of this EIAR, it is considered unlikely for significant air quality impacts to occur as a result of increased traffic flow and a quantitative assessment is not required in this case.

4.5.2.4 Noise

Noise is fully assessed in Chapter 9 of this EIAR. The biogas produced from the plant will be used in the onsite boilers and any excess will be burned in 2 no. CHP engines. If the boilers and the engines are out of commission for some reason, then the flare will be used to treat the biogas. The flare has the potential to create a noise impact and has been included in the noise assessment in Chapter 9 of this EIAR. The impact assessment of noise and vibration has concluded that additional noise associated with the operation of the AD plant, including the unlikely use of the gas flare, will not create any noise nuisance beyond the site boundary (Section 9.5.3 of this EIAR). There are a number of trees and hedgerows on the intervening lands between the site boundary and the nearest noise sensitive location approximately 100m away. When taking into account the local terrain combined with the proposed mitigation measures in Chapter 9 it is not expected that the Proposed AD Plant noise levels will have a significant impact on the surrounding population and human health.

No traffic routes are predicted to experience increases of more than 25% in total traffic flows during the Operational Phase and therefore no detailed assessment is required as per the DMRB Guidelines. Refer to Chapter 12 of the EIAR for a detailed traffic assessment report.

4.5.2.5 Landscape and Visual

Some significant changes will occur on the landscape of the site, mainly with the removal of trees and hedgerows and general construction activity to the implementation of the proposed buildings, but these changes will also be counterbalanced with the implementation of the new green structure and maintenance of some of the most important hedgerows. The typology of the buildings adapts well to the existing environment by linking to existing buildings of similar typology. The new plantings planned for the peripheral zones of the Proposed Development and the creation of amenity zones in the central spaces of the site will mitigate the visual impacts caused in the medium term.

4.5.2.6 Traffic

Increases in Operational Phase traffic due to site workers and deliveries to the AD plant can affect the local road network and has the potential to impact the surrounding population. The AD Plant will result in an increase of 15 laden trucks and 40 staff car movements per weekday (arising from the 20 new employees), leading to an increase in the traffic on College Road and the R162. Chapter 12.1 Traffic has assessed the traffic related impacts of the Operational Phase and concluded:

“The percentage increases are highest on the College Road, but it should be noted these are in the context of a low existing flow, with the 7 additional staff cars arriving in the AM peak hour resulting in most of the increase during the AM peak hour.

The percentage impacts on the R162 to the north and south of the College Road junction are all well below the +5% lower threshold criteria.

These predicted increases are not considered to be materially significant in relation to the operational capacity of the R162/College Road junction.”

As such, there will be no significant impact on the road network and therefore no significant impact on human health as a result of Operational Phase traffic.

4.5.3 Potential Cumulative Impacts

Cumulative Impacts can be defined as *“impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project”*. Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the accumulation of different effects that are individually minor. Such effects are not caused or controlled by the project developer.

The cumulative effects of the Proposed Development on the Population and Human Health have been assessed taking other planned, existing and permitted developments in the surrounding area into account.

4.5.4 “Do Nothing” Impact

The Do-Nothing scenario would result in the site remaining in operation at its current capacity as an animal by-product rendering plant. The existing employment numbers at the site would

remain unchanged. However, the additional direct employment predicted as a result of the Construction and Operational Phase would not be created. This may result in a negative socio-economic impact.

AD is a sustainable form of renewable energy production through a naturally occurring biological process. The process produces biogas which can be converted into renewable electricity, or it can be upgraded to biomethane for use in on site boilers, as a vehicle fuel or for injection directly into the gas network to provide a source of renewable heat. The production and utilisation of renewable energy and fuel, in comparison non-renewable technologies, has fewer GHG emissions associated with it. GHG emissions and other air quality impacts can have a negative impact on population and human health. If the AD plant were to remain undeveloped the environmental benefits of a renewable form of energy and fuel production would not be realised.

4.6 Avoidance, Remedial & Mitigation Measures

4.6.1 Construction Phase

During the Construction Phase of this Proposed Development HSE guidelines will be adhered to in relation to social distancing, cough and sneeze etiquette, face masks and hand washing. Appropriate welfare facilities will be provided at the facility. Frequently touched objects and surfaces such as door handles, machine steering wheels and gear levers will be cleaned and disinfected frequently.

No specific mitigation measures are required during the Construction Phase of the Proposed Development in relation to population and settlements, given the lack of direct effects resulting from the Proposed Development. However, where required, mitigation measures in relation to air emissions (dust), noise, traffic, waste etc. are identified in their respective Chapters in this EIA Report.

4.6.2 Operational Phase

All HSE guidelines published to protect against the spread of COVID-19 will be adhered to during the Operational Phase of the Proposed Development. These HSE guidelines may relate to social distancing, cough and sneeze etiquette, face masks and hand washing.

All workers employed during the Operational Phase of the Proposed Development will comply with the relevant HSE guidelines and any Government protocols that may be in place at that point in time in relation to Covid-19.

During the Operational Phase of the Proposed Development, pest control measures will be put in place to ensure that pests such as flies, rodents or other vermin will not give rise to nuisance at the facility or any facility surrounds. Pest control procedures will be put in place at the facility and rodent activity will be monitored during routine housekeeping checks. A professional pest control company will be employed by the applicant if required

No other specific mitigation measures are required in relation to population and settlements, given the lack of direct effects resulting from the Proposed Development. However, where

required, mitigation measures in relation to air emissions, noise, traffic etc. are identified in their respective Chapters in this EIA Report.

4.6.3 “Worst Case” Scenario

If mitigations measures relating to COVID-19 fail there is a risk that there may be an outbreak of COVID-19 at the facility. An outbreak of COVID-19 is when two or more cases of the disease are linked by time, place or person. The ‘*General Guide on Management of COVID-19 Outbreaks in the Workplace*’, published in June 2021 by the HSE (or other updated HSE and Government protocols that are in place at that point in time) will be adhered to if any employees test positive for COVID-19. In some instances, it may be necessary to close the workplace in order to control the spread of COVID-19.

4.7 Residual Impacts

Residual Impacts are defined as ‘*effects that are predicted to remain after all assessments and mitigation measures*’. They are the remaining ‘environmental costs’ of a project and are the final or intended effects of a development after mitigation measures have been applied to avoid or reduce adverse impacts. Potential residual impacts from the Proposed Development were considered as part of this environmental assessment.

No negative residual impacts in the context of population and human health are anticipated regarding this Proposed Development.

The Construction Phase will create construction employment in the area which will have a positive effect on local businesses who might benefit from increased custom to their services (e.g. petrol stations, food, retail and hardware supplies services). The increased employment will also enhance the local economy within the area which will have a short-term positive impact on local settlement as a result.

Operational Phase of the Proposed Development will have the potential to create employment (maintenance and management of the Proposed Development) which will have a long-term positive impact on the local socio-economic environment. The construction of an AD plant will also contribute towards reduced reliance on energy production through fossil fuel combustion.

4.8 Monitoring

4.8.1 Construction Phase

No specific monitoring measures are proposed or required in relation to Population and Human Health for the Construction Phase of the Proposed Development.

Monitoring activities will be implemented for the Construction Phase in accordance with the Preliminary CEMP submitted as part of this planning application.

4.8.2 Operational Phase

No specific monitoring measures are required in relation to population and settlements, given the lack of direct effects resulting from the Proposed Development. However, where required,

monitoring in relation to air emissions, water, noise and traffic are identified in their respective Chapters in this EIAR.

4.9 Interactions

4.9.1 Air Quality

Interactions with air quality, including odour, during the Construction and Operational Phase has the potential to cause health, odour and dust nuisance issues. However, the mitigation measures that will be put in place at the Proposed Development will ensure that the impacts and their effects comply with all ambient air quality legislative limits and therefore the predicted impact is not significant with a neutral effect on human health. Air quality is discussed further in Chapter 8 of this EIAR.

4.9.2 Hydrology

There are no anticipated impacts to groundwater or local groundwater supplies used for drinking water associated with the Proposed Development.

4.9.3 Noise

The potential impacts on the noise environment associated with the Proposed Development will be principally limited to the movement of trucks delivering infeed materials and the subsequent exit of these vehicles from the site as well as the movement of trucks collecting biofuel from the tank farm.

No traffic routes are predicted to experience increases of more than 25% in total traffic flows during the Operational Phase and therefore no detailed noise assessment is required as per the DMRB Guidelines. Refer to Chapter 12 of the EIAR for a detailed traffic assessment report.

In relation to operational noise from on-site plant and equipment, when taking account of local terrain, predicted noise levels at the closest noise sensitive location are expected to be lower than the level set out in Chapter 9 of this EIAR and as such there will be no significant impact.

4.9.4 Landscape and Visual

It is not considered that the Proposed Development by virtue of its visual appearance, will cause any issues for the residential local population.

4.9.5 Traffic

Construction and Operational traffic can impact the road network and the local population utilising it. The percentage impacts on the R162 to the north and south of the College Road junction as a result of the Proposed Development are all well below the +5% lower threshold criteria.

These predicted increases are not considered to be materially significant in relation to the operational capacity of the R162/College Road junction. Therefore, there will be no significant impact on the population and human health of the surrounding area.

4.10 Difficulties Encountered

No difficulties were encountered in the preparation of this Chapter of the EIAR.

4.11 References

The Central Statistics Office (CSO)

Meath County Development Plan 2021-2027

The Regional Planning Guidelines of the Greater Dublin Area 2010-2022

Ordinance Survey Ireland (OSI)

WHO. Ottawa Charter for Health Promotion First International Conference on Health Promotion Ottawa, 21 November 1986 - WHO/HPR/HEP/95.1. 1986.

WHO. Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948. 1946.

Healthy Ireland Framework 2013-2025

Farrell, C., McAvoy, H., Wilde, J. and Combat Poverty Agency (2008), Tackling Health Inequalities – An All-Ireland Approach to Social Determinants. Dublin: Combat Poverty Agency/Institute of Public Health in Ireland.

Wilkinson, Richard; Marmot, Michael, eds. (2003). The Social Determinants of Health: The Solid Facts (PDF) (2nd ed.). World Health Organization Europe.

Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (European Communities 1999)

Work Safely Protocol COVID-19 National Protocol for Employers and Workers (Government of Ireland, V14, May 2021)

General Guide on Management of COVID-19 Outbreaks in the Workplace' (HSE, June 2021).

Environmental Protection Agency, Radon, 2022. Available at: <https://www.epa.ie/environment-and-you/radon/>

5 BIODIVERSITY

5.1 Introduction

This Chapter describes the Biodiversity of the site of the Proposed Development and surrounding environs, with emphasis on habitats, flora, and fauna, and details the methodology of assessment used in each case. It provides an assessment of the impacts of the Proposed Development on habitats and species, particularly those protected by national and international legislation, or considered to be of Conservation Importance; and proposes measures for the mitigation of these impacts, where appropriate.

The Chapter has been completed having regard to the *Guidelines for Ecological Impact Assessment in the UK and Ireland*, by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018), together with the guidance outlined in the Environmental Protection Agency documents *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (Draft, August 2017) and *Advice Notes for Preparing Environmental Impact Statements* (Draft, September 2015) and the European Commission document *Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report* (EC, 2017). Reference is also made to the European Commission's, *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment* (2013) and the *Interpretation Manual of the European Union Habitats EUR28* (EC, 2013).

The value of the ecological resources, the habitats, and species present or potentially present, was determined using the ecological evaluation guidance given in the Transport Infrastructure Ireland (TII) [formerly the National Roads Authority (NRA)]'s *Ecological Assessment Guidelines* (TII[NRA], 2009).

5.1.1 Quality Assurance and Competence

All surveying and reporting for Chapter 5 of this EIAR have been carried out by qualified and experienced ecologists and environmental consultants.

Charlotte Lawler-Greene, Principal Environmental Consultant with Enviroguide, has a M.Sc. (Environmental Sciences) from University of East-Anglia, a BSc (Honours) in Botany from NUI Galway, and 17 years' experience in Environmental and Waste Management, Ecology and Consultancy. She has a wealth of experience in desktop research, literature scoping-review, and report writing including, the preparation and peer review of Ecological Impact Assessments and Biodiversity Chapters for EIARs, Appropriate Assessment (Stage 1 and 2 reports), invasive species surveys, mammal and habitat conservation plans and habitat restoration plans as well as practical field experience (Habitat surveys, Wintering bird surveys, mammal surveys, fresh water macro-invertebrate sampling and identification etc.) She is also a proficient in development of spatial mapping of habitats in GIS.

Brian McCloskey, is a Project Ecologist and experienced Ornithologist with 11 years of birding experience. Brian is a longstanding and active member of Bird Watch Ireland and has provided Ornithology survey work for ecological consultancies, e.g., Vantage points surveys of Gulls, Terns, Raptors, Waders and Wildfowl; hinterland surveys of the above as well as

riverine species; and breeding waders and country birds. Brian is highly experienced with all survey methodologies and with surveying all species groups of Irish birds and migrants.

5.1.2 Relevant Legislation and Policy

5.1.2.1 National Legislation

Wildlife Act 1976 and amendments

The Wildlife Act 1976 was enacted to provide protection to birds, animals, and plants in Ireland and to control activities which may have an adverse impact on the conservation of wildlife. With regard to the listed species, it is an offence to disturb, injure or damage their breeding or resting place wherever these occur without an appropriate licence from the National Parks and Wildlife Service (NPWS). This list includes all birds along with their nests and eggs. Intentional destruction of an active nest from the building stage up until the chicks have fledged is an offence. This includes the cutting of hedgerows from the 1st of March to the 31st of August. The act also provides a mechanism to give statutory protection to Natural Heritage Areas (NHAs). The Wildlife Amendment Act 2000 widened the scope of the Act to include most species, including the majority of fish and aquatic invertebrate species which were excluded from the 1976 Act.

The current list of plant species protected by Section 21 of the Wildlife Act, 1976 (and amendments) is set out in the Flora (Protection) Order, 2015 (S.I. No. 356/2015). The Flora (Protection) Order affords protection to several species of plant in Ireland, including 68 vascular plants, 40 mosses, 25 liverworts, 1 stonewort and 1 lichen. This Act makes it illegal for anyone to uproot, cut or damage any of the listed plant species and it also forbids anyone from altering, interfering, or damaging their habitats. This protection is not confined to within designated conservation sites and applies wherever the plants are found.

European Communities (EC) (Birds and Natural Habitats) Regulations, 2011

The EU Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive 1992) provides protection to particular species and habitats throughout Europe. The Habitats Directive has been transposed into Irish law through the EC (Birds and Natural Habitats) Regulations 2011.

Annex IV of the EU Habitats Directive provides protection to a number of listed species, wherever they occur. Under Regulation 23 of the Habitats Directive, any person who, in regard to the listed species, *“Deliberately captures or kills any specimen of these species in the wild, deliberately disturbs these species particularly during the period of breeding, rearing, hibernation and migration, deliberately takes or destroys eggs from the wild or damages or destroys a breeding site or resting place of such an animal shall be guilty of an offence.”*

Invasive Species Legislation

Certain plant species and their hybrids are listed as Invasive Alien Plant Species in Part 1 of the Third Schedule of the *European Communities (Birds and Natural Habitats) Regulations* 2011 (SI 477 of 2011, as amended). In addition, soils and other material containing such

invasive plant material, are classified in Part 3 of the Third Schedule as vector materials and are subject to the same strict legal controls.

Failure to comply with the legal requirements set down in this legislation can result in either civil or criminal prosecution, or both, with very severe penalties accruing. Convicted parties under the Act can be fined up to €500,000.00, jailed for up to 3 years, or both.

Extracts from the relevant sections of the regulations are reproduced below.

“49(2) Save in accordance with a licence granted [by the Department of Arts, Heritage and the Gaeltacht], any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow in anyplace [a restricted non-native plant], shall be guilty of an offence.

49(3) ... it shall be a defence to a charge of committing an offence under paragraph (1) or (2) to prove that the accused took all reasonable steps and exercised all due diligence to avoid committing the offence.

50(1) Save in accordance with a licence, a person shall be guilty of an offence if he or she [...] offers or exposes for sale, transportation, distribution, introduction, or release—

(a) an animal or plant listed in Part 1 or Part 2 of the Third Schedule,

(b) anything from which an animal or plant referred to in subparagraph (a) can be reproduced or propagated, or

(c) a vector material listed in the Third Schedule, in any place in the State specified in the third column of the Third Schedule in relation to such an animal, plant or vector material.”

5.1.2.2 International Legislation

EU Birds Directive

The Birds Directive constitutes a level of general protection for all wild birds throughout the European Union. Annex I of the Birds Directive includes a total of 194 bird species that are considered rare, vulnerable to habitat changes or in danger of extinction within the European Union. Article 4 establishes that there should be a sustainable management of hunting of listed species, and that any large scale non-selective killing of birds must be outlawed. The Directive requires the designation of Special Protection Areas (SPAs) for: listed and rare species, regularly occurring migratory species and for wetlands which attract large numbers of birds. There are 25 Annex I species that regularly occur in Ireland and a total of 153 Special Protection Areas have been designated.

EU Habitats Directive

The Habitats Directive aims to protect some 220 habitats and approximately 1000 species throughout Europe. The habitats and species are listed in the Directives annexes, where Annex I covers habitats and Annex II, IV and V cover species. There are 59 Annex I habitats in Ireland and 33 Annex IV species which require strict protection wherever they occur. The Directive requires the designation of Special Areas of Conservation for areas of habitat

deemed to be of European interest. The SACs together with the SPAs from the Birds Directive form a network of protected sites called Natura 2000. An Appropriate Assessment is required under Article 6 of the Habitats Directive where a project or plan may give rise to significant effects upon a European site. This is dealt with further in the AA Screening Report and Natura Impact Statement accompanying this application.

Water Framework Directive

The EU Water Framework Directive (WFD) 2000/60/EC is an important piece of environmental legislation which aims to protect and improve water quality. It applies to rivers, lakes, groundwater, estuaries, and coastal waters. The Water Framework Directive was agreed by all individual EU member states in 2000, and its first cycle ran from 2009 – 2015. The Directive runs in 6-year cycles, so the third (current) cycle runs from 2021 – 2027. The aim of the WFD is to prevent any deterioration in the existing status of water quality, including the protection of good and high water quality status where it exists. The WFD requires member states to manage their water resources on an integrated basis to achieve at least 'good' ecological status, through River Basin Management Plans (RBMP), by 2027.

Bern and Bonn Convention

The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982) was enacted to conserve all species and their habitats. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was introduced to give protection to migratory species across borders in Europe.

Ramsar Convention

The Ramsar Convention on Wetlands is an intergovernmental treaty signed in Ramsar, Iran, in 1971. The treaty is a commitment for national action and international cooperation for the conservation of wetlands and their resources. In Ireland there are currently 45 Ramsar sites which cover a total area of 66,994 hectares.

Convention Biological Diversity (1992)

Ireland is a signatory on the UN Convention on Biological Diversity (CBD), the Cancun Declaration (CBD, 2016) which focuses on the need for governments from National to local levels to mainstream the conservation and sustainable use of biodiversity for human well-being. All parties to the Convention must prepare national biodiversity strategies and action plans.

National Biodiversity Plan(s)

The third National Biodiversity Plan was published in Ireland by the Department Culture, Heritage and the Gaeltacht in October 2017 and spans 2017- 2021. The plan was developed in line with EU and International Biodiversity strategies and policies.

Local Biodiversity Plan(s)

Meath County Council adopted its first Biodiversity Action Plan in 2010 in accordance with the National Biodiversity Action Plan. The second County Meath Local Biodiversity Action Plan

2015-2020 was adopted in April 2015. The Plan provides a framework for the conservation of biodiversity and natural heritage at a local level.

5.1.2.3 Meath County Development Plan (2021-2027)

Policies of the Meath County Council Development Plan that are of relevance to this Biodiversity Chapter are outlined below:

Objective HER OBJ30: To implement, in partnership with the Department of Culture, Heritage and the Gaeltacht, relevant stakeholders and the community, the objectives and actions of Ireland's National Biodiversity Action Plan 2017-2021 which relate to the remit and functions of Meath County Council.

Objective HER OBJ31: To implement, in partnership with the Department of Culture, Heritage and the Gaeltacht, relevant stakeholders and the community, the objectives and actions of the County Meath Biodiversity Plan 2015-2020 and any revisions thereof.

Objective HER OBJ32: To actively support the implementation of the All-Ireland Pollinator Plan 2021-2025 and any revisions thereof.

Objective HER OBJ33: To ensure an Appropriate Assessment in accordance with Article 6(3) and Article 6(4) of the Habitats Directives (92/43/EEC) and in accordance with the Department of Environment, Heritage and Local Government Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities, 2009 and relevant EPA and European Commission guidance documents, is carried out in respect of any plan or project not directly connected with or necessary for the management of the site but likely to have a significant effect on a Natura 2000 site(s), either individually or in-combination with other plans or projects, in view of the site's conservation objectives.

Objective HER OBJ34: To protect and conserve the conservation value of candidate Special Areas of Conservation, Special Protection Areas, Natural Heritage Areas and proposed Natural Heritage Areas as identified by the Minister for the Department of Culture, Heritage and the Gaeltacht and any other sites that may be proposed for designation during the lifetime of this Plan in accordance with the provisions of the Habitats and Birds Directives and to permit development in or affecting same only in accordance with the provisions of those Directives as transposed into Irish Law.

Objective HER OBJ35: To ensure that development does not have a significant adverse impact, incapable of satisfactory avoidance or mitigation, on plant, animal or bird species protected by law.

Objective HER OBJ36: To promote awareness, understanding and best practice in the management of the County's woodland, tree and hedgerow resource.

Objective HER OBJ38: To review the Meath Tree, Woodland and Hedgerow Survey (2011), over the life of the Development Plan, as appropriate.

Policy HER POL 44: To require all development proposals to address the presence or absence of invasive alien species on Proposed Development sites and (if necessary) require applicants to prepare and submit an Invasive Species Management Plan where such species

exists to comply with the provisions of the European Communities (Birds and natural Habitats) Regulations 2011-2015

5.2 Study Methodology

This section details the steps and methodology employed to undertake an Ecological Impact Assessment of the Proposed Development.

5.2.1 Scope of Assessment

The specific objectives of the study were to:

- Undertake baseline ecological surveys of the Site of the Proposed Development,
- Evaluate the nature conservation importance of the Site and Zone of Influence of the Proposed Development Site;
- Identify and assess the direct, indirect, and cumulative ecological implications or impacts of the Proposed Development during its lifetime; and
- Where possible, propose mitigation measures to remove or reduce those impacts at the appropriate stage of development.

5.2.1.1 Zone of Influence

The 'zone of influence' (ZOI) for a project is the area over which ecological features may be affected by changes due to the Proposed Development and associated activities. This is likely to extend beyond the Site of the Proposed Development, for example where there are ecological or hydrological links beyond the site boundaries (CIEEM, 2018). The ZOI will vary with different ecological features, depending on their sensitivities to an environmental change.

The ZOI is regarded to be relatively limited and within the redline boundary for most ecological receptors (with the exception of designated sites, e.g. European sites, Ramsar sites, Natural Heritage Areas and proposed Natural Heritage Areas – see below).

To determine the ZOI of the Proposed Development for *designated sites*, reference was made to the OPR Practice Note PN01 - 'Appropriate Assessment Screening for Development Management' (OPR, 2021), a practice note produced by the Office of the Planning Regulator, Dublin. This note was published to provide guidance on screening for appropriate assessment (AA) during the planning process, and although it focuses on the approach a planning authority should take in screening for AA, the methodology is also readily applied in the preparation of Biodiversity Chapters such as this to identify relevant designated sites potentially linked to the Proposed Development.

In addition, the guidance document published by the Department of Housing, Planning and Local Government (then DEHLG) 'Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities' (2009) was considered, which recommends an arbitrary distance of 15km as the precautionary ZOI for a plan or project being assessed for likely significant effects on European Sites, stating however that this should be evaluated on a case-by-case basis.

The methodology used to identify relevant designated sites comprised the following:

Use of up-to-date GIS spatial datasets for designated sites and water catchments – downloaded from the NPWS website (www.npws.ie) and the EPA website (www.epa.ie) to identify designated sites which could potentially be affected by the Proposed Development;

The catchment data were used to establish or discount potential hydrological connectivity between the project boundary and any designated sites.

All designated sites within a 15km ZOI of the Proposed Development Site were identified and are shown in Figure 5-2 and Figure 5-3.

In addition, the potential for connectivity with designated sites at distances greater than 15km from the Proposed Development was also considered in this initial assessment. In this case, there is potential connectivity (hydrological) between the Proposed Development Site and designated sites located at a distance greater than 15km based on the Source-Pathway-Receptor model. (See Figures 5-2 and 5-3)

Table 5-7 provides details of all relevant designated sites as identified in the preceding steps. The potential for pathways between designated sites and the Proposed Development Site was assessed on a case-by-case basis using the Source-Pathway-Receptor framework as per the OPR Practice Note PN01 (March 2021). Pathways considered included:

Direct pathways (e.g. proximity (i.e. location within the designated site), water bodies, air (for both air emissions and noise impacts).

Indirect pathways (e.g. disruption to migratory paths, 'Sightlines' where noisy or intrusive activities may result in disturbance to shy species.

5.2.2 Desk Study

A desktop study was carried out to collate and review available information, datasets and documentation sources pertaining to the site's natural environment. The desktop study relied on the following sources:

- Information on species records and distributions, obtained from the National Biodiversity Data Centre (NBDC) at www.maps.biodiversityireland.ie ;
- Information on waterbodies, catchment areas and hydrological connections obtained from the Environmental Protection Agency (EPA) at www.gis.epa.ie ;
- Information on bedrock, groundwater, aquifers and their statuses, obtained from Geological Survey Ireland (GSI) at www.gsi.ie ;
- Information on the network of designated conservation sites, boundaries, qualifying interests and conservation objectives, obtained from the National Parks and Wildlife Service (NPWS) at www.npws.ie ;
- Satellite imagery and mapping obtained from various sources and dates including Google, Digital Globe, Bing and Ordnance Survey Ireland;
- Information on the existence of permitted developments, or developments awaiting decision, in the vicinity of the Proposed Development from <https://www.eplanning.ie/MeathCC/searchtypes>

- Information on the extent, nature and location of the Proposed Development, provided by the Applicant and/or their design team;
- The current conservation status of birds in Ireland taken from Gilbert et al. (2021).
- The pollinator friendly planting code provided by The All-Ireland Pollinator Plan (2015-2020) available at www.pollinators.ie
- Meath Biodiversity Action Plan 2011 - 2017
- Meath County Development Plan 2021-2027
- The AA Screening Report, and,
- Environmental Impact Assessment Report and Ecological Impact Assessment Reports prepared for previous applications by the Applicant in the vicinity of the Site were considered in the preparation of this Biodiversity Chapter.

5.2.3 Field Surveys

Field surveys have been carried out at the Site of the Proposed Development to inform this Biodiversity Chapter. Ground truthing habitat and ecological field surveys were previously conducted by a consultant ecologist in February 2016, February 2018, and May 2019 to establish the ecological features and resources of the site, particularly any rare or protected species and habitats present within the study area or in the greater surroundings. The area surveyed included the Proposed Development site and the land bounding the site.

An site walkover was carried out on 27th June 2022 to establish whether any significant changes had occurred, and to conduct a Breeding Bird survey at the site. The findings of these surveys are provided in Section 5.3.4 Habitats.

The following sections provide details of the field surveys carried out and a summary of ecological surveys is provided in Table 5-1.

Table 5-1: Summary of ecological surveys carried out at the Site.

Survey	Survey Date(s)	Surveyor
Habitat and Flora Surveys	February 2016; May 2019, June 2022	Enviroguide Consulting
Mammal Surveys	February 2016, May 2019, June 2022	Enviroguide Consulting
Bat Surveys	2001, 2008, September 2018, May 2019, June 2022	Enviroguide Consulting
Other Fauna	May 2019, June 2022	Enviroguide Consulting
Winter Bird Surveys	February 2016,	Enviroguide Consulting
Breeding Bird Surveys	May 2019, June 2022	Enviroguide Consulting

5.2.3.1 Habitat Surveys

The habitat surveying and the categorisation of habitats recorded, had regard to the Heritage Council's national standards as outlined in 'Best Practice Guidance for Habitat Survey and Mapping' (Smith et al., 2011) and 'A Guide to Habitats in Ireland' (Fossitt, 2000). An evaluation of the habitats recorded is included in subsequent Sections of this Chapter.

5.2.3.2 Mammal Surveys (non-bat species)

A mammal survey, which concentrated on protected species such as Badger (*Meles meles*) and Otter (*Lutra lutra*), was carried out in conjunction with the habitat survey. The habitat types recorded throughout the survey area were used to assist in identifying the fauna considered likely to utilise the area. During this survey, the site was searched for tracks and signs of mammals as per Bang and Dahlstrom (2001).

5.2.3.3 Bat Surveys

All Irish bat species are protected under the Wildlife Act (1976) and Wildlife Amendment Acts (2000 and 2010). Also, the EC Directive on the conservation of Natural habitats and of Wild Fauna and Flora (Council Directive 92/43/EEC), seeks to protect rare species, including bats, and their habitats. All Irish bats are listed in Annex IV of the Habitats Directive and the Lesser Horseshoe bat (*Rhinolophus hipposideros*) is further listed under Annex II as species requiring designation of Special Area of Conservation for their protection. Records of bat activity in the area were retrieved from Bat Conservation Ireland (BCI), the National Biodiversity Data Centre's (NBDC) online biodiversity mapping system and from the NPWS species distribution maps.

Bat surveys have been carried out at the site in 2001, 2008, 2018, and 2019. In view of the time lapse since the original survey and the fact that bat survey methodology improved greatly since 2008, a more comprehensive bat survey was conducted in Autumn 2018. Two forms of survey design were implemented.

An unmanned automated bat survey was completed at a number of preselected locations over a period of approximately one week. Two passive bioacoustics recording units (Song Meter SM2)¹ were deployed at a number of locations during autumn 2018. The units were moved strategically to sample activity at a number of locations that were selected for their proximity to habitats or features potentially valuable to bats. Calls emitted by bats that passed near enough to the SM2 detectors were recorded and their calls stored for later analysis. The SM2 detector system records bat ultrasonic calls on a continuous basis and stores the information onto internal CF cards with a combined storage capacity of 32 GB of data per unit. The bat detector is effectively used as a bat activity data logger.

An activity survey was conducted within the site along a walked transect route. The survey started at sunset and continued for four hours until after midnight. The route was designed to comprehensively transect the Proposed Development area and intersect with the range of foraging and commuting habitats present within it - particularly those associated with linear features such as hedgerows and treelines.

5.2.3.4 Bird Surveys

Ornithological surveys were completed during site visits in February 2016, May 2019 and June 2022.

¹ The Song Meter SM2BAT (192x2) and SM2BAT+ models are manufactured by Wildlife Acoustics, Inc.

5.2.3.5 Invasive Species Surveys

The Site was assessed for the presence of invasive plant species during the habitat survey undertaken in June 2022.

5.2.4 Assessment

The value of the ecological resources – the habitats and species present or potentially present was determined using the ecological evaluation guidance provided in the National Roads Authority's Ecological Assessment Guidelines (NRA [TII], 2009). This evaluation scheme, with values ranging from locally important to internationally important, seeks to provide value ratings for habitats and species present that are considered ecological receptors of impacts that may ensue from a proposal (Table 5-2). The NRA [TII] (2009) guidelines define key ecological receptors as those ecological features which are evaluated as Locally Important (higher value) or higher, that are likely to be impacted significantly by the Proposed Development. Internationally important receptors would include Special Areas of Conservation (SAC) or Special Protected Areas (SPA) while those of national importance would include Natural Heritage Areas (NHA).

This evaluation scheme has been adapted here to assess the value of habitats and fauna within the Site of the Proposed Development. The value of habitats is assessed based on the condition, size, rarity, conservation, and legal status. The value of fauna is assessed on its biodiversity value, legal status, and conservation status. Biodiversity value is based on its national distribution, abundance or rarity, and associated trends.

Using the evaluation criteria as described above, the habitats and species identified as being present or potentially present were assessed. As per the NRA [TII] guidelines, impact assessment is only undertaken on Key Ecological Receptors (KERs).

Table 5-2: Description of values for ecological resources based on geographic hierarchy of importance (NRA [TII], 2009b)

Importance	Criteria
International Importance	'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation. Proposed Special Protection Area (pSPA). - Site that fulfils the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended). Features essential to maintaining the coherence of the Natura 2000 Network Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive. Resident or regularly occurring populations (assessed to be important at the national level) of the following: Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or Species of animal and plants listed in Annex II and/or IV of the Habitats Directive Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971).

Importance	Criteria
	World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972). Biosphere Reserve (UNESCO Man & The Biosphere Programme) Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979). Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979). Biogenetic Reserve under the Council of Europe. European Diploma Site under the Council of Europe. Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).
National Importance	Site designated or proposed as a Natural Heritage Area (NHA). Statutory Nature Reserve. Refuge for Fauna and Flora protected under the Wildlife Acts. National Park. Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park. Resident or regularly occurring populations (assessed to be important at the national level) of the following: Species protected under the Wildlife Acts; and/or Species listed on the relevant Red Data list. Site containing 'viable areas' of the habitat types listed in Annex I of the Habitats Directive
County Importance	Area of Special Amenity. Area subject to a Tree Preservation Order. Area of High Amenity, or equivalent, designated under the County Development Plan. Resident or regularly occurring populations (assessed to be important at the County level) of the following: Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; Species protected under the Wildlife Acts; and/or Species listed on the relevant Red Data list. Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance. County important populations of species; or viable areas of semi-natural habitats; or natural heritage features identified in the National or Local BAP; if this has been prepared.

Importance	Criteria
	Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county. Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.
Local Importance (higher value)	Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared; Resident or regularly occurring populations (assessed to be important at the Local level) of the following: Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; Species protected under the Wildlife Acts; and/or Species listed on the relevant Red Data list. Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality; Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.
Local Importance (lower value)	Sites containing small areas of semi-natural habitat that are of some local importance for wildlife; Sites or features containing non-native species that is of some importance in maintaining habitat links.

5.2.4.1 Impact Assessment Criteria

Once the value of the identified Key Ecological Receptors (KERs) was determined, the next step was to assess the potential effect of the Proposed Development on these KERs. This was carried out with regard to the criteria outlined in various impact assessment guidelines (NRA, 2009b; CIEEM, 2018) that set down a number of parameters such as quality, magnitude, extent and duration that should be considered when determining which elements of the Proposed Development could constitute impact or sources of impacts. Once impacts are defined, their significance was categorised using EPA Guidelines (EPA, 2022).

Identification of a risk does not constitute a prediction that it will occur, or that it will create or cause significant impact. However, identification of the risk does mean that there is a possibility of ecological or environmental damage occurring, with the level and significance of the impact depending upon the nature and exposure to the risk and the characteristics of the ecological receptor.

5.2.4.2 Criteria used to define the quality, significance, and duration of effects

In line with the EPA Guidelines (EPA, 2022), the following terms are defined when quantifying the quality of effects. See Table 5-3.

Table 5-3: Definition of Quality of Effects

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

In line with the EPA Guidelines (EPA, 2022), the following terms are defined when quantifying the significance of effects. See Table 5-4.

Table 5-4: Definition of Significance of Effects

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

In line with the EPA Guidelines (EPA, 2022), the following terms are defined when quantifying duration and frequency of effects. See Table 5-5.

Table 5-5: Definition of Duration of Effects

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

5.3 The Existing and Receiving Environment (Baseline Situation)

5.3.1 Site Overview

The Site of the Proposed Development is located at College Road, Nobber, Co. Meath. The Proposed Development site comprises a number of agricultural fields separated by linear hedgerows within the townland of Nobber in Co. Meath.

The site is located directly west of the existing College Proteins Animal by-product (ABP) rendering and biodiesel production facility at College Road, Nobber, Co Meath. The rendering and biodiesel plant is operated by the Applicant in accordance with the IE Licence (IE Licence No. P0037-04).

A solar farm has also been constructed by the Applicant adjacent to the northern boundary of the site of the Proposed Development and produces 3 million kWh of 100% green electricity for consumption by on-site operations. The Site location is presented in Figure 5-1.

The Site can be accessed from the southwest via the R162, or from the northeast via the R165. The town of Nobber, County Meath, lies approximately 3km south of the site of the Proposed Development. The town of Kingscourt, Co. Cavan lies approximately 7km northwest of the site on the R162, the village of Drumconrath, Co. Meath, lies approximately 6km to the east of the site on the R165, and the village of Kilmainhamwood, Co. Meath lies approximately 6km to the west of the site on the L6802. The landscape surrounding the site of the Proposed Development is rural, comprised of grazing and arable lands, divided by frequent mature hedgerows, and scattered with small farms and residential dwellings.

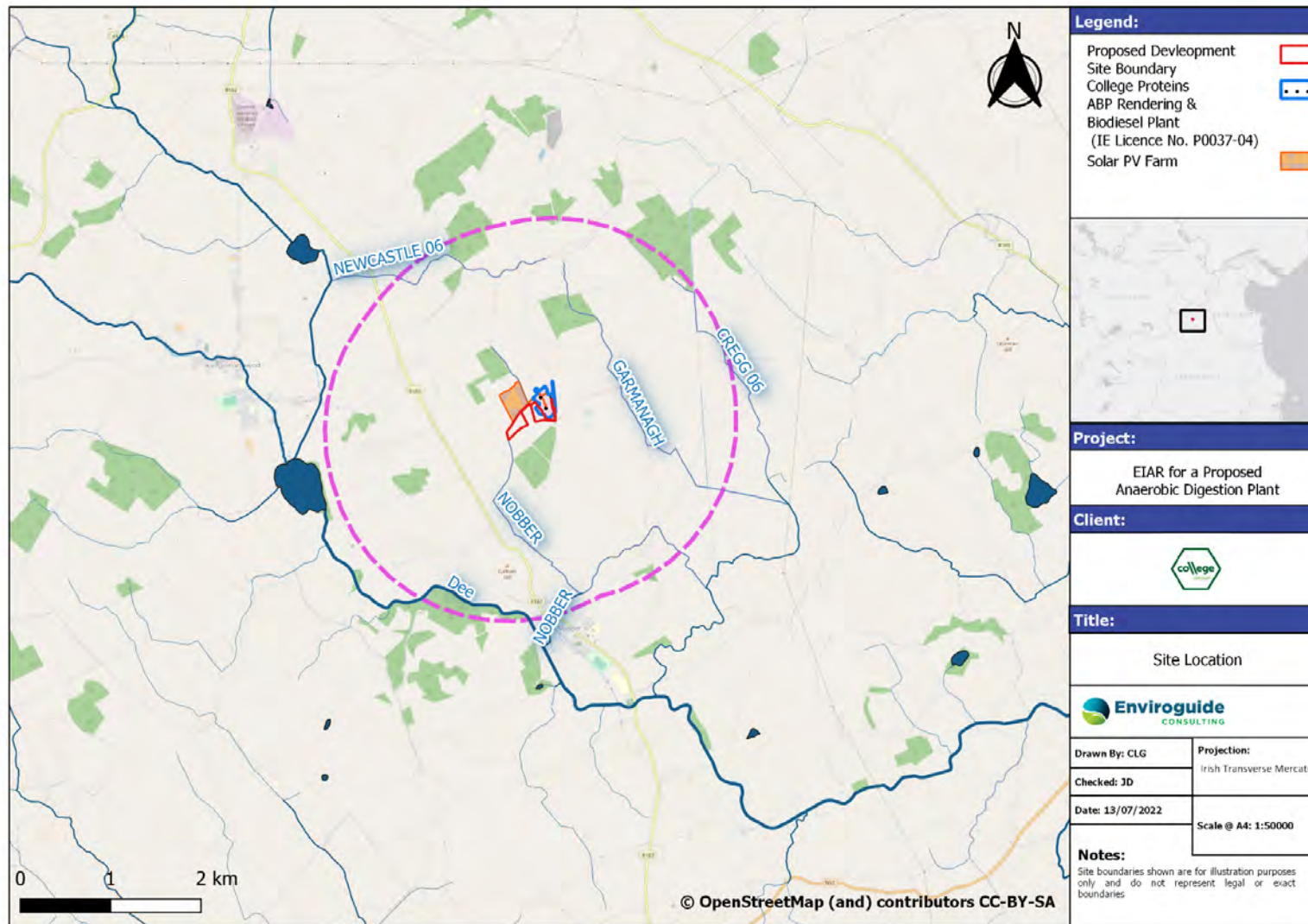


Figure 5-1: Site Location and Water features within the vicinity of the Proposed Development

5.3.2 Geology, Hydrology and Hydrogeology

Soils, Geology and Hydrology are assessed in Chapters 6 and 7 of this EIAR and summarised below. See also Figure 5-1.

The Site of the Proposed Development is within the Newry, Fane, Glyde and Dee WFD Catchment (Catchment ID 06), the Newry, Fane, Glyde and Dee Hydrometric Area (HA06) and the Dee-SC_010 Sub-Catchment, (Sub-Catchment ID: 06_3).

The closest surface water feature is recorded on the EPA database (EPA, 2022) as the Nobber Stream (River Waterbody Code: IE_NB_06M460800) which adjoins the northern boundary of the Site and flows approximately 2.2km downstream before discharging to the River Dee (River Waterbody Code: IE_NB_06D010360) approximately 1.9km south of the Site.

The Garmanagh Stream (River Waterbody Code: IE_NB_06D010360) is located approximately 0.74km east of the Site. The Garmanagh Stream flows approximately 4.6km downstream before discharging to the River Dee approximately 3.3km south of the Site.

Soil is mapped as poorly drained fine loamy drift with siliceous stones of the Kilrush (0700h) soil series (Teagasc, 2022). Subsoils mapped by the GSI (GSI, 2022) as 'till derived from Namurian sandstones and shales (TNSSs)'. Previous site investigation records indicate that cohesive soils comprising clay to 12.0 meters below ground level (mbGL) and stoney clay to 22.0mbGL was encountered beneath the Site (Dunnes Drilling, 2020).

The bedrock beneath the majority of the proposed AD plant area is mapped as the Fingal Group (undifferentiated) comprising dark limestone, shale and micrite. The bedrock beneath the remainder of the Site including the proposed infill area is mapped by the GSI (GSI, 2022) as the Ardagh Shale Formation comprising black shale. Previous site investigation records indicate that bedrock was encountered as broken shale at depths below 22.0mbGL (Dunnes Drilling, 2020). The GSI (GSI, 2022) has classified the bedrock of the Fingal Group (undifferentiated) beneath the majority of the proposed AD plant area as Locally Important (LI) aquifer (i.e., bedrock which is Moderately Productive only in Local Zones). The GSI have assigned a groundwater vulnerability rating of "Low" (L) for the groundwater beneath the Proposed Development site (GSI, 2022) which is attributed to the low permeability and thickness (>10m) of the overburden.

5.3.3 Designated Sites

The Habitats Directive (92/43/EEC) seeks to conserve natural habitats and wild fauna and flora by the designation of Special Areas of Conservation (SACs) and the Birds Directive (79/409/EEC) seeks to protect birds of special importance by the designation of Special Protection Areas (SPAs). It is the responsibility of each member state to designate SPAs and SACs, both of which will form part of Natura 2000, a network of protected sites throughout the European Community. SACs are selected for the conservation of Annex I habitats (including priority types which are in danger of disappearance) and Annex II species (other than birds). SPAs are selected for the conservation of Annex I birds and other regularly occurring migratory birds and their habitats. The annexed habitats and species for which each site is selected correspond to the qualifying interests of the sites; from these the conservation objectives of the site are derived.

National Heritage Areas (NHAs) are designations under the Wildlife Acts to protect habitats, species, or geology of national importance. The boundaries of many of the NHAs in Ireland

overlap with SAC and/or SPA sites. Although many NHA designations are not yet fully in force under this legislation (referred to as 'proposed NHAs' or pNHAs), they are offered protection in the meantime under planning policy which normally requires that planning authorities give recognition to their ecological value.

Table 5-6 presents details of the key ecological features of the designated sites within a 15km radius of the Proposed Development as well as those with a potential source-pathway-receptor linkage as outlined in section 5.2.1.1. The result of this preliminary screening concluded that there is a total of 3 No. SACs, 2 No. SPAs and 11 No. pNHAs located within the ZOI of the Proposed Development Site. The distances to each site listed are taken from the nearest possible point of the Proposed Development Site boundary to nearest possible point of each European site or pNHA.

Table 5-6: Designated sites located within the ZOI of the site of the Proposed Development

Site Name & Code	Qualifying Interests (*= priority habitats)	Distance to Site
Special Areas of Conservation		
River Boyne and River Blackwater SAC [002299]	Alkaline fens [7230] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, <i>Alnion incanae</i> , <i>Salicion albae</i>) [91E0] Lampetra fluviatilis (River Lamprey) [1099] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]	13.36km
Killyconny Bog (Cloghbally) SAC [000006]	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120]	13.91km
Dundalk Bay SAC [002122]	[1130] Estuaries [1140] Mudflats and sandflats not covered by seawater at low tide [1220] Perennial vegetation of stony banks [1310] Salicornia and other annuals colonizing mud and sand [1330] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1410] Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	26.86km (>40km by river)
Special Protection Areas		
River Boyne and River Blackwater SPA [004232]	Kingfisher (<i>Alcedo atthis</i>) [A229]	13.58km
Dundalk Bay SPA	[A005] Great Crested Grebe <i>Podiceps cristatus</i> <i>wintering</i> [A043] Greylag Goose <i>Anser anser</i> <i>wintering</i> [A046] Light-bellied Brent Goose <i>Branta bernicla hrota</i> <i>wintering</i> [A048] Shelduck <i>Tadorna tadorna</i> <i>wintering</i> [A052] Teal <i>Anas crecca</i> <i>wintering</i> [A053] Mallard <i>Anas platyrhynchos</i> <i>wintering</i> [A054] Pintail <i>Anas acuta</i> <i>wintering</i> [A065] Common Scoter <i>Melanitta nigra</i> <i>wintering</i> [A069] Red-breasted Merganser <i>Mergus serrator</i> <i>wintering</i> [A130] Oystercatcher <i>Haematopus ostralegus</i> <i>wintering</i> [A137] Ringed Plover <i>Charadrius hiaticula</i> <i>wintering</i> [A140] Golden Plover <i>Pluvialis apricaria</i> <i>wintering</i> [A141] Grey Plover <i>Pluvialis squatarola</i> <i>wintering</i> [A142] Lapwing <i>Vanellus vanellus</i> <i>wintering</i> [A143] Knot <i>Calidris canutus</i> <i>wintering</i>	26.86km (>40km by river)

Site Name & Code	Qualifying Interests (*= priority habitats)	Distance to Site
	[A149] Dunlin <i>Calidris alpina</i> wintering [A156] Black-tailed Godwit <i>Limosa limosa</i> wintering [A157] Bar-tailed Godwit <i>Limosa lapponica</i> wintering [A160] Curlew <i>Numenius arquata</i> wintering [A162] Redshank <i>Tringa totanus</i> wintering [A179] Black-headed Gull <i>Chroicocephalus ridibundus</i> wintering [A182] Common Gull <i>Larus canus</i> wintering [A184] Herring Gull <i>Larus argentatus</i> wintering [A999] Wetlands & Waterbirds	
Natural Heritage Areas (NHAs)		
There are no NHAs within 15km of the Proposed Development		
Proposed Natural Heritage Areas (pNHAs)^{1F2}		
Ballyhoe Lough [001594] (Co. Monaghan)	The site is location on the Monaghan Meath border and is fairly acid peaty lough, contrasting markedly to most of the loughs in County Meath, which are calcareous. The lough is now divided in two by a narrow strip of land covered by willow (<i>Salix</i> spp.) trees, Common Reed (<i>Phragmites australis</i>) and Alder (<i>Alnus glutinosa</i>). Around the edge is a fringe of Common Reed with some Common Club-rush (<i>Schoenoplectus lacustris</i>) and White Water-lily (<i>Nymphaea alba</i>). There is a peninsula, which cuts the lake in two, included in the site and it contains fields of wet grassland which are dominated by Soft Rush (<i>Juncus effusus</i>). The islands in the lough are covered with trees and shrubs and like the lakeshore fringed by Common Reed. They are believed to be crannógs.	6.91km
Ballyhoe Lough [001594] (Co. Meath)		6.154km
Mentrim Lough [001587] (Co. Meath)	Mentrim Lough lies approximately 3km south-east of Drumcondra in Co. Meath. The site, which consists of low hills, ridges and marshy depressions, is part of the margin of the drumlin belt, the drumlins terminating to the south at the Kells moraine. The pattern of the drumlins reflects the course of the main glacial currents during the maximum glaciation. In the north of the site is Mentrim Lough itself, by which grows Marsh Fern (<i>Thelypteris palustris</i>), a rare plant in Ireland and apparently becoming rarer.	8.957km
Breakey Loughs [001558] (Co Meath)	Breakey Loughs is a Natural Heritage Area (NHA) located 7km south-west of Kingscourt, in Co. Meath. It comprises two small lakes separated by freshwater marsh, wet woodland, cutover bog and wet grassland. The marginal grassland is used for grazing cattle.	7.81km
Ardee Cutaway Bog [001454] (Co. Louth)	This site is a cutaway raised bog, situated 3km west of Ardee in Co. Louth.	10.68km
Lough Naglack [000561] (Co. Monaghan)	This calcareous lough is situated 2km south-east of Carrickmacross in Co. Monaghan. Together with adjoining limestone grassland, calcareous marsh and mixed woodland this area supports a very	13.21km

² Where available, brief site synopses are provided for pNHA sites. These synopses are available from the NPWS (<https://www.npws.ie/protected-sites/nha>). It is noteworthy that these synopses are based in many cases on old survey data and may not accurately reflect the status of the site at the current time.

Site Name & Code	Qualifying Interests (*= priority habitats)	Distance to Site
	rich flora including Quaking-grass (<i>Briza media</i>) Pale Flax (<i>Linum bienne</i>), Common Spotted-orchid (<i>Dactylorhiza fuchsii</i>) and sedges (including <i>Carex disticha</i> , <i>Carex hirta</i> and <i>Carex rostrata</i>)	
Lough Fea Demesne [000560] Co.Monaghan)	About 1km south of Carrickmacross to the west of a road junction are two small fields of limestone grassland which are extremely rich in varieties and numbers of orchids. To the west of the grassland are Lough Fea Woods. This substantial area of mixed woodland consists mainly of magnificent Beech (<i>Fagus sylvatica</i>), about 35m in height. Also present are Ash (<i>Fraxinus excelsior</i>), Scots Pine (<i>Pinus sylvestris</i>), European Larch (<i>Larix decidua</i>), Sycamore (<i>Acer pseudoplatanus</i>) and oak (<i>Quercus</i> spp.). Further into the demesne birch trees (<i>Betula</i> spp.) and conifers replace the Beech.	12.43km
Corstown Loughs [000552] Co. Meath	Corstown Loughs occupy a scenic valley surrounded by drumlins 6km west of Ardee in Co. Meath. This Natural Heritage Area comprises a variety of habitats including medium and small sized freshwater lakes, wet woodland, cutaway bog and marginal wet grassland. The site is surrounded by rich agricultural land used for cattle grazing. The lakes are underlain by marl and have an interesting calcicole flora. Several plant species of note occur here including Lesser Bulrush (<i>Typha angustifolia</i>) which is rare and occurs mainly in the north, Tufted-sedge (<i>Carex elata</i>) which is locally frequent in the centre but rare elsewhere, and Marsh Fern (<i>Thelypteris palustris</i>) which is also listed as rare.	7.09km
Reaghstown Marsh [001828] Co. Louth	Reaghstown Marsh consists of two small areas of marsh approximately halfway between Kingscourt and Ardee, 9km from each. This previously more extensive and wetter site has been heavily affected by drainage and much of the original site is now under cultivation. The site consists of a small lake and its surrounding wetland and a larger area of willow (<i>Salix</i> spp.) scrub with a wet sedge-rich field layer. This site is of interest as an example of a freshwater marsh in an area where many of these sites have been destroyed by drainage	8.59km
Louth Hall and Ardee Woods [001616] Co. Louth	Louth Hall and Ardee Woods pNHA covers three areas of mixed, planted and semi-natural deciduous woodland to the north of Ardee in Co. Louth. This pNHA has diminished in size since it was first surveyed in 1974, due to tree felling, agricultural improvement and new housing development, but it still contains good examples of both dry and wet woodland habitats with a representative ground flora.	14.08km
Monalty Lough [001608] Co. Monaghan	Monalty Lough lies 2.5km to the west of Carrickmacross and is set in typical cattle pasture in the glacial drift of the drumlin belt, underlain by Upper limestone.	13.95km

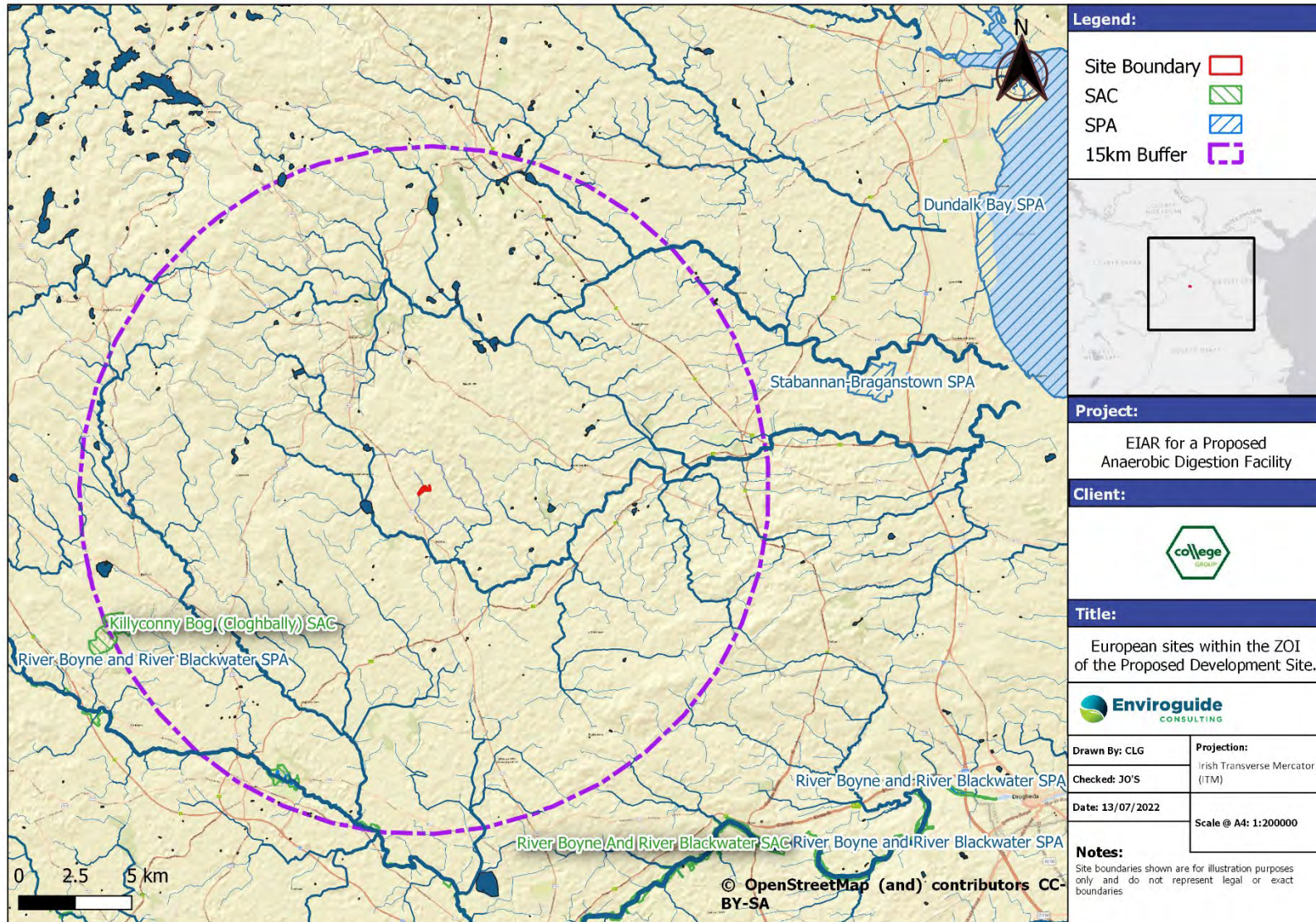


Figure 5-2: European Sites within the ZOI of the Site of the Proposed Development

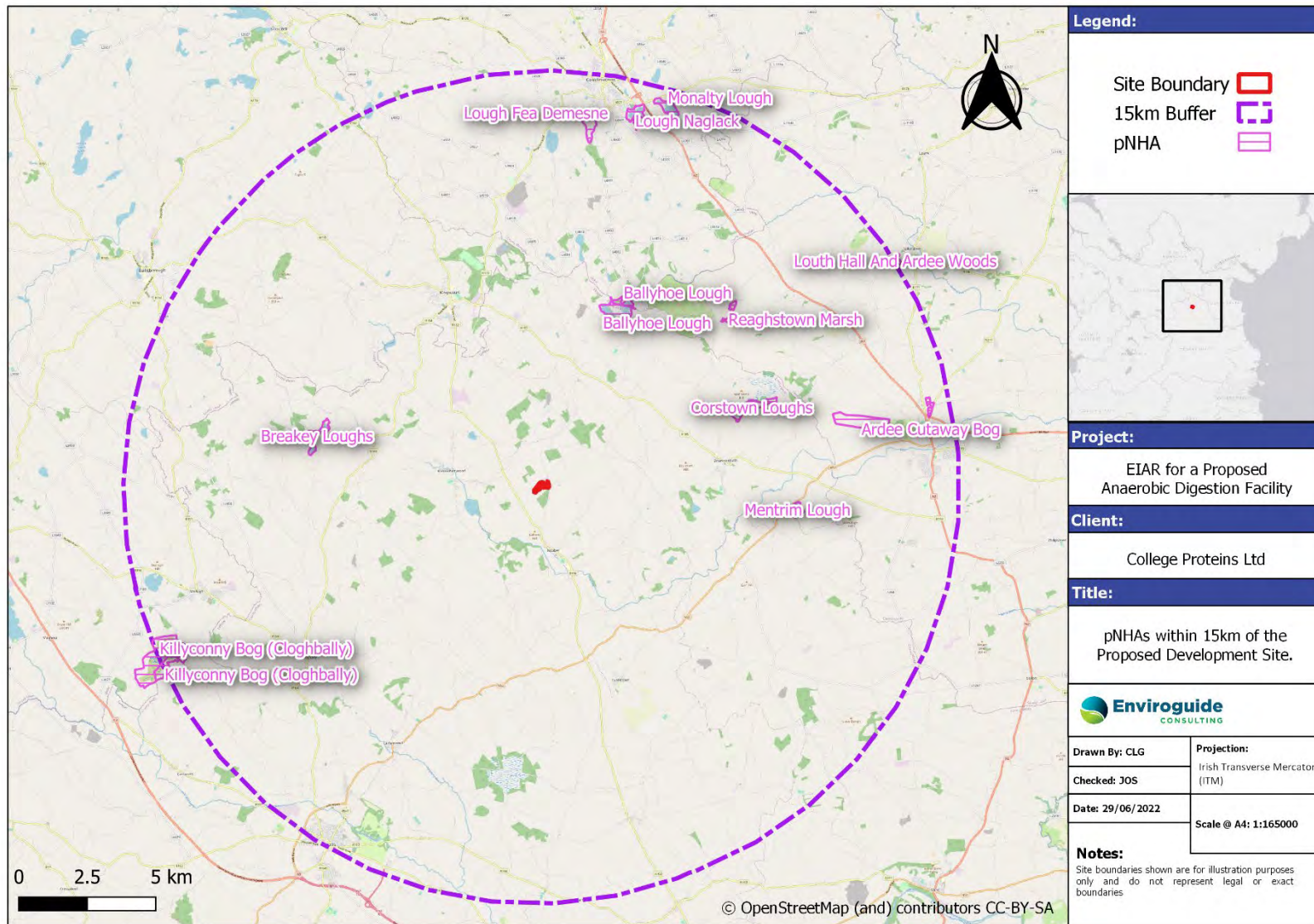


Figure 5-3: pNHAs within 15km of site of the Proposed Development

5.3.4 Habitats

The Proposed Development site is dominated by grassland habitats that are bounded by stock proof fencing, treelines, drainage ditches and streams. The area surrounding the Site of the Proposed Development predominantly characterised by agricultural land, the existing College Proteins facility and some scattered one-off dwellings.

The Proposed Development site is located within the River Dee sub-catchment (Dee_SC_010) and the Moynagh sub-basin. The Nobber Stream (EPA code: 06N09) flows along the northern and western boundaries of the project site, from east to west and then turning southwards along the western boundary. The watercourse is mapped as rising c.800m to the north of the project site. The Nobber Stream flows along the boundaries of the site after which it flows for a further c.2.4km to where it enters a second unnamed watercourse, which flows into the River Dee (06D01) after a further c.820m downstream. There is a network of drainage ditches along the multiple field boundaries within the project site, which ultimately flow into the Nobber Stream.

The habitats within the Site of the Proposed Development were coded and categorised to level 3 according to Fossitt (2000). Improved grassland was the dominant habitat present within the site. The following habitats were identified:

Table 5-7: List of habitat categories (Fossitt, 2000) recorded at the Site of the Proposed Development

Category	Code
Improved Grassland	GA1
Wet grassland	GS4
Buildings and artificial surfaces	BL3
Eroding/upland rivers	FW1
Drainage ditches	FW4
Treelines	WL2
Amenity Grassland	GA2

The following paragraphs describe the habitats within the Proposed Development Site boundary.

5.3.4.1 Improved Grassland (GA1)

This habitat type makes up almost the entirety of the western portion of the Proposed Development site. The most abundant grasses found here include: meadow foxtail (*Alopecurus pratensis*), perennial ryegrass (*Lolium perenne*) and red fescue (*Festuca rubra*). The herbaceous component is characterised by creeping buttercup (*Ranunculus repens*), white clover (*Trifolium repens*), dandelion (*Taraxacum vulgaria*), daisy (*Bellis perennis*), creeping thistle (*Cirsium arvense*), field speedwell (*Veronica persica*), thyme-leaved speedwell (*Veronica serpyllifolia*), cuckooflower (*Cardamine pratensis*), ribwort plantain (*Plantago lanceolata*), broad-leaved dock (*Rumex obtusifolius*), nettle (*Urtica dioica*) and

creeping cinquefoil (*Potentilla reptans*). There are some scattered parcels of rushes (*Juncus sp.*) within the site in the slightly wetter areas.

5.3.4.2 Wet Grassland (GS4)

Areas of wet grassland are present on in the field directly west of the existing College Proteins facility. This field is the principal construction site for the AD facility. The agricultural fields are poorly drained, due to the underlying clay soils and are dominated by rush species, namely *Juncus effusus*. At the time of the site visit, the fields were mainly dry underfoot and have been extensively overgrazed and poached by cattle. Grass species present were dominated by Yorkshire fog *Holcus lanatus*, perennial ryegrass *Lolium perenne* and cocksfoot *Dactylis glomerata*. Herbaceous species observed included broad-leaved dock *Rumex obtusifolius*, silverweed *Potentilla anserina*, ribwort plantain *Plantago lanceolata*, redleg *Persicaria maculosa*, marsh thistle *Cirsium palustre*, red clover *Trifolium pratense*, cuckooflower (*Cardamine pratensis*), meadow buttercup (*Ranunculus acris*), ribwort plantain (*Plantago lanceolata*), bush vetch (*Vicia sepium*) and common sorrel (*Rumex acetosa*).

5.3.4.3 Amenity grassland (GA2)

This habitat is located along the eastern extent of the site of the Proposed Development to the east of the existing College Proteins IE licenced facility. The habitat is landscaped and recently mown and forms part of the existing site entrance.

5.3.4.4 Eroding Upland Rivers (FW1)

The Nobber stream is located at the north and western boundary of the site. This stream is a tributary of the River Dee and joins the River Dee at [E2819838 N2890871]. The stream substrate is comprised of angular cobbles and gravels. The stream width is 30-50cm, with a depth of 2-8cm. At the time of the site visit, the stream was fast flowing and clear. No in-stream vegetation was observed. The banks of the stream were sparsely vegetated with bracken *Pteridium Aquilinum*, ivy *Hedera helix*, dog rose *Rosa canina* marsh thistle *Cirsium palustre*, and occasional marsh marigold *Caltha palustris*.

5.3.4.5 Drainage ditches (FW4)

There is a network of drainage ditches throughout the site associated with the hedgerows/Treelines. These drainage ditches were predominantly wet during the site survey and filled with decaying leaf matter though very little actual flow was noted. The ditches to the west of the Proposed AD location appear to flow both to the Nobber at the northern end and the southern end flows southwards and eastwards towards College Road. It is presumed that this drainage ditch connects with the Garmanagh stream in the east. The ditches located in the infill area of the Proposed Development all ultimately discharge into the Nobber Stream along the northern boundary of the infill area of the Proposed Development.

5.3.4.6 Treelines (WL2)

This habitat makes up the boundaries of the Site of the Proposed Development as well as the intermediate boundaries between fields within the Project site. Common species found within this habitat include ash (*Fraxinus excelsior*), hawthorn (*Crataegus monogyna*), gorse (*Ulex europaeus*), blackthorn (*Prunus spinosa*), rowan (*Sorbus aucuparia*), bramble (*Rubus fruticosus*), elder (*Sambucus nigra*), ivy (*Hedera hibernica*), herb-robert (*Geranium robertianum*), dog-violet (*Viola riviniana*), red-dead nettle (*Lamium purpureum*), cleavers

(*Galium aparine*) and nettle (*Urtica dioica*). In the shadier areas, particularly along the Nobber Stream, lesser celandine (*Ficaria verna*) and wood-sorrel (*Oxalis acetosella*) are also found.

5.3.4.7 Buildings and artificial surfaces (BL3)

The above sections describe the natural/semi-natural habitat types at the site of the Proposed Development. In addition to these, a large portion of the Site is comprised of buildings and artificial surfaces (e.g. the existing College Proteins facility).

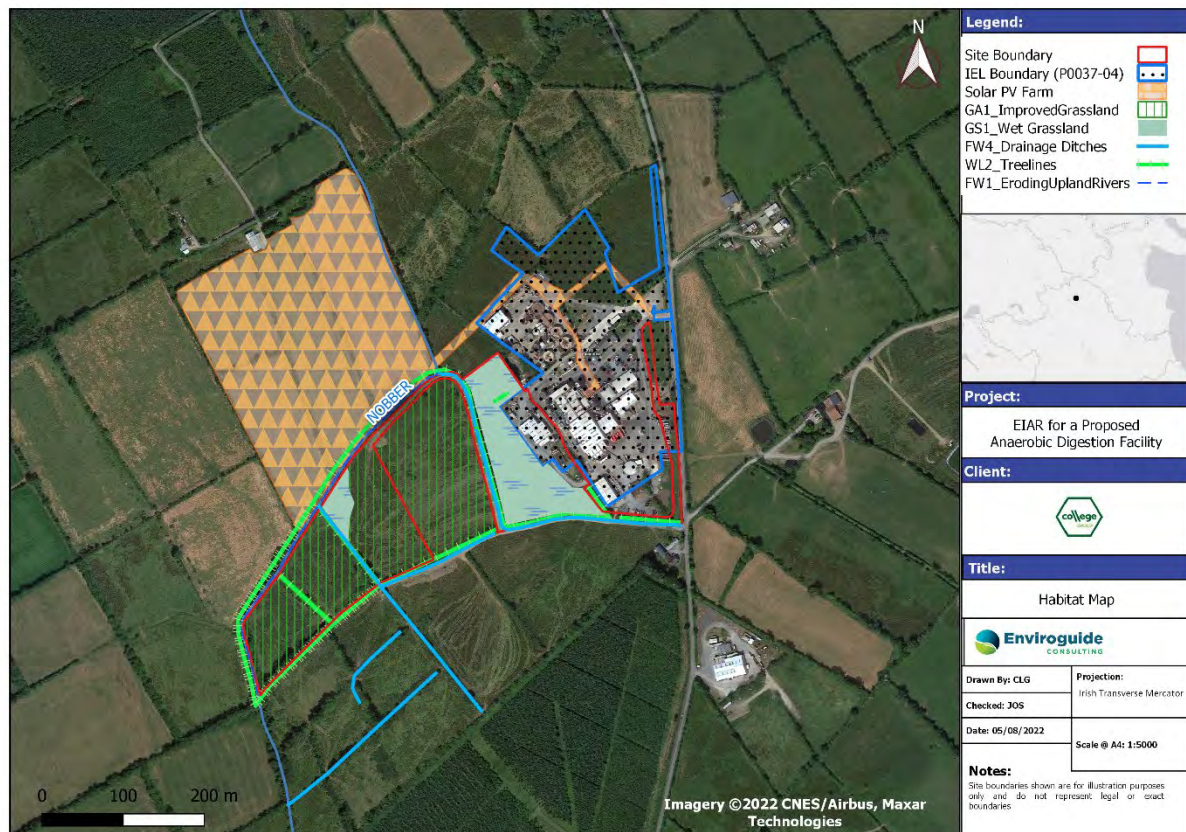


Figure 5-4: Habitat Map

5.3.5 Species and species groups

5.3.5.1 Flora

Rare and Protected Flora

The Site of the Proposed Development is located within the Ordnance Survey National Grid 10km square N88. Species records dated within the last 20 years from the National Biodiversity Data Centre (NBDC) are available online for the 10km grid square (N88), 2km grid square (N88E) and 1 km grid squares (N8188 & N8189). These records were studied for the presence of invasive, rare, or protected flora species. No rare or protected flora were identified within the 10km (N88), 2km (N88E) & 1km (N8188 & N8189) grid square records on the NBDC database. In addition, no rare or protected flora were identified at Site of the Proposed Development during onsite surveys.

The NPWS online database contains a single record of one protected flora species (Flora Protection Order (FPO), 1999) namely, Betony *Stachys officinalis*, a species of open woodland, pastures and hedgebanks. This species has been recorded at Drumconrath, 6km

to the east of the site. No suitable habitat for this species occurs within the Proposed Development site.

Invasive Species

There are records for five species of flora considered to be invasive within the 10km (N88) & 2 km (N88E) and 1km (N8188 & N8189) grid squares within which the site of the Proposed Development is located. Details of these records are listed in Table 5-8.

Four of the 5 No. invasive species recorded are designated as High Impact Invasive species and 1 species (sycamore) is designated as Medium Impact due to its common and widespread presence throughout Ireland. 3 species are listed in Schedule III of the European Communities (Birds and Habitats) Regulations 2011 (S.I. 477 of 2011, as amended).

No invasive species were listed on the 2km or 1km tetrads and no invasive species were identified at the Site of the Proposed Development during the onsite surveys.

Table 5-8: Record of invasive plant species for the 10km (N88) Grid Square

Species	Grid square	Date of last record	Source	Designations
Cherry Laurel (<i>Prunus laurocerasus</i>)	N88	01/07/2005	Species Data from the National Vegetation Database	High Impact Invasive Species
Giant hogweed (<i>Heracleum mantegazzianum</i>)	N88	01/07/2005	Species Data from the National Vegetation Database	High Impact Invasive Species Invasive Species Regulation S.I. 477 (Ireland)
Japanese Knotweed (<i>Fallopia japonica</i>)	N88	16/05/2021	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	High Impact Invasive Species Invasive Species Regulation S.I. 477 (Ireland)
Rhododendron ponticum	N88	09/06/2005	Species Data from the National Vegetation Database	Invasive Species Regulation S.I. 477 (Ireland)
Sycamore (<i>Acer pseudoplatanus</i>)	N88	01/10/2009	River Biologists' Database (EPA)	Medium Impact Invasive Species

Source: National Biodiversity Data Centre [<https://maps.biodiversityireland.ie/Map>] [Accessed 28-06-2022]

5.3.5.2 Fauna

Mammals (excl. bats)

Records for terrestrial mammals recorded in the 1km, 2km and 10km National Grid Squares were retrieved from the NBDC online database, along with records obtained from the NPWS. Table 5-9 lists these species, their date of last record and summarises their protected status.

Table 5-9: Terrestrial mammals for the 10km (N88) and 2km (N88E) tetrads.

Species	Grid square	Date of last record	Source	Designation
NATIVE				
Eurasian Badger (<i>Meles meles</i>)	N88, N88E	31/12/2015 31/12/2014	Badger Setts of Ireland Database	Protected species - Wildlife (Amendment) Act 2000 Bern Convention Appendix III
European Otter (<i>Lutra lutra</i>)	N88	12/02/2015	Atlas of Mammals in Ireland 2010-2015	EU Habitats Directive – Annex II & IV Protected species - Wildlife (Amendment) Act 2000 Bern Convention Appendix III
Irish Hare (<i>Lepus timidus</i> subsp. <i>Hibernicus</i>)	N88	15/08/2014	Atlas of Mammals in Ireland 2010-2015	Protected species - Wildlife (Amendment) Act 2000 Red Data Book – Threatened Species – Least Concern
West European Hedgehog (<i>Erinaceus europaeus</i>)	N88	14/05/2021	Hedgehogs of Ireland	Protected species - Wildlife (Amendment) Act 2000 Bern Convention Appendix III
Red Fox (<i>Vulpes vulpes</i>)	N88	15/08/2014	Atlas of Mammals in Ireland 2010-2015	
NON-NATIVE				
Eastern Grey Squirrel (<i>Sciurus carolinensis</i>)	H06	31/12/2012	Irish Squirrel Survey 2012	High Impact Invasive Species EU Regulation No. 1143/2014 Regulation S.I. 477 (Ireland)
European Rabbit (<i>Oryctolagus cuniculus</i>)	H06	16/09/2015	Atlas of Mammals in Ireland 2010-2015	Medium Impact Invasive Species

Source: National Biodiversity Data Centre [<https://maps.biodiversityireland.ie/Map>] [Accessed 28/06/2022]

Otter (*Lutra lutra*)

Otters are legally protected under the Wildlife (Amendment) Act 2000. Otters have been recorded at approximately 90% of sites within the Neagh/Bann International River Basin District, during the Otter Survey of Ireland (Bailey M., Rochford, J. 2006) and thus may use the watercourse, which forms the north and west site boundary. However, no otter spraints were found along the watercourse during the site survey. While no signs of otter were noted, it is reasonable to assume that, if present in a river system, they can exploit the entire system. So, otter may be present within the waterways surrounding the site.

Badger (*Meles meles*)

Badger is legally protected under the Wildlife (Amendment) Act 2000. They are common and widespread in Ireland and occur in lowland habitats where the soil is dry and not subject to flooding (Hayden and Harrington, 2000). No tracks, specific signs or breeding setts were found within the Proposed Development site during the site visit. However, they are likely to be present within the area surrounding the site.

Other mammals

Other mammals that are likely to occur in the vicinity of the proposed site include Rabbit *Oryctolagus cuniculus*, Fox *Vulpes vulpes*, Irish Hare *Lepus timidus hibernicus*, stoat *Mustela erminea*, hedgehog *Erinaceus europaeus*, Wood Mouse *Apodemus sylvestris*, Pygmy Shrew *Sorex minutus*. There are no records of Pine Marten *Martes martes* from the area surrounding the Proposed Development site. (Hayden and Harrington 2000).

The Site of the Proposed Development has the potential to support the following non-native/invasive species: Brown Rat *Rattus norvegicus*. The management of this nuisance species forms part of the environmental management system which is in place at the College Proteins facility.

Bats

In view of their sensitive status across Europe, all species of bat have been listed on Annex IV of the EC 'Habitats Directive and some, such as the lesser horseshoe bat, are given further protection and listed on Annex II of this Directive. The obligations of the Habitats Directive have been transposed into Irish law and combined with the Wildlife Acts 1976 to 2018, ensure that individual bats and their breeding sites and resting places are fully protected. This has important implications for those who own or manage sites where bats occur.

All bat species are protected under the Wildlife Acts which make it an offence to wilfully interfere with or destroy the breeding or resting place of these species; however, the Acts permit limited exemptions for certain kinds of development.

Records for Bat species recorded in the 1km, 2km and 10km National Grid Squares were retrieved from the NBDC online database, along with records obtained from the NPWS. Table 5-10 lists these species, their date of last record and summarises their protected status.

Table 5-10: Bat species recorded within the 1km, 2km and 10km National Grid Squares

Species	Grid square	Date of last record	Source	Designation
Daubenton's Bat (<i>Myotis daubentoniid</i>)	N88	01/09/2009	National Bat Database of Ireland	EU Habitats Directive Annex IV Protected Species Wildlife (Amendment) Acts
Brown Long eared Bat (<i>Plecotus auratus</i>)	N88	08/09/2008	National Bat Database of Ireland	EU Habitats Directive Annex IV Protected Species Wildlife (Amendment) Acts
Lesser Noctule (<i>Nyctalus Leisleri</i>)	N88	15/08/2012	Bats of Northern Ireland	EU Habitats Directive Annex IV Protected Species Wildlife (Amendment) Acts
Pipistrelle (<i>Pipistrellus</i>)	N88	12/08/2014	National Bat Database of Ireland	EU Habitats Directive Annex IV Protected Species Wildlife (Amendment) Acts

<i>pipistrellus sensu lato)</i>				
Soprano Pipistrelle (<i>Pipistrellus pygmaeus</i>)	N88	24/07/2014	National Bat Database of Ireland	EU Habitats Directive Annex IV Protected Species Wildlife (Amendment) Acts

During the ecological survey conducted within the site in 2018, 2019 and 2022, the area was examined for potential indicators of bat activity, including suitable habitat and potential roost features. There are a limited number of large mature trees present within the site boundary capable of supporting bat roosts. However, examination of these trees from the ground onsite did not uncover any noteworthy cracks, crevices or holes with potential to harbour bats, albeit this is not considered a definitive assessment. The treelines within and bounding the site are likely to support commuting and foraging bats, particularly at sections along the Nobber Stream on the northern and western boundaries and to a lesser extent along the treelines running through the fields. There are no plans to remove any boundary vegetation (hedgerows or treelines) as part of the Proposed Development. There are however two treelines located within the Infill area of the Proposed Development that will require removal.

Amphibians

Common frog (*Rana temporaria*) and smooth newt (*Triturus vulgaris*)

The European Frog *Rana temporaria* is likely to use the site and records from the 10km tetrad were available (22/03/2011) from the National Frog Survey of Ireland 2010/2011. Frogs are protected species under the EU Habitats Directive, Annex V and the Wildlife Acts as amended. A frog was identified during the field survey within the wet grassland habitats in the western portion of the Site of the Proposed Development.

There were no records for the smooth newt recorded within any of the Grid squares containing the site of the Proposed Development and there are no suitable habitats within the site of the Proposed Development to support the species.

Common Lizard (*Zootoca vivipara*)

There are no records of Common Lizard (*Zootoca vivipara*, formerly *Lacerta vivipara*) within the 10km (N88) containing the Site of the Proposed Development. However, it is not considered that this species would occupy the Site in question due to a lack of suitable habitat across an intensive agricultural/Industrial landscape.

Freshwater Species

Lamprey

The three Lamprey species that occur in Ireland are legally protected under the EU Habitats Directive, where they are listed under Annex II. There are no records of River Lamprey *Lampetra fluviatilis*, Sea Lamprey *Petromyzan marinus* or Brook Lamprey *Lampetra planeri* from the River Dee or its tributaries (NPWS records).

White-clawed Crayfish

White-clawed Crayfish *Austropotamobius pallipes* is a legally protected species under the EU Habitats Directive, where it is listed under Annex II. There were no records of this species from

local watercourses in the area in the NPWS online database. However, there are two records of this species from the River Dee (Reynolds 2007).

Salmon

Atlantic Salmon *Salmo salar* is a legally protected species under the EU Habitats Directive, where it is listed under Annex II. Atlantic Salmon is present in the River Dee, documented in the Conservation Status Report (NPWS 2007).

Birds

Records for rare/protected birds recorded in the 1km, 2km and 10km National Grid Squares were also reviewed on the NBDC online database. A total of 3 No. bird species listed on the 10km (N88) dataset have been placed on the birds of Conservation Concern Red list while a further 19 No. bird species are placed on the Amber list of the Bird of Conservation Concern. In addition, the NDBC database 10km Grid square included records of 40 No. species of common breeding birds which are considered to have stable populations. Table 5-11 lists the bird species recorded on the 2km(N88E) tetrad.

Table 5-11: Bird records for the 2km (N88E) tetrad surrounding the site

Species	Grid square	Date of last record	Source / Title of Dataset	Designation
Blackcap (<i>Sylvia atricapilla</i>)	N88E	31/12/2011	Bird Atlas 2007-2011	Green Conservation Status (BoCCI)
Eurasian Treecreeper (<i>Certhia familiaris</i>)	N88E	31/12/2011	Bird Atlas 2007-2011	Green Conservation Status (BoCCI)
European Robin (<i>Erithacus rubecula</i>)	N88E	31/12/2011	Bird Atlas 2007-2011	Green Conservation Status (BoCCI)
Dunnock (<i>Prunella modularis</i>)	N88E	31/12/2011	Bird Atlas 2007-2011	Green Conservation Status (BoCCI)
Winter Wren (<i>Troglodytes troglodytes</i>)	N88E	31/12/2011	Bird Atlas 2007-2011	Green Conservation Status (BoCCI)

Bird Survey Results

Breeding Bird Surveys

The site was surveyed on the 3rd May 2019 and also 30th June 2022 to determine the extent of breeding bird activity within the site of the Proposed Development. details of bird species identified including their conservation status is provided in Table 5-13.

In 2019, the following 12 bird species were recorded: Blackbird, Barn Swallow, Blue Tit, Chaffinch, Chiffchaff, Coal Tit, Dunnock, Great Tit, Goldfinch, Jackdaw, Robin and Rook.

In 2022, 5 No. transects were surveyed throughout the site to record all the species present. 32No. species were recorded in total. Each transect was divided up into four parts (all a similar distance) and bird species noted within each the transect. Distance brackets were also used,

however, due to the lack of suitable habitat outside of the site, the majority of species were recorded inside the site boundary and within 50 meters each side of the surveyor on each transect. Red Listed species that were found on the survey included: Meadow Pipit

Table 5-12: Breeding Bird survey results (2022)

Species	Date Surveyed	BoCCI Status	Comments
Blackbird (<i>Turdus merula</i>)	03/05/2019 30/06/2022	Green	~ Recently fledged young
Blackcap (<i>Sylvia atricapilla</i>)	30/06/2022	Green	~
Blue Tit (<i>Cyanistes caeruleus</i>)	03/05/2019 30/06/2022	Green	~ Recently fledged young
Bullfinch (<i>Pyrrhula pyrrhula</i>)	30/06/2022	Green	Recently fledged young
Buzzard (<i>Buteo buteo</i>)	30/06/2022	Green	~
Chaffinch (<i>Fringilla coelebs</i>)	03/05/2019 30/06/2022	Green	~ ~
Chiffchaff (<i>Phylloscopus collybita</i>)	30/06/2022	Green	~
Coal Tit (<i>Parus ater</i>)	03/05/2019 30/06/2022	Green	~ ~
Dunnock (<i>Prunella modularis</i>)	03/05/2019 30/06/2022	Green	~ Recently fledged young
Great Tit (<i>Parus major</i>)	03/05/2019 30/06/2022	Green	~ ~
Goldcrest (<i>Regulus regulus</i>)	30/06/2022	Amber	Recently fledged young
Goldfinch (<i>Carduelis carduelis</i>)	03/05/2019 30/06/2022	Green	~ ~
Hooded Crow (<i>Corvus corone</i>)	30/06/2022	Green	~
House Martin (<i>Delichon urbicum</i>)	30/06/2022	Amber	~
House Sparrow (<i>Passer domesticus</i>)	30/06/2022	Amber	~
Jackdaw (<i>Corvus monedula</i>)	03/05/2019 30/06/2022	Green	~ ~
Lesser Redpoll (<i>Acanthis flammea</i>)	30/06/2022	Green	~
Linnet (<i>Carduelis cannabina</i>)	30/06/2022	Amber	Recently fledged young
Magpie (<i>Pica pica</i>)	30/06/2022	Green	~
Meadow Pipit (<i>Anthus pratensis</i>)	30/06/2022	Red	~
Mistle Thrush (<i>Turdus viscivorus</i>)	30/06/2022	Green	~
Pied Wagtail (<i>Motacilla alba yarrellii</i>)	30/06/2022	Green	Recently fledged young
Robin (<i>Erithacus rubecula</i>)	03/05/2019 30/06/2022	Green	~ Recently fledged young

Species	Date Surveyed	BoCCI Status	Comments
Rook (<i>Corvus frugilegus</i>)	03/05/2019 30/06/2022	Green	~ Recently fledged young
Spotted Flycatcher (<i>Muscicpa striata</i>)	30/06/2022	Amber	~
Starling (<i>Sturnus vulgaris</i>)	30/06/2022	Amber	Recently fledged young
Stonechat (<i>Saxicola torquatus</i>)	30/06/2022	Green	Recently fledged young
Song Thrush (<i>Turdus philomelos</i>)	30/06/2022	Green	Recently fledged young
Swallow (<i>Hirundo rustica</i>)	03/05/2019 30/06/2022	Amber	~ ~
Treecreeper (<i>Certhia familiaris</i>)	30/06/2022	Green	~
Woodpigeon (<i>Columba palumbus</i>)	30/06/2022	Green	~
Wren (<i>Troglodytes troglodytes</i>)	30/06/2022	Green	Recently fledged young

The hedgerows within and bounding the site offer nesting and foraging habitat for a range of common countryside birds. The removal of any of this vegetation, if required, must be completed outside the main bird nesting season, i.e. 1st March to 31st August.

5.3.6 Habitat Evaluation

The habitats recorded during the field survey are evaluated below for their conservation importance using the evaluation scheme adapted from NRA (2009) and IEEM (2018) guidelines. Those habitats selected as key ecological receptors are those which are evaluated to be of at least local importance (higher value). Table 5-14 illustrates the evaluation rating given to each habitat. The rationale behind these evaluations is also provided.

Table 5-13: Selection of Key ecological receptor (KER) habitats with rationale for evaluation

Habitat (code)	Rating	Rationale	KER
Improved Grassland	Local importance (lower value)	Fields poached by cattle and machinery tracking.	No
Wet Grassland (GS4)	Local importance (lower value)	Fields poached by cattle and machinery tracking.	No
Amenity Grassland (GA2)	Local importance (lower value)	Frequently landscaped and mown.	No
Buildings and artificial surfaces (BL3)	N/A	Highly managed industrial areas with a low biodiversity value. Artificial habitat. Lack of significant intrinsic ecological value.	No
Eroding/Upland (FW1)	Local importance (higher value)	Second order stream whose water quality has been compromised by grazing along banks.	Yes
Drainage ditches (FW4)	Local importance (low value)	Turbid and stagnant. Shows signs of infilling by vegetation.	No

Habitat (code)	Rating	Rationale	KER
Treelines (WL2)	Local importance, (higher value)	Dominated by ash, bramble, hawthorn, gorse and holly. Good nesting habitat for breeding birds and good foraging habitat for birds and mammals	Yes
Spoil and bare ground (ED3)	Local importance (lower value)	Man-made habitat of low biodiversity value.	No

5.3.6.1 Fauna Evaluation

Non-avian and avian fauna have been evaluated below for their conservation importance based on the evaluation scheme based on NRA and CIEEM guidelines. Those selected as key ecological receptors are those which are evaluated as being species:

- of at least local importance (higher value) Red-listed and Amber-listed bird species which were recorded during the site surveys or for which records are retained by NPWS, BCI or at the NBDC and;
- for which suitable habitat is available.

Table 5-15 illustrates the evaluation rating given to each species. The rationale behind these evaluations is also provided. The impacts of the Proposed Development, on species selected as key receptors are assessed in section 5-4.

Table 5-14: Evaluation of Fauna recorded within the Surrounding area of the Site of the Proposed Development.

Species	Evaluation	Rationale	KER
Badger (<i>M. meles</i>),	National importance	None observed, but likely to be present at the site. Recorded by NBDC within 10km of the proposal site	Yes
Otter (<i>L.lutra</i>)	International importance	The conservation value of the Irish population. Presence of stream on site Recorded within the Neagh/Bann International River Basin District	Yes
Red fox (<i>Vulpes vulpes</i>)	Local importance (higher value)	Red foxes are not considered endangered in Ireland or in the rest of Europe	No
Common and soprano pipistrelle (<i>P. pipistrellus</i> and <i>P.pygmaeus</i>)	National Importance	Recorded within site during 2008 surveys	Yes
Leisler's bat (<i>N. leisleri</i>).	Important internationally as the Irish population is the largest population in Europe	Recorded within site during 2008 surveys	Yes
White-clawed Crayfish (<i>Austropotamobius pallipes</i>)	Important internationally	Recorded within the River Dee and within the Clegg Stream	Yes
Salmon (<i>Salmo salar</i>)	National Importance	Recorded within the River Dee	Yes
Common Frog (<i>Rana temporaria</i>)	Local importance (higher value)	Recorded within the site during 2022 survey Frogspawn recorded within the site during 2016 survey	Yes
Meadow Pipit (<i>Anthus pratensis</i>)	Individuals observed during survey periods or evidence of presence on site recorded. Some suitable breeding and/or foraging habitat at the site	Recorded within site during 2016, 2019 & 2022 surveys	Yes
Goldcrest (<i>Regulus regulus</i>) House Martin (<i>Delichon urbicum</i>) House Sparrow (<i>Passer domesticus</i>) Linnet (<i>Carduelis cannabina</i>) Spotted Flycatcher (<i>Muscicapa striata</i>) Kestrel (<i>Falco tinnunculus</i>) Starling (<i>Sturnus vulgaris</i>) Swallow (<i>Hirundo rustica</i>)	Individuals observed during survey periods or evidence of presence on site recorded. Incidental flyover during survey periods. Some suitable breeding and/or foraging habitat at the site	Recorded within site during 2016 & 2022 surveys	Yes

5.4 Characteristics of the Proposed Development

5.4.1 Site Location

The Site is approximately 5.31 hectares (Ha) and can be accessed from the southwest via the R162, or from the northeast via the R165 and is accessed off College Road which adjoins the eastern boundary of the Site.

The site is located at an altitude of between 87m OD to the south of the plant to 92m OD to the northwest. The lands surrounding the site are dominated by drumlins. These drumlins reach elevations of 100m and are generally small, approximately 200m in length, with a moderate gradient to the southeast. These lands are currently under agricultural use, grazed by cattle and sheep and are undeveloped. The Nobber stream flows beneath a treeline along the northern and western boundary of the site.

5.4.2 Existing General Description

The Proposed Development comprises the following:

- The proposed AD plant area which comprises an open field adjoining the existing facility and an existing garage and old concrete tank located within the existing facility.
- The proposed infill area comprises three (3No.) open fields separated by field boundaries located approximately 0.17km west of the existing facility.
- The proposed AD plant area and proposed infill area are connected via an existing access track.

5.4.3 Proposed Project Description

The Applicant proposes to construct an Anaerobic Digestion (AD) Facility to produce green Biogas which will off-set the use of fossil fuels on-site and reduce the company's carbon footprint. The biogas produced from the AD Facility can be used in the on-site steam boilers and Combined Heat and Power (CHP) plants to generate steam and electricity to run the production facilities on-site.

The Proposed Development will consist of the demolition of an existing garage and the provision of an Anaerobic Digestion Facility with an intake of up to 50,000 tonnes of organic feed-stock material per annum. The Facility will comprise a waste reception building (incorporating workshop, control room and welfare facilities), 2 No. digester tanks, 2 No. digestate storage tanks, glycerine tank, buffer tank, pasteuriser tank, 4 No. liquid reception tanks; all of the above tanks located within a fully bunded concrete area; associated biofilter, gas flare, biogas combined heat and power plant, internal access roads, weighbridge, truck loading area and soil deposition area. The Proposed Development will also include all associated site development, drainage and infrastructure works above and below ground. The maximum height of the Proposed Development is the chimney stack associated with the biofilter at c. 18m above ground level.

The Existing and Proposed Site Layouts are presented in Figures 5-5 and 5-6.

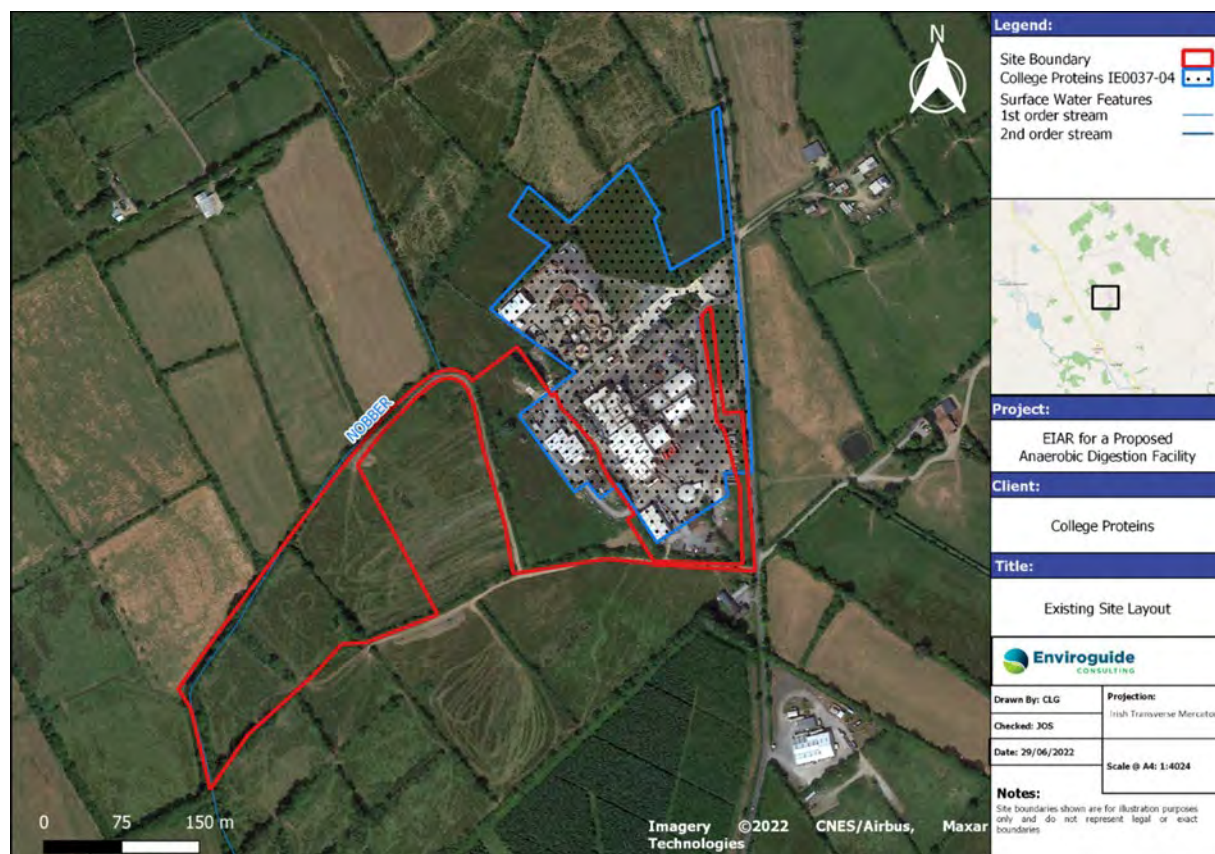


Figure 5-5: Existing Site Layout

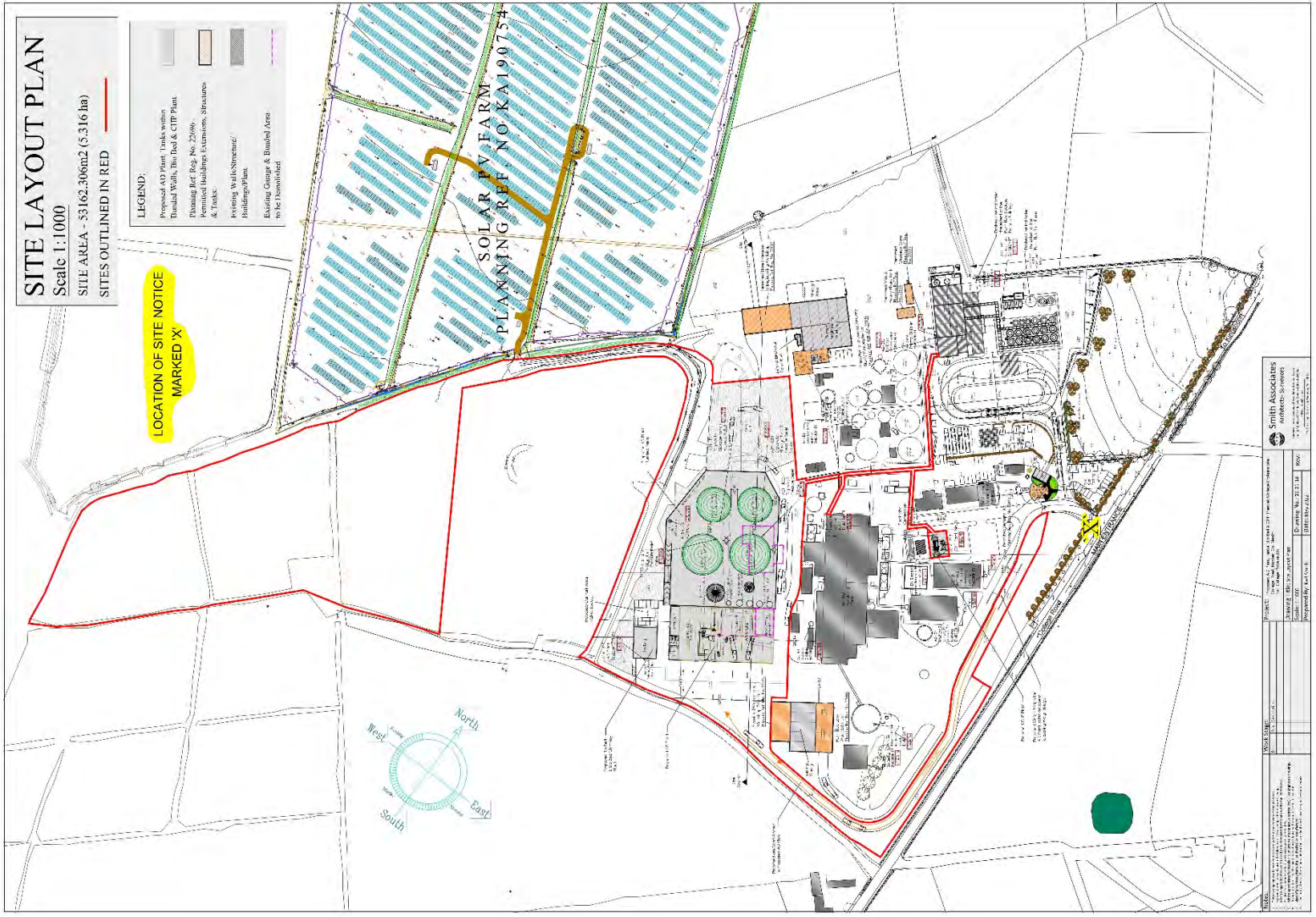


Figure 5-6: Proposed Site Layout

5.4.4 Construction Phase

The Construction Phase for the Proposed Development will involve the demolition of the existing workshop and concrete tank and the removal of soil from the site of the Proposed Development, the removal of the drainage ditch and treelines within the infill area, the construction of the Anaerobic Digestion plant and raising the level of land in the infill area with the excavated soil. The Construction Phase will last approximately 12 months and will comprise the following:

Phase 1 – The existing building garage and concrete tank on site will be demolished. The garage currently used for maintaining College Proteins vehicles has a floor area of 545.67m² and the building is 8.3 meters to the apex. The building is constructed from concrete, steel and Kingspan sheeting. The Kingspan sheeting, purloins and steel work will be carefully removed and stored to be re-used on other buildings in future projects. The concrete tank (bund area) has never been in use, therefore there is no chance of any soil contamination under this tank. This has a floor area of 178.79m² and a wall height of 2 meters. The concrete floors and walls of the existing building garage and concrete tank (totalling approx. 840m³ volume) will be removed off site for disposal in a licenced facility. The gravel from the yard surrounding the garage and concrete tank will be dug up and kept to one side pending testing for contamination and then will be re-used as filling on site if it is suitable. If not, the material will be treated in an authorised facility. The garage & concrete tank bund are detailed on drawing No. 21-21-23 attached in Appendix A.

Phase 2 – The soil (77,804.15m³) will be removed from the Site and will be infilled to fields to the west of the site. Ref. drawing 21-21-18 in Appendix A. A new weighbridge will be installed beside the existing rendering weighbridge, this will be separated with a fence and signage to direct traffic on site. There will be a new two-way road constructed on site separated from the rendering plant with a fence to access the proposed AD plant area. 21,500 tonnes approx. of stone filling and concrete will be brought to the site to create a base for building the road, yard, tank foundations, walls of the reception hall and AD tanks and bunded walls.

Phase 3 - The AD plant intake buildings, tanks, bund wall and road will be constructed. The intake building will be of steel frame construction, shuttered concrete walls, olive green insulated Kingspan sheeting and purloins. The olive green sheeting was selected to blend the colours into the agricultural surroundings around the site and therefore cause less visual impact. The AD tank bund will be a concrete wall construction with a concrete floor, the roadway to the plant will be a constructed from concrete. The intake tanks and glycerine tank will be constructed from stainless steel. The buffer tank, digesters and digestate storage tanks will be constructed from concrete. The pasteurisation tank will be constructed from glass lined steel.

The Proposed Development comprises of:

- Anaerobic Digestion (AD) Plant Reception building (food waste reception)
- Reception hall for solid feedstock (silage & Maize)
- Borger Fibre separation for digestate
- Workshop
- Office, control room, toilets and changing rooms
- Biobed

- 4 No. Liquid reception tank- 113m³ tanks
- 1 No. Glycerine tank- 78m³
- 1 No. Buffer tank – 983m³
- 1 No. Pasteurisation tank - 247m³
- 2 No. Digesters - 3682m³
- 2 No. Digestate Storage tanks – 2500m³
- Gas Flare
- Biogas Combined Heat and Power (CHP) Plant

Refer to Site Layout Plan drawing 21-21-14 in Appendix A.

Phase 4 – The fields where the soil will be deposited will be re-seeded and planted with grass and returned to agricultural use. Please see filling area on drawing ref. 21-21-18 in Appendix A.

The foundations for the main digester yard area will be on a raft foundation while the AD intake building will be on shallow strip foundations with no requirement for piling.

It is estimated by the Applicant that the Proposed Development will require the excavation of 77,804.15m³ of soil for the construction of foundations, to depths of up to 7.0mbGL. This includes an estimated 4,920m³ of soil excavated to depths of up to 2.0mbGL for the construction of the access road, surface water and foul water drainage, including attenuation tanks, and other infrastructure.

It is anticipated that all soil excavated during the Construction Phase will remain onsite to be infilled within the undeveloped lands in the west of the Site subject to assessment of the suitability for use in accordance with engineering and environmental specifications that will be determined as part of the detailed design.

The proposed infilling at the Site will be undertaken in three phases (i.e., Area 1 through Area 3). Filling operations will be confined to a selected area of the Site at any one time with each area being restored in a timely manner from commencement of the next phase. In stream works will be required to remove and divert the drainage ditch located in the footprint of the infill area (See Figure 5-7)

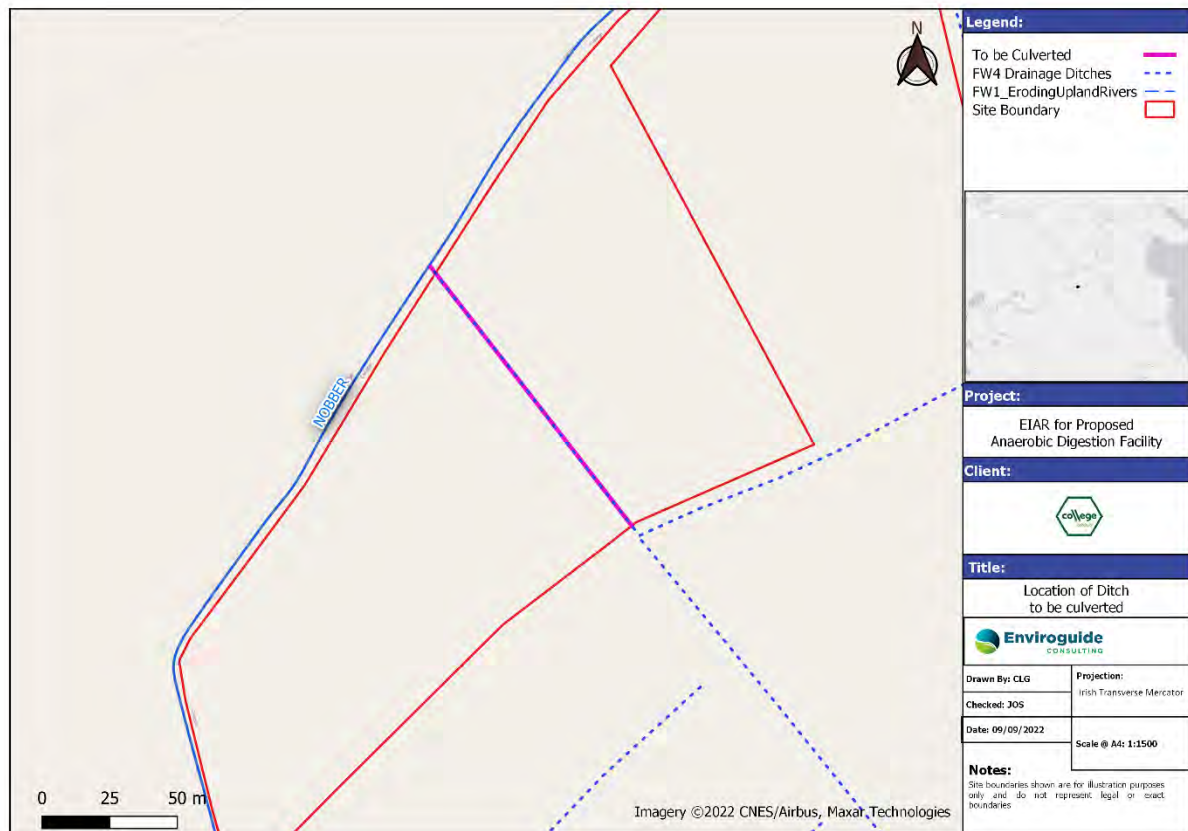


Figure 5-7: Location of drainage ditch to be culverted

The drain is dry during the summer months. See Photo below:



Photo 5-1: Field Drain to be culverted prior to Infilling works.

Foul water drainage infrastructure from toilets and showers will be constructed within the Proposed Development with connections for discharge to the WWTP at the existing facility;

Foul water drainage from potential spill areas from the bunded area and loading areas of the Proposed Development will be collected and pumped into the AD plant.

During the Construction Phase, there will be no direct discharge of surface water runoff from the construction works area to groundwater, surface water courses or drainage infrastructure at the existing facility. Any surface water generated during the Construction Phase will need to be diverted and pumped to a temporary settlement pond for retention prior to discharge to the Nobber stream

Surface water runoff from the operational areas of the existing facility will continue to discharge to the existing surface water drainage channels at emission points SW1.

Details of the existing ground level, the proposed change in elevation and the final cut and fill volumes are detailed in Figure 5-7 (Smith Associates Architects - Surveyors, July 2022. Site Layout Plan (Drawing No. 21-21-18)).

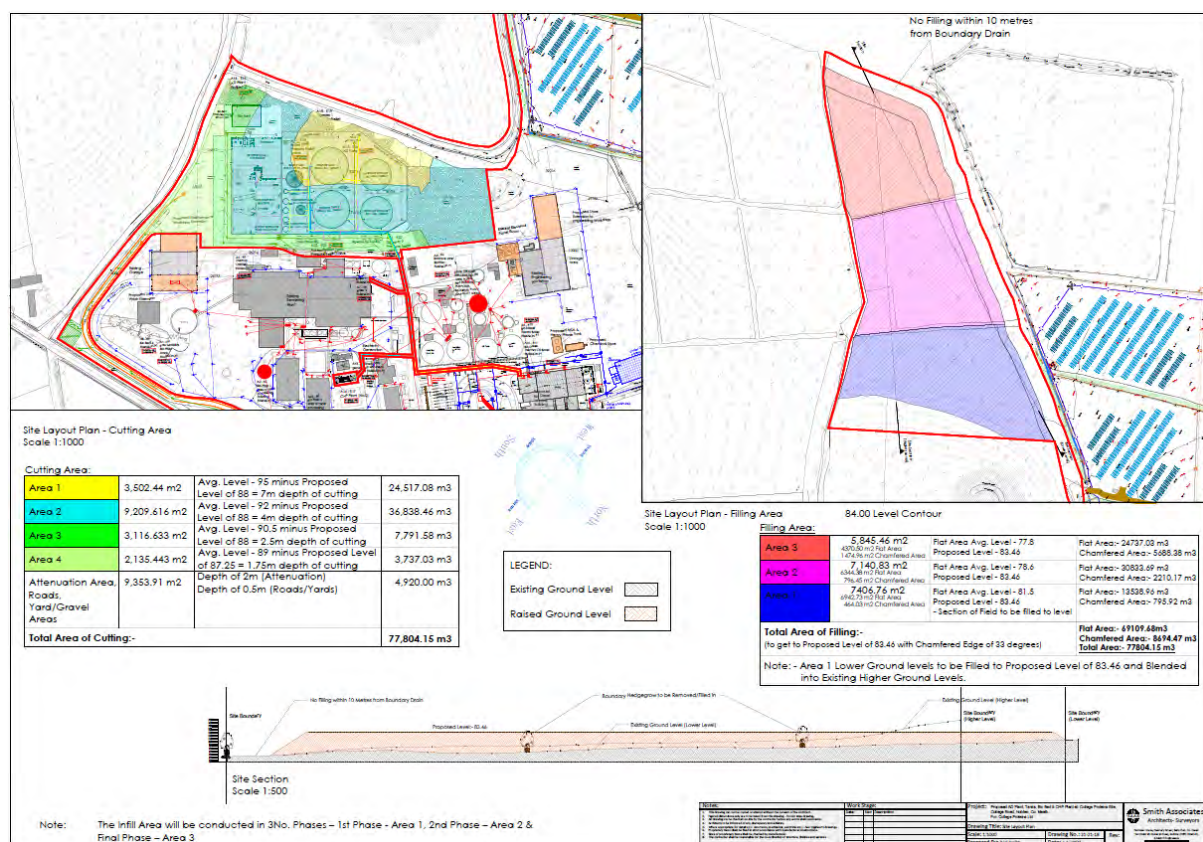


Figure 5-8. Proposed Cut / Fill Volumes

Once the proposed infilling works are complete, the surface will be reseeded with grass and the land use returned to agricultural lands (i.e., grazing of sheep / cattle).

It is estimated by the Applicant that the importation of 10,000m³ of aggregate fill materials will be required for the construction of the Proposed Development (e.g., granular material beneath road pavement, construction of building and tank foundations and for drainage and utility bedding / surrounds etc.).

Where required, fuels will be stored in appropriate bunded, integrity tested tanks, in accordance with conditions of the IE Licence (IE Licence No. P0037-04) and Emergency Management System (EMS) for the existing facility.

The existing welfare facilities at the Site will be available for the duration of the Construction Phase.

5.4.5 Operational Phase

The existing facility will continue to operate as an animal by-product rendering plant, a biodiesel production facility and a solar farm, with the addition of an anaerobic digestion facility. The existing facility is currently operational under IE Licence (P0037-04) and Greenhouse Gas Permit (GHG Permit) No. IE-GHG123-10405-03.

An application for a review of the existing IE License will be made to the Environmental Protection Agency as the introduction of an anaerobic digestion facility will result in changes to the environmental emissions from the facility. The GHG Permit may also need to be revised, and the EMS will be updated accordingly.

The Proposed Development will be operated in accordance with the requirements of the planning grant conditions and updated requirements of the reviewed IE Licence, GHG Permit, EMS and Safety Report for the facility.

5.5 Potential Impact of the Proposed Development

5.5.1 Construction Phase Impacts

The Construction Phase will involve the construction of the AD facility and backfilling of the excavated soils to the infill area. It will result in the excavation of volumes of soil and stones and the transfer of this material from the AD construction area to the grassland on the western end of the site. This material will be used as infill on the western area of the site. In total 77,804m³ of soil and stones is projected to be removed to the infill area.

The two treelines currently separating the farmland in the infill area will require removal to facilitate the Proposed Development. In addition, the drainage ditch which currently runs beneath the central treeline will need to be culverted/diverted.

5.5.1.1 Designated Sites

Table 5-15: Sites of National and International Importance selected for impact assessment

Site Name & Code	Feature of interest	Distance to Site
River Boyne and River Blackwater SAC [002299]	Alkaline fens, Alluvial forests	13.36km
Killyconny Bog (Cloghbally) SAC	Raised Bog	13.91km
Dundalk Bay SAC	Estuaries; Mudflats and sandflats; Perennial vegetation of stony banks; Salicornia and other annuals colonizing mud and sand; Atlantic salt meadows (Glaucopuccinellietalia maritimae); Mediterranean salt meadows (Juncetalia maritimi)	>40km Downriver

Site Name & Code	Feature of interest	Distance to Site
Dundalk Bay SPA	Wintering birds	>40km Downriver
River Boyne and River Blackwater SPA	Kingfisher (<i>Alcedo atthis</i>) [A229]	13.58km
Ballyhoe Lough [001594] (Co. Monaghan)	Lake	6.91km
Mentrim Lough [001587] (Co Meath)	Lake	8.957km
Breakey Loughs [001558] (CoMeath)	Lake	7.81km
Ardee Cutaway Bog [001454] (Co Louth)	Raised Bog	10.68km
Lough Naglack [000561] (Co Monaghan)	Lake	13.21km
Lough Fea Demesne [000560] Co Monaghan)	Lake	12.43km
Corstown Loughs [000552] Co Meath	Lake, wet woodland, cutaway bog	7.09km
Reaghstown Marsh [001828] Co Louth	Marsh	8.59km
Louth Hall and Ardee Woods [001616] Co Louth	Planted & semi-natural deciduous woodland	14.08km
Monalty Lough [001608] Co Monaghan	Lake	13.95km

With regard to the sites listed in Table 5-16, it is considered that they are outside the potential zone of impact influence of the Construction Phase of the Proposed Development, and it is considered that no significant plausible potential impact pathway connects them to the location of the Proposed Development. It is concluded that no significant adverse impacts ensuing from the Construction Phase of the proposal on these sites are reasonably foreseeable.

5.5.1.2 Habitats

Construction impacts on the habitats selected as key ecological receptors are summarised in Table 5-17. The following habitats will be lost as a result of the Proposed Development: wet and improved grassland habitats, treelines located in the western portion of the site earmarked for infilling as well as the associated drainage ditches located beneath these treelines. The grassland habitats are modified and semi-natural reflective of the agricultural activities carried out at the site. Similar habitats are dominant in the areas surrounding the site of the Proposed Development.

The potential significant impacts of the Proposed Development on aquatic ecology (without mitigation) are summarised as follows:

Pollution of watercourses with suspended solids, due to runoff of soil from construction areas

In the absence of adequate mitigation measures, contamination of watercourses with suspended solids may have the potential to impact on aquatic flora and fauna within the waterways, downstream of the proposed site.

Pollution of watercourses, during Construction Phase, with other substances such as fuels, lubricants, concrete, waste concrete, wastewater from wash facilities, etc

Table 5-16: Summary of unmitigated construction on habitats

Habitat	Evaluation	Construction impact	Significance of Impact	Duration	Reversibility	Timing / Frequency	Positive/ Negative
Eroding Upland Rivers (FW1)	Local importance (higher value)	Adverse water quality impacts due to: -Ingress of sediments into stream from earthworks, ground disturbance, and movement of machinery and vehicles. -Fuel or oil spill -other pollutants e.g. cement materials.	Significant	Temporary	Possible	Fish spawning period.	Negative
Drainage Ditches FW4	Local importance (lower value)	Adverse water quality impacts due to: -Ingress of sediments into stream from earthworks, ground disturbance, and movement of machinery and vehicles. -Fuel or oil spill -other pollutants e.g. cement materials.	Significant	Temporary	Possible	Fish spawning period.	Negative
Treelines (WL2)	Local importance, (higher value)	Some habitat loss or alteration expected.	Significant	Long term	Reversible	Bird breeding period	Negative

Habitat	Characterisation of unmitigated impact on the feature	Potential significance without mitigation and confidence levels
Eroding Upland Rivers (FW1)	Risk of pollution from sediment and other pollutant run-off from development footprint during the Construction Phase.	It is probable that the impact will be significant and temporary
Drainage Ditches (FW4)	Risk of pollution from sediment and other pollutant run-off from development footprint during the Construction Phase.	It is probable that the impact will be significant and temporary
Treelines (WL2)	Removal of vegetation will impact on breeding birds and foraging mammals including bats and birds	It is probable that the impact will be significant and temporary

5.5.1.3 Fauna

The potential impact of the Proposed Development on fauna may be considered as:

- Loss of habitats / Alteration of habitats;
 - Potential impairment of water quality due to construction and demolition works; and
 - Disturbance and/or displacement of fauna.
- Disturbance and displacement of fauna may occur during the Construction Phase due to the operation of vehicles, presence of staff, excavations etc.

Habitat Loss or Alteration

The main impacts on flora and fauna will arise when the site is subject to ground clearance and removal of vegetation. There will be no impacts on any designated areas.

Non-avian fauna

It is expected that the loss of habitat that will result from the Proposed Development will have a slight impact on non-avian species selected. The habitat loss will be confined to areas of grassland. Similar habitat of equivalent ecological value is widely available within and adjacent to the Proposed Development site.

Avian fauna

It is not expected that the Proposed Development will cause any reduction in the baseline population of passerines, as there is ample alternative nesting/foraging habitat remaining on the perimeter of the site and in the surrounding environment.

Potential impairment of water quality due to construction works

There is the potential that aquatic habitats within the Nobber and Garmanagh streams associated with the site may be altered as a result of pollutants and/or sediment entering these systems during the Construction Phase. These activities could be *negative, significant* and *temporary* in nature. Mitigation measures to avoid and control these potential impacts are discussed and assessed in Section 5.6.

Displacement and/or disturbance to avian and non-avian fauna

Disturbance to breeding, sheltering or foraging species of fauna, by human activity and the operation of machinery is a potential impact during the Construction Phase. Work taking place during the summer months could cause disturbance to fauna locally and could lead to temporary displacement of some species from the site during construction. It is expected that this effect would be *neutral, imperceptible, short-term*, and localised and would not extend beyond the Construction Phase. These conclusions apply similarly to avian species.

Table 5-17: Summary of unmitigated Construction Phase impacts on KER Species

Fauna	Evaluation	On site residency status	Description of Construction Impact	Significance	Duration	Reversibility	Positive/Negative
Badger	Nationally important	Potential to be present all year round.	Slight disturbance from construction and occasional human/vehicle activity.	Slight impact	Temporary	Construction Phase impacts will cease at end of phase	Negative
Otter	Internationally important	Potential to be present all year round.	Slight disturbance from construction and occasional human/vehicle activity.	Slight impact	Temporary	Construction Phase impacts will cease at end of phase	Negative
Bats	Internationally important	Peak activity period May – September.	There will be minimal loss of potential foraging habitat within the site. However, this loss of habitat is not considered to be significant, given the availability of extensive foraging habitat outside the site. Some noise and anthropogenic disturbance during construction may occur	Slight impact	Temporary	Construction Phase impacts will cease at end of phase. Foraging potential will not be impaired	Negative
White-clawed Crayfish	Internationally important	Potential to be present all year round.	Runoff to watercourse during Construction Phase	Slight impact	Temporary	Construction Phase impacts will cease at end of phase	Negative
Salmon	Internationally important	Potential to be present during the spawning period	Runoff to watercourse during Construction Phase	Slight impact	Temporary	Construction Phase impacts will cease at end of phase	Negative
Meadow Pipit	Red Listed species	Individuals observed during survey periods or evidence of presence on site recorded. Suitable breeding and/or foraging habitat at the site	Slight disturbance from construction and occasional human/vehicle activity if birds are present	Slight impact	Temporary	Construction Phase impacts will cease at end of phase	Negative

Fauna	Evaluation	On site residency status	Description of Construction Impact	Significance	Duration	Reversibility	Positive/Negative
Goldcrest House Martin House Sparrow Linnet Spotted Flycatcher Kestrel Starling Swallow	Amber Listed species	Individuals observed during survey periods or evidence of presence on site recorded. Incidental flyover during survey periods. Suitable breeding and/or foraging habitat at the site	Slight disturbance from construction and occasional human/vehicle activity if construction takes place during the breeding season	Low	Temporary	Construction Phase impacts will cease at end of phase	Negative

Fauna	Characterisation of unmitigated construction impact on the feature	Significance without mitigation and confidence levels
Badger	There will be some loss of potential foraging habitat as a result of the proposed development. However, this loss of habitat is not considered to be significant, given the availability of extensive foraging habitat outside the site. Some disturbance during the Construction Phase of the development.	It is probable that the impact will be slight and temporary
Otter	There is the potential, without mitigation, for sediment and pollutants entering the stream and waterways within the site, to be washed downstream, reducing water quality within the section of the stream where otter forage. An increase in sediment and pollutants entering the stream could potentially lead to an impact on aquatic species of prey which otter feed upon.	It is probable that the impact will be slight and temporary.
Bats	There may be minimal loss of potential foraging habitat within the site. However, this loss of habitat is not considered to be significant, given the availability of extensive foraging habitat locally. Some noise and anthropogenic disturbance during construction may occur	It is probable that the impact will be slight and temporary
Birds	There will be minimal loss of potential foraging or breeding habitat within the site. However, this loss of habitat is not considered to be significant, given the availability of extensive foraging habitat outside the site and the low occurrence of species of conservation concern. Some noise and anthropogenic disturbance during construction may occur	It is probable that the impact will be slight and temporary.
White-clawed Crayfish	There is the potential, without mitigation, for sediment and pollutants entering the stream and waterways within the site, to be washed downstream, reducing water quality within the section of the stream. An increase in sediment and pollutants entering the stream could potentially lead to an impact on aquatic species.	It is probable that the impact will be slight and temporary
Salmon	There is the potential, without mitigation, for sediment and pollutants entering the stream and waterways within the site, to be washed downstream, reducing water quality within the section of the stream. An increase in sediment and pollutants entering the stream could potentially lead to an impact on aquatic species.	It is probable that the impact will be slight and temporary

5.5.2 Operational Phase Impacts

The operation of the facility will not involve any new point water source discharges and there will be no other material releases that would cause adverse impacts on surface waters.

5.5.2.1 Habitats

Water quality impacts are not expected to be of significance during Operational Phase of the facility.

The Water Quality Control Measures (see section 5.6.2, 5.6.2.5, 5.6.2.6) will still be active at the early stages of the Operational Phase when exposed soils are re-vegetating; therefore, it is unlikely that any negative impact to receiving water quality in rivers and streams may occur due to the ingress of sediments. No further potential impact to habitats is expected during the Operational Phase of the facility.

5.5.2.2 Fauna

Non-Avian Fauna

No impacts to the mammals selected for impact assessment are expected during the Operational Phase.

Avian Fauna

It is not expected that the Proposed Development will cause any reduction in the baseline population of passerines, as there is ample alternative nesting/foraging habitat remaining on the perimeter of the site and in the surrounding environment. Replanting of boundary vegetation will take place in areas where the continuity of the boundary vegetation was disturbed during the Construction Phase.

5.5.3 Conclusion

It is considered highly likely that once the Construction Phase of the Proposed Development has been completed, all terrestrial fauna will utilise all habitats within and around the site, within a short period of time. Given the habitats that will be impacted and the nature and scale of the expected alteration to them, it is expected that no significant change from the current situation will result for the species considered to be key ecological receptors.

Table 5-18: Ecological Impact on KER species during the Operational Phase of the Proposed AD facility (without mitigation)

Fauna	Description of unmitigated operational impact	Duration	Significance	Reversibility	Timing / Frequency	Positive/Negative
Badger	No impact is envisaged during the Operational Phase of the Proposed Development. The potential disturbance, due to an increase in human activity associated with the operations and maintenance is considered to be negligible.	Temporary	Slight	Reversible	Likely to be resident all year round.	Negative
Otter	During the initial Operational Phase/until the exposed areas are re-vegetated, there is the potential, without mitigation, for sediment and pollutants to enter the stream within the site, washing downstream and reducing water quality within the sections of the streams where otter forage. An increase in sediment and pollutants entering these streams could potentially lead to an impact on aquatic species of prey, which otter feed upon.	Temporary	Slight	Reversible	Likely to be present on waterways all year round.	Negative
Bats species	No impact is envisaged during the Operational Phase of the Proposed Development. The potential disturbance, due to an increase in human activity associated with the operation and maintenance, is considered to be negligible.	Temporary	Slight	Reversible	Bats are active during the summer (May-Sept).	Negative
White-clawed Crayfish	During the initial Operational Phase/until the exposed areas are revegetated, there is the potential, without mitigation, for sediment and pollutants to enter the stream within the site, washing downstream and reducing water quality. An increase in sediment and pollutants entering the stream could potentially lead to an impact on aquatic species.	Temporary	Slight	Reversible	Likely to be resident all year round.	Negative
Salmon	During the initial Operational Phase/until the exposed areas are revegetated, there is the potential, without mitigation, for sediment and pollutants to enter the stream within the site, washing downstream and reducing water quality within the stream. An increase in sediment and pollutants entering these streams could potentially lead to an impact on aquatic species of prey, which otter feed upon.	Temporary	Slight	Reversible	Likely to be present during the spawning period	Negative
Bird species	No significant impact is envisaged during the Operational Phase of the Proposed Development. The potential disturbance, due to an increase in human activity associated with maintenance is considered to be negligible.	Temporary	Slight	Reversible	A mix of seasonal visitors and residents	Negative
	There is the potential risk of collision to species which fly through the site. Displacement of species from the immediate site.	Permanent	Slight	Irreversible		

Table 5-19: Summary of significance of the expected impacts during the Operational Phase and their associated confidence levels on the KER species during the Operational Phase (without mitigation)

Fauna	Characterisation of unmitigated operational impact	Significance without mitigation and confidence level
Badger	No impact is envisaged during the Operational Phase of the Proposed Development. Any potential disturbance, due to an increase in human activity, is considered to be negligible.	It is probable to near certain that the impact will be slight
Otter	During the initial Operational Phase/until the exposed areas are revegetated, there is the potential, without mitigation, for sediment and pollutants to enter the stream within the site, washing downstream and reducing water quality within the sections of the stream where otter forage. An increase in sediment and pollutants entering the stream could potentially lead to an impact on aquatic species of prey, which otter feed upon.	It is probable to near certain that the impact will be slight
Bat species	No impact is envisaged during the Operational Phase of the Proposed Development. Any potential disturbance, due to an increase in human activity, is considered to be negligible.	It is probable to near certain that the impact will be slight
White-clawed Crayfish	During the initial Operational Phase/until the exposed areas are revegetated, there is the potential, without mitigation, for sediment and pollutants to enter the stream within the site, washing downstream and reducing water quality. An increase in sediment and pollutants entering the stream could potentially lead to an impact on aquatic species.	It is probable to near certain that the impact will be slight
Salmon	During the initial Operational Phase/until the exposed areas are revegetated, there is the potential, without mitigation, for sediment and pollutants to enter the stream within the site, washing downstream and reducing water quality. An increase in sediment and pollutants entering the stream could potentially lead to an impact on aquatic species.	It is probable to near certain that the impact will be slight
Bird species	No significant impact is envisaged during the Operational Phase of the Proposed Development. The potential disturbance, due to an increase in human activity is considered to be negligible. Displacement of species from the immediate site	It is probable to near certain that the impact will be slight

5.5.4 Potential Cumulative Impacts

5.5.4.1 Existing planning permissions

A search of planning applications located within c.150m of the Site of the Proposed Development was conducted using online planning resources such as the National Planning Application Database (NPAD) (MyPlan.ie) and Meath County Council Planning Application Map. Any planning applications listed as granted or decision pending from within the last five years were assessed for their potential to act in-combination with the Proposed Development and cause likely significant effects on the relevant Designated Sites. Long-term developments granted outside of this time period were also considered where applicable.

It is noted that the majority of developments within the vicinity of the Site of the Proposed Development are applications granted more than 5 years ago and that have since been completed.

5.5.4.2 Relevant Plans and Policies

Plans and policies that may result in possible in-combination effects with the Proposed Development include:

- Meath Biodiversity Action Plan 2011-2017
- Meath County Development Plan 2021-2027

The Meath County Development Plan 2021-2027 has directly addressed the protection of European sites through specific policies. The Biodiversity Action Plan is set out to protect and improve biodiversity, will not result in negative in-combination effects with the Proposed Development. It can be concluded that there is no potential for cumulative impacts with the above listed plans on any ecological receptors.

5.5.5 “Do Nothing” Impact

If the Proposed Development were not to go ahead, habitats at the Site of the Proposed Development would continue to evolve. The wet grassland habitats would continue to be in agricultural use, recolonising bare ground habitat would likely transition to scrub. The Site would likely be used by various fauna such as bats, hedgehog, badger, otter, fox and rabbit.

5.6 Avoidance, Remedial & Mitigation Measures

The above sections outlined a range of potential impacts of the Proposed Development in the absence of mitigation measures. Potential impacts arising from the Construction and/or Operational Phases include:

- Water quality impacts to the local surface water network arising from surface water run-off, and alterations to drainage ditches within the infill area during the Construction Phase,
- Dust emissions from the Proposed Development Site and construction vehicle traffic into designated sites during the Construction Phase,
- Semi-natural habitat loss
- Disturbance and/or mortality of mammals within the Site during the Construction Phase
- Disturbance to bats within the Site and potential loss of foraging and/or commuting habitat during the Construction Phase

- Disturbance and/or mortality of birds within the Site, temporary loss of potential nesting habitat during the Construction Phase

To address impacts on surface water therein arising from surface water discharges, a range of mitigation measures to protect surface water quality (and therefore aquatic habitats and species) are provided in section 16.6.2, 16.6.2.5, 16.6.2.6). These surface water mitigation measure will treat the source (e.g., removal of silt from surface waters via silt fences, incorporation of SuDS into the project design) or remove the pathway (e.g., create a buffer between the infill area and surface water features/drainage ditches, during the Construction Phase).

To address impacts on the receiving environment as a result of dust emissions, a dust management plan (as described in section 16.6.2.1) will be implemented, which will treat/address the source of the impact (e.g. construction traffic, demolition) to ensure no impacts arise as a result of dust emissions.

The loss of treeline and grassland habitats at the Site is addressed by retaining the boundary treeline vegetation and the reseeded of the infill area post infilling.

Disturbance and/or mortality of local fauna within the Site (e.g. bats, mammals, and birds) is addressed below. The mitigation measures outlined ensure that there will be no significant impact on local fauna at the Site. The mitigation measures address the source of impacts (e.g., backfilling activities, dust, noise, vegetation clearance).

5.6.1 Mitigation by Design

5.6.1.1 Consultation and avoidance by design

Consultation between the design team of the Proposed Development (the developer; College Proteins, and environmental consultants, Enviroguide) was conducted on an ongoing basis in order to formulate a project design which would avoid, by design and at source, any construction activities that could initiate potential water quality impacts. As a consequence, all aspects of the construction of the proposed facility and its layout, adopted avoidance by design approach. In addition, to avoid impacts at source, particularly with regard to the adjacent stream, a hydrological buffer zone of 10m was applied to the stream during the design stage.

Treelines which are to be retained will be fenced off before construction work commences. Fences will be located a minimum of 2m from the base of retained hedgerows.

No ground clearance, earth moving or movement of machinery will occur within these fenced-off areas. The removal of hedgerows will be conducted outside of the breeding season (March – August inclusive) and this will reduce impacts on foraging bats, who are active during this period.

5.6.1.2 Excavations in-fill activities

Prior to excavation, a detailed review of the final cut and fill model will be carried out to confirm cut and fill volumes. Detailed quantities of material to be excavated will be verified through accurate survey techniques by the groundwork's contractor at the Construction Phase.

Handling of excavated soils will be undertaken in accordance with documented procedures that will be set out in order to protect ground and minimise airborne dust. The normal measures required to prevent airborne dust emissions and associated nuisance arising from site work

will be in place including measures to prevent uncovered soil drying out leading to wind pick up of dust and mud being spread onto the local road network and adjoining properties. This will require additional wetting at the point of dust release, dampening down during dry weather and wheel cleaning for any vehicles leaving the Site. Potential impacts and avoidance and mitigation measures associated with generation of dust are addressed in Section 5.6.2.1 and Chapter 8.

All working faces will be inspected and assessed daily by an appropriately qualified geotechnical Engineer and the geometries of the working faces amended where required appropriate to the characteristics of soil materials. Soils will be infilled and compacted in a manner to prevent subsidence within the infilled sections.

Filling operations will be confined to a selected area of the site at any one time with each area being restored in a timely manner from commencement of the next phase. Once the proposed infilling works are complete, the surface will be seeded with grasses.

5.6.2 Construction Phase

Surface water mitigation

Surface runoff during the Construction Phase will be managed within the works areas. Direct uncontrolled surface water discharges from the Site will not be permitted into the Nobber stream. In-stream works will be required for the culverting of the drainage ditch that crosses the proposed infill area. The culvert will be precast and delivered to Site as required thereby reducing the risk of any direct impact to water quality in the open drainage channel and the downstream Nobber Stream. All in-stream works will be undertaken during the summer when the flow in the open drainage ditch crossing the proposed infill area is negligible. Regardless, the proposed construction design will include an over-pump or the installation of a ditch diversion to manage water in the event of a rainfall event. There is the potential for some disturbance of the stream bed and increased suspended solids content of the water downstream of the works area. This may result in a 'negative', 'moderate', 'short-term' impact on the receiving water quality of the Nobber Stream.

The existing drainage ditch will be excavated out and a bed of crushed stone will be laid along the length of the new culvert. The culvert sections will be laid on the crushed stone and levelled. On completion of the installation the excavation will be backfilled with compacted stone up to the level of the top of the culvert. The culvert will be designed to accommodate the 1 in 100-year storm (+20%).

Instream machine works will be minimised as far as practically possible to reduce risk of oil contamination entering the drainage ditch and the Nobber stream.

Temporary surface water drainage infrastructure will be constructed to manage all construction related surface water run-off. Infrastructure will include a silt trap/oil interceptor and settlement pond and will be constructed within the Proposed Development with connections for discharge to the local drainage network.

Trenched double silt fencing will be installed along the western and northern boundary of the Proposed Development infill Site. The silt fencing will act as a temporary sediment control device to protect the water course from sediment and potential surface water run-off from the Site. The fencing will be inspected twice daily based on Site and weather conditions for any

signs of contamination or excessive silt deposits and records of these checks will be maintained. Silt laden water within the trenches will be routed to an appropriately sized settlement facility before discharging to the Nobber Stream. A buffer zone of 10m will be maintained between the silt trap and the watercourse with natural vegetation left intact.

In addition, the following measures will be undertaken:

Designated impermeable cement washout areas will be provided within the AD construction site.

Run-off from the working site or any areas of exposed soil will be channelled and intercepted at regular intervals for discharge to silt-traps or lagoons with over-flows directed to land rather than to a drain.

Silty water generated on site will be treated using silt traps/settlement ponds and temporary interceptors and traps will be installed until such time as permanent facilities are constructed.

Storm drain inlets which could receive stormwater from the project will be protected throughout the Construction Phase. Inlet protection will be installed before soil disturbing activities begin.

A regular review of weather forecasts of heavy rainfall will be conducted, and a contingency plan will be prepared for before and after such events to minimise any potential nuisances. As the risk of the break-out of silt laden run-off is higher during these weather conditions, no work will be carried out during such periods where possible.

Temporary hydrocarbon interceptor facilities will be installed and maintained where Site Works involve the discharge of drainage waters to nearby drains.

All containment and treatment facilities will be regularly inspected and maintained.

Refuelling of plant during the Construction Phase will only be carried out at designated refuelling station locations on site. Each station will be fully equipped for spill response and a specially trained and dedicated Environmental and Emergency Spill Response team will be appointed before the commencement of works on site.

Only emergency breakdown maintenance will be carried out on site. Drip trays and spill kits will be available on site to ensure that any spills from vehicles are contained and removed off site.

All personnel working on site will be trained in pollution incident control response.

Any other diesel, fuel or hydraulic oils stored on site will be stored in bunded storage tanks- the bunded area will have a volume of at least 110% of the volume of the stored materials as per best practice guidelines (Enterprise Ireland, BPGCS005).

If portaloos and/or containerised toilets and welfare units will be used to provide facilities for site personnel, all associated waste will be removed from site by a licenced waste disposal contractor.

Under no circumstances will any untreated wastewater generated onsite (from equipment washing, road sweeping etc.) be released into surface water drains.

5.6.2.1 Dust Minimisation Plan

The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors. In order to develop a workable and transparent dust control strategy, the following management plan which has been formulated by drawing on best practice guidance from Ireland, the UK (BRE 2003), (The Scottish Office 1996) (UK Office of Deputy Prime Minister 2002) and the USA (USEPA 1997), (USEPA 1986) will be implemented.

Monitoring of Dust Emissions

Monitoring of dust within the Site one month prior to commencement of any construction works to collate baseline data. Monitoring of dust can be carried out by using the Bergerhoff Method. This involves placing Bergerhoff Dust Deposit Gauges at strategic locations along the Site boundaries for a period of 30 +/- 2 days. The selection of sampling point locations should be carried out in consideration of the requirements of the German Standard Method VDI 2119 (Measurement of Dustfall, Determination of Dustfall using Bergerhoff Instrument (Standard Method German Engineering Institute) with respect to the location of the samplers relative to buildings and other obstructions, height above ground, and sample collection and analysis procedures. After the exposure period is complete, the Gauges will be removed from the Site; the dust deposits in each Gauge will then be determined gravimetrically and expressed as a dust deposition rate in mg/m²/day in accordance with the relevant standard. Monitoring of construction dust deposition will be conducted at nearby sensitive receptors and at the Site boundary (i.e., worst-case location), during the Construction Phase of the Proposed Development.

Regular inspections of the Infill site and access roads from the AD construction site to the infill site will be carried out to monitor dust, records and notes on these inspections will be logged.

The individual(s) responsible for monitoring of dust within the Construction Phase will receive work specific induction in relation to dust minimisation measures, visual dust assessment and dust monitoring in the direct area.

Should dust deposition be deemed to be at a rate which has the potential to cause an impact on the local environment, additional mitigation will be put in place immediately.

Site Management

Regular inspections of the Site and boundary will be carried out to monitor dust, records and notes on these inspections should be logged.

Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.

Make the complaints log available to the local authority when asked.

Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the logbook.

Preparing and Maintaining the Site

Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.

Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on Site.

Fully enclose specific operations where there is a high potential for dust production and the Site is active for an extensive period.

Avoid Site runoff of water or mud.

Keep Site fencing, barriers and scaffolding clean using wet methods.

Remove materials that have a potential to produce dust from Site as soon as possible, unless being re-used on Site. If they are being re-used on-site cover as described below.

Operating Vehicles / Machinery

Ensure all vehicles switch off engines when stationary - no idling vehicles.

Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable.

Impose and signpost a maximum-speed-limit of 15 kph haul roads and work areas

Produce a Construction Traffic Management Plan to manage the sustainable delivery of goods and materials.

Measures Specific to Earthworks

Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.

Use Hessian or mulches where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.

Only remove the cover in small areas during work and not all at once.

During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.

Measures Specific to Construction

Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.

For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.

Measures Specific to Trackout

Site roads (particularly unpaved) can be a significant source of fugitive dust from construction sites if control measures are not in place. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25 to 80%.

A speed restriction of 15 km/hr will be applied as an effective control measure for dust for on-site vehicles.

Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.

Avoid dry sweeping of large areas.

Inspect on-site haul roads for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.

Record all inspections of haul roads and any subsequent action in a site log book.

Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.

Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.

5.6.2.2 Protection of Hedgehog and Pygmy Shrew

As noted in the British Hedgehog Preservation Society's publication *Hedgehogs and development*, during the Construction Phase of the Proposed Development Hedgehogs have the potential to be impacted through the loss of suitable hibernation and nest sites in the form of piles of dead wood, vegetation and leaves. This can be mitigated through the careful removal of dead wood/leaves to another part of the Site where they will not be affected. Woody debris from the proposed clearance of vegetative areas on site will also be left in this out-of-the way location as compensatory Hedgehog habitat during the Construction Phase (refer to section 5.6.1.1).

Vegetation will be removed in sections working in a consistent direction to prevent entrapment of protected fauna potentially present (e.g. Hedgehog).

Hedgehog also frequent long grass for foraging and daytime nesting sites so care will be taken when stripping these areas of the Site.

As best-practice, all construction-related rubbish on site e.g. plastic sheeting, netting etc. will be kept in a designated area on site and kept off ground level so as to protect Hedgehogs from entrapment and death. The above measures will also act to mitigate potential negative impacts on other small mammal species potentially found on site e.g. Pygmy Shrew.

Work likely to cause disturbance during hibernation – for example removal of hibernation habitats such as log piles and dense scrub –**will not take place during November to March**, unless a suitability qualified ecologist has deemed the Site to be devoid of Hedgehog.

5.6.2.3 Protection of Bats

To protect bats from lighting associated with the **Construction Phase** of the Proposed Development, the following will be considered when choosing luminaires. This is taken from the most recent BCT Lighting Guidelines (BCT, 2018):

All luminaires used will lack UV/IR elements to reduce impact.

LED luminaires will be used due to the fact that they are highly directional, lower intensity, good colour rendition and dimming capability.

A warm white spectrum (<2700 Kelvins will be used to reduce the blue light component of the LED spectrum).

Luminaires will feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.

Column heights should be carefully considered to minimise light spill. The shortest column height allowed should be used where possible.

Only luminaires with an upward light ratio of 0% and with good optical control will be used.

Luminaires will be mounted on the horizontal, i.e. no upward tilt.

Any external security lighting will be set on motion-sensors and short (1min) timers.

As a last resort, accessories such as baffles, hoods or louvres will be used to reduce light spill and direct it only to where it is needed.

Any Construction Phase external lighting will strictly follow the above guidelines.

5.6.2.4 Protection of Birds

Any clearance of vegetation will be carried out outside the main breeding season, i.e. 1st March to 31st August, in compliance with the Wildlife Act 2000. Should any vegetation removal be required during this period, the NPWS will be consulted, and instruction taken from them. If the buildings on Site are to be demolished during the breeding bird season, the buildings will be inspected for breeding birds (e.g. Swallows) prior to demolition. Should nesting birds be discovered, the nest will be protected until any nesting birds have fledged and departed the site.

5.6.2.5 Water Quality Measures during the Construction Phase

No work will take place within the buffer zone that will be established adjacent to the streams and drainage ditches identified on site.

5.6.2.6 Protection of Watercourses (General Measures)

It is recommended that the following measures will be incorporated into the development so as to ensure no significant negative impact on water course and the features of conservation interest:

Raw or uncured waste concrete / cementitious material will be disposed of by removal from the site;

Ready-mix concrete suppliers will be used in preference to on-site batching;

Fuelling and lubrication of equipment will be carried out in designated bunded areas; Prior to any work, it will be ensured that all construction equipment is mechanically sound to avoid leaks of oil, fuel, hydraulic fluids and grease.

Procedures and contingency plans will be set up to deal with an emergency accidents or spills; and

An emergency spill kit with oil boom, absorbers etc. will be kept on site in the event of an accidental spill.

A designated trained operator experienced in working with concrete will be employed during the concrete pouring phase; and

Large volumes of concrete water will be pumped into a skip to settle out; settled solids will need to be appropriately disposed of off-site. The total volume of concrete water will be reduced by only permitting concrete chutes to be washed on site.

5.6.2.7 Timing of vegetation clearance

The following table provides guidance for when vegetation clearance and instream works are permissible. Information sources include the British Hedgehog Preservation Society's *Hedgehogs and Development* and *The Wildlife (Amendment) Act, 2000*.

Table 5-20: Seasonal restrictions on vegetation removal. Red boxes indicate periods when clearance/works are not permissible

Ecological Feature	January	February	March	April	May	June	July	August	September	October	November	December
Breeding Birds	Vegetation clearance permissible	<u>Nesting bird season</u> No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of nesting birds by an ecologist.							Vegetation clearance permissible			
Hibernating mammals (namely Hedgehog, excluding bats)	<u>Mammal hibernation season</u> No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of hibernating mammals by an ecologist.		Vegetation clearance permissible							<u>Mammal hibernation season</u> No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of hibernating mammals by an ecologist.		

The preferred period for vegetation clearance is within the month of October (Table 5-21). Vegetation will be removed in sections working in a consistent direction to prevent entrapment of protected fauna potentially present (e.g., Hedgehog, Badger). Vegetation clearance will take place under the supervision of an ecologist to avoid any potential impact on birds or mammals.

5.6.3 Mitigation by Management

5.6.3.1 Environmental Management Plan and Environmental Manager

The environmental commitments of the Proposed Development should be managed through the Environmental Management Plan (EMP). The implementation of the proposed mitigation measures, monitoring and follow-up arrangements and management of impacts, can be managed through the EMP.

College Proteins have an Environmental Manager with appropriate experience and expertise who will be employed prior to, and for the duration of, the Construction Phase to ensure that all the mitigation measures outlined in relation to the environment are implemented.

A programme of regular checking of equipment, materials storage and transfer areas, drainage structures and their attenuation ability should be designed and implemented during the Construction Phase of the project.

The purpose of this management control is to ensure that the measures that are put in place continue to operate effectively, to prevent accidental leakages, and to identify potential breaches in the protective retention and attenuation network during earthworks operations. Many of the mitigation measures below have been based on CIRIA technical guidance on water pollution control (Murnane et al., 2006).

5.6.3.2 Management of excavated material

All excavated earth materials will be re-used in an environmentally appropriate and safe manner, e.g. used for landscaping. No special mitigation measures are required for the removal of wet grassland or other habitats that are of lower ecological value.

The Environmental Management Plan will include regular checking of silt fencing and drainage structures, should they be deemed necessary, and of their attenuation ability during the Construction Phase of the project. The purpose of this management control is to ensure that the measures that are put in place continue to operate effectively, to identify potential breaches in the protective retention and attenuation network during earthworks operations.

5.6.3.3 Treeline Management

Treelines will be planted along the new site boundaries and will reconnect with existing treelines, to create new networks of ecological corridors. The trees and shrubs will be native species and the species composition will reflect habitats that have been lost. The condition of any new tree and shrub planting will be monitored.

5.6.3.4 Storage, Stockpiling and Waste Generation Management

Excavated earth materials will be re-used in an environmentally appropriate and safe manner. It is anticipated that all excavated materials will be relocated to the infill site during the Construction Phase however, any remaining material will be removed from the development site at the end of the Construction Phase.

5.6.3.5 Waste Control

Any introduced semi-natural (road building materials) or artificial (PVC piping, cement materials, electrical wiring etc.) will be taken off site at the end of the Construction Phase. Any accidental spillage of solid state introduced materials must be removed from the site.

5.6.3.6 Storage

The storage of materials, containers, stockpiles and waste, however temporary, should follow best practice at all times and be stored at designated areas. Storage will be located as follows:

- Away from drains and watercourse or drains;
- Fuel oils etc. will be stored at the temporary site compound;
- In secure areas; and well away from moving plant, machinery and vehicles.
- All containers will be stored upright and clearly labelled.

5.6.4 Monitoring

5.6.4.1 Operational Phase Water Quality Monitoring

Ongoing water quality monitoring will continue by College Proteins staff as part of their EPA licensing requirements. Water sampling will include the following tests:

- Biological water quality analysis - Q sampling; and
- Physicochemical water quality analysis.

5.6.4.2 Habitat Monitoring

The condition of any new tree and shrub planting will be monitored. Any tree or shrub failing to establish successfully will be replaced by the developer during the first five years of development.

5.6.5 “Worst Case” Scenario

From time-to-time environmental incidents can occur at construction sites and licenced facilities. These can vary in severity from a minor spill to a major incident such as a Fire. The management, containment remediation and corrective action of any such incident will be carried out in line with the conditions of the existing IE Licence condition applied by the EPA.

5.7 Residual Impacts

Residual impacts are impacts that remain once mitigation has been implemented or impacts that cannot be mitigated. Provided all mitigation measures are implemented in full and remain effective throughout the lifetime of the Development, no significant negative residual impacts on the local ecology or on any designated nature conservation sites are expected from the Proposed Development.

5.8 Interactions

5.8.1 Hydrology

The key environmental interaction with biodiversity is water. A series of mitigation measures are proposed in Chapter 7 – Hydrology of this EIAR document, as well as in this Chapter, to ensure the quality (pollution and sedimentation) and quantity (surface run-off and flooding) of water is of an appropriate standard.

5.8.2 Land and Soils

An assessment of the potential impact of the Proposed Development on land and soils is outlined in Chapter 6 – Land and Soils. These impacts are considered to be relevant to the ecological sensitivities associated with the Site of the Proposed Development discussed in this Chapter; and mitigation measures addressing these potential impacts are described in full in Chapter 6.

5.8.3 Air Quality and Climate

An assessment of the potential impact of the Proposed Development on air quality and climate is included in Chapter 8 of this EIAR. The Construction Phase has the potential to interact with flora and fauna in adjacent habitats and designated sites due to dust emissions arising from the construction works. However, the mitigation measures employed at the Proposed Development will ensure that the impacts to flora and fauna are not significant.

5.8.4 Noise and Vibration

An assessment of the potential impact of the Proposed Development in the form of excess noise and vibrations associated with the proposed works are laid out in Chapter 9 - Noise and Vibration. These impacts are considered to be relevant to the ecological sensitivities associated with the Site of the Proposed Development discussed in this Biodiversity Chapter.

5.9 Difficulties Encountered When Compiling

An extensive search of available datasets for records of rare and protected species within proximity of the Proposed Development has been undertaken as part of this assessment. However, the records from these datasets do not constitute a complete species list. The absence of species from these datasets does not necessarily confirm an absence of species in the area.

The botanical survey dates in June 2022 were within the standard acceptable timeframe for general botanical field surveying and more than sufficient to complete the objective of habitat classification and general botanical field surveying.

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6 LAND AND SOIL

6.1 Introduction

This Chapter of the Environmental Impact Assessment Report (EIAR) provides a description of the land, soils and geology within and immediately surrounding the Proposed Development site, an assessment of the potential impacts of the Proposed Development on land, soils and geology and sets out any required mitigation measures where appropriate.

The principal objectives of this Chapter are to identify:

- Land, soils, and geological characteristics at the Proposed Development site;
- Potential impacts that the Proposed Development may have on land, soils and geology including “worst case” scenario assessment;
- Potential constraints that the environmental attributes may place on the Proposed Development;
- Required mitigation measures which may be necessary to minimise any adverse impacts related to the Proposed Development; and
- Evaluate the significance of any residual impacts.

6.1.1 Quality Assurance and Competence

This Chapter of the EIAR was written by Gareth Carroll BAI, Senior Environmental Consultant with Enviroguide Consulting with over 9 years’ experience of environmental assessment of brownfield and greenfield sites. The Chapter was reviewed by Claire Clifford BSc., MSc., PGeo., EurGeol who is Technical Director of the Contaminated Land and Hydrogeology Division of Enviroguide Consulting and is a Professional Geologist with the Institute of Geologists of Ireland and has extensive experience in preparing environmental assessments for a range of project types and geological and hydrogeological site settings.

6.1.2 Description of the Proposed Development

Recognising the climate emergency and the responsibility to address it, the Applicant is striving to reduce their carbon footprint and become a carbon neutral operation by investing in a greener future, through sustainable projects.

The Applicant is proposing to construct an Anaerobic Digestion (AD) Facility to produce green Biogas which will off-set the use of fossil fuels on-site, therefore reducing the company’s carbon footprint. The biogas produced from the AD Facility can be used in the on-site steam boilers and Combined Heat and Power (CHP) plants to generate steam and electricity to run the production facilities on-site.

The Applicant is committed to sustainability and maximising the resource value of organic material from all sources. The Proposed Development will reduce the requirement for natural gas use on-site which will aid the company’s self-sufficiency in this regard.

The Proposed Development will consist of the demolition of an existing garage and the provision of an Anaerobic Digestion Facility with an intake of up to 50,000 tonnes of organic feed-stock material per annum. The Facility will comprise a waste reception building (incorporating

workshop, control room and welfare facilities), 2 No. digester tanks, 2 No. digestate storage tanks, glycerine tank, buffer tank, pasteuriser tank, 4 No. liquid reception tanks; all of the above tanks located within a fully bunded concrete area; associated biofilter, gas flare, biogas combined heat and power plant, internal access roads, weighbridge, truck loading area and soil deposition area. The Proposed Development will also include all associated site development, drainage and infrastructure works above and below ground. The maximum height of the Proposed Development is the chimney stack associated with the biofilter at c. 18m above ground level.

AD is a sustainable form of renewable energy production through a naturally occurring biological process in which micro-organisms break down biodegradable material in the absence of oxygen in an enclosed system. The process produces a methane-rich biogas and a nutrient rich fertiliser known as 'digestate'. The biogas can be converted into renewable electricity, or it can be upgraded to biomethane for use in on site boilers, as a vehicle fuel or for injection directly into the gas network to provide a source of renewable heat.

Feedstocks proposed for biogas production include grass and maize silage, food waste, slurry, sludges from food processing plants.

The Proposed Development site layout is presented in Figure 6-1 (Smith Associates Architects – Surveyors, May 2022. Site Layout Plan (Drawing No. 21-21-14)).

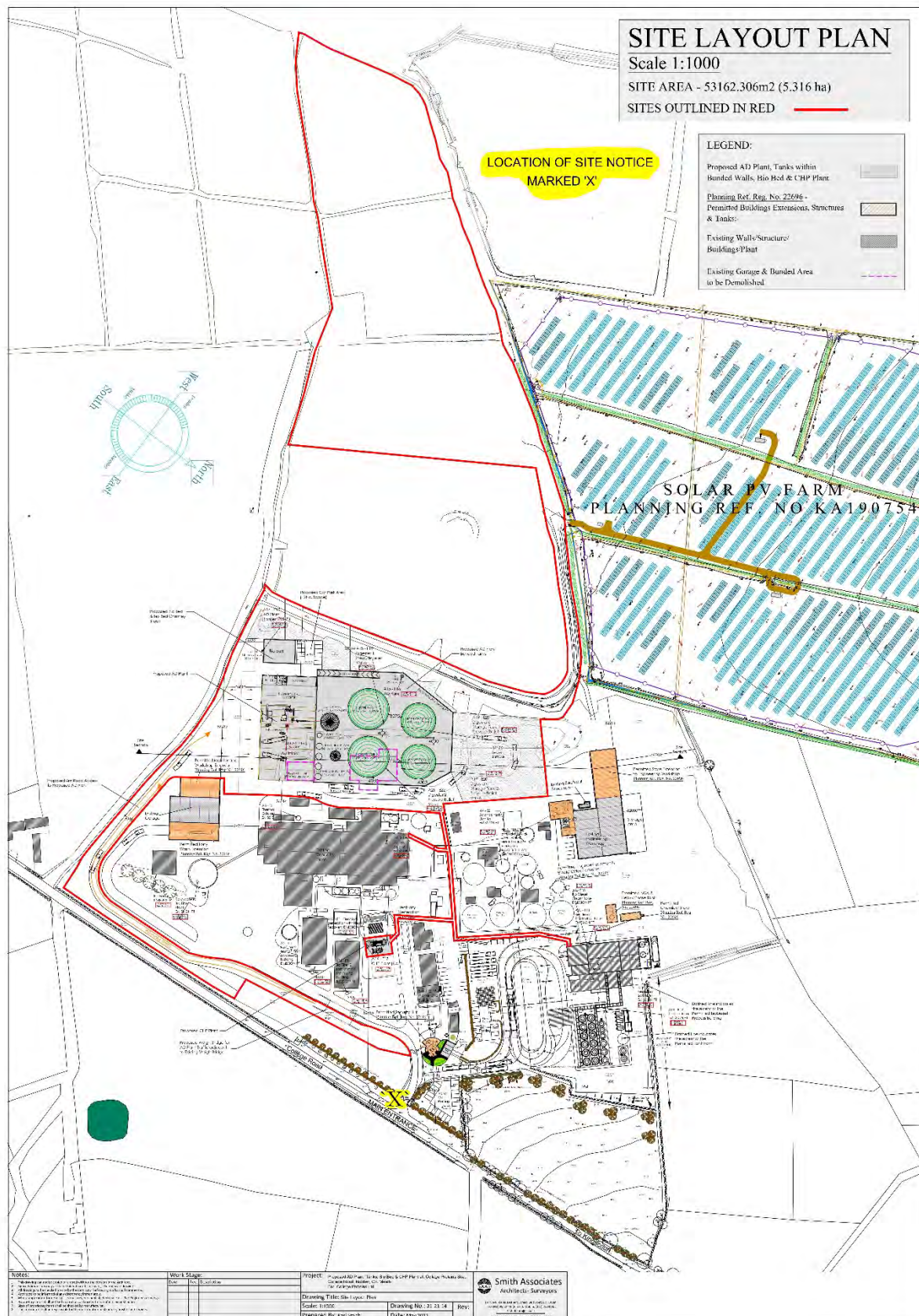


Figure 6-1: Proposed Development Site Layout

6.1.2.1 Construction Phase

The Construction Phase for the Proposed Development will involve the removal of an existing building, removal of soil from the site of the Proposed Development, the construction of the Anaerobic Digestion plant and raising the level of land near the solar farm with the excavated soil.

Phase 1 – The existing building garage and concrete tank on site will be demolished. The garage currently used for maintaining College Proteins vehicles has a floor area of 545.67m² and the building is 8.3 meters to the apex. The building is constructed from concrete, steel and Kingspan sheeting. The Kingspan sheeting, purloins and steel work will be carefully removed and stored to be re-used on other buildings in future projects. The concrete tank (bund area) has never been in use, therefore there is no chance of any soil contamination under this tank. This has a floor area of 178.79m² and a wall height of 2 meters. The concrete floors and walls of the existing building garage and concrete tank (totalling approx. 840m³ volume) will be removed off site for disposal in a licenced facility. The gravel from the yard surrounding the garage and concrete tank will be dug up and kept to one side pending testing for contamination and then will be re-used as filling on site if it is suitable. If not, the material will be treated in an authorised facility. The garage & concrete tank bund are detailed on drawing No. 21-21-23 attached in Appendix A.

Phase 2 – The soil (77,804.15m³) will be removed from the Site and will be infilled to fields to the west of the site. Ref. drawing 21-21-18 in Appendix A. A new weighbridge will be installed beside the existing rendering weighbridge, this will be separated with a fence and signage to direct traffic on site. There will be a new two-way road constructed on site separated from the rendering plant with a fence to access the proposed AD plant area. 21,500 tonnes approx. of stone filling and concrete will be brought to the site to create a base for building the road, yard, tank foundations, walls of the reception hall and AD tanks and bunded walls.

Phase 3 - The AD plant intake buildings, tanks, bund wall and road will be constructed. The intake building will be of steel frame construction, shuttered concrete walls, olive green insulated Kingspan sheeting and purloins. The olive green sheeting was selected to blend the colours into the agricultural surroundings around the site and therefore cause less visual impact. The AD tank bund will be a concrete wall construction with a concrete floor, the roadway to the plant will be a constructed from concrete. The intake tanks and glycerine tank will be constructed from stainless steel. The buffer tank, digesters and digestate storage tanks will be constructed from concrete. The pasteurisation tank will be constructed from glass lined steel.

The Proposed Development comprises of:

- Anaerobic Digestion (AD) Plant Reception building (food waste reception)
- Reception hall for solid feedstock (silage & Maize)
- Borger Fibre separation for digestate
- Workshop
- Office, control room, toilets and changing rooms
- Biobed
- 4 No. Liquid reception tank- 113m³ tanks
- 1 No. Glycerine tank- 78m³

- 1 No. Buffer tank – 983m³
- 1 No. Pasteurisation tank - 247m³
- 2 No. Digesters - 3682m³
- 2 No. Digestate Storage tanks – 2500m³
- Gas Flare
- Biogas Combined Heat and Power (CHP) Plant

Refer to Site Layout Plan drawing 21-21-14 in Appendix A.

Phase 4 – The fields where the soil will be deposited will be re-seeded and planted with grass and returned to agricultural use. Please see filling area on drawing ref. 21-21-18 in Appendix A.

6.1.2.2 Operational Phase

The existing facility will continue to operate as an animal by-product rendering plant, a biodiesel production facility and a solar farm, with the addition of an anaerobic digestion facility. The existing facility is currently operational under IE Licence (P0037-04) and Greenhouse Gas Permit (GHG Permit) No. IE-GHG123-10405-03.

An application for a review of the existing IE License will be made to the Environmental Protection Agency as the introduction of an anaerobic digestion facility will result in changes to the environmental emissions from the facility. The GHG Permit may also need to be revised, and the EMS will be updated accordingly.

The Proposed Development will be operated in accordance with the requirements of the planning grant conditions and updated requirements of the reviewed IE Licence, GHG Permit, EMS and Safety Report for the facility.

Full details of the Proposed Development are presented in Chapter 2 of this EIAR.

6.2 Study Methodology

6.2.1 Regulation and Guidance

The methodology adopted for the assessment takes cognisance of the relevant guidelines in particular the following:

- Environmental Protection Agency, May 2022. Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Institute of Geologists of Ireland Guidelines, 2002. Geology in Environmental Impact Statements, A Guide (IGI, 2002);
- Institute of Geologists of Ireland Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements (IGI, 2013);
- Meath County Development Plan 2021-2027 (MCC, November 2021);
- National Roads Authority, 2009. Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA, 2009); and

- OPR, June 2021. OPR Practice Note PN02. Environmental Impact Assessment Screening (OPR, 2021).

6.2.2 Phased Approach

A phased approach was adopted for this EIAR in accordance with Environmental Protection Agency (EPA) and Institute of Geologists of Ireland (IGI) guidelines as set out above and is described in the following sections.

Element 1: An Initial Assessment and Impact Determination stage was carried out by Enviroguide Consulting to establish the project location, type and scale of the Proposed Development, the baseline conditions, and the type of land, soil, geological environment, to establish the activities associated with the Proposed Development and to undertake an initial assessment and impact determination.

This stage of the assessment included a desk top study that comprised a review of published environmental information for the Proposed Development site and information provided by the Applicant. The study area, for the purposes of assessing the baseline conditions for the Land, Soil and Geology Chapter of the EIAR, extends beyond the Proposed Development site boundaries and includes potential receptors within a 2.0km radius of the Proposed Development site (IGI, 2013).

This stage of the assessment was completed by Enviroguide Consulting and included the review of the following sources of information:

- Environmental Protection Agency (EPA) webmapping (EPA, 2022);
- Environmental Protection Agency (EPA) Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities (EPA, 2020);
- Geological Survey Ireland (GSI) Datasets Public Viewer and Groundwater webmapping (GSI, 2022);
- Ordnance Survey Ireland (OSI) webmapping (OSI, 2022);
- National Parks and Wildlife Services (NPWS) webmapping (NPWS, 2022);
- Teagasc webmapping (Teagasc, 2022); and
- Information provided by the Applicant pertaining to previous site investigations and assessments at Site and adjoining lands.
- Information provided by the Application pertaining previous site investigations and the design proposals for the Proposed Development.

A site walkover survey to establish the environmental site setting and baseline conditions at the Proposed Development Site relevant to land, soil and geology was undertaken by Enviroguide Consulting on the 1st July 2022.

Previous Site investigations carried out at the Site, which included trial pit excavations and borehole drilling, are detailed in the following reports (refer to Appendix C):

- IGSL Drilling Ltd., 2002. Ground Investigation Report (No.802);
- Enviroguide Consulting, April 2020. Baseline Report - Trial Pit Logs;
- Dunnes Drilling, February 2020. Borehole Log; and
- College Proteins Ltd., 2022. Pre-Planning Site Investigation.

Element 2: Based on a review of the information compiled and assessed in Element 1 including a site walkover survey and existing site investigation data, it was determined that a direct or indirect site investigations and studies stage was not required as there was sufficient baseline information available regarding the Proposed Development site to inform the impact assessment of the Proposed Development on the receiving land, soil, and geology environment.

Element 3: Evaluation of Mitigation Measures, Residual Impacts and Final Impact Assessment were based on the outcome of the information gathered in Element 1 of the assessment. Mitigation measures to address all identified adverse impacts that were identified in Element 1 of the assessment were considered in relation to the Construction Phase and the Operational Phase of the Proposed Development. These mitigation measures were then considered in the impact assessment to identify any residual impacts.

Element 4: Completion of the Land, Soils and Geology Chapter of the EIAR which includes all the associated figures and documents.

6.2.3 Description of Importance of the Receiving Environment

The National Roads Authority (NRA) criteria for estimation of the importance of geological features at the Proposed Development site during the Environmental Impact Assessment (EIA) stage, as documented by IGI (IGI, 2013) are summarised in Table 6-1.

Table 6-1: Criteria for Rating Site Importance of Geological Features

Importance	Criteria	Typical Example
Very High	Attribute has a high quality, significance or value on a regional or national scale. Degree or extent of soil contamination is significant on a national or regional scale. Volume of peat and/or soft organic soil underlying route is significant on a national or regional scale.	Geological feature rare on a regional or national scale (NHA). Large existing quarry or pit. Proven economically extractable mineral resource.
High	Attribute has a high quality, significance or value on a local scale. Degree or extent of soil contamination is significant on a local scale. Volume of peat and/or soft organic soil underlying route is significant on a local scale.	Contaminated soil on-site with previous heavy industrial usage. Large recent landfill site for mixed wastes. Geological feature of high value on a local scale (County Geological Site). Well drained and/or high fertility soils. Moderately sized existing quarry or pit. Marginally economic extractable mineral resource.

Importance	Criteria	Typical Example
Medium	Attribute has a medium quality, significance or value on a local scale. Degree or extent of soil contamination is moderate on a local scale. Volume of peat and/or soft organic soil underlying route is moderate on a local scale.	Contaminated soil on-site with previous light industrial usage. Small recent landfill site for mixed wastes. Moderately drained and/or moderate fertility soils. Small existing quarry or pit. Sub-economic extractable mineral resource.
Low	Attribute has a low quality, significance or value on a local scale. Degree or extent of soil contamination is minor on a local scale. Volume of peat and/or soft organic soil underlying route is small on a local scale.	Large historical and/or recent site for construction and demolition wastes. Small historical and/or recent landfill site for construction and demolition wastes. Poorly drained and/or low fertility soils. Uneconomically extractable mineral resource.

6.2.4 Description and Assessment of Potential Impact

Impacts will vary in quality from negative, to neutral or positive. The effects of impacts will vary in significance on the receiving environment. Effects will also vary in duration. The terminology and methodology used for assessing the 'impact' significance and the corresponding 'effect' throughout this Chapter is described in Table 6-2.

Table 6-2: Assessment of Potential Impacts Terminology and Methodology

Quality of Effects / Impacts	Definition
Negative	A change which reduces the quality of the environment.
Neutral	No effects or effects that are imperceptible, within the normal bounds of variation or within the margin of forecasting error.
Positive	A change that improves the quality of the environment.
Significance of Effects / Impacts	Definition
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics.
Duration of Effects / Impacts	Definition
Momentary	Effects lasting from seconds to minutes.
Brief	Effects lasting less than a day.

Temporary	Effects lasting one year or less.
Short-term	Effects lasting one to seven years.
Medium-term	Effects lasting seven to fifteen years.
Long-term	Effects lasting fifteen to sixty years.
Permanent	Effects lasting over sixty years.
Reversible	Effects that can be undone, for example through remediation or restoration.

6.3 The Existing and Receiving Environment (Baseline Situation)

6.3.1 Site Location and Description

The Site is located at College Road, Nobber, Co. Meath. The town of Nobber, County Meath, lies approximately 3km south of the site of the Proposed Development. The Site location is presented in Figure 6-2.

The Site is approximately 5.31 hectares (Ha). The Site is accessed from the R162 via the entrance to the existing facility.

The eastern portion of the Site is located within the existing facility which comprises an animal rendering plant and biodiesel manufacturing plant operated by the Applicant in accordance with the IE Licence (IE Licence No. P0037-04).

The Site of the Proposed Development comprises the following:

- The proposed AD plant area which comprises an existing garage and old concrete tank located within the existing facility and an open field adjoining the eastern boundary of the existing facility.
- The proposed infill area which comprises three (3No.) open fields separated by field boundaries located approximately 0.17km west of the existing facility.
- The proposed AD plant area and proposed infill area are connected via an existing access track.

The lands across the Proposed Development site are zoned 'Rural Area (RA) – To protect and promote in a balanced way, the development of agriculture, forestry and rural-related enterprise, biodiversity, the rural landscape, and the built and cultural heritage' under the Meath County Development Plan 2021-2027 (Meath County Council, November 2021).

The surrounding land use for the site is mainly rural with occasional farmhouses and one-off residential dwellings, the closest of which is located approximately 190m from the site.

There are no other EPA licensed facilities located within a 2km radius of the Site. The closest facility has been identified on the EPA database (EPA, 2022) as Saint-Gobain Construction Products (Ireland) Limited which is located approximately 3.9km to the North of the Site.

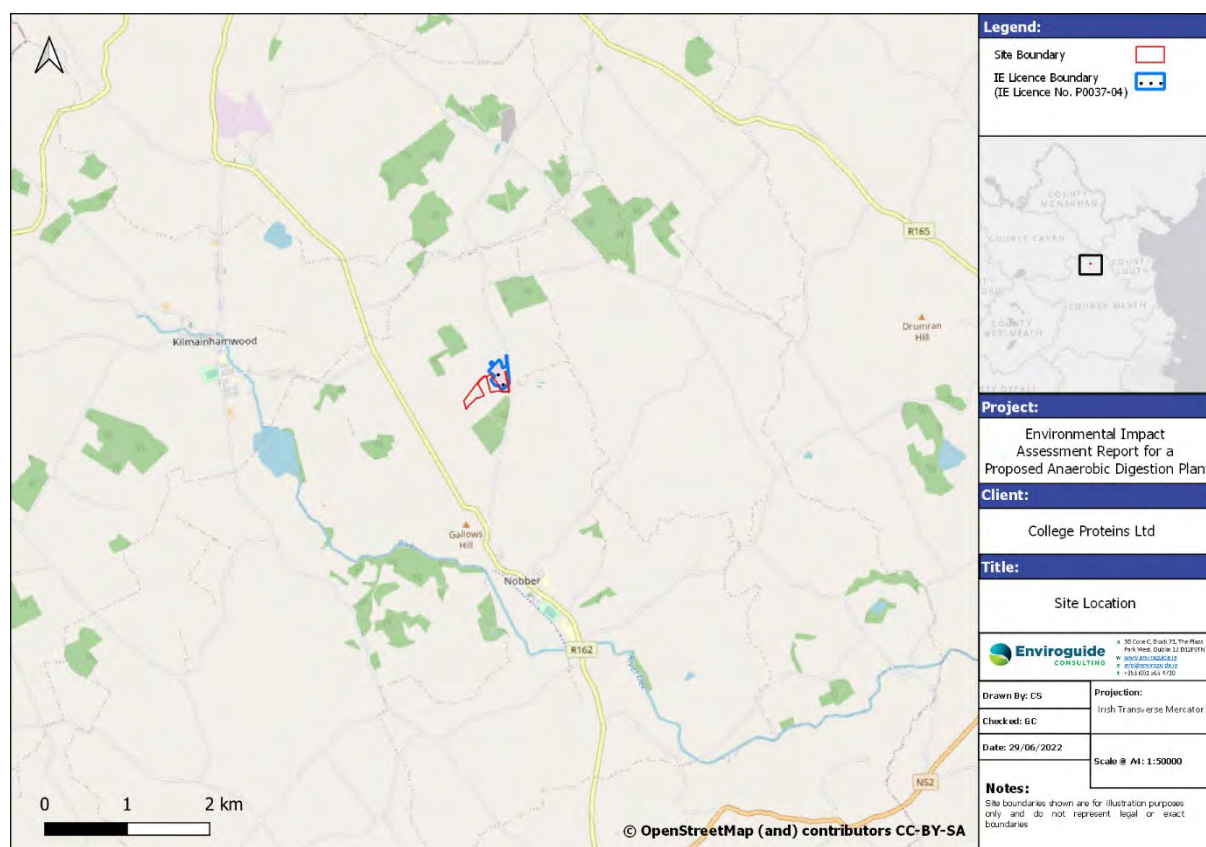


Figure 6-2: Site Location

6.3.2 Historical Land Use

Historical mapping and aerial photography available from the Ordnance Survey of Ireland website (OSI, 2022) and Google Earth (Google Earth, 2022) were reviewed and key observations on-site and off-site are summarised in Table 6-3.

Table 6-3: Onsite and Offsite Historical Land Use

Date	Information Source	Site Description
1837-1842	OSI map 6inch	On-site: The Site consists of 4 fields divided by hedgerows with one dwelling along College Road on the east of the Site, and one dwelling also along College Road to the south of the Site. There is one dwelling in the western portion of the Site, with a lane approaching it from the south. Off-site: A Ringfort is identified as Lisakilleen is located approximately 130m west of the Site. The Site is predominantly surrounded by rural countryside with agricultural fields and individual dwellings. Whitewood House and estate lie approximately 1.2km west of the Site. The village of Nobber is identified approximately 2.5km south of the Site and Brittas House and estate are situated approximately 2.5km southwest of the Site.
1888-1913	OSI map 25inch	On-site: The Site has been further divided into approximately 6 fields, and the dwellings previously identified along College Road are no longer present. The dwelling in the western portion of the Site remains but the lane now approaches it from the east. A well is noted to the north of the dwelling. Off-site: Whitewood and Brittas Houses and estates are still visible, as is Nobber village. The surrounding fields have been noticeably subdivided.

Date	Information Source	Site Description
1830-1930	OSI Cassini map 6inch	On-site: The dwelling in the western portion of the Site is now noted as "College House", and the garden behind the house has been divided. Off-site: The forest at Whitewood House has largely been clear-felled.
1995	OSI Aerial photography	On-site: The existing College Proteins facility has been established in the fields surrounding College House. Two large processing buildings and a tank farm are visible along with ancillary site buildings and hardstanding areas. The lands adjoining the existing facility to the north and the northern portion of the Site of the Proposed Development remain as open fields. Off-site: A warehouse and yard have been built approximately 0.15km south of the Site on the opposite side of College Road.
2000	OSI Aerial photography	On-site: Additional tanks have been added to the tank farm at the existing College Proteins facility. Another large processing building has been built adjoining the main processing building to the south of the facility. The facility has been increased in size and additional buildings and set down areas/car parks are visible to the east of the main processing buildings in the fields adjoining College Road. Off-site: No significant changes.
2005	OSI Aerial photography	On-site: Additional tanks and two more buildings have been added to the existing facility. Three chimney stacks have also been added to the facility. Off-site: Two lagoons are now visible on lands to the east of College Road
2005-2013	OSI Aerial Photography	On-site: Additional hardstanding areas have been laid and a new entrance to the tank farm has been opened up at the existing facility. Off-site: Lands to the south of the Site have been planted with trees.
2022	Google Earth Imagery	On-site: A biodiesel processing building and a new tank farm have been constructed in the northern most part of the existing facility. Off-site: No significant changes.

6.3.3 Topography

The surrounding area is undulating, with numerous hummocks surrounding the site reaching 100mOD. These hummocks are drumlin and drumlin tails appear to be elongated along a south-easterly orientation, but this can vary.

At the existing facility, which lies at approximately 87mOD to 92mOD, the natural topography falls from College Road on the eastern boundary towards the western boundary which is characterised by a minor local valley. It is noted that site works have altered natural topography within the existing facility boundary.

The topography of the proposed AD plant area slopes to the south with ground elevations ranging from 95.0 meters above ordnance datum (mOD) to 89.5mOD.

The topography of the proposed infill area, which lies on the southern side of a minor local valley, slopes to the west toward the bank of Nobber Stream with ground elevations ranging from 79.5mOD to 76.0mOD. The lands to the north of the proposed infill area, which lies on the northern side of the minor local valley, slope to the south toward the bank of the Nobber Stream.

6.3.4 Soils

The soils beneath the majority of the Proposed Development Site have been mapped by Teagasc (Teagasc, 2022) as poorly drained fine loamy drift with siliceous stones of the Kilrush (0700h) soil series.

The Teagasc (Teagasc, 2022) mapped soils at the Site are present in Figure 6-3.

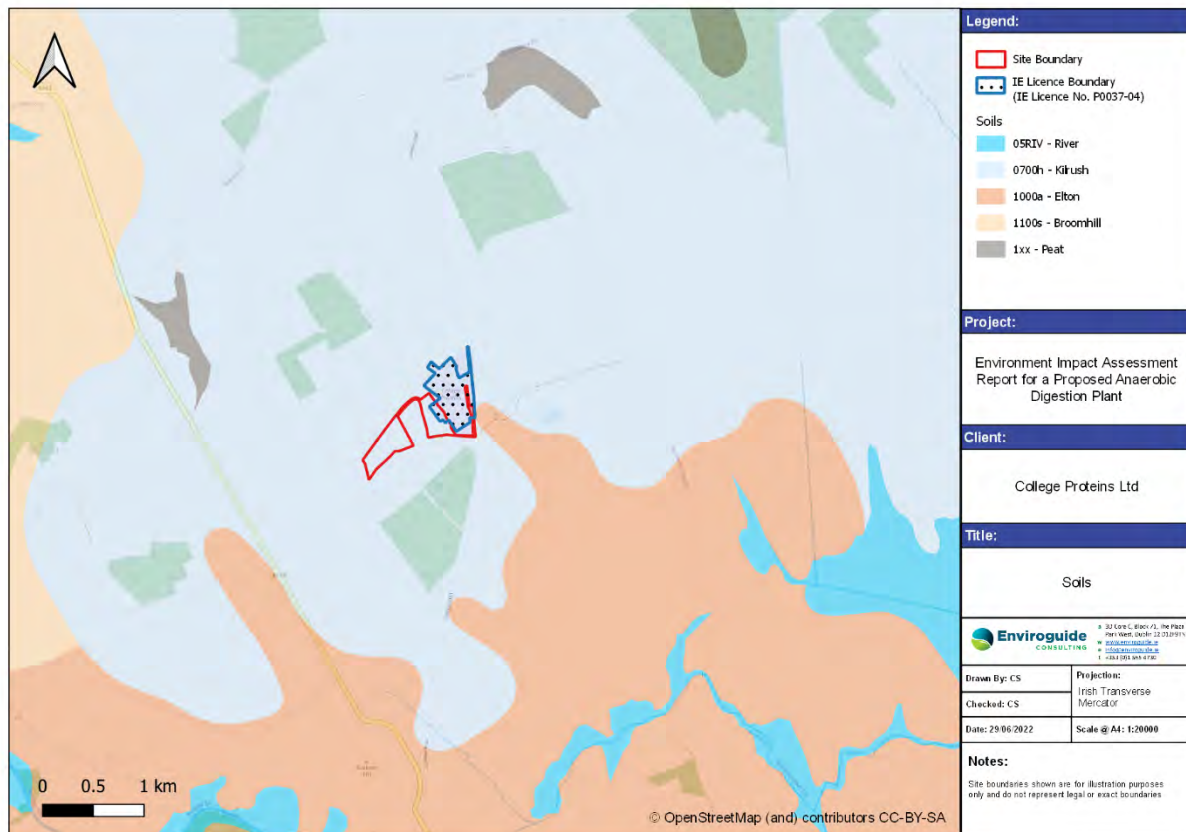


Figure 6-3: Soils

6.3.5 Quaternary Soils

The subsoils or quaternary soils beneath the Site are mapped by the GSI (GSI, 2022) as 'till derived from Namurian sandstones and shales (TNSSs)'.

The GSI (GSI, 2022) mapped subsoils or quaternary soils at the Site are present in Figure 6-4.

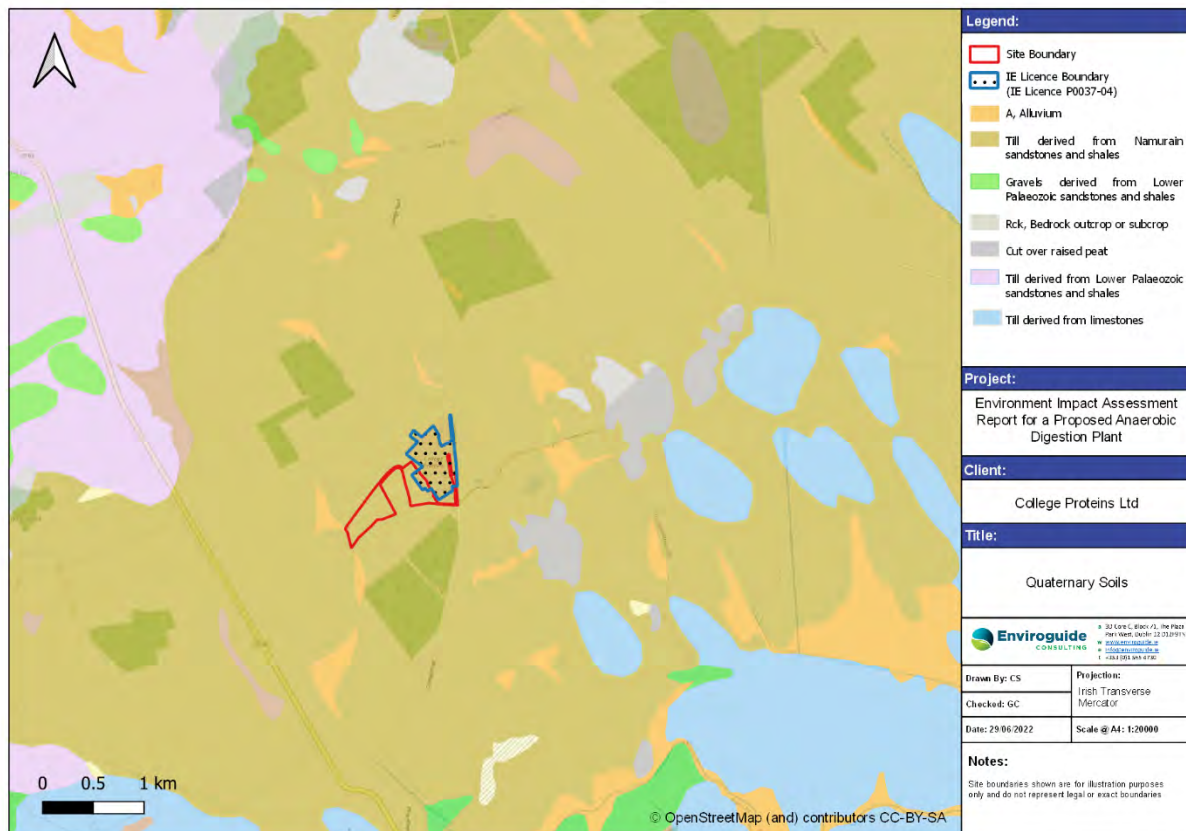


Figure 6-4: Quaternary Soils

6.3.6 Quaternary Geomorphology

There are a number of drumlins mapped by the GSI (GSI, 2022) within a 2km radius of the Site, one of which intersects the existing facility at the Site. The drumlin tails are generally elongated along a south-easterly orientation.

There are also eight (8No.) ribbed moraines mapped by the GSI (GSI, 2022) within a 2km radius of the Site, the closest of which is located 0.67km east of the Site.

6.3.7 Bedrock Geology

Based on the GSI database (GSI, 2022) the bedrock beneath the majority of the proposed AD plant area is mapped as the Fingal Group (undifferentiated) comprising dark limestone, shale and micrite. The bedrock beneath the remainder of the Site including the proposed infill area is mapped by the GSI (GSI, 2022) as the Ardagh Shale Formation comprising black shale.

There are a number of outcrops mapped within a 2km radius of the site boundary the closest of which is located 0.47km southeast of the Site.

The bedrock geology is presented in Figure 6-5.

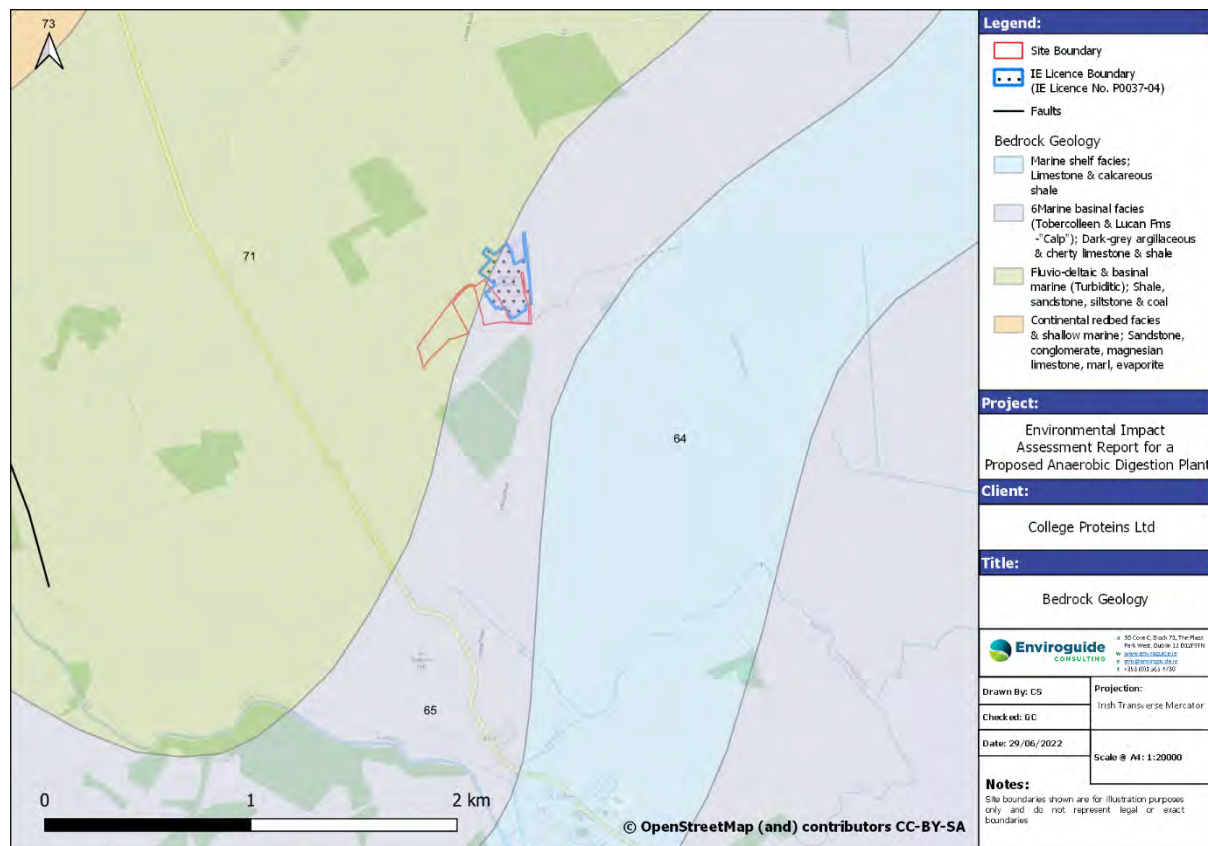


Figure 6-5: Bedrock Geology

6.3.8 Previous Site Investigation Results

Previous site investigations were carried out at the existing facility as part of the baseline assessment (EGC, 2020) which included the excavation of trial pits (TP1 through TP6). The borehole log for groundwater supply well GW4 at the existing facility was also reviewed (Dunnes Drilling, 2020).

Previous site investigations were undertaken by IGSL Drilling Ltd. within the proposed infill area in the west of the Site (IGSL, 2002 and IGSL, 2007), which included the excavation of trial pits (TP8 and TP9), and drilling of boreholes (BH5 through BH10 and RC2).

Additional trial pitting (Test Hole 1 and Test Hole 2) was undertaken by the Applicant within the footprint of the proposed AD facility area in the east of the Site (College Proteins Ltd., 2022).

The results of borehole drilling and the excavation of trial pits are discussed below.

6.3.8.1 Ground Conditions Encountered

The soil profile at the existing facility is summarised as follows:

- Made Ground: primarily comprising of reworked CLAY with varying silt, sand and gravel content was encountered to maximum depth of 0.8m (EGC, 2020);
- Brown to orange-brown, slightly silty, slightly gravelly CLAY with some assorted cobbles and boulders was encountered beneath the Made Ground to a maximum depth of 22.0mbGL (EGS, 2020 and Dunnes Drilling, 2020); and

- Bedrock was encountered as broken SHALE at depths below 22.0mbGL (Dunnes Drilling, 2020).

The soil profile at the proposed infill area is summarised as follows:

- Topsoil was encountered across the proposed infill area to 0.1mbGL;
- Grey to brown sandy gravelly CLAY was encountered to a maximum depth of 3.6mbGL (IGSL, 2002);
- Black sandy gravelly CLAY with cobbles and boulders was encountered to a maximum depth of 10.6mbGL (IGSL, 2002); and
- Bedrock was encountered as dark grey to black weathered SILTSTONE at depths below 10.6mbGL (IGSL, 2002)

The soil profile at the proposed AD facility area is summarised as brown sandy gravelly CLAY overlying black to grey sandy gravelly CLAY (College Proteins Ltd. 2022). Bedrock was not encountered during trial pit excavations undertaken by the Applicant.

Shallow groundwater seepages were encountered during trial pit excavations at the existing facility between 0.4mbGL at TP1 and 1.9mbGL at TP5 (EGC, 2020). Groundwater strikes at depths of 22.0mbGL and 70.0mbGL within the shale bedrock were also recorded during borehole drilling of GW4 at the existing facility (Dunnes Drilling, 2020). Groundwater strikes were not recorded during trial pit excavations and borehole drilling undertaken by IGSL and the Applicant at the Site (IGSL, 2002, IGSL, 2007 and College Proteins Ltd., 2022). Groundwater is assessed in Chapter 7 of this EIAR.

6.3.8.2 Soil Quality

A total of five (5No.) soil samples were collected from trial pit excavations to evaluate the existing ground (soil) conditions at the existing facility (EGC, 2020). It is noted that laboratory analysis of soils encountered during trial pit excavations and borehole drilling undertaken by IGSL and the Applicant at the Site of the Proposed Development (IGSL, 2002, IGSL, 2007 and College Proteins Ltd., 2022) was not undertaken. Nonetheless, the analytical results for spoil samples collected across the existing facility are discussed below.

With the exception of Dichloromethane (DCM) at trial pit location TP3(0.4m-1.0m), the reported concentrations of Total Petroleum Hydrocarbons (TPH), benzene, toluene, ethylbenzene, m/p-xylene and o-xylene (BTEX), methyl tertiary butyl ether (MTBE), Volatile Organic Compounds (VOCs) and Semi-volatile Organic Compounds (SVOCs), Volatile Fatty Acids (VFAs), alcohols/acetates and hydrogen peroxide were below the laboratory limits of detection. It is noted that the findings of the site investigation (EGC, 2020) concluded that the reported concentration of DCM was considered to be an anomalous occurrence potentially associated with the former use of the area as a temporary compound and car park during construction works at the existing facility.

The reported analytical results for soil samples collected at the existing facility were screened against the commercial land use (CL) soil Guideline assessment Criteria (GAC). The results for all samples were below the CL soil GACs and therefore there is no human health risk identified associated with the soil condition at the existing facility. Specific issues relating to Human Health associated with the Proposed Development are set out in Chapter 4 of this EIAR.

6.3.9 Radon

The Proposed Development site is mapped by the EPA (EPA, 2022) to be in an area where more than 20% of the homes in a 10km grid square are estimated to be above the national Reference Level of 200 Becquerel per cubic metre (Bq/m³) for long term exposure to radon in a house. A High Radon Area is any area where it is predicted that greater than 10% of homes will exceed the national Reference Level. Therefore, the Site is considered to be within a High Radon Area. It is noted that a high radon level can be found in any home, in any part of the country, but these homes are more likely to be located in High Radon Areas.

6.3.10 Geological Heritage

A review of the GSI Geological Heritage Database (GSI, 2022) indicates one (1No.) geological heritage site located within 2km radius of the Site which is identified as the Cregg (Site Code MH006) described as an area of natural rock outcrops and located approximately 0.76km east of the Site.

6.3.11 Economic Geology

The Site is mapped by the GSI (GSI, 2022) as having no potential for granular aggregate.

The bedrock beneath the majority of the Site has been identified by the GSI (GSI, 2022) as having a 'very low' potential for crushed rock aggregate. It is noted that a small portion in the eastern corner of the Site is mapped as having a 'moderate' potential for crushed rock aggregate (GSI, 2022).

6.3.12 Geohazards

The GSI (GSI, 2022) records for karst features indicate that there are no karst features within 2km of the Proposed Development site or within the shale bedrock formations beneath the Site.

The Proposed Development site and surrounding lands are located within an area with a 'low' landslide susceptibility classification (GSI, 2022). There are no recorded landslides within a 2km radius of the Site (GSI, 2022).

In Ireland, seismic activity is recorded by the Irish National Seismic Network operated by Dublin Institute for Advanced Studies (DIAS) which has been recording seismic events in Ireland since 1978. There are six permanent broadband seismic recording stations in Ireland operated by DIAS. Records since 2010 show that the majority of recorded seismic events were associated with quarry blasts and no recent events have been recorded within 2km of the Site.

6.3.13 Summary of Baseline

The eastern portion of the Site, which is located within the licenced boundary of the existing facility, comprises brownfield lands including an existing garage and a concrete tank. Based on the findings of previous site investigations, the soil quality at the existing facility has not been impacted with current and historic operational activities.

The western portion of the Site comprises greenfield undeveloped lands.

The Site is mapped within an area of having no potential for granular aggregate and a 'very low' potential for crushed rock aggregate given that the economic extraction of crushed rock aggregate at the Site is not feasible taking account of the thickness of clay overburden above the underlying shale bedrock.

Therefore, in accordance with the criteria in Table 6-1 the soil and geology underlying the Proposed Development site is be rated as an attribute of 'low' importance.

6.4 Characteristics of the Proposed Development

6.4.1 Construction Phase

The Construction Phase for the Proposed Development will involve the removal of an existing building, removal of soil from the site of the Proposed Development, the construction of the Anaerobic Digestion plant and raising the level of land near the solar farm with the excavated soil.

Phase 1 – The existing building garage and concrete tank on site will be demolished. The garage currently used for maintaining College Proteins vehicles has a floor area of 545.67m² and the building is 8.3 meters to the apex. The building is constructed from concrete, steel and Kingspan sheeting. The Kingspan sheeting, purloins and steel work will be carefully removed and stored to be re-used on other buildings in future projects. The concrete tank (bund area) has never been in use, therefore there is no chance of any soil contamination under this tank. This has a floor area of 178.79m² and a wall height of 2 meters. The concrete floors and walls of the existing building garage and concrete tank (totalling approx. 840m³ volume) will be removed off site for disposal in a licenced facility. The gravel from the yard surrounding the garage and concrete tank will be dug up and kept to one side pending testing for contamination and then will be re-used as filling on site if it is suitable. If not, the material will be treated in an authorised facility. The garage & concrete tank bund are detailed on drawing No. 21-21-23 attached in Appendix A.

Phase 2 – The soil (77,804.15m³) will be removed from the Site and will be infilled to fields to the west of the site. Ref. drawing 21-21-18 in Appendix A. A new weighbridge will be installed beside the existing rendering weighbridge, this will be separated with a fence and signage to direct traffic on site. There will be a new two-way road constructed on site separated from the rendering plant with a fence to access the proposed AD plant area. 21,500 tonnes approx. of stone filling and concrete will be brought to the site to create a base for building the road, yard, tank foundations, walls of the reception hall and AD tanks and bunded walls.

Phase 3 - The AD plant intake buildings, tanks, bund wall and road will be constructed. The intake building will be of steel frame construction, shuttered concrete walls, olive green insulated Kingspan sheeting and purloins. The olive green sheeting was selected to blend the colours into the agricultural surroundings around the site and therefore cause less visual impact. The AD tank bund will be a concrete wall construction with a concrete floor, the roadway to the plant will be a constructed from concrete. The intake tanks and glycerine tank will be constructed from stainless steel. The buffer tank, digesters and digestate storage tanks will be constructed from concrete. The pasteurisation tank will be constructed from glass lined steel.

The Proposed Development comprises of:

- Anaerobic Digestion (AD) Plant Reception building (food waste reception)
- Reception hall for solid feedstock (silage & Maize)
- Borger Fibre separation for digestate
- Workshop
- Office, control room, toilets and changing rooms
- Biobed
- 4 No. Liquid reception tank- 113m³ tanks
- 1 No. Glycerine tank- 78m³
- 1 No. Buffer tank – 983m³
- 1 No. Pasteurisation tank - 247m³
- 2 No. Digesters - 3682m³
- 2 No. Digestate Storage tanks – 2500m³
- Gas Flare
- Biogas Combined Heat and Power (CHP) Plant

Refer to Site Layout Plan drawing 21-21-14 in Appendix A.

Phase 4 – The fields where the soil will be deposited will be re-seeded and planted with grass and returned to agricultural use. Please see filling area on drawing ref. 21-21-18 in Appendix A.

The foundations for the main digester yard area will be on a raft foundation while the AD intake building will be on shallow strip foundations with no requirement for piling.

It is estimated by the Applicant that the Proposed Development will require the excavation of 77,804.15m³ of soil for the construction of building and tank foundations, to depths of up to 7.0mbGL. This includes an estimated 4,920m³ of soil excavated to depths of up to 2.0mbGL for the construction of the access road to the proposed infill area, surface water and foul water drainage including attenuation tanks, and other infrastructure. Based on the findings of previous site investigations, it is anticipated that the Proposed Development will not involve any excavation of bedrock.

It is anticipated that all soil excavated during the Construction Phase will remain onsite to be infilled within the undeveloped lands in the west of the Site subject to assessment of the suitability for use in accordance with engineering and environmental specifications that will be determined as part of the detailed design. The proposed infilling at the Site will be undertaken in three phases (i.e., Area 1 through Area 3). Filling operations will be confined to a selected area of the Site at any one time with each area being restored in a timely manner from commencement of the next phase.

Details of the existing ground level, the proposed change in elevation and the final cut and fill volumes are detailed in Figure 6-6 (Smith Associates Architects - Surveyors, July 2022. Site Layout Plan (Drawing No. 21-21-18)).

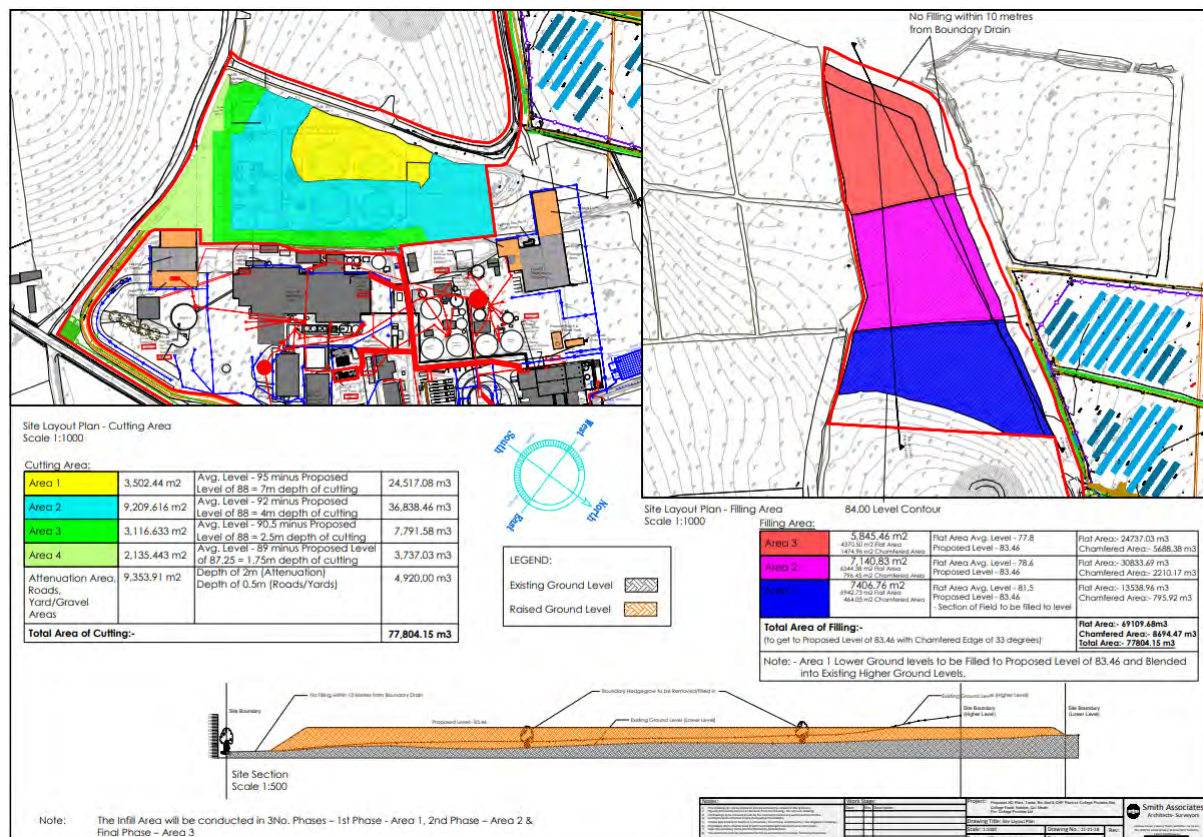


Figure 6-6. Proposed Cut / Fill Volumes

Once the proposed infilling works are complete, the surface will be seeded with grasses and the land use returned to agricultural lands (i.e., grazing of sheep / cattle).

It is estimated by the Applicant that the importation of 10,000m³ of aggregate fill materials will be required for the construction of the Proposed Development (e.g., granular material beneath road pavement, construction of building and tank foundations and for drainage and utility bedding / surrounds etc.).

Where required, fuels will be stored in appropriate bunded, integrity tested tanks, in accordance with conditions of the IE Licence (IE Licence No. P0037-04) and Emergency Management System (EMS) for the existing facility.

The existing welfare facilities at the Site will be available for the duration of the Construction Phase.

6.4.2 Operational Phase

The Operational Phase of the Proposed Development an AD facility to produce green Biogas to off-set the use of fossil fuels at the existing facility which is currently operational under IE Licence (IE Licence No. P0037-04) and Greenhouse Gas (GHG) Permit (GHG Permit No. IE-GHG123-10405-03). Gas will not be stored onsite.

All feedstocks accepted at the AD facility during the Operational Phase of the Proposed Development will be in accordance with approved acceptance procedures developed in compliance with the conditions of the IE Licence for the existing facility (IE Licence No. P0037-04). The digestate produced by the AD plant will be transported offsite to be spread on

farmlands as an organic fertiliser. The land spreading of digestate will be undertaken in accordance with the nutrient management plan for the receiving farmlands (note: the farmer using the digestate will manage the land spreading) and the controls set out in the European Union (Good Agricultural Practice for Protection of Waters) Regulations 2017, which include rate, timing, minimum distances from watercourses, circumstances under which organic fertiliser cannot be applied (e.g., land that is likely to flood, on steeply sloping ground) and record keeping.

There will be no requirements for the storage of fuels or refuelling at the Proposed Development which will be undertaken at the existing facility in accordance with the requirements of the IE Licence (IE Licence No. P0037-04).

6.5 Potential Impact of the Proposed Development

The procedure for determination of potential impacts on the receiving land, soils and geology is to identify potential receptors within the Proposed Development site boundary and surrounding environment and use the information gathered during the desk study and site walkover to assess the degree to which these receptors will be impacted upon in the absence of mitigation. Impacts are described in terms of quality, significance, duration, and type as detailed in Table 6-5.

6.5.1 Construction Phase

6.5.1.1 Direct

Land Use

As the current land use of the proposed infill area in the western portion of the Site is agricultural, it is considered that there will be no impact on land given that once the proposed infilling works are complete the land will be returned to agricultural lands (i.e., grazing of sheep/cattle).

The eastern portion of the proposed AD facility area is on lands within the boundary of the existing IE Licenced facility (IE Licence No. P0037-04) and therefore there is no change in land use for this portion of the Site. However, the change of land use from agricultural lands (i.e., grazing of sheep) to industrial land use in the western portion of the proposed AD facility area will result in a “negative”, “moderate”, and “permanent” impact on land due to the loss of agricultural lands.

Excavation of Soil and Subsoil

There will be an unavoidable loss of in-situ soils through excavation works for the construction of the proposed AD facility with the excavation of 77,804.15m³ of soils to depths of between 0.5mbGL and 7.0mbGL. The soils underlying the proposed AD facility area are considered to be of ‘low’ importance (refer to Section 6.3.13). Accordingly, there will be a direct ‘negative’, ‘slight’ and ‘permanent’ impact on the underlying soils at the Site.

Soil Structure

The excavation and infilling of soils at the Site will result in the exposure of the materials to various elements including weather and construction traffic. The temporary stockpiling of soils on site will be avoided and soils will be infilled in a controlled manner taking account of the

geological conditions at the Site with a potential 'negative', 'slight' and long-term' impact on the natural strength of the materials.

Soil Quality and Contamination

The infilling of all soils excavated during the Construction Phase to increase the levels of the undeveloped lands in the west of the Site will have a 'neutral', 'imperceptible' and 'permanent' impact given that it will have undergone testing for contaminants, invasive species and other anthropogenic inclusions and assessment of the suitability for use in accordance with engineering and environmental specifications for the Proposed Development.

There is a potential risk associated with the use of cementitious materials during construction of the building foundations, infrastructure and other in ground works at the site. It is considered that this may result in a 'negative', 'moderate' and 'long-term' impact on existing quality of soil within a localised areas underlying the Site.

The potential accidental release of deleterious materials including fuels and other materials being used on-site, through the failure of secondary containment or a materials' handling accident on the Proposed Development site could potentially result in a 'negative', 'moderate to significant', 'long-term' impact on the receiving geological environment depending on the nature of the incident.

Importation of Aggregate Materials

The Proposed Development will include the importation of 10,000m³ of aggregate materials for the construction of the Proposed Development (e.g., granular material beneath road pavement, under floor slabs and for drainage and utility bedding / surrounds etc.).

In the unlikely event that aggregate materials are sourced from unlicensed or unauthorised sources, it may result in the importation of uncertified or material not suitable for use at the Site. In the unlikely event of the importation of contaminated materials on-site, there will be a 'negative', 'moderate to significant' and 'long term' impact on the receiving lands, soil and geology at the Site.

Geological Hazards

Earthquakes are not likely to occur in the vicinity of the Site at a sufficient intensity to pose a risk for the Proposed Development. The GSI database indicates that the Site is located within an area of low susceptibility to landslides. The detailed design for the proposed infilling of soils will be specified by an appropriately qualified geotechnical Engineer to ensure that ground stability is engineered and controlled appropriately. Therefore, there will be no potential ground stability hazards associated with the infilling of soils at the Site.

The Site is not located within an area associated with karst geology due to the nature of the underlying shale bedrock and therefore there are no identified risks associated with karst features.

All aggregates imported to the Site for use in the Proposed Development will be subject to strict quality control procedures in accordance with the design specification and relevant Building Regulations therefore avoiding any potential issues with pyrite in aggregates.

Human Health

The Site is identified as being located within a High Radon Area. The design and specification of the Proposed Development will be in accordance with current Building Regulations and therefore any potential issues associated with radon will be addressed and avoided. Human health is assessed in Chapter 4 of this EIAR.

Appropriate industry standard and health and safety legislative requirements will be implemented during the Construction Phase that will be protective of site workers. The necessary measures will also be implemented to address any nuisance issues associated with dust dispersion during construction works including the bulk excavation of soils. The potential impacts associated with airborne dust is addressed in Chapter 8 (Air and Climate) of this EIAR.

6.5.1.2 Indirect

Importation of Fill Material

The Proposed Development will include the importation of 10,000m³ aggregates during the Construction Phase of the Proposed Development. The potential impacts may include loss of attribute and changes in the geological regime at the source site. It is anticipated that the required aggregates identified for importation on-site will have a 'neutral', 'imperceptible' and 'permanent' impact on the source site taking account of the fact that the statutory consent process will require the necessary environmental impacts to be assessed and mitigated as appropriate at the source site.

In order to minimise the requirement to import virgin quarried materials, recycled aggregates will be used where available and subject to meeting specified design requirements and all construction and environmental legislation. This will include where suitable, by-products that meet the legislative requirements of an Article 27 By-Product Notification of the European Union (Waste Directive) Regulations 2011-2022 and other applicable statutory requirements.

6.5.1.3 Secondary

There will be no secondary impacts associated with the Construction Phase of the Proposed Development.

6.5.2 Operational Phase

During the Operational Phase of the Proposed Development there is limited to no potential for any direct impact on the receiving land, soil and geology environment at the Proposed Development Site taking account of the operational design for the Proposed Development.

6.5.2.1 Direct

Soil Quality and Contamination

Treated effluent and sludges arising from the WWTP will continue to be disposed of by land spreading in accordance with the conditions of the IE Licence (IE Licence No. P0037-04). The potential impact with the WWTP is assessed in Chapter 7 (Hydrology and Hydrogeology) of this EIAR.

With the exception of the continued discharge of surface water runoff from the proposed infill area to ground, albeit limited, there will be no additional discharges to ground during the Operational Phase of the Proposed Development.

The potential accidental release of hazardous material including fuels, oils or chemicals being used on-site with any associated impact on the receiving land, soil and geology environment would only occur through the failure of secondary containment or a major incident on the Site could potentially result in a 'negative' 'moderate to significant' and 'long-term'. However, taking account of operational design and the EMS already in place for the existing facility to effectively manage such an incident and prevent environmental harm this scenario is deemed unlikely.

Human Health

No public health issues associated with the land, soil, geology conditions at the site have been identified for the Operational Phase of the Proposed Development. Human health is assessed in Chapter 4 (Population & Human Health) of this EIAR.

6.5.2.2 Indirect

The AD plant will produce a nutrient rich digestate which is suitable for use as a biofertiliser. This digestate will be transported offsite to be spread on farmlands as an organic fertiliser, in accordance with nutrient management plan for the receiving farmlands (note: the farmer using the digestate will manage the land spreading) and the controls set out in the European Union (Good Agricultural Practice for Protection of Waters) Regulations 2017, which include rate, timing, minimum distances from watercourses, circumstances under which organic fertiliser cannot be applied (e.g., land that is likely to flood, on steeply sloping ground) and record keeping. The use of digestate will have a positive impact of on the receiving lands given the improved recycling of nutrients and reduction of organic pollution / microbial contamination associated with untreated organic waste sources. Therefore, it is considered that there will be an overall 'positive', 'slight' and 'long term' impact on the receiving soil quality.

There will be no other indirect impacts associated with the Operational Phase of the Proposed Development.

6.5.2.3 Secondary

There will be no secondary impacts associated with the Operational Phase of the Proposed Development.

6.5.3 Potential Cumulative Impacts

Cumulative Impacts can be defined as "impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project". Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the cumulation of different effects that are individually minor. Such effects are not caused or controlled by the project developer.

A review of other off-site developments and Proposed Developments was completed as part of this environmental assessment.

The importation of aggregates to the Proposed Development may be sourced from the same borrow site as other permitted developments in the vicinity of the Site. However, contract and procurement procedures will ensure that all aggregates and fill material originating from quarry sources that will be required for construction are sourced from reputable authorised suppliers

operating in a sustainable manner and in accordance with the necessary statutory consents. Therefore, regardless of the number of other projects and developments using aggregates from the same source sites, there will be an 'indirect', 'neutral', 'imperceptible' and 'permanent' impact on the geological environment at the source site.

There are no other cumulative impacts on land, soil or geology associated with the Construction Phase and Operational Phase of the Proposed Development.

6.5.4 “Do Nothing” Impact

In the 'Do Nothing' scenario the potential impact on the receiving land, soils and geological environment of the Proposed Development did not proceed is considered.

It is considered that there would be no change or resulting impact on the nature of the Proposed Development, the derelict buildings in the eastern portion of the Site would remain, the remaining lands at the Site would continue to be used as agricultural land and there would be no impact or change to the land, soil, geology across the Site.

6.6 Avoidance, Remedial & Mitigation Measures

The mitigation measures, as outlined below, will ensure that there will be no significant impact on the receiving land, soil, and geology environment.

6.6.1 Construction Phase

Prior to the commencement of the Construction Phase, the appointed Contractor will prepare a detailed Preliminary Construction Environmental Management Plan (CEMP), including detailed construction phasing and measures to manage and prevent any potential emissions to ground.

All construction works will be undertaken having regard to the relevant industry standards (e.g., Guidance for Consultants and Contractors, CIRIA - C532', CIRIA, 2001).

During the Construction Phase the Contractor will comply with the environmental control and mitigation requirements as per the conditions of the IE Licence (IE Licence No. P0037-04) for the existing facility to ensure there will be no impact on the receiving land, soil and geology.

The EMS that is already in place for the existing facility will be strictly implemented for the Construction Phase of the Proposed Development.

6.6.1.1 Excavation and Handling of Soils

Prior to excavation, a detailed review of the final cut and fill model will be carried out to confirm cut and fill volumes. Detailed quantities of material to be excavated will be verified through accurate survey techniques by the groundworks contractor at the Construction Phase.

Excavated soils will be carefully managed and maintained in order to minimise potential impact on soil quality and soil structure. Handling of soils will be undertaken in accordance with documented procedures that will be set out in order to protect ground and minimise airborne dust. The normal measures required to prevent airborne dust emissions and associated nuisance arising from site work will be in place including measures to prevent uncovered soil drying out leading to wind pick up of dust and mud being spread onto the local road network and adjoining properties. This will require additional wetting at the point of dust release,

dampening down during dry weather and wheel cleaning for any vehicles leaving the Site. Potential impacts and avoidance and mitigation measures associated with generation of dust are addressed in Chapter 8.

6.6.1.2 Infilling of Soils

The detailed design will be specified by an appropriately qualified geotechnical Engineer for the proposed infilling to ensure that ground stability is engineered and controlled appropriately.

All working faces will be inspected and assessed daily by an appropriately qualified geotechnical Engineer and the geometries of the working faces amended where required appropriate to the characteristics of soil materials. Soils will be infilled and compacted in a manner to prevent subsidence within the infilled sections.

Filling operations will be confined to a selected area of the site at any one time with each area being restored in a timely manner from commencement of the next phase. Once the proposed infilling works are complete, the surface will be seeded with grasses.

The infilling of the lands to the north of the Site with surplus soils generated during construction works will be subject to control procedures which will include testing for contaminants, invasive species and other anthropogenic inclusions and assessment of the suitability for use in accordance with engineering and environmental specifications for the Proposed Development. Any unsuitable materials will be removed from the Site in accordance with all legislative requirements.

6.6.1.3 Importation of Aggregate Materials

Contract and procurement procedures will ensure that all aggregate materials required are sourced from reputable suppliers operating in a sustainable manner and in accordance with industry conformity and compliance standards and statutory obligations.

The importation of aggregates will be subject to management and control procedures which will include testing and assessment of the suitability for use in accordance with engineering and environmental specifications for the Proposed Development including the suitability of material that may be imported in accordance with an Article 27 By-Product Notification of the European Union (Waste Directive) Regulations 2011-2022. Therefore, any unsuitable material will be identified and avoided prior to importation to the Site.

Pre-cast concrete will be used where technically feasible to meet the design requirements for the Proposed Development. Where cast-in-place concrete is required, all work will be carried out to avoid any contamination of the receiving geological environment through the use of appropriate design and methods implemented by the appointed Contractor and in accordance with relevant industry standards.

All ready-mixed concrete will be delivered to the Proposed Development site by truck. The following measures will be implemented where poured concrete is being used on site:

- The production, transport and placement of all cementitious materials will be strictly planned and supervised. Site batching/production of concrete will not be carried out on Site;

- Shutters will be designed to prevent failure. Grout loss will be prevented from shuttered pours by ensuring that all joints between panels achieve a close fit or that they are sealed;
- Where concrete is to be placed by means of a skip, the opening gate of the delivery chute will be securely fastened to prevent accidental opening;
- Where possible, concrete skips, pumps and machine buckets will be prevented from slewing over water when placing concrete;
- Concrete mixer trucks will not be permitted to wash out on-site with the exception of cleaning the chute into a container which will then be emptied into a skip for appropriate compliant removal offsite; and
- Surplus concrete will be returned to batch plant after completion of a pour.

6.6.1.4 Handling of Fuels and Hazardous Materials

Fuels will be stored in appropriate bunded, integrity tested tanks, in accordance with Condition 11.4 of the IE Licence (IE Licence No. P0037-04). All tank and drum storage areas, will be rendered impervious to the materials stored therein. In addition, tank and drum storage areas will as a minimum be bunded, either locally or remotely, to a volume not less than the greater of the following:

- 110% of the capacity of the largest tank or drum within the bunded area; or
- 25% of the total volume of substance that could be stored within the bunded area.

Refuelling will be carried out in accordance with the procedures outlined in the existing EMS and any requirements of the IE Licence (IE Licence No. P0037-04) for the existing facility. Refuelling will be carried out in a designated area with appropriate containment measures in place to minimise any risk of spills. Spill kits will be provided on-site to deal with any spills or leaks that may occur during refuelling.

The appointed Contractor for the Construction Phase of the Proposed Development will ensure that all plant and equipment utilised on-site is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the Proposed Development site. Only emergency breakdown maintenance will be carried out on-site. Drip trays and spill kits will be available on-site to ensure that any spills from vehicles are contained and removed off-site.

There may also be the requirement for use of portable generators or similar fuel containing equipment during the Construction Phase of the Proposed Development, which will be placed on suitable drip trays. Regular monitoring of drip tray content will be undertaken to ensure sufficient capacity is maintained at all times.

Emergency procedures developed in accordance with Condition 14 of the IE Licence and outlined in the existing EMS will be strictly implemented by the appointed Contractor and spillage kits will be available on-site including in vehicles operating on-site. Construction staff will be familiar with emergency procedures for in the event of accidental fuel spillages.

In the event of a leak or spill from equipment (e.g., leak or spill from machinery during construction works), any contaminated soil will be removed from the Site and compliantly disposed off-site. Residual soil will be tested to validate that all potentially contaminated material has been removed. This procedure will be undertaken in accordance with industry best practice procedures and EPA guidelines.

6.6.2 Operational Phase

During the Operational Phase of the Proposed Development there is limited to no potential for any impact on the receiving land, soil and geology environment and therefore there is no mitigation required in regard to the Proposed Development.

The avoidance measures, as outlined below, which are in place as part of the baseline condition at the Site, will ensure that there will be no significant impact on the receiving land, soil and geological environment.

The procedures set out in the EMS and conditions of the IE Licence (IE Licence No. P0037-04) will be strictly adhered to for the duration of the Operational Phase.

Emergency procedures developed in accordance with Condition 14 of the IE Licence and outlined in the existing EMS will be strictly implemented during the Operational Phase of the Proposed Development and spillage kits will be available on-site including in vehicles operating on-site. All staff will be familiar with emergency procedures for in the event of accidental fuel spillages.

6.6.3 “Worst Case” Scenario

The potential accidental release of hazardous material including fuels, waste materials being used on-site with any associated impact on the receiving land, soil and geology environment would only occur through the failure of secondary containment or a major incident on the Site. However, this worst-case scenario is deemed to be an unlikely scenario taking account of the emergency procedures developed for the existing facility in accordance with Condition 14 of the IE Licence and outlined in the existing EMS, and the embedded design avoidance measures and mitigation measures for the Proposed Development.

6.7 Residual Impacts

Residual Impacts are defined as ‘effects that are predicted to remain after all assessments and mitigation measures. They are the remaining ‘environmental costs’ of a project and are the final or intended effects of a development after mitigation measures have been applied to avoid or reduce adverse impacts.

The predicted impacts of the Construction and Operational Phases are described in Table 6-4 in terms of quality, significance, extent, likelihood and duration. The relevant mitigation measures are detailed, and the residual impacts are determined which take account of the avoidance, remedial and mitigation measures.

There are no significant residual impacts on land, soils and geology anticipated regarding this Proposed Development.

Table 6-4. Summary of Residual Impacts

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
Construction Phase								
Use of the Proposed Development	Land use	There will be a change of land use from agricultural lands (i.e., grazing of sheep) to industrial land use in the western portion of the proposed AD facility area.	Negative	Moderate	Permanent	Direct	None required. The loss of soil at the Site is unavoidable.	Moderate
Excavation of Soils	Soils	There will be an unavoidable loss of in-situ soil, subsoil through excavation works to achieve the formation levels for the Proposed Development.	Negative	Slight	Permanent	Direct	None Required.	Slight
Excavation and Infilling of Soils	Soil Structure	The excavation and infilling of soils at the Site will result in the exposure of the materials to various elements including weather and construction traffic.	Negative	Slight	Long Term	Direct	All works will be undertaken in accordance with the requirements of the Preliminary CEMP. Excavated soils will be carefully managed and maintained in order to minimise potential impact on soil quality and structure.	Imperceptible
Infilling of Soils	Soil Quality	The infilling of excavated soils has the potential to impact on the receiving land, soil and geology at the Site.	Neutral	Imperceptible	Permanent	Direct	None required. The infilling of soils at the Site will be subject to testing for contaminants, invasive species and other anthropogenic	Imperceptible

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
							inclusions and assessment of the suitability for use in accordance with engineering and environmental specifications for the Proposed Development.	
Use of cementitious materials	Soil Quality	Potential release of cementitious material during construction works.	Negative	Moderate	Long-term	Direct	Where cast-in-place concrete is required, all work will be carried out to avoid any contamination of the receiving geological environment through the use of appropriate design and methods implemented by the appointed Contractor and in accordance with relevant industry standards.	Imperceptible
Accidental Release of Deleterious Materials Including Fuel and Other Materials Being Used On-site	Soil Quality	Potential (albeit low) for uncontrolled release of deleterious materials including fuels and other materials being used on-site, through the failure of secondary and tertiary containment or a materials handling accident, to the land, soil and geological environment.	Negative	Moderate to Significant	Long-term	Direct	Refuelling of plant and storage of any deleterious materials including fuels will be undertaken in accordance with the requirements of the IE Licence and procedures outlined in the EMS that is already in place for the existing facility.	Imperceptible

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
Importation of Soil and Aggregate Materials	Land, Soil and Geology	The Proposed Development will include the importation of aggregate materials. The potential impacts may include importation of unsuitable of contaminated materials.	Negative	Moderate to Significant	Long-term	Direct	Contract and procurement procedures will ensure that all imported soil and stone / aggregate materials meet with industry conformity/compliance standards and statutory obligations.	Imperceptible
Import of required aggregates for the construction of the Proposed Development.	Land, Soil and Geology at the source site	The potential impacts may include loss of attribute and changes in the geological attribute at the source site. Only certified materials from authorised sources will be used.	Neutral	Imperceptible	Permanent	Indirect	Contract and procurement procedures will ensure that all imported soil and stone / aggregate materials meet with industry conformity/compliance standards and statutory obligations.	Imperceptible
Operational Phase								
Use of the Proposed Development	Land, Soil and Geology	During the Operational Phase of the Proposed Development there is limited potential for any direct adverse impact on the receiving land, soil and geological environment at the Site. There will be no discharges to, excavation of, or infilling of ground.	Neutral	Imperceptible	Permanent	Direct	None required.	Imperceptible
Land Spreading of	Soil Quality	The use of digestate will have a positive impact of on	Positive	Slight	Long Term	Indirect	None Required. The land spreading of	Imperceptible

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
Digestate from AD Plant on Offsite Farmlands		the receiving lands given the improved recycling of nutrients and reduction of organic pollution / microbial contamination associated with untreated organic waste sources.					digestate will be undertaken in accordance with the nutrient management plan (carried out by the farmer on their landbank. The farmer using the digestate will manage the land spreading) for the receiving farmlands and the controls set out in the European Union (Good Agricultural Practice for Protection of Waters) Regulations 2017.	

6.8 Monitoring

6.8.1 Construction Phase

There are no monitoring requirements specifically in relation to hydrology and hydrogeology during the Construction Phase of the Proposed Development.

6.8.2 Operational Phase

The Proposed Development will operate under the IE Licence (IE Licence No. P0037-04) which will be amended include the proposed Development. The operator will comply with any monitoring requirements as per the conditions of the IE Licence (IE Licence No. P0037-04).

There are no additional monitoring requirements specifically in relation to hydrology and hydrogeology during the Operational Phase of the Proposed Development.

6.9 Interactions

6.9.1 Population and Human Health

Appropriate industry standard and health and safety legislative requirements will be implemented during the Construction Phase of the Proposed Development that will be protective of site workers.

Specific issues relating to Public Health associated with the Proposed Development are set out in Chapter 4 of this EIAR.

6.9.2 Hydrology and Hydrogeology

An assessment of the potential impact of the Proposed Development on the hydrological and hydrogeological environment is included in Chapter 7 of this EIAR. Procedures for the protection of receiving water environment are also set out in Chapter 7 of this EIAR.

6.9.3 Material Assets

An assessment of the potential impact of the Proposed Development on the material assets including built services, infrastructure and waste management is included in Chapter 12 of this EIAR.

6.9.4 Biodiversity

An assessment of the potential impacts of the Proposed Development on the Biodiversity of the site, with emphasis on habitats, flora and fauna which may be impacted a result of the Proposed Development are included in Chapter 5 of this EIAR. It also provides an assessment of the impacts of the Proposed Development on habitats and species, particularly those protected by national and international legislation or considered to be of particular conservation importance and proposes measures for the mitigation of these impacts.

6.9.5 Landscape and Visual

During the construction phase the topography of the proposed infill area will be increased and the land use within the western portion of the proposed AD facility will undergo a change from

agricultural land use to industrial land use. An assessment of the potential impact of the Proposed Development on the receiving landscape is included in Chapter 10 of this EIAR.

6.9.6 Air Quality and Climate

The excavation and infilling of soils at the Site has the potential to generate nuisance impacts (i.e., dust). An assessment of the potential impact of the Proposed Development on air quality and climate is included in Chapter 8 of this EIAR.

6.10 Difficulties Encountered When Compiling

No difficulties were encountered in the preparation of this Chapter of the EIAR.

6.11 References

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Smith Associates Architects - Surveyors, July 2022. Site Layout Plan (Drawing No. 21-21-18).

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7 HYDROLOGY AND HYDROGEOLOGY

7.1 Introduction

This Chapter of the Environmental Impact Assessment Report (EIAR) provides a description of the hydrology and hydrogeology (water) environment within and immediately surrounding the Site of the Proposed Development and an assessment of the potential impacts of the Proposed Development on hydrology and hydrogeology and sets out any required mitigation measures where appropriate.

The principal objectives of this Chapter are to identify:

- Hydrological and hydrogeological characteristics of the receiving environment at the Proposed Development site;
- Potential impacts that the Proposed Development may have on the receiving water environment;
- Potential constraints that the environmental attributes may place on the Proposed Development;
- Required mitigation measures which may be necessary to minimise any adverse impacts related to the Proposed Development; and
- Evaluate the significance of any residual impacts.

7.1.1 Quality Assurance and Competence

This Chapter of the EIAR was written by Gareth Carroll BAI, Senior Environmental Consultant with Enviroguide Consulting with over 9 years' experience of environmental assessment of brownfield and greenfield sites. The Chapter was reviewed by Claire Clifford BSc., MSc., PGeo., EurGeol who is Technical Director of the Contaminated Land and Hydrogeology Division of Enviroguide Consulting and is a Professional Geologist with the Institute of Geologists of Ireland and has extensive experience in preparing environmental assessments for a range of project types and geological and hydrogeological site settings.

7.1.2 Description of the Proposed Development

Recognising the climate emergency and the responsibility to address it, the Applicant is striving to reduce their carbon footprint and become a carbon neutral operation by investing in a greener future, through sustainable projects.

The Applicant is proposing to construct an Anaerobic Digestion (AD) Facility to produce green Biogas which will off-set the use of fossil fuels on-site, therefore reducing the company's carbon footprint. The biogas produced from the AD Facility can be used in the on-site steam boilers and Combined Heat and Power (CHP) plants to generate steam and electricity to run the production facilities on-site.

The Applicant is committed to sustainability and maximising the resource value of organic material from all sources. The Proposed Development will reduce the requirement for natural gas use on-site which will aid the company's self-sufficiency in this regard.

The Proposed Development will consist of the demolition of an existing garage and the provision of an Anaerobic Digestion Facility with an intake of up to 50,000 tonnes of organic feedstock material per annum. The Facility will comprise a waste reception building (incorporating workshop, control room and welfare facilities), 2 No. digester tanks, 2 No. digestate storage tanks, glycerine tank, buffer tank, pasteuriser tank, 4 No. liquid reception tanks; all of the above tanks located within a fully bunded concrete area; associated biofilter, gas flare, biogas combined heat and power plant, internal access roads, weighbridge, truck loading area and soil deposition area. The Proposed Development will also include all associated site development, drainage and infrastructure works above and below ground. The maximum height of the Proposed Development is the chimney stack associated with the biofilter at c. 18m above ground level.

AD is a sustainable form of renewable energy production through a naturally occurring biological process in which micro-organisms break down biodegradable material in the absence of oxygen in an enclosed system. The process produces a methane-rich biogas and a nutrient rich fertiliser known as 'digestate'. The biogas can be converted into renewable electricity, or it can be upgraded to biomethane for use in on site boilers, as a vehicle fuel or for injection directly into the gas network to provide a source of renewable heat.

Feedstocks proposed for biogas production include grass and maize silage, food waste, slurry, sludges from food processing plants.

The Proposed Development site layout is presented in Figure 7-1 (Smith Associates Architects – Surveyors, May 2022. Site Layout Plan (Drawing No. 21-21-14)).

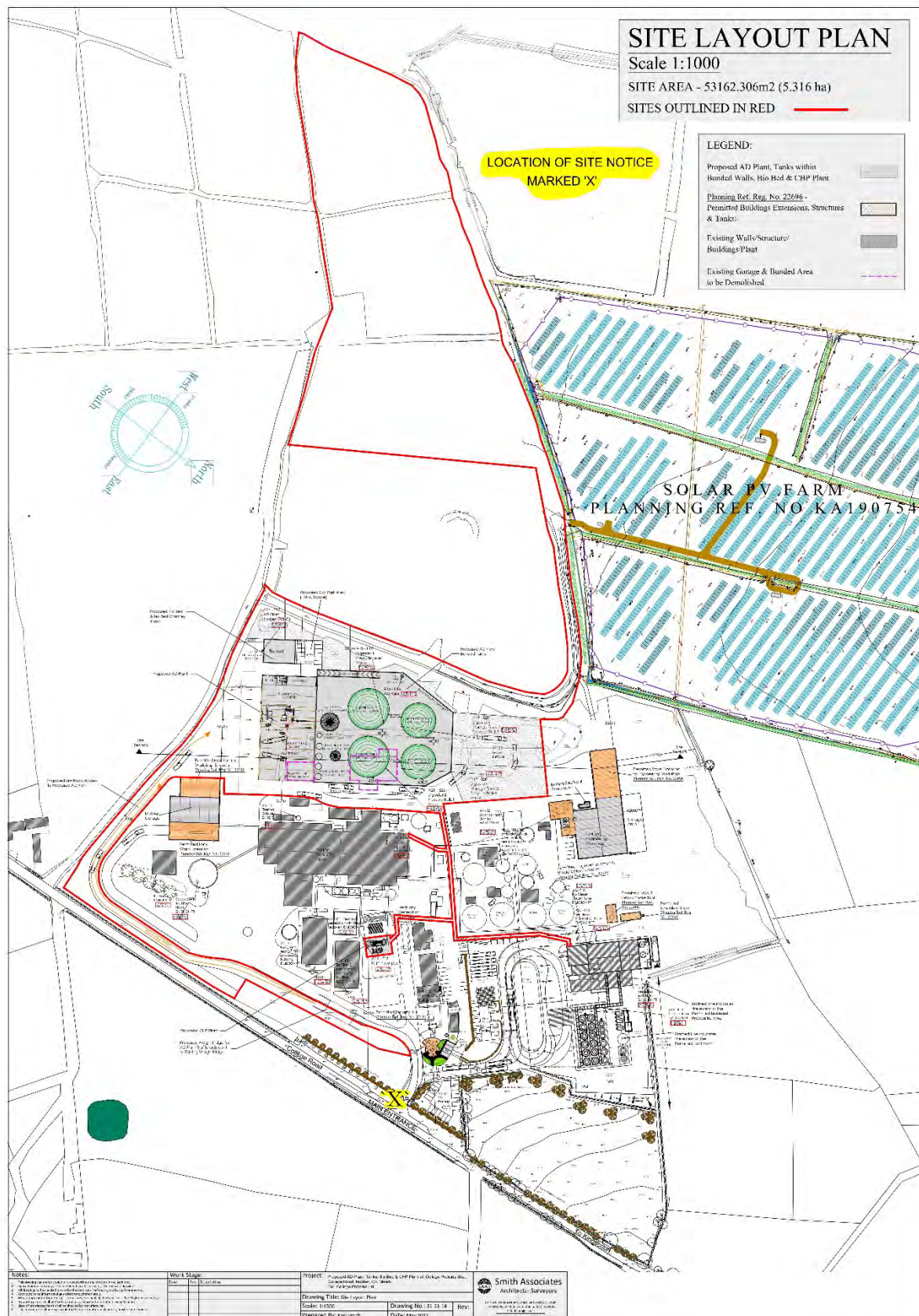


Figure 7-1: Proposed Development Site Layout

7.1.2.1 Construction Phase

The Construction Phase for the Proposed Development will involve the removal of an existing building, removal of soil from the site of the Proposed Development, the construction of the Anaerobic Digestion plant and raising the level of land near the solar farm with the excavated soil.

Phase 1 – The existing building garage and concrete tank on site will be demolished. The garage currently used for maintaining College Proteins vehicles has a floor area of 545.67m² and the building is 8.3 meters to the apex. The building is constructed from concrete, steel and Kingspan sheeting. The Kingspan sheeting, purloins and steel work will be carefully removed and stored to be re-used on other buildings in future projects. The concrete tank (bund area) has never been in use, therefore there is no chance of any soil contamination under this tank. This has a floor area of 178.79m² and a wall height of 2 meters. The concrete floors and walls of the existing building garage and concrete tank (totalling approx. 840m³ volume) will be removed off site for disposal in a licenced facility. The gravel from the yard surrounding the garage and concrete tank will be dug up and kept to one side pending testing for contamination and then will be re-used as filling on site if it is suitable. If not, the material will be treated in an authorised facility. The garage & concrete tank bund are detailed on drawing No. 21-21-23 attached in Appendix A.

Phase 2 – The soil (77,804.15m³) will be removed from the Site and will be infilled to fields to the west of the site. Ref. drawing 21-21-18 in Appendix A. A new weighbridge will be installed beside the existing rendering weighbridge, this will be separated with a fence and signage to direct traffic on site. There will be a new two-way road constructed on site separated from the rendering plant with a fence to access the proposed AD plant area. 21,500 tonnes approx. of stone filling and concrete will be brought to the site to create a base for building the road, yard, tank foundations, walls of the reception hall and AD tanks and bunded walls.

Phase 3 - The AD plant intake buildings, tanks, bund wall and road will be constructed. The intake building will be of steel frame construction, shuttered concrete walls, olive green insulated Kingspan sheeting and purloins. The olive green sheeting was selected to blend the colours into the agricultural surroundings around the site and therefore cause less visual impact. The AD tank bund will be a concrete wall construction with a concrete floor, the roadway to the plant will be constructed from concrete. The intake tanks and glycerine tank will be constructed from stainless steel. The buffer tank, digesters and digestate storage tanks will be constructed from concrete. The pasteurisation tank will be constructed from glass lined steel.

The Proposed Development comprises of:

- Anaerobic Digestion (AD) Plant Reception building (food waste reception)
- Reception hall for solid feedstock (silage & Maize)
- Borger Fibre separation for digestate
- Workshop
- Office, control room, toilets and changing rooms
- Biobed
- 4 No. Liquid reception tank- 113m³ tanks
- 1 No. Glycerine tank- 78m³

- 1 No. Buffer tank – 983m³
- 1 No. Pasteurisation tank - 247m³
- 2 No. Digesters - 3682m³
- 2 No. Digestate Storage tanks – 2500m³
- Gas Flare
- Biogas Combined Heat and Power (CHP) Plant

Refer to Site Layout Plan drawing 21-21-14 in Appendix A.

Phase 4 – The fields where the soil will be deposited will be re-seeded and planted with grass and returned to agricultural use. Please see filling area on drawing ref. 21-21-18 in Appendix A.

7.1.2.2 Operational Phase

The existing facility will continue to operate as an animal by-product rendering plant, a biodiesel production facility and a solar farm, with the addition of an anaerobic digestion facility. The existing facility is currently operational under IE Licence (P0037-04) and Greenhouse Gas Permit (GHG Permit) No. IE-GHG123-10405-03.

An application for a review of the existing IE License will be made to the Environmental Protection Agency as the introduction of an anaerobic digestion facility will result in changes to the environmental emissions from the facility. The GHG Permit may also need to be revised, and the EMS will be updated accordingly.

The Proposed Development will be operated in accordance with the requirements of the planning grant conditions and updated requirements of the reviewed IE Licence, GHG Permit, EMS and Safety Report for the facility.

A summary of the Proposed Development is described in Chapter 2 of this EIAR.

7.2 Study Methodology

7.2.1 Regulations and Guidance

The methodology adopted for the assessment has regard to the relevant guidelines in particular the following:

- Council Directive 80/68/EEC, 1979. On the protection of groundwater against pollution caused by certain dangerous substances. Council of European Communities.
- Council Directive 2006/118/EEC, 2006. On the protection of groundwater against pollution and deterioration. European Parliament and the Council of European Communities.
- Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy with amendments 2455/2001/EC, 2008/32/EC and 2008/105/EC (Water Framework Directive, WFD);

- Department of the Environment, Heritage and Local Government, Environmental Protection Agency and Geological Survey of Ireland, 1999. Groundwater Protection Schemes (Groundwater Protection Schemes, 1999);
- Department of the Environment, Heritage and Local Government, 2009. Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DEHLG, 2009);
- Environmental Protection Agency, May 2022. Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Institute of Geologists of Ireland Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements (IGI, 2013);
- Local Government, July 1990. No. 21.1990. Local Government (Water Pollution) (Amendment) Act, 1990;
- Local Government, March 1977. No. 01/1977. Local Government (Water Pollution) Act, 1977;
- Meath County Development Plan 2021-2027 (MCC, November 2021);
- National Roads Authority, 2009. Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA, 2009);
- OPR, June 2021. OPR Practice Note PN02. Environmental Impact Assessment Screening (OPR, 2021);
- S.I. No. 272/2009 - European Communities Environmental Objectives (Surface Waters) Regulations 2009 including amendments S.I. No. 327/2012, S.I. No. 386/2015 and S.I. No. 77/2019;
- S.I. No. 9 of 2010 - European Communities Environmental Objectives (Groundwater) Regulations 2010 including amendments S.I. No. 149 of 2012 and S.I. No. 366 of 201; and
- WFD Working Group, 2005. Guidance on the Assessment of the Impact of Groundwater Abstractions (WFD, 2005).

7.2.2 Phased Approach

A phased approach was adopted for this EIAR in accordance with Environmental Protection Agency (EPA) and Institute of Geologists of Ireland (IGI) guidelines as set out above and is described in the following sections.

Element 1: An initial Assessment and Impact Determination stage was carried out by Enviroguide Consulting to establish the project location, type and scale of the Proposed Development, the baseline conditions, and the type of hydrological and hydrogeological environment, to establish the activities associated with the Proposed Development and to undertake an initial assessment and impact determination.

This stage of the assessment included a desk top study that comprised a review of published environmental information for the Proposed Development site and information provided by the Applicant. The study area, for the purposes of assessing the baseline conditions for the Hydrology and Hydrogeology Chapter of the EIAR, extends beyond the site boundaries and includes potential receptors within a 2.0km radius of the Proposed Development site (IGI, 2013).

This stage of the assessment was completed by Enviroguide Consulting and included the review of the following sources of information:

- Environmental Protection Agency (EPA) webmapping (EPA, 2022);
- Geological Survey Ireland (GSI) Datasets Public Viewer and Groundwater webmapping (GSI, 2022);
- National Parks and Wildlife Services (NPWS) webmapping (NPWS, 2022);
- Ordnance Survey Ireland (OSI) webmapping (OSI, 2022);
- Water Framework Directive Ireland (WFD) webmapping (WFD, 2022);
- Teagasc webmapping (Teagasc, 2022);
- Office of Public Works (OPW) database on historic flooding and the Catchment Flood Risk Assessment and Management (CFRAM) maps (OPW, 2022); and
- Information provided by the Application pertaining to previous site investigations and the design proposals for the Proposed Development (refer to Appendix C and Appendix D).

A site walkover survey to establish the environmental site setting and baseline conditions at the Proposed Development Site relevant to hydrology and hydrogeology was undertaken by Enviroguide Consulting on the 1st July 2022.

Previous Site investigations carried out at the Site, which included trial pit excavations and borehole drilling, are detailed in the following reports (refer to Appendix C):

- IGSL Drilling Ltd., 2002. Ground Investigation Report (No.802);
- Enviroguide Consulting, April 2020. Baseline Report - Trial Pit Logs;
- Dunnes Drilling, February 2020. Borehole Log; and
- College Proteins Ltd., 2022. Pre-Planning Site Investigation.

Other documents reviewed in this Chapter of the EIAR (refer to Appendix D) include:

- Traynor Environmental Ltd., July 2022. Firewater from the Proposed Anaerobic Digestion Development (TEL, 2022a);
- Traynor Environmental Ltd., July 2022. WWTP Capacity to take Foul Water Arising from the Toilets as part of the AD Development (TEL, 2022b);
- Traynor Environmental Ltd., July 2022. Attenuation Calculations and Storm Drainage Design (TEL, 2022c); and
- Traynor Environmental Ltd., July 2022. Flood Risk Review (TEL, 2022d).

Element 2: Based on a review of the information compiled and assessed in Element 1 including a site walkover survey and existing site investigation data, it was determined that a direct or indirect site investigations and studies stage was not required, as there was sufficient baseline information available regarding the Proposed Development site to inform the impact assessment of the Proposed Development on the receiving hydrological and hydrogeological environment.

Element 3: Evaluation of Mitigation Measures, Residual Impacts and Final Impact Assessment were based on the outcome of the information gathered in Element 1 of the assessment. Mitigation measures to address all identified adverse impacts that were identified in Element 1 of the assessment were considered in relation to the Construction Phase and

Operational Phase of the Proposed Development. These mitigation measures were then considered in the impact assessment to identify any residual impacts.

Element 4: Completion of the Hydrology and Hydrogeology Chapter of the EIAR which includes all the associated figures and documents.

7.2.3 Description of Importance of the Receiving Environment

The National Roads Authority (NRA) criteria for estimation of the importance of hydrogeological features at the Proposed Development site during the Environmental Impact Assessment (EIA) stage, as documented by IGI (IGI, 2013) are summarised in Table 7-1.

Table 7-1. Criteria for Rating Site Importance of Hydrogeological Features

Importance	Criteria	Typical Example
Extremely High	Attribute has a high quality or value on an international scale.	Groundwater supports river, wetland or surface water body ecosystem protected by European Union (EU) legislation e.g., SAC or SPA status.
Very High	Attribute has a high quality or value on a regional or national scale.	Regionally Important Aquifer with multiple wellfields. Groundwater supports river, wetland, or surface water body ecosystem protected by national legislation – e.g., NHA status. Regionally important potable water source supplying >2500 homes Inner source protection area for regionally important water source.
High	Attribute has a high quality or value on a local scale.	Regionally Important Aquifer. Groundwater provides large proportion of baseflow to local rivers. Locally important potable water source supplying >1000 homes. Outer source protection area for regionally important water source. Inner source protection area for locally important water source.
Medium	Attribute has a medium quality or value on a local scale.	Locally Important Aquifer Potable water source supplying >50 homes. Outer source protection area for locally important water source.
Low	Attribute has a low quality or value on a local scale.	Poor Bedrock Aquifer. Potable water source supplying <50 homes.

7.2.4 Description and Assessment of Potential Impact

Impacts will vary in quality from negative, to neutral or positive. The effects of impacts will vary in significance on the receiving environment. Effects will also vary in duration. The terminology and methodology used for assessing the 'impact' significance and the corresponding 'effect' throughout this Chapter is described in Table 7-2.

Table 7-2. Assessment of Potential Impacts Terminology and Methodology

Quality of Effects / Impacts	Definition
Negative	A change which reduces the quality of the environment
Neutral	No effects or effects that are imperceptible, within the normal bounds of variation or within the margin of forecasting error.
Positive	A change that improves the quality of the environment
Significance of Effects / Impacts	Definition
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant	An effect which, by its character, magnitude, duration, or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration, or intensity significantly alters a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics.
Duration of Effects / Impacts	Definition
Momentary	Effects lasting from seconds to minutes
Brief	Effects lasting less than a day
Temporary	Effects lasting one year or less
Short-term	Effects lasting one to seven years
Medium-term	Effects lasting seven to fifteen years
Long-term	Effects lasting fifteen to sixty years
Permanent	Effects lasting over sixty years
Reversible	Effects that can be undone, for example through remediation or restoration

7.3 The Existing and Receiving Environment (Baseline Situation)

7.3.1 Site Location and Description

The Site is located at College Road, Nobber, Co. Meath. The town of Nobber, County Meath, lies approximately 3km south of the site of the Proposed Development. The Site location is presented in Figure 7-2.

The Site is approximately 5.31 hectares (Ha). The Site is accessed from the R162 via the entrance to the existing facility.

The eastern portion of the Site is located within the existing facility which comprises an animal rendering plant and biodiesel manufacturing plant operated by the Applicant in accordance with the IE Licence (IE Licence No. P0037-04).

The Site of the Proposed Development comprises the following:

The proposed AD plant area which comprises an existing garage and old concrete tank located within the existing facility and an open field adjoining the eastern boundary of the existing facility.

The proposed infill area which comprises three (3No.) open fields separated by field boundaries located approximately 0.17km west of the existing facility; and

The proposed AD plant area and proposed infill area are connected via an existing access track.

The surrounding land use for the Site is mainly rural with occasional farmhouses and one-off residential dwellings, the closest of which is located approximately 190m from the Site.

There are no other EPA licensed facilities located within a 2km radius of the Site. The closest facility has been identified on the EPA database (EPA, 2022) as Saint-Gobain Construction Products (Ireland) Limited which is located approximately 3.9km to the south of the Site.

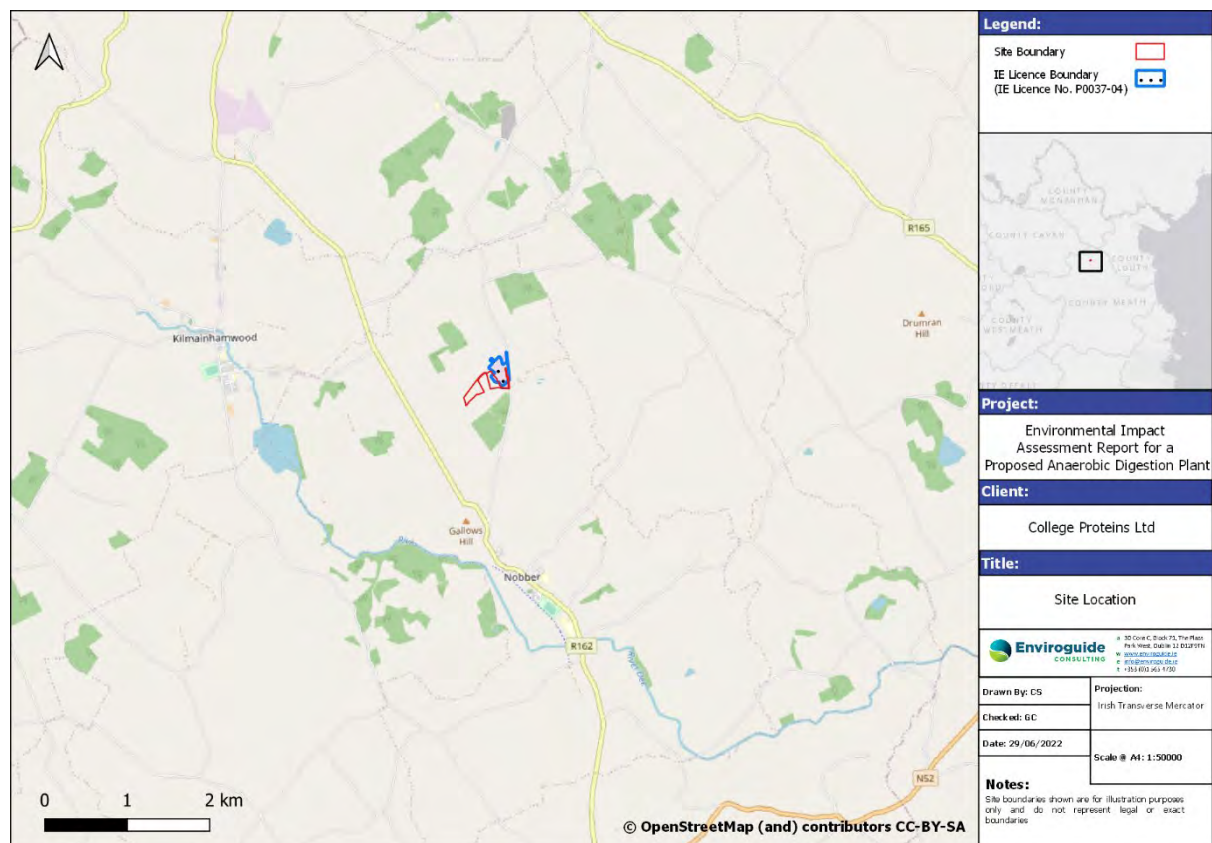


Figure 7-2: Site Location

7.3.2 Topography

The surrounding area is undulating, with numerous hummocks surrounding the site reaching 100mOD. These hummocks are drumlin and drumlin tails appear to be elongated along a south-easterly orientation, but this can vary.

At the existing facility, which lies at approximately 87mOD to 92mOD, the natural topography falls from College Road on the eastern boundary towards the western boundary which is characterised by a minor local valley. It is noted that site works have altered natural topography within the existing facility boundary.

The topography of the proposed AD plant area slopes to the south with ground elevations ranging from 95.0 meters above ordnance datum (mOD) to 89.5mOD.

The topography of the proposed infill area, which lies on the southern side of a minor local valley, slopes to the west toward the bank of Nobber Stream with ground elevations ranging from 79.5mOD to 76.0mOD. The lands to the north of the proposed infill area, which lies on the northern side of the minor local valley, slope to the south toward the bank of the Nobber Stream.

7.3.3 Rainfall

Monthly rainfall data available for 1km x 1km grids (for the period 1981 to 2010) was sourced from Met Éireann (Walsh, 2012) and is presented in Table 7-3. It is noted that the 30year average monthly rainfall data for the period 1991-2020 is in the process of being quality assured and collated by Met Éireann. The data is due to be published in 2022 but was not yet available at the time of writing this chapter of the EIAR.

Table 7-3: Long Term Mean Monthly Rainfall Data (mm) (Walsh, 2012)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual
88	66	73	62	64	68	67	79	73	96	85	91	913
Note: 1km x 1km Irish Grid Coordinates selected for the Site = X (Easting): 282000, Y (Northing):289000												

The closest the synoptic meteorological station to the Site, Dunsany, is located approximately 36.3km south of the Site. A summary of the average PE at Dunsany station for the period 2021 (Met Éireann, 2022) is presented in Table 7-4.

Table 7-4: Average Potential Evapotranspiration (Met Éireann, 2022)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual
6.7	21.9	33.0	54.3	73.8	87.9	91.0	63.6	43.9	27.0	11.8	8.8	523.7

The GSI (GSI, 2022) have calculated an Effective Rainfall (ER) values of 440.3mm/year across the Site.

7.3.4 Hydrology

The Site has been mapped by the EPA (EPA, 2022) to be within the Newry, Fane, Glyde and Dee WFD Catchment (Catchment I.D.: 06), the Newry, Fane, Glyde and Dee Hydrometric Area (HA06) and the Dee_SC_010 Sub-Catchment, (Sub-catchment ID: 06_3).

The majority of the Site, including the existing facility, is mapped by the EPA (EPA, 2022) to be within the Moynagh_040 WFD River Sub Basin (EU Code: IE_NB_06M460800), while a portion of the proposed access road and southeast corner of the existing facility is located within the Dee_040 WFD River Sub Basin (EU Code: IE_NB_06D010360).

The closest surface water feature is recorded on the EPA database (EPA, 2022) as the Nobber Stream (River Waterbody Code: IE_NB_06M460800) which adjoins the northern boundary of the Site and flows approximately 2.2km downstream before discharging to the River Dee (River Waterbody Code: IE_NB_06D010360) approximately 1.9km south of the Site.

The Garmanagh Stream (River Waterbody Code: IE_NB_06D010360) is located approximately 0.74km east of the Site. The Garmanagh Stream flows approximately 4.6km downstream before discharging to the River Dee approximately 3.3km south of the Site.

During the site walkover survey undertaken on the 1st July 2022 a number of open drainage channels were identified along the access road to the proposed infill area and crossing the proposed infill area (refer to Photograph 7-1 and Figure 7-3). Standing water was encountered within the identified drainage channels which were identified to discharge to the Nobber Stream. An open drainage channel was also identified to the south of the existing facility (refer to Figure 7-3) which was culverted beneath College Road. Standing water was encountered within the identified drainage channel which is understood to ultimately discharge to the Garmanagh Stream.

The surface water features mapped by the EPA within a 2km radius of the Site are presented in Figure 7-3.



Photograph 7-1. Open Drainage Channel Crossing the Proposed Infill Area

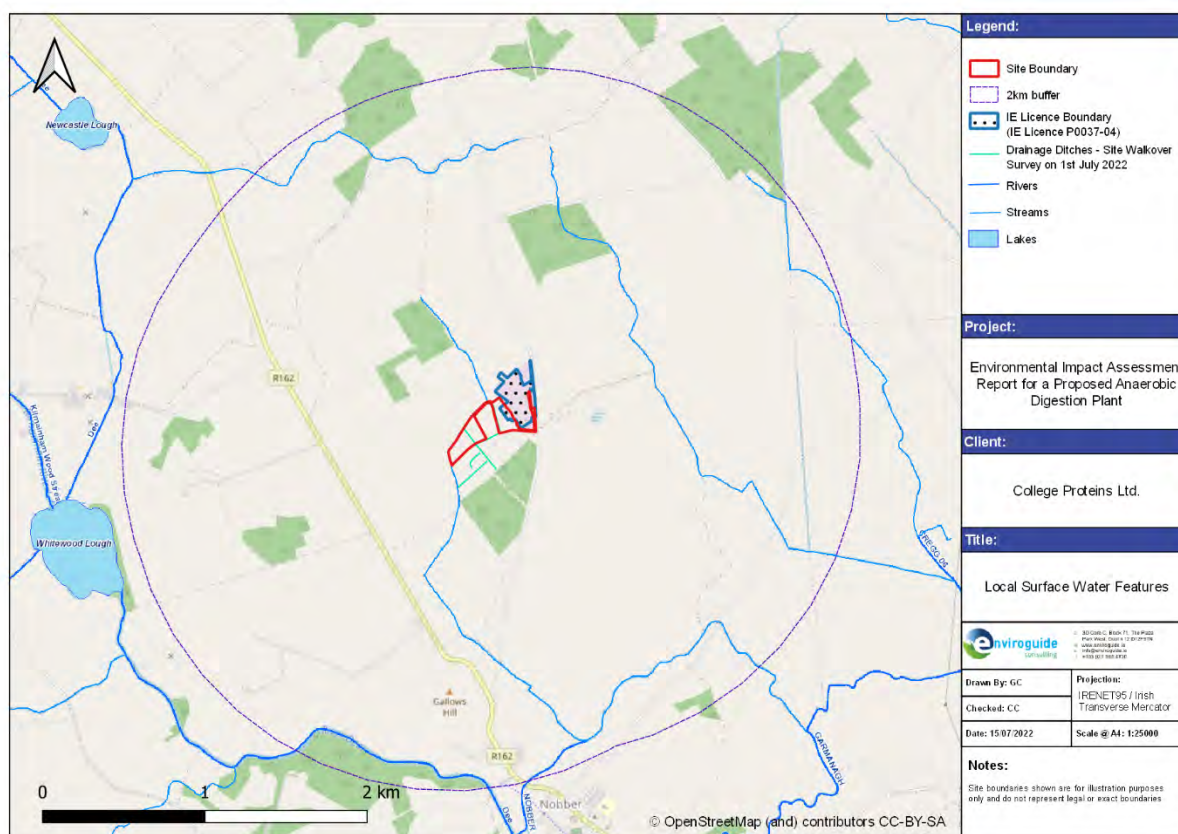


Figure 7-3: Local Surface Water Features

7.3.4.1 Site Drainage and Existing Drainage Infrastructure

Surface water runoff from the existing IE Licensed facility is discharged at emission point SW1 to an open roadside drainage channel located along the eastern boundary of the Site. The open drainage channel ultimately discharges to the Garmanagh Stream which is located within the Dee_040 WFD River Sub Basin.

Surface water runoff from roof and non-process areas to the left of the existing biodiesel manufacturing plant is also discharged to the open roadside drainage channel at SW1 via a silt trap and oil interceptor.

Surface water runoff from the biodiesel manufacturing plant at the existing facility is discharged at emission point SW8 to an open drainage channel located along the northern boundary of the Site via an appropriately sized attenuation tank and interceptor. The open drainage channel ultimately discharges to the Nobber Stream which is located within the Moynagh_040 WFD River Sub Basin.

In the event of an emergency onsite (e.g., fire or accidental spill) shut-off valves at SW1 and SW8 are closed to prevent potentially contaminated water from discharging offsite. Potentially contaminated water is diverted to an overground lined lagoon located approximately 0.34km east of the existing facility.

7.3.4.2 Foul Water

Process water and foul water from welfare facilities and the canteen at the existing facility is collected in the existing underground pipe network and treated in the WWTP. Treated effluent

from the WWTP discharged through a constructed sand filter to an overground, lined lagoon before being land spread in accordance with the IE Licence (IE Licence No. P0037-04). In the event that land spreading cannot occur for seasonal or other reasons the capacity of the treated effluent storage lagoon is adequate to contain any treated effluent generated.

7.3.5 Flood Risk

As documented in the flood risk review prepared by Traynor Environmental Ltd. (TEL, 2022d), the Site is not located within an area where there is a potential risk of fluvial and coastal flooding.

7.3.6 Soil and Geology

Soils and geology are assessed in Chapter 6 of this EIAR and summarised as follows:

Soil mapped as poorly drained fine loamy drift with siliceous stones of the Kilrush (0700h) soil series (Teagasc, 2022).

Subsoils mapped by the GSI (GSI, 2022) as 'till derived from Namurian sandstones and shales (TNSSs)'. Previous trial pit and borehole logs (EGC, 2020) indicate that the existing facility is underlain by Made Ground comprising reworked CLAY with varying silt, sand and gravel content to 0.8mbGL and slightly silty, slightly gravelly CLAY to 22.0mbGL. The soils encountered beneath the undeveloped portion of the proposed AD facility and the proposed infill area comprise sandy gravelly CLAY to a maximum depth of 10.6mbGL;

Bedrock beneath the majority of the proposed AD plant area is mapped as the Fingal Group (undifferentiated) comprising dark limestone, shale and micrite. The bedrock beneath the remainder of the Site including the proposed infill area is mapped by the GSI (GSI, 2022) as the Ardagh Shale Formation comprising black shale. Previous site investigation results (EGC, 2020, IGSL, 2002 and College Proteins Ltd., 2022) indicate that bedrock beneath the existing facility comprises broken SHALE at depths below 22.0mbGL and beneath the proposed infill area comprises weathered SILTSTONE at depths below 10.6mbGL.

7.3.7 Aquifer Classification

The GSI provides a methodology for aquifer classification based on resource value as regionally important, locally important, and poor.

The GSI (GSI, 2022) has classified the bedrock of the Fingal Group (undifferentiated) beneath the majority of the proposed AD plant area as Locally Important (LI) aquifer (i.e., bedrock which is Moderately Productive only in Local Zones). Locally important aquifers are capable of supplying 'good' yields (100m³/day to 400m³/day) with groundwater flows predominantly occurring through fractures, fissures and joints (GSI, 2017).

The bedrock of the Ardagh Shale Formation beneath the remainder of the Site including the proposed infill area is classified by the GSI (GSI, 2022) as a Poor Aquifer (PU) (i.e., bedrock which is generally unproductive). Poor aquifers are capable of supplying 'moderate' to 'low' yields (<100m³/day) and groundwater flow occurs predominantly through a limited and poorly-connected network of fractures, fissures and joints (GSI, 2017).

There are no gravel aquifers mapped beneath or within a 2.0km radius of the Proposed Development site (GSI, 2022).

The bedrock aquifer map is presented in Figure 7-4.

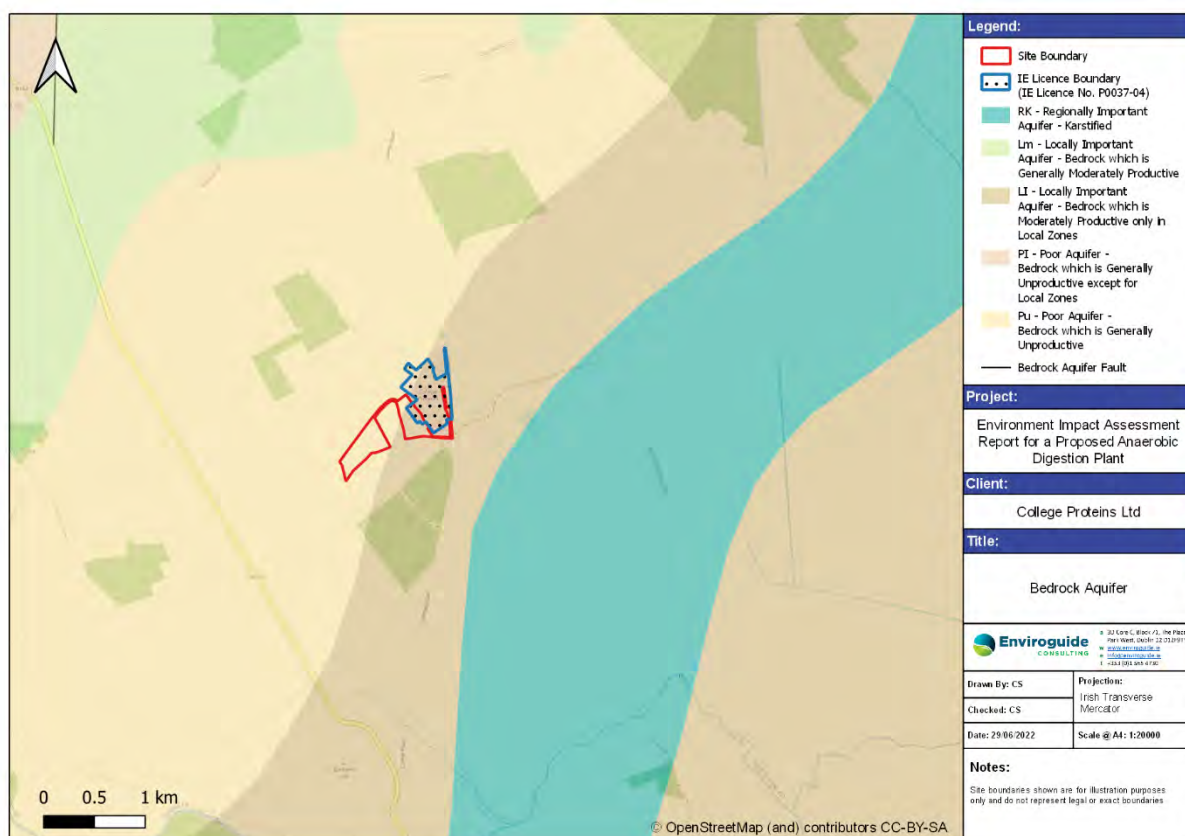


Figure 7-4: Bedrock Aquifer

7.3.8 Aquifer Vulnerability Rating

The vulnerability categories, and methods for determination, are presented in the Groundwater Protection Schemes publication (DEHLG/EPA/GSI, 1999) and summarised in Table 7-8. The publications state that *'as all groundwater is hydrologically connected to the land surface, it is the effectiveness of this connection that determines the relative vulnerability to contamination. Groundwater that readily and quickly receives water (and contaminants) from the land surface is considered to be more vulnerable than groundwater that receives water (and contaminants) more slowly and in lower quantities. The travel time, attenuation capacity and quantity of contaminants are a function of the following natural geological and hydrogeological attributes of any area:*

- the subsoils that overlie the groundwater;*
- the type of recharge - whether point or diffuse; and*
- the thickness of the unsaturated zone through which the contaminant moves'.*

Table 7-5: Vulnerability Mapping Criteria (DEHLG/EPA/GSI, 1999)

Subsoil Thickness	Hydrogeological Requirements				
	Diffuse Recharge			Point Recharge	Unsaturated Zone
	Subsoil Permeability & Type			(Swallow holes, losing streams)	(sand & gravel aquifers only)
	High permeability (sand & gravel)	Moderate permeability (sandy subsoil)	Low permeability (clayey subsoil, clay, peat)		
0-3m	Extreme	Extreme	Extreme	Extreme (30m radius)	Extreme
3-5m	High	High	High	N/A	High
5-10m	High	High	Moderate	N/A	High
>10m	High	Moderate	Low	N/A	High

Notes: (i) N/A = not applicable (ii) Permeability classifications relate to the material characteristics as described by the subsoil description and classification method.

The GSI have assigned a groundwater vulnerability rating of “Low” (L) for the groundwater beneath the Proposed Development site (GSI, 2022) which is attributed to the low permeability and thickness (>10m) of the overburden.

The GSI Groundwater Vulnerability Map is presented in Figure 6-13.

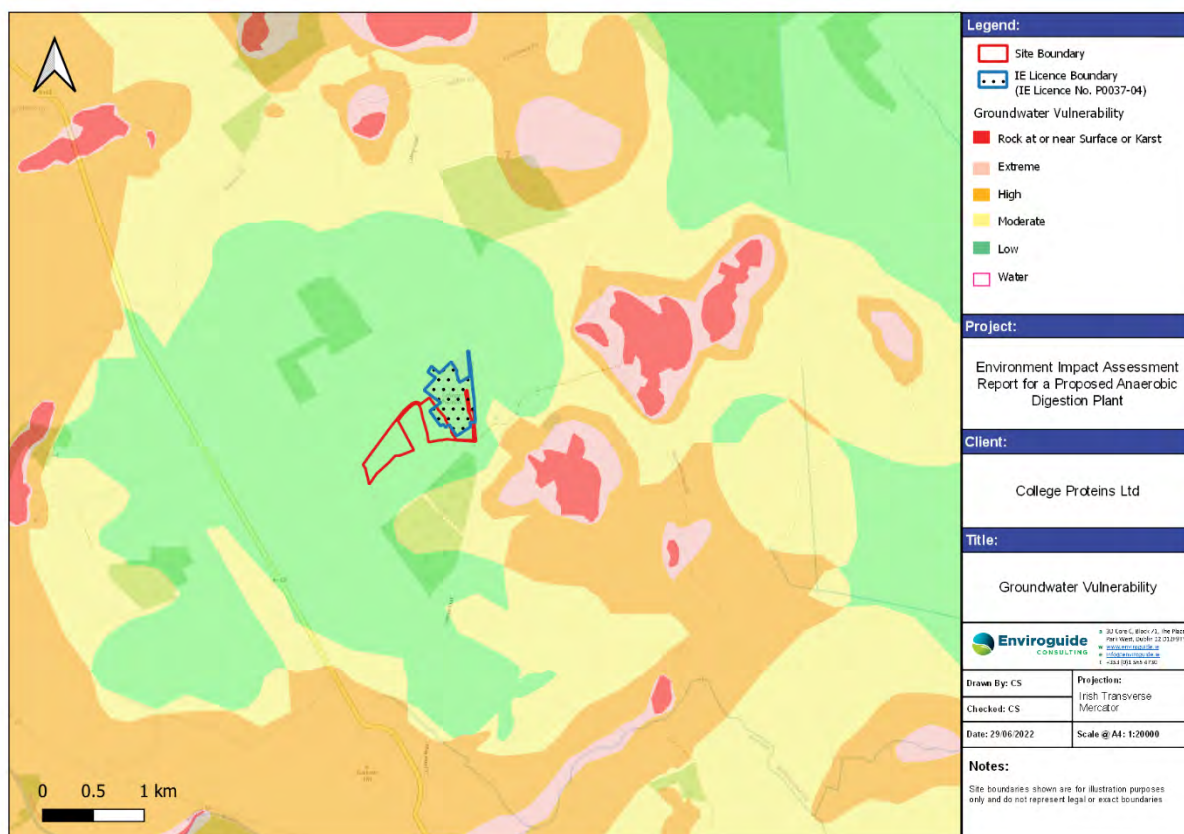


Figure 7-5: Groundwater Vulnerability

7.3.9 Groundwater Body

The bedrock aquifer of the Fingal Formation beneath the majority of the proposed AD plant area is within the Ardee Groundwater Body (GWB) (EU Code: IE_NB_G_018) that covers

some 109km² and occupies an area across Co. Meath, Co. Louth and a small portion of Co. Monaghan (GSI, 2022).

The bedrock aquifer of the Ardagh Shale Formation beneath the remainder of the Site including the proposed infill area is within the Louth Groundwater Body (GWB) (EU Code: IEGBNI_NB_G_019). that covers some 1,621km² and occupies an area across Co. Louth, Co. Monaghan and Co. Meath (GSI, 2022).

7.3.10 Regional and Local Groundwater Flow Regimes

The main recharge across both GWBs (i.e., Ardee GWB and Louth GWB) comes from diffuse recharge from water percolating through the overlying subsoils and outcrops and into the aquifer. The main discharge occurs to the rivers and streams across the GWB, through seepages and springs in the watercourses. However, given the poor productivity of the aquifers in both GWBs it is considered that any groundwater - surface water interactions will be limited and baseflow to rivers and streams will be relatively low (GSI, 2022).

The GSI (GSI, 2022) identifies that flow paths within both GWBs (i.e., Ardee GWB and Louth GWB) are likely to be short (30-300 m) with groundwater discharging rapidly to nearby streams and small spring. Regionally groundwater flow directions in both GWBs are expected to follow topography, overall in a easterly direction (GSI, 2022).

Groundwater strikes were recorded during the drilling of production well GW1 at the existing facility (Dunnes Drilling, 2020). The groundwater strikes were recorded at depths of 22.0mbGL and 70.0mbGL within the underlying shale bedrock of the Fingal Formation. It is noted that groundwater strikes were not recorded during borehole drilling within the proposed infill area (IGSL, 2002).

Groundwater level measurements were recorded at existing groundwater wells during the site walkover survey on the 1st July 2022 and are presented in Table 7-6.

Table 7-6: Groundwater Elevation Survey (1st July 2022)

Monitoring Well	Water Level (mbGL)	Water Level (mOD)
GW1	22.91	64.87
GW2	30.93	57.56
GW3	22.29	65.98
GW4	21.45	66.41
GW5	22.12	67.90
RC02	6.28	75.81
Notes: **= The pumps located at the meat-rendering plant and the WWTP operate continuously and were switched on when groundwater levels were measured at the Site on the 1 st July 2022.		

Regionally groundwater flow direction is overall to the east. Based on the measured groundwater elevations, the inferred local groundwater flow direction in the vicinity of the Site is broadly to the east and with a localised drawdown at GW1 and GW2 when the supply pumps are switched on (refer to Figure 7-6).

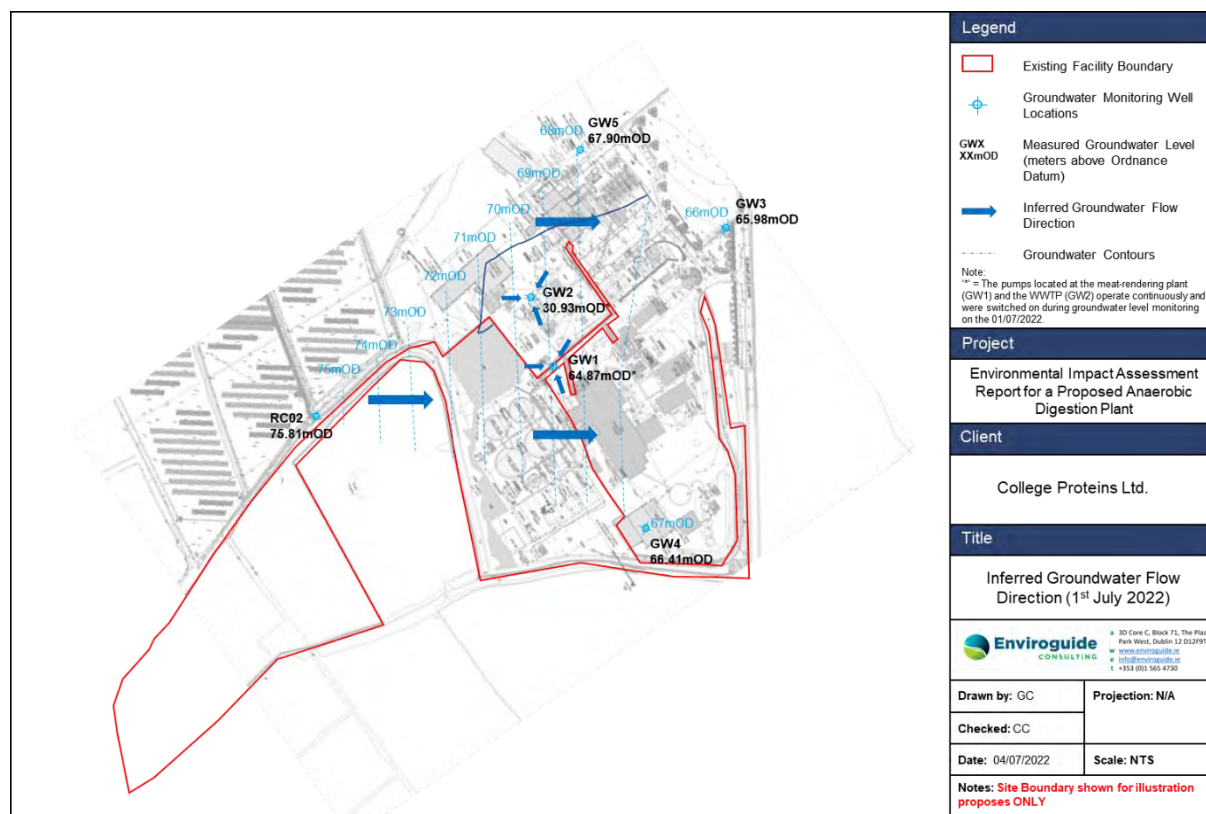


Figure 7-6. Inferred Groundwater Flow Direction

7.3.11 Water Use and Source Protection

The GSI groundwater wells and springs database (GSI, 2022) lists twenty-one (21No.) groundwater sources within a 2km radius of the Site two of which the GSI identifies as being located on within the existing facility (GSI Name: 2627NEW042 & 2627NEW067).

There are currently three production wells in use at the existing facility (GW1, GW2 and GW5) with a maximum supply requirement of 30,742m³/year. There is a fourth standby supply well located to the east of the existing facility (GW4). Another well located at the eastern site boundary (GW3) was installed for the purposes of groundwater monitoring and is not used as a groundwater source.

There are no Groundwater Source Protection Areas (SPAs) located within a 2km radius of the Site. The closest Groundwater SPAs to the Site is the Nobber Water Supply (GSI No.: 2627NEW055) which is located approximately 2.5km south and downgradient of the Site.

There are no potable surface water sources assigned by the EPA (EPA, 2022) located within a 2km radius of the Site or potentially hydraulically connected downstream of the Site.

The groundwater wells, springs and groundwater SPAs within a 2km radius of the Site is presented in Figure 7-7.

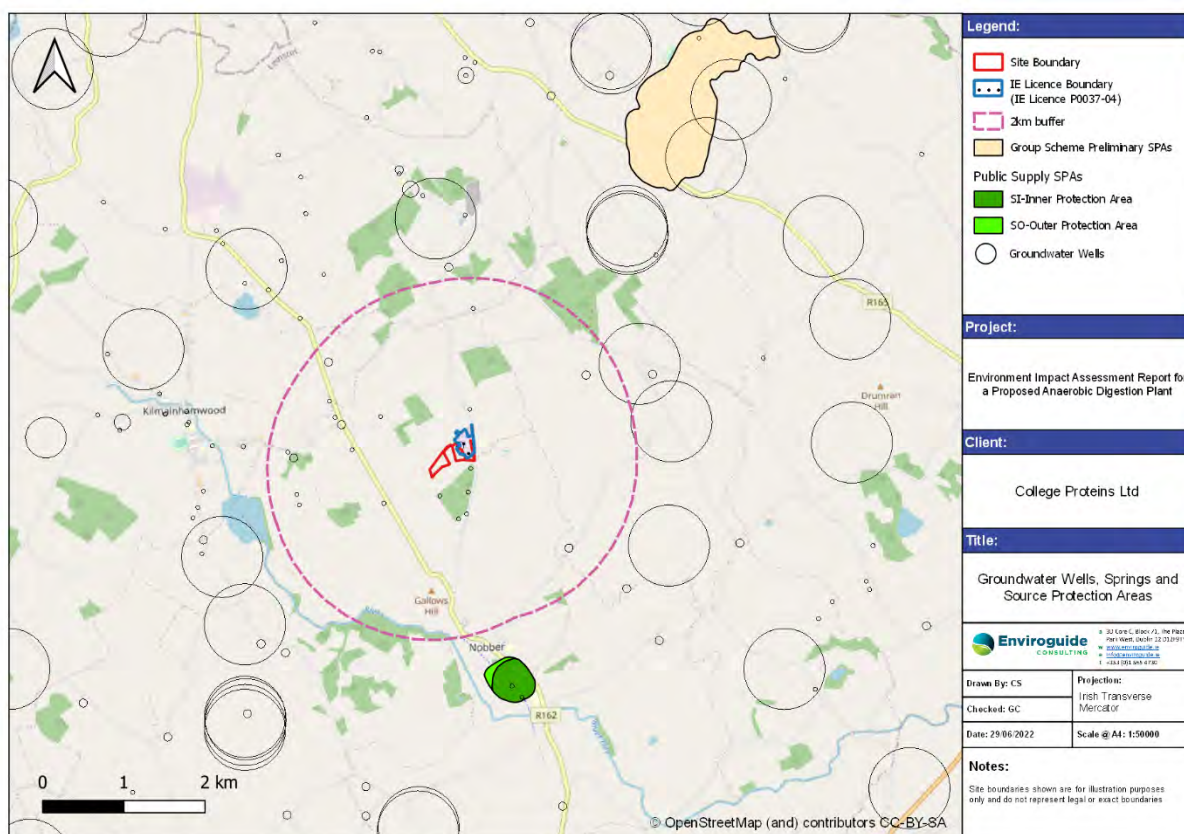


Figure 7-7. Groundwater Wells, Spring and Groundwater SPAs

7.3.12 Water Quality

7.3.12.1 Surface Water Quality

The EPA database lists all water monitoring stations used by the EPA and Local Authorities used for the monitoring and water quality management for the EU Water Framework Directive

The EPA Q-Value is a system of water quality rating based on the biological quality of the water body and abundance for specific invertebrate species. There are no EPA monitoring locations along the Nobber Stream and Garmanagh Stream. However, a summary of the Q-value for the operational and historic EPA monitoring locations along the River Dee upstream and downstream of the confluence with the Nobber Stream and Garmanagh Stream is presented in Table 7-7. Chemistry data from the EPA monitoring data base is available for parameters including total ammonia, BOD, nitrate, chloride and ortho-phosphate. The EPA data indicates that there is a downward trend in Total Ammonia and Ortho-phosphate (as P) within the River Dee downstream of the confluence with the Garmanagh Stream for the period 2013-2018 (EPA, 2022).

Table 7-7: EPA Monitoring Stations Downstream of the Site

River I.D.	Sample Location / Monitoring Station	Q-Value (WFD Status)
River Dee (0.42km upstream of the confluence with the Nobber Stream)	Wooden Br West of Nobber Bridge Station I.D.: RS06D010150	3-4 (Moderate) in 2020
River Dee (1.44km downstream of the confluence with the Nobber Stream)	Deegvee Bridge Station ID: RS06D010200	3 (Poor) in 2020

River Dee (2.1km downstream of the confluence with the Garmanagh Stream)	DEE - Kilbride Bridge Station I.D.: RS06D010300	4-5 (High) in 1990
River Dee (5.3km downstream of the confluence with the Garmanagh Stream)	Br SE of Rockfield House Station I.D.: RS06D010360	4 (Good) in 2020

Monthly surface water monitoring at the existing facility is undertaken in accordance with the requirements of the IE Licence (IE Licence No. P0037-04) at emission points SW1, which discharges to the Garmanagh Stream, and SW8, which discharges to the Nobber Stream. The surface water monitoring results for samples collected in 2021, as reported in the supporting documentation for the Annual Environmental Report (AER 2021), were screened against the applicable emission limit values (ELVs) set out in the IE Licence for the existing facility (IE Licence No. P0037-04).

Table 7-8 Surface Water Monitoring Results (Average Concentration 2021)

Parameter	Average Concentration (2021)	ELV	Frequency of Monitoring
SW1			
BOD (mg/l)	2.03	2.55	Monthly
Ammonia (mg/l as N)	0.83	1.0	Monthly
Orthophosphate (as PO ₄)	0.16	0.21	Monthly
pH	7.35	6.5 < pH < 9	Monthly
Conductivity	203.2	241	Monthly
TOC	19.2	40	Continuous
SW8			
BOD (mg/l)	2.02	2.59	Monthly
Ammonia (mg/l as N)	0.30	0.68	Monthly
Orthophosphate (as PO ₄)	0.14	0.22	Monthly
pH	7.61	6.5 < pH < 9	Monthly
Conductivity	161.6	214.5	Monthly
TOC	9.2	40	Continuous
Source: 2021 AER for the existing licenced facility (IE Licence No. P0037-04).			

Surface water monitoring results for samples collected in 2021 were reported as below the applicable ELVs set out in the IE Licence for the existing facility (IE Licence No. P0037-04).

7.3.12.2 Groundwater Quality

There is no available published groundwater quality data for the Ardee GWB in the vicinity of the Site. However, published chemical data from EPA groundwater monitoring stations at Kilmainhamwood (Station ID: GWIE_NB_G_01923000007), located in the Louth GWB approximately 3.65km west of the Site, for the period of 2013-2018 shows an upward trend of results for Ammoniacal, Chloride and Ortho-phosphate however, the indicative quality status of each of these analytical results was "Good" (EPA, 2022).

Bi-annual groundwater monitoring is undertaken at water supply wells located within the existing facility (GW1, GW4 and GW5) in accordance with the requirements of the IE Licence (IE Licence No. P0037-04). The groundwater monitoring results for samples collected in 2021, as reported in the supporting documentation for the Annual Environmental Report (AER 2021),

and in 2022 (provided by the Applicant) were screened against the following applicable water quality assessment criteria:

- S.I. No. 9/2010 - European Communities Environmental Objectives (Groundwater) Regulations 2010 and as amended (GW GTVs);
- S.I. No. 272/2009 - European Communities Environmental Objectives (Surface Waters) Regulations 2009 and as amended (SW EQSs); and
- SI. No. 122/2014 - European Union (Drinking Water) Regulations 2014 and as amended (DW PVs).

Table 7-9 Groundwater Monitoring Results (2021)

Parameter	Units	GW GTVs	SW EQSs	DW PVs	Sample I.D.		
					GW1		
					07/04/21	09/09/21	03/03/22
pH	pH Units	--	Soft Water 4.5< pH < 9.0 or Hard Water 6.0< pH < 9.0	6.5 - 9.5	8.5	8.1	7.3
Nitrates as NO3	mg/l	37.5	--	50.0	0.5	1.4	1.2
Ammonia as NH4	mg/l	--	--	0.3	<0.015	<0.015	0.016
Ammonia as N	mg/l	0.065-0.175	High status <= 0.04 (mean) or <=0.090 (95%ile) or Good status <= 0.065 (mean) or <= 0.14 (95%ile)	--	<0.015	<0.015	<0.015
Total Nitrogen	mg/l	--	--	--	0.8	1.1	0.8
Conductivity	µS/cm	800-1875	--	2500	1358.0	700.0	800
Total Organic Carbon	mg/kg	--	--	--	1.55	1.03	1.1
Notes: Cells in BOLD exceed GW GTVs Cells in <i>ITALICS</i> exceed SW EQSs Cells <u>UNDERLINED</u> exceed DW PVs							

Groundwater monitoring results for samples collected in 2021 and 2022 were reported as below the applicable GW GTVs, SW EQSs and DW PVs. Therefore, based on the bi-annual groundwater monitoring results for samples collected in 2021 and 2022, there is no identified potential risk to receiving surface water and groundwater receptors.

7.3.13 Water Framework Directive

The Water Framework Directive status for surface water, groundwater, transitional and coastal water bodies relevant to the site as recorded by the EPA (EPA, 2022) in accordance with

European Communities (Water Policy) Regulations 2003 (S.I. No. 722/2003) are provided in Table 7-10.

Table 7-10: Water Framework Directive Status

Waterbody Name	Water body; EU code	Location from Site	Distance from Site (km)	River Waterbody WFD Status (2013-2018)	WFD Risk 3 rd Cycle	Hydraulic Connection to the Site
River Waterbodies						
Nobber Stream	IE_NB_06M460800	Adjoins Northern Site Boundary	0.0	Poor	At Risk	Yes – Adjoining Site
Garmanagh Stream	IE_NB_06D010360	East	0.74	Good	Not at Risk	Yes – Discharge of surface water runoff from the existing facility and Proposed Development
River Dee	IE_NB_06D010360	South	1.9	Good	Not at Risk	Yes - Downstream of the Nobber Stream and the Garmanagh Stream
Groundwater Bodies						
Ardee GWB	IE_NB_G_018	N/A	N/A	Good	At Risk	Yes - Underlying groundwater-body
Louth GWB	IEGBNI_NB_G_019	N/A	N/A	Good	Not at Risk	Yes - Underlying groundwater-body

7.3.14 Designated and Protected Areas

The Habitats Directive (92/43/EEC) seeks to conserve natural habitats and wild fauna and flora by the designation of Special Areas of Conservation (SACs) and the Birds Directive (2009/147/EC) seeks to protect birds of special importance by the designation of Special Protection Areas (SPAs). SACs and SPAs are collectively known as Natura 2000 or European sites (referred to hereafter as Natura 2000 site). National Heritage Areas (NHAs) are designations under the Wildlife Acts to protect habitats, species, or geology of national importance. The boundaries of many of the NHAs in Ireland overlap with SAC and/or SPA sites. Although many NHA designations are not yet fully in force under this legislation (referred to as 'proposed NHAs' or pNHAs), they are offered protection in the meantime under planning policy which normally requires that planning authorities give recognition to their ecological value.

The designated and protected sites are described in detail in Chapter 5 of this EIAR. The designated and protected sites located within a 15km radius of the Proposed Development Site are presented in Figure 7-8.

There are (2No.) sites identified as SACs, one (1No.) site identified as an SPA and eleven (11No.) sites that are identified as pNHAs located within a 15km radius of the Site. There are no identified NHAs identified within a 15km radius of the Site.

It is noted that there is also a potential hydraulic connection via the River Dee between the site and the Dundalk Bay SAC and SPA located approximately 26.82km east of the Site.

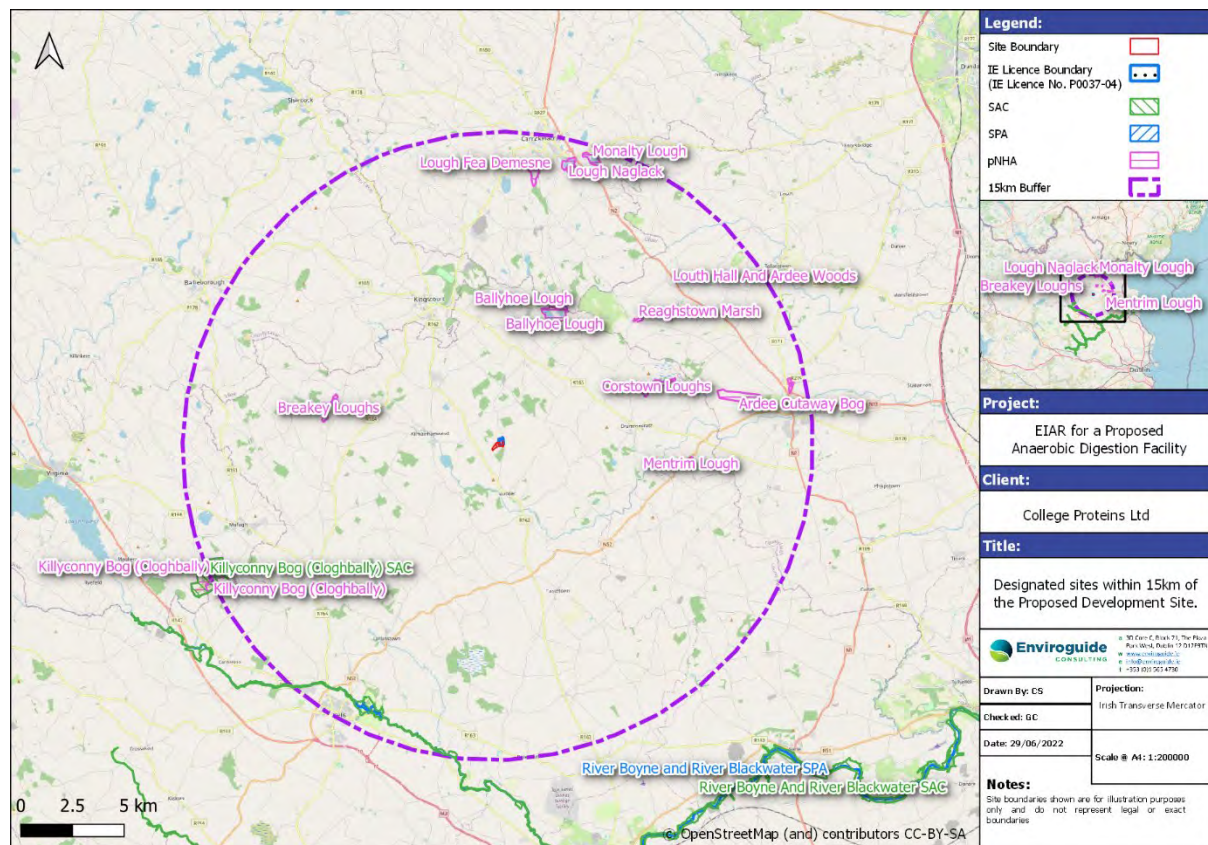


Figure 7-8: Designated and Protected Areas

7.3.15 Conceptual Site Model

The site is underlain by poorly drained till derived from Namurian sandstones and shales (TNSSs) and borehole logs for onsite supply well indicate that overburden extended to 22.0mbGL where the top of rock was encountered.

The bedrock of the Fingal Group (undifferentiated) beneath the majority of the proposed AD plant area has been classified by the GSI (GSI, 2022) as Locally Important (LI) aquifer (i.e., bedrock which is Moderately Productive only in Local Zones).

While the bedrock of the Ardagh Shale Formation beneath the remainder of the Site including the proposed infill area is classified by the GSI (GSI, 2022) as a Poor Aquifer (PU) (i.e., bedrock which is generally unproductive) which indicates a lower capacity of the aquifer beneath the Proposed Development Site to accept recharge via infiltration of rainfall.

The groundwater beneath the Site has been assigned a Low (L) groundwater vulnerability rating due to the low permeability and thickness of the overlying soils.

Measured groundwater levels at the Site ranged between 57.56mOD (GW2) to 75.81mOD (RC02) and the inferred groundwater flow is to the east with localised drawdown toward groundwater supply wells GW1 and GW2 when operational. Groundwater monitoring results for samples collected between 2021 and 2022 confirms that in terms of TOC, nitrate, nitrogen and ammonia, water quality at GW1 has been reported as below the respective GW GTVs, SW EQSs and DW PVs.

Surface water runoff from the existing facility is treated and attenuated prior to discharge to the Garmanagh Stream and Nobber Stream via open drainage channels at surface water emission points SW1 and SW8 respectively. Surface water monitoring results for samples collected in 2021 indicates potential influences of the agricultural land uses within catchment with elevated ammoniacal nitrogen in surface water. However, in terms of BOD, ortho-phosphate, pH and ammonia, water quality at emission points SW1 and SW8 have been reported as below the respective EPA agreed limit values.

The key receptors associated with the Site include:

- Nearby surface water courses including the Garmanagh Stream, the Nobber Stream and the River Dee;
- Other downgradient rivers potentially receiving groundwater discharges;
- The underlying bedrock aquifers;
- Onsite groundwater users; and
- Offsite groundwater users including private and public supply sources.

7.3.16 Importance and Sensitivity of Receiving Environment

There are currently three production wells in use at the existing facility (GW1, GW2 and GW5) with a maximum supply requirement of 30,742m³/year.

The receiving water bodies have been assigned a WFD Status of 'high' for groundwater, and 'poor' to 'good' for the closest surface water bodies hydraulically connected to Site. There is no identified risk to designated and protected sites.

Overall, taking account of the receiving hydrogeological environment, in accordance with the criteria set out in Table 7-1, the Site is considered to be of 'medium to high' hydrogeological importance given the presence of the existing onsite supply wells and taking account of the characteristics of the environment including WFD Status.

7.4 Characteristics of the Proposed Development

The Applicant is proposing to construct an Anaerobic Digestion (AD) Plant to produce green Biogas which will off-set the use of fossil fuels on-site, therefore reducing the company's carbon footprint. The biogas produced from the AD plant can be used in the on-site steam boilers and Combined Heat and Power (CHP) plants to generate steam and electricity to run the production facilities on-site.

The existing facility is currently operational under IE Licence (P0037-04) and GHG Permit (IE-GHG123-10405-03). The Construction Phase and the Operational Phase of the Proposed Development will be operated in accordance with the requirements of the IE Licence, GHG Permit and the existing Environmental Management System (EMS).

The Proposed Development is described in Section 7.1.2 and characteristics relevant to this Chapter are described in Section 7.4.1 and Section 7.4.2.

7.4.1 Construction Phase

The Construction Phase for the Proposed Development will require:

The demolition of existing structures onsite including the existing garage and a concrete tank;

It is estimated by the Applicant that the Proposed Development will require the excavation of 77,804.15m³ of soil for the construction of building and tank foundations, the access road to the proposed infill area, surface water and foul water drainage including attenuation tanks, and other infrastructure;

The foundations for the main digester yard area will be on a raft foundation while the AD intake building will be on shallow strip foundations with no requirement for piling.

Based on the measured groundwater levels during previous site investigations (refer to Table 7-6), it is anticipated that excavations will be above groundwater and there will be no requirement for dewatering;

All soil excavated during the Construction Phase will remain onsite to be infilled within the undeveloped lands in the west of the Site subject to assessment of the suitability for use in accordance with engineering and environmental specifications that will be determined as part of the detailed design.

In-stream works will be required for the culverting of the open drainage channel that crosses the proposed infill area. The existing drainage will be excavated out and a bed of crushed stone will be laid along the length of the new culvert. The culvert sections will be laid on the crushed stone and levelled. On completion of the installation the excavation will be backfilled with compacted stone up to the level of the top of the culvert. The culvert will be designed to accommodate the 1 in 100-year storm (+20%);

During the in-stream works there will be temporary diversions or over-pumping of the open drainage channel;

Surface water drainage infrastructure including silt trap, oil interceptor and attenuation tank will be constructed within the Proposed Development with connections for discharge to the existing emission point SW1;

Foul water drainage infrastructure from toilets and showers will be constructed within the Proposed Development with connections for discharge to the WWTP at the existing facility;

Foul water drainage from potential spill areas from the bunded area and loading areas of the Proposed Development will be collected and pumped into the AD plant.

Water supply infrastructure will also be constructed for the Proposed Development with connection to the production wells serving the existing facility;

Operational design details of the foul and surface water drainage as well as water supply are provided in Section 7.4.2;

During the Construction Phase, there will be no direct discharge of surface water runoff from the construction works area to groundwater, surface water courses or drainage infrastructure at the existing facility;

Surface water runoff from the operational areas of the existing facility will continue to discharge to the existing surface water drainage channels at emission points SW1 and at SW8 in relation to the biodiesel facility.

The existing welfare facilities at the Site will be available for the duration of the Construction Phase.

7.4.2 Operational Phase

The surface water drainage for Proposed Development has been divided into three (3No.) catchment areas as described below. Surface water runoff from the site will be managed in accordance with the principles and objectives of Sustainable Drainage Systems (SuDS) to treat and attenuate water prior discharging from the Site.

Non-process Areas

As documented in the technical note for the proposed drainage design (TEL, 2022c), surface water runoff from 6,100m² of non-process areas along the access road to the proposed AD plant area will outfall via an appropriately sized silt trap and oil interceptor to the proposed attenuation tank designed to meet the 24-hour duration, 1 in 100-year rainfall event including an allowance of 20% for climate change.

The outfall from the proposed attenuation tank will be pumped to the open roadside drainage channel, at emission point SW1, in accordance with the requirements of the IE Licence (P0037-04) (refer to Figure 7-9).

The open drainage channel will ultimately discharge to the Garmanagh Stream.

In the event of an emergency onsite (e.g., fire or accidental spill) a shut-off valve at SW1 will be closed to prevent potentially contaminated water from discharging offsite. In accordance with the requirements of the IE Licence (P0037-04) potentially contaminated water will be diverted to the existing overground lined lagoon, located approximately 0.34km east of the existing facility. As documented in the technical note on firewater retention for the Proposed development (TEL, 2022a), the overground lined lagoon which was designed in accordance with the EPA Guidance on Retention Requirements for Firewater Run-off (2019) has sufficient fire water retention and storage capacity to contain runoff from the Proposed Development and the existing facilities in the event of a fire.

It is noted that surface water from the non-process areas to the north of the Proposed AD plant will continue to discharge to ground via permeable gravel hardstanding.

Proposed AD Plant Area

Surface water runoff from the main digester yard area, within the AD intake building and from surface water runoff surrounding the AD intake building including the truck off-loading and out-loading bays will be collected, contained and recirculated in the closed loop system within the AD Plant as part of the operational processes (refer to Figure 7-9 – Smith Associates Architects – Surveyors, July 2022. Drainage Layout – Colour Coded (Drawing No. 21-21-15)). The capacity of the AD tanks has been designed to contain surface water runoff during the the 1 in 100-year rainfall event including an allowance of 20% for climate change.

A bund system with a capacity of 4,492.63m³, will contain all surface water runoff and potential spills from the AD tanks within the main plant area, which has a volume equivalent to the capacity of the largest of the AD tanks (3,926m³) with an allowance of 10% in accordance with EPA guidelines on the 'Storage and Transfer of Materials for Scheduled Activities' (EPA, 2004). Therefore, there will be no discharge of surface water runoff from the AD Plant area to the proposed surface water drainage network.

Clean surface water runoff from the remaining areas of the Site (i.e., truck turning area to the east of AD Tanks and the lands to the north of the bio bed), will discharge to ground via permeable gravel hardstanding.

Proposed Infill Area

Surface water runoff at the proposed infill area will continue to discharge to ground and receiving downgradient water courses (i.e., the Nobber Stream).

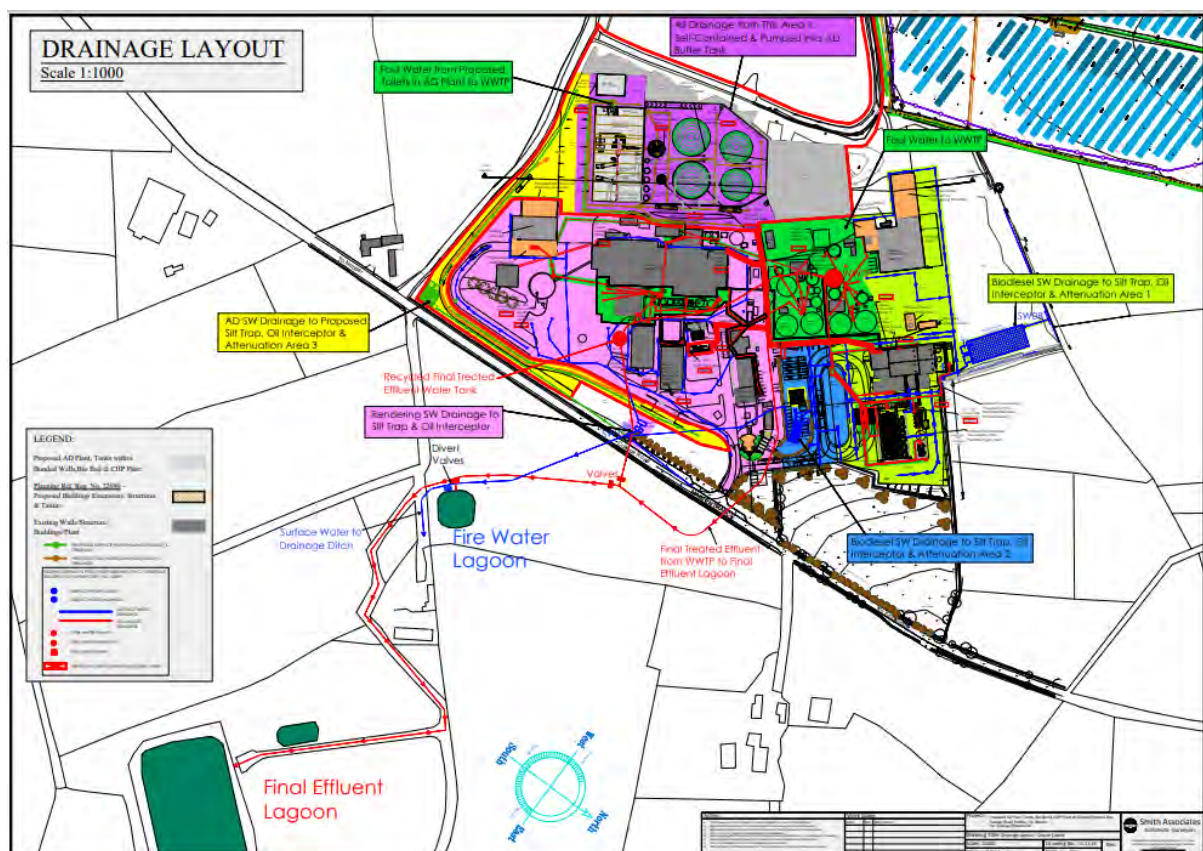


Figure 7-9. Drainage Layout at the Existing and Proposed Facility

Foul water from toilets and showers at the Proposed Development will be discharged to the WWTP at the existing facility (refer to Figure 7-9) which is operated in accordance with the IE Licence (IE Licence No. P0037-04). As documented in the technical note on the capacity of the WWTP (TEL, 2022b), the WWTP has sufficient capacity to accept the limited increased loading of 0.63m³/day from the Proposed Development and therefore no upgrades are required to the WWTP. Treated effluent from the WWTP will continue to be discharged through a constructed sand filter to an overground, lined lagoon before being land spread in accordance with the IE Licence (IE Licence No. P0037-04).

Water abstracted from the production wells at the existing facility will be used to supply the Proposed Development. It is anticipated that there will be an increase in water supply demand of 0.63m³/day (TEL, 2022b) to supply welfare facilities and 5m³/day for washing down of vehicles in the AD plant intake area during the Operational Phase of the Proposed Development.

All feedstocks accepted for the AD facility at the Proposed Development will be in accordance with approved acceptance procedures developed in compliance with the conditions of the IE Licence (P0037-04).

There will be no requirements for the storage of fuels or refuelling at the Proposed Development which will be undertaken at the existing facility in accordance with the requirements of the IE Licence (IE Licence No. P0037-04).

7.5 Potential Impact of the Proposed Development

The procedure for determination of potential impacts on the receiving hydrological and hydrogeological environment is to identify potential receptors within the Proposed Development site boundary and surrounding environment and use the information gathered during the desk study and site walkover to assess the degree to which these receptors will be impacted upon in the absence of mitigation. Impacts are described in terms of quality, significance, duration and type as detailed in Table 7-11.

7.5.1 Construction Phase

7.5.1.1 Direct

Groundwater Flow Regimes

Based on the measured groundwater levels (refer to Table 7-6), it is anticipated that excavations will be above groundwater. Therefore, all works will be undertaken above the existing groundwater level with no requirement for dewatering and no impact on the local groundwater resource and groundwater flow regime.

Water Quality

There will be no direct discharges from the construction works areas to surface water and groundwater during the Construction Phase.

In-stream works will be required for the culverting of the open drainage channel that crosses the proposed infill area. The culvert will be precast and delivered to Site as required thereby reducing the risk of any direct impact to water quality in the open drainage channel and the downstream Nobber Stream.

All in-stream works will be undertaken during the summer when the flow in the open drainage ditch crossing the proposed infill area is negligible. Regardless, the proposed construction design will include an over-pump or the installation of a ditch diversion to manage water in the event of a rainfall event. There is the potential for some disturbance of the stream bed and increased suspended solids content of the water downstream of the works area. This may result in a 'negative', 'moderate', 'short-term' impact on the receiving water quality of the Nobber Stream.

The release of suspended solids entrained in surface runoff indirectly tracked on vehicles / machinery during the Construction Phase of the Proposed Development could enter the existing surface water network at the existing facility or enter downgradient receiving watercourses (i.e., the Nobber Stream and the Garmanagh Stream) and could potentially result in a 'negative', 'slight to moderate' 'short-term' impact on receiving surface water quality.

There is a potential risk associated with the cementitious materials used during the construction of deeper infrastructure where groundwater may be encountered that could result in a 'negative', 'significant' and 'medium-term' impact on the underlying groundwater quality beneath the Site.

If the accidental release of hazardous material including fuels, chemicals and materials being used on-site, through the failure of secondary containment or a materials handling accident on the Site, were to occur over open ground then these materials could infiltrate to the underlying groundwater, the existing surface water drainage network at the existing facility and enter downgradient receiving watercourses (i.e., the Nobber Stream and the Garmanagh Stream). In the event of such scenarios, it is considered that this could result in a 'negative', 'moderate to significant', 'long-term' impact on the receiving hydrological and hydrogeological environment depending on the nature of the incident.

Human Health

The groundwater supply at the Site will not be used for drinking water and therefore there will be no associated human health issues for workers at the associated with groundwater use. Human health is assessed in Chapter 4 of this EIAR.

7.5.1.2 Indirect

There will be no indirect impacts associated with the Construction Phase of the Proposed Development.

7.5.1.3 Secondary

There will be no secondary impacts associated with the Construction Phase of the Proposed Development.

7.5.2 Operational Phase

7.5.2.1 Direct

The existing facility is currently operational under IE Licence (P0037-04) and GHG Permit (IE-GHG123-10405-03). The Construction Phase and the Operational Phase of the Proposed Development will be operated in accordance with the requirements of the IE Licence, GHG Permit and the existing Environmental Management System (EMS).

Hydrogeological Regime

The infilling of the land in the north of the Site with low permeability soils, will reduce existing downwards infiltration rate beneath the Site within the localised portion of the 1,621km² Louth GWB. This portion of the Site is underlain by a Poor Aquifer indicating an already limited capacity of the aquifer to accept recharge via infiltration of rainfall. Therefore, any change in the recharge potential within the Site taking account of the nature of the aquifer including recharge potential and limited baseflow contributions within the GWB will only impact a very

localised area of the aquifer within the vicinity of the Site. Overall, it is considered that any impact on the hydrogeological regime is unavoidable however there will be a 'negative', 'imperceptible' and 'long term' impact within a very localised zone of the aquifer.

There will be an increase in impermeable surfaces at the Site for the construction of the proposed AD Plant and access road to the Proposed Development. However, while there may be a reduction in infiltration to ground and local variations in the mechanism for groundwater recharge, there will be no change to the overall recharge potential of the underlying aquifer.

Water supply to the Proposed Development will be from the production well for the existing facility which are located within the underlying Ardee GWB which is a Locally Important aquifer. The existing facility has a current water supply requirement of 85m³/day. Locally important aquifers are capable of 'good' well yields in the range of 100-400 m³/day. Therefore, it is considered that based on the resource potential of the aquifer and the relatively small increased water supply requirement of 0.63m³/day for welfare and 5m³/day for washing down of vehicles in the AD plant intake area for the Proposed Development, it is considered that there will be a 'negative', 'slight' and 'long term impact on the resource potential of the aquifer.

Hydrological Regime and Flood Risk

The land in the north of the Site will be infilled with low permeability soil from the proposed AD Plant area which will have a similar hydraulic conductivity and infiltration rate to the existing native soils. Rainfall will continue to infiltrate to ground and runoff as overland flow towards the downgradient water courses (i.e., the Nobber Stream). It is therefore considered that there will be no overall change in the discharges to adjoining watercourses.

The removal and culverting of the existing open drainage channel, where there is potential for scouring of sediments and sediment entrained in runoff from bare bank slopes, will have an overall 'positive', 'slight', and 'permanent' impact on the receiving water quality of the receiving downstream Nobber Stream.

Surface water runoff from the main digester yard area, within the AD intake building and from surface water runoff surrounding the AD intake building including the truck off-loading and out-loading bays will be collected, contained and recirculated in the closed loop system within the AD Plant as part of the operational processes.

Surface water runoff from the remaining non-process areas along the access road to the proposed AD plant area will be treated and attenuated prior to discharging offsite via SW1 in accordance with the existing discharge requirements of the IE Licence. Therefore, there will be no overall change in the baseline condition as surface water will continue to discharge at greenfield runoff rates to the Garmanagh Stream.

As documented in the flood risk review prepared by Traynor Environmental Ltd. (TEL, 2022d), there is no identified flood risk.

Overall, it is considered that there will be a 'neutral', 'imperceptible' and 'long-term' impact on the hydrological regime of the receiving water courses (i.e., the Garmanagh Stream) and the potential flooding impacts associated with the Proposed Development.

Groundwater Vulnerability

The infilling of the lands to the north of the Site will have a positive impact on improving the vulnerability of the underlying aquifer by increasing the overall thickness of overburden above

the aquifer. Given the low permeability and thickness (>10m) of the overburden across the Site, it is considered that there will be an overall 'positive', 'slight' and 'permanent' impact on the groundwater vulnerability associated with the infilling of the Site by reducing the potential for migration of contamination to groundwater.

Water Quality

The infilling of the lands to the north of the Site with surplus soils generated during construction works will have a 'neutral', 'imperceptible' and 'permanent' impact on the receiving water environment given that it will have undergone testing for contaminants, invasive species and other anthropogenic inclusions and assessment of the suitability for use in accordance with engineering and environmental specifications for the Proposed Development.

Surface water runoff from outside of the proposed AD Plant area (i.e., access road to the Site) will be managed in accordance with SuDS. Water will be treated and attenuated via a silt trap and oil interceptor and an appropriately sized attenuation tank prior to outfalling to the open drainage channel along the eastern boundary of the Site and ultimately discharging to the Garmanagh Stream. Therefore, there will be an overall 'neutral', 'slight' and 'long-term' impact on the water quality of the receiving downstream surface water receptors.

In the unmitigated scenario where there is no attenuation tank, no petrol interceptor and no shut off valve, there could be a potential release of hazardous or contaminated runoff from the Site to the receiving drainage channel and potentially the Garmanagh Stream. In this unmitigated scenario there could be 'negative', 'significant' and 'long term' impact on water quality depending on the nature and duration of the unmitigated event. The receiving drainage channel along the eastern boundary of the Site would be impacted in the vicinity of the outfall and there could potentially be a localised impact within the immediate downstream area of the Garmanagh Stream. There is limited potential for release to groundwater and taking account of the nature of the bedrock aquifer it is considered that any worst-case incident would result in an impact to groundwater quality within a very localised areas of the bedrock aquifer only.

There will be a limited increase of 0.63l/day in the rate of discharge of treated effluent to the WWTP for the existing facility. As documented in the technical note on the capacity of the WWTP (TEL, 2022b), the WWTP has sufficient capacity and therefore no changes are required to the WWTP. The discharge of foul water from the Proposed Development to the WWTP will only be undertaken in accordance with the conditions of the IE Licence (IE Licence No. P0037-04) for the existing facility and will comply with the current ELVs for treated effluent. Furthermore, treated effluent and sludges arising from the WWTP will be disposed of by land spreading in accordance with the conditions of the IE Licence (IE Licence No. P0037-04). Therefore, there will be an overall 'neutral', 'imperceptible' and 'long-term' impact on the receiving water quality.

Human Health

The groundwater supply at the Site will not be used for drinking water. However, the onsite groundwater source will be used to supply welfare facilities (e.g., showers) for the Proposed Development. The abstraction of water will be undertaken in accordance with the existing consents and requirements of the IE Licence and therefore there will be no potential associated human health issues for workers at the Proposed Development associated with groundwater use.

There are no identified risks to offsite groundwater users associated with the Operational Phase of the Proposed Development.

Human health is assessed in Chapter 4 of this EIAR.

7.5.2.2 Indirect

There are no indirect impacts associated with the Operational Phase of the Proposed Development.

7.5.2.3 Secondary

There are no secondary impacts associated with the Operational Phase of the Proposed Development.

7.5.3 Potential Cumulative Impacts

Cumulative Impacts can be defined as “impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project”. Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the cumulation of different effects that are individually minor. Such effects are not caused or controlled by the project developer.

A review of other off-site developments and Proposed Developments was completed as part of this environmental assessment.

Water abstracted from the production wells at the existing facility will be used to supply the Proposed Development. The abstraction of water will be undertaken in accordance with the existing consents and requirements of the IE Licence. The existing facility has a current water supply requirement of 85m³/day. Locally important aquifers are capable of ‘good’ well yields in the range of 100-400 m³/day. Therefore, it is considered that based on the resource potential of the aquifer and the relatively small increased water supply requirement of 0.63m³/day for welfare and 5m³/day for washing down of vehicles in the AD plant intake area for the Proposed Development, it is considered that there will be a ‘negative’, ‘slight’ and ‘long term cumulative impact on the supply network and water resources.

Surface water runoff from outside of the proposed AD Plant area (i.e., access road to the Site) will be discharged to the open drainage channel along the eastern boundary of the Site and ultimately discharging to the Garmanagh Stream. Therefore, in the absence of mitigation, there could be a potential ‘negative’, ‘significant’ and short term’ impact on the receiving water quality of the drainage channel and potentially locally within the Garmanagh Stream. However, as mentioned above, the unmitigated worst-case source scenario is deemed to be an unlikely scenario taking account of the embedded design avoidance measures and mitigation measures.

There will be no other potential cumulative impacts associated with the Proposed Development.

7.5.4 “Do Nothing” Impact

In the ‘Do Nothing’ scenario it is considered that the Proposed Development did not proceed and the potential impact on the receiving hydrological and hydrogeological environment is considered.

If the Proposed Development did not proceed the Site of the Proposed Development would continue to be used as agricultural lands and there would be no impact or change to the hydrological and hydrogeological regime at the Site. The existing facility would still continue to operate in accordance with the conditions of the IE Licence.

7.5.5 Water Framework Directive

In the unmitigated worst-case source scenario at the site, and in the absence of design and mitigation measures there could be a potential ‘negative’, ‘significant’ and ‘long-term’ impact, on the receiving WFD Status locally within the Nobber Stream and the Garmanagh Stream, associated with surface water discharges from the Site. However, it is considered that there would be no impact to the receiving WFD Status within the River Dee taking account of the distances downstream and the potential for assimilation within the receiving water bodies. Groundwater quality within the Ardee GWB and the Louth GWB would potentially be impacted within a very localised area in a worst-case scenario in the absence of mitigation.

7.6 Avoidance, Remedial & Mitigation Measures

The measures outlined in this section of the report will ensure that there will be no significant impact on the receiving groundwater and surface water environment and associated receptors (e.g., Natura 2000 sites). Therefore, the Proposed Development will not have any impact on compliance with the EU Water Framework Directive, European Communities (Environmental Objectives) Surface Water Regulations (S.I. 272 of 2009 and as amended) and the European Communities Environmental Objectives (Groundwater) Regulations (S.I. No. 9 of 2010 and as amended) individually or in combination.

7.6.1 Construction Phase

Prior to the commencement of the Construction Phase, the appointed Contractor will prepare a detailed Preliminary Construction Environmental Management Plan (CEMP), including detailed construction phasing and measures to manage and prevent any potential emissions to groundwater and surface water.

The construction works will be managed with consideration of applicable regulations and standard best international practice including but not limited to:

- CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors;
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (C650), 2005;
- BPGCS005, Oil Storage Guidelines;
- EPA (2004) IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities;
- CIRIA 697, The SUDS Manual, 2007;
- UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004;

- Construction Industry Research and Information Association CIRIA C648: Control of water pollution from linear construction projects: Technical guidance (Murnane et al. 2006);
- CIRIA C648: Control of water pollution from linear construction projects: Site guide (Murnane et al. 2006); and
- Inland Fisheries Ireland (2016). Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters.

During the Construction Phase the Contractor will comply with the environmental control and mitigation requirements as per the conditions of the IE Licence (IE Licence No. P0037-04) for the existing facility to ensure there will be no impact on the receiving hydrological and hydrogeological environment.

The EMS that is already in place for the existing facility will be strictly implemented for the Construction Phase of the Proposed Development.

Mitigation measures will be adopted as part of the construction works on the Proposed Development site. These measures are considered to be best practice construction techniques that are applicable to most developments of this scale and nature. The measures will address the main activities of potential impact which include:

- Control and Management of Water and Surface Runoff;
- Management and control of imported soil and aggregates from off-site sources;
- Fuel and Chemical handling, transport, and storage; and
- Accidental release of contaminants – notify relevant statutory authorities.

As part of the overall construction methodology, sediment and water pollution control risks arising from construction-related surface water discharges will be considered. All works carried out as part of these infrastructure works will comply with all Statutory Legislation including the Local Government (Water Pollution) acts, 1977 and 1990 and the contractor will cooperate fully with the Environment Section of Meath County Council in this regard.

7.6.1.1 Control and Management of Water and Surface Runoff

Surface runoff during the Construction Phase will be managed within the works areas. Trenched double silt fencing will be installed along the western and northern boundary of the proposed infill area. The silt fencing will act as a temporary sediment control device to protect the Nobber Stream from sediment and potential surface water run-off from the Site. The fencing will be inspected twice daily based on Site and weather conditions for any signs of contamination or excessive silt deposits and records of these checks will be maintained. Silt laden water within the trenches will be routed to an appropriately sized settlement facility before discharging to the Nobber Stream. A buffer zone of 10m will be maintained between the silt trap and the watercourse with natural vegetation left intact.

There may be a temporary increase in the exposure of the underlying groundwater during earthworks due to the temporary removal of hardstanding areas. Surface water runoff will be prevented from entering open excavations with sandbags or other approved methods proposed by the Contractor.

A regular review of weather forecasts of heavy rainfall will be conducted, and a contingency plan will be prepared for before and after such events to minimise any potential nuisances. As

the risk of the break-out of silt laden run-off is higher during these weather conditions, no work will be carried out during such periods where possible.

7.6.1.2 Management and Control of Instream Works

All instream works will be undertaken in accordance with the requirements of the Preliminary CEMP and will follow the guidelines published by Inland Fisheries Ireland (IFI) Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters (2016) and The National Roads Authority (now Transport Infrastructure Ireland) Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes.

During all instream works required for the construction of the culverted drainage channel, the appointed contractor will ensure that the following mitigation measures are strictly adhered to:

- Instream machine works will be minimised, and any machines working in the watercourse must be protected against leakage or spillage of fuels, oils, greases and hydraulic fuels;
- Where temporary pumping is required to divert surface water within the drainage channel, the discharge must be routed to an appropriately sized settlement facility before return to the Nobber Stream;
- Instream earthworks must be executed so as to minimise the suspension of solids; and
- Where required, every care must be taken to insure against spillage of concrete or leakage of cement grout within cofferdams.

7.6.1.3 Reuse of Surplus Soils

The infilling of the lands to the north of the Site with surplus soils generated during construction works will be subject to control procedures which will include testing for contaminants, invasive species and other anthropogenic inclusions. Any unsuitable materials will be removed from the Site in accordance with all legislative requirements.

A minimum 10m buffer will be maintained between the proposed infill area, the Site boundary and any receiving water course in particular the Nobber Stream.

The design of the proposed infill area will take account of the local groundwater flow regime and where required will incorporate appropriate drainage layers into the soil cover.

7.6.1.4 Control and Management of Soil and Stockpiles

Where possible, stockpiling of soil and stone on-site will be avoided. However, in the event that stockpiling is required, temporary stockpiled materials pending infilling on lands to the west of the Site will be located in designated areas only and there will be no storage of materials within 10m of the Site boundary, open drains and water courses. Where required during periods of wet weather appropriate containment measures will be implemented to prevent excessive runoff and entrainment of sediment. These will include battering of stockpiles, covering of stockpiles with tarpaulins and use of sandbags to contain any runoff from the stockpiles.

7.6.1.5 Importation of Materials

Contract and procurement procedures will ensure that all imported aggregates and other construction materials required for the Proposed Development will be sourced from reputable suppliers operating in a sustainable manner and in accordance with industry

conformity/compliance standards and statutory obligations. The importation of aggregates will be subject to management and control procedures to ensure the suitability for use in accordance with engineering and environmental specifications for the Proposed Development. Therefore, any unsuitable material will be identified prior to unloading / placement on-site.

7.6.1.6 Concrete Works

Pre-cast concrete will be used where technically feasible to meet the design requirements for the Proposed Development. Where cast-in-place concrete is required, all work will be carried out to avoid any contamination of the receiving geological environment through the use of appropriate design and methods implemented by the appointed Contractor and in accordance with relevant industry standards.

All ready-mixed concrete will be delivered to the Proposed Development site by truck. The following measures will be implemented where poured concrete is being used on site:

- The production, transport and placement of all cementitious materials will be strictly planned and supervised. Site batching/production of concrete will not be carried out on Site;
- Shutters will be designed to prevent failure. Grout loss will be prevented from shuttered pours by ensuring that all joints between panels achieve a close fit or that they are sealed;
- Where concrete is to be placed by means of a skip, the opening gate of the delivery chute will be securely fastened to prevent accidental opening;
- Where possible, concrete skips, pumps and machine buckets will be prevented from slewing over water when placing concrete;
- Concrete mixer trucks will not be permitted to wash out on-site with the exception of cleaning the chute into a container which will then be emptied into a skip for appropriate compliant removal offsite; and
- Surplus concrete will be returned to batch plant after completion of a pour.

7.6.1.7 Handling of Fuels and Hazardous Materials

Fuels will be stored in appropriate bunded, integrity tested tanks, in accordance with Condition 11.4 of the IE Licence (IE Licence No. P0037-04). All tank and drum storage areas will be rendered impervious to the materials stored therein. In addition, tank and drum storage areas will as a minimum be bunded, either locally or remotely, to a volume not less than the greater of the following:

- 110% of the capacity of the largest tank or drum within the bunded area; or
- 25% of the total volume of substance that could be stored within the bunded area.

Refuelling will be carried out in accordance with the procedures outlined in the existing EMS and any requirements of the IE Licence (IE Licence No. P0037-04) for the existing facility. Refuelling will be carried out in a designated area with appropriate containment measures in place to minimise any risk of spills. Spill kits will be provided on-site to deal with any spills or leaks that may occur during refuelling.

The appointed Contractor for the Construction Phase of the Proposed Development will ensure that all plant and equipment utilised on-site is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the Proposed

Development site. Only emergency breakdown maintenance will be carried out on-site. Drip trays and spill kits will be available on-site to ensure that any spills from vehicles are contained and removed off-site.

There may also be the requirement for use of portable generators or similar fuel containing equipment during the Construction Phase of the Proposed Development, which will be placed on suitable drip trays. Regular monitoring of drip tray content will be undertaken to ensure sufficient capacity is maintained at all times.

Emergency procedures developed in accordance with Condition 14 of the IE Licence and outlined in the existing EMS will be strictly implemented by the appointed Contractor and spillage kits will be available on-site including in vehicles operating on-site. Construction staff will be familiar with emergency procedures for in the event of accidental fuel spillages.

In the event of a leak or spill from equipment (e.g., leak or spill from machinery during construction works), any contaminated soil will be removed from the Site and compliantly disposed off-site. Residual soil will be tested to validate that all potentially contaminated material has been removed. This procedure will be undertaken in accordance with industry best practice procedures and EPA guidelines.

7.6.1.8 Welfare Facilities

The existing welfare facilities at the Site will be available for the duration of the Construction Phase.

7.6.2 Operational Phase

During the Operation Phase of the Proposed Development there is limited to no potential for any impact on the receiving hydrological and hydrogeological environment and therefore there is no mitigation required in regard to the Proposed Development.

The avoidance measures, as outlined below, which are in place as part of the baseline condition at the Proposed Development Site will ensure that there will be no significant impact on the receiving hydrological and hydrogeological environment.

The procedures set out in the EMS and conditions of the IE Licence (IE Licence No. P0037-04) will be strictly adhered to for the duration of the Operational Phase.

It is noted that accidental discharges to the open drains from the AD process tanks will be prevented by a bund system, which will contain within the main plant area a volume equivalent to the capacity of the largest of the AD tanks with an allowance of 10%. The bund system will ensure any contaminated water is prevented from discharging into the surface water drainage network.

Ongoing regular maintenance of the proposed surface water drainage will be incorporated into the overall management strategy for the Proposed Development.

In the event of an emergency or incident at the Site a shut-off valve at SW1 and SW8 will be closed to prevent potentially contaminated water from discharging offsite. Potentially contaminated water will be diverted to an overground lined lagoon on the eastern side of College Road for removal offsite for disposal in accordance with all relevant waste management legislation. The existing fire water retention and storage for the existing facility, which has been designed in accordance with been designed in accordance with the EPA

Guidance on Retention Requirements for Firewater Run-off (EPA, 2019), has adequate capacity for the Proposed Development. Therefore, there will be no impact on the receiving surface water quality in the event of an emergency or fire at the Proposed Development Site.

Emergency procedures developed in accordance with Condition 14 of the IE Licence and outlined in the existing EMS will be strictly implemented during the Operational Phase of the Proposed Development and spillage kits will be available on-site including in vehicles operating on-site. All staff will be familiar with emergency procedures for in the event of accidental fuel spillages.

7.6.3 “Worst Case” Scenario

In the unmitigated worst-case source scenario (i.e., fuel spill incident onsite or fire), the discharge of surface water from the Proposed Development could result in a potential ‘negative’, ‘significant’ and ‘long-term’ impact on the receiving water quality of the underlying groundwater, the existing surface water network at the existing facility and enter downgradient receiving watercourses (i.e., the Nobber Stream and the Garmanagh Stream) depending on the nature of the incident. However, this worst-case scenario is deemed to be an unlikely scenario taking account of the emergency procedures developed for the existing facility in accordance with Condition 14 of the IE Licence and outlined in the existing EMS, and the embedded design avoidance measures and mitigation measures for the Proposed Development. During the Operational Phase, in the event of an emergency the valve on the outlet from the surface water drainage at SW1 will be automatically closed to prevent any potentially contaminated water discharging from the Site.

7.7 Residual Impacts

Residual Impacts are defined as ‘effects that are predicted to remain after all assessments and mitigation measures. They are the remaining ‘environmental costs’ of a project and are the final or intended effects of a development after mitigation measures have been applied to avoid or reduce adverse impacts.

The predicted impacts of the Construction and Operational Phases are described in Table 7-11 in terms of quality, significance, extent, likelihood, and duration. The relevant mitigation measures are detailed, and the residual impacts are determined which take account of the avoidance, remedial and mitigation measures.

There are no significant residual impacts on hydrology and hydrogeology anticipated regarding this Proposed Development.

There will be no impact to the existing WFD Status of water bodies associated with the Proposed Development including the Nobber Stream, the Garmanagh Stream, the River Dee, the Ardee GWB and Louth GWB as a result of the Proposed Development taking account of design avoidance and mitigation measures where required.

Table 7-11: Summary of Residual Impacts

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
Construction Phase								
In-Stream Works	Water Quality	There is the potential for some disturbance of the stream bed and increased suspended solids content of the water in the Nobber Stream.	Negative	Moderate	Temporary	Direct	All instream works will be undertaken in accordance with the requirements of the Preliminary CEMP and follow relevant guidelines published by IFI and The National Roads Authority (now Transport Infrastructure Ireland) regarding instream works and river crossings.	Imperceptible
Surface runoff containing contaminants or suspended solids	Surface water quality	Potential for contaminants entrained in surface water runoff to enter the existing surface water network at the existing facility or enter downgradient receiving watercourses	Negative	Slight to Moderate	Short Term	Direct	Surface runoff during the Construction Phase will be managed within the works areas in accordance with the requirements of the Preliminary CEMP. There will be no direct discharges of water from construction works areas to ground, water courses or the existing surface water network at the existing facility during the Construction Phase of the Proposed Development.	Imperceptible

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
Use of cementitious materials.	Soil and bedrock	Potential release of cementitious material during construction works for foundations, pavements and infrastructure.	Negative	Significant	Medium Term	Direct	Where cast-in-place concrete is required, all work will be carried out to avoid any contamination of the receiving geological environment through the use of appropriate design and methods implemented by the appointed Contractor and in accordance with relevant industry standards.	Imperceptible
Accidental release of deleterious materials (e.g., fuels or other hazardous materials being used onsite).	Groundwater and Surface Water Quality / WFD Status	Potential for uncontrolled release of deleterious materials (fuels or process water) to the underlying groundwater and surface water environment with potential impact on the receiving water quality / WFD Status of the Nobber Stream, the Garmanagh Stream, the Ardee GWB and the Louth GWB.	Negative	Moderate to Significant	Long Term	Direct / Worst-Case	Refuelling of plant and storage of any deleterious materials including fuels will be undertaken in accordance with the requirements of the IE Licence and procedures outlined in the EMS that is already in place for the existing facility.	Imperceptible
Operational Phase								
Infilling of the Land in the North of the Site	Hydrogeological Regime	The increased thickness of soil materials that will have a similar permeability to the underlying native soils may reduce direct infiltration within a localised area of the Poor aquifer.	Negative	Imperceptible	Long Term	Direct	The design of the proposed infill area will take account of the local groundwater flow regime and will incorporate appropriate drainage layers into the soil cover.	Imperceptible

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
Proposed Development	Hydrogeological Regime	The Proposed Development will result in an increase in impermeable surfaces resulting in minor changes to the local hydrogeological regime.	Neutral	Imperceptible	Long Term	Direct	None Required.	Imperceptible
Water Supply	Hydrogeological Regime	The increased water supply requirement for the Proposed Development may impact on the resource potential of the aquifer.	Negative	Slight	Long Term	Direct	None Required. Water supply to the Proposed Development will be undertaken in accordance with the under the existing consents in place for the existing facility.	Slight
Removal and Culverting of the Existing Open Drainage Channel Crossing the Proposed Infill Area	Water Quality	The removal and culverting of the existing open drainage channel, where there is potential for scouring of sediments and sediment entrained in runoff from bare bank slopes, will have an overall positive impact on the receiving water quality of the downstream Nobber Stream.	Positive	Slight	Permanent	Direct	None Required.	Slight (Positive)
Surface Water Drainage / Proposed Development	Hydrological Regime and Flood Risk	The SSFRA identified that there is no risk of flood associated with the Proposed Development.	Neutral	Imperceptible	Long Term	Direct	None Required.	Imperceptible
Infilling of the Land in the North of the Site	Groundwater Vulnerability	Increasing the overall thickness of overburden in the northern portion of the Site will have a will have a positive impact on improving	Positive	Slight	Permanent	Direct	None Required	Slight (Positive)

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
		the vulnerability of the underlying aquifer.						
Infilling of the Land in the North of the Site	Groundwater Quality	The infilling of lands in the north of the site with soils excavated from the proposed AD Plant area has the potential to impact on the receiving water environment.	Neutral	Imperceptible	Permanent	Direct	The reuse of surplus soils at the Proposed Development will be subject to testing for contaminants, invasive species and other anthropogenic inclusions and assessment of the suitability for use in accordance with engineering and environmental specifications for the Proposed Development.	Imperceptible
Surface Water Drainage	Surface Water Quality	Surface water runoff from outside of the proposed AD Plant area (i.e., access road to the Site) will be managed in accordance with SuDS prior to discharging from the Site.	Neutral	Slight	Long Term	Direct	None Required. Ongoing maintenance of the surface water drainage network will be undertaken.	Slight
Surface Water Drainage	Water Quality / WFD Status	In the absence of design and mitigation measures there could be a potential impact associated with the potential release of contaminated surface water runoff from the Site, on the receiving water quality / WFD Status of the Garmanagh Stream.	Negative	Significant	Long Term	Direct / Worst Case Scenario	In the event of an emergency or incident at the Site a shut-off valve at SW1 will be closed to prevent potentially contaminated water from discharging offsite.	Imperceptible

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
Foul Water	Water Quality	Treated effluent and sludges arising from the WWTP will be disposed of by land spreading with potential impacts on the receiving water quality.	Neutral	Imperceptible	Long Term	Direct	The operation of the WWTP will be undertaken in accordance with the IE Licence to ensure that treated effluent meets the ELVs. Furthermore, treated effluent and sludges arising from the WWTP will be disposed of by land spreading in accordance with the conditions of the IE Licence.	Imperceptible

7.8 Monitoring

7.8.1 Construction Phase

There are no monitoring requirements specifically in relation to hydrology and hydrogeology during the Construction Phase of the Proposed Development.

7.8.2 Operational Phase

The Proposed Development will operate under the IE Licence (IE Licence No. P0037-04) which will be amended include the proposed Development. The operator will comply with any monitoring requirements as per the conditions of the IE Licence (IE Licence No. P0037-04).

Continued surface water monitoring at SW1 and groundwater monitoring at GW1 as required in the conditions of the existing (IE Licence No. P0037-04).

There are no additional monitoring requirements specifically in relation to hydrology and hydrogeology during the Operational Phase of the Proposed Development.

7.9 Interactions

7.9.1 Population and Human Health

No public health issues associated with the water (hydrology and hydrogeology) conditions at the Proposed Development Site have been identified for the Construction Phase or Operational Phase of the Proposed Development.

Appropriate industry standard and health and safety legislative requirements will be implemented during the Construction Phase that will be protective of site workers.

It is noted that specific issues relating to Public Health associated with the Proposed Development are set out in Chapter 4 of this EIAR.

7.9.2 Land, Soil, Geology and Hydrogeology

An assessment of the potential impact of the Proposed Development on the existing land, soils and geological environment during the Operational Phase of the Proposed Development is set out in Chapter 6 Land, Soil and Geology of this EIAR.

7.9.3 Biodiversity

An assessment of the potential impacts of the Proposed Development on the Biodiversity of the Site, with emphasis on habitats, flora and fauna which may be impacted a result of the Proposed Development are included in Chapter 5 of this EIAR. It also provides an assessment of the impacts of the Proposed Development on habitats and species, particularly those protected by national and international legislation or considered to be of particular conservation importance and proposes measures for the mitigation of these impacts.

7.9.4 Material Assets - Water

An assessment of the potential impact of the Proposed Development on the Material Assets including built services, infrastructure, traffic, and waste management has been set out in

Chapter 12 of this EIAR. Any discharges to the WWTP at the existing facility and water supply to the from the production wells at the existing facility will be in accordance with the conditions of the IE Licence (IE Licence No. P0037-04).

7.10 Difficulties Encountered When Compiling

There were no difficulties encountered when compiling the Hydrology and Hydrogeology Chapter of this EIAR.

7.11 References

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8 AIR QUALITY AND CLIMATE

8.1 Introduction

This Chapter will describe and assess the potential impacts on air quality and climate associated with the Proposed Development lands adjoining the College Proteins, Nobber, Co. Meath. Taking into account Ambient Air Quality Standards, the baseline air quality will be examined along with the potential for release of emissions to the atmosphere and associated effects prior to and following mitigation measures. This Chapter will also describe and assess the potential impacts on micro and macro-climate as a result of the Proposed Development. Attention will be focused on Ireland's obligations under the Kyoto Protocol and the Paris Agreement in the context of the overall climatic impact of the presence and absence of the Proposed Development.

8.1.1 Quality Assurance and Competence

The Chapter was prepared by Laura Griffin (BA Hons, MSc), Environmental Consultants, Enviroguide Consulting. Laura has experience working on a number of EIARs and EIA Screening Reports for projects of a similar scale to the Proposed Development.

8.1.2 Ambient Air Quality Standards

For the protection of health and ecosystems, EU directives apply air quality standards in Ireland and other EU member states for a range of pollutants. These rules include requirements for monitoring, assessment and management of ambient air quality. The first major instrument in tackling air pollution was the Air Quality Framework Directive 96/62/EC and its four daughter Directives. Each of these instruments was repealed with the introduction of Directive 2008/50/EC on ambient air quality and cleaner air for Europe in 2008 (as amended by Decision 2011/850/EU and Directive 2015/1480/EC) (the CAFE Directive), save for the "Fourth Daughter Directive" (Directive 2004/107/EC relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air).

The CAFE Directive lays down measures aimed at:

1. defining and establishing objectives for ambient air quality designed to avoid, prevent or reduce harmful effects on human health and the environment as a whole;
2. assessing the ambient air quality in Member States on the basis of common methods and criteria and, in particular, assessing concentrations in ambient air of certain pollutants;
3. providing information on ambient air quality in order to help combat pollution and nuisance and to monitor long-term trends and improvements resulting from national and Community measures;
4. ensuring that such information on ambient air quality is made available to the public;
5. maintaining air quality where it is good and improve it in other cases;
6. promoting increased cooperation between the Member States in reducing air pollution.

Ambient air quality monitoring and assessment in Ireland is carried out in accordance with the requirements of the CAFE Directive. The CAFE Directive has been transposed into Irish legislation by the Air Quality Standards Regulations (S.I. No. 180 of 2011). The CAFE Directive requires EU member states to designate 'Zones' reflective of population density for the purpose of managing air quality. Four zones were defined in the Air Quality Standards Regulations (2011) and subsequently amended in 2013 to account for 2011 census population counts and to align with coal restricted areas in the Air Pollution Act (Marketing, Sale, Distribution and Burning of Specified Fuels) Regulations 2012. (S.I. No. 326 of 2012) (the 2012 Regulations).

The main areas defined in each zone are:

- ❖ **Zone A:** Dublin Conurbation
- ❖ **Zone B:** Cork Conurbation
- ❖ **Zone C:** Other cities and large towns comprising Limerick, Galway, Waterford, Drogheda, Dundalk, Bray, Navan, Ennis, Tralee, Kilkenny, Carlow, Naas, Sligo, Newbridge, Mullingar, Wexford, Letterkenny, Athlone, Celbridge, Clonmel, Balbriggan, Greystones, Leixlip and Portlaoise.
- ❖ **Zone D:** Rural Ireland, i.e., the remainder of the State excluding Zones A, B and C.

The Site of the Proposed Development is located in lands adjoining the College Proteins, Nobber, Co. Meath and falls under the 'Zone D' category based on the EPA CAFE Directive.

The CAFE Directive outlines certain limit or target values specified by the five published directives that apply limits to specific air pollutants. These limits, outlined in Table 8-1, will be referred to as part of the Proposed Development assessment with respect to air quality.

Table 8-1: Limit Values of Cleaner Air for Europe (CAFE) Directive 2008/50/EC (Source: EPA, 2020)

Pollutant	Limit Value Objective	Averaging Period	Limit Value $\mu\text{g}/\text{m}^3$	Limit Value ppb	Basis of Application of the Limit Value	Limit Value Attainment Date
SO ₂	Protection of Human Health	1 hour	350	132	Not to be exceeded more than 24 times in a calendar year	1 Jan 2005
SO ₂		24 hours	125	47	Not to be exceeded more than 3 times in a calendar year	1 Jan 2005
SO ₂	Protection of vegetation	Calendar year	20	7.5	Annual mean	19 July 2001
SO ₂		1 Oct to 31 Mar	20	7.5	Winter mean	19 July 2001
NO ₂	Protection of human health	1 hour	200	105	Not to be exceeded more than 18 times in a calendar year	1 Jan 2010
NO ₂		Calendar year	40	21	Annual mean	1 Jan 2010

Pollutant	Limit Value Objective	Averaging Period	Limit Value $\mu\text{g}/\text{m}^3$	Limit Value ppb	Basis of Application of the Limit Value	Limit Value Attainment Date
NO + NO₂	Protection of ecosystems	Calendar year	30	16	Annual mean	19 July 2001
PM10	Protection of human health	24 hours	50	-	Not to be exceeded more than 35 times in a calendar year	1 Jan 2005
PM10		Calendar year	40	-	Annual mean	1 Jan 2005
PM2.5 - Stage 1		Calendar year	25	-	Annual mean	1 Jan 2015
PM2.5 - Stage 2		Calendar year	20	-	Annual mean	1 Jan 2020
Lead		Calendar year	0.5	-	Annual mean	1 Jan 2005
Carbon Monoxide		8 hours	10,000	8,620	Not to be exceeded	1 Jan 2005
Benzene		Calendar year	5	1.5	Annual mean	1 Jan 2010

The EPA is the competent authority for the purpose of the CAFE Directive and is required to send an annual report to the Minister for Environment and the European Commission. The regulations further provide for the distribution of public information. This includes information on any exceedances of target values, the reasons for exceedances, the area(s) in which they occurred, and the relevant information regarding effects on human health and environmental impacts.

8.1.3 Climate Agreements

Climate change is recognised as one of the most serious global environmental problems and arguably the greatest challenge facing humanity today. While natural variations in climate over time are normal, anthropogenic activities have interfered greatly with the global atmospheric system by emitting substantial amounts of greenhouse gases (GHGs). This has caused a discernible effect on our global climate system, with continued change expected due to current and predicted trends of GHG emissions. In Ireland this is demonstrated by rising sea levels, changes in the ecosystem, and extreme weather events.

In March 1994, the United Nations Framework Convention on Climate Change (UNFCCC) was established as an intergovernmental effort to tackle the challenges posed by climate change. The Convention membership is almost universal, with 197 countries having ratified. Under the Convention, governments gather and share information on GHG emissions, national policies, and best practices. This information is then utilised to launch national strategies and international agreements to address GHG emissions. Following the formation of the UNFCCC, two major international climate change agreements were adopted: The Kyoto Protocol, and the Paris Agreement.

In April 1994, Ireland ratified the United Nations Framework Convention on Climate Change (UNFCCC) and subsequently signed the Kyoto Protocol in 1997. The Kyoto Protocol is an international agreement linked to the UNFCCC which commits its parties to legally binding emission reduction targets. In order to ensure compliance with the protocol, the Intergovernmental Panel on Climate Change (IPCC) has outlined detailed guidelines on compiling National Greenhouse Gas Inventories. These are designed to estimate and report on national inventories of anthropogenic GHG emissions and removals. Under Article 4 of the Kyoto Protocol, Ireland agreed to limit the net anthropogenic growth of the six named GHGs to 13% above the 1990 level, during the period 2008 to 2012.

The second commitment period of the Kyoto Protocol was established by the Doha amendment which was adopted *in extremis* on the 8th of December 2012, to impose quantified emission limitation and reduction commitments (QELRCs) to Annex I (developed country) Parties during a commitment period from 2013 to 2020. 38 developed countries, inclusive of the EU and its 28 member states, are participating. Under the Doha amendment, participating countries have committed to an 18% reduction in emissions from 1990 levels. The EU has committed to reducing emissions in this period to 20% below 1990 levels. Ireland's QELRCs for the period 2013 to 2020 is 80% of its base year emissions. Ireland's compliance with the Doha amendment will be assessed based on the GHG inventory submission in 2022 for 1990-2020 data. As of October 2020, the Doha Amendment has received the required number of ratifications to enter into force. Once in force, the emission reduction commitments of participating developed countries and economies in transition (EITs) become legally binding.

In December 2015, the Paris Climate Change Conference (COP21) took place and was an important milestone in terms of international climate change agreements. The Paris Agreement sets out a global action plan to put the world on track to mitigate dangerous climate change by setting a global warming limit not to exceed 2°C above pre-industrial levels, with efforts to limit this to 1.5°C. As a contribution to the objectives of the agreement, countries have submitted comprehensive national climate action plans (nationally determined contributions, NDCs). Under this agreement, governments agreed to come together every 5 years to assess the collective progress towards the long-term goals and inform Parties in updating and enhancing their nationally determined contributions. Ireland will contribute to the Agreement through the NDC tabled by the EU on behalf of Member States in 2020, which commits to a 55% reduction in EU-wide emissions by 2030 compared to 1990. This is considered to be the current NDC maintained by the EU and its Member States under Article 4 of the Paris Agreement.

The EU has set itself targets for reducing its GHG emissions progressively up to 2050, these are outlined in the 2020 climate and energy package and the 2030 climate and energy policy framework. These targets are defined to assist the EU in transitioning to a low-carbon economy, as detailed in the 2050 low carbon roadmap. The 2020 package is a set of binding legislation to ensure that the EU meets its climate and energy targets for the year 2020. There are three key targets outlined in the package which were set by the EU in 2007 and enacted in legislation in 2009:

- 20% reduction in GHG emissions from 1990 levels;
- 20% of EU energy to be from renewable sources;
- 20% improvement in energy efficiency.

The 2030 climate and energy framework builds on the 2020 climate energy package and was adopted by EU leaders in October 2014. The framework sets three key targets for the year 2030:

- At least 40% cuts in GHG emissions from 1990 levels;
- At least 32% share for renewable energy;
- At least 32.5% improvement in energy efficiency.

The EU has acted in several areas in order to meet these targets, including the introduction of the Emissions Trading System (ETS). The ETS is the key tool used by the EU in cutting GHG emissions from large-scale facilities in the power, industrial, and aviation sectors. Around 45% of the EU's GHG emissions are covered by the ETS.

As part of the European Green Deal, the Commission proposed in September 2020 to raise the 2030 greenhouse gas emission reduction target, including emissions and removals, to at least 55% compared to 1990. The European Climate Law came into force in July 2021 and writes into law the goal set out in the European Green Deal for Europe's economy and society to become climate-neutral by 2050. The law also sets the intermediate target of reducing net greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels.

8.1.3.1 National Policy Position in Ireland

National climate policy in Ireland recognises the threat of climate change to humanity and supports mobilisation of a comprehensive international response to climate change, and global transition to a low-carbon future.

The Climate Action and Low Carbon Development (Amendment) Act 2021 was enacted in 2021 and sets Ireland on a legally binding path to net-Zero emissions no later than 2050, and to a 51% reduction in emissions by the end of this decade. The Act provides the framework for Ireland to meet its international and EU climate commitments and to become a leader in addressing climate change.

The Irish Government recently published its Climate Action Plan (2021) which provides a detailed framework for taking decisive action to achieve a 51% reduction in overall greenhouse gas emissions by 2030 and setting Ireland on a path to reach net-zero emissions by no later than 2050, as committed to in the Programme for Government and as required by the Climate Act 2021. The Plan lists the actions needed to deliver on national climate targets and sets indicative ranges of emissions reductions for each sector of the economy. It will be updated annually, next in 2022, to ensure alignment with Ireland's legally binding economy-wide carbon budgets and sectoral ceilings.

Ireland's latest greenhouse gas (GHG) emissions 1990-2021 are provisional figures based on the SEAI's final energy balance released in June 2022 (EPA, 2022). In 2021, Ireland's GHG emissions are estimated to be 61.53 million tonnes of carbon dioxide equivalent (Mt CO₂eq) which is 4.7% higher (or 2.76 Mt CO₂ eq) than emissions in 2020 (58.77 Mt CO₂ eq). There was a decrease of 3.4% in emissions reported for 2020 compared to 2019. Emissions are over 1% higher than pre-pandemic 2019 figures. In 2021, the energy industries, transport and agriculture sectors accounted for 71.9% of total GHG emissions. Agriculture is the single largest contributor to the overall emissions, at 37.5%. Transport, energy industries and the

residential sector are the next largest contributors, at 17.7%, 16.7% and 11.4%, respectively (EPA, 2022).

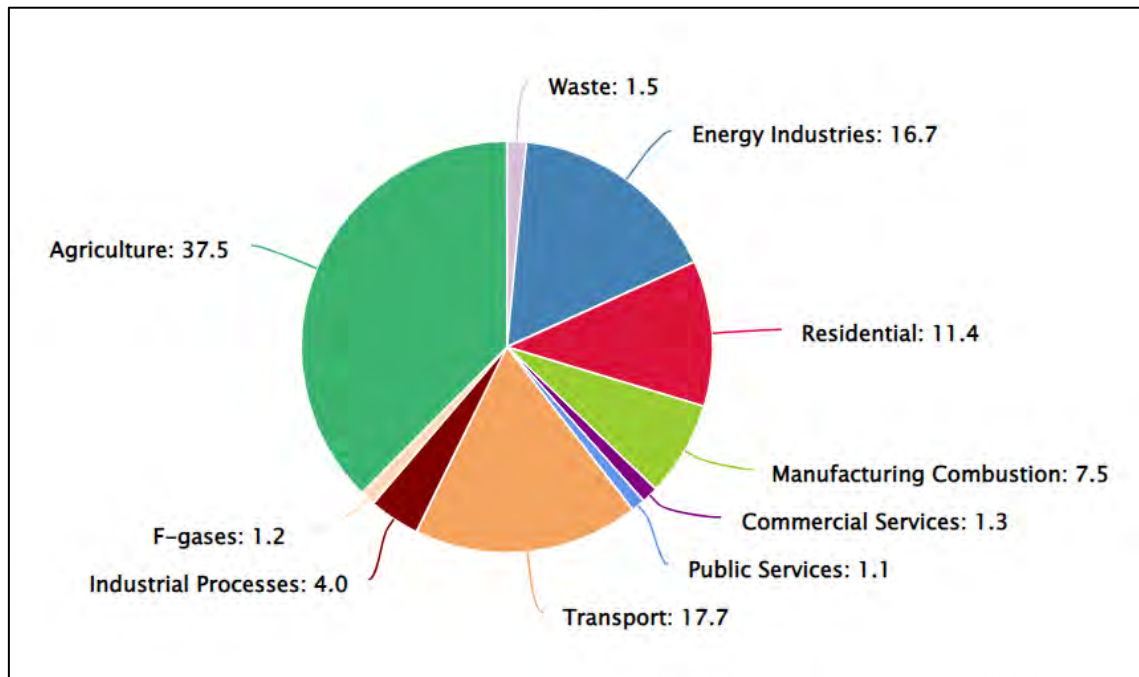


Figure 8-1: Ireland's Greenhouse Gas Emissions by Sector for 2021 (Source: EPA, 2022)

8.2 Study Methodology

A desktop study involving various national and international documents on climate change and analysis of synoptic meteorological data was carried out in order to compile this Chapter. Furthermore, a semi-quantitative assessment of fugitive dust emissions from operations of the Proposed Development was undertaken and sets out to:

- Assess the existing PM₁₀ concentrations and dust deposition rates
- Identify the potential sources of impacts on air quality and climate
- Identify the local sensitive receptors
- Identify the pathway and distance of sensitive receptors relative to the Site
- Analysis of weather data to assess impacts caused by weather events

The impact of dust is generally monitored by measuring rates of dust deposition. According to the EPA Guideline Document *Environmental Management in the Extractive Industry* (2006), there are currently no Irish statutory standards or EPA guidelines relating specifically to dust deposition thresholds for inert mineral dust. There are a number of methods to measure dust deposition, however only the German TA Luft Air Quality Standards (TA Luft, 1986) specify a method of measuring dust deposition – The Bergerhoff Method (German Standard VDI 2119, 1972) – with dust nuisance. It is the only enforceable method available. On this basis, it is recommended that the following TA Luft dust deposition limit value be adopted at site boundaries associated with quarry developments:

- Total dust deposition (soluble and insoluble): **350 mg/m²/day** when averaged over a 30-day period.

Table 8-2: Dust Deposition Limit Values

Measures	Monitoring Frequency	Standard
Dust Emissions	Monthly	350 mg/m ² /day – Bergerhoff Method

8.3 The Existing and Receiving Environment (Baseline Situation)

The site of the Proposed Development, College Proteins, is located to the west of College Road, in the townland of Nobber, Co. Meath (Eircode A82 XT61). The site is approximately 5.31 hectares and can be accessed from the southwest via the R162, or from the northeast via the R165. The town of Nobber, County Meath, lies approximately 3km south of the site of the Proposed Development. The town of Kingscourt, Co. Cavan lies approximately 7km northwest of the site on the R162, the village of Drumconrath, Co. Meath, lies approximately 6km to the east of the site on the R165, and the village of Kilmainhamwood, Co. Meath lies approximately 6km to the west of the site on the L6802. The landscape surrounding the site of the Proposed Development is rural, comprised of grazing and arable lands, divided by frequent mature hedgerows, and scattered with small farms and residential dwellings.

College Proteins is a leading Bio-Waste Management Company which collects and treats animal by-products and food wastes from abattoirs, meat plants, butchers and poultry plants, and has been operating since 1989. Category 1 (Cat 1) is the highest risk category for rendering. College Proteins render Specified Risk Material (SRM) linked with prion diseases (also known as transmissible spongiform encephalopathies (TSEs)), for example, fallen stock with SRM, international catering waste, and any material handled with Cat 1 material.

The main raw materials are inputted into the existing plant and cooked and separated to produce Cat 1 Tallow and Cat 1 Meat and Bone Meal (MBM). These two products produced from the process are renewable indigenous, carbon neutral fuels. The Cat 1 Tallow is made from rendered animal fat and is used for the production of biofuels, while the Cat 1 MBM is primarily used as a carbon-neutral fuel in steam raising boilers, particularly in cement manufacturing. The site of the Proposed Development also has a biodiesel facility that produces 25,000 tonnes of biodiesel per annum. The Cat 1 Tallow produced from the rendering operations is used as a feedstock in the biodiesel facility. This enhances the value of the Cat 1 Tallow and produces a green biofuel. This biofuel is sent off-site as an ingredient to be blended with white diesel to reduce carbon emissions from vehicles.

A solar farm has been constructed adjacent to site which will produce 3 million kWh of 100% green electricity for consumption by on-site operations.

College Proteins operates under the EU Regulation S.I. No. 187/2014 (European Union (Animal By-Products) Regulations 2014) and in accordance with EC Regulation 1069/2009 and EU 142/2011.

The College Proteins facility at College Road currently operates under an Industrial Emissions (IE) Licence from the Environmental Protection Agency (EPA), IE register number P0037, which was originally issued to the facility on the 2nd of February 1996, and a Greenhouse Gas Emissions (GHG) Permit Register No. IE-GHG123-10405, which was originally issued to the facility on the 23rd of December 2013. The current IE Licence is version P0037-04, which was revised and reissued to College Proteins by the EPA on the 3rd of June 2021, and the GHG Permit for the facility is version IE-GHG123-10405-03, which was reissued to the College Proteins Facility by the EPA on the 21st of January 2020. The company have a Waste Collection Permit NWCPO-08-06361-03. The facility is also approved by the Department of Agriculture as a Category 1 Rendering Plant, Approval No. R911.

The Environmental Management System (EMS) in place at the facility is certified to International Standard 14001:2015. In addition to this the Hazard Analysis & Critical Control Point (HACCP) system has been implemented to ensure controls are in place at all levels of operation. The Environmental Management System and HACCP controls are designed to foster improved environmental performance.

8.3.1 Air Quality

According to the 2012 Regulations (S.I. No. 326 of 2012) the proposed Site falls into 'Zone D' of Ireland which is described by the EPA as 'Rural Ireland'. It is expected that existing ambient air quality in the vicinity of the site is characteristic of a rural location with the primary source air emissions (such as particulate matter (dust), NO₂, and hydrocarbons) likely to be of local domestic and agricultural origin. Local agricultural activities may exert a higher or lower influence on dust generation in the vicinity of the Site on a seasonal basis.

In conjunction with individual local authorities, the EPA undertakes ambient air quality monitoring at specific locations throughout the country in the urban and rural environment; an Air Quality Report based on data from 30 monitoring stations and a number of mobile air quality units is developed on an annual basis. The EPA's most recent publication 'Air Quality in Ireland, 2020' reports the quality of the air in Ireland based on the data from the National Ambient Air Quality Monitoring Network throughout the year 2020.

When assessing air quality, the EPA focuses on two main pollutants: particulate matter and nitrogen oxides. Measured concentrations of NO₂ for the years 2019 and 2020 are presented in Table 8-3 for Zone D monitoring stations. These results show that current levels of NO₂ are well below the annual mean and 1-hour maximum limit values. In the year 2019, annual mean concentrations of NO₂ ranged from 4 - 8 ug/m³ across all Zone D stations, with no exceedance of the maximum hourly limit (EPA, 2020). In the year 2020, annual mean concentrations of NO₂ ranged from 2 - 17 ug/m³ across all Zone D stations, with no exceedance of the maximum hourly limit (EPA, 2021).

During 2020, the restriction of movement in Ireland due to the COVID-19 Pandemic had an impact on air quality nationally with a large-scale reduction in vehicular traffic. It is noted that the decrease in NO₂ levels during that year is a direct result of the restrictions placed on movements and construction due to COVID-19.

Based on the EPA data, a conservative estimate of the current background NO₂ concentration in the region of the Proposed Development is 8 ug/m³.

Table 8-3: Concentrations of NO₂ at Zone D Monitoring Stations

Station	Objective	Concentration (µg/m ³)		Limit or Threshold Value
		2019	2020	
Emo Court	Annual Mean NO ₂	4	4	40 µg/m ³
	Days >200µg/m ³	0	0	35 days
Birr	Annual Mean NO ₂	-	9	40 µg/m ³
	Days >200µg/m ³	-	0	35 days
Castlebar	Annual Mean NO ₂	8	6	40 µg/m ³
	Days >200µg/m ³	0	0	35 days
Carrick-On-Shannon	Annual Mean NO ₂	-	17	40 µg/m ³
	Days >200µg/m ³	-	0	35 days
Kilkitt	Annual Mean NO ₂	5	2	40 µg/m ³
	Days >200µg/m ³	0	0	35 days

Measured concentrations of PM₁₀ for the years 2019 and 2020 are presented in Table 8-3 for Zone D monitoring stations. As is evident from these results, current levels of PM₁₀ are well below the annual mean limit value. In the year 2019, annual mean concentrations of PM₁₀ ranged from 7 – 28 ug/m³ across all Zone D stations, with no exceedance of short-term limit values (EPA, 2020). In the year 2020, annual mean concentrations of PM₁₀ ranged from 7 – 15 ug/m³ across all Zone D stations, with no exceedance of short-term limit values (EPA, 2021).

Based on the EPA data, a conservative estimate of the current background PM₁₀ concentration in the region of the Proposed Development is 14 µg/m³.

Table 8-4: Concentrations of PM₁₀ at Zone D Monitoring Stations

Station	Objective	Concentration (µg/m ³)		Limit or Threshold Value
		2019	2020	
Tipperary Town	Annual Mean PM ₁₀	9	12	40 µg/m ³
	Days >50µg/m ³	1	1	35 days
Carrick-On-Shannon	Annual Mean PM ₁₀	-	10	40 µg/m ³
	Days >50µg/m ³	-	0	35 days

Station	Objective	Concentration ($\mu\text{g}/\text{m}^3$)		Limit or Threshold Value
		2019	2020	
Enniscorthy	Annual Mean PM_{10}	18	15	$40 \mu\text{g}/\text{m}^3$
	Days $>50\mu\text{g}/\text{m}^3$	14	4	35 days
Birr	Annual Mean PM_{10}	-	10	$40 \mu\text{g}/\text{m}^3$
	Days $>50\mu\text{g}/\text{m}^3$	-	0	35 days
Askeaton	Annual Mean PM_{10}	-	7	$40 \mu\text{g}/\text{m}^3$
	Days $>50\mu\text{g}/\text{m}^3$	-	0	35 days
Macroom	Annual Mean PM_{10}	28	15	$40 \mu\text{g}/\text{m}^3$
	Days $>50\mu\text{g}/\text{m}^3$	2	5	35 days
Castlebar	Annual Mean PM_{10}	16	14	$40 \mu\text{g}/\text{m}^3$
	Days $>50\mu\text{g}/\text{m}^3$	1	2	35 days
Cobh	Annual Mean PM_{10}	13	13	$40 \mu\text{g}/\text{m}^3$
	Days $>50\mu\text{g}/\text{m}^3$	0	0	35 days
Claremorris	Annual Mean PM_{10}	11	10	$40 \mu\text{g}/\text{m}^3$
	Days $>50\mu\text{g}/\text{m}^3$	0	0	35 days
Kilkitt	Annual Mean PM_{10}	7	8	$40 \mu\text{g}/\text{m}^3$
	Days $>50\mu\text{g}/\text{m}^3$	1	0	35 days
Cavan	Annual Mean PM_{10}	-	9	$40 \mu\text{g}/\text{m}^3$
	Days $>50\mu\text{g}/\text{m}^3$	-	0	35 days
Roscommon Town	Annual Mean PM_{10}	12	11	$40 \mu\text{g}/\text{m}^3$
	Days $>50\mu\text{g}/\text{m}^3$	2	0	35 days

8.3.2 Air Quality Modelling

As part of the current EPA Industrial Emissions Licence P0037-04 requirements, air emission monitoring must be carried out. Previous monitoring results have been sourced from Annual Environmental Reports (AER) for the facility which have been submitted to the EPA since 2017. The most recent environmental monitoring has found the facility to be compliant with emission limit values for air quality and odour. The following sections provide a summary of these results, and a copy of this environmental report can be found in Appendix E of this EIAR.

Air emissions are monitored from the following emission points at the facility:

- A5 –E3; RTO

- A6 –E7; Boiler No. 1
- A7 –E8; Boiler No. 2
- A1-E2; Raw material bio-filter stack
- A2-E4; Biofilter No. 1
- A3-E5; Biofilter No. 2
- A4 –E6; Balance tank biofilter
- A8 - E9; Biofilter No.6
- A9 –E10; Biodiesel Steam Boiler
- A10 –E11; Biodiesel Thermal Oil Boiler
- A13 –E14; Cogeneration Plant (CHP)

Table 8-2: Average Measured Value

Emission Reference No.	Parameter/ Substance	Frequency of Monitoring	ELV in License	Average Measured value	Unit	Standard/ Method of analysis
Biofilters: A1-E2, A2-E4, A3-E5, A4-E6, A4-E7	Hydrogen sulphide	Weekly as per the the IEL P0037-04	5	All < LOD*	ppm	CRM
	Mercaptans					
	Ammonia		50	All < LOD*		
	Amines	Biannually	5	All < LOD*		IS EN 13649:2002
A5 - E3	Volatile organic compounds (as TOC)	Biannually	10	5.1	mg/Nm ³	IS EN 12619:2013
	Total Particulates		30	1.05		ISO 9096:2003 / and BS EN 13284-1:2002
	Nitrogen oxides (as NOx)		250	49.3		IS EN 14792:2006
	Sulphur dioxide (as SOx)		400	1.3		Method TGN M21 and BS EN 14791:2005
	Carbon monoxide (CO)		NLS*			
	Ammonia		5	0.04		IS EN 14791:2005 / Colorimetric
						Method TGN M21
Boiler 1	Sulphur dioxide (as SOx)	Annually as per the IEL P0037-04	NLS* in the IEL P0037-04	70.3		Method TGN M21
	Nitrogen oxides (as NOx)			390.2		IS EN 14792:2006
	Carbon monoxide (CO)			175.1		IS EN 15058:2006
Boiler 2	Sulphur dioxide (as SOx)			117.4		Method TGN M21

	Nitrogen oxides (as NO _x)			603.4		IS EN 14792:2006
	Carbon monoxide (CO)			0.65		IS EN 15058:2006
Biodiesel Steam boiler	Sulphur dioxide (as SO _x)	Annually	NLS*	2.1		Method TGN M21
	Nitrogen oxides (as NO _x)		100	79.7		IS EN 14792:2006
	Carbon monoxide (CO)		NLS*	2.8		IS EN 15058:2006
Biodiesel Thermal Oil boiler	Sulphur dioxide (as SO _x)	Annually	NLS*	1.2		Method TGN M21
	Nitrogen oxides (as NO _x)		100	74.6		IS EN 14792:2006
	Carbon monoxide (CO)		NLS*	5		IS EN 15058:2006

* NLS* = No Limit Specified, LOD* = Limit of Detection

The figures in Table 8-2 are compared with the requirement of the IEL P0037-04.

Figure 8-3: Mass Emissions

Parameter	ELV (kg/year)	Mass emissions 2019 (kg/year)	Mass emissions 2020 (kg/year)	Mass emissions 2021 (kg/year)
SO_x	504 000	2 896.44	11 558.60	4 135.16
NO_x	315 000	45 988.96	43 829.22	25 423.55
Particulates	37 800	398.48	373.96	443.69
CO	N/A	384.19	27.21	4 016.98
CO₂	N/A	9 344 767	13 035 329	16 757 076
TOC	12 600	1 859.59	1 783.29	551.54
Ammonia	6 300	398.48	15.33	0.79
Amines	N/A	0	0	0
H₂S and Mercaptans	N/A	0	0	0

* Note ELV for TO only

8.3.3 Macroclimate

Ireland has a typical maritime climate, largely due to its proximity to the Atlantic Ocean and the presence of the Gulf Stream. Due to the moderating effects of the Gulf Stream, Ireland does not suffer the temperature extremes that are experienced by many other countries at a similar latitude. Mean annual temperatures generally range between 9°C and 10°C. Winters tend to be cool and windy while summers are mostly mild and less windy. The prevailing wind direction is between the south and west with average annual wind speeds ranging between 6 knots in parts of south Leinster to over 15 knots in the extreme north. Rainfall in Ireland occurs throughout the year with reasonable frequency. The highest rainfall occurs in the western half of the country and on high ground; and generally, decreases towards the northeast. As the prevailing winds are from the west-southwest, the west of Ireland experiences the largest number of wet days. The area of least precipitation is along the eastern seaboard of the country.

8.3.4 Microclimate

The synoptic meteorological station in Dunsany, Co. Meath is located approximately 36.3km south of the Proposed Development; and for the purposes of this Chapter, weather data collected here may be considered similar to that which is experienced in the area of the subject Site.

The weather in the area of the subject site is generally dominated by cool oceanic air masses, with cool winters, mild humid summers, and a lack of temperature extremes. Based on meteorological data at Dunsany over the last 3 years, the mean January temperature is 4.8°C, while the mean July temperature is 15.8°C. The prevailing wind direction is from a quadrant centred on the southwest. These are moderately warm winds from the Atlantic and they habitually bring rain. The expected annual rainfall for the eastern half of the country ranges between 750 and 1000mm. Easterly winds are less frequent, weaker, and tend to bring cooler weather from the northeast in spring and warmer weather from the southeast in summer.

8.3.4.1 Rainfall

Rainfall is a key indicator of changes in climate, as measurements of rainfall are fundamental to assessing the effects of climate change on the water cycle and water balance. Table 8-3 illustrates the monthly and annual rainfall data collected over a 3-year period (2019-2021) at Dunsany Weather Station. The annual rates of precipitation ranged from 952.6 mm in 2019 to 815.8 mm in 2021 with distribution of the highest monthly rainfall values falling in the autumn and winter months. The long-term average annual rainfall is 869.7mm; this is within the expected range of the eastern half of the country.

Table 8-5: Monthly Rainfall Values (mm) for Dunsany Weather Station from January 2019 to December 2021 (Source: Met Eireann)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2021	104.7	100.4	46.0	11.8	106.7	12.6	96.1	53.3	37.7	101.7	30.2	114.6	815.8
2020	55.1	157.1	47.1	19.3	14.2	76.9	130.9	99.2	69.0	86.1	73.4	89.0	917.3
2019	38.2	34.5	109.7	73.1	39.8	78.1	35.3	123.9	125.0	75.0	154.0	66.3	952.6
LTA³	80.2	59.7	63.4	61.1	65.1	71.5	61.4	77.7	71.8	90.6	84.0	83.2	869.7

8.3.4.2 Wind

Wind at a particular location can be influenced by a number of factors, such as obstructions by trees or buildings, the nature of the terrain, and deflection by nearby mountains or hills. Wind blows most frequently from the south and west for open sites while winds from the northeast and north occur less often. The analysis of hourly weather data from Dunsany synoptic weather station over a period of 11 years suggests that the predominant wind direction blows from the southwest, with windspeeds of between 7 and 10 knots occurring most frequently.

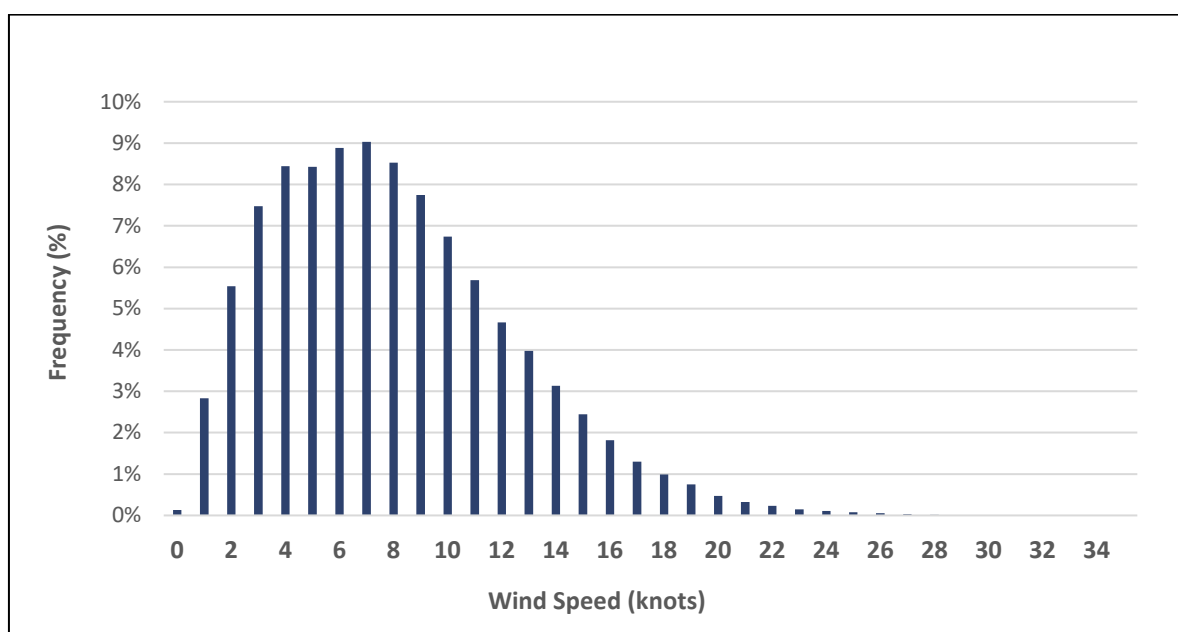


Figure 8-4: Wind Speed Frequency Distribution at Dunsany Synoptic Weather Station over 11 years (2010-2020)

Figure 8-3 provides a wind rose of the predominant wind directions and associated wind speeds at Dunsany. As is visible from Figure 8-3, the prevailing wind is from a south-westerly direction with an annual incidence of 34.29% for winds between 200 and 250 degrees. The most frequent wind speed associated with this wind direction is between 7 and 10 knots which is considered a 'gentle breeze' in terms of the Beaufort scale, this wind direction and wind

³ The 'LTA' is average for the climatological long-term-average (LTA) reference period 1981-2010

speed occurs in combination approximately 11.30% of the time. The overall most common windspeed is between 7 and 10 knots, occurring in 31.78% of incidences, and wind speeds of between 11 and 16 knots occurring in 21.66% of incidences.

The lowest frequency is for winds blowing from the northern quadrant at approximately 3.61% of the time. The incidence of wind between 1 and 6 knots is about 41.78% with wind speeds of above 17 knots (8.7 m/s) occurring in just 4.59% of incidences. This wind rose is broadly representative of the prevailing conditions experienced at the subject Site.

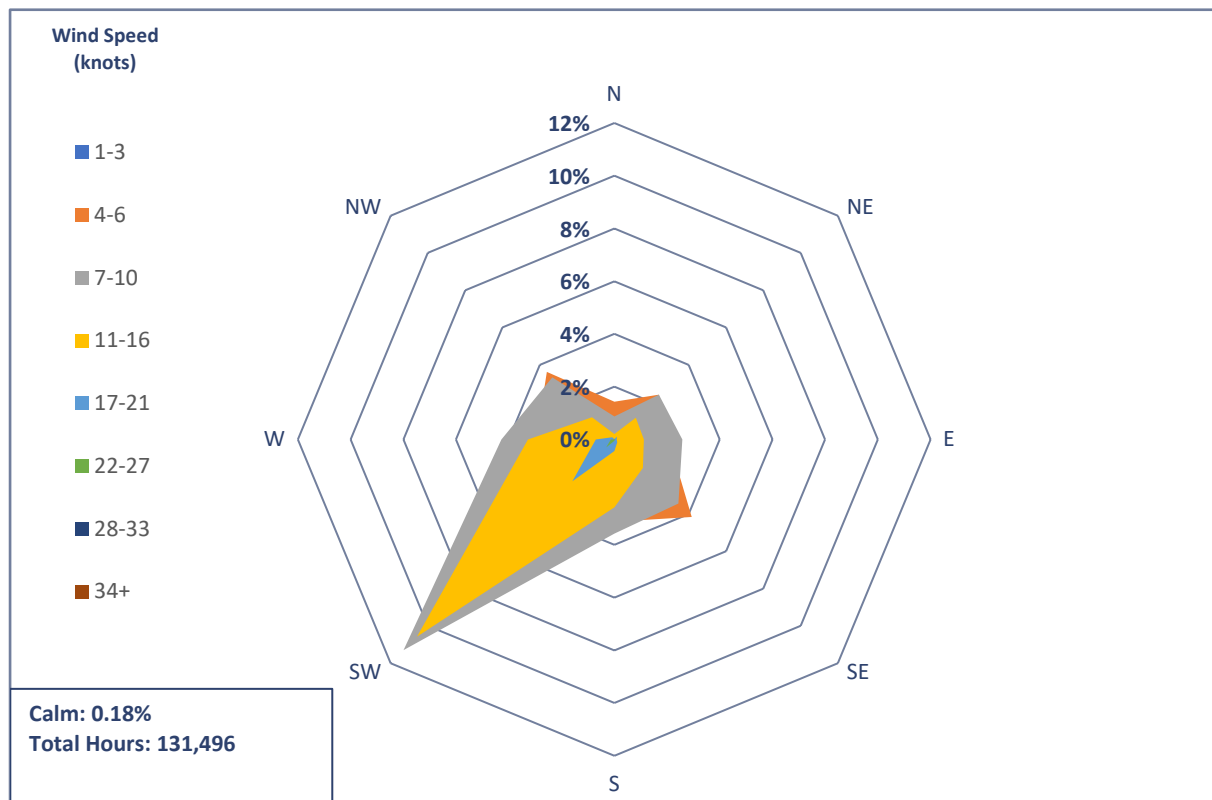


Figure 8-5: 13-year Windrose at Dunsany Weather Station 2007-2021 (Developed using Met Eireann Hourly Data)

8.4 Characteristics of the Proposed Development

College Proteins are proposing to construct an Anaerobic Digestion (AD) Facility to produce green Biogas which will off-set the use of fossil fuels on-site, therefore reducing the company's carbon footprint. The biogas produced from the AD Facility can be used in the on-site steam boilers and Combined Heat and Power (CHP) plants to generate steam and electricity to run the production facilities on-site.

College Proteins are committed to sustainability and maximising the resource value of organic material from all sources. The Proposed Development will reduce the requirement for natural gas use on-site which will aid the company's self-sufficiency in this regard.

The Proposed Development will consist of the demolition of an existing garage and the provision of an Anaerobic Digestion Facility with an intake of up to 50,000 tonnes of organic feed-stock material per annum. The Facility will comprise a waste reception building (incorporating workshop, control room and welfare facilities), 2 No. digester tanks, 2 No. digestate storage tanks, glycerine tank, buffer tank, pasteuriser tank, 4 No. liquid reception tanks; all of the above

tanks located within a fully bunded concrete area; associated biofilter, gas flare, biogas combined heat and power plant, internal access roads, weighbridge, truck loading area and soil deposition area. The Proposed Development will also include all associated site development, drainage and infrastructure works above and below ground. The maximum height of the Proposed Development is the chimney stack associated with the biofilter at c. 18m above ground level.

AD is a sustainable form of renewable energy production through a naturally occurring biological process in which micro-organisms break down biodegradable material in the absence of oxygen in an enclosed system. The process produces a methane-rich biogas and a nutrient rich fertiliser known as 'digestate'. The biogas can be converted into renewable electricity, or it can be upgraded to biomethane for use in on site boilers, as a vehicle fuel or for injection directly into the gas network to provide a source of renewable heat.

Feedstocks proposed for biogas production include grass and maize silage, food waste, slurry, sludges from food processing plants.

8.4.1 Construction Phase

The Construction Phase for the Proposed Development will involve the removal of an existing building, removal of soil from the site of the Proposed Development, the construction of the Anaerobic Digestion plant and raising the level of land near the solar farm with the excavated soil.

Phase 1 – The existing building garage and concrete tank on site will be demolished. The garage currently used for maintaining College Proteins vehicles has a floor area of 545.67m² and the building is 8.3 meters to the apex. The building is constructed from concrete, steel and Kingspan sheeting. The Kingspan sheeting, purloins and steel work will be carefully removed and stored to be re-used on other buildings in future projects. The concrete tank (bunded area) has never been in use, therefore there is no chance of any soil contamination under this tank. This has a floor area of 178.79m² and a wall height of 2 meters. The concrete floors and walls of the existing building garage and concrete tank (totalling approx. 840m³ volume) will be removed off site for disposal in a licenced facility. The gravel from the yard surrounding the garage and concrete tank will be dug up and kept to one side pending testing for contamination and then will be re-used as filling on site if it is suitable. If not, the material will be treated in an authorised facility. The garage & concrete tank bund are detailed on drawing No. 21-21-23 attached in Appendix A.

Phase 2 – The soil (77,804.15m³) will be removed from the Site and will be infilled to fields to the west of the site. Ref. drawing 21-21-18 in Appendix A. A new weighbridge will be installed beside the existing rendering weighbridge, this will be separated with a fence and signage to direct traffic on site. There will be a new two-way road constructed on site separated from the rendering plant with a fence to access the proposed AD plant area. 21,500 tonnes approx. of stone filling and concrete will be brought to the site to create a base for building the road, yard, tank foundations, walls of the reception hall and AD tanks and bunded walls.

Phase 3 - The AD plant intake buildings, tanks, bund wall and road will be constructed. The intake building will be of steel frame construction, shuttered concrete walls, olive green insulated Kingspan sheeting and purloins. The olive green sheeting was selected to blend the

colours into the agricultural surroundings around the site and therefore cause less visual impact. The AD tank bund will be a concrete wall construction with a concrete floor, the roadway to the plant will be a constructed from concrete. The intake tanks and glycerine tank will be constructed from stainless steel. The buffer tank, digesters and digestate storage tanks will be constructed from concrete. The pasteurisation tank will be constructed from glass lined steel.

The Proposed Development comprises of:

- Anaerobic Digestion (AD) Plant Reception building (food waste reception)
- Reception hall for solid feedstock (silage & Maize)
- Borger Fibre separation for digestate
- Workshop
- Office, control room, toilets and changing rooms
- Biobed
- 4 No. Liquid reception tank- 113m³ tanks
- 1 No. Glycerine tank- 78m³
- 1 No. Buffer tank – 983m³
- 1 No. Pasteurisation tank - 247m³
- 2 No. Digesters - 3682m³
- 2 No. Digestate Storage tanks – 2500m³
- Gas Flare
- Biogas Combined Heat and Power (CHP) Plant

Refer to Site Layout Plan drawing 21-21-14 in Appendix A.

Phase 4 – The fields where the soil will be deposited will be re-seeded and planted with grass and returned to agricultural use. Please see filling area on drawing ref. 21-21-18 in Appendix A.

8.4.2 Operational Phase

The existing facility will continue to operate as an animal by-product rendering plant, a biodiesel production facility and a solar farm, with the addition of an anaerobic digestion facility. The existing facility is currently operational under IE Licence (P0037-04) and Greenhouse Gas Permit (GHG Permit) No. IE-GHG123-10405-03.

An application for a review of the existing IE License will be made to the Environmental Protection Agency as the introduction of an anaerobic digestion facility will results in changes to the environmental emissions from the facility. The GHG Permit may also need to be revised, and the EMS will be updated accordingly.

The Proposed Development will be operated in accordance with the requirements of the planning grant conditions and updated requirements of the reviewed IE Licence, GHG Permit, EMS and Safety Report for the facility.

8.5 Potential Impact of the Proposed Development

8.5.1 Potential Impacts on Air Quality

8.5.1.1 Construction Phase

There is potential for construction related air emissions to impact on local air quality as a result of the Proposed Development. Potential impacts are expected to be short-term and of a temporary nature. The main air quality impacts that may arise during construction activities are:

- Dust deposition;
- Elevated particulate matter concentrations (PM_{10} and $PM_{2.5}$) as a result of dust generating activities on Site; and
- An increase in concentrations of airborne particles, volatile organic compounds, nitrogen oxides, and sulphur oxides due to exhaust emissions from diesel powered vehicles and equipment on Site (non-road mobile machinery) and vehicles accessing the Site.

The greatest potential impact on air quality during this phase is from construction dust emissions and the potential for nuisance dust. The dust emissions from a construction site that may result in air quality impacts generally depend on:

- Site activities and duration;
- The size of the site;
- The meteorological conditions;
- The proximity of receptors to the activities;
- The adequacy of applied mitigation measures; and
- The sensitivity of receptors to dust.

The primary sources of dust identified include soil excavation works, demolition, bulk material transportation, loading and unloading, stockpiling materials, cutting and filling, and vehicular movements (HGVs and on-site machinery).

According to Transport Infrastructure Ireland guidelines (TII, 2011), it is difficult to accurately quantify dust emissions arising from construction activities. Therefore, it is not possible to easily predict changes to dust soiling rates or PM_{10} concentrations. TII recommend a semi-quantitative approach to determine the likelihood of significant impact in this instance. This should also be combined with an assessment of the proposed mitigation measures. The following table outlines the distance criteria which is recommended for use in assisting a semi-quantitative assessment:

Table 8-6: Assessment Criteria for the Impact of Dust Emissions from Construction Activities, with Standard Mitigation in Place

Source		Potential Distance for Significant Effects (Distance from source)		
Scale	Description	Soiling	PM10	Vegetation effects
Major	Large construction sites, with high use of haul routes	100m	25m	25m
Moderate	Moderate sized construction sites, with moderate use of haul routes	50m	15m	15m
Minor	Minor construction sites, with limited use of haul routes	25m	10m	10m

In order to account for a worst-case scenario, the Proposed Development can be considered moderate in scale due to the size of the Site and the duration of construction activities. Therefore, it can be assumed that there is potential for significant dust soiling 50m from the Site.

The nearest sensitive receptor (a residential dwelling) is located more than 50m from the Proposed Development boundary and therefore, there is no potential for significant dust soiling.

Construction vehicles and machinery during this phase will temporarily and intermittently generate exhaust fumes and consequently potential emissions of volatile organic compounds, nitrogen oxides, sulphur oxides, and particulate matter (dust). Dust emissions associated with vehicular movements are largely due to the resuspension of particulate materials from ground disturbance. According to the IAQM (2014), experience from the assessment of exhaust emissions from on-site machinery and Site traffic suggests that they are unlikely to make a significant impact on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed. Air pollutants may increase marginally due to construction-related traffic and machinery from the Proposed Development. However, any such increase is not considered significant and will be well within relevant ambient air quality standards. According to TII (2011), the significance of impacts due to vehicle emissions during the Construction Phase will be dependent on the number of additional vehicle movements, the proportion of HGVs and the proximity of sensitive receptors to Site access routes. If construction traffic would lead to a significant change (> 10%) in Annual Average Daily Traffic (AADT) flows near to sensitive receptors, then concentrations of nitrogen dioxide, PM₁₀ and PM_{2.5} should be predicted in line with the methodology as outlined within TII guidance. Construction traffic is not expected to result in a significant change (> 10%) in AADT flows near to sensitive receptors. Therefore, a detailed air quality assessment is not required.

8.5.1.2 Operational Phase

The existing facility will continue to operate as an animal by-product rendering plant, a biodiesel production facility and a solar farm. The existing facility is currently operational under IE Licence (P0037-04) and Greenhouse Gas Permit (GHG Permit) No. IE-GHG123-10405-03.

An application for a review of the existing IE License will be made to the Environmental Protection Agency as the modifications will result in changes to the air emissions from the facility. The changes to the air emissions have been analysed and assessed within this Chapter. The GHG Permit may also need to be revised, and the EMS will be updated accordingly.

The Proposed Development will be operated in accordance with the requirements of the planning grant conditions and updated requirements of the reviewed IE Licence, GHG Permit, EMS and Safety Report for the facility.

The greatest potential effect on air quality during the Operational Phase of the Proposed Development is from traffic-related air emissions, odour emissions from existing and proposed operations, hydrogen sulfide (H₂S) emissions from the short-term operation of the pressure relief valve (PRVs) on the gas storage tanks, and NO_x emissions from the AD gas engines and standby flare.

Operational traffic will use regional and local roads to access the facility with potential increases of traffic flow on some roads and subsequent associated emissions of VOCs, nitrogen oxides, sulphur dioxides and increased particulate matter concentrations.

In terms of associated impacts on air quality, Table 8-7 outlines the criteria that are prerequisite for an air quality assessment. According to IAQM guidance (2017), if none of the criteria are met, then there should be no requirement to carry out an air quality assessment for the impact of the development on the local area, and the impacts can be considered as having an insignificant effect.

Table 8-7: Indicative Criteria for Requiring an Air Quality Assessment (Source: IAQM, 2017)

Potential Change resulting from Proposed Development	Indicative Criteria to Proceed to an Air Quality Assessment
Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors	A change of LDV flows of more than 1000 Annual Average Daily Traffic (AADT)
Cause a significant change in Heavy Duty Vehicle (HGV) flows on local roads with relevant receptors	A change of HGV flows of more than 100 Annual Average Daily Traffic (AADT)
Realign roads, i.e., changing the proximity of receptors to traffic lanes	Where the change is 5m or more
Cause a change in Daily Average Speed (DAS)	Where the DAS will change by 10 km/h or more

Potential Change resulting from Proposed Development	Indicative Criteria to Proceed to an Air Quality Assessment
Cause a change in peak hour speed	Where the peak hour speed will change by 20km/h or more.

As per Chapter 12.1 Traffic, the criteria presented in Table 8-7 have not been met by the Proposed Development; it is therefore considered unlikely for significant air quality impacts to occur as a result of increased traffic flow and a quantitative assessment is not required in this case.

8.5.2 Potential Impacts on Climate

8.5.2.1 Construction Phase

There is the potential for combustion emissions from onsite machinery and traffic derived pollutants of CO₂ and N₂O to be emitted during the Construction Phase of the development. However, due to the size and duration of the Construction Phase, and the mitigation measures proposed, the effect on national GHG emissions will be insignificant in terms of Ireland's obligations under the Kyoto Protocol and therefore will have no considerable impact on climate. Overall, climatic impacts are considered to be short-term and imperceptible.

8.5.2.2 Operational Phase

Air Quality Impact Assessment

8.5.2.2.1.1 Odour

Odour is the property of a substance that activates the human sense of smell. The human olfactory system is a sensory system used for the detection of odours; it is highly sensitive and can detect extremely low concentrations (fractions of a part per billion) of a wide range of odorous chemicals.

Odour Guidelines

According to the EPA's *odour impact assessment guidance for EPA licenced sites*, human health and well-being can be significantly impacted by offensive odour, especially if subjected to the odour for extended periods of time. This occurs as odour sensing olfactory cells are linked to areas of the brain that control emotions and memory processes. Furthermore, a person's health may suffer indirectly due to stress associated with odour impact.

The IAQM (2018) *Guidance on the Assessment of Odour for Planning* suggests that, for odour exposure to occur, all three links in the source-pathway-receptor chain must be present:

- 1. An emission source:** a means for an odour to get into the atmosphere;
- 2. A pathway:** for the odour to travel through the air to locations off Site; and
- 3. The presence of receptors:** people that could experience an adverse effect.

Furthermore, the scale of exposure (impact) is determined by two factors; the concentration and duration of time that the odour may be perceived by the receptor. By definition, 1 OU_E/m³ is the detection threshold of 50% of a qualified panel of observers in an odour-free laboratory using odour-free air as the zero reference (the selection criteria result in the qualified panel being more sensitive to a particular odorant than the general population). The recognition threshold is generally between 1 and 5 times this concentration (1-5 OU_E/m³) and the concentration at which the odour may be considered to be a nuisance is between 5 and 10 OU_E/m³ (EPA, 2001).

Currently, there is no statutory odour standard in Ireland relating to industrial installations. Guidance from the UK (EA, 2011), and adapted for Irish EPA use, recommends that odour standards should vary from 1.5-6.0 OU_E/m³ as a 98th percentile of one hour averaging periods at the worst-case sensitive receptor based on the offensiveness of the odour and with adjustments for local factors such as population density. A summary of the indicative criterion (taken from (EA, 2011) and adapted for Irish EPA use) is given in Table 8-8.

Table 8-8: Indicative Odour Standards Based on Offensiveness of Odour taken from EA, 2011 and adapted for Irish EPA use (Source: AG9, 2019)

Industrial Sectors	Relative Offensiveness of Odour	Indicative Criterion
Processes involving decaying animal or fish remains; Processes involving septic effluent or sludge; Waste sites including landfills, waste transfer stations and non-green waste composting facilities.	Most Offensive	1.5 OU _E /m ³ as a 98 th percentile of one hour averaging periods at the worst-case sensitive receptor. ¹
- Intensive livestock rearing; - Fat frying / meat cooking (food processing); - Animal feed; - Sugar beet processing; - Well aerated green waste composting Most odours from regulated processes fall into this category i.e. any industrial sector which does not obviously fall within the 'most offensive' or 'less offensive' categories.	Moderately Offensive	3.0 OU _E /m ³ as a 98 th percentile of one hour averaging periods at the worst-case sensitive receptor.
- Brewery / Grain / Oats Production - Coffee Roasting - Bakery - Confectionery	Less Offensive	6.0 OU _E /m ³ as a 98 th percentile of hourly averages at the worst-case sensitive receptor

Note 1: Professional judgement should be applied in the determination of where the worst-case sensitive receptor is located.

8.5.2.2.1.2 Air Quality Impact Assessment Results

The potential air quality impacts of the Operational Phase have been evaluated by means of an air dispersion model which was carried out by The Airshed (August 2022). Dispersion

modelling techniques were used to establish the predicted air quality impact beyond the boundary of the facility in accordance with the standard requirements.

ADMS 5.2 is a widely recognised mathematical model and was developed specifically for industrial point sources. The model is widely used for environmental assessment and is generally considered to be suitable for air quality impact assessment subject to its proper use. This mathematical model enables the calculation of sources and includes an algorithm for assessing flow around buildings and topography that may affect dispersion.

An air dispersion model was carried out in order to assess the impacts of air emissions. Rather than replicating atmospheric processes in detail, the purpose of a dispersion model is to perform a mathematical approximation of dispersion and to provide a means for estimating ambient pollutant concentrations at a given location (EPA, 2020). ADMS 5.2 software was used to determine whether the Proposed Development will be compliant with the criterion of 1.5OUE/m³ at the nearest sensitive receptor. The model was used to predict how emissions will be dispersed taking account of the source conditions (the flow rate and pollutant concentration); release conditions (height of release, efflux velocity and temperature); meteorological conditions from a representative site (in this case near ground measurements from Dunsany and cloud cover data from Dublin Airport both as supplied by Met Eireann); and surface conditions (surface roughness).

The aim of the assessment is to predict odour concentrations from the new AD plant and to take account of potential combined odour impacts from the existing installation. The assessment considers two initial odour Scenarios (Scenarios 1 and 2); specific air quality impacts from the AD process (Scenarios 3 and 4); and the scope for the controlled increase in certain odour emissions from the existing process (Scenario 5):

- Scenario 1 – which considers the amenity impacts from existing point source releases based on odour emission rates provided by College Proteins, as currently existing (August 2022);
- Scenario 2 – which considers the amenity impacts from existing point source releases as assumed in Scenario 1 and the proposed odour emissions from the AD plant;
- Scenario 3 - which considers the health impacts from the short-term operation of the pressure relief valves (PRV);
- Scenario 4 – which considers the potential health impacts from NO_x emissions from the combustion of gas in the proposed new gas engine and the standby flare; and
- Scenario 5 – which considers the impacts from the proposed odour emissions from the AD plant, with increased odour emissions from the existing plant, whilst remaining below the EPA's odour benchmark.

The assessment assumes continuous operation (24 hours/365 days) throughout the year. Amenity impacts on the local community are assessed in terms of the odour benchmarks set out in AG9. The results from the odour impact assessment are relevant when considering impacts on the amenity of local residents.

The two digester tanks will be fitted with pressure relief valves (PRV) which will only operate if the gas is not being used, and where the CHP engine and the flare are offline and where the gas pressure in the digester exceeds safe levels.

The PRVs normally only operate during pressure testing and do not form part of the normal plant operation. The operation of the safety PRVs on the digester tanks could lead to the short-term release of Hydrogen Sulphide (H₂S). This assessment assumes the worst-case would arise from the simultaneous operation of the PRVs on both digester storage tanks (Scenario 3).

Scenario 4 considers the impacts from the proposed release of NO_x associated with the combustion of the gas generated by the AD plant. This considers the short and long-term exposure from the operation of the CHP gas engine and from the short-term operation of the flare.

The results of the dispersion model at all sensitive receptors for each of the scenarios were as follows:

- Existing Odour Impacts: The worst-case impact assessment indicates that odour from the existing installation (for Scenario 1) is predicted to be < 0.7 OUE/m³ 1 hour 98%ile at all sensitive receptors.
- Proposed Design (for odour mitigation): The results from Scenario 2 and the subsequent stack height iteration exercise indicate that a stack height of 18m would ensure that the combined impact from all proposed releases would be < 1.1 OUE/m³ 1 hour 98%ile at all sensitive receptors.
- Digester Tank PRV Operation: The predicted worst-case ground level concentrations of H₂S from the operation of the PRVs are well below the Insignificance threshold at all sensitive receptors.
- Impacts from Gas Engine and Flare: The predicted worst-case ground level concentrations of annual mean NO₂ from the proposed CHP gas engine are of Minor Adverse significance or less at all sensitive receptors. The predicted short-term concentrations of NO₂ from the gas engine and operation of the flare are Insignificant at all sensitive receptors. Levels of annual mean exposure to NO_x in air are predicted to be well below the threshold where damage to sensitive ecology may occur.
- Increased Emissions from Existing Process: The results from Scenario 5 indicate that odour from the existing installation may be increased whilst still remaining below the EPA odour benchmark.

The model indicates that the predicted odour emissions from the Site will be less than the criterion of 1.5OUE/m³ at the nearest sensitive receptors. Therefore, odour as a result of Site operations will not have a significant impact on the local environment. Refer to the full Air Quality Impact Assessment report which can be found in Appendix B of this EIAR for pollutant concentrations at all sensitive receptors for each of the scenarios.

8.5.3 Potential Cumulative Impacts

Cumulative Impacts can be defined as “*impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project*”. Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the accumulation of different effects that are individually minor. Such effects are not caused or controlled by the project developer.

The cumulative effects on the air quality and climate of the current Proposed Development and other planned or existing developments have been considered, in particular through the generation of air pollutants and GHG emissions. There are no planned or proposed projects located in close proximity to the Proposed Development with potential to result in cumulative impacts, therefore cumulative impacts are not predicted in this regard.

Scenario 2 of the Air Quality Impact Assessment has assessed the Proposed Development in combination with the current operations at the site. It is predicted that the combined impact is compliant with the criterion of 1.5O_uE/m³ as a 98th percentile of the hourly average concentrations. Therefore, cumulative impacts are not expected to occur in this regard.

8.5.4 “Do Nothing” Impact

The Do-Nothing scenario would result in the Site remaining in operation at its current capacity as an animal by-product rendering plant. The existing ambient air quality would remain unchanged onsite and at nearby sensitive receptors.

Greenhouse gas emissions as a result of the Proposed Development are also likely to be marginal in terms of overall national GHG emission estimates and Ireland's obligations under the Kyoto Protocol and the Paris Agreement when compared to a Do-Nothing scenario.

8.6 Avoidance, Remedial, and Mitigation Measures

8.6.1 Air Quality

8.6.1.1 Construction Phase

It is not expected that adverse air quality impacts are likely to occur at sensitive receptors as a result of the Proposed Development. However, the following mitigation measures will be employed as necessary to further prevent such impacts occurring:

- In dry and/or windy weather, site roads and any other areas used by vehicles, within the boundary of the facility, will be sprayed with water as and when required to minimise airborne dust nuisance;
- Material handling systems and site stockpiling of waste materials will be designed and laid out to minimise exposure to wind and shorten the length of time for which material will be stockpiled so as to minimise dust generation;
- Rotary atomisers and water bowsers will be employed during dry weather and during any site preparation activities including overburden removal, excavation of works area, internal roads;
- All vehicles moving waste to and from the facility will be appropriately covered during transit;
- Daily visual observations will be made on fugitive dust levels; in the event of high dust levels, operations giving rise to such emissions will be ceased or curtailed;
- Enclosed waste handling and storage areas for all wastes will be provided; and vented to a biofilter.
- Exhaust emissions from vehicles and machinery will be minimised by avoidance of engines running unnecessarily as idle engines will not be permitted for excessive periods;
- The doors of the waste building will remain closed at all times except when vehicles are entering the building for loading or unloading activities;

- Regular inspections, monitoring and maintenance of waste handling areas to detect potential odours and apply corrective measures as necessary;
- Waste will be stored under appropriate conditions so as to avoid putrefaction, odour generation and dust accumulation.

8.6.1.2 **Operational Phase**

Odour control is one of the primary concerns for AD facilities, especially if they are located in close proximity to sensitive receptors. Good process management and careful housekeeping can greatly reduce odours; however, some method of odour treatment is generally required. Odour emissions as a result of Site operations are not considered to pose a significant impact to air quality in the vicinity of the Proposed Development; an Air Dispersion Model has been carried out for the Proposed Development and the results of which are presented in Section 8.5.1.2.2. However, to minimise the risks of odour impacts occurring, a series of mitigation measures have been prepared:

- The installation of a biofilter is common practice as it is widely known to be an effective option for odour treatment. The Proposed Development contains 1 biofilter which will further manage H₂S concentrations and associated potential odour emissions from Site operations; and will be maintained to ensure optimum performance;
- The biofilter will filter the air and reduce the emissions of H₂S and odour to insignificant levels;
- All loads entering the site will be covered;
- Any material stored on site will be kept in a sealed tank or in the intake building which is ventilated to the biofilter.
- Dust suppression techniques will include employment of water bowsers to dampen the Site and haul roads, and temporary ceasing of specific operations during unfavourable weather conditions;
- A power washer will be available to wash down wheels of trucks exiting the site where necessary;
- Exhaust emissions of volatile organic compounds, nitrogen oxides, and sulphur oxides from vehicles and machinery will be minimised by avoidance of engines running unnecessarily as idle engines will not be permitted for excessive periods;
- Unnecessary vehicle movement and manoeuvring will be avoided, and speed limits will be in place so as to prevent resuspension of particulate matter.

8.6.2 **Climate**

As negative climatic impacts associated with the Construction and Operational Phases of the development are negligible, no mitigation measures are proposed. Best practice measures will be implemented to minimise exhaust emissions from construction and operational vehicles and machinery by avoidance of engines running unnecessarily, as idle engines will not be permitted for excessive periods.

8.6.3 **“Worst Case” Scenario**

Worst case scenario would involve failures of mitigation measures for the Proposed Development. In such events, it is not considered that dust nuisances will occur.

8.7 Residual Impacts

Residual Impacts are defined as *'effects that are predicted to remain after all assessments and mitigation measures'*. They are the remaining 'environmental costs' of a project and are the final or intended effects of a development after mitigation measures have been applied to avoid or reduce adverse impacts. Potential residual impacts from the Proposed Development were considered as part of this environmental assessment.

It is considered that the Proposed Development will have an overall positive residual impact with respect to climate due to the diversion of waste from landfill and therefore reduce associated methane gas emissions; which are significant contributors to climate change. This is in line with Ireland's Climate Action Plan 2019 which has set out to include legally binding waste/recycling targets.

8.8 Monitoring

The Proposed Development is subject to an Industrial Emissions (IE) Licence (P0037-04) from the Environmental Protection Agency (EPA). The operator will comply with the air monitoring requirements as per the conditions of the IE Licence, which are outlined in Section 8.3.1 of this Chapter.

In the event of any nuisance arising in the vicinity of the facility, including nuisance from malodours, the permit holder will take immediate appropriate measures to abate the nuisance. Any such event will be notified and recorded as an incident.

The permit holder will carry out daily inspections of the facility and its immediate surrounds for nuisance including but not limited to dust and odours, and an inspection log maintained.

8.9 Interactions

Interactions between Air Quality and Climate and other aspects of this Environmental Impact Assessment Report have been considered and are detailed below.

8.9.1 Population and Human Health

Interactions between Air Quality and Population and Human Health have been considered as the Operational Phase has the potential to cause health issues as a result of impacts on air quality from dust nuisances and potential traffic derived pollutants. However, the mitigation measures employed at the Proposed Development will ensure that all impacts are compliant with ambient air quality standards and human health will not be affected.

8.9.2 Biodiversity

Interactions between Air Quality and Biodiversity have been considered as the Construction Phase has the potential to interact with flora and fauna in adjacent habitats and designated sites due to dust emissions arising from the construction works. However, the mitigation measures employed at the Proposed Development will ensure that the impacts to flora and fauna are not significant.

8.9.3 Traffic

Traffic derived pollutants which may affect Air Quality and Climate are deemed insignificant due to the marginal change in traffic volume and movement associated with the Proposed Development in the context of currently low traffic flow in the area, as outlined in Chapter 12.1 of this EIAR.

8.10 Difficulties Encountered When Compiling

No difficulties have been encountered while compiling this Chapter.

8.11 References

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United Nations Framework Convention on Climate Change (2015) The Paris Agreement.

9 NOISE & VIBRATION

9.1 Introduction

This Chapter of the EIAR provides a description and assessment of the likely impact of the Proposed Development located at College Proteins, Nobber, Co. Meath regarding noise. This Chapter discusses the existing ambient noise levels at nearby sensitive receptors, the potential impacts of the Proposed Development on the existing ambient noise environment and the mitigation measures that may be employed to reduce or eliminate any potential impact.

9.1.1 Quality Assurance and Competence

The Chapter was prepared by Laura Griffin (BA Hons, MSc), Environmental Consultant, Enviroguide Consulting. Laura has experience working on a number of EIARs and EIA Screening Reports for projects of a similar scale to the Proposed Development.

9.2 Study Methodology

This assessment will examine the likely impacts of sound pressure levels generated by the Proposed Development located at lands at College Proteins, which is located to the west of College Road, in the townland of Nobber, Co. Meath (Eircode A82 XT61). Noise calculations will be used to predict and assess the likely impact of onsite equipment at offsite noise sensitive receptors.

For the purpose of the assessment, 'sensitive receptors' terminology used describes any persons, locations or otherwise that may be susceptible to changes as a consequence of the Proposed Development.

The primary noise impacts associated with this Proposed Development are likely to be due to:

- Site clearance, including demolition works of the existing garage;
- Building construction works;
- Mobile plant and equipment used in anaerobic digestive (AD) operations;
- Traffic movements internally;
- Trucks entering and exiting the site.

With respect to the listed noise impacts, the key objective of the proposed facility is to manage activities to ensure any significant increase in noise emissions are minimised.

Documents consulted during the preparation of this EIAR Chapter are listed in the References section. The acoustics section has been compiled taking cognisance of:

- Design Manual for Roads and Bridges Volume 11 Section 3 Part 7 (HD 213/11 – Revision 1) (The Highways Agency et al., 2011);
- BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise;
- ISO 1996-1:2016 Acoustics - Description, measurement and assessment of environmental noise. Part 1: Basic quantities and assessment procedures

- ISO 1996-2:2017 Acoustics - Description, measurement and assessment of environmental noise Part 2: Determination of sound pressure levels;
- ISO 9613-1:1993 Acoustics - Attenuation of sound during propagation outdoors -- Part 1: Calculation of the absorption of sound by the atmosphere;
- ISO 9613-2:1996 Acoustics - Attenuation of sound during propagation outdoors -- Part 2: General method of calculation;
- Environmental Protection Agency (2016) Guidance Note for Noise (NG4): Licence Applications, Surveys and Assessments in Relation to Scheduled Activities; and
- Guidelines for the Treatment of Noise & Vibration in National Road Schemes, National Roads Authority, Revision 1, 25th October 2004.

The following noise indices, analysis and observations were reviewed.

LA_{eq} - The A-weighted, equivalent continuous sound level of the measurement period. Represents an 'energy average' of the sound pressure levels measured.

LA₉₀ - The A-weighted, noise level exceeded for 90% of the measurement period. Calculated by statistical analysis of the measurement data.

LA₁₀ - The A-weighted, noise level exceeded for 10% of the measurement period. Calculated by statistical analysis of the measurement data.

9.2.1 Desk Study

The noise assessment will review all existing information relating to the Site and its environs, which involves a desk-based study of the following:

- An evaluation of the Site and the surrounding area to assess certain changes that are likely to impact the surrounding environs was carried out. Sensitive receptors were identified and are discussed in this Chapter.
- BS 5228 2009 +A1 2014 Code of practice for noise and vibration control on construction and open sites with respect to the controlling noise and vibration impacts

9.3 The Existing and Receiving Environment (Baseline Situation)

The site of the Proposed Development, College Proteins, is located to the west of College Road, in the townland of Nobber, Co. Meath (Eircode A82 XT61). The site is approximately 5.31 hectares and can be accessed from the southwest via the R162, or from the northeast via the R165. The town of Nobber, County Meath, lies approximately 3km south of the site of the Proposed Development. The town of Kingscourt, Co. Cavan lies approximately 7km northwest of the site on the R162, the village of Drumconrath, Co. Meath, lies approximately 6km to the east of the site on the R165, and the village of Kilmainhamwood, Co. Meath lies approximately 6km to the west of the site on the L6802. The landscape surrounding the site of the Proposed Development is rural, comprised of grazing and arable lands, divided by frequent mature hedgerows, and scattered with small farms and residential dwellings.

Glenside Environmental Services carry out annual noise survey reports for College Proteins to evaluate and assess the noise impact that the site activities have on the local receiving noise environment and to assess compliance with Condition of Industrial Emissions Licence

P037-03. Condition 9.3 requires an annual noise survey at the facility. The latest noise survey report can be found in Appendix F.

The noise monitoring surveys are conducted according to ISO 1996-2 2007 Acoustics – Description, Measurement and Assessment of Environmental Noise Parts 1-3 and with reference to the 2012 EPA publication, “Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) during periods when normal site activities were occurring during daytime, evening and night time periods.”

9.3.1 Noise Sensitive Receptors

There is one Noise Sensitive Location (NSL), and this is referred to as NSL1 and is located to the south of the site.

Measurements were conducted at NSL1 and 1 no. boundary (N1) close to the site entrance. These are shown in the location map presented in Figure 9-1.



Figure 9-1: Noise Monitoring Locations (Boundary N1 & Sensitive Location NSL1, annotated by Glenside Environmental Services, December 2021).

9.3.2 Instrumentation and Methodology

Noise measurements were conducted according to the requirements of ISO 1996-2 2007 Acoustics – Description, Measurement and Assessment of Environmental Noise Parts 1-3 and the 2003 EPA publication, “Environmental Noise Survey, Guidance Document”. The measurements were made using a calibrated RION NL32 integrating sound level meters which were calibrated at 94 dB prior to and after use. The sound level meter is a Class 1 instrument which is in accordance with IEC 61672-1:2002 regulations. The sound level meter was fitted with a windshield during all measurements.

9.3.3 Survey Implementation

The most recent free-field noise measurements were carried out on 8th December 2021, when all site activities were occurring normally. In accordance with the requirements of NG4, noise monitoring at each location was carried out as follows:

- Daytime Monitoring 07:00hrs – 19:00hrs;
- Night-Time Monitoring 23:00 - 07:00.

9.3.4 Meteorological Conditions during Surveys

The prevailing local weather conditions at the time of the surveys were as follows:

8th December 2021; clear, with scattered showers, 8°C with a light breeze with a recorded maximum speed of 0.9m/sec.

The noise surveys were conducted the equivalent continuous A-Weighted Sound Pressure Level, LAeq, T, over 15 to 30-minute monitoring intervals with a Fast time weighting. The LAfmax parameter was similarly recorded. A statistical analysis of the measurement results was also simultaneously completed so that the percentile levels, LAN, T, for N = 90% and 10% over the specific measurement intervals were also recorded. A 1/3 octave band frequency analysis was also conducted simultaneously during each noise monitoring interval to determine the presence of tonal components associated with site generated noise.

9.3.5 2021 Survey Results

The environmental noise measurement results recorded at the assessment locations in the vicinity of the College Proteins site during 7th and 8th December 2021 are presented in Table 9-1 and 9-2.

The recorded 1/3 octave band spectra are presented in Appendix I of the 2021 noise report, and these demonstrate that there were no tonal components associated with recorded noise measurements as determined according to ISO 1996-2 2007 Acoustics – Description, Measurement and Assessment of Environmental Noise Part 2 – Annex D.

Table 9-1: Dwelling Location NSL1 Monitoring Survey Results

Monitoring Location	Time	LAeq 30min dB(A)	LA90 30min dB(A)	LA10 30min dB(A)	Total Component	Comments
Day	10:07-10:37	57.6	47.2	60.4	No	Low level site noise, intermittent site traffic. Passing traffic on road.
	10:37-11:07	58.0	47.5	61.0	No	
	11:07-11:37	56.9	46.5	60.1	No	
Night	23:15-23:30	50.0	44.2	53.7	No	Occasional site traffic, low level site noise. Light breeze.
	23:30-23:45	49.5	43.9	53.9	No	
	23:45-00:00	49.2	43.6	54.6	No	

Table 9-2: Boundary Location N1 Monitoring Results

Monitoring Location	Time	L _{AEQ} 30min dB(A)	L _{A90} 30min dB(A)	L _{A10} 30min dB(A)	Total Component	Comments
Day	12:00-12:30	60.7	52.3	63.0	No	Intermittent local traffic
	12:30-13:00	61.1	52.8	63.7	No	
	13:00-13:30	62.7	54.2	64.0	No	
Night	00:15-00:30	53.6	45.9	58.7	No	No site noise audible, intermittent passing traffic.
	00:30-00:45	52.9	46.2	58.0	No	
	00:45-01:00	52.7	45.8	57.6	No	

9.3.6 Evaluation of 2021 Noise Survey Results

Condition 9.1 of IEL P0037-04 specifies the following noise limit values against which all recorded noise levels were assessed.

Daytime (07:00hrs-19:00hrs) 55 dB(A) LAeq, 30mins

Night time (23:00hrs – 07:00hrs) 45dB(A) LAeq, 30mins

Measurements at Location N1 were recorded close to the site entrance at eastern boundary and adjacent to the local road. Intermittent noise from the facility was audible during the daytime period. Traffic movements associated with the facility also contributed to the ambient noise levels. Traffic on the local road was the main contributor to local noise levels. The average noise level was recorded at 60dB(A) to 63dB(A) There was no significant noise emanating from the College Proteins facility.

Measurements at Location NSL1 were recorded at the closest dwelling south of the facility. There was no site noise audible here during the day and night monitoring events. Local passing traffic was the main noise source. Daytime noise levels were recorded at 56dB(A) to 58dB(A) with background levels steady at 46-48dB(A).

9.3.7 2021 Noise Survey Summary

Glenside Environmental Services considered it reasonable to state that the College Proteins site activities which include the operation of a rendering facility does not cause an adverse or intrusive noise impact beyond the boundaries of the site.

The noise levels measured at the Noise Sensitive Receptor NSL1 together with observations made during each survey period suggested that the operation of the facility during the monitoring periods does not have an adverse noise impact on any local sensitive areas.

The absence of any tonal components detected as demonstrated in the measured 1/3 octave frequency band spectra presented in Appendix I of the 2021 noise survey during the daytime period demonstrates that the operation of the facility does not generate noise of a nature that may cause unacceptable noise nuisance or disturbance at the private residence located in the vicinity of the subject site. Background noise levels indicate the specific noise from the facility is within levels specified in the Industrial Emissions Licence.

9.3.8 2021 Noise Survey Conclusions

Based on the noise levels recorded and observations at the boundary and sensitive receptors during the monitoring survey, it has been demonstrated that the College Proteins site activities comply with the Industrial Emissions Licence noise limit values, and therefore do not adversely impact the noise climate at local noise sensitive receptors during the day, evening, or night-time periods.

9.3.9 Quiet Area Screening

The location of the Proposed Development was screened in order to determine if it is located in or near an area that could be considered a 'Quiet Area' in open country according to the Environmental Protection Agency's publication *Environmental Quality Objectives - Noise in Quiet Areas, 2003*.

The following criteria were assessed for this determination:

- At least 3 km from urban areas with a population >1,000 people;
- At least 10 km from any urban areas with a population >5,000 people;
- At least 15 km from any urban areas with a population >10,000 people;
- At least 3 km from any local industry;
- At least 10 km from any major industry centre;
- At least 5 km from any National Primary Route, and;
- At least 7.5 km from any Motorway or Dual Carriageway.

If the Site does not meet these criteria, it is not considered to be a quiet area as per the definition of the Environmental Protection Agency. 'Quiet Areas', according to NG4 (2016), they have a much more stringent noise criterion set out in the guidelines. Before relevant noise criterion can be applied, 'Quiet Area Screening' must be performed to identify or rule out the Site as a Quiet Area. Quiet Area screening results can be viewed in Table 9-1.

Table 9-3: Quiet Area Screening of the Development Location

Quiet Area Screening of the Development Location			
Screening Question	Answer (Yes/No)		Screening Results
Is the site >3km away from urban areas with a population >1,000 people?	Yes ✓	No ☐	The Proposed Development is not located within 3km of an area with a population >1,000 people.
Is the site >10km away from urban areas with a population >5,000 people?	Yes ✓	No ☐	The Proposed Development is not located within 10km of an area which has a population >5,000 people.
Is the site >15km away from urban areas with a population >10,000 people?	Yes ✓	No ☐	The Proposed Development not located within 15km of an urban area which has a population >10,000 people.
Is the site >3km away from any local industry?	Yes ☐	No ✓	The Proposed Development is bounded by local industry.

Quiet Area Screening of the Development Location			
Screening Question	Answer (Yes/No)		Screening Results
Is the site >10km away from any major industry centre?	Yes ✓	No ☐	The Proposed Development is located within 10km of a major industry centre.
Is the site >5km away from any national primary route?	Yes ✓	No ☐	The Proposed Development is approx. 5.7km from the N52.
Is the site >7.5km away from any motorway or dual carriageway?	Yes ✓	No ☐	The Proposed Development is located approx. 22km west of the M50.
QUIET AREA?	No		The Site does not meet these criteria it is not considered to be a quiet area.

According to the EPA Guidance, NG4, where an area is determined not to be a 'quiet area' baseline monitoring should be conducted to determine if there is a low background noise. Due to the location of the Proposed Development, within an area where local industry is operating in the vicinity of the Proposed Development, a low background noise would not be predicted. As such, baseline noise monitoring for the Site is recommended.

9.3.10 Recommended Noise Limits

All reasonably practicable measures should be adopted at licensed facilities and Best Available Techniques (BAT) should be used in the selection and implementation of appropriate noise mitigation measures and controls. While BAT must be applied on a case-by-case basis, the noise attributable solely to on-site activities, expressed as a free field value at any Noise Sensitive Location (NSL), should not generally exceed the values given below (EPA Noise guidance, NG4).

Table 9-4: Recommended Noise Limit Criteria (Source: EPA NG4)

Scenario	Daytime Noise Criterion, dB L _A r,T (07:00 to 19:00hrs)	Evening Noise Criterion, dB L _A r,T (19:00 to 23:00hrs)	Night-time Noise Criterion, dB L _A eq,T (23:00 to 07:00hrs)
Quiet Area	Noise from the permitted site to be at least 10dB below the average daytime background noise level measured during the baseline noise survey.	Noise from the permitted site to be at least 10dB below the average evening background noise level measured during the baseline noise survey.	Noise from the permitted site to be at least 10dB below the average night-time background noise level measured during the baseline noise survey.
Areas of Low Background Noise	45dB	40dB	35dB
All other Areas	55dB	50dB	45dB
Proposed Noise Limits for the Proposed Development	55dB	50dB	45dB

Conditions as set out in the EPA Industrial Emissions Licence (P0037-04) for the facility provide specific noise limit criteria to be adhered to onsite. The following noise limits are specified for the Site under the extant permissions:

Table 9-5: Recommended Noise Limits as per EPA Licence Requirements

Parameter	Emission Standard	Basis of Standard
Daytime	<55 dB(A) L _{Ar} , T (30 mins)	Schedule B4 of EPA Licence P0037-04
Evening Time	<50 dB(A) L _{Ar} , T (30 mins)	
Nighttime	<45 dB(A) L _{AEQ} , T (15-30 mins)	

Note 1: During night-time hours, there will be no clearly audible tonal component or impulsive component in the noise emission from the activity at the installation boundary.

9.3.11 Noise

Noise is defined as any sound that has the potential to cause disturbance, discomfort, or psychological stress to a person exposed to it, or any sound that could cause actual physiological harm to a person exposed to it, or physical damage to any structure exposed to it. In summary, noise can be defined as any unwanted sound. Sound levels are expressed in decibels (dB) on a logarithmic scale, where 0dB is nominally the "threshold of hearing" and 120dB is nominally the "threshold of pain" (refer to Figure 9-1).

Background noise is defined as *'the steady existing noise level present without contribution from any intermittent sources. The A-weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90 per cent of a given time interval, T (LAF90, T)'*. According to the EPA Noise Guidance NG4, an area of low background noise is one where the existing background noise levels measured during an environmental noise survey are as follows:

- Average Daytime Background Noise Level ≤40dB LAF90, and;
- Average Evening Background Noise Level ≤35dB LAF90, and;
- Average Night-time Background Noise Level ≤30dB LAF90.

The Proposed Development, though situated in a rural area, is considered to be a non-quiet area as per EPA screening guidelines. The site is bounded by industrial sites.

Figure 9-2 depicts typical sounds and their noise levels on a decibel scale.

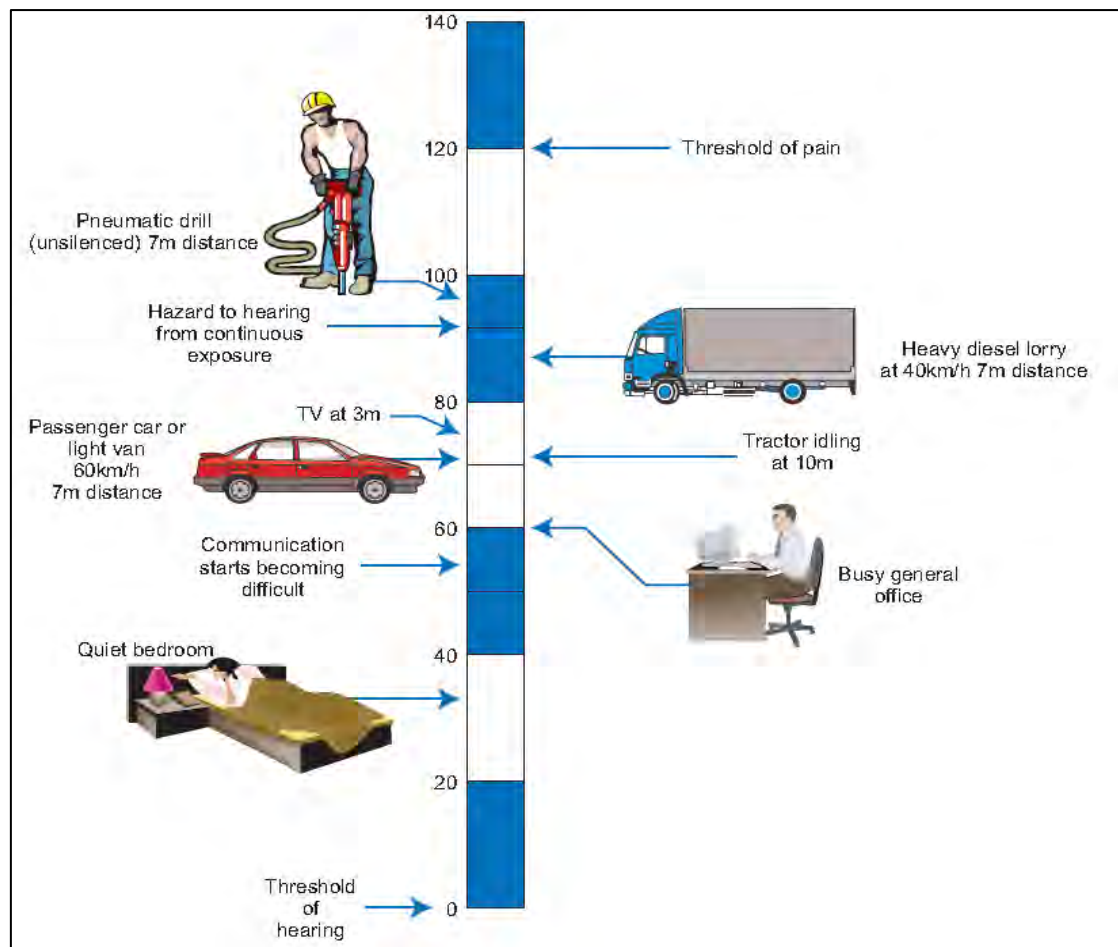


Figure 9-2: Scale and Indicative Noise Levels on the dB(A) Scale (Based on guidance taken from: Design Manual for Roads and Bridges, Volume 11 Consolidated Edition 1993)

9.4 Characteristics of the Proposed Development

College Proteins are proposing to construct an Anaerobic Digestion (AD) Facility to produce green Biogas which will off-set the use of fossil fuels on-site, therefore reducing the company's carbon footprint. The biogas produced from the AD Facility can be used in the on-site steam boilers and Combined Heat and Power (CHP) plants to generate steam and electricity to run the production facilities on-site.

College Proteins are committed to sustainability and maximising the resource value of organic material from all sources. The Proposed Development will reduce the requirement for natural gas use on-site which will aid the company's self-sufficiency in this regard.

The Proposed Development will consist of the demolition of the existing garage and the provision of the AD Facility with an intake capacity of up to 50,000 tonnes of organic feedstock material per annum. The AD Facility will comprise a waste reception building (incorporating workshop, control room and welfare facilities), 2 No. digester tanks, 2 No. digestate storage tanks, glycerine tank, buffer tank, pasteuriser tank, 4 No. liquid reception tanks; all of the above tanks located within a fully bunded concrete area; associated biofilter, gas flare, internal access roads, weighbridge, truck loading area and soil deposition area. The Proposed Development will also include all associated site development, drainage and infrastructure

works above and below ground. The maximum height of the Proposed Development is the chimney stack associated with the biofilter at c. 18m above ground level.

AD is a sustainable form of renewable energy production through a naturally occurring biological process in which micro-organisms break down biodegradable material in the absence of oxygen in an enclosed system. The process produces a methane-rich biogas and a nutrient rich fertiliser known as 'digestate'. The biogas can be converted into renewable electricity, or it can be upgraded to biomethane for use in on site boilers, as a vehicle fuel or for injection directly into the gas network to provide a source of renewable heat.

Feedstocks proposed for biogas production include grass and maize silage, food waste, slurry, sludges from food processing plants.

9.4.1 Construction Phase

The Construction Phase for the Proposed Development will involve the removal of an existing building, removal of soil from the site of the Proposed Development, the construction of the Anaerobic Digestion plant and raising the level of land near the solar farm with the excavated soil.

Phase 1 – The existing building garage and concrete tank on site will be demolished. The garage currently used for maintaining College Proteins vehicles has a floor area of 545.67m² and the building is 8.3 meters to the apex. The building is constructed from concrete, steel and Kingspan sheeting. The Kingspan sheeting, purloins and steel work will be carefully removed and stored to be re-used on other buildings in future projects. The concrete tank (bund area) has never been in use, therefore there is no chance of any soil contamination under this tank. This has a floor area of 178.79m² and a wall height of 2 meters. The concrete floors and walls of the existing building garage and concrete tank (totalling approx. 840m³ volume) will be removed off site for disposal in a licenced facility. The gravel from the yard surrounding the garage and concrete tank will be dug up and kept to one side pending testing for contamination and then will be re-used as filling on site if it is suitable. If not, the material will be treated in an authorised facility. The garage & concrete tank bund are detailed on drawing No. 21-21-23 attached in Appendix A.

Phase 2 – The soil (77,804.15m³) will be removed from the Site and will be infilled to fields to the west of the site. Ref. drawing 21-21-18 in Appendix A. A new weighbridge will be installed beside the existing rendering weighbridge, this will be separated with a fence and signage to direct traffic on site. There will be a new two-way road constructed on site separated from the rendering plant with a fence to access the proposed AD plant area. 21,500 tonnes approx. of stone filling and concrete will be brought to the site to create a base for building the road, yard, tank foundations, walls of the reception hall and AD tanks and bunded walls.

Phase 3 - The AD plant intake buildings, tanks, bund wall and road will be constructed. The intake building will be of steel frame construction, shuttered concrete walls, olive green insulated Kingspan sheeting and purloins. The olive green sheeting was selected to blend the colours into the agricultural surroundings around the site and therefore cause less visual impact. The AD tank bund will be a concrete wall construction with a concrete floor, the roadway to the plant will be constructed from concrete. The intake tanks and glycerine tank will be constructed from stainless steel. The buffer tank, digesters and digestate storage tanks

will be constructed from concrete. The pasteurisation tank will be constructed from glass lined steel.

The Proposed Development comprises of:

- Anaerobic Digestion (AD) Plant Reception building (food waste reception)
- Reception hall for solid feedstock (silage & Maize)
- Borger Fibre separation for digestate
- Workshop
- Office, control room, toilets and changing rooms
- Biobed
- 4 No. Liquid reception tank- 113m³ tanks
- 1 No. Glycerine tank- 78m³
- 1 No. Buffer tank – 983m³
- 1 No. Pasteurisation tank - 247m³
- 2 No. Digesters - 3682m³
- 2 No. Digestate Storage tanks – 2500m³
- Gas Flare
- Biogas Combined Heat and Power (CHP) Plant

Refer to Site Layout Plan drawing 21-21-14 in Appendix A.

Phase 4 – The fields where the soil will be deposited will be re-seeded and planted with grass and returned to agricultural use. Please see filling area on drawing ref. 21-21-18 in Appendix A.

9.4.2 Operational Phase

The existing facility will continue to operate as an animal by-product rendering plant, a biodiesel production facility and a solar farm, with the addition of an anaerobic digestion facility. The existing facility is currently operational under IE Licence (P0037-04) and Greenhouse Gas Permit (GHG Permit) No. IE-GHG123-10405-03.

An application for a review of the existing IE License will be made to the Environmental Protection Agency as the introduction of an anaerobic digestion facility will result in changes to the environmental emissions from the facility. The GHG Permit may also need to be revised, and the EMS will be updated accordingly.

The Proposed Development will be operated in accordance with the requirements of the planning grant conditions and updated requirements of the reviewed IE Licence, GHG Permit, EMS and Safety Report for the facility.

9.5 Potential Impact of the Proposed Development

This section assesses the impact of the Proposed Development on the human environment. The noise-generating activities associated with the Site are as follows:

- Site clearance, including demolition works of the existing garage;
- Building construction works;

- Mobile plant and equipment used in anaerobic digestive (AD) operations;
- Traffic movements internally;
- Trucks entering and exiting the site.

9.5.1 Noise Sensitive Locations

The EPA define noise sensitive locations as *'any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or other area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels'*.

In identifying sensitive receptors, consideration has been given residential properties or noise sensitive premises such as schools or hospitals, or recreational spaces within a close proximity of the Proposed Development.

The nearest noise sensitive location is a residential property which is located approximately 190m from the proposed demolition and the AD bio-filter and approximately 225m from the proposed CHP gas engine.

Table 9-6: Sensitive Receptors

Name	Type	Coordinates		Orientation Relative to Site Boundary
		X	Y	
Rathgillen	Residential	53.843075	-6.752573	190m Southeast
Gallagher's Cottage, Rathgillen	Residential	53.844587	-6.749851	300m East
College	Residential	53.846914	-6.759794	440m Northwest
College	Residential	53.849672	-6.752485	600m Northeast

9.5.2 Noise from Operational Traffic

Volume 2, Chapter 12 'Traffic' has been prepared by Stephen Reid Consulting Traffic and Transportation Limited (SRC).

The Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3 Part 7 (HD 213/11 – Revision 1) (The Highways Agency et al., 2011) states that *"changes in traffic volume on existing roads or new routes may cause either of the threshold values for noise to be exceeded. A change in noise level of 1dB LA10, 18h is equivalent to a 25% increase or a 20% decrease in traffic flow, assuming other factors remain unchanged and a change in noise level of 3dB LA10, 18h is equivalent to a 100% increase or a 50% decrease in traffic flow"*.

No traffic routes are predicted to experience increases of more than 25% in total traffic flows during the Operational Phase and therefore no detailed assessment is required as per the DMRB Guidelines. Refer to Chapter 12 of the EIAR for a detailed traffic assessment report.

9.5.3 Noise from Onsite Plant & Equipment

Noise and vibration can arise from the operation of fixed or mobile machinery used for the Construction Phase and from vehicular traffic during the Operational Phase. Noise prediction calculations have been completed for sound pressure levels from the use of onsite plant and equipment up to 300m from the source for the construction activities and proposed AD plant and up to 560m from the source for the demolition activities. According to the inverse square law, it can be shown that for each doubling of distance from a point source, the sound pressure level decreases by approximately 6 dB. Table 9-4 details the noise emissions from the plant or machinery items to be used in the Proposed Development and the relevant L_{Aeq} values at the reference distances. The reference levels were calculated and projected for a range of distances from the source to the appropriate receptor using the following formula:

$$L_{Source} \approx L_{Ref} - 20 \cdot \log_{10}(R2/R1)$$

Where:

L_{Source} = Sound Pressure Level at Initial Location

L_{Ref} = Sound Pressure Level at the new Location

$R1$ = Distance from the noise source to initial location

$R2$ = Distance from noise source to the new location

The calculations make a number of assumptions such as:

1. There is a straight line between the source and observer.
2. Meteorological conditions are static.
3. There are no natural barriers that affect attenuation of noise other than distance.
4. All plant items are operating from a single source simultaneously and at full capacity.
5. All plant items are operating at the edge of the work area closest to the sensitive receptor.

The inverse square law is the logical first estimate of the sound you would get at a distant point in a reasonably open area. It is noted that the sound intensity from a point source will obey the inverse square law if there are no reflections or reverberation. If there are barriers between the source and the point of measurement, you are likely to get less than what the inverse square law predicts.

Table 9-7, Table 9-8 and Table 9-9 set out the mobile machinery and fixed plant associated with the Proposed Development and associated dB(A) levels according to BS 5228-1/manufacture specifications, the inverse square law, and accounting for noise reduction associated with building materials:

Table 9-7: Equipment associated with proposed demolition activities

Plant Item	Ref	dB(A) @10m	dB(A) @-190m	dB(A) @ 300m	dB(A) @ 440m	dB(A) @ 560m
Breaker	BS 5228-1	90	64.4	60.5	57.1	55.0
Crusher	BS 5228-1	86	60.4	56.5	53.1	51
Excavator	BS 5228-1	75	49.4	45.5	42.1	40

Table 9-8: Equipment associated with proposed construction activities

Plant Item	Ref	dB(A) @10m	dB(A) @ 190m	dB(A) @ 225m	dB(A) @ 300m
Loading Shovel	BS 5228-1	76.5	50.9	49.5	47
Excavator	BS 5228-1	75	49.4	48	45.5
Mobile Crane	BS 5228-1	70	44.4	43	40.5

Table 9-9: Proposed AD plant noise levels

Plant Item	Location	dB(A) @10m	dB(A) @ 190m	dB(A) @ 225m	dB(A) @ 300m
Liquids Reception Tanks	Outside	N/A	N/A	N/A	N/A
Glycerine Tank	Outside	N/A	N/A	N/A	N/A
Solids Feed System	Inside the reception hall (insulated Kingspan sheeting)	50	24.4	23	20.5
Food Waste Depacker	Inside the reception hall (insulated Kingspan sheeting)	60	34.4	33	30.5
Screw Conveyors	Inside the reception hall (insulated Kingspan sheeting)	50	24.4	23	20.5
Pumps	Inside the reception hall (insulated Kingspan sheeting)	50	24.4	23	20.5

Plant Item	Location	dB(A) @10m	dB(A) @ 190m	dB(A) @ 225m	dB(A) @ 300m
Vogelsang Quick Mix	Inside the reception hall (insulated Kingspan sheeting)	55	29.4	28	25.5
Sealed Buffer Tank	Outside	N/A	N/A	N/A	N/A
Digesters	Outside	N/A	N/A	N/A	N/A
Digester Heat Exchange System	Outside	N/A	N/A	N/A	N/A
Digester Mixing System	There are 4 No. compressors part of the mixing system, the compressors would be located alongside the digesters, which means that they can be located between the tanks, meaning that there will be a digester blocking any nuisance noise	75	49.4	48	45.5
Pasteurisation Tank	Outside	N/A	N/A	N/A	N/A
Gas Holder	Outside	N/A	N/A	N/A	N/A
Flare	Outside	80	53.5	52	49.5
Gas Burner Control System	Inside the reception hall (insulated Kingspan sheeting)	N/A	N/A	N/A	N/A
HGV Movements	Outside	55	29.4	28	25.5
CHP Engine Exhaust	Outside	45	19.4	18	15.5
Biobed Fan	Outside	40	14.4	13	10.5

Tables 9-7, 9-8 and 9-9 outline the predicted noise levels at reference distances using *BS 5228-1* recommendations/manufacture specifications recommendations. The predicted noise levels from onsite activities up to 560m from the Proposed Development for Table 9-7 and

300m for both Table 9-8 and Table 9-9. The nearest noise sensitive location is located approximately 190m from the Proposed Development Site Boundary.

The adopted criteria will not be exceeded by any construction equipment, nor will it be exceeded by the proposed AD plant. However, there is the potential for the adopted criteria to be exceeded by the breaker at the three sensitive receptors at distances 190m, 300m and 440m and by the crusher at two sensitive receptors at distances 190m and 300m during the demolition activities. However, it is important to recognise that the sound intensity from a point source will obey the inverse square law if there are no reflections or reverberation. If there are barriers between the source and the point of measurement, it will likely to be less than what the inverse square law predicts. There are a number of trees and hedgerows on the intervening lands between the Site Boundary and the noise sensitive locations. Therefore, when taking account of local terrain, predicted noise levels at the closest noise sensitive location are expected to be lower than is outlined in Table 9-7. Demolition activities will also be short-term in duration. Nevertheless, mitigation measures, as outlined in Section 9.6, will be implemented to reduce any potential impacts.

It is not envisaged for any excessively noisy activities to be carried out over extended periods of time during the construction stage.

9.5.4 Potential Cumulative Impacts

Cumulative Impacts can be defined as “*impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project*”. Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the cumulation of different effects that are individually minor. Such effects are not caused or controlled by the project developer.

The cumulative effects of noise and vibrations from the Proposed Development and other existing developments have been considered, in particular through the generation of nuisance noise. It is not expected that the Proposed Development will result in cumulative impacts with any existing or proposed offsite projects due to the adherence and full implementation of the appropriate control and mitigation measures onsite.

9.5.5 “Do Nothing” Impact

The Do-Nothing impact has been considered in terms of noise and vibration in this Chapter. If the Proposed Development did not proceed, the site would remain as a bio-waste management facility, biodiesel, and solar farm. Noise and vibration levels would remain unchanged onsite and at nearby sensitive receptors.

9.6 Avoidance, Remedial & Mitigation Measures

In order to control likely noise impacts caused by the Proposed Development, best available technology will be employed by the Main Contractor to minimise noise from the construction operations and will comply with the mitigation measures as set out in *BS 5228-1: A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise*:

- Selection of plant with low inherent potential for generating noise.

- Siting of plant as far away from sensitive receptors as permitted by site constraints.
- Avoid unnecessary revving of engines and switch off plant items when not required.
- Keep plant machinery and vehicles adequately maintained and serviced.
- Proper balancing of plant items with rotating parts.
- Keep internal routes well maintained and avoid steep gradients.
- Minimise drop heights for materials or ensure a resilient material underlies.
- Use of alternative reversing alarm systems on plant machinery.
- Where noise becomes a source of resonating body panels and cover plates, additional stiffening ribs or materials should be safely applied where appropriate.
- Limiting the hours during which site activities likely to create high levels of noise are permitted.
- Appointing a site representative responsible for matters relating to noise.
- Monitoring typical levels of noise during critical periods and at sensitive locations.

9.6.1 “Worst Case” Scenario

The worst-case scenario where mitigation measures fail for the Proposed Development, it is considered that localised noise will not cause any noise nuisance to nearby receptors.

9.7 Residual Impacts

Residual Impacts are defined as *‘effects that are predicted to remain after all assessments and mitigation measures’*. They are the remaining ‘environmental costs’ of a Proposed Development and are the final or intended effects of a development after mitigation measures have been applied to avoid or reduce adverse impacts. Potential residual impacts from the Proposed Development were considered as part of this environmental assessment.

No residual impacts are anticipated.

9.8 Monitoring

The control measure outlined in Section 9.6 are to be implemented and furthermore, the Main Contractor will monitor the likelihood of prolonged exposure to excessive noise and commission a noise surveying/monitoring programme where necessary. The Proposed Development is subject to an Industrial Emissions (IE) Licence from the Environmental Protection Agency (EPA). The operator will comply with the noise monitoring requirements as per the conditions of the IE Licence.

9.9 Interactions

9.9.1 Population and Human Health

The impact assessment of noise and vibration has concluded that additional noise associated with the operation of on-site machinery will not create any major negative impacts beyond the Site boundary. Mitigation and monitoring measures will be incorporated to further reduce the potential for noise generation from the Proposed Development.

It is noted that specific issues relating to Population and Human Health associated with the Proposed Development are set out in Chapter 4 of this EIAR.

9.9.2 Biodiversity

It is not considered that the Noise and Vibration effects of the Proposed Development will have an adverse impact on biodiversity in the local area due to the implementation of mitigation measures.

It is noted that specific issues relating to Biodiversity associated with the Proposed Development are set out in Chapter 5 of this EIAR.

9.9.3 Traffic

The Proposed Development will have no significant impact on overall traffic volumes and therefore traffic will not result in any significant increases of noise at sensitive receptors.

9.10 Difficulties Encountered When Compiling

No difficulties were encountered.

9.11 References

BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise.

Department of Environment, Heritage, and Local Government (2004) Quarries and Ancillary Activities: Guidelines for Planning Authorities.

Design Manual for Roads and Bridges Volume 11 Section 3 Part 7 (HD 213/11 – Revision 1) (The Highways Agency et al., 2011);

Environmental Protection Agency (2006) Environmental Management in the Extractive Industry (Non-Scheduled Materials).

Environmental Protection Agency (2016) Guidance Note for Noise (NG4): Licence Applications, Surveys and Assessments in Relation to Scheduled Activities.

Guidelines for the Treatment of Noise & Vibration in National Road Schemes, National Roads Authority, Revision 1, 25th October 2004.

ISO 1996-1:2016 Acoustics - Description, measurement and assessment of environmental noise. Part 1: Basic quantities and assessment procedures.

ISO 1996-2:2017 Acoustics - Description, measurement and assessment of environmental noise Part 2: Determination of sound pressure levels.

ISO 9613-1:1993 Acoustics - Attenuation of sound during propagation outdoors -- Part 1: Calculation of the absorption of sound by the atmosphere.

ISO 9613-2:1996 Acoustics - Attenuation of sound during propagation outdoors -- Part 2: General method of calculation.

10 LANDSCAPE AND VISUAL IMPACT ASSESSMENT

10.1 Introduction

This Landscape and Visual Impact Assessment Chapter has been prepared in respect of a Proposed Development to construct an Anaerobic Digestion (AD) Plant to produce green Biogas, at College Road, Nobber Co. Meath.

This Chapter assesses the effects of the Proposed Development on the landscape and visual amenities of the area and details the potential direct and indirect effects of the Proposed Development on landscape fabric, character and quality, and the resulting impact on visual amenity.

The aim of a landscape and visual assessment is to identify the elements of the landscape which make it unique and the extent to which it is possible to alter these landscapes before unacceptable consequences arise. Landscape character represents the individuality of an area based on its particular combination of features and elements. The purpose of this assessment is to evaluate the existing landscape character of the site and surroundings, to assess the visual impact of the Proposed Development and to identify landscape designations and planning policies that may concern the subject site and its environs.

Landscape Impact Assessment (LIA) relates to assessing effects on the landscape as a resource in its own right and is concerned with how the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character.

Visual Impact Assessment (VIA) relates to assessing effects on specific views and on the general visual amenity experienced by people. This deals with how the surroundings of individuals or groups of people may be specifically affected by changes in the content and character of views as a result of the change or loss of existing elements of the landscape and/or introduction of new elements. Visual effects may occur from: Visual Obstruction (blocking of a view, be it full, partial or intermittent) or; Visual Intrusion (interruption of a view without blocking).

Cumulative landscape and visual impact assessment is concerned with additional changes to the landscape or visual amenity caused by the Proposed Development in conjunction with other developments, or actions that occurred in the past, present or are likely to occur in the foreseeable future.

10.1.1 Quality Assurance and Competence

This Chapter was prepared by Enviroguide Environmental Consultant Nuno Costa. Nuno has a M.Sc. in Landscape Architecture from *University of Porto*, a Postgraduate Diploma in Advanced Studies in Territory, Environment and Sustainable Development from *Nova University Lisbon*, and is a PhD student in Landscape Architecture and Urban Ecology. Nuno has 13 years professional experience as a Landscape Architect.

10.2 Methodology

This section sets out the methodology for the LVA as result of the Proposed Development.

10.2.1 Guidelines and other information used in the LVA

The assessment has been undertaken in accordance with best practice, legislation and guidance notes. The methodology used is based on the Environmental Protection Agency Documents; *The Guidelines on the Information to be contained in Environmental Impact Assessment Reports (2022)*, and their precursor *The Guidelines on the Information to be contained in Environmental Impact Statements (2002)* and *Advice notes on current practise in the preparation of Environmental Impact Statements (2003)*. It is also based on the Department of the Environment, Heritage and Local Governments Document; *Architectural Heritage Protection, Guidelines for Planning Authorities, 2004* and the Landscape Institute and Institute of Environmental Management & Assessment Document *Guidelines for Landscape and Visual Impact Assessment (2013)*.

The aforementioned documents recommend baseline studies to describe, classify and appraise the existing landscape and visual properties, focusing on any sensitive receptors in the area and the ability of the landscape to accommodate the Proposed Development changes that will occur at the Proposed Development site. This is established through a collective process of desktop study and onsite survey work. Once the baseline conditions are established it allows for the identification of impacts, and an assessment of their magnitude and significance on the landscape character and visual amenities of the area.

A judgement on the sensitivity of the landscape is made from a combination of the susceptibility of the landscape to development, and therefore change, and the value attached to that landscape. This is determined by way of existing designations, both legislative and non-legislative for scenic beauty, landscape quality, recreational value, significant importance, rarity etc. Visual sensitivity is determined by a combination of judgements about the susceptibility of visual receptors such as dwellings, roads, scenic spots etc. to changes in visual amenity and the value attached to these views. The *Guidelines for Landscape and Visual Impact Assessment* state that the aim is “to establish the area in which the development will be visible, the different groups of people who may experience views of the development, the places where they will be affected and the nature of the views and visual amenity at those points”.

The assessment of the landscape and visual impacts for this development was informed by the guidance documents indicated on the References Chapter. However, documents: “*Meath County Development Plan 2021-2027*” and “*The Landscape Institute, ‘Guidelines for Landscape and Visual Impact Assessment’, (3rd Edition) 2013*” had a special relevance in this analysis.

10.2.2 Desktop Study

The desktop study comprised the following:

- Establishing an appropriate Study Area from which to study the landscape and visual effects of the Proposed Development;
- Review of Viewsheds, which indicates areas from which the Development is potentially visible in relation to terrain within the Study Area;
- Review of relevant County Development Plans, particularly with regard to sensitive landscape and scenic view/route designations;
- Selection of potential Viewshed Reference Points (VRPs) from key visual receptors to be investigated during fieldwork for actual visibility and sensitivity.

10.2.3 Fieldwork

Site visits were carried out at various times in order to:

- Select a refined set of VRP's for assessment.
- Record a description of the landscape elements and characteristics within the Study Area generally and also within view from each VRP.
- Capture high quality base photography from which to prepare photomontages of the proposal.

10.2.4 Landscape and Visual Assessment Criteria

The assessment of landscape and visual effects involves a description of the geographic location and landscape context of the Proposed Development as well as a general landscape description concerning essential landscape character and salient features of the wider Study Area. This is discussed with respect to: landform and drainage; vegetation and land use; centres of population and houses; transport routes and; public amenities and facilities. Consideration of design guidance, the planning policy context and relevant landscape designations are also considered.

Once the baseline environment was established, an assessment of the likely potential significant effects associated with the Proposed Development was carried out. This included the following:

- Appraisal of salient landscape character.
- Appraisal of predicted landscape effects.
- Appraisal of predicted visual Viewsheds maps as well as photomontages prepared from selected VRP locations.
- Appraisal of predicted cumulative effects.
- Discussion of mitigation measures.
- Assessment of residual effects following mitigation.

10.2.5 Assessment of Effects

The landscape and visual impact assessment seeks to identify, predict and evaluate the significance of potential effects to landscape characteristics and established views. The

assessments are based on an evaluation of the sensitivity to change and the magnitude of change for each landscape or visual receptor. The assessment acknowledges that landscape and visual effects change over time as the existing landscape evolves and proposed planting establishes and matures. The assessment therefore reports on potential effects during both the Construction Phase and the Operational Phase of the Proposed Development. The prominence of the Proposed Development in the landscape or view will vary according to the existing screening effects of local topography, structures and buildings, intervening existing vegetation and type and height of the proposed structures.

10.2.5.1 Landscape Effects

Landscape effects describe the impact on the fabric or structure of a landscape or landscape character. The assessment of landscape effects firstly requires the identification of the components of the landscape. The landscape components are also described as landscape receptors and comprise the following: Individual landscape elements or features; Specific aesthetic or perceptual aspects; and Landscape character, or the distinct, recognisable and consistent pattern of elements (natural and man-made) in the landscape that makes one landscape different from another. The assessment will identify the interaction between these components and the Proposed Development during Construction and Operational Phases. The condition of the landscape and any evidence of current pressures causing change in the landscape will also be documented and described.

Landscape Value

Landscape value is frequently addressed by reference to international, national, regional and local designations, determined by statutory and planning agencies. However, absence of such a designation does not necessarily imply a lack of quality or value. Factors such as accessibility and local scarcity can render areas of nationally unremarkable quality, highly valuable as a local resource. The quality and condition is also considered in the determination of the value of a landscape. The evaluation of landscape value is undertaken with reference to the definitions stated in Table 10-1.

Table 10-1: Landscape Sensitivity Criteria

Landscape Value	Classification Criteria
High	Nationally designated or iconic, unspoilt landscape with few, if any, degrading elements.
Medium	Regionally or locally designated landscape, or an undesignated landscape with locally important landmark features and some detracting elements.
Low	Undesignated landscape with few if any distinct features or with several degrading elements.

The landscape of the site of the Proposed Development is considered to have a Medium Landscape Value.

Landscape Susceptibility

Landscape susceptibility relates to the ability of a particular landscape to accommodate the Proposed Development. Landscape susceptibility is appraised through consideration of the baseline characteristics of the landscape, and in particular the scale or complexity of a given landscape. The evaluation of landscape susceptibility is undertaken with reference to a three-point scale, as outlined in Table 10-2:

Table 10-2: Landscape Susceptibility Criteria

Landscape Susceptibility	Classification Criteria
High	Small scale, intimate or complex landscape considered to be intolerant of even minor change.
Medium	Medium scale, more open or less complex landscape considered tolerant to some degree of change.
Low	Large scale, simple landscape considered tolerant of a large degree of change.

The landscape of the site of the Proposed Development is considered to have a Medium Landscape Susceptibility.

Landscape Sensitivity

Landscape sensitivity to change is determined by employing professional judgment to combine and analyse the identified landscape value, quality and susceptibility and is defined with reference to the scale outlined in Table 10-3:

Table 10-3: Landscape Sensitivity Criteria

Class	Criteria
High	Landscape characteristics or features with little or no capacity to absorb change without fundamentally altering their present character. Landscape designated for its international or national landscape value or with highly valued features. Outstanding example in the area of well cared for landscape or set of features that combine to give a particularly distinctive sense of place. Few detracting or incongruous elements
High-Medium	Landscape characteristics or features with a low capacity to absorb change without fundamentally altering their present character. Landscape designated for regional or county-wide landscape value where the characteristics or qualities that provided the basis for their designation are apparent. Good example in the area of reasonably well cared for landscape with notable landscape features.

Class	Criteria
Medium	Landscape characteristics or features with moderate capacity to absorb change without fundamentally altering their present character. Landscape designated for its local landscape value or a regional designated landscape where the characteristics and qualities that led to the designation of the area are less apparent or are partially eroded or an undesignated landscape which may be valued locally – for example an important open space. An example of a landscape or a set of features which is neutral or mixed character.
Medium - Low	Landscape characteristics or features which are reasonably tolerant of change without detriment to their present character. No landscape designation present or of medium to low local value, or an example of a common or un-stimulating landscape or set of features and conditions.
Low	Landscape characteristics or features which are tolerant of change without detriment to their present character. No designation present or of low local value. An example of monotonous unattractive visually conflicting or degraded landscape or set of features.

The landscape of the site of the Proposed Development is considered to have a Medium to High-Medium Landscape Sensitivity.

Magnitude of Landscape Change

Magnitude of change is an expression of the size or scale of change in the landscape, the geographical extent of the area influenced and the duration and reversibility of the resultant effect. The variables involved are described below:

The extent of existing landscape elements that will be lost, the proportion of the total extent that this represents and the contribution of that element to the character of the landscape;

The extent to which aesthetic or perceptual aspects of the landscape are altered either by removal of existing components of the landscape or by addition of new ones;

Whether the effect changes the key characteristics of the landscape, which are integral to its distinctive character;

The geographic area over which the landscape effects will be felt (within the Project Development site itself; the immediate setting of the Project Development site; at the scale of the landscape type or character area; on a larger scale influencing several landscape types or character areas); and

The duration of the effects (short term, medium term or long term) and the reversibility of the effect (whether it is permanent, temporary or partially reversible).

Changes to landscape characteristics can be both direct and indirect. **Direct change** occurs where the Proposed Development will result in a physical change to the landscape within or adjacent to the Project Development site. **Indirect changes** are a consequence of the direct

changes resulting from the Proposed Development. They can often occur away from the Proposed Development site (for example, off-site construction staff parking) and may be a result of a sequence of interrelationships or a complex pathway (for example, a new road or footpath construction may increase public access and associated problems e.g. littering). They may be separated by distance or in time from the source of the effects.

The magnitude of change affecting the baseline landscape resource is based on an interpretation of a combination of the criteria set out in Table 10-4.

Table 10-4: Magnitude of Landscape Change Criteria

Magnitude of Landscape Change	Classification Criteria
None	Landscape characteristics or features with little or no capacity to absorb change without fundamentally altering their present character. Landscape designated for its international or national landscape value or with highly valued features. Outstanding example in the area of well cared for landscape or set of features that combine to give a particularly distinctive sense of place. Few detracting or incongruous elements
Negligible	Landscape characteristics or features with a low capacity to absorb change without fundamentally altering their present character. Landscape designated for regional or county-wide landscape value where the characteristics or qualities that provided the basis for their designation are apparent or a landscape with highly valued features locally. Good example in the area of a well-cared for landscape or set of features that combine to give a clearly defined sense of place.
Low	Landscape characteristics or features which are reasonably tolerant of change without detriment to their present character. No designation present or of little local value. An example of an un-stimulating landscape or set of features; with some areas lacking a sense of place and identity.
Medium	Noticeable change, affecting some key characteristics and the experience of the landscape; and Introduction of some uncharacteristic elements
High	Noticeable change, affecting many key characteristics and the experience of the landscape; and Introduction of many incongruous developments
Very High	Highly noticeable change, affecting most key characteristics and dominating the experience of the landscape; and Introduction of highly incongruous development

It is considered that the Proposed Development changes to landscape characteristics are **Medium to High**.

10.2.5.2 Visual Effects

Visual effects are determined by the extent of visibility and the nature of the visibility (i.e. how a development is seen within the landscape); for example, whether it appears integrated and balanced within the visual composition of a view or whether it creates a focal point. Negative visual effects may occur through the intrusion of new elements into established views, which are out of keeping with the existing structure, scale and composition of the view. Visual effects may also be beneficial, where an attractive focus is created in a previously unremarkable view or the influence of previously detracting features is reduced. The significance of effects will vary, depending on the nature and degree of change experienced and the perceived value and composition of the existing view.

Receptors

For there to be a visual impact, there is the need for a viewer. Views experienced from locations such as settlements, recognised routes and popular vantage points used by the public have been included in the assessment. Receptors are the viewers at these locations. The degree to which receptors, i.e. people, will be affected by changes as a result of the Proposed Development depends on a number of factors.

Value of the View

Value of the view is an appraisal of the value attached to views and is often informed by the appearance on Ordnance Survey of tourist maps and in guidebooks, literature or art. Value can also be indicated by the provision of parking or services and signage and interpretation. The nature and composition of the view is also an indicator. The value of the view is determined with reference to the definitions outlined in Table 10-5:

Table 10-5: Value of the View

Value	Classification Criteria
High	Nationally recognised view of the landscape, with no detracting elements.
Medium	Regionally or locally recognised view, or unrecognised but pleasing and well composed view, with few detracting elements.
Low	Typical or poorly composed view often with numerous detracting elements.

Visual Susceptibility

The GLVIA guidelines identify that the susceptibility of visual receptors to changes in views and visual amenity is a function of:

- The occupation or activity of people experiencing the view at a particular location; and
- The extent to which their attention or interest may therefore be focused on the views and visual amenity they experience at particular locations.

For example, residents in their home, walkers whose interest is likely to be focused on the landscape or a particular view, or visitors at an attraction where views are an important part of the experience often indicate a higher level of susceptibility. Whereas receptors occupied in outdoor sport, where views are not important, or at their place of work, are often considered less susceptible to change. Visual susceptibility is determined with reference to the three-point scale and criteria outlined in Table 10-6.

Table 10-6: Visual Susceptibility

Susceptibility	Classification Criteria
High	Receptors for which the view is of primary importance and are likely to notice even minor change.
Medium	Receptors for which the view is important but not the primary focus and are tolerant of some change.
Low	Receptors for which the view is incidental or unimportant and is tolerant of a high degree of change.

Visual Sensitivity

Sensitivity to change considers the nature of the receptor; for example, a person occupying a residential dwelling is generally more sensitive to change than someone working in a factory unit. The importance of the view experienced by the receptor also contributes to an understanding of the susceptibility of the visual receptor to change as well as the value attached to the view. A judgement is also made on the value attached to the views experienced. This takes account of:

- Recognition of the value attached to particular views, for example in relation to heritage assets, or through planning designations;
- Indicators of the value attached to views by visitors, for example through appearance in guidebooks or on tourist maps, provision of facilities for their enjoyment (sign boards, interpretive material) and references to them in literature or art; and
- Possible local value: it is important to note that the absence of view recognition does not preclude local value, as a view may be important as a resource in the local or immediate environment due to its relative rarity or local importance.

The visual sensitivity to change is based on interpretation of a combination of all or some of the criteria outlined in Table 10- 7:

Table 10-7 Visual Sensitivity

Visual Sensitivity	Criteria
High	Users of outdoor recreational facilities, on recognised national cycling or walking routes or in national designated landscapes. Dwellings with views orientated towards the Proposed Development.

Visual Sensitivity	Criteria
High - Medium	Users of outdoor recreational facilities, in locally designated landscapes or on local recreational routes that are well publicised in guide books. Road and rail users in nationally designated landscapes or on recognised scenic routes, likely to be travelling to enjoy the view.
Medium	Users of primary transport road network, orientated towards the Development, likely to be travelling for other purposes than just the view. Dwellings with oblique views of the Proposed Development.
Medium - Low	People engaged in active outdoor sports or recreation and less likely to focus on the view. Eg: outdoor workers – agriculture, horticulture Primary transport road network and rail users likely to be travelling to work with oblique views of the Development or users of minor road network.
Low	People engaged in work activities indoors, with limited opportunity for views of the Development.

Magnitude of Visual Change

Visual effects are direct effects as the magnitude of change within an existing view will be determined by the extent of visibility of the Proposed Development. The magnitude of the visual effect resulting from the development at any particular viewpoint or receptor is based on the size or scale of change in the view, the geographical extent of the area influenced and its duration and reversibility. The variables involved are described below:

The scale of the change in the view with respect to the loss or addition of features in the view and changes in its composition, including the proportion of the view occupied by the development;

The degree of contrast or integration of any new features or changes in the landscape form, scale, mass, line, height, skylining, back-grounding, visual clues, focal points, colour and texture;

The nature of the view of the Proposed Development, in relation to the amount of time over which it will be experienced and whether views will be full, partial or glimpses;

The angle of view in relation to the main activity of the receptor, distance of the viewpoint from the development and the extent of the area over which the changes will be visible; and

The duration of the effects (short term, medium term or long term) and the reversibility of the effect (whether it is permanent, temporary or partially reversible).

The magnitude of visual effect resulting from the development at any particular viewpoint or receptor is based on the interpretation of the above range of factors and is set out in Table 10- 8:

Table 10-8 Magnitude of Visual Change (Visual effects)

Magnitude	Criteria
Very High	The development will cause significant changes in the existing view over a wide area or a change which will dominate over a limited area.
High	The development will cause a considerable change in the existing view over a wide area or a significant change over a limited area.
Medium	The development will cause modest changes to the existing view over a wide area or noticeable change over a limited area.
Low	The development will cause very minor changes to the view over a wide area or minor changes over a limited area.
Negligible	The development will cause a barely discernible change in the existing view.
None	No change in the existing view.

10.2.6 Duration and Quality of Effects

Table 10-9 provides the definition of the duration of landscape and visual effects:

Table 10-9 Definition of the duration of landscape and visual effects

Duration	Description
Temporary	Impacts lasting one year or less
Short-term	Impacts lasting one to seven years
Medium-term	Impacts lasting seven to twenty years
Long-term	Impacts lasting twenty to fifty years
Permanent	Impacts lasting over fifty years

The quality of both, landscape and visual effects, can be Beneficial (Positive), Adverse (Negative) or Neutral according to the definitions set out in Table 10- 10:

Table 10-10 Definition of Quality of Effects

Class	Criteria
Beneficial:	A positive impact which will improve or enhance the landscape character or viewpoint.
Neutral	A neutral impact which will neither enhance nor detract from the landscape character or viewpoint.
Negative	A negative impact which will detract from the existing landscape character or viewpoint.

10.2.7 Significance Criteria

The objective of the assessment process is to identify and evaluate the potentially significant effects arising from the Proposed Development. The assessment will identify the residual effects likely to arise from the finalised design taking into account mitigation measures and the change over time. The significance of effects is assessed by considering the sensitivity of the receptor and the predicted magnitude of effect in relation to the baseline conditions. In order to provide a level of consistency and transparency to the assessment and allow comparisons to be made between the various landscape and visual receptors subject to assessment, the assessment of significance is informed by pre-defined criteria as outlined in the Table 10-11. When assessing significance, individual effects may fall across several different categories of significance and professional judgement is therefore used to determine which category of significance best fits the overall effect to a landscape or visual receptor. The significance of the effects can be adverse (negative) or beneficial (positive) according to the definitions set out in Table 10- 11:

Table 10-11 Categories of Significance of Landscape and Visual Effects

Impact Magnitude	Definition
Imperceptible Impact:	An impact capable of measurement but without noticeable consequences
Minor Impact:	An impact which causes noticeable changes in the character of the environment without affecting its sensitivities
Moderate Impact:	An impact that alters the character of the environment in a manner that is consistent with the existing and emerging trends
Significant Impact:	An impact which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment
Profound Impact:	An impact which obliterates sensitive characteristics

10.2.8 Study Area

Due to the scale and nature of the Proposed Development within this receiving landscape setting, it is anticipated that the Proposed Development is not likely to give rise to significant landscape or visual impacts beyond approx. 1.0km, apart from the one it already hases. However, out of an abundance of caution, a 3.0km-radius study area is used in this instance.

As one moves away from any type of development in the landscape, it will become less perceptible with distance. It is common practice to consider the viewpoint distance as laid out in Table 10–12.

Table 10-12 identifies and describes the impact of a viewpoint and the distances associated with these visual impacts.

Table 10-12 Viewpoint Distance

Viewpoint Distance	Description
0-2km	It is generally accepted that a development located approximately 2km or less from a viewer would be close enough to allow identification of significant detail. Any positions within this range with open uninterrupted views of a development would generally receive the greatest visual impacts.
2-5km	At this distance, visibility of a development site becomes more general, with viewers in open uninterrupted positions able to identify general form, colour/tone and textural contrast, but losing the more focused detail achievable from closer positions. Impacts at this distance are generally less than those found between 0-2km.
5-10km	Beyond 5km visual prominence quickly diminishes. Certain circumstances/light conditions etc. have potential to allow certain types of development and material finishes to be perceived. The development increasingly becomes part of the general background/distance views. Upwards of 15km distance, developments quickly become minor features within the landscape and considered imperceptible to the average human eye. The impact of the development diminishes as the developments becomes part of the general background/distance views.

The field study also revealed that a number of different elements on the ground have a bearing on the visibility of the Proposed Development:

10.2.9 Viewsheds

Viewsheds were defined in 5 different points of the site of the Proposed Development (V1-V5), as it can be seen in the images 10-1 to 10-5.

These Viewsheds were processed using *Google Earth Pro* software, that adjusted the view of the observer 2.00 meters above the terrain. In green, on the images, it can be seen the visibility from the considered points.

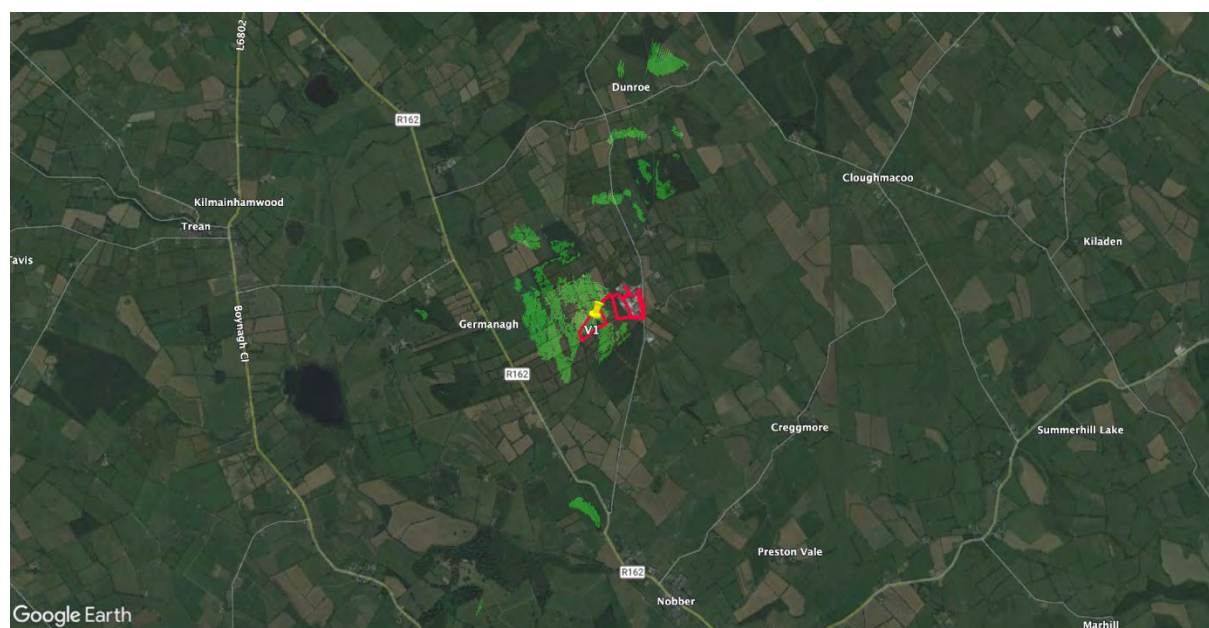


Figure 10-1: Viewshed V1

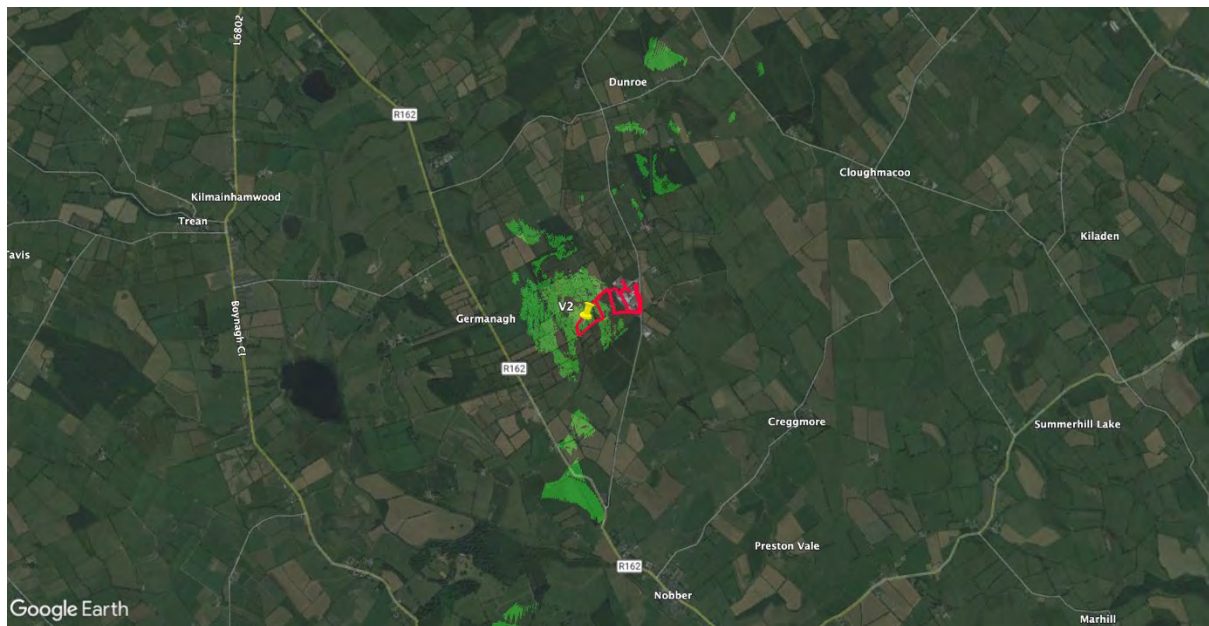


Figure 10-2: Viewshed V2

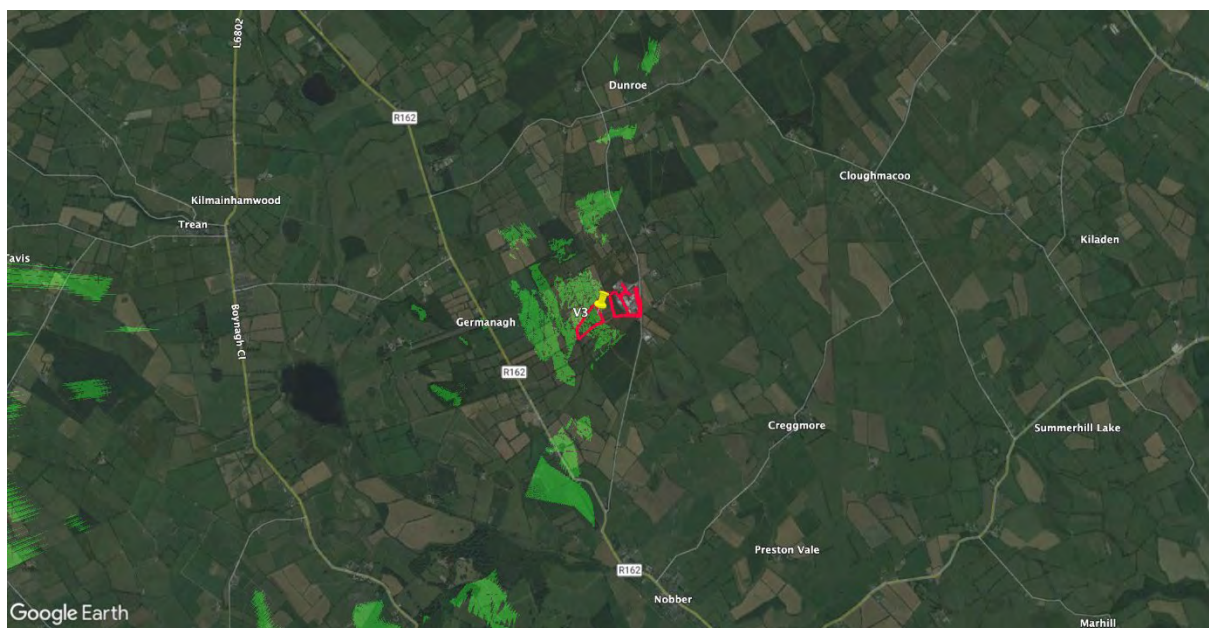


Figure 10-3: Viewshed V3



Figure 10-4: Viewshed V4



Figure 10-5: Viewshed V5

10.2.10 Potential Visual Receptors

Following the production of the viewsheds and field study, the following possible receptors of impacts were noted.

10.2.10.1 Dwellings with views orientated towards the development

Dwellings with views orientated towards the development are generally accepted as having a high visual sensitivity.

The dwellings in this area are very dispersed and there is no defined settlements apart from *Kilmainhamwood* (3.50 km of the site) and *Nobber* (2.00 km of the site). The dwellings in *Creggmore* (1.60 km of the site) are dispersed as referred and don't have visibility to the site. The dwellings in *Germanagh* (0.80 km of the site) are closer but due to the vegetation barriers don't have much visibility to the site.

The closest dwelling houses facing the Proposed Development are north (350 meters), west (600 meters), south (700 meters) and east (1300 meters).

The Proposed Development is partially visible from these locations, however, it is not predicted that there will be a negative impact on these dwellings as the Proposed Development is in line with the surrounding environment, and there are many vegetation barriers and land elevations that prevent full visibility to the site. It is therefore predicted neutral impact from these types of visual receptors.

10.2.10.2 Users of the High Amenity areas

No High Amenity areas were found in the vicinity of the Proposed Development

10.2.10.3 Outdoor workers

People engaged in outdoor work are not likely to focus on the surrounding view and are generally accepted as having medium to low visual sensitivity.

Due to the industrial and agricultural nature of the surrounding landscape, it is not expected that outdoor workers will be impacted by the Proposed Development.

10.2.10.4 Road / transport users

Users of the main roads around the Proposed Development are generally accepted as having medium to low visual sensitivity.

College Road gives access to the site, originating from the R162, on south. From this road, there are other small roads that gave access to small industrial units or dwellings.

10.2.10.5 Indoor workers

People engaged in work activities indoors, with limited opportunity for views of the development are generally accepted as having a low visual sensitivity.

10.3 The Existing and Receiving Environment (Baseline Situation)

10.3.1 Site Context

The site of the Proposed Development is located to the west of College Road, in the townland of Nobber, Co. Meath. The Proposed Development site is approximately 5.31 hectares and can be accessed from the southwest via the R162, or from the northeast via the R165. The town of Nobber, County Meath, lies approximately 3km south of the site of the Proposed Development. The town of Kingscourt, Co. Cavan lies approximately 7km northwest of the site on the R162, the village of Drumconrath, Co. Meath, lies approximately 6km to the east of the site on the R165, and the village of Kilmainhamwood, Co. Meath lies approximately 6km to the west of the site on the L6802. The landscape surrounding the site of the Proposed

Development is rural, comprised of grazing and arable lands, divided by frequent mature hedgerows, and scattered with small farms and residential dwellings.

The existing facility adjoining the eastern boundary of the Proposed Development, comprises an animal rendering plant and biodiesel manufacturing plant operated by the Applicant in accordance with the IE Licence (IE Licence No. P0037-04). There are no other EPA licensed facilities located within a 2km radius of the Site. The closest facility has been identified on the EPA database (EPA, 2022) as Saint-Gobain Construction Products (Ireland) Limited which is located approximately 3.9km to the North of the Site.

The Proposed Development on the ground is on the same footprint on the site as that already approved.

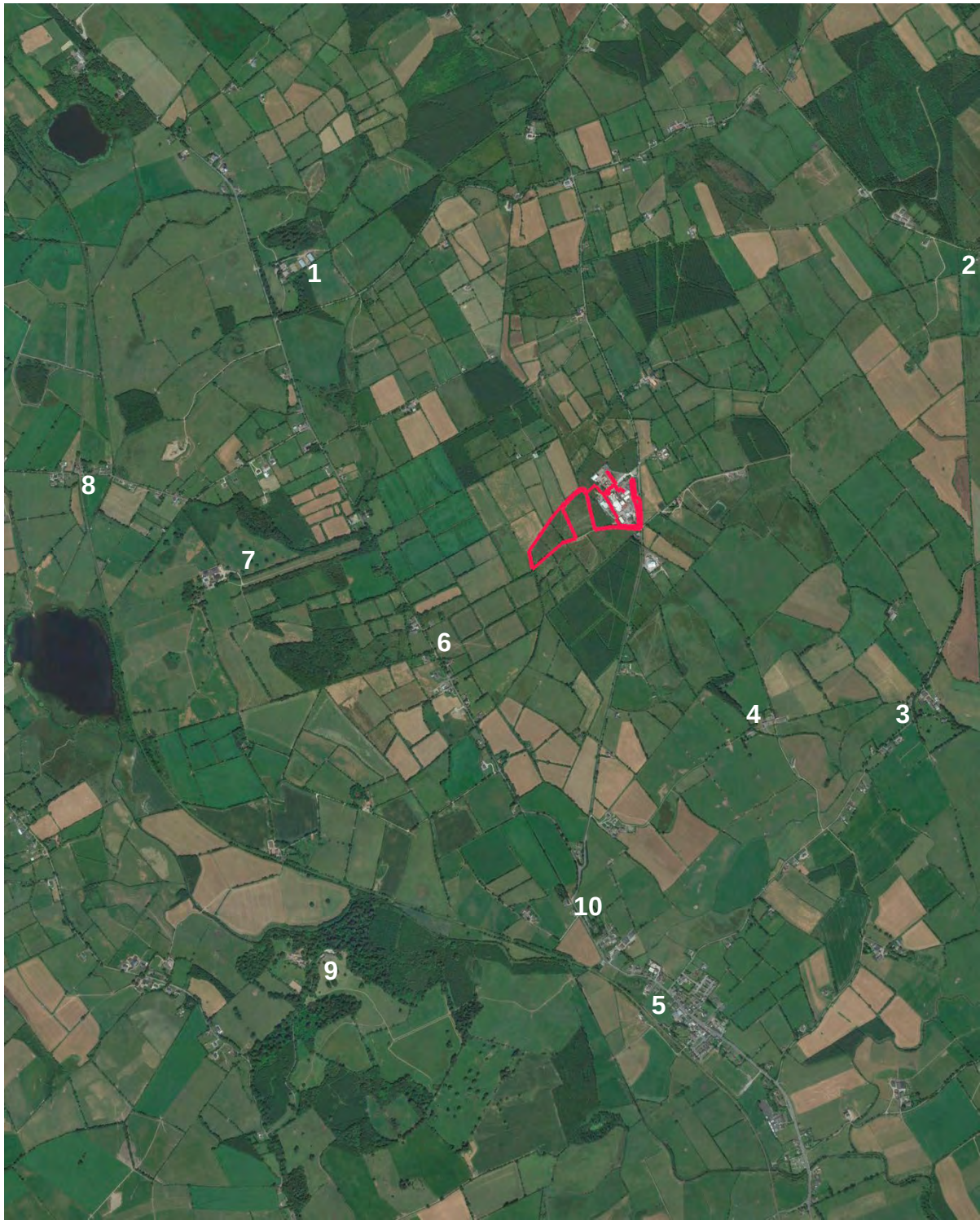


Figure 10-6: Aerial view with the Proposed Development outlined in red in its broader landscape context. Viewing altitude: 10.00 km. Source: Google Earth

1 - Rathe House	7 - Whitewood House (Protected Structure)
2 - Cloughmacoo	8 - Kingscourt R. L. and Gogarty's Printers Limited (Protected Structures)
3 - Creggmore	9 - Brittas Estate (Protected Structure)
4 - Rathgillen Farm and Lodge	10 - Water pump (Protected Structure)
5 - Nobber	
6 - Germanagh	

10.3.2 Designation and Zoning

The lands across the Proposed Development site are zoned 'Rural Area (RA) – To protect and promote in a balanced way, the development of agriculture, forestry and rural-related enterprise, biodiversity, the rural landscape, and the built and cultural heritage' under the Meath County Development Plan 2021-2027 (MCDP).

A Landscape Character Assessment is part of MCDP that refers: "Defining landscape character enables an understanding to be formed of the inherent value and importance of individual landscape elements and the processes that may alter landscape character in the future". According to MCDP the area in which the site is located is defined as **Landscape Character Area LCA 2 – North Meath Lakelands**, which forms part of an area of landscape character called **Hills and Uplands** (as shown in Figure 10-7):

"This complex drumlin landscape is wetter and more wooded than the rest of Meath and has significantly less development. There are small lakes and stream corridors between the drumlins and road corridors are often raised above adjacent fields".

"The landscape character around settlements tends to be a well-managed patchwork of small pastoral fields, dense hedgerows and small areas of broad-leaved woodland. In more remote areas farmland becomes less well managed with overgrown hedgerows and less woodland".

"Views within this area are generally limited by the complex topography and mature vegetation except at the top of drumlins".

"Short range views are channelled along narrow valleys between drumlins often along road or river corridors. The key landmark in the area is the gypsum factory outside Kingscourt whose billowing white smoke can be seen from some distance".

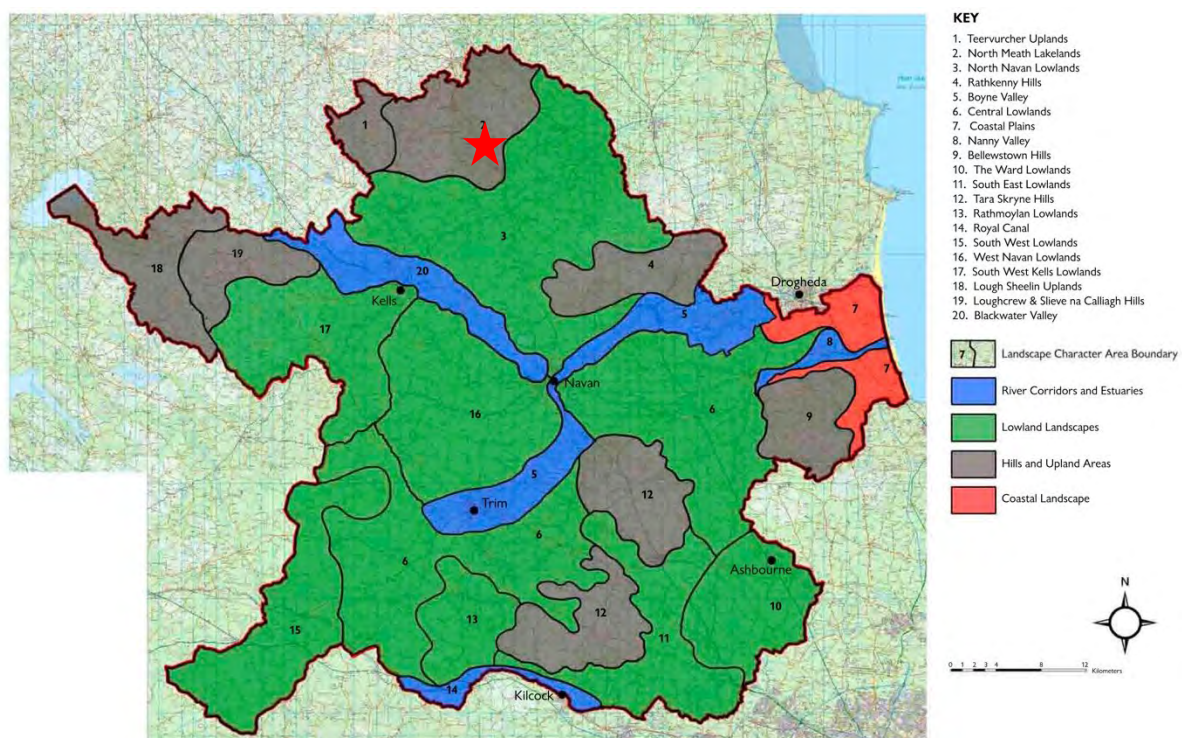


Figure 10-7: Landscape Character types. Map from the MCDP. Site marked with a star

The North Meath Lakelands Area LCA 2 is defined as of moderate value and of regional landscape importance (as shown in Figure 10-8).

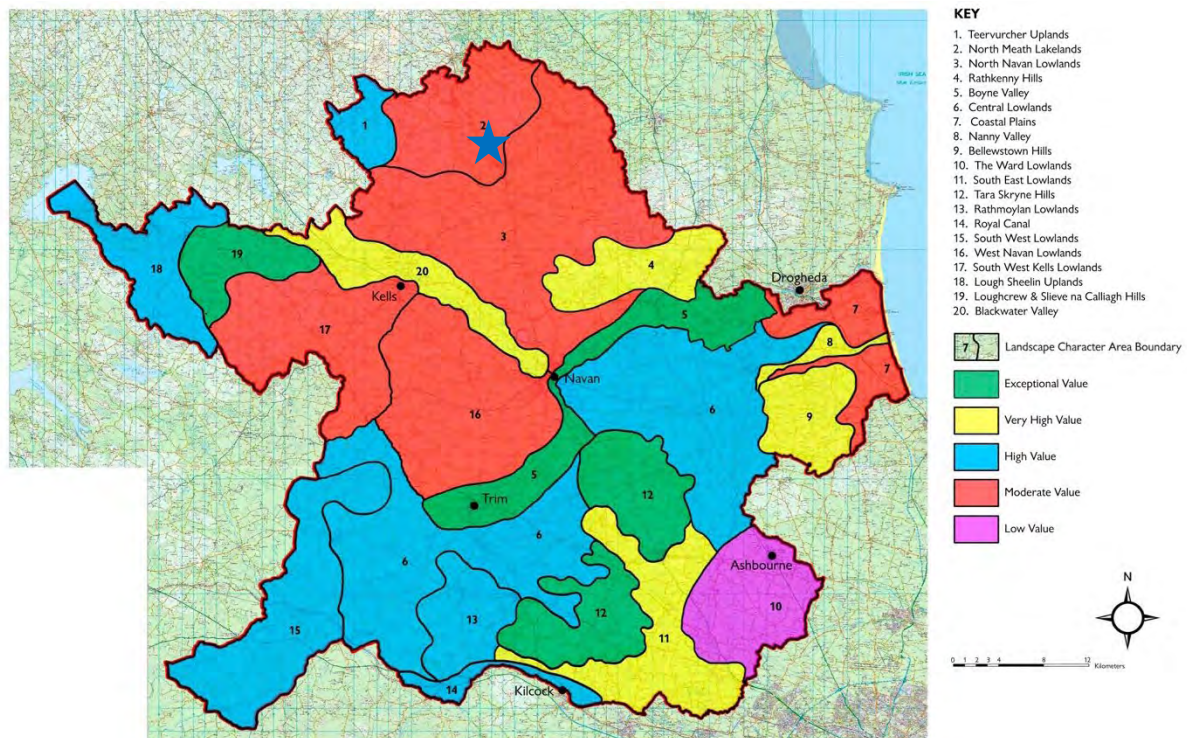


Figure 10-8: Landscape Character areas. Map from the MCDP. Site marked with a star

The North Meath Lakelands Area LCA 2 is defined as having low sensitivity landscape (as shown in Figure 10-9).

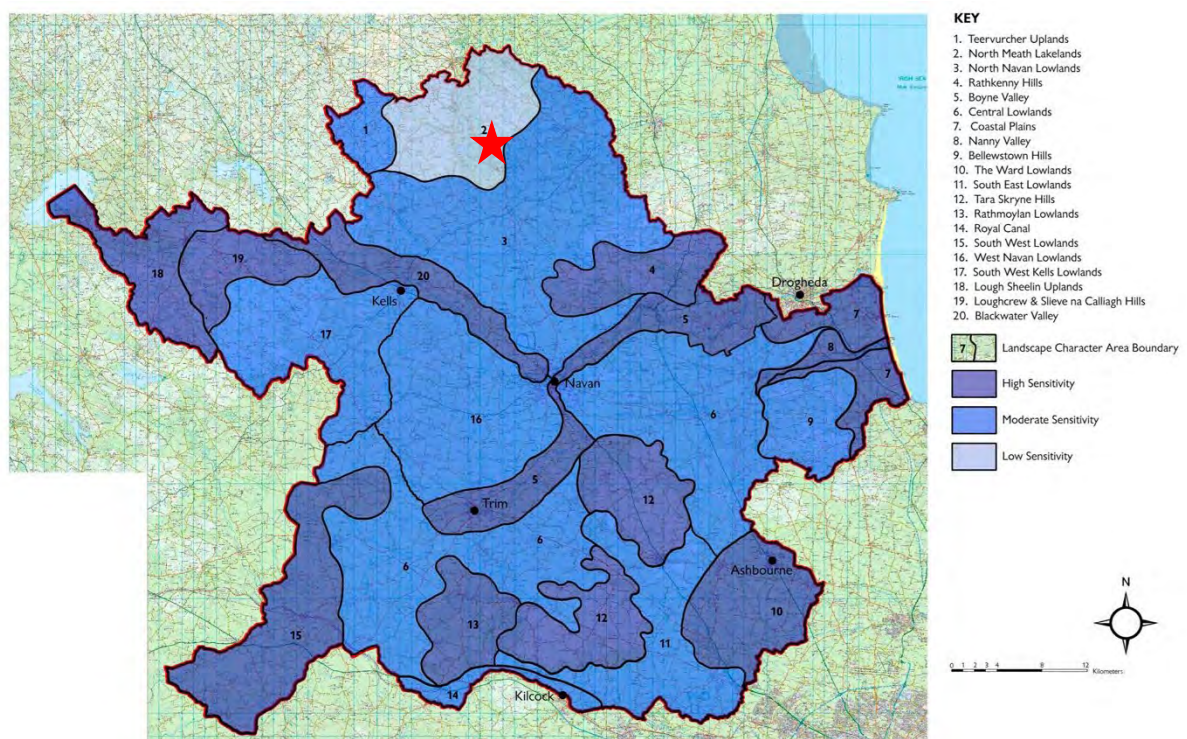


Figure 10-9: Landscape Sensitivity. Map from the MCDP. Site marked with a star

The Meath Landscape Character Assessment analyses the capacity of LCA 2 North Meath Lakelands for ten various development types, none of which are the type proposed on the Proposed Development. However, of the eight categories 3 are rated high capacity, 6 are medium capacity and one is low. The combination of low sensitivity and the drumlin topography further increases the capacity for development.

10.3.3 Landscape Character of the site

The site comprises of wet grass land bound by on the northeast and northwest side mature hedgerows. On the southerly boundary there is a post and wire fence. To the south side of the fence is located the existing Rendering plant which comprises of industrial and office buildings, a car park, areas of hard standing and a small garden area. This area is generally flat and similar to the adjacent entrance to 3rd class road levels. Despite the proximity to the Rendering Plant, the wider area retains a rural and agricultural quality. Generally, the area is open grassland or sub-divided by low managed hedgerows with a scattering of trees. The surrounding landscape notably less open as strong hedgerows and tree lines along with drumlins define views and frame the background of views.

The local landscape character is defined by the existing industrial development which has had a large visual impact on the local landscape character. The land use has redefined the local landscape character in the vicinity. Screening of the site along the roadside comprises some planting of trees and raised berms.

The site is on the south facing side of a low hill and the broader context is defined by the drumlin landscape of this part of north Meath. Field sizes are small to medium and bound by hedgerows of varying heights. There are stands of commercial forestry immediately to the south and to the northwest and northeast of the site.

The nature of the topography and existing vegetation in the landscape means that views tend to be enclosed unless the viewpoint is from an elevated position. Views from the tops of drumlins can take in a wide panorama across the landscape.

The landscape is crisscrossed by local roads. Houses are located along roads in the study area, particularly leading east out of Nobber. An existing overhead powerline runs east-west across the site. The site is bound by and divided internally by hedgerows.

The following points were also revealed after site-visits:

The Proposed Development has a mixed peripheral tree/shrub hedge to the north and south;

Part of the northern and western boundary has no existing hedge;

There are however several hedges around the Proposed Development, on the limits of the agricultural fields;

To the east, at the transition with the road, there is a bush-hedge, about 2 meters high, that prevents visibility into the site. This hedge is interrupted in the access to the site and in its most northwest limit (range of 75 meters) where there is visibility to the site;

There are large hedgerows surrounding the 3 fields planned to be occupied with the deposition of land, further to the west, and there are also 2 central hedgerows that divide the 3 fields.

10.3.4 Landscape Capacity of the site

The industrial aspect of existing plant has a good ability to absorb development without further landscaping or visual impacts. The landform of the site itself has a medium capacity for

development in that it presents an opportunity to hide the development from the adjacent roadside.

10.3.5 Landscape Sensitivity

Landscape sensitivity is a measure of the ability of the landscape to accommodate change or intervention without suffering unacceptable effects to its character and values.

Within the Meath County Development Plan, this area is deemed be of Moderate Landscape Value, Low Landscape Sensitivity and Regional Landscape Importance. The County Level LCA is important to take into account as a guide to landscape sensitivity, but the relevant guidelines recommend that each site must be assessed in terms of its particular context and sensitivities. On-site survey and other Meath County Council landscape appraisals including work to identify views and prospects as well as national surveys such as the National Inventory of Architectural Heritage (gardens) are also taken into account in this assessment.

Brittas Demesne is located approximately 2.5km to the south west of the constructed solar farm and is recognised in the National Inventory of Architectural Heritage (NIAH) as being an example of demesne landscape where the main features are “substantially present”. Whitewood house is located approximately 1km to the west and is also described by the NIAH survey as having main designed landscape features “substantially present”. Whitewood lake and its car park/amenity area is located approximately 1.5km to the west of the site and the view from the car park across the lake towards Whitewood house is considered of local importance in the County Development Plan.

10.3.6 Protected Views

There are four protected views defined by the MCDP in the broader landscape.

Protected view or prospect 16 (local importance)

County road north of Moydorragh – short range views to north-east towards tower.

Expansive views to south west across complex of mixed landscape types – this view is visible from a number of locations along this road.

Visual impact: Although this view is towards the site, College Proteins is slightly further to the north, and is therefore there is no visibility.

Protected view or prospect 17 (regional importance)

County road between *Mullagheven Crossroads* and *Gorry's Crossroads* – north, north east.

Expansive views to distant locations to north and to views of Carlingford, Mourne Mountains to the north east. Highly varied topography. Woodland in lowlands.

Visual impact: As the existing CHP Plant and Bio Diesel Plant are not visible from this location, the new proposed buildings are also not visible therefore it is considered that this view will experience a neutral and imperceptible visual impact.

Protected view or prospect 18 (local importance)

County road between Mullystaghan and Robertstown - north, north east and east.

Extensive views to north, north east and east from this point and approach roads. Land is open with occasional woodland blocks and complex topography. Development evident, especially in lowland areas.

Visual impact: The proposed amendments to the industrial site are imperceptible in comparison, it is considered that this view will experience a neutral and imperceptible visual impact.

Protected view or prospect 19 (local importance)

Car park at Whitewood lough – lakeland view to east with woodland and Whitewood House on horizon. Open view towards north east of horizon.

Low levels of development visible in near ground.

Visual impact: The existing College Proteins Plant cannot be seen from this location. It is obscured from view by land mass and vegetation.

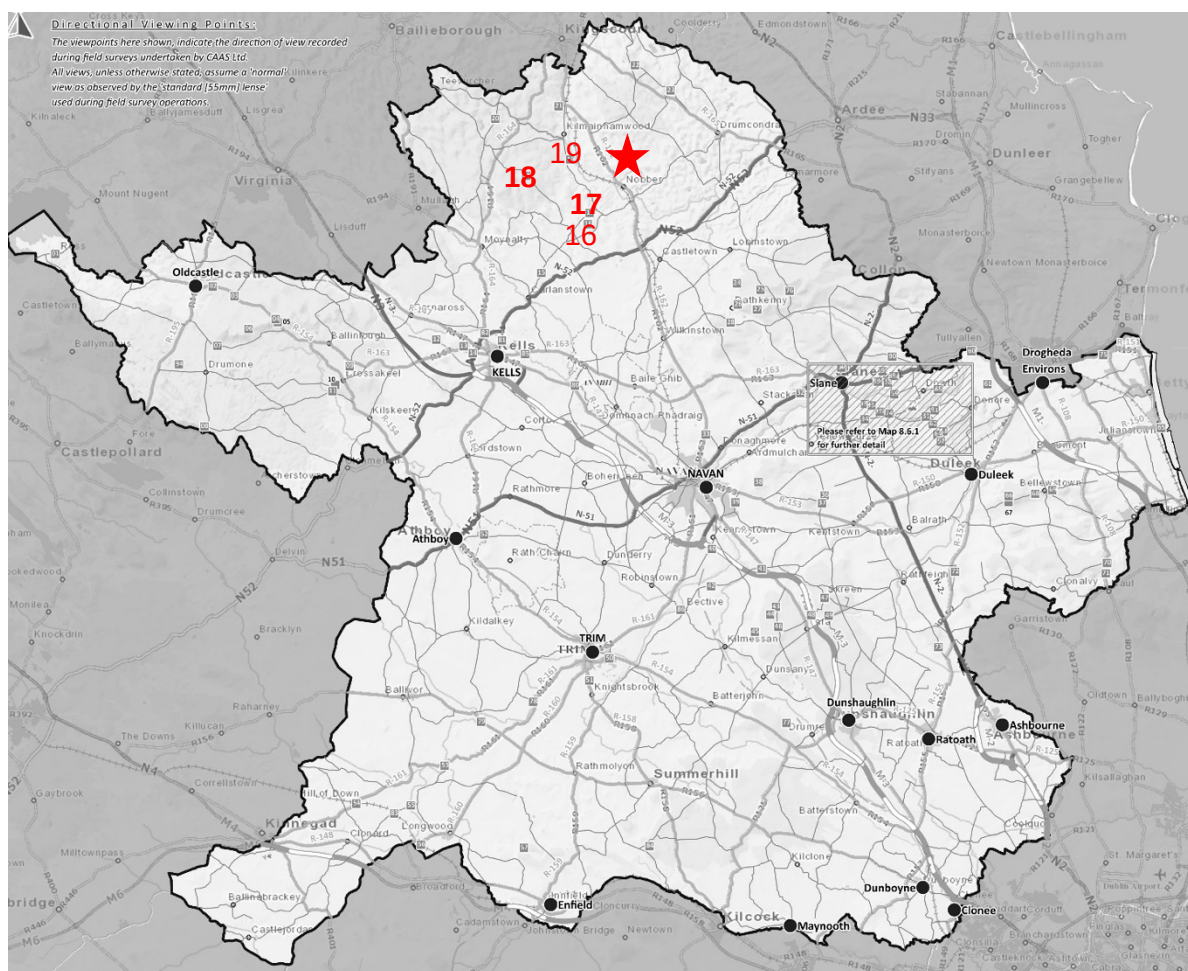


Figure 10-10-10: Views & Prospects. Map from the MCDP. Site marked with a star

From the Recommendations of the Assessment, it can be highlighted:

1. *Develop incentives to encourage landowners to maintain the integrity of historic field patterns and manage field boundaries and woodland.*

2. *Maintain the visual quality of the landscape by avoiding development that alter the drumlin landform or that would adversely affect short-range views within valleys of long-range views from the top of drumlins.*

From the Potential Capacity defined by the Assessment, it can be highlighted:

Low potential capacity to accommodate overhead cables or masts because drumlin tops are highly visible and panoramic views to wider landscape are an important characteristic that would be adversely affected by such development. Medium potential capacity to accommodate small substations at the base of drumlins provided they are visually concealed. Potential conflicts with buried archaeology will be a major constraint.

Medium potential capacity to accommodate some biomass and forestry development because this is a sensitive and diverse landscape with mix of habitats. However, prominent areas such as hillsides and or valleys where views are channeled should be avoided.

10.3.7 Topography and Soils

The surrounding area is undulating, with numerous hummocks surrounding the site reaching 100mOD. These hummocks are drumlin and drumlin tails appear to be elongated along a south-easterly orientation, but this can vary.

At the existing facility the natural topography falls from College Road on the eastern boundary towards the western boundary. It is noted that site works have altered natural topography within the existing facility boundary.

The topography of the proposed AD plant area slopes to the south with ground elevations ranging from 89.5 meters above ordnance datum (mOD) to 95.0mOD. While, the topography of the proposed infill area slopes to the southwest with ground elevations ranging from 77.0 meters above ordnance datum (mOD) to 79.5mOD.

The soils beneath the majority of the Proposed Development Site have been mapped by Teagasc (Teagasc, 2022) as poorly drained fine loamy drift with siliceous stones of the Kilrush (0700h) soil series.

10.3.8 Existing Facilities

Facilities adjacent to the planning application boundary include a variety of typical industrial uses and include Offices, Carparking, Industrial buildings Tank Farm, Engineering buildings, Weighbridges, Tallow Storage Bins, BioFilter Buildings, External Storage Areas and two existing chimneys which are 22 metres high.

College Proteins operates an animal rendering plant at College Road, Nobber, Co. Meath since 1989. The company is one of Ireland's leading processors of animal by-products. The main raw materials are inputted into the existing plant and cooked and separated to produce tallow and meat and bone meal (MBM). These two products produced from the process are renewable indigenous, carbon neutral fuels.

The site also has a Biodiesel facility that's 23 meters high that produces 25,000 tonnes per annum of biodiesel. Tallow produced from its rendering operations is used as a feedstock in the biodiesel facility. This enhances the value of the tallow and produces a green biofuel. This

biofuel is sent off site as an ingredient to be blended with white diesel to reduce carbon emissions from vehicles.

A solar farm has also been constructed at the site which will produce 3 million Kwh of 100% green electricity for consumption by on site operations.

10.3.9 Landscape Visibility

Views from surrounding roads can vary greatly, often being well-screened by roadside hedgerows and vegetation and fencing. The situation is similar for surrounding residential properties and amenities. The larger buildings extends to the visually prominent nature of the site into its wider hinterland.

10.3.10 Existing Protected Structures

There are 5 protected structures within the boarder landscape of the Proposed Development. The location of the protected structures can be seen in the Figure 10-6.

1. Whitewood House, Lodge and farm buildings (90 174)

Building type: Country House

Description: Three-bay, two-storey over high basement House, 1735 by Richard Castle. Designed as a hunting lodge for the Preston Family. Incl stable block, farm buildings and gate lodge. Whitewood House is located near the top of a drumlin (+105.9m ASL) and the ground drops away to all sides. While it falls quite steeply to the west towards Whitewood Lough (+49.60m ASL), it falls and undulates more gradually towards the application site (c. +85 to 95m ASL).

Distance: This is located 0.8 km West of the Proposed Development site (east garden's limit)

Visual Impact: Assessed on Viewpoint 5 (visual impacts)

2. Brittas (90 175)

Building type: Country House

Description: It was the seat of the Bligh family since the 17th century. Built c. 1800. Francis Johnston is supposed to have worked on the house. A rectangular two-storey house with a wide hipped roof and a four-bay ballroom to the East.

Distance: This is located 2.2 km Southwest of the Proposed Development site .

Visual Impact: No visibility to the Proposed Development site given the existing dense forest patch north of the property.

3. Water pump (90 176)

Building type: Water Pump

Description: Cast-iron water pump, erected c.1870, with lion's head surrounding spout. Fluted base and cap, with finial and side handle.

Distance: This is located 1.65 km South of the Proposed Development site .

Visual Impact: No visibility to the Proposed Development site due to the existing buildings, structures and vegetation.

4. Gogarty's Printers Limited (90 184)

Building type: Railway Shed

Description: Detached six-bay single-storey former railway warehouse, built c.1870, now in use as printing premises. Roughly dressed limestone walls with quoins.

Distance: 2.6 km west of the site.

Visual Impact: No visibility to the Proposed Development site given the view is oriented to the East.

5. Drogheda, Kingscourt Railway Line (90 185)

Building type: Railway Line

Description: Section of Drogheda-Kingscourt railway line, constructed c. 1870. Single line of cast-iron track on timber sleepers with limestone platform and level crossing. Station complex includes goods shed, and railway workers house.

Distance: This is located 2.20 km West of the Proposed Development site .

Visual Impact: No visibility to the Proposed Development site due to the existing buildings, structures and vegetation.

10.4 Characteristics of the Proposed Development

10.4.1 Description of the Proposed Development

College Proteins are proposing to construct an Anaerobic Digestion (AD) Facility to produce green Biogas which will off-set the use of fossil fuels on-site, therefore reducing the company's carbon footprint. The biogas produced from the AD Facility can be used in the on-site steam boilers and Combined Heat and Power (CHP) plants to generate steam and electricity to run the production facilities on-site. College Proteins are committed to sustainability and maximising the resource value of organic material from all sources. The Proposed Development will reduce the requirement for natural gas use on-site which will aid the company's self-sufficiency in this regard.

The Proposed Development will consist of the demolition of an existing garage and the provision of an Anaerobic Digestion Facility with an intake of up to 50,000 tonnes of organic feed-stock material per annum. The Facility will comprise a waste reception building (incorporating workshop, control room and welfare facilities), 2 No. digester tanks, 2 No. digestate storage tanks, glycerine tank, buffer tank, pasteuriser tank, 4 No. liquid reception tanks; all of the above tanks located within a fully bunded concrete area; associated biofilter, gas flare, biogas combined heat and power plant, internal access roads, weighbridge, truck loading area and soil deposition area. The Proposed Development will also include all associated site development, drainage and infrastructure works above and below ground. The maximum height of the Proposed Development is the chimney stack associated with the biofilter at c. 18m above ground level.

AD is a sustainable form of renewable energy production through a naturally occurring biological process in which micro-organisms break down biodegradable material in the absence of oxygen in an enclosed system. The process produces a methane-rich biogas and

a nutrient rich fertiliser known as 'digestate'. The biogas can be converted into renewable electricity, or it can be upgraded to biomethane for use in on site boilers, as a vehicle fuel or for injection directly into the gas network to provide a source of renewable heat.

Feedstocks proposed for biogas production include energy crops (e.g., grass and maize silage), food waste, slurry, sludges from food processing plants.

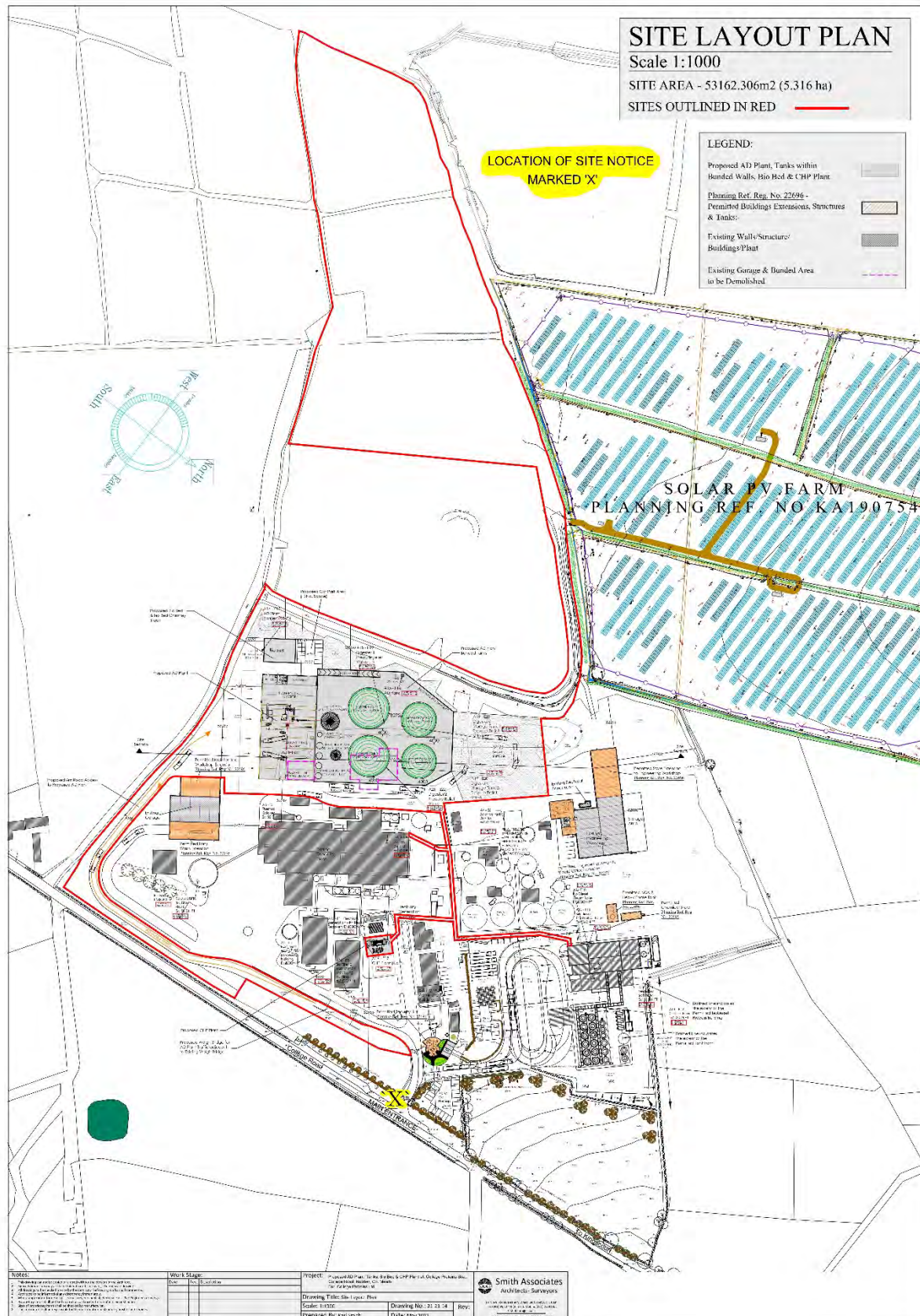


Figure 10-11: Site Layout Plan. Source: Smith Associates Architects-Surveyors

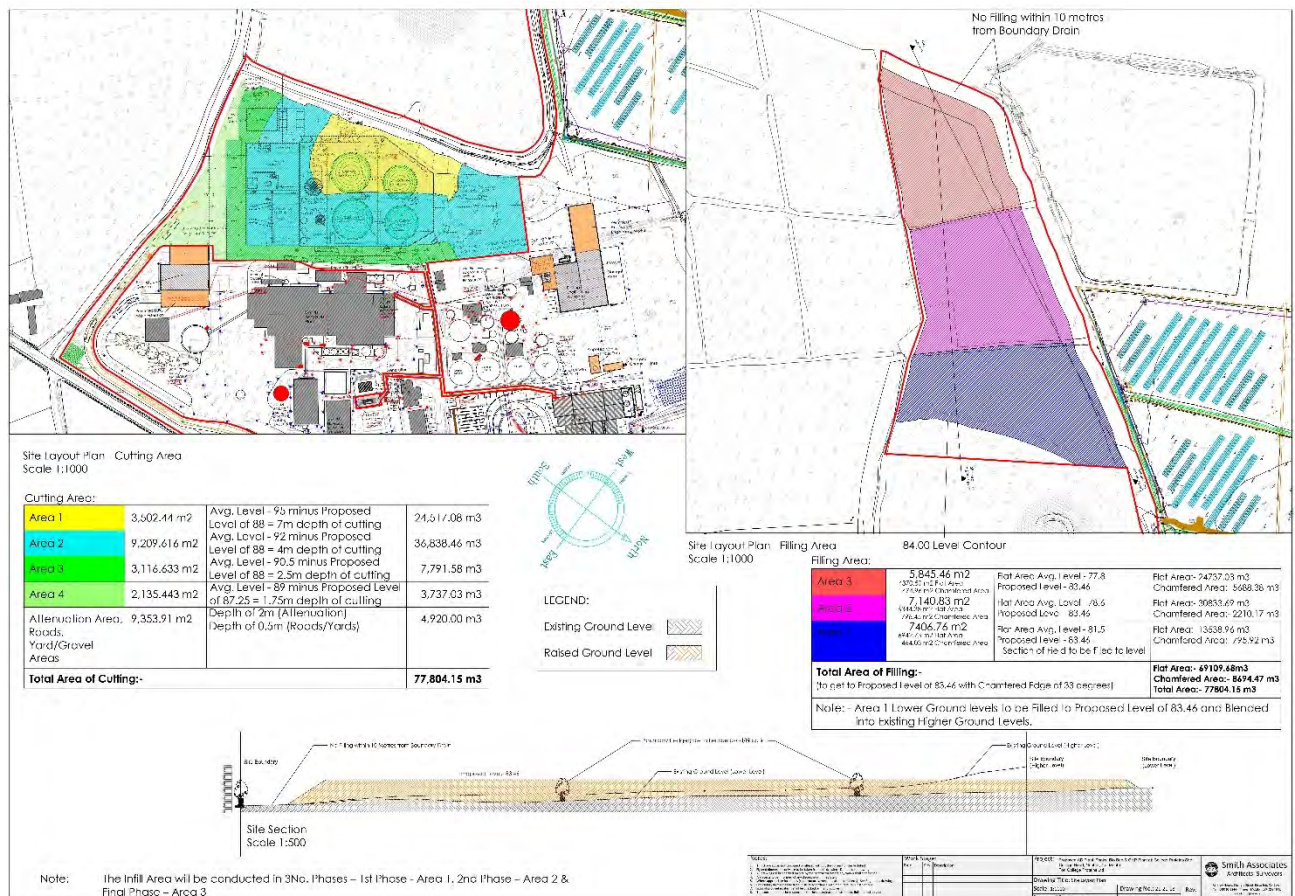


Figure 10-12: Plant Cutting and Filling. Source: Smith Associates Architects-Surveyors

10.4.2 Construction Phase

The Construction Phase for the Proposed Development will involve the removal of an existing building, removal of soil from the site of the Proposed Development, the construction of the Anaerobic Digestion plant and raising the level of land near the solar farm with the excavated soil.

Phase 1 – The existing building garage and concrete tank on site will be demolished. The garage currently used for maintaining College Proteins vehicles has a floor area of 545.67m² and the building is 8.3 meters to the apex. The building is constructed from concrete, steel and Kingspan sheeting. The Kingspan sheeting, purloins and steel work will be carefully removed and stored to be re-used on other buildings in future projects. The concrete tank (bund area) has never been in use, therefore there is no chance of any soil contamination under this tank. This has a floor area of 178.79m² and a wall height of 2 meters. The concrete floors and walls of the existing building garage and concrete tank (totalling approx. 840m³ volume) will be removed off site for disposal in a licenced facility. The gravel from the yard surrounding the garage and concrete tank will be dug up and kept to one side pending testing for contamination and then will be re-used as filling on site if it is suitable. If not, the material will be treated in an authorised facility. The garage & concrete tank bund are detailed on drawing No. 21-21-23 attached in Appendix A.

Phase 2 – The soil (77,804.15m³) will be removed from the Site and will be infilled to fields to the west of the site. Ref. drawing 21-21-18 in Appendix A. A new weighbridge will be installed beside the existing rendering weighbridge, this will be separated with a fence and signage to direct traffic on site. There will be a new two-way road constructed on site separated from the rendering plant with a fence to access the proposed AD plant area. 21,500 tonnes approx. of stone filling and concrete will be brought to the site to create a base for building the road, yard, tank foundations, walls of the reception hall and AD tanks and bunded walls.

Phase 3 - The AD plant intake buildings, tanks, bund wall and road will be constructed. The intake building will be of steel frame construction, shuttered concrete walls, olive green insulated Kingspan sheeting and purloins. The olive green sheeting was selected to blend the colours into the agricultural surroundings around the site and therefore cause less visual impact. The AD tank bund will be a concrete wall construction with a concrete floor, the roadway to the plant will be a constructed from concrete. The intake tanks and glycerine tank will be constructed from stainless steel. The buffer tank, digesters and digestate storage tanks will be constructed from concrete. The pasteurisation tank will be constructed from glass lined steel.

The Proposed Development comprises of:

- Anaerobic Digestion (AD) Plant Reception building (food waste reception)
- Reception hall for solid feedstock (silage & Maize)
- Borger Fibre separation for digestate
- Workshop
- Office, control room, toilets and changing rooms
- Biobed
- 4 No. Liquid reception tank- 113m³ tanks
- 1 No. Glycerine tank- 78m³
- 1 No. Buffer tank – 983m³
- 1 No. Pasteurisation tank - 247m³
- 2 No. Digesters - 3682m³
- 2 No. Digestate Storage tanks – 2500m³
- Gas Flare
- Biogas Combined Heat and Power (CHP) Plant

Refer to Site Layout Plan drawing 21-21-14 in Appendix A.

Phase 4 – The fields where the soil will be deposited will be re-seeded and planted with grass and returned to agricultural use. Please see filling area on drawing ref. 21-21-18 in Appendix A.

10.4.3 Operational Phase

The existing facility will continue to operate as an animal by-product rendering plant, a biodiesel production facility and a solar farm, with the addition of an anaerobic digestion facility. The existing facility is currently operational under IE Licence (P0037-04) and Greenhouse Gas Permit (GHG Permit) No. IE-GHG123-10405-03.

An application for a review of the existing IE License will be made to the Environmental Protection Agency as the introduction of an anaerobic digestion facility will result in changes to the environmental emissions from the facility. The GHG Permit may also need to be revised, and the EMS will be updated accordingly.

The Proposed Development will be operated in accordance with the requirements of the planning grant conditions and updated requirements of the reviewed IE Licence, GHG Permit, EMS and Safety Report for the facility.

10.5 Potential Impact of the Proposed Development

10.5.1 Potential Landscape Impact

Landscape effects – Degree of change to physical characteristics or elements of the landscape, which together form the character of that landscape, e.g. landform, vegetation, boundaries, buildings etc.

10.5.1.1 Construction Phase

During the Construction Phase the site landscape will undergo a change. Expected landscape impacts include:

Some large, brightly coloured earth moving equipment, construction machinery, cranes operating on the site and construction site offices/facilities, security lighting and fencing etc;

Change in colour and form of topography due to the excavation, removal and storage of soils;

Creation of areas of hard surfaces (car parks, paths, roads);

Construction of proposed new buildings;

Land deposit and change of elevations in the fields to the west, on the site of the Proposed Development;

Removal of wet grassland and some hedgerows.

These landscape impacts will reduce rapidly with distance from the site boundaries, and intervening hedgerows, and existing buildings will further reduce the impacts to minor to negligible, negative and short term for the Construction Phase.

It is concluded that the Proposed Development will, therefore, have a minor, negative and short to medium-term impact on the landscape character of the site during the Construction Phase.

10.5.1.2 Operational Phase

It is not expected that the Operational Phase of the Proposed Development will cause any negative impact.

The potential landscape impacts will be neutral and long-term as a result of the Proposed Development. It is considered, in the context of the Development Plan zoning, the Proposed Development is a continuation of existing industrial site.

10.5.2 Visual Impacts

10.5.2.1 Visual Receptor Sensitivity

In terms of visual sensitivity, the receptors will be categorised as those being:

Typically, non-designated viewpoints of modest visual amenity representing local residential receptors. These are deemed to be of **Medium-low** visual sensitivity.

Typically, single designation viewpoints representing tourists / visitors or local residents involved in recreational or amenity based activity where an appreciation of the visual setting is integral to the experience and pleasant views are afforded. These are deemed to be of **Medium** visual sensitivity.

Typically, an amenity and/or heritage feature viewpoint with aesthetic and/or extensive views, but without any scenic designation. This is deemed to be of **Medium** visual sensitivity.

Typically, a scenic designation viewpoint, in combination with a separate heritage/amenity designation. These are deemed to be of **High-Medium** visual sensitivity.

10.5.2.2 Magnitude of Visual Impact

The assessment of visual impacts at each of the selected viewpoints is aided by photomontages of the Proposed Development. Photomontages are a 'photo-real' depiction of the scheme within the view, utilising a rendered three-dimensional model of the development, which has been geo-referenced to allow accurate placement and scale. For each viewpoint, the following images have been produced:

Existing View

Montage View

The baseline photography was captured in July 2022 and thus, deciduous trees are with full leaf. In this instance, seasonal factors are not considered to contribute to material differences in the visual impacts assessed below and any likely variations will be described.

10.5.2.3 Viewpoint Locations

A total of 10 viewpoint locations were selected for use in the photomontage assessment of visual effects. The choice of viewpoint locations is influenced by both the views available and the type of viewer. Choice of viewpoint locations aimed to incorporate prominent visual receptors where there is likely to be either residential receptors or regular motor traffic. The choice of viewpoint locations should cover locations where the site will be completely visible as well as partially visible and the choice of viewpoint locations in this instance did so.



Figure 10-13: Proposed viewpoints. Viewing altitude: 10.00 km. Source: Google Earth

10.5.2.4 Viewpoint Assessment

Whether a visual effect is deemed to be positive, negative or neutral involves a degree of subjectivity. What appears to be a positive effect to one viewer could be deemed to be a negative effect by another viewer. All predicted visual effects of the viewpoints below are long term and direct effects.

The images that follow intend to represent, as accurately as possible, the physical and visual characteristics of the Proposed Development from a variety of distances and directions around the site. Priority was given to views from the public domain, such as main roads and to views from potentially sensitive locations such as residential areas. The location of all views is shown on Figure 10-13. For each of the visuals, an existing and a proposed view is presented and where the Proposed Development is not visible in the view the elements of the development will be shown as a red outline.

Viewpoint 01



Figure 10-14 Viewpoint 01, College Road, Existing View



Figure 10-15 Viewpoint 01, College Road, Proposed View

Viewpoint 1 (Figures 10-14 and 10-15)	
Location	College Road, Nobber
Coordinates	Latitude & Longitude:53.503029, -6.45758
Viewing distance to site boundary	260m
Direction of View	North
Existing View	Fairly homogeneous view from College Road to the north. Tree-shrub hedges on both sides of the road, with different species, allow a closed view, with the road on the horizon line.
Value of the View	Medium
Visual Susceptibility	Medium
Visual Sensitivity	Medium
Magnitude of Visual Changes	None
Duration of Effects	Temporary
Quality of Effects	Neutral
Significance of Landscape and Visual Effects	Imperceptible
Conclusion or Visual Impact of Proposed Development	The Proposed Development has no visual impact, visibility being blocked by existing vegetation. The silhouette of the Proposed Development is represented in the image by a red line.

Viewpoint 02



Figure 10-16 Viewpoint 02, Unnamed road, Existing View



Figure 10-17 Viewpoint 02, Unnamed road, Proposed View

Viewpoint 2 (Figures 10-16 and 10-17)	
Location	Unnamed road
Coordinates	Latitude & Longitude:53.503902, -6.45229
Viewing distance to site boundary	140m
Direction of View	West
Existing View	View to the east front of the site, from an unnamed road that gives access to a small industrial building. The current view is already marked by the 2 towers and by other buildings of the site. It is also marked by the shrub hedge that limits the separation of the fields and between the fields and the road and by a large tree that, in this perspective, gives some framework to the buildings of the site.
Value of the View	Medium-Low
Visual Susceptibility	Medium-High
Visual Sensitivity	Medium
Magnitude of Visual Changes	None
Duration of Effects	Temporary
Quality of Effects	Neutral
Significance of Landscape and Visual Effects	Imperceptible
Conclusion or Visual Impact of Proposed Development	The Proposed Development has no visual impact, visibility being blocked by existing vegetation. The silhouette of the Proposed Development is represented in the image by a red line.

Viewpoint 03



Base 3

Photo Description: Unnamed road, looking south/southwest

Distance to Site: 100m

Camera: Nikon D810

Lens: 24mm

Date: 12/07/2022

Time: 10:43

Figure 10-18 Viewpoint 03, Unnamed road, Existing View



Proposed 3

Photo Description: Unnamed road, looking south/southwest

Distance to Site: 100m

Camera: Nikon D810

Lens: 24mm

Date: 12/07/2022

Time: 10:43

Figure 10-19 Viewpoint 03, Unnamed road, Proposed View

Viewpoint 3 (Figures 10-18 and 10-19)	
Location	Unnamed road
Coordinates	Latitude & Longitude: 53.504657, -6.45843
Viewing distance to site boundary	100m
Direction of View	South / Southwest
Existing View	Viewed from a point slightly further north than the V5 viewpoint, at the intersection of an unnamed road that connects to an industrial warehouse. The view from this point is even framed by two medium-sized deciduous trees that frame the industrial buildings of the site between them. There is also a bush hedge that partially hides the site, with an elevation of land still visible before the start of the buildings.
Value of the View	Medium
Visual Susceptibility	Medium
Visual Sensitivity	Medium-Low
Magnitude of Visual Changes	Low
Duration of Effects	Short to Medium-term
Quality of Effects	Neutral
Significance of Landscape and Visual Effects	Minor
Conclusion or Visual Impact of Proposed Development	The visual impact of the Proposed Development is minor, as the new buildings have the same or smaller scale and height than the existing buildings. The neutral color used for the new buildings also helps to minimize the visual impact, and these are partially hidden either by existing buildings or by vegetation. The tree in the foreground from this point of view (the one on the far right) is in bad sanitary conditions (possibly dead), so it should be removed and replaced by one of the same species. The hedge can also be reinforced with more trees or large shrubs to emphasize the visual impact mitigation of the entire site.

Viewpoint 4



Figure 10-20 Viewpoint 4, College Road, Nobber, Existing View



Figure 10-21 Viewpoint 4, College Road, Nobber, Proposed View

Viewpoint 4 (Figures 10-20 and 10-21)	
Location	College Road, Nobber
Coordinates	Latitude & Longitude:53.51758, -6.452105
Viewing distance to site boundary	840m
Direction of View	South
Existing View	View from College Road to South. Great visual amplitude, in a landscape dominated by agricultural fields intersected by shrub-hedges but with some tree lines as well. In a more distant visual plane, the industrial buildings are visible, being partially hidden by a hedgerow with some mature trees.
Value of the View	Medium
Visual Susceptibility	High
Visual Sensitivity	High
Magnitude of Visual Changes	Negligible
Duration of Effects	Short-term
Quality of Effects	Neutral
Significance of Landscape and Visual Effects	Minor
Conclusion or Visual Impact of Proposed Development	The visual impact of the Proposed Development is minor, with only part of the new buildings being visible, but with some difficulty. The color chosen for the new buildings helps to mitigate this visual impact, as they have lower height than the existing Biodiesel building, which still dominates this point of view as it is the most disruptive element in relation to the rest of the landscape. In the short-term, the growth of vegetation will completely hide the new buildings as well as the existing ones (with the exception of the Biodiesel building, where this concealment will be in the medium term).

Viewpoint 5



Figure 10-22 Viewpoint 5, Whitewood House, Existing View



Figure 10-23 Viewpoint 5, Whitewood House, Proposed View

Viewpoint 5 (Figures 10-22 and 10-23)	
Location	Whitewood House
Coordinates	Latitude & Longitude: 53.502726, -6.465518
Viewing distance to site boundary	2000m
Direction of View	East
Existing View	Great visual amplitude in a view of recognized value (protected view). The entire field of view is oriented to the east and is framed by large tree vegetation on both sides of the view. The entire background scenario is also occupied by vegetation, with no disturbing elements of this landscape being visible.
Value of the View	High
Visual Susceptibility	High
Visual Sensitivity	High
Magnitude of Visual Changes	None
Duration of Effects	Temporary
Quality of Effects	Neutral
Significance of Landscape and Visual Effects	Imperceptible
Conclusion or Visual Impact of Proposed Development	The Proposed Development has no visual impact, visibility being blocked by existing vegetation. The silhouette of the Proposed Development is represented in the image by a red line.

Viewpoint 6



Figure 10-24 Viewpoint 6, R162, Germanagh, Existing View



Figure 10-25 Viewpoint 6, R162, Germanagh, Proposed View

Viewpoint 6 (Figures 10-24 and 10-25)	
Location	R162, Germanagh
Coordinates	Latitude & Longitude:53.504703, -6.463221
Viewing distance to site boundary	1350m
Direction of View	East
Existing View	View of the R162 in the <i>Germanagh</i> settlement, West of the Proposed Development. Visibility to the East is very limited by the shrub hedge next to the road, with only a few trees visible behind this hedge and, in a more distant visual plane, part of an arboreal hedge. The electricity pole in the foreground negatively marks this point of view.
Value of the View	Medium
Visual Susceptibility	Medium to Low
Visual Sensitivity	Medium
Magnitude of Visual Changes	None
Duration of Effects	Temporary
Quality of Effects	Neutral
Significance of Landscape and Visual Effects	Imperceptible
Conclusion or Visual Impact of Proposed Development	The Proposed Development has no visual impact, visibility being blocked by existing building and vegetation. The silhouette of the Proposed Development is represented in the image by a red line.

Viewpoint 7



Figure 10-26 Viewpoint 7, Unnamed road, Existing View



Figure 10-27 Viewpoint 7, Unnamed road, Proposed View

Viewpoint 7 (Figures 10-26 and 10-27)	
Location	Unnamed road
Coordinates	Latitude & Longitude:53.512358, -6.443585
Viewing distance to site boundary	1400m
Direction of View	South/Southwest
Existing View	View from an unnamed road to the south, with the Proposed Development site visible. This point of view is about 40 meters higher than the Proposed Development, with the extension of the existing site being visible, namely the higher industrial buildings. Open fields, in the foreground, mark this point of view, with tree hedges separating them from the site. It is still visible in a more distant visual plane, part of a hill occupied mostly by vegetation.
Value of the View	High-Medium
Visual Susceptibility	Medium
Visual Sensitivity	Medium
Magnitude of Visual Changes	Negligible
Duration of Effects	Short-term
Quality of Effects	Neutral
Significance of Landscape and Visual Effects	Minor
Conclusion or Visual Impact of Proposed Development	The visual impact of the Proposed Development is minor, with the new buildings having a neutral insertion in the rest of the industrial complex. With the chosen color, they end up being mimicked in the rest of the natural landscape. With the growth of hedgerows virtually all visual impact of the industrial site will be mitigated, as the one of the new buildings will be in the short term.

Viewpoint 8



Figure 10-28 Viewpoint 8, Cregg Road, Existing View



Figure 10-29 Viewpoint 8, Cregg Road, Proposed View

Viewpoint 8 (Figures 10-28 and 10-29)	
Location	Cregg Road
Coordinates	Latitude & Longitude:53.512224, -6.434857
Viewing distance to site boundary	1900m
Direction of View	Southwest
Existing View	View from Cregg Road to the West. A small shrub-hedge is visible next to the road and, behind, an open field with an arboreal hedge in the background.
Value of the View	Medium
Visual Susceptibility	Medium
Visual Sensitivity	Medium-Low
Magnitude of Visual Changes	None
Duration of Effects	Temporary
Quality of Effects	Neutral
Significance of Landscape and Visual Effects	Imperceptible
Conclusion or Visual Impact of Proposed Development	The Proposed Development has no visual impact, visibility being blocked by existing vegetation. The silhouette of the Proposed Development is represented in the image by a red line.

Viewpoint 9



Figure 10-30 Viewpoint 9, R162 Nobber, Existing View



Figure 10-31 Viewpoint 9, R162 Nobber, Proposed View

Viewpoint 9 (Figures 10-30 and 10-31)	
Location	R162, Nobber
Coordinates	Latitude & Longitude:53.49786, -6.443130
Viewing distance to site boundary	2800m
Direction of View	South / Southeast
Existing View	View from the R162 road to the north, near the village of Nobber The horizon line is marked by the road and framed by the existence of shrubby hedges on both sides of the road. Behind the hedges it is still possible to see large trees, and there is still a flowerbed with young trees planted between the road and the sidewalk on the left side of the image. In the background it is possible to see some dwellings, in the village of Nobber.
Value of the View	Medium to Low
Visual Susceptibility	Low
Visual Sensitivity	Medium-Low
Magnitude of Visual Changes	None
Duration of Effects	Temporary
Quality of Effects	Neutral
Significance of Landscape and Visual Effects	Imperceptible
Conclusion or Visual Impact of Proposed Development	The Proposed Development has no visual impact, visibility being blocked by existing vegetation. The silhouette of the Proposed Development is represented in the image by a red line.

Viewpoint 10



Figure 10-32 Viewpoint 10, R162, Existing View



Figure 10-33 Viewpoint 10, R162, Proposed View

Viewpoint 10 (Figures 10-32 and 10-33)	
Location	R162
Coordinates	Latitude & Longitude:53.495137, -6.453941
Viewing distance to site boundary	1500m
Direction of View	South / Southwest
Existing View	View from the R162 with the bush-hedge by the road and the tree hedges in the background preventing virtually all visibility to the North.
Value of the View	Low
Visual Susceptibility	Low
Visual Sensitivity	Medium-Low
Magnitude of Visual Changes	None
Duration of Effects	Temporary
Quality of Effects	Neutral
Significance of Landscape and Visual Effects	Imperceptible
Conclusion or Visual Impact of Proposed Development	The Proposed Development has no visual impact, visibility being blocked by existing vegetation. The silhouette of the Proposed Development is represented in the image by a red line.

10.5.2.5 Visual Impacts Effects Conclusion

After evaluating the visual impact on these 10 points, Table 10-13 summarizes 3 of these criteria (Duration, Quality and Significance).

Table 10-13 Visual Impact Assessment Results

Duration of the Effects	Viewpoints	Total	%
Permanent	—	0	0%
Long-term to Permanent	—	0	0%
Long-term	—	0	0%
Medium to Long-term	—	0	0%
Medium-term	—	0	0%
Short to Medium-term	3	1	8%
Short-term	4,7	2	17%
Temporary	1, 2, 5, 6, 8, 9, 10	7	58%
Quality of the Effects			
Beneficial	—	0	0%
Neutral to Beneficial	—	0	0%
Neutral	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	0	100%
Neutral to Negative	—	0	0%
Negative	—	0	0%
Significance of Landscape and Visual Effects			
Imperceptible	1, 2, 5, 6, 8, 9, 10	7	58%
Minor to Imperceptible	—	0	0%
Minor	3, 4, 7	3	25%
Minor to Moderate	—	0	0%
Moderate	—	0	0%
Moderate to Significant	—	0	0%
Significant	—	0	0%
Profound	—	0	0%

It is concluded that in 58% of these viewpoints the visual impacts from the Proposed Development will be temporary, with only 25% either short term or short to medium-term.

With regard to quality, 100% of the points are considered neutral.

Finally, 58% of the points are considered to have an imperceptible impact and 25% a minor impact.

In the viewpoints considered as having a minor impact, it could be important to understand what mitigation measures to mitigate the visual impacts. Many of these measures will arise as

a result of the natural growth of existing vegetation, outside the Proposed Development site, namely the hedgerows, around the agricultural fields, and shrub hedges along the roads.

10.5.3 Conclusion

This Chapter has related the Landscape Impact Assessment (LIA) and the Visual Impact Assessment (VIA) in respect of a Proposed Development to construct an Anaerobic Digestion (AD) Plant to produce green Biogas, at College Road, Nobber Co. Meath.

The site comprises of wet grass land bound by on the northeast and northwest side mature hedgerows. The site is located within the North Meath Lakelands County Landscape Character Area which is considered to be of moderate landscape value, low landscape sensitivity and regional landscape importance. The topography of the site and surroundings and the screening nature of existing vegetation means that there are very few locations where parts of the Proposed Development would be visible.

The broader study area also includes four protected views and prospects as set out in the Meath County Development Plan – it was concluded that these views are not affected by the Proposed Development. It also includes 5 protected structures in the vicinity's – it was concluded that the Proposed Development has no visual impact on these structures.

The site of the Proposed Development was considered to have a Medium Landscape Value, a Medium Landscape Susceptibility, a Medium to High-Medium Landscape Sensitivity and that the Proposed Development changes to landscape characteristics are Medium to High. In terms of the LIA some changes will occur on the landscape of the site, mainly with the removal of existing vegetation, earth movements and general construction activity to the implementation of the proposed buildings. These changes will by somewhat contained with the maintenance of the existing hedgerows on the outskirts of the Proposed Development.

In what refers to the VIA, 10 viewpoints were assessed, chosen by sensitivity of the views through site visits and Viewshed's analysis. As it can be seen by the conclusion on the visual effects (Chapter 10.5.2.5) the visual impacts of the Proposed Development are very limited, being the ones that have visual impact being considered minor.

As can be seen in Figure 10-34 the new buildings (in orange) will be built to the west of the existing buildings (in blue). Thus, the visual impact of most of the identified visual receptors is practically null since the height projected for these new buildings is lower than the height of existing buildings. The part where these could be more visible would be the West of the Proposed Development site but as they are framed by a matrix of existing hedgerows along the agricultural fields this visibility is low or non-existent.

The proposed buildings end up fitting into the existing industrial complex, being neutral in terms of their insertion in this context.



Figure 10-34 Relation of the existing buildings, in blue, with the Proposed Development , in orange

10.5.4 Potential Cumulative Impacts

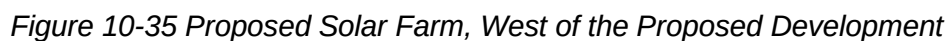
Cumulative impacts can be described as impacts that result from changes caused by a development in conjunction with other past, present or reasonably foreseeable actions.

A solar farm is constructed, west of the Development site, covering an area of around 75,000 square meters.

In terms of landscape impact, it will be high and long-term, since there will be a change from an agricultural land occupation to a mostly industrial occupation, despite the soil permeability being negligible since the panels will be elevated, with the exception of the settlement pillars and proposed technical zones. The biggest impact in terms of landscape will be the removal of the central hedgerows, two with a north/south orientation, with around 300 meters each, and one with an east/west orientation with around 80 meters.

The maintenance of the existing peripheral hedgerows around the solar camp site will minimize the visual impact of this installation, since the trees that make up these hedges are already mature and with a considerable height. The visual impact will therefore be low to neutral in the long term.

The distance between this solar farm and the Proposed Development (about 60 meters to the closest building) also helps to distinguish these two complexes, with different typologies. There are also 2 hedgerows between this distance, as well as a hedge that flanks the road to the south, which connects the Proposed Development to solar farm.



In the absence of the Proposed Development, the current plant would continue in operation and therefore the appearance of the existing site would not change. The site of the proposed new buildings would remain as grassland. The current adverse visual impact of the plant would continue, without the screening effect of the recommended mitigation planting.

The key landscape and visual mitigation measures used during the Construction Phase have been incorporated into the layout of the site and design of the proposed buildings. The buildings will be clad in a similar neutral coloured material as the existing and will have a similar horizontal emphasis. The set back of the buildings from the site boundary and the positioning of the new buildings along extensions of existing building lines helps to link the Proposed Development with the existing and localises the visual and landscape impacts.

The greatest mitigation measure identified is the maintenance of the existing hedgerows, namely to the North and South of the site and also to the West, in the transition to the area where the construction lands will be deposited.

However, it is essential to ensure the good condition of these hedgerows, protecting them from any negative action that may occur during the Construction Phase. A professional arborist should be hired to ensure the assessment of these hedges for an extended period, during the Construction Phase and beyond.

The possibility of reformulating the hedge to the East, should also be considered, since it is at this edge of the site where there is a greater visual impact, due to the fact that there is only one shrub hedge of medium size. The planting of trees should be considered for a better framing of existing and proposed buildings, creating a tree-shrub hedge.

This is highlighted in the description of Viewpoint 3, where a tree in a poor phytosanitary state was identified, and that should be replaced by a tree of the same species.

Figure 10-36 identifies the sections where the existing hedges should be reinforced (North and East), with the planting of tree of the same species as the existing ones, in order to maintain the uniformity of the hedges. The planting compass should be 7.5 meters in 7.5 meters between each trunk. This can be between every 2 existing trees, or just with new trees. The scheme in figure 10-36 must be confirmed on the site, with the marking of each new tree.

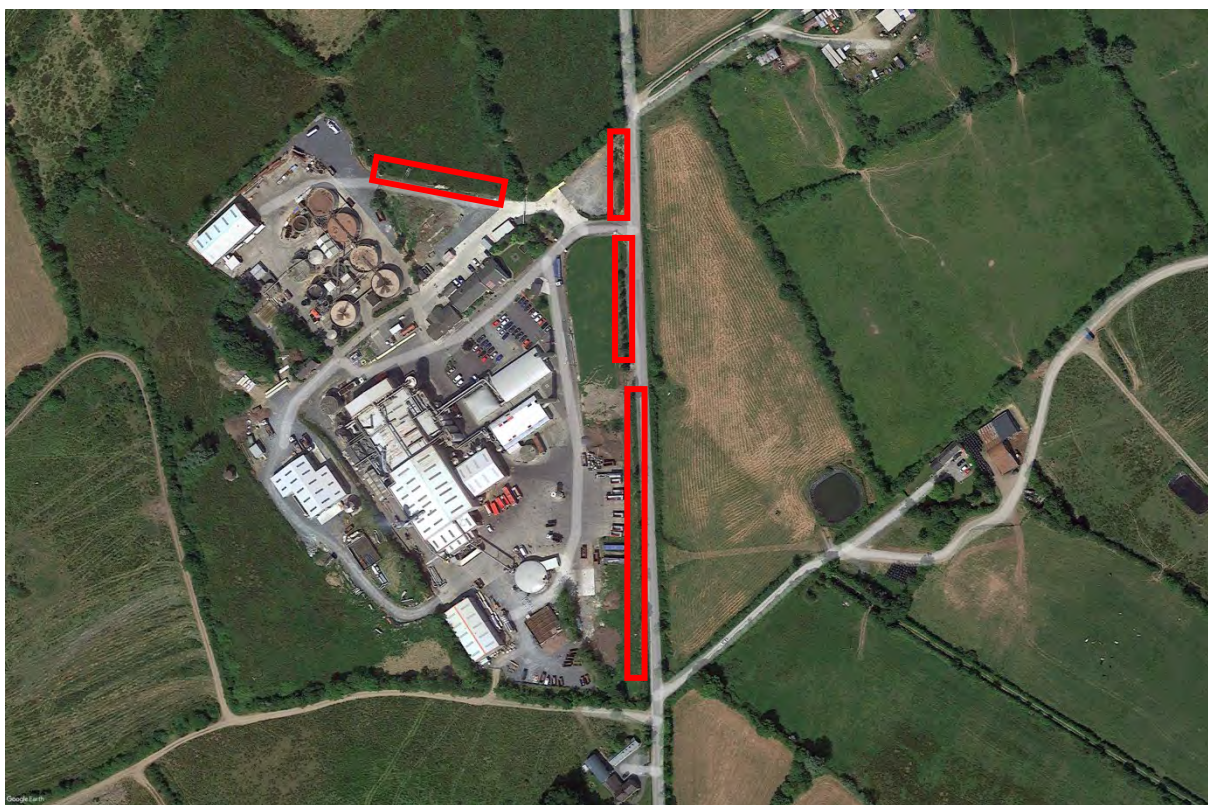


Figure 10-36 Proposed reinforcement of East and North hedges

10.6.1 “Worst Case” Scenario

It is predicted that the ‘worst case’ scenario of potential visual impact will occur during the winter months when the deciduous vegetation is in a state of dormancy. This will result in the reduced screening effect of deciduous vegetation and potentially increased views of the development. The accompanying photographic survey demonstrates such winter conditions. The Proposed Development is also likely to be most visible during clear weather conditions. The proposed non-reflective grey paint on the exterior of the proposed stack will visually blend with the existing landscape.

10.7 Residual Impacts

Residual Impacts are defined as *‘effects that are predicted to remain after all assessments and mitigation measures’*. They are the remaining *‘environmental costs’* of a project and are the final or intended effects of a development after mitigation measures have been applied to avoid or reduce adverse impacts. Potential residual impacts from the Proposed Development were considered as part of this environmental assessment. No negative residual impacts in the context of landscape and visual impact are anticipated regarding this Proposed Development.

There would be no effects on the landscape character of Brittas Estate or Whitewood designed landscapes.

On completion, the disturbance and change associated with the construction stage will be gradually altered by the influence that the new development establishes on the character and visual context of its environs. In this regard it is considered that the Proposed Development of the site will have a residual minor local impact on the landscape character of its environs and reduce rapidly with distance to impacts which are negligible, neutral long-term impacts.

10.8 Monitoring

10.8.1 Construction Phase

It is considered that the initial development of the site, including removal of trees and hedgerows and general construction activity will result in overall residual effects that are moderate, negative temporary impacts and ongoing residual effects that will be moderate, neutral short-term impacts by the closest receptors and reduce rapidly with distance to impacts which are minor/negligible, neutral short-term impacts.

There are no landscape tender drawings or specifications included on this project. Given the importance of hedgerows in mitigating landscape and visual impacts of the industrial site, special attention must be paid during the Construction Phase to the preservation of these elements and their verification and maintenance. Therefore, during the construction works, a professionally qualified Arboriculturist is recommended to be retained by the principal contractor or site manager to monitor and advice on any works within the RPA of retained trees to ensure successful tree retention and planning compliance.

10.8.2 Operational Phase

There is no landscape management plan foreseen.

However, the verification and maintenance of shrub/tree hedges should continue over time. It may be necessary to reinforce some tree/shrub hedges especially on the periphery of the Proposed Development site, as there are some gaps especially in the hedge on the east.

10.9 Interactions

Interactions between Landscape and Visual Impact and other aspects of this Environmental Impact Assessment Report have been considered and are detailed below.

10.9.1 Population and Human Health

It is not considered that the Proposed Development by virtue of its visual appearance and in the context of the proposed zoning of the site of the Proposed Development and the agricultural landscape, will cause any issues for the residential local population.

10.9.2 Biodiversity

The proposed mitigation measures on the reinforcement of the existing green structure of the site interacts with the biodiversity and ecology through the changes that will occur to the existing habitats and flora at the site. The Proposed Development will entail losses in terms of vegetation at the site, which in turn will affect the ecology of the site. The site in its current condition is not of high ecological value, and the proposed mitigation measures will not result in significant adverse effects in this regard.

10.9.3 Archaeology and Cultural Heritage

As there are no known archaeological or architectural remains found during the desk top survey as well as the walkover survey, it is not predicted that any changes in landscape or visual impact will affect in any way the archaeology of the area.

Within a 2km radius of the development Site there are 28 no. recorded archaeological monuments. The Proposed Development has no visual impact in any of this 28 recorded archaeological monuments.

There is a Ringfort – rath (ME005-054), located between the eastern and western portions of the site but is outside the red line boundary, but this site will not be directly affected by the Proposed Development and there will be no visual impacts on sightings from and to the ringfort when the Anaerobic Digestion plant is constructed. This was proved by a walkover survey, carried out to assess the upstanding remains of the ringfort ME005-054 as well to assess the development lands and any possible archaeological remains that may be visible.

10.10 Difficulties Encountered When Compiling

No difficulties were encountered in the preparation of this Chapter.

10.11 References

Meath County Development Plan 2021-2027

The Landscape Institute, 'Guidelines for Landscape and Visual Impact Assessment', (3rd Edition) 2013

Technical Information Note on Townscape Character Assessment, 2016, published by the Landscape Institute

'The Countryside Agency and Scottish Natural Heritage – Landscape Character Assessment Guidance for England and Scotland' 2002

Environmental Protection Agency (EPA) Guidelines on the Information to be contained in Environmental Impact Assessment Reports (2022)

EPA Advice notes on current practice in the preparation of environment impact statements (2003)

EPA - Environmental Management Guidelines - Environmental Management in the Extractive Industry

Section 177F of the Planning and Development Act 2000 (as amended)

A Handbook on Environmental Impact Assessment, Scottish Natural Heritage

Journal of Environmental Psychology, Visual Thresholds for Detection, Recognition and Visual Impact in Landscape Settings (H. Shang and I.D. Bishop, 2000)

Landscape design with plants, Brian Clouston

Atlas of the Irish rural landscape, Aalen, Whelen, Stout

11 ARCHAEOLOGY AND CULTURAL HERITAGE

11.1 Introduction

This Chapter of the EIAR describes and assesses the potential effects of the Proposed Development, located at College Road, Nobber, Co. Meath, on Archaeology, Cultural Heritage and Architectural Heritage, and was prepared by Louise Hewitt, Environmental Consultant with Enviroguide Consulting and Ellen O'Carroll, Archaeological Consultancy.

The Site of the Proposed Development is currently operating as an animal rendering plant. The main raw materials are inputted into the existing plant and cooked and separated to produce tallow and meat and bone meal (MBM). These two products produced from the process are renewable indigenous, carbon neutral fuels. The site also has a Biodiesel facility that produces 25,000 tonnes per annum of biodiesel. Tallow produced from its rendering operations is used as a feedstock in the biodiesel facility. A solar farm has also been constructed at the site which will produce 3 million Kwh of 100% green electricity for consumption by on site operations. To develop the greener future further at College Proteins we are proposing to construct an Anaerobic Digestion plant to produce green Biogas which will offset the use of fossil fuels on site, therefore reducing the companies carbon footprint.

The aim of this Chapter is to assess the baseline Archaeological, Architectural and Cultural Heritage conditions of the surrounding environment for the Proposed Development, in order to determine any significant impacts that may arise as a result of the Proposed Development and highlight any potential effects this may have on these resources. In addition, if deemed appropriate, mitigation measures are recommended, in accordance with the policies of Meath County Council, the Department of Culture, Heritage, and the Gaeltacht, National Monuments Acts 1930-2004 and best practice guidelines.

The assessment comprised a paper survey and cartographic research as well as a site walkover and visual impact assessment of RMP sites located close to the development site. Sources used for the desk-based assessment were the Record of Monument and Places (RMP), Department of Culture, Heritage and the Gaeltacht (DoCHG), the National Museum of Ireland topographical files, the Meath County Development Plan, www.excavations.ie and various literature resources.

The RMP is comprised of manuals listing all known archaeological sites and monuments in each county with accompanying maps locating these sites and additional information from archaeological excavations and assessment records in the intervening period. All sites included in the RMP are protected under the National Monuments Acts (1930-2004). The record is continually updated with information from the results of on-going research and excavation, as new sites are discovered. The types of Recorded National Monuments, both within the study area and in the immediate vicinity, have served to inform the author in the development of a hypothesis as to the potential sub-surface archaeology within the study area. This is backed up by the results of previous archaeological excavations and investigations both within and without the study area published in excavation summary reports for each year (www.excavations.ie).

The National Museum maintains a register of finds of archaeological objects from each townland in the twenty-six counties of the Republic of Ireland. Detailed records are held for each find, many of which are regarded as 'stray finds' having been recovered by farmers in the course of ploughing or other such activities and received to the museum in accordance with national monuments legislation. The records contain information such as type and location of find, correspondence between the museum and the finder, and, where applicable, results of excavations carried out by museum staff at the location of the finds.

The Meath County Development Plan (2021-2027) has a list of protected structures which has established the preservation of these structures including their settings. The Record of Protected Structures was established under the Local Government (Planning and Development) Act 2000 and comprises a listing of structures of architectural, historical, archaeological, artistic, cultural, scientific, social, or technical interest, along with accompanying maps. It also safeguards the protected structures along with their curtilage against any development without the express permission of the Minister for the Department of Arts Heritage and the Gaeltacht.

A number of literary sources and Cartographic maps were also consulted. Literary sources are a valuable means of completing the written archaeological record of an area and gaining insight into the history of the environs of the proposed works. The principal sources consulted are listed in the bibliography at the end of this Chapter. Cartographic maps consulted were the OS 6-inch first edition mapping (1837-1842), 25-inch mapping series (1889-1913) and third edition (1909) for Co. Meath.

11.1.1 Quality Assurance and Competence

This Chapter was prepared by Louise Hewitt, Environmental Consultants, Enviroguide Consulting and Ellen O Carroll, Archaeological Consultancy. Louise has a Master of Science (Hons) in Environmental Resource Management from University College Dublin and a Bachelor of Science (Hons) in Biology from Maynooth University. Louise has experience preparing Environmental Impact Assessment (EIA) Screening Reports, Introduction, Population & Human Health and Archaeology & Cultural Heritage Chapters of EIARs.

Dr. Ellen OCarroll has a Masters (Hons) in Archaeological Methods and Practices from University College Cork and a PhD from Trinity College Dublin in Environmental Archaeological sampling using botanical techniques. She also completed a Diploma in EIA management from UCD and has undertaken, managed and co-ordinated a variety of Archaeological and Architectural sections of EIA's and SEA's.

11.1.2 Project Description

The Proposed Development (as detailed in Chapter 2 of this EIAR) will comprise of the following components:

- Anaerobic Digestion (AD) Plant Reception building (food waste reception)
- Reception hall for solid feedstock (silage & Maize)
- Borger Fibre separation for digestate
- Workshop
- Office, control room, toilets and changing rooms
- Biobed

- 4 No. Liquid reception tank- 113m³ tanks
- 1 No. Glycerine tank- 78m³
- 1 No. Buffer tank – 983m³
- 1 No. Pasteurisation tank - 247m³
- 2 No. Digesters - 3682m³
- 2 No. Digestate Storage tanks – 2500m³
- Gas Flare
- Biogas Combined Heat and Power (CHP) Plant

11.2 Study Methodology

11.2.1 Guidance and Legislation

The following legislation and guidance documents were consulted as part of this assessment. This legislation makes up the main legal mechanisms by which Archaeological, Architectural and Cultural Heritage resources are protected in Ireland.

- National Monuments Act, 1930-2014;
- Heritage Act, 1995;
- Architectural Heritage and Historic Properties Act, 1999;
- Local Government (Planning and Development) Act, 2000
- The Planning and Development (Strategic Infrastructure) Act, 2006;
- EPA 'Advice Notes for preparing Environmental Impact Statements' (Draft 2015);
- EPA 'Guidelines on the Information to be Contained in Environmental Impact Statements' (EPA, 2002);
- Frameworks and Principles for the Protection of the Archaeological Heritage, 1999, (formerly) Department of Arts, Heritage, Gaeltacht, and Islands.
- Architectural Heritage Protection: Guidelines for Planning Authorities, 2011, (formerly) Department of Arts, Heritage, and the Gaeltacht.

The assessment contained in this Chapter has involved a desktop study / paper survey which considered all available archaeological, architectural, historical, and cartographic sources. This information was used in order to assess any potential impact on the receiving environment and to identify measures to ensure the conservation of any monuments or features.

This archaeological assessment also includes a site walkover that took place on 8th September 2022, as well as considering the impact of the Proposed Development on the visual amenity of ringfort ME005-054. This Visual Impact Assessment of the Proposed Development was carried out by E O'Carroll following a site visit, with all views to the site, and from the site to other Monuments, taken into consideration.

11.2.2 Desk Study

The following archaeological, historical and cartographic sources were examined as part of the paper study:

Records of Monuments and Places (RMP) is a list of monuments recorded under Section 12 (1) of the National Monuments (Amendment) Act 1994.

Sites and Monuments Record (SMR) is a national baseline database of known archaeological sites and monuments in Ireland.

Topographical Files of the National Museum of Ireland is an archive containing records of all finds logged by the National Museum.

Aerial Photographs provide an important archaeological resource in terms of detecting new sites and identifying the exact location and extent of known sites. These features can be identified through surface anomalies such as earthworks or distinct vegetation marks.

Excavations Bulletin is an annual publication, started in 1970, which summarises all archaeological excavations carried out in Ireland each year (www.excavations.ie).

The National Inventory of Architectural Heritage is a comprehensive database of structures relating to the architectural heritage of Ireland.

Meath County Development Plan contains a list of Architectural Conservation Areas and recorded Protected Structures for County Meath.

Cartographic Sources are important in providing topographical information on areas of archaeological potential as well as tracing land use development within the Proposed Development area.

11.3 The Existing and Receiving Environment (Baseline Situation)

The Proposed Development site is located at College Road, Nobber Co. Meath. The facility at College Road currently operates under an Industrial Emissions Licence from the Environmental Protection Agency register number P0037-04.

The site of the Proposed Development, College Proteins is located to the west of College Road, in the townland of Nobber, Co. Meath (Eircode A82 XT61). The site is approximately 5.31 hectares and can be accessed from the southwest via the R162, or from the northeast via the R165. The town of Nobber, County Meath, lies approximately 3km south of the site of the Proposed Development. The town of Kingscourt, Co. Cavan lies approximately 7km northwest of the site on the R162, the village of Drumconrath, Co. Meath, lies approximately 6km to the east of the site on the R165, and the village of Kilmainhamwood, Co. Meath lies approximately 6km to the west of the site on the L6802. The landscape surrounding the site of the Proposed Development is rural, comprised of grazing and arable lands, divided by frequent mature hedgerows, and scattered with small farms and residential dwellings.

Nobber, the closest village to the development site is notable for its Motte and Bailey (RMP no. ME005:070) which lies at the northern edge of the town. This Motte and Bailey was constructed by Gilbert de Angulo shortly after the Anglo-Norman invasion of 1169 (Bradley 1985). The placename in Irish for Nobber is *An Obair* which translates as 'the work'. Nobber has also been interpreted as meaning 'the marsh'. Indeed the lands surrounding Nobber are noted as being wet and marshy (Joyce 1875).

Pre-historic activity from the area is recorded at Moynagh Lough 1km west of Nobber in the form of Mesolithic stone and flint tools (Bradley 1991). Similarly stray finds from Nobber village which are recorded in the topographical files in the National Museum include three stone axeheads. Moynagh Lough Crannog was again occupied in the Early Bronze Age and Late Bronze Age periods (1900 – 800BC) which is represented by layers of charcoal flecked soil, spreads and the remains of structures or houses with sherds of decorated pottery, scrapers, bone objects and saddle querns (Bradley 1991).

Secular activity in the area during the Early Christian/Medieval period is represented by numerous enclosures, ringforts and the main phase of activity at Moynagh Lough Crannog. Excavations at the crannog site revealed that a substantial crannog was constructed here during the Early Christian period. Four levels of crannog occupation have been uncovered and these are dated dendrochronologically to the seventh and eighth centuries AD (Bradley 1991). Ringforts were one of the most prolific archaeological monuments of this era and each was essentially a farmstead comprising a circular ditched enclosure. There is 18 no. ringfort and 1 no. enclosures located within a 2km radius of the Proposed Development. Ringforts are usually situated on gentle slopes with good views of the surrounding countryside and although they tend to have a dispersed distribution in the landscape, they are occasionally found in pairs. The distribution of ringforts is high in the North Midlands where a high-density band of monuments runs from south Monaghan through Meath, Cavan, Longford and Westmeath to the banks of the Shannon (Stout 1997). The ringfort is surrounded by an earthen bank formed by material thrown up from a fosse or ditch located immediately outside the earthen bank. Generally, ringforts vary in size from 25–50 metres in diameter and are usually circular in plan but can also be oval or D-shaped.

Nobber has a significant Medieval and later Medieval history beginning with the construction of the Motte and Bailey by Gilbert de Angulo just after 1169. The motte and bailey comprises a flat topped earthen mound and a bailey comprising a raised rectangular area (Moore 1987). Subsequently the lands around Nobber were transferred back to the Lacys in 1196 after Gilbert was banned from the area in 1196. The manor of Nobber was then granted to the archbishops of Armagh in 1243 in whose possession it remained for the duration of the Middle Ages. The church at Nobber (ME005:071) was dedicated to St. John the Baptist and the west wall of the church survives to three storeys. During the reign of Elizabeth I, the townland of College was known as 'College Land'. By the 1830s, College townland was the property of Viscount Gormanston and was administered by his agent, Richard Cruice. Leased as farms varying in size from four to thirty Irish acres, the townland was characterised by light soil and yellow clay which held the rain in springtime, forcing the planting of crops to be put off until later in the season (Stirland 2009). The ringfort known as Lissakilleen (ME005:054) was already "nearly defaced" by this time (OS Name Books - O'Donovan 2001). In 1919, College House was built which is detailed on a stone over the doorway into the house.

Figure 11-1 indicates the location of the Proposed Development in relation to archaeological monuments and architectural features.



Figure 11-1: Location of Proposed Development in relation to archaeological monuments and architectural features

11.3.1 RMP files (Record of Monuments and Places) close to the study area

Within a 2km radius of the development Site there are 28 no. recorded archaeological monuments. The monuments are listed below, and identified by townland, RMP number, site type, site status and distance of the site for the Proposed Development. The RMP reference consists of a three-letter county code, the relevant number of the Ordnance Survey six-inch sheet on which the Site is located, and the number of the individual monument. This information is gathered from the online Historic Environment Viewer provided by the Department of Culture, Heritage, and the Gaeltacht. These monuments are discussed above within the context of the historical and archaeological background of the surrounding area. No Recorded Monuments will be affected by the development plans.

RMP No.: ME005-054----

Townland: College

Site Type: Ringfort - rath

Description: Located at the crest of the NW-facing slope of a hill. It is described as 'Lisakilleen' – lios of the Burial Ground – on the OS 6-inch maps. This is a circular grass and rush-covered area (diam. 23m N-S; 21m E-W) that slopes down steeply to the NW. It is defined

by an earthen bank (Wth of base 5m; int. H 0.4m; ext. H 1.1m) S-W-N, and the remains of a fosse (Wth of top 5m; Wth of base 2m; D 0.2m) elsewhere. An entrance is not identified and there is no evidence of burial.

Site visit to assess impacts to RMP ME005-054

A site visit was conducted by E O'Carroll on the 8th of September 2022. The 'site of' the ringfort was located on top of a hill with unobstructed views in all directions. The area was walked, and the only obvious remains of the ringfort was a slight rise in the terrain, denoting a small portion of the bank at its north-western corner and as recorded in recent cartographic sources (Figure 11-3). This elevated soil measured 20 cm in height and ran for approximately 10 metres in length (Figure 11-2).

Archaeological testing (Licence no. 17E0659 & 19E0315)) by E. O'Carroll in an area c. 250m to the NE as well as in the area of the solar farm development located to the north of the ringfort produced no archaeological material (O'Carroll 2017 & 2019).

Distance: This RMP site is located between the eastern and western portions of the site but is outside the red line boundary.

Impact: This site will not be directly affected by the Proposed Development and there will be no visual impacts on sightings from and to the ringfort when the Anaerobic Digestion plant is constructed.



Figure 11-2 Location of ringfort showing the partial remains of the low bank

RMP No.: ME005-053----

Townland: Garmanagh

Site Type: Ringfort – rath

Description: Situated on a slight S-facing slope. This is a circular grass and rush-covered area (diam. 30.5m NW-SE; 28.5m NE-SW) that slopes down to the S. It is defined by an earthen bank (at E: Wth of base 3.5m; int. H 0.6m; ext. H 1m) incorporated into the bank of a farm lane inside the monument N-ESE, and an outer fosse deepened to a drain (Wth of base 2.1m) N-ESE, but the perimeter is largely reduced to a scarp (at SSW: Wth 1.1m; H 0.5m). The original entrance is not identified, and the monument remains unplanted in a forest since before 1995 (OSAP).

Distance: This RMP site is located 0.6 km northwest of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

RMP No.: ME005-035----

Townland: College

Site Type: Ringfort - rath

Description: Located on a short NW-SE spur. This is a grass and rush-covered area defined by an overgrown earthen bank (Wth of base 5.5m; int. H 1.3m; ext. H 1.8m) and an outer fosse (Wth c. 5.5m) that survive WSW-N (Chord 32m) within a small rectangular field (dims c. 55m NW-SE; c. 40m NE-SW) which probably contains the full extent of the monument but the perimeter cannot be traced elsewhere.

Distance: This RMP site is located 0.7 km north of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

RMP No.: ME006-061----

Townland: Rathgillen

Site Type: Church

Description: Situated on a level, low-lying landscape in a part of Rathgillen townland called Killaruggle on the 1908 ed. of the OS 6-inch map. A church associated with St. Patrick at Killaruggle is recorded in the folk record and there was thought to be a well and a cross-inscribed stone there (IFC: Schools' Collection vol. 712, 256), for which see this web-page accessed on 18/10/2018: <https://www.duchas.ie/en/cbes> A rectangular overgrown structure with walls that are almost complete (T 0.6m) except the N wall is largely missing is regarded

locally as a Penal church. There are no architectural features present and there is no evidence of an enclosure or burials associated with it.

Distance: This RMP site is located 0.9 km east of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

RMP No.: ME005-052----

Townland: Garmanagh

Site Type: Ringfort – rath

Description: Situated on a rise on top of a NNE-SSW ridge. It is depicted as an embanked enclosure (ext. diam. c. 30m) on the 1836 edition of the OS 6-inch map where it is described in gothic lettering as a 'Fort', and as an arc of a bank SW-N on the 1908 edition. This is a circular grass-covered area (diam. c. 38m N-S; c. 38m E-W) defined by a scarp (at NW: Wth 3m; H 0.85m). There is no visible bank, fosse or entrance.

Distance: This RMP site is located 0.9 km west of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

RMP No.: ME006-067----

Townland: Cregg

Site Type: Flat cemetery

Description: Located on a shelf just off the summit at SW of a prominent natural knoll of limestone outcrop (dims of base c. 250m N-S; c. 170m N-S; dims of top c. 90m N-S; c. 50m E-W; max. H c. 10m at NE to c. 30m at SW). Archaeological testing (05E0526) uncovered four small pits (diam. 0.12-0.25m) filled with a charcoal-rich clay that had burnt stone and bone inclusions. They were cut into a band of orange-brown subsoil (L c. 12m) amongst the rock outcrop nodes. A larger pit (diam. 1.3m) was nearby and three other pits (diam. 0.1-0.12m) were found in another trench c. 1.5m to the SW. About 20m to the NE and closer to the summit two pits (diam. 0.5m; 0.6m) are recorded, one of which produced a sherd of poorly made, crumbly pottery that is probably prehistoric. A trench on the W side of the knoll produce evidence of three linear features including a probable ditch (Wth of top 3.4m) aligned E-W and apparently extending down a steep slope. (O'Carroll 2005)

Distance: This RMP site is located 1.0 km northeast of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

RMP No.: ME006-016----

Townland: Rathgillen

Site Type: Ringfort – rath

Description: Situated just SE of the summit of a fairly small but prominent drumlin, it is described as ‘Rathcarn’ – fort of the cairn – on the OS 6-inch maps. This is a circular grass-covered area (diam. 62m NNW-SSE; c. 60m ENE-WSW) defined by an earthen bank W-NNE (Wth of base 5m; int. H 1m; ext. H 1.8m) and ESE-SSW (Wth of base 6m; int. H 0.5m; ext. H 1.4m) that is reduced to a scarp elsewhere. It is circumscribed by a field bank WNW-E. There is no visible fosse but the entrance (Wth of base 2.8m) is at N. There is a lunate annexe attached to the NW, beyond the field bank. This is visible as a level grass-covered area (max. dims c. 65m NE-SW; 24.6m NW-SE) defined by a low scarp (Wth 1m; H 0.35m).

Distance: This RMP site is located 1.2 km southeast of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

RMP No.: ME006-006----

Townland: Cregg

Site Type: Ringfort - rath

Description: Situated at the head of a small N-S valley or fold on a S-facing slope. It is described as ‘Lisnagunnell’ on the 1836 and 1908 editions of the OS 6-inch map. This is a circular grass-covered area (diam. 37m) defined by an earthen bank (Wth 4-9m; int. H 0.3-0.4m; ext. H 1.2-1.3m), which is incorporated into a field bank ESE-S. There are entrance gaps at W, NW, N, E and SSE but the original entrance is not identified.

Distance: This RMP site is located 1.3 km northeast of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

RMP No.: ME005-021----

Townland: College

Site Type: Ringfort - rath

Description: Situated at the highest point of and at the centre of an E-W ridge. It is described as ‘Clark’s Fort’ in gothic script on the 1836 and 1908 editions of the OS 6-inch map. This is a circular grass and rush-covered area (diam. 33.2m E-W) defined by an earthen bank (Wth of base 6-6.7m; int. H 0.5-0.6m; ext. H 2.1-2.3m) with some bushes and a complete outer fosse (at E: Wth of top 6.2m; Wth of base 2.7m; ext. D 0.9m; at W: Wth of base 0.8m; ext. D 0.5m).

There is a modern entrance and causeway at W but the original entrance is not identified. The interior is overlain by an ENE-WSW field bank S of the centre.

Distance: This RMP site is located 1.4 km north of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

RMP No.: ME005-050----

Townland: Whitewood

Site Type: Ringfort - rath

Description: Located towards the N end of a NNE-SSW ridge, it is described as 'Lisnamuck' – the Pig's Lios – on the OS 6-inch maps. This is a circular overgrown area (diam. 41m NW-SE; 38m NE-SW) defined by an overgrown earthen bank (Wth of base 5-5.2m; int. H 0.6-0.9m; ext. H 1.6-2m) with traces of inner and outer facing stones, and a slight outer fosse (Wth of base 2.2m; ext. D 0.2m) ESE-SW. There is a wide entrance (Wth of base 3.7m) at E.

Distance: This RMP site is located 1.5 km west of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

RMP No.: ME005-051----

Townland: Whitewood

Site Type: Ringfort - rath

Description: Situated on a fairly level landscape with slightly higher ground to the N and E, and on the Ne side of the ENE-WSW avenue to Whitewood House. It is described as 'Lisaniska' from Lios an Uisce – the Water Lios – on the OS 6-inch maps. This is a subcircular grass and rush-covered area (dims 57.8m N-S; 52.4m E-W) defined by an overgrown earthen bank, best preserved (Wth of base 5.5m; int. H 0.75m; ext. H 1.7m) ESE-WSW with an outer fosse or drain and traces of an outer bank (Wth 3.3m; ext. H 0.9m) SSW-WSW. There are many entrances through the bank but only that at NW (Wth of base 1.7m) has a causeway (Wth of top 2.2m; H 0.6m). An ENE-WSW field bank and drain cut the monument towards the perimeter at S, and it is better preserved S of this feature. It remains unplanted in a forest. (Digitalmap).

Distance: This RMP site is located 1.5 km west of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

RMP No.: ME005-022----

Townland: Cregg

Site Type: Ringfort - rath

Description: Located towards the W end of an E-W ridge, it is overlooking a small N-S stream c. 120m to the E. This is a circular grass and rush-covered area (diam. 30m E-W; 29m N-S) defined by an overgrown earthen bank (Wth of base 5-5.3m; int. H 0.3-0.6m; ext. H 1.6-1.9m), and an outer fosse that is best preserves (at SW: Wth of top 5m; Wth of base 1.5m; ext. D 0.3m) ESE-SW. The entrance (Wth of base 1.2m) and causeway (Wth of top 2m; H 0.6m) is at SSE.

Distance: This RMP site is located 1.5 km north of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

RMP No.: ME005-018----

Townland: Garmanagh

Site Type: Mound

Description: Located on a rise towards the bottom of a NW-facing slope, with an old quarry just to the SE and it is at the SE corner of a field. A mound is depicted here on the manuscript map (21 F 14 (63, 44)) in NLI. This is a grass-covered circular mound (diam. 12m; H 1.2-1.6m) that is quarried at W and SW and slightly truncated by a NNW-SSE field bank at E and an ENE-WSW field bank at S. It may be a spoil mound.

Distance: This RMP site is located 1.5 km northwest of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

RMP No.: ME005-019----

Townland: Garmanagh

Site Type: Ringfort - rath

Description: Located towards the top of a N and W-facing slope with the valley of a small E-W stream c. 85m to the N. This is a circular grass-covered area (diam. 40m N-S) that slopes down to the N (H 1.8m). It is defined by an earthen bank (at S: Wth of base 9.5m; int. H 0.9m; ext. H 1.5m; at N: Wth of base 5m; int. H 0.4m; ext. H 1.45m) and hedge with an outer fosse (Wth of top 4.8-5.8m; Wth of base 0.7m at S to 3.5m at N). There is a slight outer bank (at N: Wth of base 2m; ext. H 0.1m) W-N-E. There is an entrance (Wth of base 1.8m) but no causeway at SSE but the original entrance (Wth of base 2.2m), now blocked, and causeway (Wth of top 2.4m; H 0.5m) are at NNW.

Distance: This RMP site is located 1.6 km northwest of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

RMP No.: ME005-020----

Townland: Carrickleck

Site Type: Ringfort - rath

Description: Situated towards the bottom of a SW-facing slope with a small E-W stream circling around it SE-SW c. 60m distant. This is a circular grass and scrub-covered area (diam. 31m N-S; 28.5m WNW-ESE) defined by an overgrown earthen bank (at ESE: Wth of base 5m; int. H 0.9m; ext. H 1.5m) that melds into the hillslope NW-NE, with a fosse (at ESE: Wth of top 6.4m; ext. D 1m) ESE-S-W. The original entrance (Wth of base 1.8m) is at SSE, and the rath is surrounded by field banks NE-S-SW.

Distance: This RMP site is located 1.6 km northwest of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

RMP No.: ME005-049----

Townland: Whitewood

Site Type: Cross

Description: Situated against the W road bank of the R162 Nobber to Kingscourt road. They are described as 'Stone Crosses' in italic script on the 1836 and 1908 editions of the OS 6-inch map. There are four crude disc-headed or penal-style crosses (H c. 0.3-0.4m; span c. 0.3-0.4m), roughly formed and with no inscriptions. They are probably eighteenth century in date, and it is thought locally that they mark the graves of croppies from 1798.

Distance: This RMP site is located 1.6 km east of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

RMP No.: ME006-007----

Townland: Cregg

Site Type: Ringfort - rath

Description: Situated on a hillock on a S-facing slope. It is described as 'Lisanail' on the 1836 and 1908 editions of the OS 6-inch map. It was described in 1968 as a circular grass and scrub-covered area (diam. 31.4m NE-SW; 30.8m NW-SE) defined by an earthen bank (at SSE: Wth of base 4.2m; int. H 0.35m; ext. H 1.1m) with an external fosse (at SSE: Wth of

base 2.6m; ext. D 0.6m) ENE-SW, but the bank is reduced to a low scarp elsewhere. It was bisected by a NE-SW field bank with a field bank extending NW from the centre and a relict field bank extended SE. The entrance (Wth of base 3.7m) and slight causeway (Wth of top 2.4m; H 0.3m) were at ESE. It had been removed by 1995 (OSAP).

Distance: This RMP site is located 1.7 km northeast of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

RMP No.: ME006-059----

Townland: Rathgillen

Site Type: Water mill – horizontal-wheeled

Description: Located on level, low-lying ground on the NE bank of a small NW-SE tributary of a SW-NE section of the old River Dee, c. 110m from its confluence with the river. The discovery of three rotary querns suggests that there may have been a water mill on the river shortly after it exited the original Moynagh Lough, which was much more extensive originally. It would have utilised the lake as a mill-pond, but there is no visible evidence of such a mill, and its location is not precisely known. The quernstones are kept at a nearby house.

Distance: This RMP site is located 1.7 km southeast of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

RMP No.: ME006-060----

Townland: Cregg

Site Type: Rock art

Description: This stone was discovered during 1994 when a field bank was removed. It is a rough sandstone pillar with a blunt pointed top and a triangular cross-section (H 0.45m; dims c. 0.25m x c. 0.17m). There are four incised V motifs on one face. (Corlett 1999; Eogan 2011, 13)

Distance: This RMP site is located 1.8 km southeast of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

RMP No.: ME005-048----

Townland: Whitewood

Site Type: Ringfort - rath

Description: Situated on a W-facing slope, it is described as 'Lisbane' – the White Lios – on the OS 6-inch maps. This is an oval grass and rush-covered area (dims 48m NNE-SSW; 34.6m WNW-ESE) defined by an earthen bank incorporated into a field bank (Wth of base 4.6m; int. H 0.7m; ext. H 1.2-1.5m) and hedge. There is no visible fosse and there are modern entrances at SE and W.

Distance: This RMP site is located 1.8 km west of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

RMP No.: ME005-069----

Townland: Muff

Site Type: Barrow – ring-barrow

Description: Situated on top of a hill that is described as 'Gallows Hill' in italic lettering on the OS 6-inch maps. This is a circular grass-covered area (diam. 37m E-W; 35m N-S) defined by a low scarp (Wth 4-5m; H 0.5m at E to 1m at W) separated by a slight fosse or berm (Wth 2-3m) from an outer grass-covered bank (Wth of base 6.5-9m; int. H 0-0.2m; ext. H 0.4-0.5m). There are traces of a second outer fosse NW-E, and there is a gap in the bank at SE.

Distance: This RMP site is located 1.8 km south of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

RMP No.: ME006-068----

Townland: Cloghmacoo

Site Type: Enclosure

Description: Situated on top of a prominent hillock. A grass-covered oval enclosure (dims c. 45m E-W; c. 33m N-S) that is probably defined by a fosse (Wth c. 3-6m) SW-N-SE is visible on Google Earth (16/03/2021). It is traversed by a relict NE-SW field bank that is depicted on the 1908 edition of the OS 6-inch map. The enclosure is also visible on an OSI image (2005-12), Digital Globe (2011-13) and Aerial Premium (2013-18) images as well as other Google Earth images. It was first reported by Jean Charles Caill  re.

Distance: This RMP site is located 1.9 km northeast of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

RMP No.: ME006-017----

Townland: Posseckstown (Morgallion By.)

Site Type: Ringfort - rath

Description: Situated on a fairly low NW-SE ridge. This is a circular grass and rush-covered area (diam. 36m N-S; 33m E-W) sloping down to the SE. It is defined by an earth and stone bank (Wth of base 3.5-6m; int. H 0.4m; ext. H 0.9-1.4m) and hedge ENE-W-N with some evidence of outer facing stones. There is no visible fosse and the entrance (Wth of base 2.5m) is at E.

Distance: This RMP site is located 1.9 km southeast of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

RMP No.: ME005-066----

Townland: Muff

Site Type: Ringfort - rath

Description: Located just E of the tip of a NW-SE spur. This is a circular grass-covered area (diam. 29m E-W; 28m N-S) that slopes down to the NE. It is defined by an eroded and grass-covered earthen bank (Wth 8m; int. H 0.3m; ext. H 0.6m) with slight traces of an outer fosse (Wth of base 3.5m; ext. D 0.4m). The original entrance is not identified. Rath (ME005-067----) is on an equally high hillock c. 140m to the S.

Distance: This RMP site is located 1.9 km southwest of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

RMP No.: ME005-034----

Townland: Rathe

Site Type: Ringfort - rath

Description: Situated at the crest of a NW-facing slope overlooking rath (ME005-033----), which is c. 170m to the WNW. This rath is described as 'Lisnaguinnell' on the 1836 and 1908 editions of the OS 6-inch map. It is a circular grass and scrub-covered area (diam. 38.5m NW-SE; 37m NE-SW) defined by an overgrown earthen bank (Wth of base 7-8.5m; int. H 0.9-1.2m; ext. H 2.7-3m) separated by a fosse (Wth of top 8-9m; ext. D 0.7-1.2m) from an outer bank (Wth of base 3.2-6m; ext. H 0.5-0.7m) that is absent ESE-S. The entrance through the inner bank (Wth of base 2.3m) and causeway (Wth of top 3m; H 0.5m) are at E. The base of a relict stone wall (Wth 1.2m; H 0.4m) separates off the NW quadrant, and there is a house site (int. dims 5.5m NW-SE; 4.1m NE-SW) backing onto the inner face of the inner bank at NE and defined elsewhere by stones or a low earthen bank.

Distance: This RMP site is located 2.0 km northwest of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

RMP No.: ME005-068003-

Townland: Muff

Site Type: Bullaun stone

Description: Situated at the crest of a S-facing slope in a col, with slightly higher ground to the NW and E, and a NW-SE section of the River Dee is c. 300m to the SW. This is a boulder (dims 0.4m x 0.4m) has a portion of a basin (diam. 0.2m; D 0.15m) at one edge. The cross-base (ME005-068001-) and the fragment of a bullaun stone (ME005-068002-) are just to the S.

Distance: This RMP site is located 2.0 km southwest of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

RMP No.: ME005-067----

Townland: Muff

Site Type: Ringfort - rath

Description: Located on a hillock, it is described as 'Lisanarwer' in gothic lettering on the OS 6-inch maps. This is a raised, circular, grass and rush-covered area (diam. 44.6m N-S; 44.3m E-W) defined by an overgrown earthen bank (Wth of base 4.5-7.5m; int. H 0.4-0.7m; ext. H 3.5-3.7m) separated by a fosse (Wth of top 7-10m; Wth of base 2-3m; ext. D 0.8m at S to 2.6m at N) from an overgrown earthen bank (at N: Wth of base 9m; ext. H 2m) that is missing ESE-SW. This bank has a outer fosse (Wth of top 9m; Wth of base 3m; ext. D 1m) SSW-NNE, and there is a section (L 14m) of what might be a third outer bank (Wth of base 9m; ext. H 1m) and an outer fosse (Wth of base 2m; D 0.5m) only at N. There is an entrance through the inner bank (Wth of base 2.6m) and a causeway (Wth of top 3.6m; H 0.9m) over the inner fosse at S. Rath (ME005-066----) is c. 140m to the N. Archaeological testing (20E0132) by M. McCarthy in an area (dims c. 120-c. 200m NE-SW; c. 150m NW-SE) c. 100m to the SE at the closest point produced no related material (excavations.ie 2020:020).

Distance: This RMP site is located 2.0 km southwest of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

RMP No.: ME005-034001-

Townland: Rathe

Site Type: House – indeterminate date

Description: Situated at the crest of a NW-facing slope, and inside the inner bank of rath (ME005-034----) at NE. A rectangular grass-covered area (int. dims 5.5m NW-SE; 4.1m NE-SW), obscured by furze, is defined by the rath bank at NE and elsewhere by stones or a low earthen bank and is. An entrance is not noted.

Distance: This RMP site is located 2.0 km northwest of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

11.3.2 Topographical files, National Museum of Ireland (NMI)

The development site straddles College and a small corner of Rathgillen townland. There are no stray finds recorded in the Topographical Files of the National Museum for College townland but some quern stones were uncovered in Rathgillen townland. The following finds relate to townlands in the general area and reflect prehistoric and early historic activity.

Table 11-1: Topographical finds, national Museum of Ireland

NMI Ref.	Townland	Find
1999:69–71	Cregg	Flint Flakes
1999:72	Cregg	Flint Scraper
	Cregg	Pottery
1999:46–50	Rathgillen	Quernstones
1929:30	Nobber	Polished stone axehead
1931:2	Nobber	Polished stone axehead
1941:403	Nobber	Polished stone axehead
1960:612	Altmush	Stone Bann flake
1955:54–76	Whitewood Crannóg	Stone bead, medieval jar fragment, pot sherd, hollowed stone mould, timbers and paddles, quernstone fragments, two dug-out canoes.

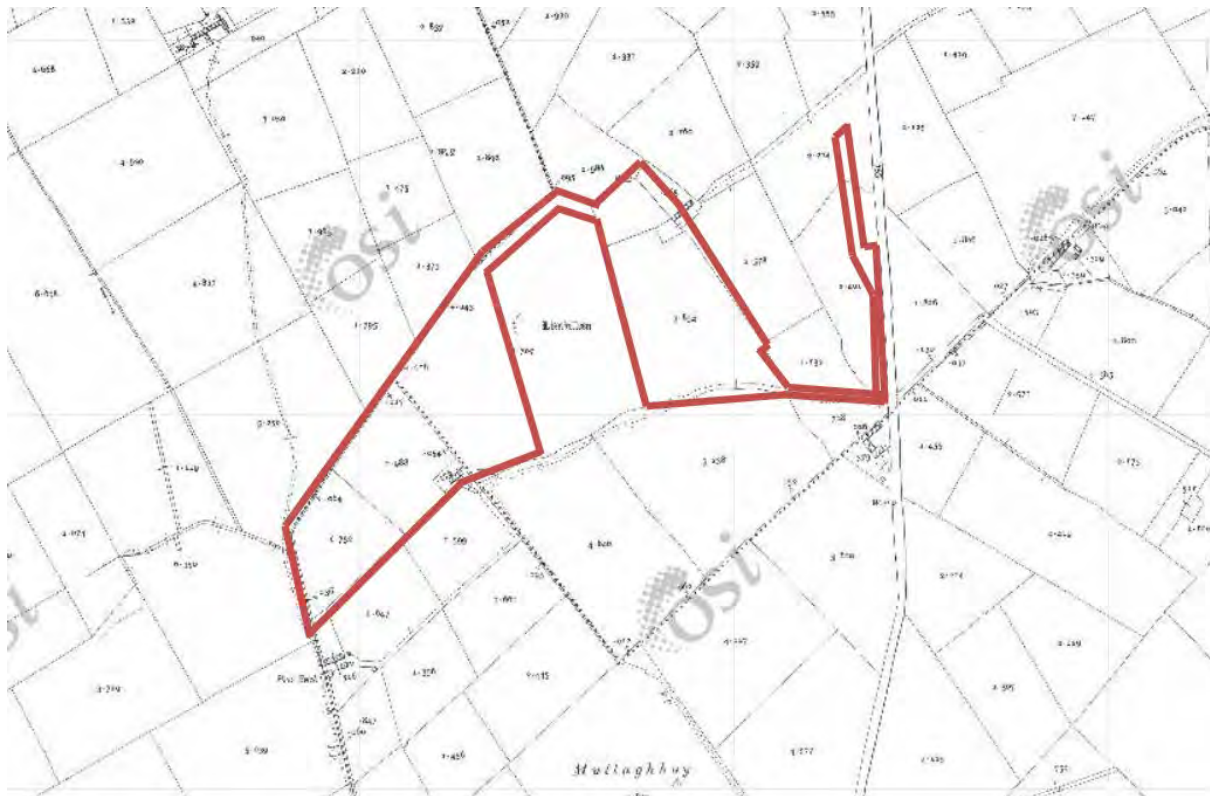


Figure 11-4: First Edition 25-inch Ordinance Survey Map, 1838-1842

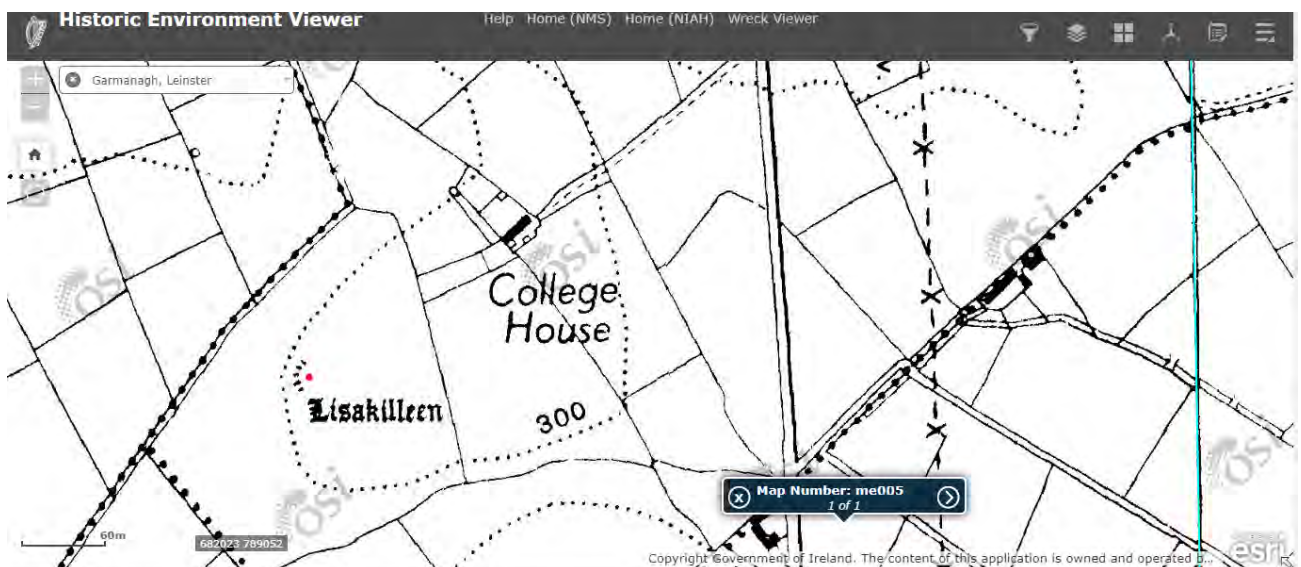


Figure 11-5 Cassini - 6 inch 1940

11.3.4 Excavations Database and Previous work carried out in the surrounding area

Excavations.ie contains summary accounts of all the excavations carried out in Ireland – North and South – from 1970 to 2018. This dataset is compiled in order to provide summary accounts of all excavations carried out on the island of Ireland. The Database recorded 1 no. of excavations within the townland of College. This included a programme of investigations (Licence 12E0374) in advance of the N52 Ardee Bypass. Two areas of archaeological interest, Ballygowan 1 and Boharnamoe 1, were identified during testing however these townlands are located over 10 km away from the Proposed Development Site.

The Database records 1 no. programme of archaeological investigation within the townlands of Garmanagh (Licence number: 05E1050) located 1km west of the Site. Trenching produced nothing of archaeological interest on a house site. The Database also records 1 no. programme of archaeological investigation within the townlands of Cregg (Licence number: 05E0526) located 1.2 km north-east of the Proposed Development Site. The Prehistoric site contained a large 32,000m² limestone outcrop with a maximum height of over 31m from the field surface. Fifteen trenches were excavated mechanically across the summit of the hill, and archaeological features and deposits were noted in three of them (Excavations.ie).

A programme of archaeological monitoring and testing was also carried out in compliance with conditions related to planning consents KA/160786 and KA/190754 directly east and north of the Proposed Development site under two separate licenses (17E0659 & 19E0315). Nothing of archaeological significance was uncovered during these phases of development at the College Proteins Plant (O'Carroll 2017 and 2019). Further archaeological monitoring of the solar array farm recently constructed contained no archaeological remains (O'Carroll 2022).

11.3.5 Site Walkover and Visual Impact Assessment

A walkover survey by E O'Carroll was carried out to assess the upstanding remains of the ringfort ME005-054 as well to assess the development lands and any possible archaeological remains that may be visible. The development lands and the area of the ringfort were traversed noting and recording the terrain type, land usage as well as the presence of obvious features of archaeological or cultural significance.

The visual impact of the Proposed Development on recorded monuments was analysed using a landscape archaeology approach, considering the development site within its broader physical, historical and archaeological context.

Development plans for the Anaerobic Digestion plant will only occur within the eastern portion of the red box outlined on Figure 11-1. Consequently, the Anaerobic Digestion plant will be located beside the current operational College Proteins plant (Figure 11-8). A road and soil distribution area will occur on the northern and western side of the development site respectively. Therefore, there will be no upstanding construction works occurring to the north and west of RMP ME005-054 and as such there will be no impacts on sightings from the ringfort across the landscape to any other archaeological monuments including the multiple ringforts which occur in the wider landscape.

The field where these development plans are proposed was walked by the author. The field is bounded by hedgerow on all sides and the terrain is marshy and uneven (Figure 11-6). It was also clear from the inspection of an engineering test pit as well as discussions with representatives from the College Proteins Plant that the level of the field will need to drop considerably due to the depth of topsoil present in the field. Thus, the development height will only reach slightly above the hedgerows which surround the field.

Taking all the above into consideration which includes the elevated height of the partial remains of the ringfort, the siting of the Anaerobic Digestion plant beside the existing plant and at a lower level to what is currently extant, it has been determined that the development plans

will not visually impact upon RMP site ME005 – 0054. Furthermore, there was no archaeological features noted within the Proposed Development lands (Figure 11-6).



Figure 11-6 Development site showing engineering test pit

11.3.6 Inventory of Architectural Heritage

The National Inventory of Architectural Heritage (NIAH) was reviewed in order to identify any buildings/features of architectural significance within 2km of the Proposed Development Site. The NIAH Registration Number refers to the registration number on the National Inventory of Architectural Heritage building survey of County Meath. The NIAH is a section within the Department of the Arts Heritage and the Gaeltacht, and the work involves identifying and recording the architectural heritage of Ireland from 1700 to present day Ireland. It is important to note that there may be structures in the NIAH survey that are also included in the RPS, however not all of them are. There are 1 no. buildings of architectural significance located with 2km of the Proposed Development Site. Information from the National Inventory of Architectural Heritage on this building and its features are given below.

Reg. No.: 14302028

Townland: Muff

Date: 1850 - 1890

Original Use: Water pump

Categories of Special Interest: Artistic, social, technical

Description: Cast-iron water pump, erected c. 1870, with lion's head surrounding spout. Fluted base and cap, with finial and side handle.

Distance: This is located 2.0 km south of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

11.3.7 Meath County Council Development Plan

The Meath County Council Development Plan addresses Architectural Conservation Areas, historic areas and Protected Structures, and recognises the statutory protection afforded to all Records of Monuments and Places (RMP) and all archaeological heritage sites under the National Monuments Legislation (1930-2004). The development plan lists several aims and objectives in relation to archaeological and architectural heritage which the Proposed Development has taken into account.

HER POL 1: To protect sites, monuments, places, areas or objects of the following categories:

Sites and monuments included in the Sites and Monuments Record as maintained by the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht;

Monuments and places included in the Record of Monuments and Places as established under the National Monuments Acts;

Historic monuments and archaeological areas included in the Register of Historic Monuments as established under the National Monuments Acts; Meath County Development Plan 2021-2027 Chapter 8

National monuments subject to Preservation Orders under the National Monuments Acts and national monuments which are in the ownership or guardianship of the Minister for Culture, Heritage and the Gaeltacht or a local authority;

Archaeological objects within the meaning of the National Monuments Acts; and Wrecks protected under the National Monuments Acts or otherwise included in the Shipwreck Inventory maintained by the National

HER POL 5: To seek guidance from the National Museum of Ireland where an unrecorded archaeological object is discovered, or the National Monuments Service in the case of an unrecorded archaeological site.

11.3.7.1 Architecture

Protection is also recognised to areas of cohesive architectural value and these areas can be classified as Architectural Conservation Areas (ACA), and any works that may have a material effect on the special character of an ACA needs planning permission. An area can be designated an ACA often because it contains a group of historic buildings or has a distinctive street size/plot size that contributes to the distinct character of a town or village. In the Meath area, there are 18 no. Architectural Conservation Area Locations, as follows:

- Ardbracon Demesne
- Athboy
- Dunboyne
- Dunsany Castle Demesne
- Headfort Demesne
- Julianstown
- Kilmessan
- Laytown
- Longwood
- Moynalty
- Oldbridge Demesne
- Oldcastle
- Slane
- Slane Castle Demesne
- Slane Mill Complex
- Somerville Demesne
- Stackallen Demesne
- Summerhill

The Proposed Development does not lie within the vicinity of any of the above designated areas (Figure 11-7).

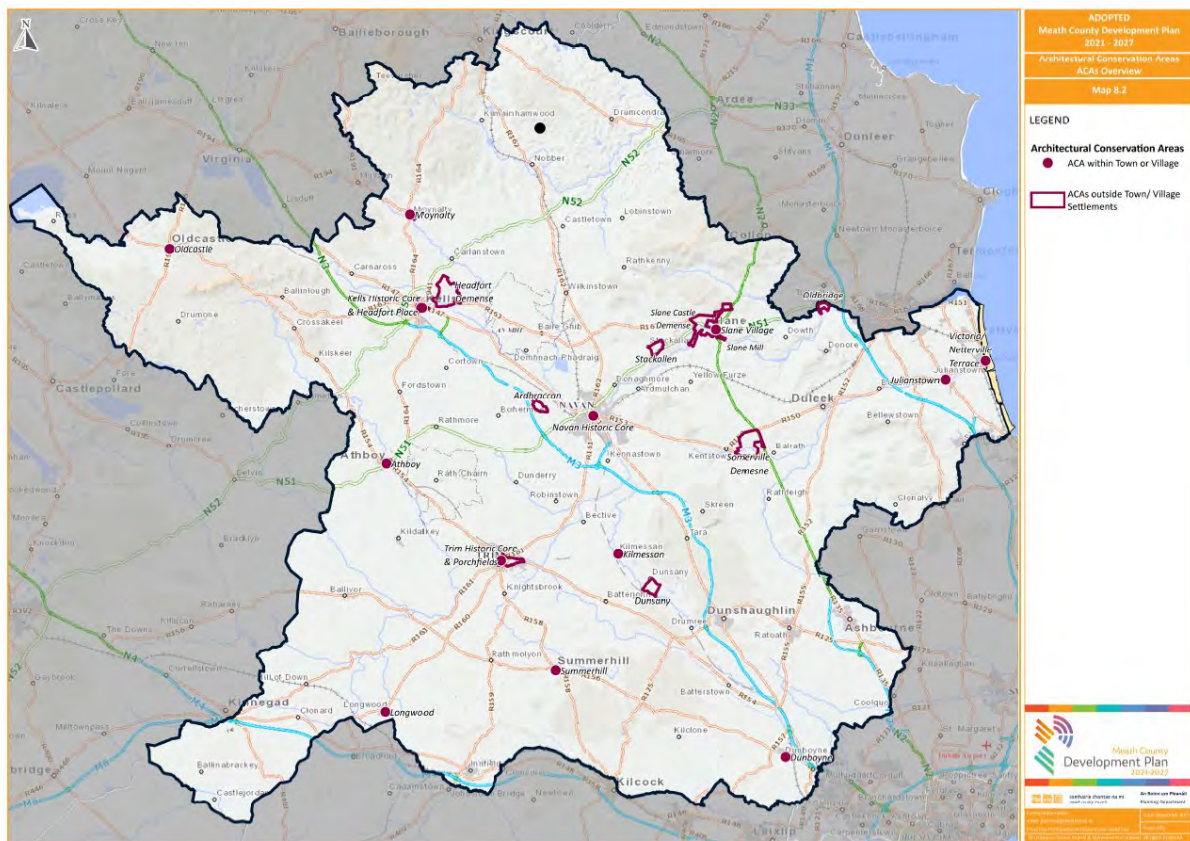


Figure 11-7: Architectural Conservation Areas (ACA) within the Meath County Development Plan 2021-2027 (Site location represented as black circle in the North of the outlined area)

11.3.7.2 Protected Structures

A protected structure is a structure or part of a structure that a planning authority considers to be a special interest from an “*architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest*”.

In certain circumstances, some archaeological structures may also be considered as architectural heritage, meaning they may therefore appear on both the Record of Monuments and Places (RMP) and the Record of Protected Structures (RPS). These structures are protected by both the National Monuments Acts and the Planning and Development Acts 2000 (as amended).

The Site is located within the Townland of College. The townlands of Garmanagh and Rathgillen are also located in close proximity to the Site. There are no Protected Structures located within the Site of the Proposed Development. According to the Meath County Council Development Plan 2021-2027, there are 5 no. Protected Structures located in the vicinity of the Proposed Development.

1. Whitewood House, Lodge and farm buildings (90174)

Building type: Country House

Description: Three-bay, two-storey over high basement House, 1735 by Richard Castle. Designed as a hunting lodge for the Preston Family. Incl stable block, farm buildings and gate lodge. Whitewood House is located near the top of a drumlin (+105.9m ASL) and the ground drops away to all sides. While it falls quite steeply to the west towards Whitewood Lough (+49.60m ASL), it falls and undulates more gradually towards the application site (c. +85 to 95m ASL).

Distance: This is located 0.8 km West of the Proposed Development site (east garden's limit)

Visual Impact: Assessed on Viewpoint 5 (visual impacts)

2. Brittas (90175)

Building type: Country House

Description: It was the seat of the Bligh family since the 17th century. Built c. 1800. Francis Johnston is supposed to have worked on the house. A rectangular two-storey house with a wide hipped roof and a four-bay ballroom to the East.

Distance: This is located 2.2 km Southwest of the Proposed Development site .

Visual Impact: No visibility to the Proposed Development site given the existing dense forest patch north of the property.

3. Water pump (90176)

Building type: Water Pump

Description: Cast-iron water pump, erected c.1870, with lion's head surrounding spout. Fluted base and cap, with finial and side handle.

Distance: This is located 1.65 km South of the Proposed Development site .

Visual Impact: No visibility to the Proposed Development site given the view is oriented to the East.

4. Drogheda, Kingscourt Railway Line (90185)

Building type: Railway Line

Description: Section of Drogheda-Kingscourt railway line, constructed c. 1870. Single line

of cast-iron track on timber sleepers with limestone platform and level crossing. Station complex includes goods shed, and railway workers house.

Distance: This is located 2.20 km West of the Proposed Development site .

Visual Impact: No visibility to the Proposed Development site due to the existing buildings, structures and vegetation.

5. Gogarty's Printers Limited (90 184)

Building type: Railway Shed

Description: Detached six-bay single-storey former railway warehouse, built c.1870, now in use as printing premises. Roughly dressed limestone walls with quoins.

Distance: 2.6 km west of the site.

Visual Impact: No visibility to the Proposed Development site given the view is oriented to the East.

Based on the distance of the Protected Structures from the site there will be no significant impacts as a result of the Proposed Development.

11.4 Characteristics of the Proposed Development

College Proteins are proposing to construct an Anaerobic Digestion (AD) Facility to produce green Biogas which will off-set the use of fossil fuels on-site, therefore reducing the company's carbon footprint. The biogas produced from the AD Facility can be used in the on-site steam boilers and Combined Heat and Power (CHP) plants to generate steam and electricity to run the production facilities on-site.

College Proteins are committed to sustainability and maximising the resource value of organic material from all sources. The Proposed Development will reduce the requirement for natural gas use on-site which will aid the company's self-sufficiency in this regard.

The Proposed Development will consist of the demolition of an existing garage and the provision of an Anaerobic Digestion Facility with an intake of up to 50,000 tonnes of organic feedstock material per annum. The Facility will comprise a waste reception building (incorporating workshop, control room and welfare facilities), 2 No. digester tanks, 2 No. digestate storage tanks, glycerine tank, buffer tank, pasteuriser tank, 4 No. liquid reception tanks; all of the above tanks located within a fully bunded concrete area; associated biofilter, gas flare, biogas combined heat and power plant, internal access roads, weighbridge, truck loading area and soil deposition area. The Proposed Development will also include all associated site development, drainage and infrastructure works above and below ground. The maximum height of the Proposed Development is the chimney stack associated with the biofilter at c. 18m above ground level.

AD is a sustainable form of renewable energy production through a naturally occurring biological process in which micro-organisms break down biodegradable material in the absence of oxygen in an enclosed system. The process produces a methane-rich biogas and a nutrient rich fertiliser known as 'digestate'. The biogas can be converted into renewable electricity, or it can be upgraded to biomethane for use in on site boilers, as a vehicle fuel or for injection directly into the gas network to provide a source of renewable heat.

Feedstocks proposed for biogas production include grass and maize silage, food waste, slurry, sludges from food processing plants.

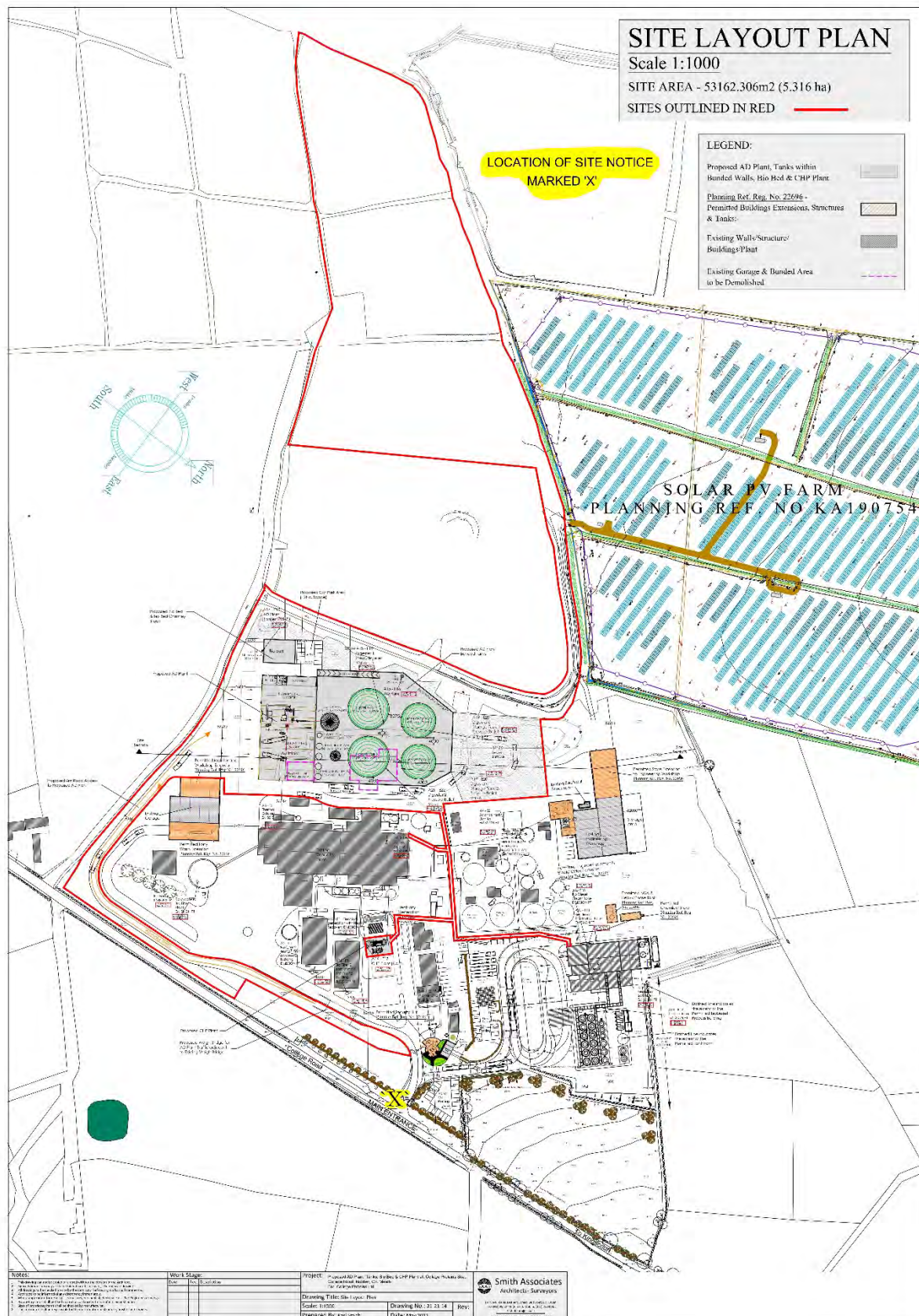


Figure 11-8: Site Layout

11.4.1 Construction Phase

The Construction Phase for the Proposed Development will involve the removal of an existing building, removal of soil from the site of the Proposed Development, the construction of the Anaerobic Digestion plant and raising the level of land near the solar farm with the excavated soil.

Phase 1 – The existing building garage and concrete tank on site will be demolished. The garage currently used for maintaining College Proteins vehicles has a floor area of 545.67m² and the building is 8.3 meters to the apex. The building is constructed from concrete, steel and Kingspan sheeting. The Kingspan sheeting, purloins and steel work will be carefully removed and stored to be re-used on other buildings in future projects. The concrete tank (bund area) has never been in use, therefore there is no chance of any soil contamination under this tank. This has a floor area of 178.79m² and a wall height of 2 meters. The concrete floors and walls of the existing building garage and concrete tank (totalling approx. 840m³ volume) will be removed off site for disposal in a licenced facility. The gravel from the yard surrounding the garage and concrete tank will be dug up and kept to one side pending testing for contamination and then will be re-used as filling on site if it is suitable. If not, the material will be treated in an authorised facility. The garage & concrete tank bund are detailed on drawing No. 21-21-23 attached in Appendix A.

Phase 2 – The soil (77,804.15m³) will be removed from the Site and will be infilled to fields to the west of the site. Ref. drawing 21-21-18 in Appendix A. A new weighbridge will be installed beside the existing rendering weighbridge, this will be separated with a fence and signage to direct traffic on site. There will be a new two-way road constructed on site separated from the rendering plant with a fence to access the proposed AD plant area. 21,500 tonnes approx. of stone filling and concrete will be brought to the site to create a base for building the road, yard, tank foundations, walls of the reception hall and AD tanks and bunded walls.

Phase 3 - The AD plant intake buildings, tanks, bund wall and road will be constructed. The intake building will be of steel frame construction, shuttered concrete walls, olive green insulated Kingspan sheeting and purloins. The olive green sheeting was selected to blend the colours into the agricultural surroundings around the site and therefore cause less visual impact. The AD tank bund will be a concrete wall construction with a concrete floor, the roadway to the plant will be constructed from concrete. The intake tanks and glycerine tank will be constructed from stainless steel. The buffer tank, digesters and digestate storage tanks will be constructed from concrete. The pasteurisation tank will be constructed from glass lined steel.

The Proposed Development comprises of:

- Anaerobic Digestion (AD) Plant Reception building (food waste reception)
- Reception hall for solid feedstock (silage & Maize)
- Borger Fibre separation for digestate
- Workshop
- Office, control room, toilets and changing rooms
- Biobed
- 4 No. Liquid reception tank- 113m³ tanks
- 1 No. Glycerine tank- 78m³

- 1 No. Buffer tank – 983m³
- 1 No. Pasteurisation tank - 247m³
- 2 No. Digesters - 3682m³
- 2 No. Digestate Storage tanks – 2500m³
- Gas Flare
- Biogas Combined Heat and Power (CHP) Plant

Refer to Site Layout Plan drawing 21-21-14 in Appendix A.

Phase 4 – The fields where the soil will be deposited will be re-seeded and planted with grass and returned to agricultural use. Please see filling area on drawing ref. 21-21-18 in Appendix A.

11.4.2 Operational Phase

The existing facility will continue to operate as an animal by-product rendering plant, a biodiesel production facility and a solar farm, with the addition of an anaerobic digestion facility. The existing facility is currently operational under IE Licence (P0037-04) and Greenhouse Gas Permit (GHG Permit) No. IE-GHG123-10405-03.

An application for a review of the existing IE License will be made to the Environmental Protection Agency as the introduction of an anaerobic digestion facility will result in changes to the environmental emissions from the facility. The GHG Permit may also need to be revised, and the EMS will be updated accordingly.

The Proposed Development will be operated in accordance with the requirements of the planning grant conditions and updated requirements of the reviewed IE Licence, GHG Permit, EMS and Safety Report for the facility.

11.5 Potential Impact of the Proposed Development

Potential Impacts and Mitigation

The land for the extension has been used for grazing for many years, however, no other significant ground disturbance has taken place within its boundary. The Proposed Development will involve earthmoving works. Although no recorded archaeological sites occur within the development boundary and no features of possible archaeological interest were identified on the field surfaces, the potential for sub-surface archaeological remains being discovered during earthmoving and topsoil stripping must be considered.

11.5.1 Construction Phase

This section assesses the impact of the Proposed Development on the Archaeology and Cultural Heritage of the area during the Construction Phase.

The greatest impact to buried archaeological deposits occurs during large-scale removal of topsoil during the initial Construction Phase groundworks. The Proposed Development will involve the movement 77,804.15 m³ of soil for levelling purposes (Smith Architects, Drawing number 21-21-18, July 2022). There is potential for previously undiscovered archaeological remains to be impacted by these excavations and levelling works.

Once appropriate mitigation measures such as pre-development archaeological testing and resolution of any uncovered remains are implemented there will be no archaeological impacts during the Construction Phase.

11.5.2 Operational Phase

The Operational Phase of that Proposed Development is that of an Anaerobic Digester facility and as such, will not result in any impact on the Archaeology and Cultural Heritage of the area.

It has been determined that there will be no direct visual impact on sightings from and to the ringfort site RMP ME005-054 when the Anaerobic Digestion plant is constructed.

11.5.3 Potential Cumulative Impacts

In the context of archaeology and cultural heritage impact, no cumulative effects are anticipated from the Proposed Development.

11.5.4 “Do Nothing” Impact

If the Proposed Development were not to proceed, the existing Site would continue to be present and operational at its current capacity as an animal rendering plant. Archaeological or cultural remains will not be impacted upon, the same as the scenario for the Proposed Operational Phase of the Development.

11.6 Avoidance, Remedial & Mitigation Measures

11.6.1 Construction Phase

Although no recorded archaeological sites occur within the development boundary and no features of possible archaeological interest were identified on the field surfaces, the potential for sub-surface archaeological remains being discovered during earthmoving and topsoil stripping must be considered. The Proposed Development will involve the movement of 77,804.15 m³ of soil to create the required surface levels.

It is therefore recommended that a programme of invasive linear test trenching be carried out by a licensed archaeologist in the areas of sub-surface works including re-routing of services, additional drainage, slip roads, and other facilitation works associated with the Proposed Development site. The purpose of testing is to identify sub surface archaeological remains within the development site and to determine the impact of the Proposed Development on such remains if they occur. Should archaeological features and or deposits be revealed then any further work would be subject to further licensing with approval from the Department of Arts, Heritage and the Gaeltacht who may recommend preservation *in situ* or preservation by record. The testing should be completed as far in advance of other scheduled site works as possible.

The presence or otherwise of archaeological soils or deposits could also be determined by examining the reports on any engineering bore-holes and test-pits that may be carried out in advance of construction in the waterlogged area.

All recommendations in this report are subject to discussion with and approval from the Department of Arts, Heritage and the Gaeltacht.

There will be no impact on archaeological, architectural or cultural heritage sites during the Construction Phase provided that all archaeological issues are resolved prior to any construction work or topsoil stripping.

11.6.2 “Worst Case” Scenario

In the worst-case scenario where mitigation measures fail for the Proposed Development, it is considered that there is potential that a monument of cultural heritage or importance could be damaged.

11.7 Residual Impacts

Residual Impacts are defined as *‘effects that are predicted to remain after all assessments and mitigation measures’*. They are the remaining ‘environmental costs’ of a project and are the final or intended effects of a development after mitigation measures have been applied to avoid or reduce adverse impacts. Potential residual impacts from the Proposed Development were considered as part of this environmental assessment.

No negative residual impacts in the context of archaeology and cultural heritage are anticipated regarding this Proposed Development.

11.8 Monitoring

No specific monitoring measures are required in relation to archaeology and cultural heritage given the fact that it is not predicted that the Proposed Development will have any adverse impacts on any archaeological features or deposits. The mitigation measures detailed in Section 11.6 will also function as a monitoring system to ensure the ongoing analysis of the effectiveness of the mitigation for both the Construction and Operational Phases.

11.9 Interactions

Interactions between Archaeology and Cultural Heritage and other aspects of this Environmental Impact Assessment Report have been considered and are detailed below.

11.9.1 Landscape and Visual

The development lands were assessed visually with regards any impacts the development plans may have on the recorded Monument ME005-054. The assessment concluded that any changes in landscape or visual amenities will not affect ME005-054 or any other archaeological and cultural heritage sites in the surrounding area.

11.9.2 Land and Soil

The Proposed Development will involve the movement of 77,804.15 m³ of soil for the site to reach the required levels. There is potential for previously unrecorded archaeological features or deposits to be discovered during this process.

11.10 Difficulties Encountered When Compiling

There were no difficulties in compiling the specified information with regard to archaeological, architectural and cultural heritage.

11.11 References

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<http://webgis.archaeology.ie/historicenvironment/>

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National Monuments of Ireland database available at:
<http://webgis.archaeology.ie/historicenvironment/>

National Inventory of Archaeological Heritage, available at:
<http://www.buildingsofireland.ie/Surveys/Buildings/>

OSI mapping (www.osi.ie)

<https://heritagemaps.ie/WebApps/HeritageMaps/index.html>

Meath County Development Plan 2021-2027

www.excavations.ie

12 MATERIAL ASSETS: TRAFFIC, WASTE AND UTILITIES

12.1 Traffic

12.1.1 Introduction

12.1.1.1 General

This Traffic Chapter of the EIAR has been prepared by Stephen Reid Consulting Traffic and Transportation Limited on behalf of College Proteins. This report has been prepared on the basis of information supplied by Enviroguide Consulting and College Proteins, and a weekday site visit in May 2022.

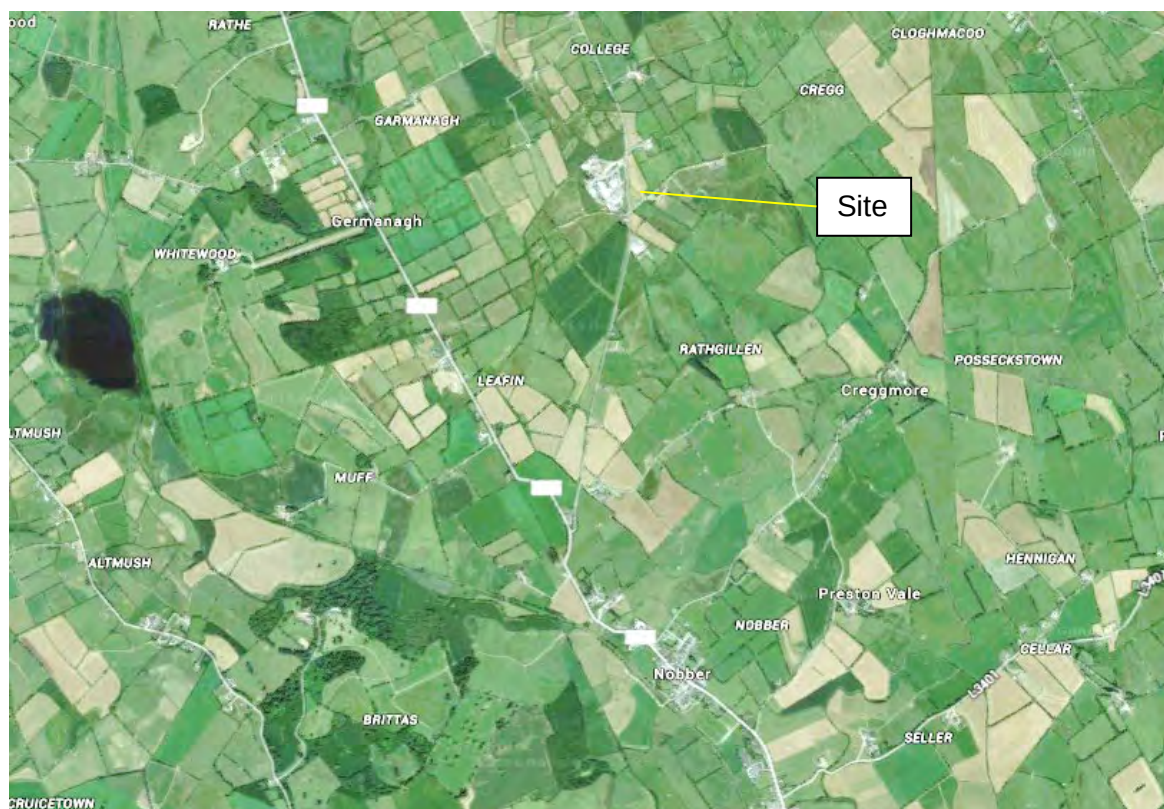


Figure 12-1: Site Location, College Proteins, Nobber, Co Meath (source: www.google.ie/maps)

The College Proteins facility is located approximately 3 kilometres north of Nobber Village. The vehicle entrance/exit at College Proteins is from the west side of College Road, a local road which connects to the R162 Kingscourt Road, some 2km south of the access to the facility.

The proposed AD Plant is to be located within the extent of the application redline in the context of the existing lands and existing College Proteins site illustrated on the Smith Associates drawings submitted with the application.

12.1.1.2 Objectives

The main objectives of this report are to consider the levels of traffic currently using the R162 at the College Road junction and on the College Road between the R162 and the College Proteins access junction, establish future year traffic as a result of TII growth rates, determine the volume of traffic resulting from the proposed AD Plant development, both in terms of construction phase traffic and operational traffic, and quantify the cumulative impact of the Proposed Development on the traffic network at this location in opening and future years. In order to complete this report, reference is made to the following relevant documents, having regard to Meath County Development Plan Policy Objectives and standard practice for preparation of traffic impact assessment:

- Meath County Development Plan 2021-2027 (MCC);
- PE-PAG-02017 'Project Appraisal Guidelines Unit 5.3: Travel Demand Projections', May 2019 (TII);
- PE-PDV-02045 'Traffic and Transport Assessment Guidelines, May 2014 (TII)
 - DN-GEO-03060 'Geometric Design of Junctions', June 2017 (TII).

12.1.2 Study Methodology

Traffic counts were collected in May 2022 to provide updated baseline data for this EIS for the proposed Anaerobic Digestion (AD) Plant, which will supply biogas to the on-site steam boilers and Combined Heat and Power (CHP) plants to generate steam and electricity to run the production facilities on-site, improving sustainability.

to consider the existing roads and traffic conditions in the environs of the facility;
set out the existing operations in terms of delivery volumes and haul routes;
describe the Proposed Development in terms of the extended facility and access arrangements;
quantify the additional traffic that would be generated by the Proposed Development;
assess the impact of the additional traffic on the receiving environment
make recommendations measures to mitigate traffic impacts, if applicable.

12.1.3 The Existing and Receiving Environment (Baseline Situation)

12.1.3.1 The R162 Kingscourt Road

The R162 is a two-lane single carriageway regional route running through County Meath from the N51 in Navan town, intersecting with the N52, passing through Nobber village, and then extending through County Cavan (via Kingscourt and Shercock, to Cootehill). To the north of Nobber, the carriageway is generally 7.5 metres wide.

The College Road junction on the R162 (shown on Figure 12-2) is located approximately 1 kilometre northwest of the centre of Nobber Village, and approximately 0.5 kilometres northwest of the bridge, and 0.23 kilometres northwest of the 80 km/h-60 km/h speed limit change.



Figure 12-2: R162 Junction with College Road (source: Google Earth)

This junction was upgraded as part of a historic planning permission for College Proteins (MCC Ref: 01/1363), with a right turn lane on the R162 and improved sightlines, and this form of junction is adequate for the volumes of turning traffic which enters/exits College Road at peak times and throughout the day. The R162 to the north and south of the junction also has 'SLOW' markings and yellow bar markings on the approaches to bends in the alignment.

Traffic turning out of College Road is controlled by a Stop sign and Stopline marking. At the time of a site visit in May 2022 it is noted that the road markings are visible but worn at the junction and should be refreshed to improve visibility to road users as a matter of ongoing maintenance by Meath County Council (see Figure 12-2).

12.1.3.2 College Road

The College Road is a local road heading northwards from the R162 junction through the College area and ultimately linking to the Cregg Road just south of the R165 (Drumconrath-Kingscourt Road).

The width of the carriageway is typically 4.5-5.0 metres, with sections of widening as follows:

- inset widening to 7.5 metres at the College Proteins access – while this was previously undertaken by College Proteins to improve sightlines for exiting traffic, it also improves passing widths if vehicles are turning in/out, and can facilitate a vehicle pulling in to stop if the gates are closed, without blocking passing traffic;
- for a distance of approximately 0.18 kilometres on the approach to/exit from the R162, the carriageway widens to 7.3 metres, between the edge of carriageway markings, with a solid centreline extending southwards to the stop line – this improvement work was also undertaken previously by College Proteins as part of the junction upgrade;
- several locations along the length where the road is slightly wider (c.5.5 metres, to the north of the tannery).

The horizontal alignment of College Road between the site and the R162 is generally straight with the exception of the immediate approach to/exit from the R162 junction, where it was previously realigned by College Proteins (MCC Ref: 01/1363) with the bend approaching the R162 introduced to remove the skew and form a proper T-junction between the roads.

There is also a slight left-hand bend passing the tannery site entrance (located some 0.44 kilometres south of the College Proteins access, on the east side of the road), as illustrated in Figure 12-3.

To the north of the College Proteins access, the alignment of College Road takes a slight left hand bend, some 0.18 kilometres from the entrance.

The vertical alignment of College Road follows the topography of the surrounding lands and therefore rises and falls over a series of crests and troughs. Notwithstanding this, generally there is reasonable forward visibility along much of the road.



Figure 12-3: College Road looking north – typical vertical and horizontal alignment (source: SRC)

12.1.3.3 College Proteins Access Junction

As noted above, the College Proteins access junction on College Road was also upgraded as part of a previous planning permission, and includes a concrete hard standing to either side of the access. Visibility from the access, and forward visibility for traffic approaching on College Road southbound is adequate for the road type and speed of traffic using it, as illustrated in Figures 12-4, 12-5 and 12-6.



Figure 12-4: Existing sightline +150m to left from College Proteins access (source: SRC)



Figure 12-5: Existing sightline +160m to right from College Proteins access (source: SRC)



Figure 12-6: Southbound forward visibility of College Proteins access (source: SRC)

12.1.3.4 College Proteins Internal Traffic Management

The traffic management arrangements within the College Proteins site are well-established and organised, with adequate signage and markings to identify and define routes to the weighbridge, visitor and staff parking, as illustrated in Figure 12-7. Some of the road markings should be refreshed to ensure adequate visibility in lower lighting conditions.



Figure 12-7: Internal traffic management and wayfinding at College Proteins (source: SRC)

12.1.3.5 Existing Traffic Volumes for R162/College Road Junction

A weekday daytime traffic count was undertaken at the R162/College Road junction on Wednesday 18th May 2022 from 07.00-19.00, to provide an up to date set of baseline traffic data.

The results provide the following key points:

The AM peak hour is 08.00-09.00 while the PM peak hour is 17.00-18.00.

Existing two-way traffic flows on the R162 of 303 vehicles north of the College Road junction and 336 vehicles south of the College Road junction, during the AM peak hour (08:00-09:00), and 340 vehicles north of the College Road junction and 374 vehicles south of the College Road junction, during the PM peak hour (17:00-18:00),

Existing two-way flow on College Road of 51 vehicles (AM peak hour) and 78 vehicles (PM peak hour).

Over the 12-hour survey period, the existing two way flow on the R162 is 1,918 vehicles (north of College Road) and 3,242 vehicles (south of College Road), with a two way flow of 590 vehicles on College Road over the same 12-hour period.

Over the 12-hour period, 79% of traffic entering College Road arrives from the R162 south via Nobber village, and 75% of traffic exiting from College Road turns left on the R162 towards Nobber village.

The existing operations at College Proteins would be a significant proportion of the existing daytime traffic on College Road, to the south of the site access, although it is recognised the total volumes on College Road are low.

Trucks accessing and exiting the facility are all directed to travel to/from the R162 to the south (identified by signage at the exit, and operational procedures which all 'haulage' drivers must adhere to). Therefore, other than occasional and infrequent local car movements (by staff living in the area), no College Proteins-related traffic uses the College Road to the north of the facility.

The Junction Turning Count data is available within Appendix G of this EIAR.

12.1.3.6 Existing Traffic Volumes Generated by College Proteins

There are 79 staff employed at the Nobber College Proteins facility. The greater proportion of the workforce arrives on site before 08.00, with a small number of office/administrative staff arriving between 08.00 and 09.00. Therefore, existing staff travel has minimal impact on the R162 and College Road during the weekday morning peak period.

Typically, there would be 4-5 trucks arriving and departing (each way) per hour and across the daytime hours. The split from the survey data identified 38% OGV1 (smaller rigid) and 62% OGV2 (large rigid/articulated).

SRC would note that the existing volumes of traffic generated by College Proteins are not significant in the context of the junctions and there are no capacity issues or queuing due to existing traffic at either the College Proteins access, or at the R162 junction, with traffic able to turn-in/out of College Road at the R162 junction with minimal queuing and delay, even during peak periods for traffic volumes on the R162.

12.1.3.7 Pedestrian and Cycle Activity

Pedestrian and cycle activity was observed to be minimal in the vicinity of the site which is in keeping with the rural nature of the area and the relatively remote location of the site.

12.1.3.8 Existing Public Transport Accessibility

There are buses running along the R162 and stopping in Nobber Village, but it is not expected that these would provide access for the workforce at the facility, due to the timing of services which do not suit staff shift times.

As the site is located in a rural area several kilometres north of Nobber, and there are no footpaths to the north of the Health Centre on the R162, it is expected that the primary mode for access to the site (for staff working at the facility) will be by private car, either as car drivers or passengers by lift share/drop off.

12.1.4 Characteristics of the Proposed Development

College Proteins are proposing to construct an Anaerobic Digestion (AD) Facility to produce green Biogas which will off-set the use of fossil fuels on-site, therefore reducing the company's carbon footprint. The biogas produced from the AD Facility can be used in the on-site steam boilers and Combined Heat and Power (CHP) plants to generate steam and electricity to run the production facilities on-site.

College Proteins are committed to sustainability and maximising the resource value of organic material from all sources. The Proposed Development will reduce the requirement for natural gas use on-site which will aid the company's self-sufficiency in this regard.

The Proposed Development will consist of the demolition of the existing garage and the provision of the AD Facility with an intake capacity of up to 50,000 tonnes of organic feedstock material per annum. The AD Facility will comprise a waste reception building (incorporating workshop, control room and welfare facilities), 2 No. digester tanks, 2 No. digestate storage tanks, glycerine tank, buffer tank, pasteuriser tank, 4 No. liquid reception tanks; all of the above tanks located within a fully bunded concrete area; associated biofilter, gas flare, internal access roads, weighbridge, truck loading area and soil deposition area. The proposed development will also include all associated site development, drainage and infrastructure works above and below ground. The maximum height of the Proposed Development is the chimney stack associated with the biofilter at c. 18m above ground level.

AD is a sustainable form of renewable energy production through a naturally occurring biological process in which micro-organisms break down biodegradable material in the absence of oxygen in an enclosed system. The process produces a methane-rich biogas and a nutrient rich fertiliser known as 'digestate'. The biogas can be converted into renewable electricity, or it can be upgraded to biomethane for use in on site boilers, as a vehicle fuel or for injection directly into the gas network to provide a source of renewable heat.

The 'feedstocks' proposed for biogas production include grass and maize silage, food waste, slurry, and sludges from food processing plants.

12.1.4.1 Construction Phase

The Construction Phase for the Proposed Development will involve the removal of an existing building, removal of soil from the site of the Proposed Development, the construction of the Anaerobic Digestion plant and raising the level of land near the solar farm with the excavated soil.

Phase 1 – The existing building garage and concrete tank on site will be demolished. The garage currently used for maintaining College Proteins vehicles has a floor area of 545.67m² and the building is 8.3 meters to the apex. The building is constructed from concrete, steel and Kingspan sheeting. The Kingspan sheeting, purloins and steel work will be carefully removed and stored to be re-used on other buildings in future projects. The concrete tank (bund area) has never been in use, therefore there is no chance of any soil contamination under this tank. This has a floor area of 178.79m² and a wall height of 2 meters. The concrete floors and walls of the existing building garage and concrete tank (totalling approx. 840m³ volume) will be removed off site for disposal in a licenced facility. The gravel from the yard surrounding the garage and concrete tank will be dug up and kept to one side pending testing for contamination and then will be re-used as filling on site if it is suitable. If not, the material will be treated in an authorised facility. The garage & concrete tank bund are detailed on drawing No. 21-21-23 attached in Appendix A.

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direct traffic on site. There will be a new two-way road constructed on site separated from the rendering plant with a fence to access the proposed AD plant area. 21,500 tonnes approx. of stone filling and concrete will be brought to the site to create a base for building the road, yard, tank foundations, walls of the reception hall and AD tanks and bunded walls.

Phase 3 - The AD plant intake buildings, tanks, bund wall and road will be constructed. The intake building will be of steel frame construction, shuttered concrete walls, olive green insulated Kingspan sheeting and purloins. The olive green sheeting was selected to blend the colours into the agricultural surroundings around the site and therefore cause less visual impact. The AD tank bund will be a concrete wall construction with a concrete floor, the roadway to the plant will be a constructed from concrete. The intake tanks and glycerine tank will be constructed from stainless steel. The buffer tank, digesters and digestate storage tanks will be constructed from concrete. The pasteurisation tank will be constructed from glass lined steel.

The Proposed Development comprises of:

- Anaerobic Digestion (AD) Plant Reception building (food waste reception)
- Reception hall for solid feedstock (silage & Maize)
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- Workshop
- Office, control room, toilets and changing rooms
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- 2 No. Digesters - 3682m³
- 2 No. Digestate Storage tanks – 2500m³
- Gas Flare
- Biogas Combined Heat and Power (CHP) Plant

Refer to Site Layout Plan drawing 21-21-14 in Appendix A.

Phase 4 – The fields where the soil will be deposited will be re-seeded and planted with grass and returned to agricultural use. Please see filling area on drawing ref. 21-21-18 in Appendix A.

12.1.4.2 Operational Phase

The existing facility will continue to operate as an animal by-product rendering plant, a biodiesel production facility and a solar farm, with the addition of an anaerobic digestion facility. The existing facility is currently operational under IE Licence (P0037-04) and Greenhouse Gas Permit (GHG Permit) No. IE-GHG123-10405-03.

An application for a review of the existing IE License will be made to the Environmental Protection Agency as the introduction of an anaerobic digestion facility will results in changes to the environmental emissions from the facility. The GHG Permit may also need to be revised, and the EMS will be updated accordingly.

The Proposed Development will be operated in accordance with the requirements of the planning grant conditions and updated requirements of the reviewed IE Licence, GHG Permit, EMS and Safety Report for the facility.

12.1.5 Potential Impact of the Proposed Development

12.1.5.1 General

The Proposed Development by College Proteins is a proposal to construct an Anaerobic Digester (AD) Plant for the production biogas at their site at College Road, Nobber, Co. Meath. The layout is illustrated on the site layout drawings submitted with the planning application, located on lands inside the curtilage of the College Proteins lands.

12.1.5.2 College Proteins Operational Traffic Generation

Existing Operations

The existing operations at the College Proteins site are primarily related to the rendering plant and bio-waste management activities, servicing the Food Service Sector. As noted previously, there are 79 staff based at the facility in Nobber.

Proposed AD Plant (subject application)

The 2,500 tonnes/annum of material which is currently generated in the College Biodiesel facility can be used in the AD Plant and therefore 2 trucks per week (Based on 25 tonne loads) that are currently leaving the biodiesel plant could be diverted to the AD plant, reducing existing traffic generation.

An additional 47,500 tonnes/ annum of 'feedstock' materials will be brought to the AD Plant. This will result in an increase of 36.5 (i.e. 37) laden truck movements per week. (Based on 25 tonne loads), averaging out at 7.4 (i.e., 8) laden trucks arriving per weekday).

Approximately 3,500 tonnes/annum of plastic/cardboard from food waste packaging will also leave site for recycling. This is an extra 2.7 (i.e. 3) laden truck movements departing per week. (Based on 25 tonne loads).

The output from the AD Plant 46,500 tonnes/annum of digestate to be sent off site to be spread on farms. This is an additional 35.7 (i.e. 36) laden truck movements departing per week (Based on 25 tonne loads), averaging out at 7.2 (i.e., 7) laden trucks per weekday).

Therefore, the overall change in terms of HGV movements entering the College Proteins site would be an additional +38 laden truck movements IN and $+39 - 2 = +37$ laden truck movements OUT per week (a total of 75 laden truck movements), averaging out at an additional 15 laden truck movements per weekday (based on Monday-Friday haulage).

12.1.5.3 AD Plant - Construction Traffic Generation

The Construction Phase of the Proposed Development will comprise of the demolition of existing structures including the existing garage and a concrete tank located within the existing facility in the eastern portion of the Site.

The Proposed Development will involve the excavation and regrading of soil for the construction of the AD Facility, construction of the internal vehicle access road, the stormwater drainage network including proposed attenuation tank, foul water drainage from yard to be pumped into the AD plant and foul water from the amenity block to be pumped to the Waste Water Treatment Plant (WWTP) within the existing facility and all associated above and below ground works.

Excavated soils will remain onsite to be used to increase the levels of land in the field in the west of the Site. The soil will be infilled in a manner to minimise compaction and ensure that there will be adequate drainage through soils.

The construction of the AD Plant involves the following total deliveries:

- 860 trucks (civil works); - Stone, concrete
- 25 trucks (structural); - steel, cladding
- 3 trucks (electrical); - electrical panels & cables
- 25 trucks (M&E/plant) – pumps, valves, instrumentation, food waste handling equipment.

There would be relatively low numbers of construction workers on site during the construction phase, estimated at approximately 10-20 per day during the peak of construction and commissioning of the AD Plant. There will be different trades on site at different parts of the project totalling approximately 50 workers.

For the purpose of this assessment, it is assumed that 2023 will be the 'construction year' so the opening year of the facility is assumed to be late 2023/early 2024.

Post Development Traffic Impact

There will be 20 new employees including transport, operations and maintenance. This will result in an additional 40 car movements per weekday (two-way total), in addition to the additional 15 laden truck movements + 15 unladen truck movements per weekday.

The breakdown of new staff and their shift times is as follows:

Transport staff (Truck Drivers)

06:00-15:00 - 5 No. drivers

09:00-18:00 - 4 No. drivers

Operations

08:00-16:00 - Laboratory technicians – 2 No. Employees

09:00-17:00 - Logistics/Admin, Sales & Procurement, Management - 3 No. Employees

08:00-16:00 – AD Plant operators – 5 No. Employees

07:30-16.30 - Maintenance - 1 No. employee

As a result of the various shift times, 7 of the 20 new staff would be expected to arrive during the 08.00-09.00 network AM peak hour (for a 09.00 start time), while 3 of the 20 new staff would depart during the 17.00-18.00 network PM peak hour (after a 17.00 finish time).

It should be noted that 5 truck drivers will arrive before 06.00 (therefore these 'commuting' arrivals by car are excluded from the 07.00-19.00 weekday 12-hour traffic figures, while the departure of these 5 staff by car after the end of their shift at 15.00 is included in the 12-hour figures).

Percentage Impact of Development

The TII Guidelines for Transport Assessments state that the thresholds for junction analysis in Transport Assessments are as follows:

- *"Traffic to and from the development exceeds 10% of the existing two-way traffic flow on the adjoining highway."*
- *"Traffic to and from the development exceeds 5% of the existing two-way traffic flow on the adjoining highway, where traffic congestion exists or will exist within the assessment period or in other sensitive locations".*

The earliest full year for the proposed development allowing for planning, construction, commissioning and staffing would be 2024, and a '+5' design year (2029) and '+15' (2039) has also been considered.

In addition to the traffic generated by the proposed AD Plant development there is also an expected increase in traffic flows due to general development and an increase in car ownership that needs to be taken into consideration when assessing future year road link and junction capacity.

Traffic growth to 2024, 2029 and 2039 has been developed using the Project Appraisal Guidelines for National Roads Unit 5.3 - Travel Demand Projections PE-PAG-02017 (May 2019).

Figure 6.1 of the TII document confirms that the site and road network are outside the Metropolitan Areas, and therefore Table 6.2. Central Growth Rates for Co Meath are utilised. The appropriate annual rates used are as follows:

Annual County Meath Central Growth Rates

(2016-2030) LV = 1.0173; HV = 1.0365

(2030-2040) LV = 1.0070; HV = 1.0186

The 2022 surveyed flows have been factored for the 2024 opening year and 2029 and 2039 design years and are presented as 'Do Nothing' flows in the appended Diagrams 12.3(a) to 12.5(c).

As set out previously the AD Plant will result in an increase of 30 truck and 40* staff car movements during a full weekday (two-way totals, of which 35 staff car movements occur between 0700 and 19.00), leading to an increase in the traffic on College Road and the R162 to the north and south of the T-junction.

The additional traffic flows from the development (set out in the appended Diagrams 12.2(a) to 12.2(c)) have been summed with the 'Do Nothing' flows to illustrate the post development 'Do Something' flows in the appended Diagrams 12.6(a) to 12.8(c). These traffic flow diagrams are available within Appendix G of this EIAR.

The percentage impact change in the traffic flows on these adjoining roads during the 2024 opening year is as follows:

College Road (between College Proteins and R162 junction)

AM peak hour	+11 vehicles = +18.95%
PM peak hour	+6 vehicles = +8.67%
Weekday 07.00-19.00	+65 vehicles = +10.63%

R162 North

AM peak hour	+2 vehicles = +0.86%
PM peak hour	+1 vehicle = +0.77%
Weekday 07.00-19.00	+18 vehicles = +0.59%

R162 South

AM peak hour	+8 vehicles = +2.10%
PM peak hour	+5 vehicles = +1.11%
Weekday 07.00-19.00	+47 vehicles = +1.40%

The percentage increases are highest on the College Road, but it should be noted these are in the context of a low existing flow, with the 7 additional staff cars arriving in the AM peak hour resulting in most of the increase during the AM peak hour.

The percentage impacts on the R162 to the north and south of the College Road junction are all well below the +5% lower threshold criteria.

These predicted increases are not considered to be materially significant in relation to the operational capacity of the R162/College Road junction.

The proposed AD Plant will replace a previously permitted Biomass CHP facility. The undeveloped Biomass CHP facility permission, which would expire in April 2023 included for the processing of 105,000 tonnes of materials at the facility which would have been mostly

imported to College Proteins by truck. The proposed AD Plant would represent a significant reduction in HV traffic when compared to the previously permitted biomass CHP facility.

The trip assignment and percentage impact data are available within Appendix G of this EIAR.

12.1.5.4 Potential Cumulative Impacts

In the context of traffic impact, there is potential for cumulative impacts to occur with the Proposed Development and the existing facility.

Cumulative impacts are not anticipated from the Proposed Development as the existing baseline traffic has been assessed and included as part of this traffic Chapter.

12.1.6 Avoidance, Remedial & Mitigation Measures

As noted in Section 12.1.3, the Proposed Development will result in no significant impact on traffic capacity on the R162 or College Road, and the hourly and daily volumes of traffic using the access junction will not result in any capacity issues.

Notwithstanding this, it is noted that the road markings at the R162 junction and at the College Proteins access junction are worn and will have to be refreshed. It is considered that a condition to refresh these road markings could be included in a decision to grant permission for the AD plant.

12.1.6.1 Worst Case Scenario

Not applicable.

12.1.7 Residual Impacts

Residual Impacts are defined as *'effects that are predicted to remain after all assessments and mitigation measures'*. They are the remaining 'environmental costs' of a project and are the final or intended effects of a development after mitigation measures have been applied to avoid or reduce adverse impacts. Potential residual impacts from the Proposed Development were considered as part of this environmental assessment.

No negative residual impacts in the context of Traffic are anticipated regarding this Proposed Development.

12.1.8 Monitoring

No monitoring is proposed for the Construction or Operational Phase.

12.1.9 Interactions

12.1.9.1 Population and Human Health

The AD Plant will only lead to minor increases in the traffic on College Road and the R162, therefore there will be no significant impact on the population and human health of the surrounding area.

12.1.9.2 Air Quality and Climate

Traffic derived pollutants which may affect Air Quality and Climate are deemed insignificant due to the marginal change in traffic volume and movement associated with the Proposed Development in the context of currently low traffic flow in the area. Air quality is assessed in Chapter 8 of this EIAR.

12.1.9.3 Noise and Vibration

The Proposed Development will have no significant impact on overall traffic volumes and therefore traffic will not result in any significant increases of noise at sensitive receptors.

12.1.10 Difficulties Encountered when Compiling

There were no difficulties in compiling the specified information with regard to traffic.

12.1.11 References

Guidelines for Traffic Impact Assessments (IHT, 1994)

PE-PDV-02045 Traffic and Transportation Assessment Guidelines (TII, 2014)

DN-GEO-03060-02 'Geometric Design of Junctions', (TII, 2017)

PE-PAG-02017-02 Project Appraisal Guidelines Unit 5.3: Travel Demand Projections, May 2019 (TII)

Meath County Development Plan 2021-2027

12.2 Material Assets: Waste and Utilities

12.2.1 Introduction

Material Assets have been defined as *'Resources that are valued and that are intrinsic to specific places, they may be either human or natural origin and the value may arise for either economic or cultural reasons'* (EPA 2002).

The definition of Material Assets was further expanded by the EPA in 2022 in *'Guidelines on the information to be contained in Environmental Impact Assessment Reports'* which states:

'In Directive 2011/92/EU this factor included architectural and archaeological heritage. Directive 2014/52/EU includes those heritage aspects as components of cultural heritage. Material assets can now be taken to mean built services and infrastructure. Traffic is included because in effect traffic consumes roads infrastructure. Sealing of agricultural land and effects on mining or quarrying potential come under the factors of land and soils.'

The scope and definition of Material Assets within the context of the EIA process has been defined by the EIA Directive as including Architectural and Archaeological Heritage or Cultural Heritage. These elements are assessed separately in Chapter 11 under Archaeology & Cultural Heritage.

This Chapter of the Environmental Impact Assessment Report (EIAR) provides an assessment of the potential impacts of the Proposed Development on Material Assets or physical resources in the environment of human origin including built services and infrastructure comprising:

- Electricity Supply,
- Gas Supply,
- Information and Communications Technology,
- Surface Water Drainage Infrastructure,
- Water Supply and Demand,
- Wastewater Management, and
- Waste Management

Natural resources (water, land, biodiversity, air, etc) are addressed in their respective Chapters.

12.2.1.1 Quality Assurance and Competence

This Chapter was prepared by Enviroguide Senior Environmental Consultant Nikita Coulter. Nikita Coulter has a B.Sc. in Zoology (Hons) from University College Dublin, an M.Sc in Biodiversity and Conservation and a Postgraduate Diploma in Environmental Engineering from Trinity College Dublin, and a NEBOSH accredited International Diploma in Environmental Risk Management. Nikita has 8 years professional experience as an Environmental Compliance Specialist.

12.2.1.2 Study Methodology

The methodology adopted for the assessment takes cognisance of the relevant guidelines the following:

Environmental Protection Agency (EPA) (2022) Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR)

EPA (2003) Advice Notes on Current Practice in the preparation of Environmental Impact Statements.

EPA (2002) Guidelines on the information to be contained in Environmental Impact Statements.

The scope of work undertaken for the assessment included a desk-based study of material assets, namely built services, utilities and infrastructure associated with the existing Site and the Proposed Development. All phases of the Proposed Development were considered in the assessment of potential impacts on material assets.

Information on built assets in the vicinity of the Site of the Proposed Development was assembled by the following means:

A desktop review of ESB Networks Utility Maps, Irish Water Utility Plans, Gas Networks Ireland Service plans, EIR E-Maps and College Proteins Annual Environmental Returns.

Assessment of the likely impact of features of the Proposed Development, including surface water runoff, foul water discharge and water usage was carried out in accordance with the following guidelines:

IS EN752, "Drain and Sewer Systems Outside Buildings".

12.2.1.3 Prediction and Assessment of Impacts

Impacts were predicted and assessed based on the Impact Assessment guidance detailed in the EPA's 2022 document, *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* and by using the definitions detailed in Tables 12-1 to 12-5. Impacts will vary from negative to neutral or positive, and also will vary in significance on the receiving environment. The terminology and methodology used for assessing the impact significance and corresponding effects throughout this Chapter are described in Table 12-1 to 12-5. Where significant potential impacts were identified, mitigation measures are proposed to minimise impacts.

Table 12-1: Terminology used to assess the quality potential impacts & effects

Quality of Effects / Impacts	Definition
Negative	A change which reduces the quality of the environment.
Neutral	No effects or effects that are imperceptible, within the normal bounds of variation or within the margin of forecasting error.
Positive	A change that improves the quality of the environment.

Source: EPA, 2022

Table 12-2: Terminology used to assess the significance of potential impacts & effects

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

Source: EPA, 2022

Table 12-3: Terminology used to assess the duration of potential impacts/effects

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

Source: EPA, 2022

In line with the EPA Guidelines (EPA, 2022), the terms in table 12-4 are defined when quantifying the extent and context of effects, and the terms in table 12-5 are defined when quantifying the probability of effects.

Table 12-4: Definition of the Extent and Context of Effects

Quality	Definition
Extent	Describe the size of the area, the number of sites, and the proportion of a population affected by an effect.
Context	Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)

Source: EPA, 2022

Table 12-5: Definition of the Probability of Effects

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

Source: EPA, 2022

Figure 12-8 (extracted from the EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, 2022) shows how the character of the predicted impact in relation to the sensitivity of the receiving environment can determine the significance of the impact.

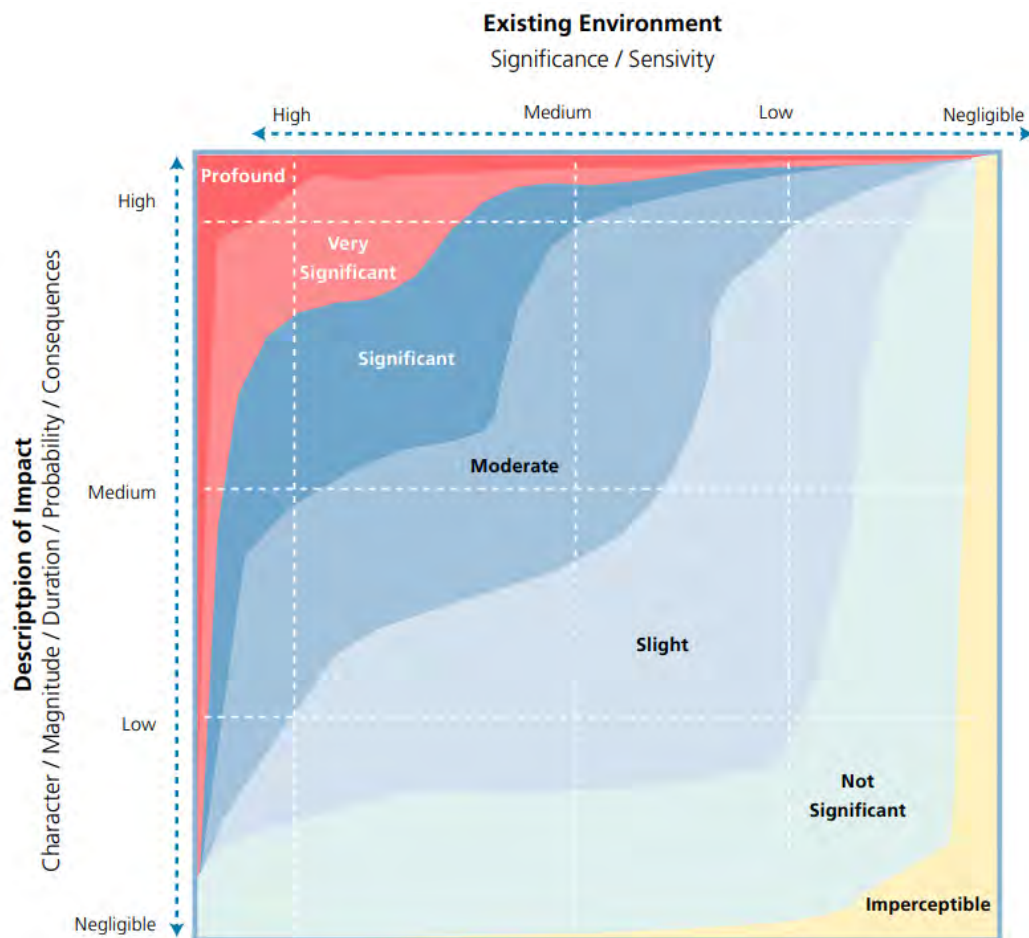


Figure 12-8 Chart showing typical classifications of the significance of impacts (EPA, 2022, Guidelines on the Information to be Contained in Environmental Impact Assessment Reports)

12.2.2 The Existing and Receiving Environment (Baseline Situation)

12.2.2.1 Baseline Environment

The Site of the Proposed Development, College Proteins, is located to the west of College Road, in the townland of Nobber, Co. Meath (Eircode A82 XT61). The Site is approximately 5.31 hectares and can be accessed from the southwest via the R162, or from the northeast via the R165.

College Proteins is a leading Bio-Waste Management Company which collects and treats animal by-products and food wastes from abattoirs, meat plants, butchers and poultry plants, and has been operating since 1989. Category 1 (Cat 1) is the highest risk category for rendering. College Proteins render Specified Risk Material (SRM) linked with prion diseases (also known as transmissible spongiform encephalopathies (TSEs)), for example, fallen stock with SRM, international catering waste, and any material handled with Cat 1 material.

The main raw materials are inputted into the existing plant and cooked and separated to produce Cat 1 Tallow and Cat 1 Meat and Bone Meal (MBM). These two products produced from the process are renewable indigenous, carbon neutral fuels. The Cat 1 Tallow is made

from rendered animal fat and is used for the production of biofuels, while the Cat 1 MBM is primarily used as a carbon-neutral fuel in steam raising boilers, particularly in cement manufacturing. The site also has a biodiesel facility that produces 25,000 tonnes of biodiesel per annum. The Cat 1 Tallow produced from the rendering operations is used as a feedstock in the biodiesel facility. This enhances the value of the Cat 1 Tallow and produces a green biofuel. This biofuel is sent off-site as an ingredient to be blended with white diesel to reduce carbon emissions from vehicles. A solar farm has also been constructed at the site which produces 3 million Kilo Watt Hours (kWh) of 100% green electricity for consumption by on-site operations.

College Proteins operates under the EU Regulation S.I. No. 187/2014 (European Union (Animal By-Products) Regulations 2014) and in accordance with EC Regulation 1069/2009 and EU 142/2011.

The College Proteins facility at College Road currently operates under an Industrial Emissions (IE) Licence from the Environmental Protection Agency (EPA), IE register number P0037, which was originally issued to the facility on the 2nd of February 1996, and a Greenhouse Gas Emissions (GHG) Permit Register No. IE-GHG123-10405, which was originally issued to the facility on the 23rd of December 2013. The current IE Licence is version P0037-04, which was revised and reissued to College Proteins by the EPA on the 3rd of June 2021, and the GHG Permit for the facility is version IE-GHG123-10405-03, which was reissued to the College Proteins Facility by the EPA on the 21st of January 2020. The company has a Waste Collection Permit NWCPO-08-06361-03. The facility is also approved by the Department of Agriculture as a Category 1 Rendering Plant, Approval No. R911.

The Environmental Management System (EMS) in place at the facility is certified to International Standard 14001:2015. In addition to this the Hazard Analysis & Critical Control Point (HACCP) system has been implemented to ensure controls are in place at all levels of operation. The Environmental Management System and HACCP controls are designed to foster improved environmental performance.

Figure 12-9 and Figure 12-10 detail the Site Location and the Proposed Site Layout Plan, respectively.

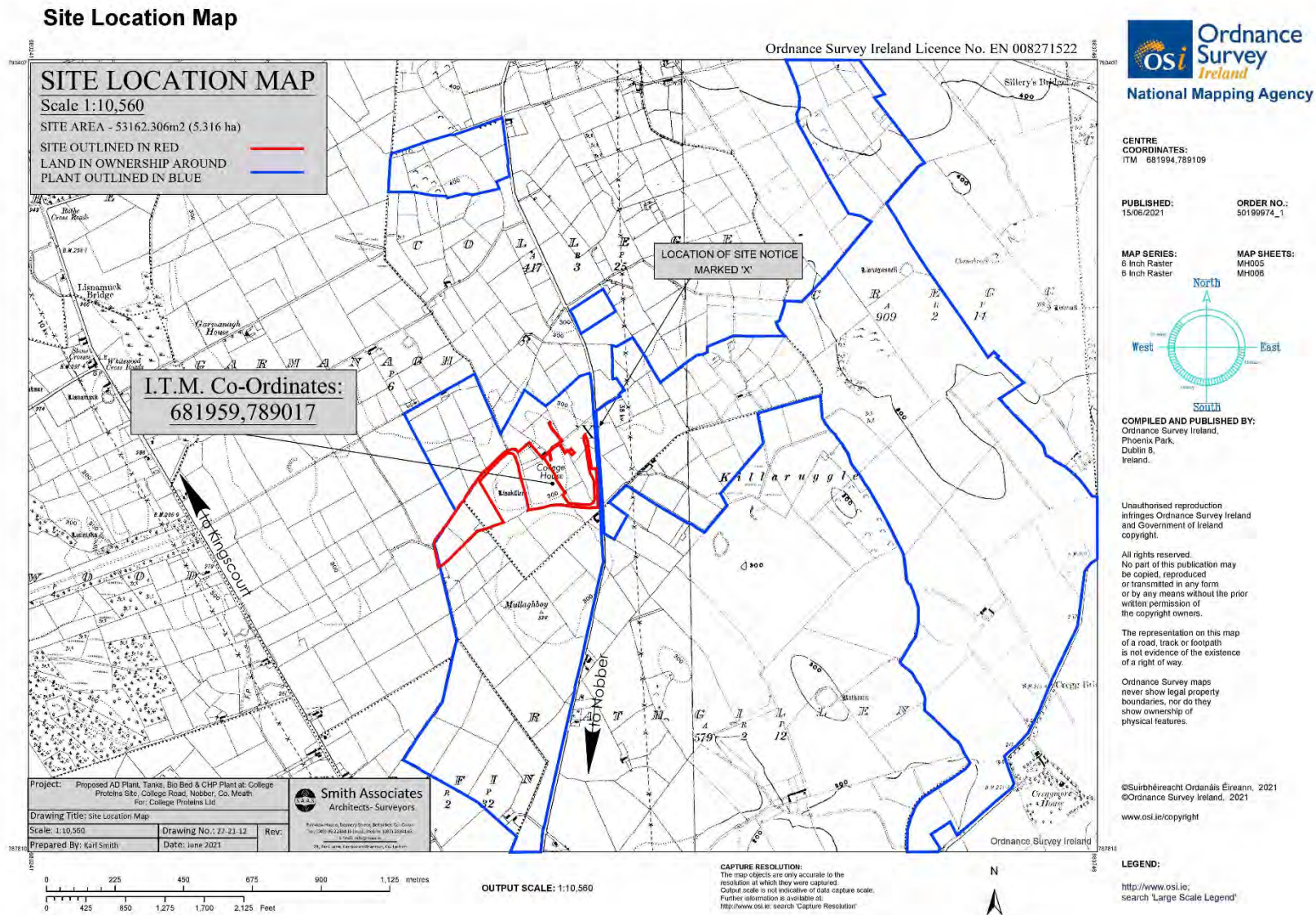


Figure 12-9: Site Location Map (Drawing no. 27-21-12, Smith Associates Architects)

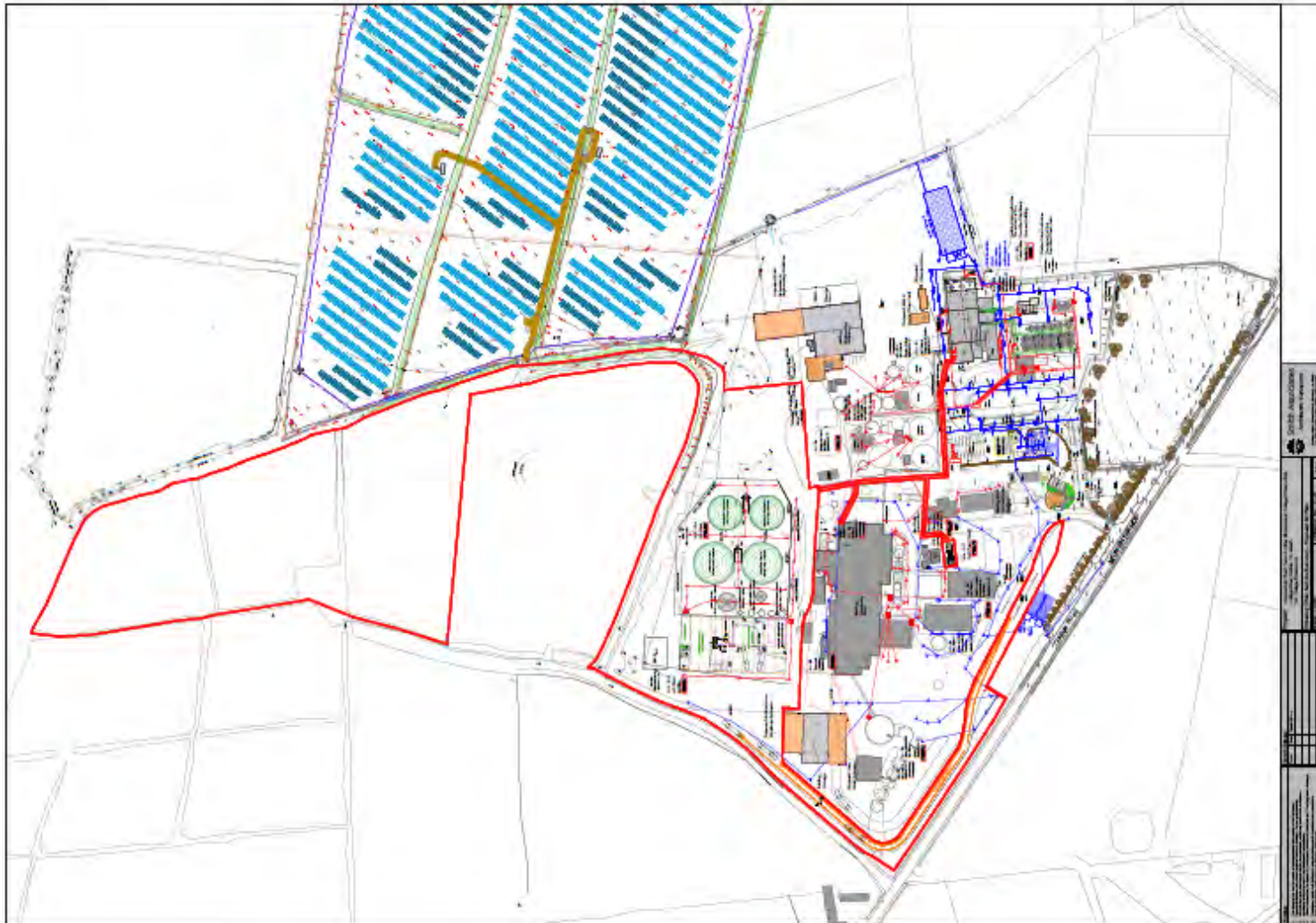


Figure 12-10: Proposed Site Layout Plan

12.2.2.2 Rendering Plant Process

Raw material is received into the factory and off-loaded in the raw material building. From there it is fed through crushers to reduce the particle size. The crushed material is fed via a pump to a preheating system. Wastewater from the raw material area and crushing area is collected in an isolated sump and fed into the pre-heating system. All areas in the factory are kept under negative pressure at all times and the malodorous air is treated in the bio filters.

The material is pressed after pre-heating, the solids go to the driers and the liquid is tri-canted. The oil is sterilised before it is sent to tallow storage tanks. The waste liquid (stick water) is sent to a waste heat evaporation plant to be evaporated and the solids are conveyed to the drier. The evaporated / concentrated liquid is then sent to the drier for further processing. Once in the drier the material is heated according to Department of Agriculture and EC regulations (1069/2009).

After drying, the material now called meal is discharged and goes on to be sterilised, cooled, milled and stored for dispatch. Vapours which are driven off at the drying stage are drawn by a fan to a waste heat evaporator, while excess vapours go to the thermal oxidiser. There is backup alternative abatement in the form of air-cooled condensers, boilers and biofilters which will be used in the event of a thermal oxidiser malfunction. The condensate liquid generated in the evaporation plant condenser is directed to the WWTP.

The process area where these processes take place is ventilated by the bio filter system and thus kept under negative pressure. Both the process in the rendering plant and the WWTP are controlled by a modern automated siemens control system. This system ensures that all processes are readily monitored and controlled thus minimising any impact on the environment through human error.

12.2.2.3 Biodiesel Process

Biodiesel is manufactured at the College Proteins facility from renewable feedstock, which is animal or vegetable-based tallow or used cooking oil for example, via a catalytic reaction known as transesterification. The esterification of fatty acids or the transesterification of triglycerides with methanol is carried out in an acid-catalysed equilibrium reaction, which is described in detail in Chapter 2. The reaction is catalysed by H^+ ions so that any acid can be used as a catalyst. However, it is important to select the correct acid in terms of corrosion (HCl), contamination (H_3PO_4) or side reactions (H_2SO_4). This avoids problems in the evaporation units of glycerine/water as well as sulphates or sulphonates of methyl esters. Acid is used as a catalyst to minimize the aforementioned problems. This biodegradable catalyst prevents the formation of methyl ester sulfonate and the biodiesel produced in this way is free of sulphur.

12.2.2.4 Local Settlement and Land Use

The town of Nobber, County Meath, lies approximately 3km south of the Site of the Proposed Development. The town of Kingscourt, Co. Cavan lies approximately 7km northwest of the Site on the R162, the village of Drumconrath, Co. Meath, lies approximately 6km to the east of the Site on the R165, and the village of Kilmainhamwood, Co. Meath lies approximately 6km to the west of the Site on the L6802. The landscape surrounding the Site of the Proposed Development is rural, comprised of grazing and arable lands, divided by frequent mature hedgerows, and scattered with small farms and residential dwellings.

12.2.2.5 Land Use History

Historical mapping and aerial photography available from the Ordnance Survey of Ireland website (OSI, 2022) were reviewed and key observations on-site and off-site are summarised in Table 12-6.

Table 12-6 Historical Land Use

Date	Information Source	Site Description
1837-1842	OSI map 6inch	On-site: The site of the Proposed Development consists of 4 fields divided by hedgerows with one dwelling along College Road on the east of the site, and one dwelling also along College Road to the south of the site. There is one dwelling in the western portion of the site, with a lane approaching it from the south. Off-site: Approx. 130m west a Ringfort is identified on the map as Lisakilleen. The site is predominantly surrounded by rural countryside with agricultural fields and individual dwellings. Whitewood House and estate lie approx. 1.2km west of the site. The village of Nobber is visible 2.5km to the south and Brittas House and estate are situated 2.5km southwest of the site.
1888-1913	OSI map 25inch	On-site: The site has been further divided into approximately 6 fields, and the dwellings along College Road are gone. The dwelling in the western portion of the site remains but the lane now approaches it from the east. A well is noted to the north of the dwelling. Off-site: Whitewood and Brittas Houses and estates are still visible, as is Nobber village. The surrounding fields have been noticeably subdivided.
1830-1930	OSI Cassini map 6inch	On-site: The dwelling in the western portion of the site is now noted as "College House", and the garden behind the house has been divided Off-site: The forest at Whitewood House has largely been clear-felled.
1995	OSI Aerial photography	On-site: The College Proteins facility has been established in the fields surrounding College House. Two large processing buildings and a tank farm are visible along with ancillary site buildings and hardstanding areas. Off-site: A warehouse and yard have been built approx. 150m south of the site on the opposite side of College Road.
2000	OSI Aerial photography	On-site: Additional tanks have been added to the tank farm. Another large processing building has been built adjoining the main processing building to the south. The site has been increased in size and additional buildings and set down areas/car parks are visible to the east of the main processing buildings in the fields adjoining College Road. Off-site: No significant changes
2005	OSI Aerial photography	On-site: Additional tanks and two more buildings have been added to the facility. Three chimney stacks have been added to the facility. Off-site: Two lagoons are now visible on lands to the east of College Road
2005-2013	OSI Aerial Photography	On-site: Additional hardstanding areas have been laid and a new entrance to the tank farm has been opened up Off-site: Lands to the south of the site have been planted with trees, possibly for biofuels.
2022	Mapcarta	On-site: A biodiesel processing building and a new tank farm have been constructed in the northern most part of the site. Off-site: No significant changes

12.2.2.6 Electricity Supply

Local Supply & Grid Connection

The Site is currently operational, and College Proteins is connected to the national grid. The electricity supply grid infrastructure on the island of Ireland is owned and maintained by ESB Networks and operated on a day-to-day basis by EirGrid. Table 12-7 indicates the amount of electricity imported to the site from the ESB for use at the site from 2018 until 2021.

Table 12-7 Electricity imported from ESB for use on site 2018 – 2021

Energy Usage On Site	Unit	2018	2019	2020	2021
Electricity from ESB	kWh (GJ)	7 476 640 (26915.90)	7 906 868 (28464.73)	9 953 569 (35832.85)	9 553 187 (34391.5)

Onsite Supply and Consumption

The newly constructed solar farm (2022) produces 3 million Kilo Watt Hours (kWh) of 100% green electricity for consumption by on-site operations. This power is only available during the day and is weather dependant. Currently there is no battery storage on site, and the solar electricity is not being exported to the grid, hence the solar farm is ramped down if excess power is being generated.

The site also operates a gas fired Combined Heat and Power (CHP) engine on site which produces 800 KW of electricity. This is mainly used at night now when solar power is not available. Power generated by the CHP engine will not be exported to the national grid, it is only for use at the site. Table 12-8 indicates the amount of electricity produced onsite in the CHP engine for use at the site from 2018 until 2021.

Table 12-8 Electricity produced onsite in the CHP engine for use on site from 2018 – 2021

Energy Usage On Site	Unit	2018	2019	2020	2021
Electricity produced on site by the CHP	kWh (GJ)	0	0	0	1,806,533.6 (6503.5)

Gas Supply

Gas Networks Ireland builds, develops and operates Ireland's gas infrastructure, maintaining gas pipelines and two sub-sea interconnectors. The site of the Proposed Development is currently operational and natural gas is the main fuel used on site. Propane cylinders are also used onsite. Natural gas is used on site to supply the steam boilers and thermal oil boiler.

Table 12-9 indicates the amount of natural gas and propane used onsite from 2018 until 2021.

Table 12-9 Natural gas and propane used onsite from 2018 until 2021

Energy Usage On Site	Unit	2018	2019	2020	2021
Natural Gas	Nm ³ (GJ)	4888441.8 (181189.62)	4480999.4 (167652.70)	6257953.2 (233636.14)	7947391.91* (299040)
Propane cylinders	tonne	0.282	0.047	0.02269	0.02269

**Note: The gas usage is higher in 2021 than 2020 as the biodiesel plant and the natural gas fired CHP were being used to generate electricity.*

Information and Communications Technology (ICT)

Eircom uses underground ducts and overhead poles for its services. Other operators in the market can have their fibre cable carried in Eircom's existing infrastructure to provide broadband for their customers.

National Broadband Ireland was set up by the Irish Government to facilitate the roll out of fibre broadband across Ireland. The Department of the Environment, Climate and Communications have developed an interactive map which details the progress of the rollout of the National Broadband Plan. The High-Speed Broadband map identifies locations and premises as amber or blue and the map is updated on a quarterly basis. Amber areas depict target areas for the State intervention of the National Broadband Plan. Blue areas indicated that commercial operators have instated or are in the process of delivering high speed broadband services. The Site of the Proposed Development is partially located within a blue area and high-speed broadband is available.

In terms of mobile telecommunication for transmission and reception, the closest mobile/ICT communications masts hosting Three, Vodafone and Eir antennae are located 2.5km to the North, and 3.4km to the south-southeast of the Site of the Proposed Development in Dunroe and Nobber respectively.

The Site of the Proposed Development is currently operational and IT infrastructure is established at the Site.

Water Supply and Demand

The Site of the Proposed Development is currently operational and there is a water supply and demand at onsite at present. Water supply to the existing facility is from the onsite groundwater supply wells, which are located within the underlying Ardee Ground Water Body (GWB) – a Locally Important aquifer. The existing facility has a current water supply requirement of 85m³/day.

Table 12-10 indicates the annual amount of groundwater used onsite from 2018 until 2021.

Table 12-10 Groundwater used onsite from 2018 until 2021

Water usage on site	Unit	2018	2019	2020	2021
Groundwater	m ³	26,825	26,030	24,136	31,742

Local Hydrology and Hydrogeology

The site of Proposed Development has been mapped by the EPA (EPA, 2022) as within the Newry, Fane, Glyde and Dee WFD Catchment (ID: 06), the Dee_SC_010 Sub-Catchment, (Sub-catchment ID: 06_3) and the Moynagh_040 WFD River Sub Basin (EU Code: IE_NB_06M460800).

The closest surface water features are named locally and recorded on the EPA database (EPA, 2022) as Whitewood Lough (Lake ID 06_218) which is located approximately 2.5km west of the site of the Proposed Development on the River Dee (IE_NB_06D010150). Tributaries to the River Dee lie both east and west of the site and enter the River Dee 2.6km to the south of the site of Proposed Development at Nobber Village. The River Dee flows eastwards and enters the River Glyde (IE_NB_040_0500) at Annagassan, Co. Louth,

discharging into the Irish Sea via Outer Dundalk Bay (IE_NB_040_0000), approximately 27km east of the Proposed Development site.

On-site Surface Water Drainage

Surface water runoff from the existing IE Licensed facility is discharged at emission point SW1 to an open roadside drainage channel located along the eastern boundary of the Site. The open drainage channel ultimately discharges to the Garmanagh Stream which is located within the Dee_040 WFD River Sub Basin.

Surface water runoff from roof and non-process areas to the left of the existing biodiesel manufacturing plant is also discharged to the open roadside drainage channel at SW1 via a silt trap and oil interceptor.

Surface water runoff from the biodiesel manufacturing plant at the existing facility is discharged at emission point SW8 to an open drainage channel located along the northern boundary of the Site via a silt trap and an interceptor. The open drainage channel ultimately discharges to the Nobber Stream which is located within the Moynagh_040 WFD River Sub Basin.

It is a requirement of the IE Licence to carry out visual inspections on any surface water discharges or watercourses on or near the site. Visual assessment of the surface water is carried out on a daily basis. It is also a requirement of the IE Licence for College Proteins to establish trigger and action levels for surface water monitoring parameters. Surface water runoff is monitored on a monthly basis with analysis conducted for BOD, Ammonia, Orthophosphates, pH, Conductivity and TOC. As can be seen from Table 12-11, the surface water monitoring results for 2021 are compliant with the IE Licence requirements.

Table 12-11 2021 Surface Water Monitoring Results (average concentration) (from AER 2021 supporting documents)

Parameter	Average	ELV or Trigger level	Frequency of Monitoring
SW1			
BOD (mg/l)	2.03	2.55	Monthly
Ammonia (mg/l as N)	0.83	1.0	Monthly
Orthophosphate (as PO ₄)	0.16	0.21	Monthly
pH	7.35	6.5 < pH < 9	Monthly
Conductivity	203.2	241	Monthly
TOC	19.2	40	
SW8			
BOD (mg/l)	2.02	2.59	Monthly
Ammonia (mg/l as N)	0.30	0.68	Monthly
Orthophosphate (as PO ₄)	0.14	0.22	Monthly
pH	7.61	6.5 < pH < 9	Monthly
Conductivity	161.6	214.5	Monthly
TOC	9.2	40	

Wastewater Management

The Site is currently operational and there is Wastewater Treatment Plant (WWTP) on site in College Proteins. All liquid wastes arising from the air washers, humidifiers, biofilters and boiler blowdown will be directed to the wastewater collection and treatment plant. In the primary water treatment process including Dissolved Air Flotation (DAF) unit, sediments and

substances such as oil are removed from the wastewater. Biological wastewater treatment is then used as a secondary treatment to remove material remaining after primary treatment. Biological wastewater treatment uses natural processes to help with the decomposition of organic substances. The process relies on bacteria to break down organic wastes using normal cellular processes. The organic matter in the influent is removed by bacterial floc suspended in activated sludge. In presence of oxygen bacteria remove the organic matter and in turn divide and multiply so sludge is made. A range of bacteria (but two in particular – Nitrobacter and Nitrosomonas) carries out the conversion of ammonia to nitrate. In the absence of oxygen, the anoxic tank completes the ammonia/nitrate removal by providing conditions for the nitrate produced in the aeration tank to be removed by converting to Nitrogen gas (N₂). Separated and filtered Final Treated Effluent (FTE) is then pumped to the lagoon. FTE is land spread on the landbank at Cregg Farm in the townlands of Cregg, Killarugge and Rathgillen, Co. Meath.

Waste Management

Meath County Council (MCC) is the local authority responsible for setting and administering waste management activities in the area of the Proposed Development. MCC's waste management activities are governed by the requirements set out in the Eastern Midlands Region Waste Management Plan (EMRWMP) 2015-2021.

The College Proteins facility both accepts waste streams for treatment and generates waste, which is transferred offsite for further/final treatment. These activities are controlled and regulated by the EPA via Industrial Emissions (IE) License reference number P0037-04.

Table 12-12 details the waste streams, along with their European Waste Catalogue (EWC)/List of Waste (LoW) codes, and the amount (in tonnes) which were accepted to the site for treatment from 2019 until 2021.

Table 12-12 Waste accepted onto the site 2019-2021

Waste Stream	EWC/LoW	2019 (tonnes)	2020 (tonnes)	2021 (tonnes)
Edible oil and fat	20 01 25	2,333.65	978.03	3,314.517
Biodegradable kitchen and canteen waste	20 01 08 B	936.15	742.99	0.000
Materials unsuitable for cons./proc. (dairy products industry)	02 05 01	761.74	327.39	308.460
Sludges from washing and cleaning	02 01 01	39.16	18.78	246.120
Sludges - materials unsuitable for consumption or processing	02 02 03	1,415.76	726.30	1,304.020
WWTP sludges	02 02 04			3,442.390
TOTAL		5,486.45	2,793.49	8,615.507

Table 12-13 details the waste streams, along with their EWC/LoW codes, the facility they were transferred to, the code for the treatment operation which they underwent, and the amount (in tonnes) which were transferred offsite for treatment from 2019 until 2021.

Table 12-13 Waste transferred offsite for treatment 2019-2021

Company name and address	Waste	EWC/LoW	Treatment Operation	2019 (tonnes)	2020 (tonnes)	2021 (tonnes)
Irish Lamp Recycling Woodstock Industrial Estate, Kilkenny Road, Athy, Co. Kildare	Fluorescent tubes and lamps	20 01 21	R5	0.046	0	0
Nicro Metals Recycling, Balnagon Upper, Crossakiel, Kells, Co. Meath	Metals	20 01 40 C	R4	4.54	0	0
P. K Top Construction NI Limited, 13 Old Park Armagh Co. Armagh BT61 8AY	Metals	16 01 18	R4	0	0	2.754
College Proteins, College Road, Nobber, Co. Meath	Final effluent	19 08 99	R10	29563	27237	26403
	WWTP sludge	02 02 04	R3	1400.3	1503.4	2418.28
Enva Ireland Limited, Smithstown Industrial Estate, Shanon, Co. Clare	Laboratory chemicals	16 05 08	R1 & R2	0	0.6	1.56
	Contaminated Packaging	15 01 10	R1	0	0	0.785
Enva Ireland Limited, Clonminam Ind. Estate, Portlaoise, Co. Laois	Waste oil: engine, gear and lubricating oil	13 02 08	R9	0	0	3.3
Bord na Mona Recycling Ltd, Proudstown Road, Navan, Co. Meath	Mixed recyclable	20 03 01 E	R5	1.294	4.003	1.728
	Wood	20 01 38	R1	1.92	0	0
	Bulky Waste	20 03 07	R1	0	3.9	0
	Municipal waste	20 03 01 B	R1	48.36	30.48	32.68
Wilton Waste Recycling, Kiffa, Crosserlough, Co. Cavan	Wooden packaging	15 01 03	R1	18.90	3.82	0
	Wood	20 01 38	R1	0	0	6.08
	Mixed metals	20 01 40 C	R4	25.235	23.98	6.82
	Mixed C & D waste	17 09 04	R5	1.10	0	0
	Municipal waste	20 03 01 B	R1	1.28	0	0.52
Progress Energy Ltd, 33 Greenogue Road, Dromore, Co. Down, BT25 1RG, NI	WWTP sludge	02 02 04	R1	0	155.92	0
Van Werven Recycling Plastics, Rosemount Business Park, Unit 8A, Dublin	Plastic and Rubber	19 12 04	R5	0	2.5	0

Company name and address	Waste	EW/LoW	Treatment Operation	2019 (tonnes)	2020 (tonnes)	2021 (tonnes)
Enrich Environmental Limited, Windtown, Co.Meath,	Woodchip	20 02 01	R3	0	0	28.3
Various European Facilities	Cat1 Meat Bone Meal	02 02 99	R1	22973.74	25169.82	27555.47

12.2.3 Characteristics of the Proposed Development

The Applicant, College Proteins, is proposing to construct an Anaerobic Digestion (AD) Facility on site at the existing College Proteins Facility, College Road, Nobber, Co. Meath, to produce green Biogas which will offset the use of fossil fuels on site, therefore reducing the companies carbon footprint. The Applicant is committed to sustainability and maximising the resource value of organic material from all sources. The Proposed Development will reduce the requirement for natural gas use on site which will aid the companies and national self-sufficiency in this regard.

The biogas produced from the AD Facility will be used in the onsite steam boilers and Combined Heat and Power (CHP) plants to generate steam and electricity to run the production facilities onsite.

The Proposed Development will consist of the demolition of an existing garage and the provision of an Anaerobic Digestion Facility with an intake of up to 50,000 tonnes of organic feed-stock material per annum. The Facility will comprise a waste reception building (incorporating workshop, control room and welfare facilities), 2 No. digester tanks, 2 No. digestate storage tanks, glycerine tank, buffer tank, pasteuriser tank, 4 No. liquid reception tanks; all of the above tanks located within a fully bunded concrete area; associated biofilter, gas flare, biogas combined heat and power plant, internal access roads, weighbridge, truck loading area and soil deposition area. The Proposed Development will also include all associated site development, drainage and infrastructure works above and below ground. The maximum height of the Proposed Development is the chimney stack associated with the biofilter at c. 18m above ground level.

AD is a sustainable form of renewable energy production through a naturally occurring biological process in which micro-organisms break down biodegradable material in the absence of oxygen in an enclosed system. The process produces a methane-rich biogas and a nutrient rich fertiliser known as 'digestate'. The biogas can be converted into renewable electricity, or it can be upgraded to biomethane for use in on site boilers, as a vehicle fuel or for injection directly into the gas network to provide a source of renewable heat.

Feedstocks proposed for biogas production include energy crops (e.g., grass and maize silage), Food waste, slurry, sludges from food processing plants.

12.2.3.1 Construction Phase

The Construction Phase for the Proposed Development will involve the removal of an existing building, removal of soil from the site of the Proposed Development, the construction of the

Anaerobic Digestion plant and raising the level of land near the solar farm with the excavated soil.

Phase 1 – The existing building garage and concrete tank on site will be demolished. The garage currently used for maintaining College Proteins vehicles has a floor area of 545.67m² and the building is 8.3 meters to the apex. The building is constructed from concrete, steel and Kingspan sheeting. The Kingspan sheeting, purloins and steel work will be carefully removed and stored to be re-used on other buildings in future projects. The concrete tank (bund area) has never been in use, therefore there is no chance of any soil contamination under this tank. This has a floor area of 178.79m² and a wall height of 2 meters. The concrete floors and walls of the existing building garage and concrete tank (totalling approx. 840m³ volume) will be removed off site for disposal in a licenced facility. The gravel from the yard surrounding the garage and concrete tank will be dug up and kept to one side pending testing for contamination and then will be re-used as filling on site if it is suitable. If not, the material will be treated in an authorised facility. The garage & concrete tank bund are detailed on drawing No. 21-21-23 attached in Appendix A.

Phase 2 – The soil (77,804.15m³) will be removed from the Site and will be infilled to fields to the west of the site. Ref. drawing 21-21-18 in Appendix A. A new weighbridge will be installed beside the existing rendering weighbridge, this will be separated with a fence and signage to direct traffic on site. There will be a new two-way road constructed on site separated from the rendering plant with a fence to access the proposed AD plant area. 21,500 tonnes approx. of stone filling and concrete will be brought to the site to create a base for building the road, yard, tank foundations, walls of the reception hall and AD tanks and bunded walls.

Phase 3 - The AD plant intake buildings, tanks, bund wall and road will be constructed. The intake building will be of steel frame construction, shuttered concrete walls, olive green insulated Kingspan sheeting and purloins. The olive green sheeting was selected to blend the colours into the agricultural surroundings around the site and therefore cause less visual impact. The AD tank bund will be a concrete wall construction with a concrete floor, the roadway to the plant will be constructed from concrete. The intake tanks and glycerine tank will be constructed from stainless steel. The buffer tank, digesters and digestate storage tanks will be constructed from concrete. The pasteurisation tank will be constructed from glass lined steel.

The Proposed Development comprises of:

- Anaerobic Digestion (AD) Plant Reception building (food waste reception)
- Reception hall for solid feedstock (silage & Maize)
- Borger Fibre separation for digestate
- Workshop
- Office, control room, toilets and changing rooms
- Biobed
- 4 No. Liquid reception tank- 113m³ tanks
- 1 No. Glycerine tank- 78m³
- 1 No. Buffer tank – 983m³
- 1 No. Pasteurisation tank - 247m³
- 2 No. Digesters - 3682m³

- 2 No. Digestate Storage tanks – 2500m³
- Gas Flare
- Biogas Combined Heat and Power (CHP) Plant

Refer to Site Layout Plan drawing 21-21-14 in Appendix A.

Phase 4 – The fields where the soil will be deposited will be re-seeded and planted with grass and returned to agricultural use. Please see filling area on drawing ref. 21-21-18 in Appendix A.

12.2.3.2 Operational Phase

The existing facility will continue to operate as an animal by-product rendering plant, a biodiesel production facility, and a solar farm, with the addition of an anaerobic digestion facility. The existing facility is currently operational under IE Licence (P0037-04) and Greenhouse Gas Permit (GHG Permit) No. IE-GHG123-10405-03.

An application for a review of the existing IE License will be made to the Environmental Protection Agency as the introduction of an anaerobic digestion facility will result in changes to the environmental emissions from the facility. The GHG Permit may also need to be revised, and the EMS will be updated accordingly.

The Proposed Development will be operated in accordance with the requirements of the planning grant conditions and updated requirements of the reviewed IE Licence, GHG Permit, EMS and Safety Report for the facility.

12.2.4 Potential Impact of the Proposed Development

This section assesses the impact of the Proposed Development on the Material Assets of the surrounding area.

12.2.4.1 Electricity Supply

Construction Phase

The Site is currently operational, and College Proteins is connected to the national grid. Construction related activities may temporarily increase the demand on the local electrical supply network, however, it is likely that all of the power required for the construction activities will be provided by the renewable energy systems (the solar farm and the CHP engine) already installed on site.

The potential impact from the Construction Phase of the Proposed Development on the local electrical supply network is likely to be neutral, imperceptible, and temporary.

Operational Phase

The 3 MW solar farm is currently operational and supplying enough power to operate the entire site with excess available for the AD Facility also. College Proteins do not have battery storage and are not exporting energy to the national grid; hence they ramp down the solar farm if there is excess power. This power is only available during the day and is weather dependant.

College Proteins also have a gas fired CHP engine on site which is used to produce 800 Kw of electricity. This is mainly used at night when solar power is not available. Power generated

by the CHP engine will not be exported to the national grid, it is only for use at the site. The current engine and an additional engine will be used to consume excess biogas when the rendering and biodiesel plant boilers have no demand for its use. This would only happen on planned maintenance shutdowns of the entire site.

Hence the impact of the Operational Phase of the Proposed Development on the electricity supply network will be positive in the long term, as no electricity supply as there will be less demand on the national grid supply.

12.2.4.2 Gas Supply

Construction Phase

There are no gas requirements during the Construction Phase and there will be no connections made to the natural gas network as part of the Proposed Development. As such, the potential impact from the Construction Phase on the gas supply network is likely to be permanently neutral and imperceptible.

Operational Phase

The AD process will use waste to produce green biogas, which will supply gas to the existing onsite rendering process. The biogas will off-set the fossil fuel usage onsite, as it will replace the natural gas that is currently used. The gas produced by the AD plant will all be directed to the existing facility to be used in the onsite steam boilers, in place of the natural gas.

As such, the potential impact from the Operational Phase on the gas supply network will be positive in the long term, as there will be less demand on the national grid supply.

12.2.4.3 Information and Communications Technology (ICT)

Construction Phase

Additional connections may be installed on the existing onsite ICT network during the Construction Phase of the Proposed Development. New connections will be controlled by the network provider in accordance with standard protocols. Due to the temporary nature of the Construction Phase, the likely effect of the Construction Phase on the local telecoms network will be neutral, imperceptible, and temporary.

Operational Phase

The likely effect of the Operational Phase on the local telecoms network will be neutral, and imperceptible in the long term.

12.2.4.4 Water Supply and Demand

It is noted that specific issues relating to Water associated with the Proposed Development are set out in Chapter 7 of this EIAR.

Construction Phase

Commencement of construction will result in a relatively small net increase in the groundwater demand at the Site of the Proposed Development as the onsite groundwater source is used to supply welfare facilities (e.g., showers) onsite, and there will be an increase in demand for these facilities during the Construction Phase. The groundwater supply at the Site will not be used for drinking water during the Construction Phase.

Water supply infrastructure will also be constructed for the Proposed Development with connection to the groundwater supply wells serving the existing facility. These new connection works may cause onsite water supply disruptions during the Construction Phase; however, these disruptions will not occur outside of the site boundary and there will be no impact on any mains water network supply in the local area. Due to the nature of the works during the Construction Phase, the likely effect on the will be negative, slight and temporary on the resource potential of the aquifer.

Operational Phase

Cold water is required for the AD plant operations which will be taken from the existing onsite groundwater abstraction well. The abstraction of water will be undertaken in accordance with the existing consents and requirements of the IE Licence and therefore the likely effect of the Proposed Development on water supply and demand will be negative but not significant in the long term.

Hot water is required to heat the AD digesters, the digesters will need to be kept between 37-42°C for the bacteria to work effectively. Also, hot water is required for the pasteurisation of the digestate from the AD plant. This hot water will be generated in the existing rendering plant or CHP plant boilers.

Locally important aquifers are capable of 'good' well yields in the range of 100-400 m³/day. Therefore, it is considered that based on the resource potential of the aquifer and the relatively small increased water supply requirement of 5.6m³/day for the Proposed Development, it is considered that there will be a neutral and imperceptible impact on the resource potential of the aquifer in the long-term.

12.2.4.5 Water Environment – Hydrology and Surface Water Drainage

Specific issues relating to Hydrology, Hydrogeology and Surface Water associated with the Proposed Development are set out in Chapter 7 of this EIAR.

Construction Phase

It is anticipated that excavations will be above groundwater level. Therefore, all construction works will be undertaken above the existing groundwater level with no requirement for dewatering and no impact on the local groundwater resource and groundwater flow regime. There will be no direct discharges from the construction works areas to surface water or groundwater during the Construction Phase. Surface water drainage infrastructure will be constructed within the Proposed Development during the Construction Phase. The potential impact from the Construction Phase is likely to be neutral and imperceptible in the short term.

Operational Phase

Surface water runoff from the site will be managed in accordance with the principles and objectives of Sustainable Drainage Systems (SuDS) to treat and attenuate water prior discharging from the Site.

The surface water drainage for Proposed Development has been divided into three (3 No.) catchment areas – the non-process areas, the proposed AD plant area and the proposed infill area.

Non-process Areas

Surface water runoff from 6,100m² of non-process areas along the access road to the proposed AD plant area will outfall to the proposed attenuation tank designed to meet the 24-hour duration, 1 in 100-year rainfall event including an allowance of 20% for climate change. The outfall from the proposed silt trap, oil interceptor and attenuation tank will be pumped to the open roadside drainage channel, at emission point SW1, in accordance with the requirements of the IE Licence (P0037-04).

The open drainage channel will ultimately discharge to the Garmanagh Stream. In the event of an emergency onsite (e.g., fire or accidental spill) a shut-off valve at SW1 will be closed to prevent potentially contaminated water from discharging offsite. In accordance with the requirements of the IE Licence (P0037-04) potentially contaminated water will be diverted to the existing overground lined lagoon, located approximately 0.34km east of the existing facility. The overground lined lagoon which was designed in accordance with the EPA Guidance on Retention Requirements for Firewater Run-off (2019) has sufficient fire water retention and storage capacity to contain runoff from the Proposed Development in the event of a fire.

Proposed AD Plant Area

Surface water runoff from the main digester yard area, within the AD intake building and from surface water runoff surrounding the AD intake building including the truck off-loading and out-loading bays will be collected, contained and recirculated in the closed loop system within the AD Plant as part of the operational processes.

The capacity of the AD tanks has been designed to contain surface water runoff during the 1 in 100-year rainfall event including an allowance of 20% for climate change.

A bund system, will contain all surface water runoff and potential spills from the AD tanks within the main plant area, which has a volume equivalent to the capacity of the largest of the AD tanks with an allowance of 10% in accordance with EPA guidelines on the 'Storage and Transfer of Materials for Scheduled Activities' (EPA, 2004).

Therefore, there will be no discharge of surface water runoff from the AD Plant area to the proposed surface water drainage network.

Proposed Infill Area

Surface water runoff at the proposed infill area will continue to discharge to ground and receiving downgradient water courses (i.e., the Nobber Stream).

Overall, the likely effect of the surface water drainage strategy for the Proposed Development will result in a neutral, slight, long-term impact on receiving surface water quality.

12.2.4.6 Wastewater Management

Construction Phase

Commencement of construction will result in a relatively small net increase in the amount of wastewater being produced on the site of the Proposed Development, as construction workers will use the onsite welfare facilities, and there will be an increase in demand for these facilities during the Construction Phase. If additional temporary welfare units are placed onsite for the

duration of the Construction Phase, they will be self-contained and emptied as required by an authorised contractor in compliance with waste management legislation. During the Construction Phase, foul water drainage infrastructure will be constructed within the Proposed Development with connections for discharge to the WWTP at the existing facility;

Due to the temporary and phased nature of the Construction Phase the likely effect of the Proposed Development on the existing foul water network during this phase is considered to be *neutral, slight and temporary*.

Operational Phase

Wastewater from the AD plant process will be transferred through the newly constructed foul water drainage infrastructure to the existing underground pipe network for discharge and treatment in the WWTP, which is operated in accordance with the with the IE Licence (IE Licence No. P0037-04). As documented in the technical note on the capacity of the WWTP prepared by Traynor Environmental Ltd, *WWTP Capacity to take Foul Water Arising from the Toilets as part of the AD Development* (2022), the WWTP has sufficient capacity to accept the limited increased loading of 0.63m³/day from the Proposed Development and therefore no upgrades are required to the WWTP.

Treated effluent from the WWTP is discharged through a constructed sand filter to an overground, lined lagoon before the Finally Treated Effluent (FTE) is land spread in accordance with the IE Licence (IE Licence No. P0037-04). The lagoon has a storage capacity of 15,000 m³ and is visually inspected as per the EPA requirements. In the event that land spreading cannot occur for seasonal or other reasons, the capacity of the treated effluent storage lagoon is adequate to contain any treated effluent generated.

Overall, the likely effect of the wastewater drainage strategy for the Proposed Development will result in a *neutral, imperceptible, long-term* impact on the receiving WWTP, and on the quality of the FTE for landspreading.

12.2.4.7 Waste Management

Construction Phase

The concrete tank and shed will be removed. It is a steel building with Kingspan sheeting, this steel and Kingspan sheeting will be carefully removed and re-used for other buildings in future projects. The concrete floor and walls will be demolished and disposed of, off site there will be approx. 840 tonnes of this material be disposed of by an authorised disposal company.

During construction activities, waste will be produced from surplus building materials such as off-cuts of timber, plasterboard, concrete, tiles, bricks, plastic, and cables. Packaging waste including plastic wrap and cardboard is also likely to be produced. Wherever possible waste will be segregated onsite into skips or other appropriate receptacles. All waste will be stored in a Waste Storage Area (WSA). Suitably qualified and permitted nominated waste management contractors will collect specific waste streams as receptacles are filled. The following waste materials will be source separated in suitably size receptables, stored in the WSA and transferred offsite for appropriate processing, recycling and recovery:

Concrete, Bricks, tiles and Ceramics,
Timber,
Metals,

Glass,
Plasterboard,
Plastic and cardboard packaging,
Green waste, and
Soils, stone and bedrock

A skip will be provided for non-hazardous C&D waste not suitable for reuse or recovery. Prior to removal, the skip will be examined by the waste manager or delegate to confirm that the skip does not contain recyclable materials that have been incorrectly disposed of. Hazardous wastes require specialist handling and removal. On-site storage of hazardous wastes will be minimised, with specialist removal off-site organised on a regular basis.

The current yard level will be lowered as part of the site enabling works. It is anticipated that there will be a requirement to remove 77,804.15m³ of soil to bring the area to the correct level for the construction of the AD facility. It is proposed that excavated soil and stone pending reuse within the Proposed Development will be temporarily stockpiled on the site. It is noted that specific issues relating to Land and Soil associated with the Proposed Development are set out in Chapter 6 of this EIAR.

All waste generated during construction will only be recovered or disposed of to an authorised site which has a current waste license or waste permit in accordance with the Waste Management Acts, 1996 (as amended). This will not apply to the reuse of excavated uncontaminated soil or other naturally occurring material within the site boundary. If surplus, reusable excavation material arises onsite which must be taken offsite, the offsite re-use of material will be prioritised to minimise the potential loss of valuable good quality soil and subsoil to landfill as a waste. The re-use of soil offsite will be undertaken in accordance with all statutory requirements and obligations including where appropriate re-use as a by-product in accordance with an Article 27 By-Product Notification of the European Union (Waste Directive) Regulations 2011-2022.

The Proposed Development will result in various classifications of waste arising throughout the Construction and Operational Phases. If not managed and stored properly, the waste could give rise to contamination of land, water or air due to uncontrolled release to the receiving environment. If litter and food waste is not managed correctly onsite, it is likely to attract vermin within the Site of the Proposed Development and the surrounding areas. Unmitigated, the likely effect of construction waste generated from the Proposed Development is significant, with short-term, negative effects.

Operational Phase

AD can make a significant contribution to the management of organic wastes in Ireland. Biodegradable food waste must be diverted from landfill to alternative more sustainable waste management methods, such as AD, to achieve national recycling targets. Refer to Table 12-14 for the proposed feedstock for the proposed AD Plant. AD will also reduce reliance on landfill capacity which will become an increasingly scarce outlet in the coming years.

AD not only recovers energy from organic waste, but it also produces a nutrient rich digestate which is suitable for use as a biofertiliser. This reduces reliance on artificial fertilisers that are becoming increasingly expensive to manufacture. The nutrients in digestate, particularly nitrogen, are more freely available for plant uptake than in untreated organic waste sources

leading to improved recycling of nutrients. Thus, the use of digestate has water and air quality environmental benefits as it decreases organic pollution potential. It would also reduce the risk of spreading microbial contamination thus creating greater biodiversity in the countryside. AD can also reduce odours from slurry spreading as the concentration of odour in the air is significantly lower when digestate, instead of untreated slurry, is applied on the fields.

Table 12-14 Proposed Feedstock for the 50,000 tonnes/annum AD Plant in Nobber

Item No.	Feedstock	Approx. Tonnes/ annum	Type	Storage Location	Source	
1	MONG/ Glycerine	2,500	liquid	Glycerine Tank	Currently a by-product of College Biofuels Nobber.	Currently removed off site, now to be diverted to AD plant.
2	Sludge	2,000	liquid	Liquid Reception tanks	From food process Plants in a 70km radius	New deliveries to site
3	Food Waste	35,000	solid	Hoppers in Intake building	From food processing plants, restaurants and supermarkets within a 70 km radius	New deliveries to site
4	Poultry Litter	2,500	solid	Reception hall for solids	From Poultry farms within a 70 km radius	New deliveries to site
5	Belly Grass	2,500	solid	Reception hall for solids	From abattoirs within a 70 km radius	New deliveries to site
6	Waste from Food and drinks manufacturing waste from dairies, brewing.	1,500	liquid	Liquid Reception tanks	From food processing plants breweries within a 70km radius	New deliveries to site
7	Silage/ Maize/ fodder Beat/ Slurries	4,000	Solid/ liquids	Reception hall for solids/ Liquid reception tanks for slurries	From farms within a 70 km radius	New deliveries to site
	Total	50,000				

Approx. 3,500 tonnes/annum of plastic/cardboard from food waste packaging will be sent offsite for recycling. This quantity of packaging waste will be deducted from the digestate figure, which will result in 3,500 tonnes less digestate leaving site. 46,500 tonnes/annum of digestate will be sent off site to be land spread on farms.

12.2.5 Potential Cumulative Impacts

The cumulative effects of Proposed Development on Material Assets have been assessed taking other planned, existing, and permitted developments in the surrounding area into account. All planning permission applications that have been granted and developed have been incorporated into the baseline assessment of this application.

There are no planned or proposed projects located in close proximity to the Proposed Development with potential to result in cumulative impacts, therefore cumulative impacts are not predicted in this regard.

12.2.6 “Do Nothing” Impact

In the ‘Do Nothing’ scenario it is considered that the Proposed Development does not proceed and the potential impact on the receiving Material Assets or physical resources in the environment of human origin including built services and infrastructure is considered.

If the Proposed Development did not proceed the Site of the Proposed Development would continue to be used as agricultural lands and there would be no impact or change to the current processes on the Site. The existing facility would still continue to operate in accordance with the conditions of the IE Licence, and natural gas would continue to be delivered to the site from the national grid, causing a demand on natural gas supplies.

12.2.7 Avoidance, Remedial & Mitigation Measures

Specific avoidance, remedial and mitigation measures to be taken during the Construction and Operational Phase with respect to water supply, surface water drainage and foul water are detailed within Chapter 7, Water (Hydrology and Hydrogeology), of this EIAR. Additionally, all works will be carried out in accordance THE Irish Water Code of Practice for Water Infrastructure (July 2020) and the Irish Water Code of Practice for Wastewater Infrastructure (July 2020). Laying of watermains/wastewater sewers and testing of pipelines and infrastructure will be in accordance with Irish Water standard details.

New connections for electricity and telecommunications will be coordinated with the relevant utility provider and Meath County Council and will be carried out and tested by approved contractors, as per standard protocols.

The following waste management mitigation measures are recommended for the Construction Phase of the Proposed Development:

- Waste materials will be separated at source and will be appropriately stored prior to removal offsite.
- Prior to the commencement of the Construction Phase detailed calculations of the quantities of topsoil, subsoil and green waste will be prepared, and soils will be tested to confirm they are clean, inert or non-hazardous.
- A suitably competent and fully authorised waste management company will be employed to manage all waste arising for the Construction Phase. The appointed waste contractor must have the relevant authorisations for the collection and transport of waste materials, issued by the National Waste Collection Permit Office (NWCPO).
- All waste materials will be transported to an appropriately authorised facility, which must have the relevant authorisations for the acceptance and treatment of the specific waste streams, i.e., a Certificate of Registration (COR) or a Waste Facility Permit (WFP) as granted by a Local Authority, or a Waste/Industrial Emission Licence as granted by the Environmental Protection Agency.
- All waste quantities and types will be recorded and quantified, and records will be retained onsite for the duration of the Construction Phase.

12.2.8 'Worst-Case' Scenario

In the event that the Proposed Development was to proceed, a worst-case scenario in relation to built services & infrastructure (electricity, telecommunications, gas, water supply infrastructure, and sewerage), would be where the works involved during construction resulted in an extended power or telecommunications outage, or disruption to water supply or sewerage systems for existing properties in the area due to unforeseen delays during connections on site.

A worst-case scenario in relation to waste would be where a previously unclassified hazardous waste stream arose on the site during excavations, which was not identified and segregated appropriately and resulted in the contamination of a non-hazardous waste stream, such as soil and stones, resulting in a large volume of hazardous waste that would require specialist removal and treatment. Additionally, the contaminated soil and stones would no longer be fit for use for fill and landscaping and would need to be replaced with imported materials.

However, taking account of the avoidance and mitigation measures, the worst-case scenarios are deemed to be an unlikely scenario.

12.2.9 Residual Impacts

Residual Impacts are defined as “effects that are predicted to remain after all assessments and mitigation measures”. They are the remaining ‘environmental costs’ of a project and are the final or intended effects of a development after mitigation measures have been applied to avoid or reduce adverse impacts. Potential residual impacts from the Proposed Development were considered as part of this environmental assessment.

Provided that the mitigation measures discussed in section 12.2.5 are implemented; that the conditions for Article 27 By-Product Notification of the European Union (Waste Directive) Regulations 2011-2022 are met for any excavated soil and stone that are removed offsite for reuse; and provided that a high rate of reuse, recycling and recovery is achieved in the Construction Phase, the likely effect of the residual impacts of the Construction Phase of the Proposed Development on the environment will be neutral and imperceptible to slight in the long term.

Additionally, the likely effect of the residual impacts of the Operational Phase, of the Proposed Development on the environment will be positive and moderate in the long term, as AD is an environmentally friendly technology that uses waste to produce green biogas, which will offset the current fossil fuel usage onsite.

Having regard to the mitigation measures proposed within this and other Chapters of the EIAR, no significant residual impacts are anticipated.

12.2.10 Monitoring

An Environmental Management System (EMS) is in place at the facility which is certified to International Standard 14001:2015. The EMS contains an Environmental Monitoring Program (EMP), which is active at the site. The EMS and the EMP will be revised to include the environmental controls which will be implemented for the operational lifetime of the Proposed Development. The EMP will verify (i) that implemented controls prevent and minimise emissions from the Proposed Development and (ii) that there is no negative impact on the receiving environment via uncontrolled releases of pollutants, sediment, dust, noise or

vibration. The EMP will also assess the effects of the AD process on the environment so that operational changes and improvements can be made where appropriate. The monitoring programme and sampling frequency will be agreed with the EPA and with Meath County Council.

12.2.11 Interactions

Material assets, utilities and waste interact with other environmental receptors as follows:

- Population and Human Health: The improper removal, handling and storage of waste materials could negatively impact on the health of construction workers. Extended power or telecommunications outages, or disruption to water supply or sewerage systems for existing properties in the area could negatively impact on the surrounding human population and their overall health. Potential impacts on population and human health are addressed in Chapter 4 of this EIAR.
- Biodiversity: The improper handling and storage of waste during the Construction and Operational Phases could negatively impact on biodiversity. Potential impacts on biodiversity are addressed in Chapter 5 of this EIAR.
- Land and Soil: Improper handling and segregation of hazardous or contaminated waste materials could lead to the contamination of soil and stones excavated from the site. Potential impacts on land and soils are addressed in Chapter 6 of this EIAR.
- Water (Hydrology & Hydrogeology): Any discharges to the WWTP at the existing facility and water supply to the from the groundwater supply wells at the existing facility will be in accordance with the conditions of the IE Licence (IE Licence No. P0037-04). Potential impacts on the water environment are addressed in Chapter 7 of this EIAR.
- Traffic: Waste collection and delivery activities at the Proposed Development have the potential to impact upon traffic movements in the local area. Potential impacts on traffic are addressed in Chapter 12.1 of this EIAR.

12.2.12 Difficulties Encountered When Compiling

No difficulties were encountered in the preparation of this Chapter.

12.2.13 References

Environmental Protection Agency (EPA) (2022) Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR)

EPA (2003) Advice Notes on Current Practice in the preparation of Environmental Impact Statements.

EPA (2002) Guidelines on the information to be contained in Environmental Impact Statements.

Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (European Communities 1999)

<https://myplan.ie/> Zoning and National Planning Applications Map Viewer. Consulted on 30.06.2022

<https://siteviewer.comreg.ie/#explore> (ComReg, 2021). Commission for Communications Regulation Mast Viewer. Consulted on 30.06.2022.

<https://www.gov.ie/en/publication/5634d-national-broadband-plan-map/> Consulted on 30.05.2022.

Irish Water (2020) Code of Practice for Water Infrastructure – Connections and Developer Services (Revision 2)

Irish Water (2020) Code of Practice for Wastewater Infrastructure – Connections and Developer Services (Revision 2)

National Standards Authority of Ireland (NSAI), 2017. IS EN752, “Drain and Sewer Systems Outside Buildings – Sewer System Management”. NSAI, 1 Swift Square, Northwood, Santry, Dublin 9

13 RISK MANAGEMENT

13.1 Study Methodology

13.1.1 Scope and Context

The relevant legislation that applies to this Chapter is the Planning and Development Regulations 2001 – 2021, as amended, and in particular Schedule 6 – Information to be contained in EIAR. The following paragraph of Schedule 6, Paragraph 2(e)(i)(IV), specifically refers to *"a description of the likely significant effects on the environment of the proposed development resulting from ... the risks to human health, cultural heritage or the environment (for example due to accidents or disasters)"*.

Paragraph 2(h) further expands with *"a description of the expected significant adverse effects on the environment of the proposed development deriving from its vulnerability to risks of major accidents and/or disasters which are relevant to it. Relevant information available and obtained through risk assessments pursuant to European Union legislation such as the Seveso III Directive or the Nuclear Safety Directive or relevant assessments carried out pursuant to national legislation may be used for this purpose, provided that the requirements of the Environmental Impact Assessment Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for, and proposed response to, emergencies arising from such events."*

Additionally, the Chemicals Act (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2015 (S.I. No. 209 of 2015) (the "COMAH Regulations"), which implement the Seveso III Directive (2012/18/EU), and which revoked the 2006 Major Accident Regulations also applies to this Chapter.

13.1.2 Quality Assurance and Competence

This Chapter was prepared by Enviroguide Senior Environmental Consultant Nikita Coulter. Nikita Coulter has a B.Sc. in Zoology (Hons) from University College Dublin, an M.Sc in Biodiversity and Conservation and a Postgraduate Diploma in Environmental Engineering from Trinity College Dublin, and a NEBOSH accredited International Diploma in Environmental Risk Management. Nikita has 8 years professional experience as an Environmental Compliance Specialist.

13.1.3 Guidelines and Reference Material

Cognisance has been taken of the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022). This document follows the requirements laid out in the Directive 2014/52/EU.

Specifically, the EPA Guidelines state that the EIAR must take account of *"the vulnerability of the project to risk of major accidents and /or disasters relevant to the project concerned and that the EIAR therefore explicitly addresses this issue. The extent to which the effects of major accidents and / or disasters are examined in the EIAR should be guided by an assessment of the likelihood of their occurrence (risk)... The potential for a project to cause risks to human health, cultural heritage or the environment due to its vulnerability to external accidents or disasters is considered where such risks are significant, e.g. the potential effects of floods on*

sites with sensitive plants. Where such risks are significant then the specific assessment of those risks in the form of a Seveso Assessment (where relevant) or Flood Risk Assessment may be required. The EIAR should refer to those separate assessments while avoiding duplication of their contents."

Reference has also been made to the Department of the Environment, Heritage & Local Government (DoEHLG) Publication 'Guide to Risk Assessment in Major Emergency Management 2010' and the Office of Emergency Planning, Department of Defence (DOD) Publication 'A National Risk Assessment for Ireland 2020'. A consolidated list of national hazards for Ireland identified in the DOD document are identified in Table 13-1.

Table 13-1: Consolidated List of National Hazards (Source: A National Risk Assessment for Ireland (2020) Department of Defence)

Hazard: Civil Large Crowd Event Pandemic Water Supply Distribution and Contamination Food Chain Contamination Animal Disease Terrorist Incident	Hazard: Natural Storm Snow and Ice (Including prolonged low temperature) Flooding (Including pluvial, fluvial and coastal)
Hazard: Transportation Maritime Incident Air Incident Transport Hub (Includes Airports, Ports and Rail Stations)	Hazard: Technological Structural Collapse (Including Dam, Tunnel, Bridge and Building) Nuclear Incident (Abroad) Cyber Incident Disruption of Energy Supply (Including oil, gas, electricity and communications)

13.1.4 Risk Assessment Methodology

The risk assessment methodology has been supported by general risk assessment methods. Hazard analysis and risk assessment are accepted internationally as essential steps in the process of identifying the challenges that may have to be addressed by society, particularly in the context of emergency management. Mitigation as a risk treatment process involves reducing or eliminating the likelihood and/or the impact of an identified hazard (DoEHLG, 2010).

Table 13-2 Classification of National Likelihood Criteria (Source: A National Risk Assessment for Ireland (2020) Department of Defence)

National Likelihood Criteria		
Rating	Classification	Average Recurrence Interval
1	Extremely Unlikely	100 or more years between occurrences
2	Very Unlikely	51-100 year between occurrences
3	Unlikely	11-50 years between occurrences
4	Likely	1-10 years between occurrences
5	Very Likely	Ongoing/Less than 1 year between occurrences

13.2 Predicted Impacts

The EIAR Chapters within this report identify that the Proposed Development has been designed in accordance with best practice and that the Proposed Development can be safely undertaken without risk to health.

In order to understand the potential consequences and predicted impacts of any major accident or disaster due to the Proposed Development and the vulnerability of the project a desk study was undertaken. The assessment reviewed:

- The vulnerability of the project to major accidents or disasters.
- The potential for the project to cause risks to human health, cultural heritage and the environment, as a result of that identified vulnerability.

A methodology has been used including the following phases:

Phase 1 Assessment:

The DOD Consolidated List of National Hazards was used to identify a preliminary list of potential major accident and disasters. Receptors covered by legislation were not included within the assessment e.g. construction workers.

Phase 2 Screening:

The list was screened and major events such as volcanoes were not included given the unlikely event of one occurring. Elements already addressed as a key part of the design e.g. risks of building collapse, are not repeated.

Phase 3: Mitigation and Evaluation

In the event that mitigation measures included did not mitigate against the risk, then, the potential impacts on receptors are identified in the relevant Chapter. Table 13-3 lists the major accidents and/or disasters reviewed.

Table 13-3: Major Accidents and/or Disasters Reviewed

Major Accident or Disaster	Relevant for this Proposed Development? (Y/N)	Why relevant?	Potential Receptor	Covered within EIAR?
Civil				
Large Crowd Event (An event with over 5,000 people)	N	Not considered vulnerable due to the nature of the Proposed Development, i.e., Anaerobic Digestion.	N/A	N/A
Pandemic	Y	COVID-19 is an illness that can affect your lungs and airways. It is caused by a virus called Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). SARS-CoV-2 is spread in sneeze or cough droplets. The Proposed Development poses no additional COVID-19 risk. It is anticipated that there will be approximately 50 workers directly employed during the Construction Phase of the project. During the Construction Phase of this Proposed Development HSE guidelines will be adhered to as relevant. All workers directly and indirectly employed during the Operational Phase of the Proposed Development will comply with the relevant Government protocols that will be in place at that point in time in relation to COVID-19.	Employees, construction workers	Chapter 4 (Population and Human Health) of this report addresses COVID-19.

Water Supply Contamination	N	Waterborne diseases can be caused by consuming contaminated drinking water. No public health issues have been identified for the Construction Phase or Operational Phase of the Proposed Development.	Local water users	Chapter 7 (Water (Hydrology and Hydrogeology)) of this report identifies the control measure required to avoid contamination of water supplies during construction works.
Food Chain Contamination	N	No risk due to closed-loop in-vessel treatment process covered by IE Licence.	Consumers/Producers	N/A
Animal Disease	N	No risk due to closed-loop in-vessel treatment process covered by IE Licence.	Consumers/Producers	N/A
Terrorist Incident	N	Not considered vulnerable due to the nature of the Proposed Development, i.e., residential/commercial development.	N/A	N/A
<u>Transportation</u>				
Maritime Incident	N	Not considered vulnerable. The closest maritime port is Drogheda Port, which is approx. 30km southeast of the Site of the Proposed Development.	N/A	N/A
Air Incident	N	Not considered vulnerable. The closest commercial airport is Dublin Airport which is approximately 57km southeast of the Site of the Proposed Development. The closest domestic airport is Navan Airfield, which is located approximately 18km south-southeast of the Site of the Proposed Development.	N/A	N/A
Transport Hub (Includes Airports, Ports and Rail Stations)	N	Not considered vulnerable as the Site of the Proposed Development is not defined as a Transport Hub.	N/A	N/A

		The closest railway station is at Dundalk Train Station, which is approximately 28km northeast of the Site of the Proposed Development. <i>For airports and ports see above.</i>		
<u>Natural</u>				
Cultural, Archaeological and Architectural Heritage	N	Not considered vulnerable.	N/A	N/A
Landslides / Sinkholes	N	Not considered vulnerable. The GSI database indicates that the Site is located within an area of 'Low' susceptibility to landslides (GSI, 2022). The Site is not located within an area associated with karst geology and therefore there are no identified geological hazards associated with karst features such as sinkholes.	N/A	Chapter 6 (Land and Soils) of this EIAR assessed the vulnerability of the Proposed Development to ground movements.
Earthquakes	N	Not considered vulnerable. The Irish National Seismic Network (INSN) has no recorded earthquake activities within a 2km radius of the Proposed Development.	N/A	Chapter 6 (Land and Soils) of this EIAR assessed the vulnerability of the Proposed Development to ground movements.
Floods/Storm surge/tidal flooding	N	Not considered vulnerable. A Flood Risk Review prepared by Traynor Environmental Ltd. (2022) concluded that there is no identified flood risk at the site of the Proposed Development.	N/A	Chapter 7 (Hydrology) of this EIAR identifies the vulnerability of the project to flooding.

Severe weather such as Tornadoes, Heatwaves, Blizzards and Droughts	N	Not considered vulnerable. In the event of severe weather events, the national meteorological service, Met Éireann, provides advance notice of severe weather, usually several days in advance. When appropriate, colour-coded weather warnings are issued. The Office of Emergency Planning works with the government departments and other key public authorities in order to ensure the best possible use of resources and compatibility across different emergency planning requirements.	N/A	N/A
Air Quality events	N	Not considered vulnerable. The odour model indicates that the predicted odour emissions from the Site will be less than the criterion of 1.5OuE/m ³ at the nearest sensitive receptors. Therefore, odour as a result of site operations will not have a significant impact on the local environment.	Local residents / employees	Chapter 8 (Air Quality) of this EIAR and the Air Quality Impact Assessment report identify the impact of the construction and operation of the Proposed Development on ambient air quality.
Wildfires	N	Not considered vulnerable due to the location of the Site of the Proposed Development.	N/A	N/A
Dam, Bridge or Tunnel Failure	N	Not considered vulnerable as no dams, bridges or tunnels are proposed as part of the development.	N/A	N/A
Flood defence failure	N	Not considered vulnerable as there is no risk of flooding	N/A	Chapter 7 (Hydrology) of this EIAR identifies the vulnerability of the project to flooding.
Fire	N	Fire safety plans and control mechanisms are in place at the site.	N/A	Chapter 7 (Hydrology) of this EIAR identifies the vulnerability of the project to fire and fire water runoff. Section 13.3.1 of this Chapter describes the Emergency Response Equipment in place at the site.
Invasive species	N	Not considered vulnerable as no invasive species were	N/A	N/A

		identified at the site during the site walkover.		
Technological				
Structural Collapse (Building)	N	Not considered vulnerable.	N/A	N/A
Nuclear incident	N	Not considered vulnerable. There are no nuclear power stations close to the Proposed Development.	N/A	N/A
Cyber incident	N	Not considered vulnerable.	N/A	N/A
Disruption to energy supply (oil, gas, electricity)	N	Not considered vulnerable as the site of the Proposed Development produces its own power.	N/A	Chapter 12 (Material Assets) of this EIAR contains information on the energy systems to be utilised during the Construction and Operational Phases of the Proposed Development
Utilities failure (communications)	N	Not considered vulnerable. In Ireland, the fixed-line communications market is dominated by Eir; while Eir, Three, and Vodafone own Ireland's mobile telecommunications infrastructure.	N/A	Chapter 12 (Material Assets) of this EIAR contains information on communications systems.
Utilities failure (water supply)	N	Not considered vulnerable.	N/A	Chapter 7 (Water) and Chapter 12 (Material Assets) of this EIAR contain information on water supply
Utilities failure (wastewater, sewage)	N	Not considered vulnerable. The facility is licenced by the EPA to accept and treat waste.	N/A	Chapter 7 (Water) and Chapter 12 (Material Assets) of this EIAR contain information on wastewater and sewage removal and treatment
Utilities failure (solid waste)	N	Not considered vulnerable. The facility is licenced by the EPA to accept and treat waste.	N/A	Chapter 12 (Material Assets) of this EIAR contains information on solid waste removal and treatment.
Industrial accidents (defence, energy, oil)	N	Not considered vulnerable. There are no Upper Tier Seveso sites adjacent to the	N/A	N/A

and gas refinery, food industry, chemical industry, manufacturing, quarrying, mining)		Site of the Proposed Development. There nearest Upper Tier Seveso Site is located approximately 20.5km from the Proposed Development at Grassland Agro Slane.		

13.3 Management Plans

13.3.1 Fire Safety

College Proteins has put in place a comprehensive suite of technical and organisational fire and explosion protective measures to prevent and mitigate emergency scenarios throughout the site. Table 13-4 provides an overview of key fire protection measures in place at the facility:

Table 13-4 Emergency Response Equipment and Inspection Frequency (Source: Firewater Retention Risk Assessment, Traynor Environmental Ltd, 2022)

Emergency Response Equipment	Location(s)	Inspection Frequency
Sprinkler System	Biofuel Plant only	Annually
Fire Extinguishers	Throughout Site	Annually
Dry Powder		
Carbon Dioxide		
Foam		
Fire Hose Reels	2 no. fire hose reels located in the production building	Every 6 months
Fire Suppression System	Automatic injection of steam or water into cookers and storage bins.	Every 6 months
	Temperature based fire detection system linked to PLC controller	
Fire Hydrants	H1 – Store Room	
	H2 – Fresh Water Tank	
	H3 – Recycle Tank	
Portable Gas Detectors	Emergency Response Centre	Every 6 months
Fixed Gas Detectors	Boiler House	Every 6 months
Spill Kits	Throughout plant	Monthly

In the event of an environmental emergency onsite (e.g., fire or accidental spill) a shut-off valve at SW1 and SW8 is closed to prevent potentially contaminated water from discharging offsite. Potentially contaminated water is diverted to the fire retention facilities currently on site servicing the Biodiesel Plant and the Rendering Plant via a sluice valve system, which closes the outlet to the local drainage system and diverts the liquids to the effluent lagoon. The Rendering Plant and associated hardstanding has 1,792m³ of firewater retention capacity based on the volume of the existing sump. The Biodiesel Plant and associated hardstanding has 1980m³ of firewater retention capacity based on the existing bunded area. The existing firewater retention lagoon has 1,000m³ of firewater retention capacity available and the effluent lagoon at worse case has a 2,400m³ available. As the Biodiesel Plant and the Rendering Plant are significantly apart the possibility of a fire at both sites is low.

Furthermore, there is also a 15,000m² overground lined lagoon located approximately 0.34km east of the existing facility, which can also be used in the event of a fire. The lagoons were designed in accordance with the EPA Guidance on Retention Requirements for Firewater Run-off (2019) (Firewater Retention Risk Assessment, Traynor Environmental Ltd, 2022).

13.3.2 Emergency Response Plan

The biogas produced from the plant will be used in the onsite boilers and any excess will be burned in 2 no. CHP engines. If the boilers and the engines are out of commission for some reason, then the flare will be used to treat the biogas. Biogas will not be stored on the site. This will be a rare and unlikely event. All areas around the tanks will be bunded. Gas tight lids will be installed on the digesters and digestate storage tanks. The intake building and tanks will be ducted to a Biofilter.

13.4 Cumulative Impacts

The cumulative effects of Proposed Development on Major Accidents and Disasters have been assessed taking other planned, existing and permitted developments in the surrounding area into account. All planning permission applications that have been granted and developed have been incorporated into the baseline assessment of this application.

As noted in Table 13-3, the Site of the Proposed Development is not an industrial site, and is not regulated, connected to or close to any site regulated under the COMAH Regulations. Additionally, there are no developments under construction or proposed in the vicinity of the Site of the Proposed Development which will be regulated under the COMAH Regulations, and so there is no potential for cumulative impacts relating to major accidents involving dangerous substances.

All cumulative impacts have been detailed in the relevant technical Chapters and are summarised in Chapter 15.

13.5 Residual Impacts

Through the implementation of mitigation measures detailed in the relevant technical Chapters of this EIAR, there are no identified incidents or examples of major accidents and or natural disasters that present a sufficient combination of risk and consequence that would lead to significant residual impacts or environmental effects as a result of the Proposed Development, alone or in combination with other projects.

The residual impacts will be negligible once all control, mitigation and monitoring measures have been implemented.

13.6 Monitoring

All monitoring proposals for the risks identified in Table 13-3 have been detailed in the relevant technical Chapters as listed in Table 13-3 and are included in Chapter 15 Mitigation Measures and Monitoring.

13.7 Difficulties Encountered When Compiling

No difficulties were encountered in completing this Risk Chapter.

13.8 References

Chapter 4-12 of Volume 2 of this EIAR

Environmental Resources Management Ireland Ltd (2005) Public Safety Zones Report

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

Garda Mapping Section – Seveso Sites Ireland WebMap [Viewed Online 03.05.2022]
<https://www.arcgis.com/home/item.html?id=a01b5a0a6ff24f10adff30beaa3b6fd0>

Office of Emergency Planning (2020) 'A National Risk Assessment for Ireland 2020'
Department of Defence Publication

Statutory Instrument (SI). No. 296/2018 - European Union (Planning and Development)
(Environmental Impact Assessment) Regulations 2018

14 INTERACTIONS

14.1 Introduction

As a requirement of Planning Regulations and the Environmental Protection Agency's '*Guidelines on information to be contained in Environmental Impact Assessment Reports*' (2017), interrelationships between various environmental aspects must be considered when assessing the impact of the Proposed Development, as well as individual significant impacts. The significant impacts of the Proposed Development and the proposed mitigation measures have been detailed in the relevant Chapters of this report. However, as with all developments that pose potential environmental impacts, there also exists potential for interactions/interrelationships between the impacts of different environmental aspects. The results may exacerbate or ameliorate the magnitude of impacts. This Chapter of the EIAR addresses the interactions between the various environmental factors of the Proposed Development.

The following Section is directed by Article 3 section 1(e) of the EIA Directive. The EPA Guidelines on the information to be contained in Environmental Impact Assessment Reports (Draft, 2017) and Advice Notes for Preparing Environmental Impact Statements (Draft, September 2015) were also considered.

Article 3 of the Directive states:

The environmental impact assessment will identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:

population and human health;

biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;

land, soil, water, air and climate;

material assets, cultural heritage and the landscape;

the interaction between the factors referred to in points (a) to (d)

14.2 Study Methodology

The interactions between impacts on different environmental factors have been addressed throughout this EIAR. Close co-ordination and management with the EIAR team was carried out to ensure that all likely relevant interactions were addressed at the scoping stage of the EIAR, and interactions have been adequately assessed.

Following an assessment of the EIAR, a matrix was produced to display where interactions between impacts on different factors have been addressed. This has been carried out by use of Chapter headings included in the EIAR and details of any interaction during all phases of the Proposed Development.

14.3 Interactions

The following matrix has been produced to show where potential significant interactions between effects on different factors have been addressed, see Table 14-1.

As this EIAR has been prepared by a number of specialist consultants, an important aspect of the EIA process was to ensure that interactions between the various disciplines have been taken into consideration. The principal interactions requiring information exchange between the environmental specialists and the design team are summarised in Table 14-2 to Table 14-10.

Table 13-1: Interactions between Factors

Interaction	4. Population and Human Health	5. Biodiversity	6. Land and Soils	7. Hydrology	8. Air Quality & Climate	9. Noise & Vibration	10. Landscape & Visual Amenity	11. Archaeology, Architecture & Cultural Heritage	12. Material Assets – Waste & Utilities	12. Material Assets - Traffic
Population and Human Health										
Biodiversity										
Land and Soils										
Hydrology										
Air Quality & Climate										
Noise & Vibration										
Landscape & Visual Amenity										
Archaeology, Architectural and Cultural Heritage										
Material Assets – Waste & Utilities										
Material Assets - Traffic										

	No Interaction
	Interaction
	N/A

Table 13-2 Population and Human Health

Population and Human Health	
Summary	
Chapter 4 of this EIAR, Population and Human Health, details the direct and indirect effects of the Proposed Development on Population and Human Health; and sets out any required mitigation measures where appropriate. The population in the vicinity of the Site of the Proposed Development has been assessed in terms of demography, economic activity and employment, tourism and amenity, landscape and visual, human health and social health. Construction Phase: The Proposed Development has the potential to cause dust nuisances during the Construction Phase as well as noise and vibrations from plant machinery and traffic. Operational Phase: The Proposed Development is expected to produce operational noise from on-site plant and equipment in addition to interactions with air quality, particularly potential odour impacts, and traffic during the Operational Phase.	
Interactions	
Air Quality	Interactions with air quality, including odour, during the Construction and Operational Phase has the potential to cause health, odour and dust nuisance issues. However, the mitigation measures that will be put in place at the Proposed Development will ensure that the impacts and their effects comply with all ambient air quality legislative limits and therefore the predicted impact is not significant with a neutral effect on human health. Air quality is discussed further in Chapter 8 of this EIAR.
Hydrology	There are no anticipated impacts to groundwater or local groundwater supplies used for drinking water associated with the Proposed Development.
Noise and Vibration	The potential impacts on the noise environment associated with the Proposed Development will be principally limited to the movement of trucks delivering infeed materials and the subsequent exit of these vehicles from the site as well as the movement of trucks collecting biofuel from the tank farm. No traffic routes are predicted to experience increases of more than 25% in total traffic flows during the Operational Phase and therefore no detailed noise assessment is required as per the DMRB Guidelines. Refer to Chapter 12 of the EIAR for a detailed traffic assessment report. In relation to operational noise from on-site plant and equipment, when taking account of local terrain, predicted noise levels at the closest noise

	sensitive location are expected to be lower than the level set out in Chapter 9 of this EIAR and as such there will be no significant impact.
Landscape and Visual	It is not considered that the Proposed Development by virtue of its visual appearance, will cause any issues for the residential local population.
Material Assets: Traffic	As the AD Plant will not significantly increase the traffic on College Road or the R162, there is no percentage impact change in the traffic flows on the adjoining roads and thus will be no significant impact on the population and human health of the surrounding area.
Conclusions	
Adverse impacts on Air Quality, Noise and Vibration and Traffic are not expected to occur and mitigation measures have been set out for any of these potential interactions. The Proposed Development is also considered to not have any interactions with Hydrology or Landscape and Visual.	

Table 13-3: Biodiversity

Biodiversity	
Summary	
Chapter 5 of this EIAR, Biodiversity, details the direct and indirect effects of the Proposed Development on the local flora and fauna; and sets out any required mitigation measures where appropriate. Construction Phase: The Proposed Development could result in potential adverse effects on Land and Soils, Hydrology, Noise and Vibration, and Air Quality and Climate. Interactions with ecological sensitivities in the surrounding area includes noise from on-site plant and equipment as well as water quality (pollution and sedimentation) and excess surface water run-off and flooding. Operational Phase: The Proposed Development will include potential impacts in relation to operational noise from on-site plant and equipment.	
Interactions	
Land and Soils	An assessment of the potential impact of the Proposed Development on land and soils is outlined in Chapter 6 – Land and Soils. These impacts are considered to be relevant to the ecological sensitivities associated with the Site of the Proposed Development discussed in this Chapter; and mitigation measures addressing these potential impacts are described in full in Chapter 6.
Hydrology	The key environmental interaction with biodiversity is water. A series of mitigation measures are proposed in Chapter 7 – Hydrology of this EIAR document, as well as in this Chapter, to ensure the quality (pollution and sedimentation) and quantity (surface run-off and flooding) of water is of an appropriate standard.
Noise and Vibration	An assessment of the potential impact of the Proposed Development in the form of excess noise and vibrations associated with the proposed works are laid out in Chapter 9 - Noise and Vibration. These impacts are considered to be relevant to the ecological sensitivities associated with the Site of the Proposed Development discussed in this Biodiversity Chapter.
Air Quality and Climate	An assessment of the potential impact of the Proposed Development on air quality and climate is included in Chapter 8 of this EIAR. The Construction Phase has the potential to interact with flora and fauna in adjacent habitats and designated sites due to dust emissions arising from the construction works. However, the mitigation measures employed at the Proposed Development will ensure that the impacts to flora and fauna are not significant.

Conclusions

Potential negative impacts have been identified for Land and Soils, Hydrology, Noise and Vibration, and Air Quality and Climate. Mitigation measures have been outlined in Chapter 6, 8, 9 and 8 respectively.

Table 13-4: Land, Soil and Geology

Land, Soil and Geology	
Summary	
Chapter 6 of this EIAR, Land, Soil and Geology details the direct and indirect effects of the Proposed Development on the local land, soils, and geology; and sets out any required mitigation measures where appropriate. There are a number of potential pollutants associated with the Construction and Operational Phase of the Proposed Development which have the potential to impact on the environment with respect to land, soils and geology such as: Construction Phase: The excavation and infilling of soils at the Site has the potential to generate nuisance impacts such as dust, noise and sediment run-off. Consideration is given to habitats and species protected by national and international legislation or considered to be of particular conservation importance. Additionally, the land will undergo a change from agricultural land use to industrial land use.	
Interactions	
Population and Human Health	Appropriate industry standard and health and safety legislative requirements will be implemented during the Construction Phase of the Proposed Development that will be protective of site workers. Specific issues relating to Public Health associated with the Proposed Development are set out in Chapter 4 of this EIAR.
Hydrology and Hydrogeology	An assessment of the potential impact of the Proposed Development on the hydrological and hydrogeological environment is included in Chapter 7 of this EIAR. Procedures for the protection of receiving water environment are also set out in Chapter 7 of this EIAR.
Material Assets	An assessment of the potential impact of the Proposed Development on the material assets including built services, infrastructure and waste management is included in Chapter 12 of this EIAR.
Air Quality and Climate	The excavation and infilling of soils at the Site has the potential to generate nuisance impacts (i.e., dust). An assessment of the potential impact of the Proposed Development on air quality and climate is included in Chapter 8 of this EIAR.
Biodiversity	An assessment of the potential impacts of the Proposed Development on the Biodiversity of the site, with emphasis on habitats, flora and fauna which may be impacted a result of the Proposed Development are included in

	Chapter 5 of this EIAR. It also provides an assessment of the impacts of the Proposed Development on habitats and species, particularly those protected by national and international legislation or considered to be of particular conservation importance and proposes measures for the mitigation of these impacts.
Landscape and Visual	During the Construction Phase the topography of the proposed infill area will be increased and the land use within the western portion of the proposed AD facility will undergo a change from agricultural land use to industrial land use. An assessment of the potential impact of the Proposed Development on the receiving landscape is included in Chapter 10 of this EIAR.
Conclusions	
Potential impacts have been outlined in the respective Chapters specified above. The mitigation measures outlined in the Preliminary CEMP and the respective Chapters outlined above, will ensure that there will be no significant adverse impacts on the receiving land, soil and geology associated with the Construction Phase and the Operational Phase of the Proposed Development.	

Table 13-5: Hydrology and Hydrogeology

Hydrology and Hydrogeology	
Summary	
Chapter 7 of this EIAR, Water (Hydrology and Hydrogeology), provides an assessment of the potential impacts of the Proposed Development on hydrology, water and hydrogeology and sets out any required mitigation measures where appropriate. Consideration is given to habitats and species protected by national and international legislation or considered to be of particular conservation importance Any discharges to the WWTP at the existing facility and water supply to the production wells at the existing facility will be in accordance with the conditions of the IE Licence (IE Licence No. P0037-04).	
Interactions	
Population and Human Health	No public health issues associated with the water (hydrology and hydrogeology) conditions at the Proposed Development Site have been identified for the Construction Phase or Operational Phase of the Proposed Development. Appropriate industry standard and health and safety legislative requirements will be implemented during the Construction Phase that will be protective of site workers. It is noted that specific issues relating to Public Health associated with the Proposed Development are set out in Chapter 4 of this EIAR.
Land, Soil, Geology and Hydrogeology	An assessment of the potential impact of the Proposed Development on the existing land, soils and geological environment during the Operational Phase of the Proposed Development is set out in Chapter 6 Land, Soil and Geology of this EIAR.
Biodiversity	An assessment of the potential impacts of the Proposed Development on the Biodiversity of the Site, with emphasis on habitats, flora and fauna which may be impacted a result of the Proposed Development are included in Chapter 5 of this EIAR. It also provides an assessment of the impacts of the Proposed Development on habitats and species, particularly those protected by national and international legislation or considered to be of particular conservation importance and proposes measures for the mitigation of these impacts.
Material Assets: Water	An assessment of the potential impact of the Proposed Development on the Material Assets including built services, infrastructure, traffic, and waste management has been set out in Chapter 12 of this EIAR. Any discharges to the WWTP at the existing facility and water supply to the from the

	production wells at the existing facility will be in accordance with the conditions of the IE Licence (IE Licence No. P0037-04).

Conclusions

The protective/avoidance/mitigation measurements that will be applied as set out in the Preliminary CEMP, will ensure that the Proposed Development will not give rise to any likely significant impacts.

Table 13-6: Air Quality and Climate

Air Quality and Climate	
Summary	
Chapter 8 of this EIAR, Air Quality and Climate, provides an assessment of the potential impacts of the Proposed Development on ambient air quality and climate, and sets out appropriate mitigation measures where necessary. The greatest potential effects on air quality and climate include dust from the Construction Phase of the Proposed Development, odour from the Operational Phase of the Proposed Development. There may also be pollutants from increased construction traffic.	
Interactions	
Population and Human Health	Interactions between Air Quality and Population and Human Health have been considered as the Operational Phase has the potential to cause health issues as a result of impacts on air quality from dust nuisances and potential traffic derived pollutants. However, the mitigation measures employed at the Proposed Development will ensure that all impacts are compliant with ambient air quality standards and human health will not be affected.
Biodiversity	Interactions between Air Quality and Biodiversity have been considered as the Construction Phase has the potential to interact with flora and fauna in adjacent habitats and designated sites due to dust emissions arising from the construction works. However, the mitigation measures employed at the Proposed Development will ensure that the impacts to flora and fauna are not significant.
Material Assets: Traffic	Traffic derived pollutants which may affect Air Quality and Climate are deemed insignificant due to the marginal change in traffic volume and movement associated with the Proposed Development in the context of currently low traffic flow in the area, as outlined in Chapter 12.1 of this EIAR.
Conclusions	
The greatest potential effect on air quality of the Proposed Development is from traffic-related air emissions, odour emissions from existing and proposed operations, hydrogen sulfide (H₂S) emissions from the short-term operation of the pressure relief valve (PRVs) on the gas storage tanks, and NO_x emissions from the AD gas engines and standby flare. However, the mitigation measures employed at the Proposed Development will ensure that no significant impacts occur.	

Table 13-7: Noise and Vibration

Noise and Vibration	
Summary	
Chapter 9 of this EIAR, Noise and Vibration, provides a description and assessment of the likely impact of the proposed activities from noise, and sets out appropriate mitigation measures where necessary. Noise-generating activities during the Construction and Operational Phases are expected not to have adverse implications for biodiversity. Noise associated with the operation of on-site machinery will not create any major negative impacts beyond the Site boundary. Mitigation and monitoring measures will be incorporated to further reduce the potential for noise generation from the Proposed Development.	
Interactions	
Population and Human Health	The impact assessment of noise and vibration has concluded that additional noise associated with the operation of on-site machinery will not create any major negative impacts beyond the Site boundary. Mitigation and monitoring measures will be incorporated to further reduce the potential for noise generation from the Proposed Development. It is noted that specific issues relating to Population and Human Health associated with the Proposed Development are set out in Chapter 4 of this EIAR.
Biodiversity	It is not considered that the Noise and Vibration effects of the Proposed Development will have an adverse impact on biodiversity in the local area due to the implementation of mitigation measures. Specific issues relating to Biodiversity associated with the Proposed Development are set out in Chapter 5 of this EIAR.
Material Assets: Traffic	The Proposed Development will have no significant impact on overall traffic volumes and therefore traffic will not result in any significant increases of noise at sensitive receptors.
Conclusions	
Noise associated with the operation of on-site machinery will not create any major negative impacts beyond the Site boundary. Mitigation and monitoring measures will be incorporated to further reduce the potential for noise generation from the Proposed Development.	

Table 13-8: Landscape and Visual Assessment

Landscape and Visual Assessment	
Summary	
Chapter 10 of the EIAR, Landscape and Visual, provides a description and assessment of the likely impact of the Proposed Development on the landscape and visual amenities of the area.	
Interactions	
Population and Human Health	It is not considered that the Proposed Development by virtue of its visual appearance and in the context of the proposed zoning of the site of the Proposed Development and the agricultural landscape, will cause any issues for the residential local population.
Biodiversity	The proposed mitigation measures on the reinforcement of the existing green structure of the site interacts with the biodiversity and ecology through the changes that will occur to the existing habitats and flora at the site. The Proposed Development will entail losses in terms of vegetation at the site, which in turn will affect the ecology of the site. The site in its current condition is not of high ecological value, and the proposed mitigation measures will not result in significant adverse effects in this regard.
Archaeology and Cultural Heritage	As there are no known archaeological or architectural remains found during the desk top survey as well as the walkover survey, it is not predicted that any changes in landscape or visual impact will affect in any way the archaeology of the area. There is a Ringfort – rath (ME005-054), located between the eastern and western portions of the site but is outside the red line boundary, but this site will not be directly affected by the Proposed Development and there will be no visual impacts on sightings from and to the ringfort when the Anaerobic Digestion plant is constructed. This was proved by a walkover survey, carried out to assess the upstanding remains of the ringfort ME005-054 as well to assess the development lands and any possible archaeological remains that may be visible.
Conclusions	
No significant negative impacts on the Landscape and Visual aspects of the surrounding environment are expected from the Proposed Development. The proposed mitigation measures will not result in significant adverse effects regarding biodiversity.	

Table 13-9: Archaeology and Cultural Heritage

Archaeology and Cultural Heritage	
Summary	
This section assesses the impact of the Proposed Development on the Archaeology and Cultural Heritage. This includes potential interactions occurring during the Construction and Operational Phases of the Proposed Development.	
Interactions	
Landscape and Visual	It is not predicted that any changes in landscape or visual amenities will affect in any way the archaeology and cultural heritage of the area. Check final Chapter.
Land and Soil	The Proposed Development will involve the movement of 77,804.15 m ³ of soil for the site to reach the required levels. There is potential for previously unrecorded archaeological features or deposits to be discovered during this process. However, as there are no archaeological or architectural sites recorded within the site boundary, it is predicted that the Proposed Development will not cause any significant impact on the Archaeology and Cultural Heritage of the area as a result of construction and excavation works. Mitigation measures have been proposed in Section 11.6.1 of this Chapter to ensure there will be no significant impacts.
Conclusions	
With the implementation of all mitigation measures detailed in Chapter 11 as well as the lack of archaeological and/or culturally historic sites within the Site boundary, there will be no negative residual impacts upon the archaeological or cultural heritage resource.	

Table 13-10: Material Assets: Traffic

Material Assets: Traffic	
Summary	
This section assesses the impact of the Proposed Development on Material Assets: Traffic. This includes potential interactions occurring during the Construction and Operational Phases of the Proposed Development.	
Interactions	
Population and Human Health	As the AD Plant will not significantly increase the traffic on College Road or the R162, there is no percentage impact change in the traffic flows on the adjoining roads and thus will be no significant impact on the population and human health of the surrounding area.
Air Quality and Climate	Traffic derived pollutants which may affect Air Quality and Climate are deemed insignificant due to the marginal change in traffic volume and movement associated with the Proposed Development in the context of currently low traffic flow in the area. Air quality is assessed in Chapter 8 of this EIAR.
Noise and Vibration	The Proposed Development will have no significant impact on overall traffic volumes and therefore traffic will not result in any significant increases of noise at sensitive receptors.
Conclusions	
Subject to implementation of all mitigation measures, there will be no negative residual impacts upon the Material Assets: Traffic. There is no percentage impact change in the traffic flows on the roads adjoining the Proposed Development and thus will be no significant impact.	

Table 13-11: Material Assets: Waste and Utilities

Material Assets: Waste And Utilities	
Summary	
This section assesses the impact of the Proposed Development on the Material Assets: Waste and Utilities. This includes potential interactions occurring during the Construction and Operational Phases of the Proposed Development. Construction Phase: - The improper removal, handling and storage of waste materials could negatively impact on the health of construction workers as well as potential disruptions to water supply or sewerage systems could be negative impacts for the surrounding population, biodiversity, land, soil and hydrology. Additionally, there may be increased construction traffic. Operational Phase: - Improper removal, handling and storage of waste materials could negatively impact on the health of the public and local biodiversity.	
Interactions	
Population and Human Health	The improper removal, handling and storage of waste materials could negatively impact on the health of construction workers. Extended power or telecommunications outages, or disruption to water supply or sewerage systems for existing properties in the area could negatively impact on the surrounding human population and their overall health. Potential impacts on population and human health are addressed in Chapter 4 of this EIAR.
Biodiversity	The improper handling and storage of waste during the Construction and Operational Phases could negatively impact on biodiversity. Potential impacts on biodiversity are addressed in Chapter 5 of this EIAR.
Land and Soil	Improper handling and segregation of hazardous or contaminated waste materials could lead to the contamination of soil and stones excavated from the site. Potential impacts on land and soils are addressed in Chapter 6 of this EIAR.
Hydrology and Hydrogeology	Any discharges to the WWTP at the existing facility and water supply to the groundwater supply wells at the existing facility will be in accordance with the conditions of the IE Licence (IE Licence No. P0037-04). Potential impacts on the water environment are addressed in Chapter 7 of this EIAR.
Material Assets: Traffic	Waste collection and delivery activities at the Proposed Development have the potential to impact upon traffic movements in the local area. Potential impacts on traffic are addressed in Chapter 12.1 of this EIAR.
Conclusions	

With the implementation of all mitigation measures detailed in the respective Chapters, there will be no negative residual impacts upon the Material Assets: Waste and Utilities.

15 MITIGATION AND MONITORING

15.1 Introduction

This EIAR has assessed the impacts and resulting effects likely to occur as a result of the Proposed Development on the various aspects of the receiving environment.

The Proposed Development will be operated in a manner that will ensure that the potential impacts on the receiving environment are avoided where possible. In cases where impacts or potential impacts have been identified, mitigation measures have been proposed to reduce the significance of particular impacts. These mitigation recommendations are contained within each Chapter exploring specific environmental aspects.

This Chapter of the EIAR collates and summarises the mitigation commitments made in Chapter 4 to Chapter 12. These measures are considered to be best practice construction techniques that are applicable to most developments of this scale and nature.

15.2 Summary of Mitigation and Monitoring Measures

The Mitigation and Monitoring Measures are detailed for Chapter 4 to Chapter 12.

15.3 Population and Human Health

15.3.1 Construction Phase

15.3.1.1 Mitigation

During the Construction Phase of this Proposed Development HSE guidelines will be adhered to in relation to social distancing, cough and sneeze etiquette, face masks and hand washing. Appropriate welfare facilities will be provided at the facility. Frequently touched objects and surfaces such as door handles, machine steering wheels and gear levers will be cleaned and disinfected frequently.

No specific mitigation measures are required during the Construction Phase of the Proposed Development in relation to population and settlements, given the lack of direct effects resulting from the Proposed Development. However, where required, mitigation measures in relation to air emissions (dust), noise, traffic, waste etc. are identified in their respective Chapters in this EIA Report.

15.3.1.2 Monitoring

No specific monitoring measures are proposed or required in relation to Population and Human Health for the Construction Phase of the Proposed Development.

Monitoring activities will be implemented for the Construction Phase in accordance with the Preliminary CEMP submitted as part of this planning application.

15.3.2 Operational Phase

15.3.2.1 Mitigation

All HSE guidelines published to protect against the spread of COVID-19 will be adhered to during the Operational Phase of the Proposed Development. These HSE guidelines may relate to social distancing, cough and sneeze etiquette, face masks and hand washing.

All workers employed during the Operational Phase of the Proposed Development will comply with the relevant HSE guidelines and any Government protocols that may be in place at that point in time in relation to Covid-19.

During the Operational Phase of the Proposed Development, pest control measures will be put in place to ensure that pests such as flies, rodents or other vermin will not give rise to nuisance at the facility or any facility surrounds. Pest control procedures will be put in place at the facility and rodent activity will be monitored during routine housekeeping checks. A professional pest control company will be employed by the applicant if required

No other specific mitigation measures are required in relation to population and settlements, given the lack of direct effects resulting from the Proposed Development. However, where required, mitigation measures in relation to air emissions, noise, traffic etc. are identified in their respective Chapters in this EIA Report.

15.3.2.2 Monitoring

No specific monitoring measures are required in relation to population and settlements, given the lack of direct effects resulting from the Proposed Development. However, where required, monitoring in relation to air emissions, water, noise and traffic are identified in their respective Chapters in this EIAR.

15.4 Biodiversity

15.4.1 Mitigation by Design

15.4.1.1 Consultation and avoidance by design

Consultation between the design team of the Proposed Development (the developer; College Proteins, and environmental consultants, Enviroguide) was conducted on an ongoing basis in order to formulate a project design which would avoid, by design and at source, any construction activities that could initiate potential water quality impacts. As a consequence, all aspects of the construction of the proposed facility and its layout, adopted avoidance by design approach. In addition, to avoid impacts at source, particularly with regard to the adjacent stream, a hydrological buffer zone of 10m was applied to the stream during the design stage.

Treelines which are to be retained will be fenced off before construction work commences. Fences will be located a minimum of 2m from the base of retained hedgerows.

No ground clearance, earth moving or movement of machinery will occur within these fenced-off areas. The removal of hedgerows will be conducted outside of the breeding season (March – August inclusive) and this will reduce impacts on foraging bats, who are active during this period.

15.4.1.2 Excavations in-fill activities

Prior to excavation, a detailed review of the final cut and fill model will be carried out to confirm cut and fill volumes. Detailed quantities of material to be excavated will be verified through accurate survey techniques by the groundwork's contractor at the Construction Phase.

Handling of excavated soils will be undertaken in accordance with documented procedures that will be set out in order to protect ground and minimise airborne dust. The normal measures required to prevent airborne dust emissions and associated nuisance arising from site work will be in place including measures to prevent uncovered soil drying out leading to wind pick up of dust and mud being spread onto the local road network and adjoining properties. This will require additional wetting at the point of dust release, dampening down during dry weather and wheel cleaning for any vehicles leaving the Site. Potential impacts and avoidance and mitigation measures associated with generation of dust are addressed in Section 5.6.2.1 and Chapter 8.

All working faces will be inspected and assessed daily by an appropriately qualified geotechnical Engineer and the geometries of the working faces amended where required appropriate to the characteristics of soil materials. Soils will be infilled and compacted in a manner to prevent subsidence within the infilled sections.

Filling operations will be confined to a selected area of the site at any one time with each area being restored in a timely manner from commencement of the next phase. Once the proposed infilling works are complete, the surface will be seeded with grasses.

15.4.2 Construction Phase

15.4.2.1 Mitigation

Surface water mitigation

Surface runoff during the Construction Phase will be managed within the works areas. Direct uncontrolled surface water discharges from the Site will not be permitted into the Nobber stream. In-stream works will be required for the culverting of the drainage ditch that crosses the proposed infill area. The culvert will be precast and delivered to Site as required thereby reducing the risk of any direct impact to water quality in the open drainage channel and the downstream Nobber Stream. All in-stream works will be undertaken during the summer when the flow in the open drainage ditch crossing the proposed infill area is negligible. Regardless, the proposed construction design will include an over-pump or the installation of a ditch diversion to manage water in the event of a rainfall event. There is the potential for some disturbance of the stream bed and increased suspended solids content of the water downstream of the works area. This may result in a 'negative', 'moderate', 'short-term' impact on the receiving water quality of the Nobber Stream.

The existing drainage ditch will be excavated out and a bed of crushed stone will be laid along the length of the new culvert. The culvert sections will be laid on the crushed stone and levelled. On completion of the installation the excavation will be backfilled with compacted stone up to the level of the top of the culvert. The culvert will be designed to accommodate the 1 in 100-year storm (+20%).

Instream machine works will be minimised as far as practically possible to reduce risk of oil contamination entering the drainage ditch and the Nobber stream.

Temporary surface water drainage infrastructure will be constructed to manage all construction related surface water run-off. Infrastructure will include a silt trap/oil interceptor and settlement pond and will be constructed within the Proposed Development with connections for discharge to the local drainage network.

Trenched double silt fencing will be installed along the western and northern boundary of the Proposed Development infill Site. The silt fencing will act as a temporary sediment control device to protect the water course from sediment and potential surface water run-off from the Site. The fencing will be inspected twice daily based on Site and weather conditions for any signs of contamination or excessive silt deposits and records of these checks will be maintained. Silt laden water within the trenches will be routed to an appropriately sized settlement facility before discharging to the Nobber Stream. A buffer zone of 10m will be maintained between the silt trap and the watercourse with natural vegetation left intact.

In addition, the following measures will be undertaken:

Designated impermeable cement washout areas will be provided within the AD construction site.

Run-off from the working site or any areas of exposed soil will be channelled and intercepted at regular intervals for discharge to silt-traps or lagoons with over-flows directed to land rather than to a drain.

Silty water generated on site will be treated using silt traps/settlement ponds and temporary interceptors and traps will be installed until such time as permanent facilities are constructed.

Storm drain inlets which could receive stormwater from the project will be protected throughout the Construction Phase. Inlet protection will be installed before soil disturbing activities begin.

A regular review of weather forecasts of heavy rainfall will be conducted, and a contingency plan will be prepared for before and after such events to minimise any potential nuisances. As the risk of the break-out of silt laden run-off is higher during these weather conditions, no work will be carried out during such periods where possible.

Temporary hydrocarbon interceptor facilities will be installed and maintained where Site Works involve the discharge of drainage waters to nearby drains.

All containment and treatment facilities will be regularly inspected and maintained.

Refuelling of plant during the Construction Phase will only be carried out at designated refuelling station locations on site. Each station will be fully equipped for spill response and a specially trained and dedicated Environmental and Emergency Spill Response team will be appointed before the commencement of works on site.

Only emergency breakdown maintenance will be carried out on site. Drip trays and spill kits will be available on site to ensure that any spills from vehicles are contained and removed off site.

All personnel working on site will be trained in pollution incident control response.

Any other diesel, fuel or hydraulic oils stored on site will be stored in bunded storage tanks- the bunded area will have a volume of at least 110% of the volume of the stored materials as per best practice guidelines (Enterprise Ireland, BPGCS005).

If portaloos and/or containerised toilets and welfare units will be used to provide facilities for site personnel, all associated waste will be removed from site by a licenced waste disposal contractor.

Under no circumstances will any untreated wastewater generated onsite (from equipment washing, road sweeping etc.) be released into surface water drains.

15.4.2.2 Dust Minimisation Plan

The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors. In order to develop a workable and transparent dust control strategy, the following management plan which has been formulated by drawing on best practice guidance from Ireland, the UK (BRE 2003), (The Scottish Office 1996) (UK Office of Deputy Prime Minister 2002) and the USA (USEPA 1997), (USEPA 1986) will be implemented.

Monitoring of Dust Emissions

Monitoring of dust within the Site one month prior to commencement of any construction works to collate baseline data. Monitoring of dust can be carried out by using the Bergerhoff Method. This involves placing Bergerhoff Dust Deposit Gauges at strategic locations along the Site boundaries for a period of 30 +/- 2 days. The selection of sampling point locations should be carried out in consideration of the requirements of the German Standard Method VDI 2119 (Measurement of Dustfall, Determination of Dustfall using Bergerhoff Instrument (Standard Method German Engineering Institute) with respect to the location of the samplers relative to buildings

and other obstructions, height above ground, and sample collection and analysis procedures. After the exposure period is complete, the Gauges will be removed from the Site; the dust deposits in each Gauge will then be determined gravimetrically and expressed as a dust deposition rate in mg/m²/day in accordance with the relevant standard. Monitoring of construction dust deposition will be conducted at nearby sensitive receptors and at the Site boundary (i.e., worst-case location), during the Construction phase of the Proposed Development.

Regular inspections of the Infill site and access roads from the AD construction site to the infill site will be carried out to monitor dust, records and notes on these inspections will be logged.

The individual(s) responsible for monitoring of dust within the Construction Phase will receive work specific induction in relation to dust minimisation measures, visual dust assessment and dust monitoring in the direct area.

Should dust deposition be deemed to be at a rate which has the potential to cause an impact on the local environment, additional mitigation will be put in place immediately.

Site Management

Regular inspections of the Site and boundary will be carried out to monitor dust, records and notes on these inspections should be logged.

Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.

Make the complaints log available to the local authority when asked.

Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the logbook.

Preparing and Maintaining the Site

Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.

Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on Site.

Fully enclose specific operations where there is a high potential for dust production and the Site is active for an extensive period.

Avoid Site runoff of water or mud.

Keep Site fencing, barriers and scaffolding clean using wet methods.

Remove materials that have a potential to produce dust from Site as soon as possible, unless being re-used on Site. If they are being re-used on-site cover as described below.

Operating Vehicles / Machinery

Ensure all vehicles switch off engines when stationary - no idling vehicles.

Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable.

Impose and signpost a maximum-speed-limit of 15 kph haul roads and work areas

Produce a Construction Traffic Management Plan to manage the sustainable delivery of goods and materials.

Measures Specific to Earthworks

Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.

Use Hessian or mulches where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.

Only remove the cover in small areas during work and not all at once.

During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.

Measures Specific to Construction

Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.

For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

Measures Specific to Trackout

Site roads (particularly unpaved) can be a significant source of fugitive dust from construction sites if control measures are not in place. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25 to 80%.

A speed restriction of 15 km/hr will be applied as an effective control measure for dust for on-site vehicles.

Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.

Avoid dry sweeping of large areas.

Inspect on-site haul roads for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.

Record all inspections of haul roads and any subsequent action in a site log book.

Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowzers and regularly cleaned.

Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.

15.4.2.3 Protection of Hedgehog and Pygmy Shrew

As noted in the British Hedgehog Preservation Society's publication *Hedgehogs and development*, during the Construction Phase of the Proposed Development Hedgehogs have the potential to be impacted through the loss of suitable hibernation and nest sites in the form of piles of dead wood, vegetation and leaves. This can be mitigated through the careful removal of dead wood/leaves to another part of the Site where they will not be affected. Woody debris from the proposed clearance of vegetative areas on site will also be left in this out-of-the way location as compensatory Hedgehog habitat during the Construction Phase (refer to section 5.6.1.1).

Vegetation will be removed in sections working in a consistent direction to prevent entrapment of protected fauna potentially present (e.g. Hedgehog).

Hedgehog also frequent long grass for foraging and daytime nesting sites so care will be taken when stripping these areas of the Site.

As best-practice, all construction-related rubbish on site e.g. plastic sheeting, netting etc. will be kept in a designated area on site and kept off ground level so as to protect Hedgehogs from entrapment and death. The above measures will also act to mitigate potential negative impacts on other small mammal species potentially found on site e.g. Pygmy Shrew.

Work likely to cause disturbance during hibernation – for example removal of hibernation habitats such as log piles and dense scrub –**will not take place during November to March**, unless a suitability qualified ecologist has deemed the Site to be devoid of Hedgehog.

15.4.2.4 Protection of Bats

To protect bats from lighting associated with the **Construction Phase** of the Proposed Development, the following will be considered when choosing luminaires. This is taken from the most recent BCT Lighting Guidelines (BCT, 2018):

All luminaires used will lack UV/IR elements to reduce impact.

LED luminaires will be used due to the fact that they are highly directional, lower intensity, good colour rendition and dimming capability.

A warm white spectrum (<2700 Kelvins will be used to reduce the blue light component of the LED spectrum).

Luminaires will feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.

Column heights should be carefully considered to minimise light spill. The shortest column height allowed should be used where possible.

Only luminaires with an upward light ratio of 0% and with good optical control will be used.

Luminaires will be mounted on the horizontal, i.e. no upward tilt.

Any external security lighting will be set on motion-sensors and short (1min) timers.

As a last resort, accessories such as baffles, hoods or louvres will be used to reduce light spill and direct it only to where it is needed.

Any Construction Phase external lighting will strictly follow the above guidelines.

15.4.2.5 Protection of Birds

Any clearance of vegetation will be carried out outside the main breeding season, i.e. 1st March to 31st August, in compliance with the Wildlife Act 2000. Should any vegetation removal be required during this period, the NPWS will be consulted, and instruction taken from them. If the buildings on Site are to be demolished during the breeding bird season, the buildings will be inspected for breeding birds (e.g. Swallows) prior to demolition. Should nesting birds be discovered, the nest will be protected until any nesting birds have fledged and departed the site.

15.4.2.6 Water Quality Measures during the Construction Phase

No work will take place within the buffer zone that will be established adjacent to the streams and drainage ditches identified on site.

15.4.2.7 Protection of Watercourses (General Measures)

It is recommended that the following measures will be incorporated into the development so as to ensure no significant negative impact on water course and the features of conservation interest:

- Raw or uncured waste concrete / cementitious material will be disposed of by removal from the site;
- Ready-mix concrete suppliers will be used in preference to on-site batching;
- Fuelling and lubrication of equipment will be carried out in designated bunded areas;
- Prior to any work, it will be ensured that all construction equipment is mechanically sound to avoid leaks of oil, fuel, hydraulic fluids and grease.
- Procedures and contingency plans will be set up to deal with an emergency accidents or spills; and
- An emergency spill kit with oil boom, absorbers etc. will be kept on site in the event of an accidental spill.
- A designated trained operator experienced in working with concrete will be employed during the concrete pouring phase; and
- Large volumes of concrete water will be pumped into a skip to settle out; settled solids will need to be appropriately disposed of off-site. The total volume of concrete water will be reduced by only permitting concrete chutes to be washed on site.

15.4.2.8 Timing of vegetation clearance

The following table provides guidance for when vegetation clearance and instream works are permissible. Information sources include the British Hedgehog Preservation Society's *Hedgehogs and Development* and *The Wildlife (Amendment) Act, 2000*.

Table 14-1: Seasonal restrictions on vegetation removal. Red boxes indicate periods when clearance/works are not permissible

Ecological Feature	January	February	March	April	May	June	July	August	September	October	November	December
Breeding Birds	Vegetation clearance permissible	<u>Nesting bird season</u> No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of nesting birds by an ecologist.							Vegetation clearance permissible			
Hibernating mammals (namely Hedgehog, excluding bats)	<u>Mammal hibernation season</u> No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of hibernating mammals by an ecologist.		Vegetation clearance permissible							<u>Mammal hibernation season</u> No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of hibernating mammals by an ecologist.		

The preferred period for vegetation clearance is within the month of October (Table 15-20). Vegetation will be removed in sections working in a consistent direction to prevent entrapment of protected fauna potentially present (e.g. Hedgehog, Badger). Vegetation clearance will take place under the supervision of an ecologist to avoid any potential impact on birds or mammals.

15.4.3 Mitigation by Management

15.4.3.1 Environmental Management Plan and Environmental Manager

The environmental commitments of the Proposed Development should be managed through the Environmental Management Plan (EMP). The implementation of the proposed mitigation measures, monitoring and follow-up arrangements and management of impacts, can be managed through the EMP.

College Proteins have an Environmental Manager with appropriate experience and expertise who will be employed prior to, and for the duration of, the Construction Phase to ensure that all the mitigation measures outlined in relation to the environment are implemented.

A programme of regular checking of equipment, materials storage and transfer areas, drainage structures and their attenuation ability should be designed and implemented during the Construction Phase of the project.

The purpose of this management control is to ensure that the measures that are put in place continue to operate effectively, to prevent accidental leakages, and to identify potential breaches in the protective retention and attenuation network during earthworks operations.

Many of the mitigation measures below have been based on CIRIA technical guidance on water pollution control (Murnane et al., 2006).

15.4.3.2 Management of excavated material

All excavated earth materials will be re-used in an environmentally appropriate and safe manner, e.g. used for landscaping. No special mitigation measures are required for the removal of wet grassland or other habitats that are of lower ecological value.

The Environmental Management Plan will include regular checking of silt fencing and drainage structures, should they be deemed necessary, and of their attenuation ability during the Construction Phase of the project. The purpose of this management control is to ensure that the measures that are put in place continue to operate effectively, to identify potential breaches in the protective retention and attenuation network during earthworks operations.

15.4.3.3 Treeline Management

Treelines will be planted along the new site boundaries and will reconnect with existing treelines, to create new networks of ecological corridors. The trees and shrubs will be native species and the species composition will reflect habitats that have been lost. The condition of any new tree and shrub planting will be monitored.

15.4.3.4 Storage, Stockpiling and Waste Generation Management

Excavated earth materials will be re-used in an environmentally appropriate and safe manner. It is anticipated that all excavated materials will be relocated to the infill site during the Construction Phase however, any remaining material will be removed from the development site at the end of the Construction Phase.

15.4.3.5 Waste Control

Any introduced semi-natural (road building materials) or artificial (PVC piping, cement materials, electrical wiring etc.) will be taken off site at the end of the Construction Phase. Any accidental spillage of solid state introduced materials must be removed from the site.

15.4.3.6 Storage

The storage of materials, containers, stockpiles and waste, however temporary, should follow best practice at all times and be stored at designated areas. Storage will be located as follows:

- Away from drains and watercourse or drains;
- Fuel oils etc. will be stored at the temporary site compound;
- In secure areas; and well away from moving plant, machinery and vehicles.
- All containers will be stored upright and clearly labelled.

15.4.4 Monitoring

15.4.4.1 Operational Phase Water Quality Monitoring

Ongoing water quality monitoring will continue by College Proteins staff as part of their EPA licensing requirements. Water sampling will include the following tests:

Biological water quality analysis - Q sampling; and
Physicochemical water quality analysis.

15.4.4.2 Habitat Monitoring

The condition of any new tree and shrub planting will be monitored. Any tree or shrub failing to establish successfully will be replaced by the developer during the first five years of development.

15.5 Land and Soils

15.5.1 Construction Phase

15.5.1.1 Mitigation

Prior to the commencement of the Construction Phase, the appointed Contractor will prepare a detailed Preliminary Construction Environmental Management Plan (CEMP), including detailed construction phasing and measures to manage and prevent any potential emissions to ground.

All construction works will be undertaken having regard to the relevant industry standards (e.g., Guidance for Consultants and Contractors, CIRIA - C532', CIRIA, 2001).

During the Construction Phase the Contractor will comply with the environmental control and mitigation requirements as per the conditions of the IE Licence (IE Licence No. P0037-04) for the existing facility to ensure there will be no impact on the receiving land, soil and geology.

The EMS that is already in place for the existing facility will be strictly implemented for the Construction Phase of the Proposed Development.

Excavation and Handling of Soils

Prior to excavation, a detailed review of the final cut and fill model will be carried out to confirm cut and fill volumes. Detailed quantities of material to be excavated will be verified through accurate survey techniques by the groundwork's contractor at the Construction Phase.

Excavated soils will be carefully managed and maintained in order to minimise potential impact on soil quality and soil structure. Handling of soils will be undertaken in accordance with documented procedures that will be set out in order to protect ground and minimise airborne dust. The normal measures required to prevent airborne dust emissions and associated nuisance arising from site work will be in place including measures to prevent uncovered soil drying out leading to wind pick up of dust and mud being spread onto the local road network and adjoining properties. This will require additional wetting at the point of dust release, dampening down during dry weather and wheel cleaning for any vehicles leaving the Site. Potential impacts and avoidance and mitigation measures associated with generation of dust are addressed in Chapter 8.

Infilling of Soils

The detailed design will be specified by an appropriately qualified geotechnical Engineer for the proposed infilling to ensure that ground stability is engineered and controlled appropriately.

All working faces will be inspected and assessed daily by an appropriately qualified geotechnical Engineer and the geometries of the working faces amended where required appropriate to the characteristics of soil materials. Soils will be infilled and compacted in a manner to prevent subsidence within the infilled sections.

Filling operations will be confined to a selected area of the site at any one time with each area being restored in a timely manner from commencement of the next phase. Once the proposed infilling works are complete, the surface will be seeded with grasses.

The infilling of the lands to the west of the Site with surplus soils generated during construction works will be subject to control procedures which will include testing for contaminants, invasive species and other anthropogenic inclusions and assessment of the suitability for use in accordance with engineering and environmental specifications for the Proposed Development. Any unsuitable materials will be removed from the Site in accordance with all legislative requirements.

Importation of Aggregate Materials

Contract and procurement procedures will ensure that all aggregate materials required are sourced from reputable suppliers operating in a sustainable manner and in accordance with industry conformity and compliance standards and statutory obligations.

The importation of aggregates will be subject to management and control procedures which will include testing and assessment of the suitability for use in accordance with engineering and environmental specifications for the Proposed Development including the suitability of material that may be imported in accordance with an Article 27 By-Product Notification of the European Union (Waste Directive) Regulations 2011-2022. Therefore, any unsuitable material will be identified and avoided prior to importation to the Site.

Pre-cast concrete will be used where technically feasible to meet the design requirements for the Proposed Development. Where cast-in-place concrete is required, all work will be carried out to avoid any contamination of the receiving geological environment through the use of appropriate design and methods implemented by the appointed Contractor and in accordance with relevant industry standards.

All ready-mixed concrete will be delivered to the Proposed Development site by truck. The following measures will be implemented where poured concrete is being used on site:

- The production, transport and placement of all cementitious materials will be strictly planned and supervised. Site batching/production of concrete will not be carried out on Site;
- Shutters will be designed to prevent failure. Grout loss will be prevented from shuttered pours by ensuring that all joints between panels achieve a close fit or that they are sealed;
- Where concrete is to be placed by means of a skip, the opening gate of the delivery chute will be securely fastened to prevent accidental opening;
- Where possible, concrete skips, pumps and machine buckets will be prevented from slewing over water when placing concrete;
- Concrete mixer trucks will not be permitted to wash out on-site with the exception of cleaning the chute into a container which will then be emptied into a skip for appropriate compliant removal offsite; and
- Surplus concrete will be returned to batch plant after completion of a pour.

Handling of Fuels and Hazardous Materials

Fuels will be stored in appropriate bunded, integrity tested tanks, in accordance with Condition 11.4 of the IE Licence (IE Licence No. P0037-04). All tank and drum storage areas, will be rendered impervious to the materials stored therein. In addition, tank and drum storage areas will as a minimum be bunded, either locally or remotely, to a volume not less than the greater of the following:

110% of the capacity of the largest tank or drum within the bunded area; or
25% of the total volume of substance that could be stored within the bunded area.

Refuelling will be carried out in accordance with the procedures outlined in the existing EMS and any requirements of the IE Licence (IE Licence No. P0037-04) for the existing facility. Refuelling will be carried out in a designated area with appropriate containment measures in place to minimise any risk of spills. Spill kits will be provided on-site to deal with any spills or leaks that may occur during refuelling.

The appointed Contractor for the Construction Phase of the Proposed Development will ensure that all plant and equipment utilised on-site is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the Proposed Development site. Only emergency breakdown maintenance will be carried out on-site. Drip trays and spill kits will be available on-site to ensure that any spills from vehicles are contained and removed off-site.

There may also be the requirement for use of portable generators or similar fuel containing equipment during the Construction Phase of the Proposed Development, which will be placed on suitable drip trays. Regular monitoring of drip tray content will be undertaken to ensure sufficient capacity is maintained at all times.

Emergency procedures developed in accordance with Condition 14 of the IE Licence and outlined in the existing EMS will be strictly implemented by the appointed Contractor and spillage kits will be available on-site including in vehicles operating on-site. Construction staff will be familiar with emergency procedures for in the event of accidental fuel spillages.

In the event of a leak or spill from equipment (e.g., leak or spill from machinery during construction works), any contaminated soil will be removed from the Site and compliantly disposed off-site. Residual soil will be tested to validate that all potentially contaminated material has been removed. This procedure will be undertaken in accordance with industry best practice procedures and EPA guidelines.

15.5.1.2 Monitoring

There are no monitoring requirements specifically in relation to hydrology and hydrogeology during the Construction Phase of the Proposed Development.

15.5.2 Operational Phase

15.5.2.1 Mitigation

During the Operational Phase of the Proposed Development there is limited to no potential for any impact on the receiving land, soil and geology environment and therefore there is no mitigation required in regard to the Proposed Development.

The avoidance measures, as outlined below, which are in place as part of the baseline condition at the Site, will ensure that there will be no significant impact on the receiving land, soil and geological environment.

The procedures set out in the EMS and conditions of the IE Licence (IE Licence No. P0037-04) will be strictly adhered to for the duration of the Operational Phase.

Emergency procedures developed in accordance with Condition 14 of the IE Licence and outlined in the existing EMS will be strictly implemented during the Operational Phase of the Proposed Development and spillage kits will be available on-site including in vehicles operating on-site. All staff will be familiar with emergency procedures for in the event of accidental fuel spillages.

15.5.2.2 Monitoring

The Proposed Development will operate under the IE Licence (IE Licence No. P0037-04) which will be amended include the Proposed Development. The operator will comply with any monitoring requirements as per the conditions of the IE Licence (IE Licence No. P0037-04).

There are no additional monitoring requirements specifically in relation to hydrology and hydrogeology during the Operational Phase of the Proposed Development.

15.6 Hydrology

15.6.1 Construction Phase

15.6.1.1 Mitigation

Prior to the commencement of the Construction Phase, the appointed Contractor will prepare a detailed Preliminary Construction Environmental Management Plan (CEMP), including detailed construction phasing and measures to manage and prevent any potential emissions to groundwater and surface water.

The construction works will be managed with consideration of applicable regulations and standard best international practice including but not limited to:

- CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors;
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (C650), 2005;
- BPGCS005, Oil Storage Guidelines;
- EPA (2004) IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities;
- CIRIA 697, The SUDS Manual, 2007;
- UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004;
- Construction Industry Research and Information Association CIRIA C648: Control of water pollution from linear construction projects: Technical guidance (Murnane et al. 2006);
- CIRIA C648: Control of water pollution from linear construction projects: Site guide (Murnane et al. 2006); and
- Inland Fisheries Ireland (2016). Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters.

During the Construction Phase the Contractor will comply with the environmental control and mitigation requirements as per the conditions of the IE Licence (IE Licence No. P0037-04) for the existing facility to ensure there will be no impact on the receiving hydrological and hydrogeological environment.

The EMS that is already in place for the existing facility will be strictly implemented for the Construction Phase of the Proposed Development.

Mitigation measures will be adopted as part of the construction works on the Proposed Development site. These measures are considered to be best practice construction techniques that are applicable to most developments of this scale and nature. The measures will address the main activities of potential impact which include:

- Control and Management of Water and Surface Runoff;
- Management and control of imported soil and aggregates from off-site sources;
- Fuel and Chemical handling, transport, and storage; and
- Accidental release of contaminants – notify relevant statutory authorities.

As part of the overall construction methodology, sediment and water pollution control risks arising from construction-related surface water discharges will be considered. All works carried

out as part of these infrastructure works will comply with all Statutory Legislation including the Local Government (Water Pollution) acts, 1977 and 1990 and the contractor will cooperate fully with the Environment Section of Meath County Council in this regard.

Control and Management of Water and Surface Runoff

Surface runoff during the Construction Phase will be managed within the works areas. Trenched double silt fencing will be installed along the western and northern boundary of the proposed infill area. The silt fencing will act as a temporary sediment control device to protect the Nobber Stream from sediment and potential surface water run-off from the Site. The fencing will be inspected twice daily based on Site and weather conditions for any signs of contamination or excessive silt deposits and records of these checks will be maintained. Silt laden water within the trenches will be routed to an appropriately sized settlement facility before discharging to the Nobber Stream. A buffer zone of 10m will be maintained between the silt trap and the watercourse with natural vegetation left intact.

There may be a temporary increase in the exposure of the underlying groundwater during earthworks due to the temporary removal of hardstanding areas. Surface water runoff will be prevented from entering open excavations with sandbags or other approved methods proposed by the Contractor.

A regular review of weather forecasts of heavy rainfall will be conducted, and a contingency plan will be prepared for before and after such events to minimise any potential nuisances. As the risk of the break-out of silt laden run-off is higher during these weather conditions, no work will be carried out during such periods where possible.

Management and Control of Instream Works

All instream works will be undertaken in accordance with the requirements of the Preliminary CEMP and will follow the guidelines published by Inland Fisheries Ireland (IFI) Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters (2016) and The National Roads Authority (now Transport Infrastructure Ireland) Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes.

During all instream works required for the construction of the culverted drainage channel, the appointed contractor will ensure that the following mitigation measures are strictly adhered to:

- Instream machine works will be minimised, and any machines working in the watercourse must be protected against leakage or spillage of fuels, oils, greases and hydraulic fuels;
- Instream earthworks must be executed so as to minimise the suspension of solids;
- Where temporary pumping is required to divert surface water within the drainage channel, the discharge must be routed to an appropriately sized settlement facility before return to the Nobber Stream; and
- Where required, every care must be taken to insure against spillage of concrete or leakage of cement grout within cofferdams.

Reuse of Surplus Soils

The infilling of the lands to the north of the Site with surplus soils generated during construction works will be subject to control procedures which will include testing for contaminants, invasive

species and other anthropogenic inclusions. Any unsuitable materials will be removed from the Site in accordance with all legislative requirements.

A minimum 10m buffer will be maintained between the proposed infill area, the Site boundary and any receiving water course in particular the Nobber Stream.

The design of the proposed infill area will take account of the local groundwater flow regime and where required will incorporate appropriate drainage layers into the soil cover.

Control and Management of Soil and Stockpiles

Where possible, stockpiling of soil and stone on-site will be avoided. However, in the event that stockpiling is required, temporary stockpiled materials pending infilling on lands to the west of the Site will be located in designated areas only and there will be no storage of materials within 10m of the Site boundary, open drains and water courses. Where required during periods of wet weather appropriate containment measures will be implemented to prevent excessive runoff and entrainment of sediment. These will include battering of stockpiles, covering of stockpiles with tarpaulins and use of sandbags to contain any runoff from the stockpiles.

Importation of Materials

Contract and procurement procedures will ensure that all imported aggregates and other construction materials required for the Proposed Development will be sourced from reputable suppliers operating in a sustainable manner and in accordance with industry conformity/compliance standards and statutory obligations. The importation of aggregates will be subject to management and control procedures to ensure the suitability for use in accordance with engineering and environmental specifications for the Proposed Development. Therefore, any unsuitable material will be identified prior to unloading / placement on-site.

Concrete Works

Pre-cast concrete will be used where technically feasible to meet the design requirements for the Proposed Development. Where cast-in-place concrete is required, all work will be carried out to avoid any contamination of the receiving geological environment through the use of appropriate design and methods implemented by the appointed Contractor and in accordance with relevant industry standards.

All ready-mixed concrete will be delivered to the Proposed Development site by truck. The following measures will be implemented where poured concrete is being used on site:

- The production, transport and placement of all cementitious materials will be strictly planned and supervised. Site batching/production of concrete will not be carried out on Site;
- Shutters will be designed to prevent failure. Grout loss will be prevented from shuttered pours by ensuring that all joints between panels achieve a close fit or that they are sealed;
- Where concrete is to be placed by means of a skip, the opening gate of the delivery chute will be securely fastened to prevent accidental opening;
- Where possible, concrete skips, pumps and machine buckets will be prevented from slewing over water when placing concrete;

- Concrete mixer trucks will not be permitted to wash out on-site with the exception of cleaning the chute into a container which will then be emptied into a skip for appropriate compliant removal offsite; and
- Surplus concrete will be returned to batch plant after completion of a pour.

Handling of Fuels and Hazardous Materials

Fuels will be stored in appropriate bunded, integrity tested tanks, in accordance with Condition 11.4 of the IE Licence (IE Licence No. P0037-04). All tank and drum storage areas, will be rendered impervious to the materials stored therein. In addition, tank and drum storage areas will as a minimum be bunded, either locally or remotely, to a volume not less than the greater of the following:

110% of the capacity of the largest tank or drum within the bunded area; or
25% of the total volume of substance that could be stored within the bunded area.

Refuelling will be carried out in accordance with the procedures outlined in the existing EMS and any requirements of the IE Licence (IE Licence No. P0037-04) for the existing facility. Refuelling will be carried out in a designated area with appropriate containment measures in place to minimise any risk of spills. Spill kits will be provided on-site to deal with any spills or leaks that may occur during refuelling.

The appointed Contractor for the Construction Phase of the Proposed Development will ensure that all plant and equipment utilised on-site is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the Proposed Development site. Only emergency breakdown maintenance will be carried out on-site. Drip trays and spill kits will be available on-site to ensure that any spills from vehicles are contained and removed off-site.

There may also be the requirement for use of portable generators or similar fuel containing equipment during the Construction Phase of the Proposed Development, which will be placed on suitable drip trays. Regular monitoring of drip tray content will be undertaken to ensure sufficient capacity is maintained at all times.

Emergency procedures developed in accordance with Condition 14 of the IE Licence and outlined in the existing EMS will be strictly implemented by the appointed Contractor and spillage kits will be available on-site including in vehicles operating on-site. Construction staff will be familiar with emergency procedures for in the event of accidental fuel spillages.

In the event of a leak or spill from equipment (e.g., leak or spill from machinery during construction works), any contaminated soil will be removed from the Site and compliantly disposed off-site. Residual soil will be tested to validate that all potentially contaminated material has been removed. This procedure will be undertaken in accordance with industry best practice procedures and EPA guidelines.

Welfare Facilities

The existing welfare facilities at the Site will be available for the duration of the Construction Phase.

15.6.1.2 Monitoring

There are no monitoring requirements specifically in relation to hydrology and hydrogeology during the Construction Phase of the Proposed Development.

15.6.2 Operational Phase

15.6.2.1 Mitigation

During the Operation Phase of the Proposed Development there is limited to no potential for any impact on the receiving hydrological and hydrogeological environment and therefore there is no mitigation required in regard to the Proposed Development.

The avoidance measures, as outlined below, which are in place as part of the baseline condition at the Proposed Development Site will ensure that there will be no significant impact on the receiving hydrological and hydrogeological environment.

The procedures set out in the EMS and conditions of the IE Licence (IE Licence No. P0037-04) will be strictly adhered to for the duration of the Operational Phase.

It is noted that accidental discharges to the open drains from the AD process tanks will be prevented by a bund system, which will contain within the main plant area a volume equivalent to the capacity of the largest of the AD tanks with an allowance of 10%. The bund system will ensure any contaminated water is prevented from discharging into the surface water drainage network.

Ongoing regular maintenance of the proposed surface water drainage will be incorporated into the overall management strategy for the Proposed Development.

In the event of an emergency or incident at the Site a shut-off valve at SW1 will be closed to prevent potentially contaminated water from discharging offsite. Potentially contaminated water will be diverted to an overground lined lagoon on the eastern side of College Road for removal offsite for disposal in accordance with all relevant waste management legislation. The existing fire water retention and storage for the existing facility, which has been designed in accordance with been designed in accordance with the EPA Guidance on Retention Requirements for Firewater Run-off (EPA, 2019), has adequate capacity for the Proposed Development. Therefore, there will be no impact on the receiving surface water quality in the event of an emergency or fire at the Proposed Development Site.

Emergency procedures developed in accordance with Condition 14 of the IE Licence and outlined in the existing EMS will be strictly implemented during the Operational Phase of the Proposed Development and spillage kits will be available on-site including in vehicles operating on-site. All staff will be familiar with emergency procedures for in the event of accidental fuel spillages.

15.6.2.2 Monitoring

The Proposed Development will operate under the IE Licence (IE Licence No. P0037-04) which will be amended include the Proposed Development. The operator will comply with any monitoring requirements as per the conditions of the IE Licence (IE Licence No. P0037-04).

Continued surface water monitoring at SW1 and groundwater monitoring at GW1 as required in the conditions of the existing (IE Licence No. P0037-04).

There are no additional monitoring requirements specifically in relation to hydrology and hydrogeology during the Operational Phase of the Proposed Development.

15.7 Air Quality and Climate

15.7.1 Construction Phase

15.7.1.1 Mitigation

It is not expected that adverse air quality impacts are likely to occur at sensitive receptors as a result of the Proposed Development. However, the following mitigation measures will be employed as necessary to further prevent such impacts occurring:

- In dry and/or windy weather, Site roads and any other areas used by vehicles, within the boundary of the facility, will be sprayed with water as and when required to minimise airborne dust nuisance;
- Material handling systems and site stockpiling of waste materials will be designed and laid out to minimise exposure to wind and shorten the length of time for which material will be stockpiled so as to minimise dust generation;
- Rotary atomisers and water bowsers will be employed during dry weather and during any site preparation activities including overburden removal, excavation of works area, internal roads;
- All vehicles moving waste to and from the facility will be appropriately covered during transit;
- Daily visual observations will be made on fugitive dust levels; in the event of high dust levels, operations giving rise to such emissions will be ceased or curtailed;
- Enclosed waste handling and storage areas for all wastes will be provided; and vented to a biofilter.
- Exhaust emissions from vehicles and machinery will be minimised by avoidance of engines running unnecessarily as idle engines will not be permitted for excessive periods;
- The doors of the waste building will remain closed at all times except when vehicles are entering the building for loading or unloading activities;
- Regular inspections, monitoring and maintenance of waste handling areas to detect potential odours and apply corrective measures as necessary;
- Waste will be stored under appropriate conditions so as to avoid putrefaction, odour generation and dust accumulation.

15.7.1.2 Monitoring

The Proposed Development is subject to an Industrial Emissions (IE) Licence (P0037-04) from the Environmental Protection Agency (EPA). The operator will comply with the air monitoring requirements as per the conditions of the IE Licence, which are outlined in Section 8.3.1 of this Chapter.

In the event of any nuisance arising in the vicinity of the facility, including nuisance from malodours, the permit holder will take immediate appropriate measures to abate the nuisance. Any such event will be notified and recorded as an incident.

The permit holder will carry out daily inspections of the facility and its immediate surrounds for nuisance including but not limited to dust and odours, and an inspection log maintained.

15.7.2 Operational Phase

15.7.2.1 Mitigation

Odour control is one of the primary concerns for AD facilities, especially if they are located in close proximity to sensitive receptors. Good process management and careful housekeeping can greatly reduce odours; however, some method of odour treatment is generally required. Odour emissions as a result of Site operations are not considered to pose a significant impact to air quality in the vicinity of the Proposed Development; an Air Dispersion Model has been carried out for the Proposed Development and the results of which are presented in Section 8.5.1.2.2. However, to minimise the risks of odour impacts occurring, a series of mitigation measures have been prepared:

- The installation of a biofilter is common practice as it is widely known to be an effective option for odour treatment. The Proposed Development contains 1 biofilter which will further manage H₂S concentrations and associated potential odour emissions from Site operations; and will be maintained to ensure optimum performance;
- The biofilter will filter the air and reduce the emissions of H₂S and odour to insignificant levels;
- All loads entering the site will be covered;
- Any material stored on site will be kept in a sealed tank or in the intake building which is ventilated to the biofilter;
- Dust suppression techniques will include employment of water bowsers to dampen the Site and haul roads, and temporary ceasing of specific operations during unfavourable weather conditions;
- A power washer will be available to wash down wheels of trucks exiting the site where necessary;
- Exhaust emissions of volatile organic compounds, nitrogen oxides, and sulphur oxides from vehicles and machinery will be minimised by avoidance of engines running unnecessarily as idle engines will not be permitted for excessive periods;
- Unnecessary vehicle movement and manoeuvring will be avoided, and speed limits will be in place so as to prevent resuspension of particulate matter.

15.7.2.2 Climate

As negative climatic impacts associated with the Operational Phase of the development are negligible, no mitigation measures are proposed. Best practice measures will be implemented to minimise exhaust emissions from construction and operational vehicles and machinery by avoidance of engines running unnecessarily, as idle engines will not be permitted for excessive periods.

15.7.2.3 Monitoring

The Proposed Development is subject to an Industrial Emissions (IE) Licence (P0037-04) from the Environmental Protection Agency (EPA). The operator will comply with the air monitoring

requirements as per the conditions of the IE Licence, which are outlined in Section 8.3.1 of this Chapter.

In the event of any nuisance arising in the vicinity of the facility, including nuisance from malodours, the permit holder will take immediate appropriate measures to abate the nuisance. Any such event will be notified and recorded as an incident.

The permit holder will carry out daily inspections of the facility and its immediate surrounds for nuisance including but not limited to dust and odours, and an inspection log maintained.

15.8 Noise and Vibration

15.8.1 Construction Phase

15.8.1.1 Mitigation

In order to control likely noise impacts caused by the Proposed Development, best available technology will be employed by the Main Contractor to minimise noise from the construction operations and will comply with the mitigation measures as set out in *BS 5228-1: A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise*:

- Selection of plant with low inherent potential for generating noise.
- Siting of plant as far away from sensitive receptors as permitted by site constraints.
- Avoid unnecessary revving of engines and switch off plant items when not required.
- Keep plant machinery and vehicles adequately maintained and serviced.
- Proper balancing of plant items with rotating parts.
- Keep internal routes well maintained and avoid steep gradients.
- Minimise drop heights for materials or ensure a resilient material underlies.
- Use of alternative reversing alarm systems on plant machinery.
- Where noise becomes a source of resonating body panels and cover plates, additional stiffening ribs or materials should be safely applied where appropriate.
- Limiting the hours during which site activities likely to create high levels of noise are permitted.
- Appointing a site representative responsible for matters relating to noise.
- Monitoring typical levels of noise during critical periods and at sensitive locations.

15.8.1.2 Monitoring

The control measure outlined in Section 9.6 are to be implemented and furthermore, the Main Contractor will monitor the likelihood of prolonged exposure to excessive noise and commission a noise surveying/monitoring programme where necessary. The Proposed Development is subject to an Industrial Emissions (IE) Licence from the Environmental Protection Agency (EPA). The operator will comply with the noise monitoring requirements as per the conditions of the IE Licence.

15.8.2 Operational Phase

15.8.2.1 Mitigation

No mitigation measures have been proposed for the Operational Phase.

15.8.2.2 Monitoring

No monitoring measures have been proposed for the Operational Phase.

15.9 Landscape and Visual Amenity

15.9.1 Construction Phase

15.9.1.1 Mitigation

The key landscape and visual mitigation measures used during the Construction Phase have been incorporated into the layout of the site and design of the proposed buildings. The buildings will be clad in a similar neutral coloured material as the existing and will have a similar horizontal emphasis. The set back of the buildings from the site boundary and the positioning of the new buildings along extensions of existing building lines helps to link the Proposed Development with the existing and localises the visual and landscape impacts.

Mitigation measures other than those mentioned have not been foreseen, namely in relation to the existing and proposed green structure.

The greatest mitigation measure identified is the maintenance of the existing hedgerows, namely to the North and South of the site and also to the West, in the transition to the area where the construction lands will be deposited.

However, it is essential to ensure the good condition of these hedgerows, protecting them from any negative action that may occur during the Construction Phase. A professional arborist should be hired to ensure the assessment of these hedges for an extended period, during the Construction Phase and beyond.

The possibility of reformulating the hedge to the East, should also be considered, since it is at this edge of the site where there is a greater visual impact, due to the fact that there is only one shrub hedge of medium size. The planting of trees should be considered for a better framing of existing and proposed buildings, creating a tree-shrub hedge.

This is highlighted in the description of Viewpoint 3, where a tree in a poor phytosanitary state was identified, and that should be replaced by a tree of the same species.

Figure 10-36 identifies the sections where the existing hedges should be reinforced (North and East), with the planting of tree of the same species as the existing ones, in order to maintain the uniformity of the hedges. The planting compass should be 7.5 meters in 7.5 meters between each trunk. This can be between every 2 existing trees, or just with new trees. The scheme in figure 10-36 must be confirmed on the site, with the marking of each new tree.

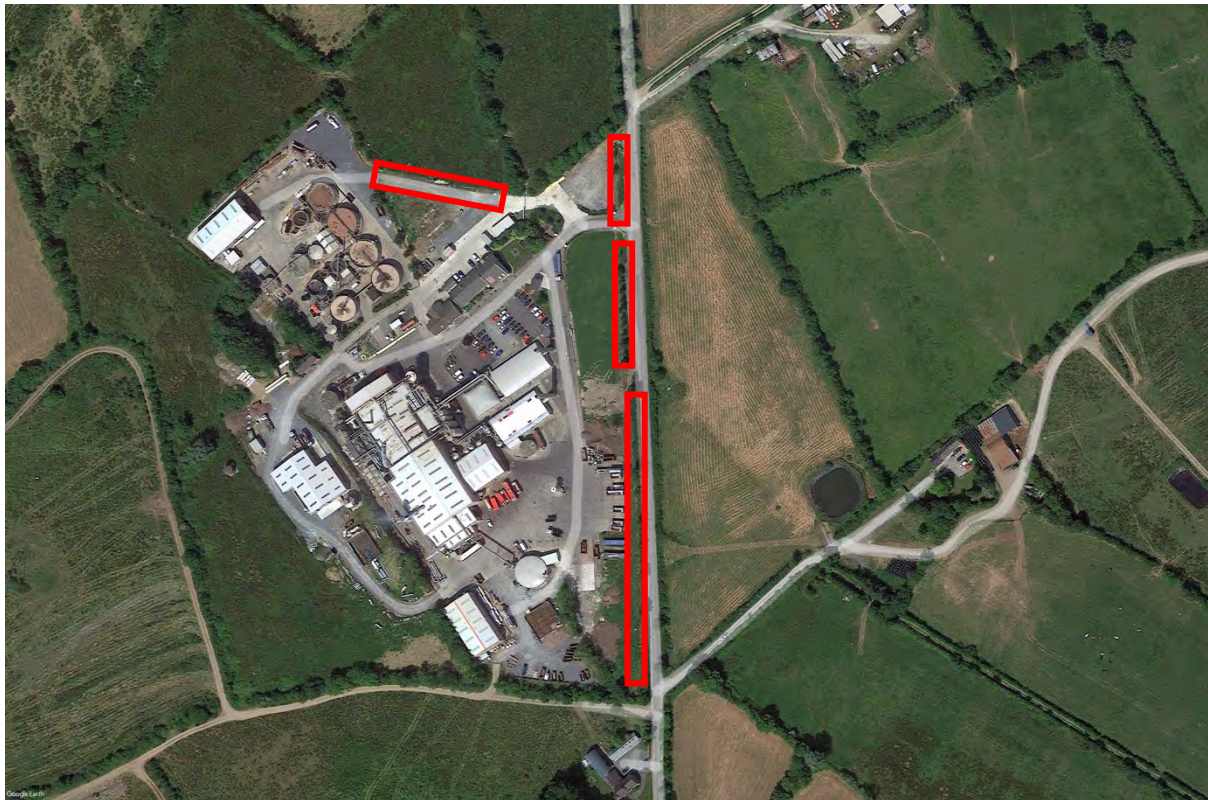


Figure 14-1 Proposed reinforcement of East and North hedges

15.9.1.2 Monitoring

It is considered that the initial development of the site, including removal of trees and hedgerows and general construction activity will result in overall residual effects that are moderate, negative temporary impacts and ongoing residual effects that will be moderate, neutral short-term impacts by the closest receptors and reduce rapidly with distance to impacts which are minor/negligible, neutral short-term impacts.

There are no landscape tender drawings or specifications included on this project. Given the importance of hedgerows in mitigating landscape and visual impacts of the industrial site, special attention should be paid during the Construction Phase to the preservation of these elements and their verification and maintenance. Therefore, during the construction works, a professionally qualified Arboriculturist is recommended to be retained by the principal contractor or site manager to monitor and advise on any works within the RPA of retained trees to ensure successful tree retention and planning compliance.

15.9.2 Operational Phase

15.9.2.1 Mitigation

There is no mitigation measure foreseen in the Operational Phase.

15.9.2.2 Monitoring

There is no landscape management plan foreseen. The verification and maintenance of shrub/tree hedges should continue over time.

15.10 Archaeology and Cultural Heritage

15.10.1 Construction Phase

15.10.1.1 Mitigation

Although no recorded archaeological sites occur within the development boundary and no features of possible archaeological interest were identified on the field surfaces, the potential for sub-surface archaeological remains being discovered during earthmoving and topsoil stripping must be considered. The Proposed Development will involve the movement of 77,804.15 m³ of soil to create the required surface levels.

It is therefore recommended that a programme of invasive linear test trenching be carried out by a licensed archaeologist in the areas of sub-surface works including re-routing of services, additional drainage, slip roads, and other facilitation works associated with the Proposed Development site. The purpose of testing is to identify sub surface archaeological remains within the development site and to determine the impact of the Proposed Development on such remains if they occur. Should archaeological features and or deposits be revealed then any further work would be subject to further licensing with approval from the Department of Arts, Heritage and the Gaeltacht who may recommend preservation *in situ* or preservation by record. The testing should be completed as far in advance of other scheduled site works as possible.

The presence or otherwise of archaeological soils or deposits could also be determined by examining the reports on any engineering bore-holes and test-pits that may be carried out in advance of construction in the waterlogged area.

All recommendations in this report are subject to discussion with and approval from the Department of Arts, Heritage and the Gaeltacht.

There will be no impact on archaeological, architectural or cultural heritage sites during the Construction Phase provided that all archaeological issues are resolved prior to any construction work or topsoil stripping.

15.10.1.2 Monitoring

No specific monitoring measures are required in relation to archaeology and cultural heritage given the fact that it is not predicted that the Proposed Development will have any adverse impacts on any archaeological features or deposits. The mitigation measures detailed in Section 11.6 will also function as a monitoring system to ensure the ongoing analysis of the effectiveness of the mitigation for both the Construction and Operational Phases.

15.10.2 Operational Phase

15.10.2.1 Mitigation

The ground at the Site of the Proposed Development is disturbed as the Site has already been developed and since no known archaeological, architectural or cultural heritage remains were found during the desk top survey, there are no further mitigation measures required for this development.

15.10.2.2 *Monitoring*

No specific monitoring measures are required in relation to archaeology and cultural heritage given the fact that it is not predicted that the Proposed Development will have any adverse impacts on any archaeological features or deposits. The mitigation measures detailed in Section 11.6 will also function as a monitoring system to ensure the ongoing analysis of the effectiveness of the mitigation for both the Construction and Operational Phases.

15.11 Material Assets: Waste and Utilities

15.11.1 Construction Phase

15.11.1.1 Mitigation

The following waste management mitigation measures are recommended for the Construction Phase of the Proposed Development:

- Waste materials will be separated at source and will be appropriately stored prior to removal offsite.
- Prior to the commencement of the Construction Phase detailed calculations of the quantities of topsoil, subsoil and green waste will be prepared, and soils will be tested to confirm they are clean, inert or non-hazardous.
- A suitably competent and fully authorised waste management company will be employed to manage all waste arising for the Construction Phase. The appointed waste contractor must have the relevant authorisations for the collection and transport of waste materials, issued by the National Waste Collection Permit Office (NWCPO).
- All waste materials will be transported to an appropriately authorised facility, which must have the relevant authorisations for the acceptance and treatment of the specific waste streams, i.e., a Certificate of Registration (COR) or a Waste Facility Permit (WFP) as granted by a Local Authority, or a Waste/Industrial Emission Licence as granted by the Environmental Protection Agency.
- All waste quantities and types will be recorded and quantified, and records will be retained onsite for the duration of the Construction Phase.

15.11.1.2 Monitoring

An Environmental Management System (EMS) is in place at the facility which is certified to International Standard 14001:2015. The EMS contains an Environmental Monitoring Program (EMP), which is active at the site. The EMS and the EMP will be revised to include the environmental controls which will be implemented for the operational lifetime of the Proposed Development. The EMP will verify (i) that implemented controls prevent and minimise emissions from the Proposed Development and (ii) that there is no negative impact on the receiving environment via uncontrolled releases of pollutants, sediment, dust, noise or vibration. The EMP will also assess the effects of the AD process on the environment so that operational changes and improvements can be made where appropriate. The monitoring programme and sampling frequency will be agreed with the EPA and with Meath County Council.

15.11.2 Operational Phase

15.11.2.1 Mitigation

Specific avoidance, remedial and mitigation measures to be taken during the Construction and Operational Phase with respect to water supply, surface water drainage and foul water are detailed within Chapter 7, Water (Hydrology and Hydrogeology), of this EIAR. Additionally, all works will be carried out in accordance with the Irish Water Code of Practice for Water Infrastructure (July 2020) and the Irish Water Code of Practice for Wastewater Infrastructure (July 2020). Laying of watermains/wastewater sewers and testing of pipelines and infrastructure will be in accordance with Irish Water standard details.

New connections for electricity and telecommunications will be coordinated with the relevant utility provider and Meath County Council and will be carried out and tested by approved contractors, as per standard protocols.

15.11.2.2 *Monitoring*

An Environmental Management System (EMS) is in place at the facility which is certified to International Standard 14001:2015. The EMS contains an Environmental Monitoring Program (EMP), which is active at the site. The EMS and the EMP will be revised to include the environmental controls which will be implemented for the operational lifetime of the Proposed Development. The EMP will verify (i) that implemented controls prevent and minimise emissions from the Proposed Development and (ii) that there is no negative impact on the receiving environment via uncontrolled releases of pollutants, sediment, dust, noise or vibration. The EMP will also assess the effects of the AD process on the environment so that operational changes and improvements can be made where appropriate. The monitoring programme and sampling frequency will be agreed with the EPA and with Meath County Council.

15.12 Material Assets: Traffic

15.12.1 Mitigation

As noted in Section 12.1.3, the Proposed Development will not result in any material change in traffic on the R162 or College Road, and the hourly and daily volumes of traffic using the access junction will not result in any capacity issues.

Notwithstanding this, it is noted that the road markings at the R162 junction are worn and will have to be refreshed. It is considered that a condition to refresh these road markings could be included in a decision to grant permission for the AD plant.

15.12.2 Monitoring

No monitoring has been proposed for the Construction or Operational Phase.