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Proposed CORE Development at

Boyne Avenue, Newtownstalaban Drogheda, Co. Louth

by Premier Periclase Ltd.

October 2024

Environmental Impact Assessment Report Non-Technical Summary

Report No. IE0313391-22-RP-0002, Issue A

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Environmental Impact Assessment Report - Non-Technical Summary

Premier Periclase Ltd
CORE
IE0313391-22-RP-0002, Issue: A

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Environmental Impact Assessment Report - Non-Technical Summary

Premier Periclase Ltd
CORE
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1 Introduction

1.1 General

This is the Non-Technical Summary (NTS) of an Environmental Impact Assessment Report (EIAR) (PM Group Report No. IE0313391-22-RP-0001) that accompanies a planning application for the development of a sustainably powered enterprise campus at the existing Premier Periclase Ltd. (PPL) site at Boyne Avenue, Newtownstalaban Drogheda, Co. Louth (see Figure 1.1).

Figure 1.1: Location of the Proposed Development

Located on a site with a long industrial history, the Proposed Development aims to create a sustainably powered enterprise campus. This shift is anticipated to have a significant, remediating effect on the site, and a positive effect on local and regional environments by reducing baseline emissions of carbon dioxide and other pollutants. The current licensable activities represent a highly carbon intensive form of industrial process. Whilst the licensable activities are undertaken in a manner that is fully compliant with the licence, the existing facility has certain impacts which are negative on the locality in terms of visual impact, air quality, and amenity.

Compared to the resumption of full scale production at the subject site (within the parameters of the existing Industrial Emissions licence pertaining to the site), the Proposed Development will deliver significant Greenhouse Gas (GHG) emissions reduction of ca. 149,600 tonnes of CO_2 annually, even in the absence of the further mitigation measures proposed in *Chapter 12 Climate* of the EIAR to further enhance the sustainability of the proposed development and avoid GHG emissions. This reduction alone represents a major positive step for emissions reduction efforts.

The proposed regeneration of the subject site will represent a major improvement in the overall industrial carbon emissions for the county and for the region, with the proposed first phase of energy infrastructure and data centre development intended to act as a catalyst for the wider redevelopment of the overall landholding for a mix of high technology, manufacturing, and commercial uses, based on a local energy and heat network on site.

The existing structures (buildings, plant, emissions flues, and production buildings) on site also have a detrimental impact on the landscape character and amenity of a sensitive landscape, impacting on urban receptors in the town of Drogheda, in addition to surrounding rural areas,

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routes along the banks of the River Boyne, and the river corridor itself. The Proposed Development will see the removal of unsightly structures on site and the development of a lower-scale modern development which will integrate more successfully into its environs, alongside the introduction of extensive landscaping and woodland planting. Figures 1.2 and 1.3 show the existing site and an artist's impression of the site following the construction of the proposed development, to demonstrate the transition being proposed to the site.

Figure 1.2: View of the current Premier Periclase Ltd. site

Figure 1.3: 3D Visual of Proposed Development

While the landholding within which the Proposed Development is situated does not contain habitats of particular biodiversity value, it adjoins sites designated for nature conservation (Natura 2000 sites) associated with the River Boyne and its estuary. The Proposed Development will see the removal of an existing heavy industrial use on the site and its replacement with a modern sustainably powered energy campus. The design of the development and the proposals for its construction and operation integrate a range of mitigation measures to avoid impacting on these sites (see in particular *Chapter 8 Biodiversity* of the EIAR, the accompanying Natura Impact Statement, and *Chapter 10 Water and Wastewater* of the EIAR).

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This Environmental Impact Assessment Report (EIAR) for the Proposed Development evaluates the environmental benefits of replacing the Magnesia and Magnesium Hydroxide production processes with clean energy technologies and new high technology employment. This redevelopment is aligned with Ireland's Climate Action Plan 2024 and the National Planning Framework, which support industrial decarbonisation and the advancement towards achieving net-zero emissions by 2050. By incorporating innovative energy solutions, the campus will not only minimise its own environmental footprint but will also potentially contribute to the stability and sustainability of the national electricity grid.

Section 2 of this EIAR NTS also provides further details of the proposed energy system on site, while a detailed Energy and Emissions Modelling Report has been prepared by Gyrogy Ltd. to explain how the proposed energy system will deliver sustainable power for the campus.

The energy solution proposed on site involves the use of a connection to the national electricity grid alongside on site renewable generation, large scale battery energy storage, and on-site flexible generation, to deliver digital services and infrastructure with minimum carbon intensity, and with a clear pathway to net-zero operations for the Data Centre proposed in the current phase of development, along with infrastructure for low carbon energy for other future employment uses within the landholding.

The combination of energy infrastructure proposed as part of the development will allow for carbon emissions to be reduced on site in real time, promoting the integration of higher levels of renewable energy, while providing flexible and resilient energy for employment uses on site.

Throughout the EIAR, it is detailed how the Proposed Development is expected to improve environmental outcomes through reduced emissions, enhanced energy efficiency, and the integration of renewable energy sources. This Proposed Development represents a significant step forward in aligning industrial development with sustainability and economic growth, demonstrating PPL's commitment to leading the way in Ireland’s transition to a greener future.

As per the requirements of the Environmental Impact Assessment (EIA) Directive[1], this NTS comprises an easily accessible summary of the EIAR, using non-technical language. It is formulated to be understandable to those without a prior background to the Proposed Development or particular environmental expertise.

1.2 Proposed Development Overview

The Proposed Development to which this planning application relates is the first phase of CORE, and consists of:

- The demolition of existing buildings, structures, and services associated with the PPL facility, as well as site clearance and remediation works.
- The careful sequestering of the licensed (inert) landfill onsite in accordance with all ongoing and future requirements of the EPA.
- A number of existing buildings and structures will be maintained as part of the Proposed Development, such as a Workshop Building, part of a Crane Store structure, 3 no. Lime Silos and water tanks and infrastructure, all of which have been incorporated into the design where beneficial and appropriate.
- The construction of a three storey Energy Centre building, a three storey Data Centre building, a single storey Facility Operations Centre building, a single storey Pump and Filtration Building, a single storey Security Gatehouse and a Security Kiosk at the main site entrance of the site.
- The provision of a Battery Energy Storage System (BESS) Compound, an ESB Substation, a Cooling Compound, a Thermal Store Compound, a Pump and Filtration System, other ancillary structures including a Firewater Tank, a Fire Fighting Water Pump Building, a Control Building,

[1] Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment, as amended by Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014.

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a Maintenance Yard and Waste Management facilities. Ground-mounted solar Photo Voltaic (PV) arrays will also be provided on the existing licensed landfill and stockpile no. 3, along with 3 no. compact substations.

- The provision of all associated works including access arrangements, internal roadways and footpaths, car and cycle parking, boundary treatments, landscaping and services, and all ancillary works.

The development site which is subject to the application for consent measures ca. 35.6 ha of industrial land owned by PPL on land zoned as E1 for "*General Employment"* in the County Louth Development Plan 2021-2027. The site is located ca. two kilometres to the east of Drogheda town centre and strategically placed along the northern bank of the Boyne River. It is well connected by Strand Road (R167) that runs adjacent to the southern boundary of the site with excellent transport links to the M1 Dublin to Belfast motorway.

The PPL site has an extensive industrial heritage, originally established in the 1930s as a cement production facility by Cement Ltd. This operation transitioned to Magnesia production in 1970s under the ownership PPL. Located in Drogheda, the site has been a significant contributor to the local economy for decades.

In recent years, the facility faced economic challenges due to escalating energy costs, leading to operational reductions and the unfortunate loss of jobs. These challenges underscore the necessity for the site's transformation, aligning it with both contemporary environmental standards and the evolving economic landscape.

The redevelopment of the PPL site is envisioned to revitalise the site through the integration of renewable energy technologies and sustainable practices. This transition is critical, not just for reducing the site's environmental footprint, but also for ensuring its viability as a modern industrial hub. The Proposed Development aims to replace the current onsite industrial processes with efficient, low carbon operations, reflecting PPL's proactive stance on environmental responsibility and economic sustainability.

1.2.1 Vision for the Continued Development of the Campus

Subject to future planning applications and consents, it is envisaged that there will be ongoing development and expansion of CORE to realise its full potential as a sustainably powered enterprise campus. Section 2.11 of the EIAR explains that the current development proposal will clear and remediate the existing industrial site, develop key energy infrastructure on site, and prepare the overall landholding for potential additional employment development. While the campus will provide an attractive location for a range of employment and industrial uses, the additional users for the site have not been identified at the time of writing. However, Section 2.11 of the EIAR sets out in further detail the potential for future additional development within the campus. This vision includes expanding the renewable energy generation, particularly that of solar electricity generation, where every opportunity to install additional solar panels will be assessed. With this proposed generation of energy on site creates the opportunity to develop a sustainable integrated business hub that includes technical innovative organisations and businesses, generating additional local employment, to be co-located where CORE can provide electrical supply and district heating.

Other opportunities that may arise in the future include the provision of renewable electrical power to the national grid and the provision of district heating to offsite users (through collection of waste heat from data centre operations and electricity generation). In addition to being a sustainable campus, it is envisaged that CORE will be in a position to potentially support and supplement the regional national electricity grid in times of high electrical demand.

1.3 Proposed Development and Operation Team

Meridiam SAS and Gyrogy Ltd. have come together to acquire and transform the PPL site into CORE. This joint venture represents a collaborative effort to leverage both companies' strengths in sustainable infrastructure development and innovative energy solutions. The PPL site was

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identified by Meridiam SAS and Gyrogy Ltd. as a suitable location for large scale industrial transition and GHG emissions reduction, which also benefits from key existing infrastructure to support modern employment uses.

There has been a concerted effort to keep the plant operational and ensure the continued operational integrity and environmental stewardship of the site. There is also a key focus on integrating the deep operational and technical expertise of the PPL team with the Meridiam and Gyrogy teams.

1.4 Need for the Project

The proposed redevelopment of the PPL site into a modern mixed-use industrial campus is integral to meeting regional and national environmental objectives. This project aligns with the strategic vision of sustainable development and industrial decarbonisation, as follows:

1. Alignment with National and EU Policies: The project aligns with policies aimed at the decarbonisation of Large Energy Users (LEUs), supporting the government's sustainable economic development and industrial decarbonisation objectives.
2. The 2024 Climate Action Plan places emphasis on the need for LEUs to increase their flexibility of electricity demand from the national grid. CAP 24 states the following at Section 12.4.1.3:

   "The overarching objective of managing electricity demand growth is to ensure, through a combination of energy efficiency and flexible electricity demand, that economic growth can be supported by low-carbon or no-carbon energy demand growth;

   Ensure that 15-20% of the electricity system demand is flexible by 2025, increasing to 20-30% by 2030, to reduce the peak demand and shift the demand to times of high renewable output;"

   The Proposed Development provides for full flexibility to allow the energy users on site to adjust their demand for electricity from the national grid in real time to respond to grid conditions or constraints, allowing the Proposed Development to reduce the strain on the grid. This will be achieved by monitoring the composition and carbon intensity of energy available from the national grid, and utilising the proposed on site energy infrastructure during periods of constraint / higher emissions intensity. Further details in relation to the energy strategy for the proposed development are provided within the Energy and Emissions Modelling Report prepared by Gyrogy, which is submitted under separate cover as part of the planning application.
3. The Louth County Development Plan 2021-2027 Policy Objective EE 33 states "*To promote the Regional Growth Centre of Drogheda as a primary centre for employment in the County that maximises the locational advantage of the town along the Dublin-Belfast Economic Corridor*." The Proposed Development will revitalise the local economy of Drogheda, creating new jobs and attracting enterprises, which supports the National Planning Framework and regional growth strategies.
4. The Louth County Development Plan Policy Objective EE 18 includes "*To encourage and facilitate the re-use and rejuvenation of vacant and underutilised industrial, enterprise, manufacturing, and warehousing units*." The establishment of this Proposed Development supports the achievement of Objective EE 18.
5. Positive Environmental Effects: The National Climate Objective states that "*The State shall, so as to reduce the extent of further global warming, pursue and achieve, by no later than the end of the year 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy*." The Proposed Development provides for the discontinuing and demolition of a carbon intensive industrial facility, and its replacement with a state of the art energy and employment development, which is designed to minimise carbon emissions. The proposals therefore support the achievement of the National Climate Objective.
6. Innovative Energy Solutions: The campus will feature advanced energy technologies including battery energy storage systems and on-site renewables, demonstrating innovative energy management.

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7. Potential support for Grid Stability and Renewable Integration: The integration of technologies to potentially provide conditioned and resilient power, enhancing grid stability and facilitating renewable energy integration.
8. The data centre element of the Proposed Development is fully supported by and consistent with the principles for sustainable data centre development set out within the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy (2022). The site provides the opportunity for the delivery of an 'energy park' form of development, which are directly supported by the Government Statement. Such locations see the co-location of energy storage, generation, large energy users, and other employment.
9. The National Planning Framework (NSO 6) and the RSES for the EMRA (RPO 8.25) specifically support the delivery of ICT infrastructure and data centre development within the State and the region.
10. Provision of Community and Economic Benefits through Just Transition: The Proposed Development supports a just transition by providing long term employment opportunities at a location targeted for employment growth while improving the overall appearance and amenity of the area (including the River Boyne and its environs) for residents and visitors.
11. Strategic Site Utilisation: Utilising the existing site infrastructure (material assets) maximises resource efficiency and leverages historical industrial significance.

1.5 EIA Process

1.5.1 Governing Legislation

EIA is defined by the EIA Directive 2014/52/EU as a process consisting of:

"*(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 classes of development and development thresholds that are subject to EIA are set out in Annex I and II of the EIA Directive. These requirements are transposed in Irish legislation as per Schedule 5, Parts 1 and 2 of the Planning and Development Regulations 2001 (S.I. No. 600/2001), as amended.

- Part 1 of Schedule 5 defines 24 classes of development projects where it is mandatory for an EIAR to be prepared.
- Part 2 of Schedule 5 establishes a further 15 classes of development and associated thresholds, above which it is also mandatory for an EIAR to be prepared.

Where the associated development threshold defined in Part 2 of Schedule 5 is not met, EIA may still be required for sub-threshold development.

The Proposed Development falls within the list of project types requiring an EIA as detailed in Classes 10(a), 13(c) and 14 of Part 2 of the Fifth Schedule of Planning & Development Regulations 2001 as amended" as follows.

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- *10. (a) Industrial estate development projects, where the area would exceed 15 hectares.*
- *13. (c) Any change or extension of development being of a class listed in Part 1 or paragraphs 1 to 12 of Part 2 of this Schedule, which would result in the demolition of structures, the demolition of which had not previously been authorised, and where such demolition would be likely to have significant effects on the environment, having regard to the criteria set out under Schedule 7.*
- *14. Works of demolition carried out in order to facilitate a project listed in Part 1 or Part 2 of this Schedule where such works would be likely to have significant effects.*

1.5.2 Purpose of the EIAR

An EIAR's purpose is to predict and assess likely significant effects (direct and indirect), if any, that the Proposed Development, if carried out, will have on the environment, on its own and in combination with other existing and /or approved / proposed projects. It is used during the consent process to inform EIA by the relevant planning authority, in this case Louth County Council.

Article 5(1) and Annex IV of the EIA Directive, specifies the information to be provided in an EIAR. These requirements have been transposed into Irish law through Article 94 and Schedule 6 of the Planning and Development Regulations 2001, as amended.

1.5.3 EIAR Methodology and Format

In addition to the EIA Directive, the EIAR prepared for the Proposed Development has been informed by:

- Environmental Protection Agency Act 1992, as amended,
- EPA (2022) *"Guidelines on the Information to be contained in Environmental Impact Assessment Reports*",
- EPA (2003) *"Advice Notes on Current Practice in the Preparation of Environmental Impact Statements",*
- European Commission (2017) "*Environmental Impact Assessment of Projects, Guidance on the Preparation of the Environmental Impact Assessment Report*",
- Department of Housing, Local Government and Heritage (2018) "*Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment*",
- Office of the Planning Regulator (2021) "*The Office of Planning Regulator (OPR) Practice Note PN02 Environmental Impact Assessment Screening*".

The above is not a fully exhaustive list. The EIAR contributors have referred to heading-specific legislation, policy, and/or guidelines within each in individual EIAR Chapter.

EIARs require the assimilation, co-ordination, and presentation of a wide range of relevant information in order to allow for the overall assessment of a proposed development. To allow for ease of presentation, and consistency when considering the various environmental factors considered, a systematic structure is used for the main body of the Report. The structure of the EIAR Chapters is outlined below.

- Assessment methodology,
- The receiving environment,
- The characteristics of the Proposed Development,
- Potential effects,
- Mitigation measures and monitoring, and
- Residual effects (where relevant).

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For some chapters, the author of that chapter may have altered the structure above to ease of carrying out the assessment for that particular environmental factor. In all chapters, each of the above items have been considered in the compilation of the chapter.

The 'Do Nothing' scenario has been considered and assessed where appropriate in the various chapters of the EIAR. The EPA 2022 Guidelines define the 'Do Nothing" Scenario as "*The situation or environment which would exist if a proposed, development, project or process were not carried out. This scenario needs to take account of the continuation or change of current management regimes, as well as the continuation or change of trends currently evident in the environment.*"

In the case where the Proposed Development does not receive planning permission, it is likely that PPL will return to full scale production in accordance with the terms of its existing IE licence.

A key factor in the scaling back of operations on site was the extreme rises in the price of gas resulting from Russia's invasion of Ukraine. Gas prices have now fallen from their 2022 peak[2] and are stabilising, meaning that a return to full scale production on site within the terms of the existing IE licence would be economically viable into the future. There is also continued strong demand for the type of products produced on the PPL site.

Throughout the EIAR, the baseline or receiving environment has been described for two different scenarios where possible, as follows:

1. **Existing Baseline Scenario** - A description of current conditions at the site and its surroundings since operations at the site have ramped down, hereinafter referred to as the existing baseline
2. **Operational Baseline Scenario** - A description of the site and its surroundings when the site was fully operational, a scenario it is proposed to return to should the Proposed Development not proceed, hereinafter referred to as the operational baseline. While licensed works continued long after 2014, that date was selected because as it represented peak lime production at the site.

In relevant chapters of the EIAR, the baseline environment is described for each of the above two scenarios. With respect to carrying out the impact assessment of the Proposed Development on the baseline environment, the author of the relevant chapters has taken the most appropriate baseline scenario out of the two above as it is considered that different chapters require a different approach (to ensure that a suitably conservative / reasonable worst case scenario is assessed for each discipline in accordance with the rationale set out in the EPA 2022 Guidelines).

1.5.4 EIAR Study Team

PM Group has fulfilled the role of Lead Consultant and Project Coordinator for the preparation of the EIAR. PM Group has been directly responsible for the preparation of the following chapters and management of the specialist contribution from sub consultants listed below:

PM Group:

- Chapter 1 Introduction
- Chapter 2 Description of the Proposed Development
- Chapter 3 Alternatives Considered
- Chapter 4 Population and Human Health
- Chapter 7 Soils, Geology and Hydrogeology
- Chapter 9 Noise and Vibration
- Chapter 10 Water and Wastewater
- Chapter 11 Air Quality

[2] SEAI Average gas prices to business (seai.ie)

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- Chapter 12 Climate
- Chapter 13 Waste Management
- Chapter 14 Material Assets
- Chapter 16 Major Accidents and Disasters
- Chapter 17 Interactions and Cumulative Impacts
- Chapter 18 Summary of Mitigation Measures and Monitoring

Specialist contributions to the EIAR were made as follows:

- Chapter 5 Landscape and Visual: Brady Shipman Martin (BSM).
- Chapter 6 Traffic and Transportation: AtkinsRéalis
- Chapter 8 Biodiversity: Scott Cawley Ltd.
- Chapter 15 Archaeology, Architectural and Cultural Heritage: Courtney Derry Heritage Consultancy Ltd.

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2 Description of the Proposed Development

2.1 Overview of Proposed Development

The Proposed Development will result in the transformative redevelopment of the PPL site in Drogheda. The site was originally established as a cement factory in the 1930s as the original Cement Ltd. site. The site was redeveloped in the 1970s to pivot to the production of magnesia products. Following 85 years of continuous operation, PPL now wishes to transform the site and use it to be a leader in industrial decarbonisation.

The Proposed Development will result in PPL ending its current operations and will have a significant, remediating effect on the site. PPL wishes to leverage the site's strategic location with excellent transport links to Belfast and Dublin, and its designation as a Regional Growth Centre under the National Planning Framework, to pioneer a green industrial model.

The applicant's long-term vision for the redevelopment of the full site (known as CORE) is to create a modern mixed use industrial campus offering low carbon energy solutions, which aligns with the Government's sustainable economic growth and decarbonisation objectives. The Proposed Development to which this planning application relates is the first phase of CORE, and can be summarised as follows (see Figures 2.1 and 2.2):

- The demolition of existing processing and industrial buildings, ancillary structures, and services associated with the Premier Periclase Ltd. (PPL) facility, site clearance and remediation works. The Proposed Development will carefully sequester the licensed (inert) landfill onsite in accordance with all ongoing and future requirements of the EPA.
- A number of existing buildings and structures will be maintained as part of the Proposed Development, such as an existing Workshop Building (located within the northwest of the site), part of an existing Crane Store structure, 3 no. Lime Silos and existing water tanks and infrastructure. These will be incorporated into the design where beneficial and appropriate.
- The construction of a three storey Energy Centre building in the northwestern area of the subject site to accommodate 9 no. gas engines, electrical rooms, mechanical plant rooms, telecommunication rooms, switchrooms, and uninterruptible power supply (UPS) rooms. The building includes 9 no. flues ca. 28.9 metres in height. Solar PV arrays and plant will be provided at roof level.
- The construction of a three storey Data Centre building within the southern portion of the site to accommodate data hall floorspace, mechanical and electrical rooms, support facilities, telecommunication rooms, storage, and ancillary office / administration space. Solar PV arrays and plant will be provided at roof level, with a structure offset from the southern façade of the building providing additional solar PV arrays and a green wall.
- The construction of a single storey Facility Operations Centre building to the west of the Energy Centre building, to accommodate security and network operations centre rooms, staff facilities, plant rooms, and storage.
- The construction of a single storey Pump and Filtration Building in the northeastern portion of the site.
- The construction of ancillary structures including a single storey Security Gatehouse and Security Kiosk at the main site entrance from Boyne Avenue.
- An ESB Substation will be provided in the northwestern corner of the site within a fenced compound, to accommodate transformers, electrical equipment and a single storey ESB Control Building. It is noted that the cable connection from this substation to an offsite ESB substation to the north, which is in partial ownership of PPL, is not included as part of the Proposed Development and will be subject to the necessary consenting process by ESB, separate to the Proposed Development.

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- A Battery Energy Storage System (BESS) compound will be provided to the north of the proposed Energy Centre building, accommodating battery units and associated plant and equipment within a fenced compound.
- The construction of a Cooling Compound substation located to the immediate east of the BESS compound.
- A Thermal Store Compound to accommodate thermal storage equipment will be located to the east of the Energy Centre building.
- The provision of a Pump and Filtration System and other ancillary structures including a Firewater Tank, a Fire Fighting Water Pump Building, a Control Building, a Maintenance Yard, and Waste Management facilities.
- The provision of ground-mounted solar PV arrays on the existing licensed landfill and stockpile no. 3 (which will be re-profiled and capped), along with 3 no. compact substations.
- Staff car parking (50 no. spaces) and bicycle parking will be provided in the western portion of the site, adjacent to the proposed Facility Operations Centre Building and Data Centre Building.
- All associated works including access arrangements, internal roadways and footpaths, car and cycle parking, boundary treatments, landscaping and services, and all ancillary works.

The Proposed Development retains some existing infrastructure for the purpose of respecting the architectural heritage of the site and additionally, to facilitate the new, cleaner activities onsite where appropriate.

Where beneficial and appropriate, the Proposed Development includes plans for upgrades to existing infrastructure, alongside the integration of renewable energy sources and advanced energy storage systems via the proposed Energy Centre. This new infrastructure line-up will be able to accommodate Large Energy Users such as a Data Centre, which is included as part of the Proposed Development.

PPL's vision extends beyond its many environmental benefits. By transitioning to a sustainable business model, with the Proposed Development PPL aims to create more jobs and economic opportunities than the current situation at the site during both the construction and operational phases of the Proposed Development, demonstrating a commitment to the local community. The future of PPL at the Proposed Development site in Drogheda is not just about reducing emissions – it is about setting a new standard for industrial excellence and sustainable development.

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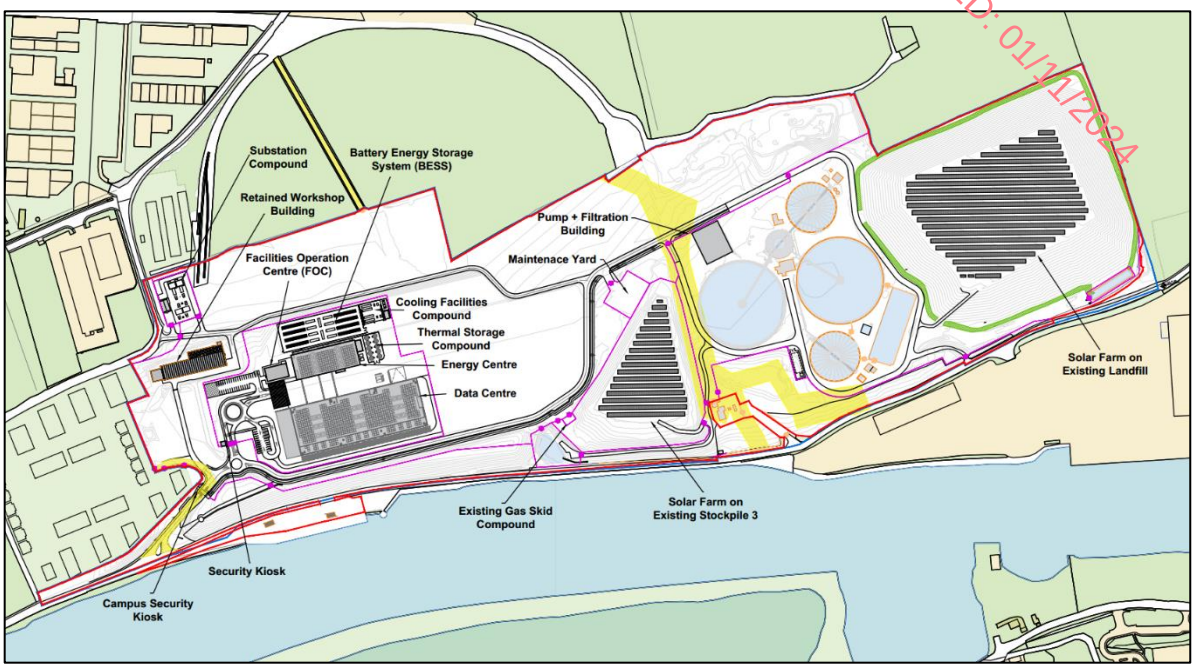

Figure 2.1: Proposed Development (i.e. First Phase of CORE)

Figure 2.2: 3D Visual of Proposed Development

2.1.1 Overview of Energy Infrastructure

At the forefront of sustainable energy infrastructure development, Gyrogy's innovative technology solutions[3] have a clear mission: to reduce carbon emissions in real-time, facilitate the integration of higher levels of renewable energy on the national electricity grid (referred to hereinafter as 'the grid'), and provide resilient and conditioned power for industrial and digital infrastructure. Gyrogy's strategic focus revolves around the creation of distributed energy infrastructure, allowing large energy users to significantly decarbonise their own operations in real-time, actively contributing to energy transition, rather than hindering it. The energy technology employed at the site will utilise

[3] Patent Pending: PCT/EP2021/059979

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Gyrogy's innovative technology solutions or any equivalent technology solutions that fulfil the same mission of real time carbon emission reduction, facilitating the integration of higher levels of renewable energy on the grid, and provision of resilient, conditioned power to support the decarbonisation of large energy users' operations.

The energy solution proposed on site involves the use of a connection to the national electricity grid alongside on site renewable generation, large scale battery energy storage, and on-site flexible generation, to deliver digital services and infrastructure with minimum carbon intensity, and with a clear pathway to net-zero operations for the Data Centre proposed in the current phase of development, along with infrastructure for low carbon energy for other future employment uses within the landholding.

The combination of energy infrastructure proposed as part of the development will allow for carbon emissions to be reduced on site in real time, promoting the integration of higher levels of renewable energy, while providing flexible and resilient energy for employment uses on site.

The CORE Energy Centre operates at Medium Voltage (MV) and incorporates power electronics and switchgear that operate as the manifold for the flows of electricity from all assets on site (a mix of onsite renewable generation, energy storage, gas generation) and the gird. This system enables the provision of power conditioning services and the balancing energy imports from the gas grid, off-site renewable energy PPAs[4], and electricity grid imports.

The energy infrastructure will optimise the import, storage or production of energy, based on real-time emissions constraints to significantly decarbonise industrial operations, and provide real-time flexibility to the energy systems.

The CORE Energy Centre can be considered as a flexible "Grid-Edge" [5] Asset with the ability to potentially provide power quality and power export services to the electricity network, which would provide a valuable balancing service to the electricity grid. This results in infrastructure that is more sustainable and cost effective, while also being more resilient, fault-tolerant and concurrently maintainable. This reliability could extend to the grid itself, due to this system's ability to enhance power quality, capacity and balancing services.

This will allow energy consumers within the enterprise campus (including the Data Centre which forms part of the current planning application) to reduce emissions arising from their energy usage in real time. This is achieved via the following strategy for on site power storage, generation, and import:

- During windy conditions, when renewable energy is abundant on the national grid, and when renewable assets are often curtailed (i.e. reduce or cease their output of electricity to the national grid in order to maintain the stability of the grid), the development will consume electricity from the national grid to power the proposed Data Centre and to top up on site energy storage within the battery energy storage system (BESS) proposed.
- Similarly, at night time, when electricity demand is low, the BESS will be charged.
- The gas engines within the proposed Energy Centre will only operate when they can do so at a lower carbon intensity than the marginal (fossil fuel) generator on the national grid.
- Generally, the BESS batteries will charge at night when electricity demand on the grid is low and are discharged in the following evening peak, when demand is high, to help reduce peak demand on the grid.

The development also includes building-mounted and at-grade solar arrays (3 MW), which will contribute to the sustainable energy mix on site.

[4] Power Purchase Agreement (PPA) is the procurement of renewable electricity through a direct contractual arrangement with a renewable generator

[5] Energy infrastructure is located proximate to the point of demand, rather than located in some centralised energy infrastructure location.

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The Proposed Development will operate both as a consumer and producer of electricity. Electricity will be consumed when the grid's fuel-mix is predominantly renewable and electricity demand on the grid is low which will usually occur at night. At peak electricity demand, the grid is most vulnerable and at its highest carbon intensity due to the increased demand requiring older more carbon intense national energy generators (e.g. coal) to be switched on to provide the necessary extra power to meet demand. At these times, the Proposed Development will provide a flexible demand-response (reduces its grid electricity demand to near zero and provides its own power), leaving the energy market and supporting the loads with its own assets enabling the reduction/elimination of emissions in real-time (hour-for-hour) on the campus. The EC will also be have the ability to potentially to export to the grid in order to displace the highest carbon intensity energy generators on the grid should there be agreement with the System Operator for the provision of such services.

An overview of the proposed technologies to be employed at the Proposed Development is illustrated in Figure 2.3.

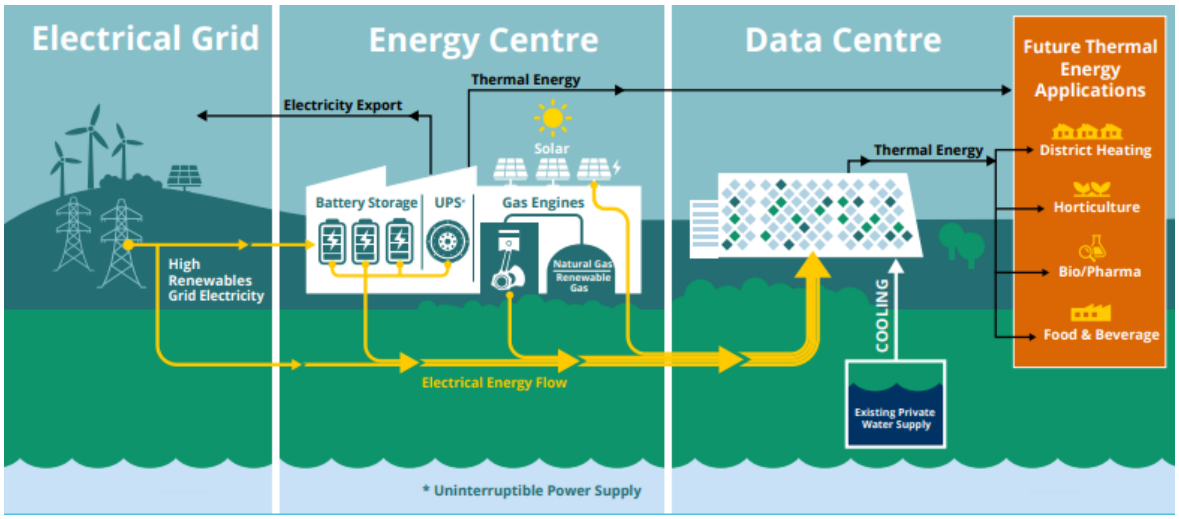

Figure 2.3: Overview of the Energy Technology to be employed at the Proposed Development

2.1.2 Continuing use of Existing Freshwater and Seawater Abstraction Infrastructure for Proposed Development

The seawater and freshwater abstraction and discharge infrastructure in place at the PPL site will continue to be operated as per the current situation onsite, within EPA registered limits and in accordance with the EPA Industrial Emissions (IE) Licence.

- Abstracted seawater from Baltray Reservoir will be used to reduce the pH of surface water runoff from the site prior to its discharge to sea via licenced emission point, SW1, to ensure compliance with IEL limits, as required.
- Abstracted freshwater from the Littlegrange and Mell Quarry intake regime will be used for the industrial processes within the site and discharged to sea via licenced emission point, SW1 (except for the freshwater used for the Data Centre cooling system, which will be released to air by evaporation). Ongoing abstraction of freshwater at Mell Quarry also serves to manage water levels in the disused quarry and prevents flooding of water abstraction infrastructure located on the eastern side of the quarry.
- The water discharged via SW1 will be subject to a sampling and monitoring regime.

The existing seawater and freshwater infrastructure serving the site is a valuable resource that PPL may seek to use in potential future industrial processes within the landholding, including potential decarbonisation applications. Given such potential future processes are not known, they are not part of the Proposed Development to which this planning application relates.

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2.2 Proposed Development Schedule

Table 2.1 outlines the schedule for the planned works to be completed as part of this Proposed Development. An allowance of up to two years of a potential delay to this Proposed Development has been factored into the planning stage of the project. There is also the possibility that other smaller delays throughout the planning stage and construction stage could accumulate to a similar delay but for simplicity, it has been captured in Table 2.1 as a single delay. Delays such as this are possible on a project of this size and complexity.

Table 2.1: Schedule for Proposed Development

Milestones	Timeframe with no allowance for delays (with an allowance for delays)
Submission of planning application	Q4 2024
Louth County Council's Planning Application decision	Q4 2024
Procurement of key subcontractors, Debt financing, Grid connection modification application and EPA Engagement and Licence Application	Q1 2025 – Q3 2025 (Q1 2025 – Q3 2027)
Initial Decommissioning Works	Q1 2025 – Q3 2025 (Q1 2027 – Q3 2027)
Demolition and EPA Activities (ca. 14 months)	Q3 2025 – Q4 2026 (Q3 2027 – Q4 2028)
Construction & Commissioning (ca. 24 months)	Q1 2027 – Q4 2028 (Q1 2029 – Q4 2030)
Opening Year	2028 (2030)

2.3 Potential Future Phases of CORE

As discussed previously in this Chapter, the Proposed Development to which this planning application relates is the first phase of CORE.

This Section includes some details of some potential future developments that may make up future phases of CORE; however it is noted that the specifics of potential future phases are not known.

2.3.1 Land Use and Connectivity Plan

The subject site under the ownership of PPL and the lands bordering this site to the north are zoned '*E1 General Employment'* identified in the Louth County Council Development Plan 2021-2027. A Land Use and Connectivity Plan has been developed (Figure 2.4) which provides an overview of the possible future development land uses of CORE on the PPL site and its local development environs in line with this zoning. The Land Use and Connectivity Plan also takes account of relevant permitted development in the vicinity.

The overall Land Use and Connectivity Plan has been prepared to ensure consistency with the policies and objectives of the Louth County Council Development Plan 2021-2027, Best Practice Urban Design Manual (2009) and the principles of sustainable development. While the overall scale and mix of development on these lands will be subject to future planning applications on a phased basis, it is envisaged that it will include a mix of Proposed Industrial / Commercial Zones, as well as providing for future connectivity through the PPL site to adjacent development land, which is similarly zoned. The future development of the area in accordance with the overall intent of the Land Use and Connectivity Plan will ensure an orderly and well-connected form of development on this important employment landbank for Drogheda.

The Land Use and Connectivity Plan indicates the first phase of CORE, the Proposed Development for which this planning application relates (i.e. an EC, DC, and new and retained infrastructural utility facilities). It builds on these Proposed Developments and outlines a future land use scenario for the balance of the site with areas allocated to Industrial / Commercial Zones in keeping with the zoning objectives. It also defines key routes for connection to adjacent lands outside the applicant's ownership, in order to ensure that the Proposed Development promotes and facilitates future development in the area and avoids prejudicing any future development.

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The Land Use and Connectivity Plan design has been informed by the existing site context including the planned future development of Drogheda, and proximity to key services / utilities and resources.

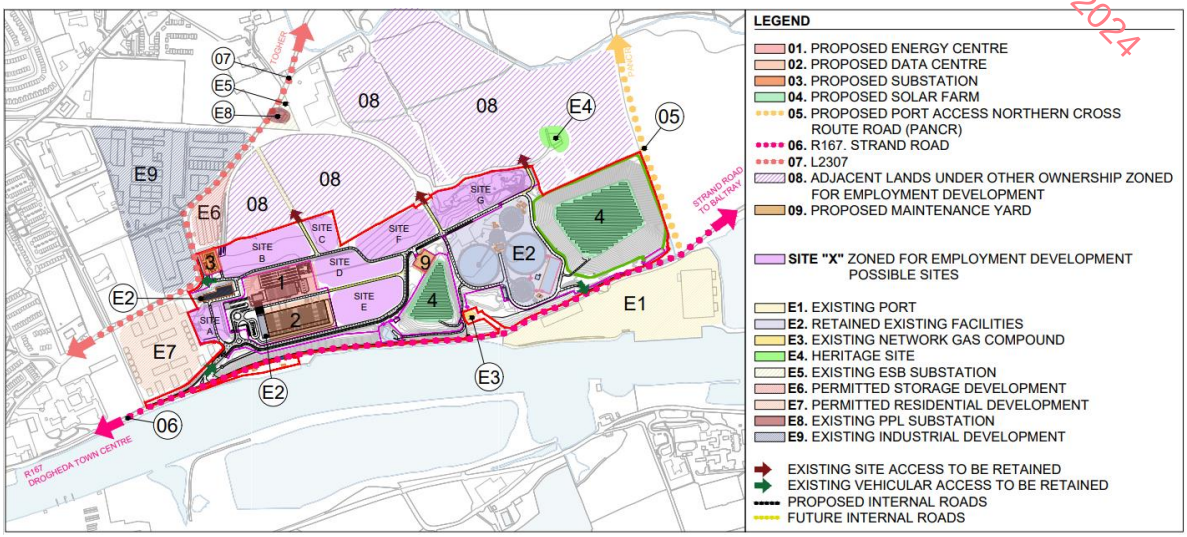

Figure 2.4: Land Use and Connectivity Plan

2.3.2 Assessment of Potential Future Phases of CORE

In the various chapters of the EIAR, future phases of CORE have been acknowledged and assessed so far as is practical with the level of detail that is known on those future developments at this time.

As the specifics of potential future phases are not known, it is not possible to conduct a detailed assessment of them. Potential future phases of development will be subject to separate planning applications, Environmental Impact Assessment (EIA) and Industrial Emissions Licensing by the EPA, as required. Any subsequent EIAR's for a future phase of development will cumulatively assess any existing phases at that time.

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3 Alternatives Considered

3.1 Introduction

Chapter 3 Alternatives Considered of the EIAR examines the alternative development options that were considered during the design development process for the Proposed Development at the Premier Periclase Ltd. (PPL) Site at Boyne Avenue, Newtownstalaban, Drogheda, Co. Louth.

The alternatives considered for the Proposed Development are described in the chapter under the following headings:

- Why build this facility? / “Do Nothing” Alternative;
- Alternative Locations;
- Alternative Layouts and Designs / Technologies;
- Alternative Mitigation Measures.

The chapter describes the alternatives that were considered under each of these headings and the reasons for the selection of the preferred options based a comparison of potential environmental effects.

3.2 “Do Nothing” Alternative

Under the "Do Nothing" scenario, where the proposed redevelopment does not proceed, several critical effects need consideration:

- **Missed Opportunities for Sustainable Development:** The "No Project" scenario would mean missing out on transforming the site into a hub for renewable energy and low-carbon technologies and thus not aligning with national goals for sustainability and decarbonisation, as outlined in Ireland's Climate Action Plan and the National Planning Framework.
- **Return to Full Scale Operations:** If the Proposed Development does not proceed, PPL is likely to resume full scale production in accordance with the terms of its existing Industrial Emissions (IE) licence.
- **Environmental Effects:** The PPL site has a legacy of NO_x, SO_x, and CO emissions. Should the site return to full scale production, these emissions will return and will remain within their permitted levels as per the site’s existing IE licence.
- **Economic Impacts:** The local economy would not benefit from the potential job creation and economic revitalisation that CORE aims to introduce.
- **Non-compliance with Planning Objectives:** Louth County Council’s (LCC) policies strongly advocate for the regeneration of underutilised industrial sites. Its policy objective EE3 is, ‘*To promote the regeneration of underutilised industrial and town centre areas in a manner which enhances the local economy and encourages a sequential approach to development’.*
- **Loss of Strategic Advantage:** The strategic location of the site, with excellent transport links and proximity to major urban centres, offers a unique opportunity for redevelopment.

In conclusion, the "Do Nothing" scenario would likely result in potential environmental risks, economic decline in the local area, and missed opportunities to align with regional and national development objectives. Therefore, proceeding with the redevelopment of the site into the proposed sustainably powered enterprise campus presents a compelling alternative to harness the site’s full potential for economic growth, environmental improvement, and community enhancement.

3.3 Alternative Locations

When assessing various sites for the Proposed Development, PPL considered that its own site located in Drogheda would be a viable option.

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The Proposed Development comes about as the result of the market conditions that PPL's operations faced in 2022, as well as the possible cessation of current operations. These circumstances presented an opportunity to redevelop the current site (i.e. a site-specific development proposal). The existing PPL site has significant advantages that can be capitalised on as described in the following subsections.

3.3.1 Infrastructure Utilisation

The Proposed Development will ensure the site is maximising the unitisation of existing resources, such as existing freshwater and seawater infrastructure, the existing tank farm area, existing power grid connectivity (38 kV), existing gas connection (4 Bar) from the Gas Networks Ireland 70 Bar main transmission line running through the site, and existing potable water supply. The utilisation of this existing infrastructure supports the efficient implementation of the campus and reduces the environmental impact associated with constructing new facilities.

3.3.2 Strategic Location

Located in Drogheda, one of only eight towns in Ireland designated as a Regional Growth Centre within the National Planning Framework, the site is strategically positioned with excellent transport links, enhancing its potential for economic growth. The PPL site is well connected by Strand Road (R167) that runs along the southern boundary of the site with excellent transport links to the M1 Dublin to Belfast motorway. The planned phases of the Port Access Northern Cross Route (PANCR), currently under development, will enhance the connectivity of the site to the M1 motorway. The future planned DART+ Coastal North Project to Drogheda will also enhance the site's connectivity to Dublin.

3.3.3 Environmental Considerations

Utilising the existing PPL site offers an opportunity to replace and upgrade a long-standing industrial use with clean, sustainable technology (e.g. solar power), enhancing local biodiversity and improving visual amenity. This approach aligns with the CORE's environmental goals and the wider regional conservation strategies.

3.3.4 Socio-Economic Considerations

The redevelopment of the PPL site will provide substantial employment opportunities, offering a just transition for the workforce affected by the previous industrial downturn. CORE will provide high-skilled employment opportunities and investment in the town of Drogheda turning it into a hub for high-tech industries and renewable energy generation and act as a regional economic driver.

3.3.5 Conclusion

As described in the above subsections, the site itself shaped the selection of the Proposed Development and wider campus vision, and PPL is able to accommodate that vision within its existing landholding.

The selection of the current PPL site is justified based on a comprehensive assessment of environmental benefits, infrastructure readiness, policy compliance, and socio-economic impacts. This site not only meets the Proposed Development's technical and operational needs but also enhances its integration into regional planning and environmental objectives. Therefore no other potential sites were considered or assessed for the Proposed Development.

3.4 Alternative Layouts, Technologies and Designs

PPL, along with its design partners AtkinsRéalis have carried out a master planning process for the site, so that the future development of the campus could be delivered in an integrated manner. The master planning process has evolved over several years and one that has involved numerous meetings and discussions with relevant stakeholders including formal pre-application consultation with the local planning authority.

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In addition, alternative building designs were considered by the project team through the evolution of the master plan. The proposed design and layout is considered the most environmentally appropriate compared to other approaches considered.

3.5 Alternative Mitigation Measures

For each aspect of the environment, each specialist has considered the feasible measures to identify the most suitable measure appropriate to the environmental setting and the Proposed Development design. In making a decision on the most suitable mitigation measure, the specialist has considered relevant guidance and legislation.

In each case, the specialist has reviewed the mitigation measures available and considered the use of the mitigation in terms of the likely residual impact on the environment. The four established strategies for mitigation of effects have been considered: avoidance, prevention, reduction, and offsetting. Mitigation measures have also been considered based on the effect on quality, duration of impact, probability and significance of effects.

3.6 Conclusion

Having examined various reasonable alternative sites, designs, and layouts, it is considered that the Proposed Development is the preferred option in terms of the sustainable development of the subject site.

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4 Population and Human Health

4.1 Introduction

Chapter 4 Population and Human Health of the EIAR examines the likely effects of the Proposed Development on the human aspects of the environment, including human health and population effects.

Population effects can be explored in terms of the effects on local residences, businesses, employment, community, local amenities and tourism. Due to the wide scope of population factors, the various environmental factors are evaluated individually within this EIAR in the relevant chapters.

4.2 Receiving Environment

A map showing the PPL site and its environs including sensitive human receptors is provided in Figure 4.1.

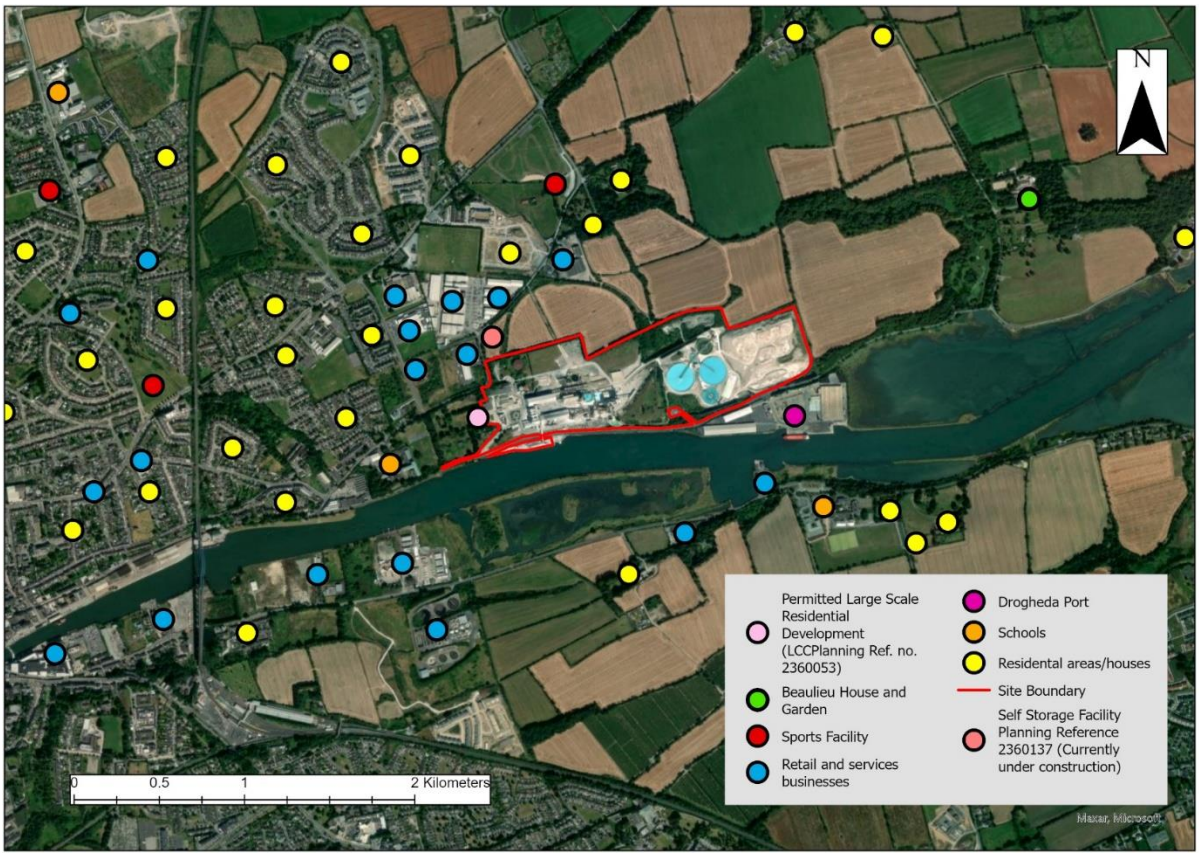

Figure 4.1: PPL Site and its environs, including Sensitive Human Receptors in the Vicinity of the PPL site

According to the Louth County Council Development Plan, the current PPL site is located in an area of E1 General Employment. In relation to areas zoned as E1 General Employment, the development plan states: *This zoning is the primary location for employment-generating activities. It will facilitate the improvement and expansion of existing employment areas and the investment and development of new employment areas. A wide range of uses will be facilitated on these lands including small, indigenous enterprises, general industry, manufacturing, food production, logistics, and warehousing. The compatibility of a particular use or operation will be dependent on the nature of the use/operations and surrounding uses in the area in which the development will be located. This zoning also facilitates opportunities for uses that are deemed permissible under the "Business*

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and Technology zoning category" E2, defined as *"lands to attract and facilitate science and technology, research and development, major offices, global services (including financial services), high tech manufacturing-based employment in high-quality campus style developments."*

4.3 Characteristics of Proposed Development

It is expected that the construction phase of the Proposed Development will result in a maximum of 200 construction personnel at peak, while the Proposed Development will employ ca. 50 personnel including Information Technology specialists, maintenance professionals and support staff when operational.

4.4 Potential Effects, Mitigation Measures and Monitoring of Effects

4.4.1 Construction Phase (Including Demolition)

The increase in employment during the construction phase will have a short-term positive effect (ca. 38 months, see Table 2.1). The short-term increase in employment is likely to promote economic activity in local businesses.

In relation to human health and safety, it is planned to use controlled explosions during the demolition works planned as part of the Proposed Development. The objective of explosive demolitions is to bring down the structure in a controlled manner minimising the damage to surrounding infrastructure by strategically placing explosive charges within the structure and timing their detonation. Good liaison between the demolition team and neighbours (such as residents and commercial properties in the vicinity) will be established, and all neighbours will be made aware of the proposed dates and times of the explosive demolition works well in advance of such works occurring. Additionally, the explosive demolition works will be restricted to daytime hours (07:00-19:00).

Exclusion zones will be required in consideration of the factors as advised by Part 8 of the Safety, Health and Welfare (Construction) Regulations 2013 (S.I. No. 291 of 2013). In the interest of public safety, an exclusion zone typically 250m (min) to the rear and sides will be controlled by sentries, strategically positioned and in radio contact with the control / firing point. Careful on-site consideration will be required to establish the exclusion zone in the best interest of public safety as well as the topographical logistics of enforcing its perimeter. The explosive engineer will be required to have a robust Misfire Procedure in accordance with the recommendations of Regulations 77.

There is a potential human health risk from the presence of asbestos (fragments and asbestos containing materials (ACMs)) at several locations across the site, and from underground asbestos piping. A detailed asbestos survey was carried out to identify where this is a concern. Before the demolition of the existing site buildings and structures can start, a significant exercise to remove asbestos materials of various types must be undertaken by specialist asbestos consultants. This exercise will commence before, and possibly extend into the main demolition exercise and will be carried out by specialist contractors. The following mitigation measures will be implemented with respect to the asbestos removal works:

- A detailed Asbestos Management Plan (AMP) for any excavation works on the shall be developed by an asbestos consultant prior to commencement of any demolition works with all mitigation measures, including site operative training and procedures, roles and responsibilities of individuals and monitoring measures detailed within the document.
- All excavation operations shall be undertaken on the assumption that asbestos containing materials (ACMs) or asbestos pipework could be encountered and appropriate health and safety including appropriate Personal Protection Equipment (PPE) provided to relevant site operatives working in these areas.
- The asbestos consultant shall advise if HSA notification is required prior to the commencement of any site excavation operations in accordance with *The Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations, 2006 & 2010*.

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- All asbestos material identified shall be carefully removed and appropriately double-bagged and safely stored on-site for off-site disposal by a suitable licenced waste haulage company to an asbestos licenced waste disposal facility.
- All excavation operations in areas suspected to contain ACMs shall be supervised by an asbestos consultant.
- Should additional unknown asbestos material be uncovered during the demolition of the site, all related works and works adjacent to the asbestos (the extent of which is to be determined in accordance with a risk assessment) will be suspended until the asbestos material is removed by a specialist contractor.

Potential effects on the various environmental factors assessed in the EIAR during the construction phase (including demolition) are described in the relevant chapters of the EIAR, and mitigation measures that will be implemented to minimise any potential effects have been outlined.

4.4.2 Operational Phase

As discussed above, during the operational phase it is expected that the Proposed Development will employ ca. 50 personnel including Information Technology specialists, maintenance professionals and support staff. In addition a significant number of service provider opportunities will be created providing backup support and highly skilled services into the future. The attraction of other and new enterprises to the campus as part of potential future development at the site will further enhance job creation. The increase in employment from the operational phase is likely to have a Positive Long-Term effect by these new employees supporting local businesses and using the amenities in the area.

In relation to human health and safety, the Flogas site located to the south-west of the PPL site, is an Upper Tier COMAH (Control of Major Accident Hazards Involving Dangerous Substances) site, for Liquefied Petroleum Gas (LPG) storage. The Louth County Development Plan 2021-2027 places a 600m Consultation Distance around this site[6]. The western section of the PPL site is within this consultation distance. This has been taken into account as part of the development of the layout for the Proposed Development.

All potential major accidents and disasters considered relevant to the Proposed Development have been discussed in *Chapter 16 Major Accidents and Disasters* of the EIAR. It has been concluded that no plausible major accidents or disaster hazards were identified, to which the Proposed Development will be particularly vulnerable. All potential risks identified were determined to be low to medium risk scenarios. No plausible potential risks were identified which would result in the Proposed Development causing a major accident or disaster on or outside of the Proposed Development.

4.4.3 'Do Nothing' Scenario

Should the Proposed Development not proceed, PPL propose to continue to operate as a magnesia and magnesium hydroxide production facility in compliance with IE Licence Reg. No. P0376-02, issued by the EPA, with production reverting to peak production capacity.

In the 'Do Nothing' scenario, the PPL site would continue to operate in compliance with the site's IE Licence which includes conditions and limit values in order to ensure a high level of protection of human health. As such, no significant adverse effects on Population and Human Health are predicted.

4.5 Conclusion

Considering the nature and scale of the Proposed Development to include demolition and construction of the project and the mitigation measures to be implemented, no significant negative effects on the Population and Human Health are anticipated. The implementation of all

[6] https://www.louthcoco.ie/en/publications/development-plans/louth-county-development-plan-2021-2027/chapter-11-web-.pdf Table 11.1.

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environmental, health and safety measures and other identified mitigation measures will ensure that there are no predicted negative residual effects on the environment in terms of Population and Human Health during the construction phases of the Proposed Development.

In relation to the operational phase, there will be a long-term positive residual effect on the local community because of increased employment opportunities and social activity in the area. This will increase economic activity in the area that will attract new economic initiatives and support local businesses and amenities. There will be improved ambient air quality and overall improvement in the quality of life for local residences. The visual impact will project a very positive image enhancing the ambiance or the area making it an attractive area to live in and is likely to impact positivity on the quality and value of property of the area.

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5 Landscape and Visual

5.1 Introduction

This Chapter of the EIAR has been prepared to assess the potential for effects on the landscape and visual environment from the proposed development during the construction and operational phases at the Premier Periclase Ltd. (PPL) Site at Boyne Avenue, Newtownstalaban, Drogheda, Co. Louth. This chapter should be read in conjunction with *Chapter 2 Description of Proposed Development* of the EIAR.

The assessment has been carried out with reference to the relevant legalisation, policy and guidelines, and with regard to landscape planning considerations set out in the Louth County Development Plan 2021 – 2027 and the Meath County Development Plan 2021 – 2027.

The EPA Guidelines (EPA 2022) provide a general methodology, including impact ratings and assessment structure, which is applicable across all environmental assessments. The Guidelines for Landscape and Visual Impact Assessment (GLVIA) (Landscape Institute and IEMA 2013) provides specific guidance for landscape and visual impact assessments. The TCA (Landscape Institute 2018) is a resource for the application of landscape character assessment to landscapes. Therefore, in this landscape and visual assessment, a combination of the approaches outlined in the EPA Guidelines (EPA 2022) and in the GLVIA (Landscape Institute and IEMA 2013), supported by the TCA (Landscape Institute 2018) and the professional experience and expertise of the assessor, is utilised . The methodology set out in Technical Guidance Note 06/19 (LI 2019) is used in the preparation of Photomontages (see EIAR Volume 2).

5.2 Receiving Environment

5.2.1 The Landscape and Visual Context – Existing Baseline Scenario

The project proposes the redevelopment of the existing PPL site into sustainability powered enterprise campus known as ‘CORE’. The approximately 35.6 hectare site is located on the northern banks of the River Boyne Estuary just under 1.5km east of the historic core of Drogheda town centre.

The site is occupied by an existing long-standing and large-scale industrial facility of poor visual quality, which dominates views south of and along that corridor / valley of the River Boyne / Boyne Estuary. While there are no particular landscape or visual sensitivities on the site, the existing mature evergreen tree-line on the northern boundary of the site provides useful screening of the industrial facility from areas north of the site and the vegetated steep bank on the south side provides for some screening of views from Strand Road on the northern side of the river / estuary.

Nevertheless, the site is located in a prominent and visually open location on the northern side of the River Boyne / Boyne Estuary and directly east of residential and community development and of Drogheda town (refer to Figure 5.1). The site falls within the extent of a number of identified Views and Prospects, including views from the Boyne Valley Viaduct and from Marsh Road within County Meath. The site is also within the wider context of a number of protected structures, including the Boyne Valley Viaduct, Newtown House and Beaulieu House and Demesne and monuments such as the church ruin and associated graveyard at Newtownstalaban.

Therefore, landscape and visual sensitivities of the baseline environment relate to:

- The high quality landscape character and visual quality of the Boyne River / Estuary corridor;
- The presence, and on-going emergence, of residential, community and open space land uses in the surrounding environment;
- The existence of identified views and prospects and protected structures of notable quality in the surrounding environment; and
- The presence of tree-lines and other vegetation as semi-natural features and screening on the boundary of the site.

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In conclusion, the baseline landscape and visual sensitivity of the site is assessed as **Low**, while, the baseline landscape and visual sensitivity of the surrounding areas is assessed as **High**.

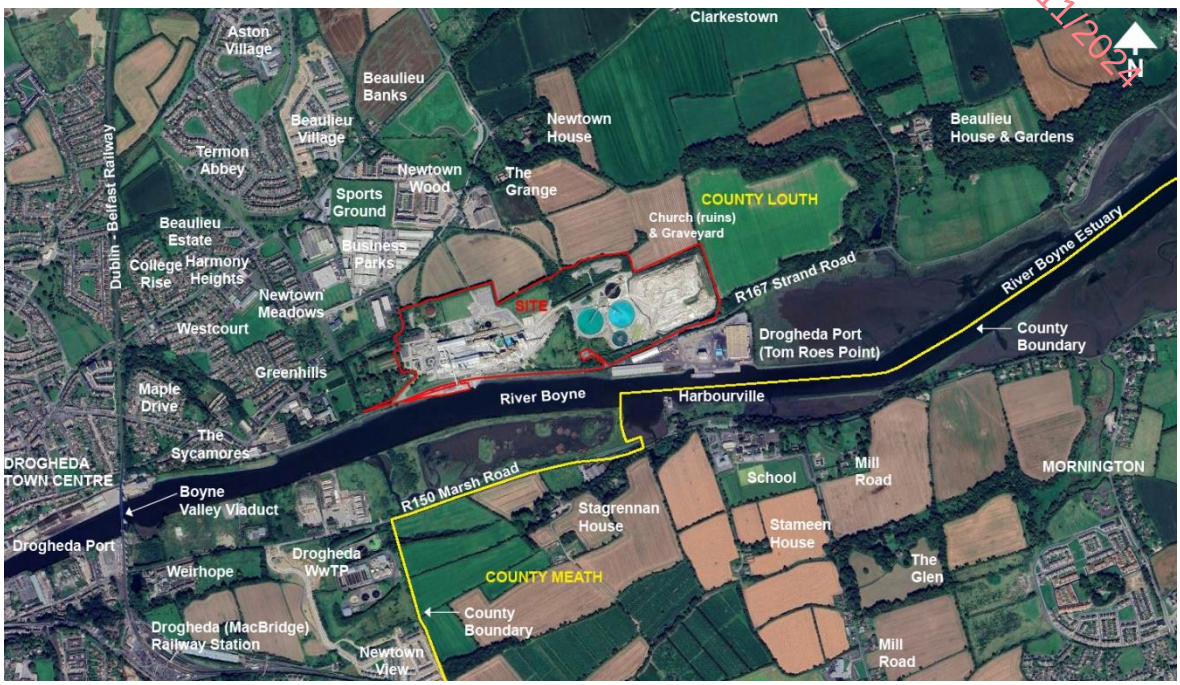

Figure 5.1: Site Context (base aerial source: Google Earth)

5.3 Characteristics of Proposed Development

5.3.1 Overview of Proposed Development

The proposed development to which this planning application relates is the first phase of CORE, and will consist of extensive works that will transform the entirety of the ca. 35.6 hectare site and set it on a path to being a sustainably powered enterprise campus. It is noted that the licenced activity to be carried out at the proposed development is unrelated to the existing Industrial Emissions licensed activity at the site.

Details of the proposed development is set out in Section 2.1 of this Non-Technical Summary.

The proposed development will result PPL ending its current operations, will result in demolition of the majority of existing structures on site and will have a significant, remediating effect on the site.

As noted, the Proposed Development includes for the maintaining and reuse of a number of existing structures including the existing PPL Workshop, the Crane Shed, and 3 no. existing silos (currently used for lime), together with the continued use of the existing water tanks and infrastructure.

In order to commemorate the railway that once ran through the site, it is proposed to construct a viewing platform in the southeast of the site. This platform will not only offer a vantage point overlooking the River Boyne and the Viaduct; it will also preserve and display any fragmentary remains associated with the railway line that are recovered within the site. Information panels will detail the railway's significance, characteristics and role in the early operation of the cement factory, early photographs and maps of the railway will support this interpretation.

5.4 Potential Effects, Mitigation Measures and Monitoring of Effects

The Proposed Development represents a redevelopment of the site from an existing long-standing large-scale visually prominent industrial facility to a lower, better integrated high quality energy campus. As such, the potential for adverse landscape and visual impacts is reduced and the

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potential for positive effects – depending on design, layout and integration of the Proposed Development in its setting – is increased, especially in the medium and long-term.

5.4.1 Construction Phase (including Demolition)

While the sensitivity of the site is low, the sensitivity of the wider landscape and visual environment is classified as high. The degree of potential change associated with the demolition and construction phase of the Proposed Development is assessed as being medium.

Therefore, the potential landscape and visual impact of the demolition and construction phase of the Proposed Development is assessed as moderate / significant, temporary to short-term and neutral.

The following measures are proposed as remedial and mitigation measures for the Construction Phase:

- Construction works will be guided by a Construction Environmental Management Plan (CEMP), which shall provide the environmental management framework to be adhered to, and monitored, during the works. The CEMP will incorporate all of the mitigation measures required to ensure that the work is carried out in a way that minimises the potential for impacts to occur to the landscape, natural heritage and visual environment.
- Monitoring of the removal and protection of trees and vegetation shall be inspected and approved by a project arborist and project ecologist.
- Existing trees, hedgerows and vegetation to be retained within and adjoining the works area, including along the northern boundary of the site will be protected in accordance with '*BS 5837:2012 Trees in relation to design, demolition and construction. Recommendations*'. Works required within the root protection area (RPA) of trees, hedgerows to be retained will follow a project specific arboricultural methodology for such works, prepared / approved by a professional qualified arborist.
- Construction compounds will not be located within the RPA of trees or planting to be retained.
- Within landscape areas, topsoil shall be stripped and stored separate to subsoils / other soils. Topsoil shall not be compacted during storage and shall be re-used wherever possible during reinstatement works.
- Monitoring of soil stripping, storage and reinstatement of landscape areas, shall be inspected and approved by the project landscape architect.
- Compound areas will be fully decommissioned and reinstated to match the existing condition insofar as possible at the end of the construction phase.
- All proposed landscape measures (as set out on landscape drawings submitted with the application), including new tree and other planting will be completed as part of finalisation of the construction phase of the Proposed Development.

There are no significant residual landscape and visual residual effects associated with the demolition and construction phase.

5.4.2 Operational Phase

While the sensitivity of the site is low, the sensitivity of the wider landscape and visual environment is classified as high and the degree of potential change associated with the operation of the Proposed Development is assessed as being medium / high.

Therefore, the potential landscape and visual impact of the operation phase of the Proposed Development is assessed as moderate / significant, short to long-term and neutral / positive.

The following measures are proposed as remedial and mitigation measures for the Operation Phase:

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- A specific integrated architectural treatment is proposed for the Proposed Development (refer to *Chapter 2 Description of Proposed Development* of the EIAR and drawings submitted with the application). These proposals will assist in the visual integration of the Proposed Development with its existing context.
- All landscape areas enhanced, provided and / or reinstated during the construction phase shall be subject to a minimum 12 month period of aftercare so as to ensure successful establishment.
- Any proposed plants, seeding or other landscape measures that die or otherwise fail within the 12 month aftercare period will be replaced to match the existing specification for same.
- Post the aftercare period the proposed landscape measures will continue to be managed as part of the on-going landscape maintenance operations for the facility.

The landscape and visual impact of the operation phase of the Proposed Development is assessed as moderate / significant, short to long-term, direct and positive.

No significant indirect landscape and visual impacts have been identified.

5.5 Conclusion

The assessment concludes that the Proposed Development, either during the demolition and construction phase or during the operational phase and potential decommissioning will not give rise to any unacceptable direct or indirect adverse effects on the landscape and visual environment. This is due in part to the poor quality and visually prominent nature of the existing long-standing industrial facility, and in part to the high quality architectural and visual character of the proposed development and of the associated extensive landscape and planting measures.

As such, the overall landscape and visual impact of the Proposed Development will be substantially positive and long-term.

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6 Traffic and Transportation

6.1 Introduction

The Proposed Development to which this planning application relates is the first phase of CORE and will consist of extensive works that will transform the entirety of the ca. 35.6 hectare site and set it on a path that will ultimately result in it being a sustainably powered enterprise campus. It is noted that the Proposed Development is unrelated to the existing Industrial Emissions licensed activity at the site.

6.2 Receiving Environment

The selected site for the Proposed Development is strategically situated in Drogheda, County Louth, Ireland (see Figure 6.1). The subject site is located along the northern bank of the River Boyne, ca. 2km to the east of Drogheda town centre, which sits on the M1 motorway connecting Dublin to Belfast.

Figure 6.1: Overall Subject Site Location with respect to Drogheda and the M1 Motorway

6.3 Characteristics of Proposed Development

The existing site access will be maintained along the R167 Strand Road. The R167 is currently a 60km/hr regional road. An additional access is proposed to be provided along L2307 Newtown Road. However, compared to L2307, R167 is a major road and will provide safe and non-obstructive access for vehicles. Therefore, the second access is only intended for use by maintenance vehicles, and mostly during off peak period. While the majority of trips associated with the operational and construction phases will use the access along R167 Strand Road. Both site accesses have been designed in accordance with the Design Manual for Urban Roads and Streets (DMURS), ensuring acceptable sightlines and junction geometry.

The main public roads serving the Proposed Development are as follows:

- **R167 (Strand Road):** This is a regional road stretching from Drogheda, Louth to Kingscourt in County Cavan. It is presently a single carriageway road with a speed limit of 50 km/hr from

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Drogheda Town Centre until the R167/R899 junction where the speed limit increases to 60 km/hr until the Gas Networks Ireland Access Gate where it increases to 80 km/hr.

- **R166(Newfoundwell Road):** Following a winding path through County Louth, R166 extends from Mell to Clogherhead. It lies north of the Proposed Development and runs nearly parallel to R167 for much of its length. In the vicinity of the development, it is known as Newfoundwell Road, with a speed limit of 50 km/hr.
- **R899 (Greenhills Road):** This orbital road connects R167 (Drogheda) with R166 (Newfoundwell Road South). The speed limit on this link is 50 km/hr.
- **L2307 (Newtown Road):** Another orbital link, which connects R166 with R167. It also has a speed limit of 50 km/hr.

Currently, there are no cycling facilities along the R167 Strand Road near the Proposed Development site. However, there is a footpath located along the northern side of R167 Strand Road. This footpath serves as the main access route to the Proposed Development site from Drogheda Town Centre and the bus stop near Our Lady's College.

6.4 Potential Effects, Mitigation Measures and Monitoring of Effects

6.4.1 Construction Phase (Including Demolition)

During demolition and construction stage, the existing access along R167 Strand Road to be utilised for both heavy vehicles and staff. It is envisaged that all the heavy vehicles will utilise the access during non-peak hours.

The parking arrangements for the staff will be provided within the proposed construction compound. Parking alongside roads will strictly be prohibited.

Overall, the peak hour trip volume to be generated during the construction phase are anticipated to be lower than the operational phase. Since the morning and afternoon peak periods are the critical periods from a capacity perspective, no further assessment was undertaken for the construction traffic.

Several haul routes for the import / export of materials were identified for the contractor to consider when developing the Construction Traffic Management Plan (CTMP) which is to be completed prior to the commencement of works. The routes have been developed in order to avoid the congested town centre as well as residential areas with direct road frontage wherever possible.

6.4.2 Operational Phase

As part of this assessment, the following two baseline scenarios were considered:

- Existing Baseline Scenario (Scenario 1): It represents the existing conditions at the site and it its surroundings since the operations have been ramped down.
- Operational Baseline Scenario (Scenario 2): It represents the condition of site when the site was fully operational under the existing licensed use.

For the existing Baseline Scenario (Scenario 1), the trips determined for the operational phase and construction phase were added to determine the total traffic on the local road network.

It was observed that the Proposed Development is likely to generate fewer trips than the trips under the current licensed usage. Hence, overall, the Proposed Development will have a positive impact on the local road network.

As operations at the facility had ramped down at the time the traffic counts were conducted, Scenario 2 was used as the baseline scenario for assessment. This scenario was considered to be worst case and ensured a robust assessment by not accounting for the potential trips that have been removed from the road network resulting from the redevelopment.

The opening year for the proposed development is anticipated to be 2028 and, as such, the assessment scenarios for the proposed development were as follows:

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- Opening Year – 2028
- Opening Year + 5 – 2033
- Opening Year + 20 – 2048

As part of the initial analysis, it was observed that the access junction, R899/R167 priority junction, and R167/L6327 priority junctions were found to be above the 5% threshold and were brought forward for detailed assessment.

The analysis showed that the access junction and R167/L6327 junction were found to be operating within capacity, and the impact of the proposed development was minimal.

The Greenhills Road (R899/R167) junction was found to be operating over capacity under existing conditions as well as the scenarios with background traffic growth with committed development trips. The additional trips generated by the proposed development, although relatively minor, further reduce the junction capacity. As a result, it is recommended that the Greenhills Road (R899/R167) junction be upgraded to a signalised junction to mitigate the impacts of existing and future traffic volumes. The final decision on the upgrade and associated works will be undertaken by Louth County Council under their statutory powers.

6.4.3 'Do Nothing' Scenario

In the 'Do Nothing' scenario, all junctions with the exception are anticipated to operate within capacity for all scenarios. The Greenhills Road (R899/R167) junction was found to be operating over capacity under existing conditions as well as the scenarios with background traffic growth with committed development trips. As a result, it is recommended that the Greenhills Road (R899/R167) junction be upgraded to a signalised junction to mitigate the impacts of existing traffic volumes. The final decision on the upgrade and associated works will be undertaken by Louth County Council under their statutory powers.

6.5 Conclusion

AtkinsRéalis was appointed by Premier Periclase Ltd. (PPL) to undertake a planning application for the development of an Energy Centre, Data Centre and Electrical Substation at the existing Premier Periclase Magnesium Oxide and Hydroxide Production Facility in Drogheda.

The total trip generation for the proposed development was calculated to be 126 no daily trips, which included trips associated with staff, security, deliveries / visitors as well as heavy vehicles. Construction traffic was calculated to be less than the operational phase trips and therefore, no separate analysis was undertaken.

As part of this assessment, the following two baseline scenarios were considered:

- Scenario 1: Represents the existing conditions at the site and it its surroundings since the operations have been ramped down. The are the conditions under which the traffic counts were conducted.
- Scenario 2: These trips are representative of the those which existed while the site was fully operational under the existing licensed use. These trips were calculated for all site operations including the movement of materials as well as staff trips.

As operations had been ramped down at the time that the traffic counts were conducted, Scenario 2 was used as the baseline scenario for assessment. This scenario was considered to be worst case and ensured a robust assessment by not accounting for the potential 249 no. trips that have been removed from the road network resulting from the redevelopment.

The opening year for the proposed development is anticipated to be 2028 and, as such, the assessment scenarios for the proposed development were as follows:

- Opening Year – 2028
- Opening Year + 5 – 2033

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- Opening Year + 20 – 2048

As part of the initial analysis, it was observed that the access junction, R899/R167 priority junction, and R167/L6327 priority junctions were found to be above the 5% threshold and were brought forward for detailed assessment. The analysis showed that the access junction and R167/L6327 junction were found to be operating within capacity, and the impact of the proposed development was minimal.

The Greenhills Road (R899/R167) junction was found to be operating over capacity under existing conditions as well as the scenarios with background traffic growth with committed development trips. The additional trips generated by the proposed development, although relatively minor, further reduce the junction capacity. As a result, to mitigate these impacts, the junction was modelled as an upgraded signalised junction. Based on the results, the signalisation of the junction adequately addresses capacity issues currently experienced by the junction. The final decision on the upgrade and associated works will be undertaken by Louth County Council under their statutory powers.

Overall, the proposed development is anticipated to have a negligible impact on the surrounding transport network. This is largely as a result of the redevelopment, removing the trips associated with the existing facility operations under the current license (249) and replacing them with the proposed development trips (126). As a result, the proposed development is supported from a traffic and transportation perspective.

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7 Soils, Geology & Hydrogeology

7.1 Introduction

Chapter 7 Soils, Geology & Hydrogeology assesses the potential effects on land, soils, geology and hydrogeology from the Proposed Development during the construction and operational phases. The assessment was carried in accordance with appropriate national guidelines and legislation.

The Proposed Development is located on a 35.6 ha brownfield site on the northern banks of the River Boyne on the eastern margins of Drogheda with an industrial history dating back to 1938. The site is currently occupied by a magnesia and magnesium hydroxide production facility operated by PPL and comprises a Production Area in the west, a tank farm in the centre and a non-hazardous production waste Landfill Area in the east (c. 6.5 ha). There are three historic stockpiles containing non-hazardous production waste located at the site, numbered 1, 2 and 3, which are capped with an estimated 0.5 m of clay and top soil with grass cover. Additionally, there are three smaller material spoil heaps A, B and C located in the production area. The general site layout and locations of stockpiles 1, 2 and 3 and spoil heaps A, B and C are presented in Figure 7.1.

The site is operated in compliance with Industrial Emissions (IE) Licence Reg. No. P0376-02, issued by the EPA. At present, production activity at the facility has been scaled back pending the outcome of the current planning application.

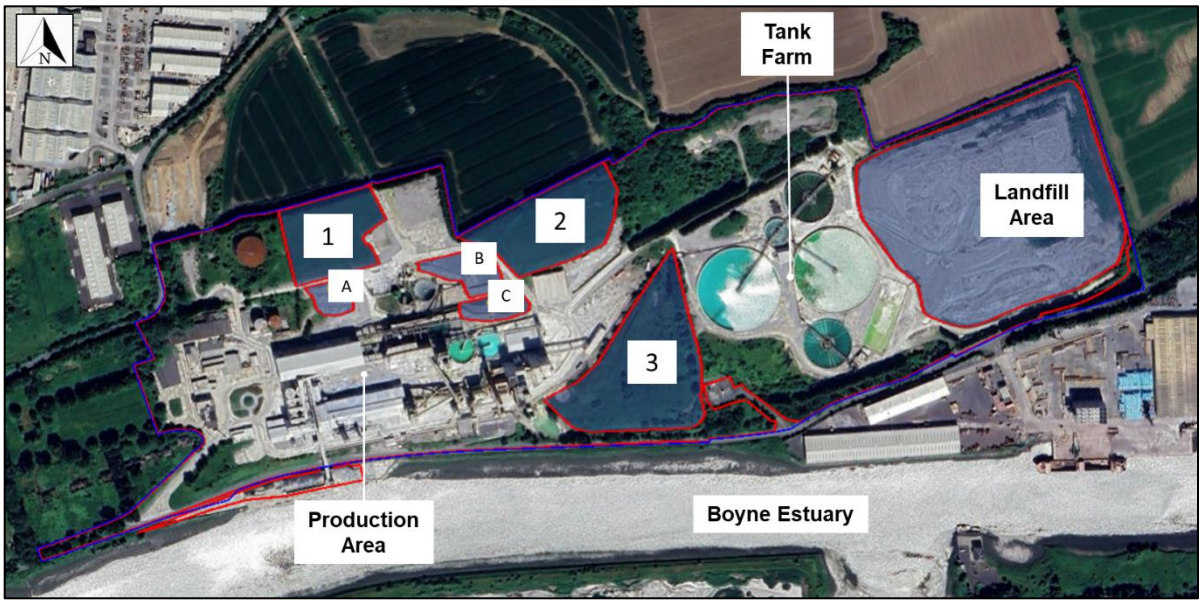

Figure 7.1: Aerial photograph showing general site layout and locations of stockpiles 1, 2 and 3 and spoil heaps A, B and C.

7.2 Receiving Environment

Based on a preliminary review of the geological / hydrogeological environment, a study area of 5km from the site boundary was selected to reflect the sensitivity of the subsurface, i.e. karst systems are present. Abstraction of water from both the River Boyne at Littlegrange and the disused Mell Quarry form a combined freshwater supply to the PPL site for industrial use. As such, the assessment includes a review of geological and hydrogeological conditions associated with the disused Mell Quarry, which is located c. 2.9 km to the west of the site. The abstraction of surface water at Littlegrange is considered further in Chapter 10 *Water and Wastewater.*

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Both previous and project specific ground investigations together with relevant environmental assessment reports and publically available information were consulted to establish baseline geological / hydrogeological conditions.

7.2.1 Ground Conditions

Ground conditions encountered in the Production Area during ground investigation are summarised as follows:

1. Made Ground/Fill material (~3.0m) is present across the majority of the site and underlies the main waste stockpiles;
2. Fluvial/glacial and marine sediments deposits including Gravelly CLAY that thins out from the northern area of the site as it approaches the Boyne River underlain by a granular stratum comprising GRAVEL or SAND or SAND and GRAVEL;
3. Depth to bedrock was proven in the north western corner of the site at depths of 21 m and 24 m bgl. Subsoil thickness up to a maximum depth of 18 m was proven in the southern part of the site where bedrock was not encountered during ground investigations. Limestone bedrock underlying the site of the Mornington and Tullyallen Formations likely consists of weathered material overlying more competent rock; and
4. There are no signs of karst features at the surface in the vicinity of the development site, probably because subsoils in the area are thick and therefore mask the potential presence of karst features in the underlying limestone bedrock.

According to the Radon Risk Map of Ireland, the northern part of the Production Area is located within a high radon area, with the remainder of the site is located within a medium radon area. Measures to protect buildings from radon in the ground are incorporated in the design of the project.

7.2.2 Soil Contamination

Localised areas of soil contamination were encountered during ground investigations. A Tier 2 Generic Quantitative Risk Assessment (GQRA) was completed by AtkinsRéalis[7] to assess potential risks to human health and environmental receptors associated with identified soil contamination. Findings of the GQRA are summarised as follows:

- Reported concentrations of contaminants are not considered to represent an unacceptable risk and the site is considered suitable for a commercial land use;
- A preliminary ground gas[8] risk assessment classified the site as a Characteristic Situation 1 (CS1), very low risk. Therefore, it is considered that ground gas does not pose a risk;
- The presence of asbestos (fragments and ACMs) within the Made Ground at several locations does pose a potential risk to construction workers during redevelopment of the site; and
- While there is no evidence of any impacts to existing groundwater quality, localised hydrocarbon contamination identified in the north-western part of the site has the potential to impact on groundwater in the future via vertical migration of contaminants. Any such groundwater impacts would pose a risk to surface water quality of the hydraulically connected Boyne Estuary. Therefore, the GQRA recommended remediation works to manage potential risks.

7.2.3 Hydrogeology

Groundwater monitoring indicates groundwater flow direction within the saturated sand and gravel (shallow groundwater within superficial deposits) generally follows topography and is from north-

[7] AtkinsRéalis (2024) "*Tier 2 Generic Quantitative Risk Assessment, Premier Periclase Ltd., Proposed CORE Development*", Document reference: 0088045DG0015.

[8] Ground gas includes methane (CH_4), carbon dioxide (CO_2), oxygen (O_2), carbon monoxide (CO) and hydrogen sulphide (H_2S)

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west towards south to south-east in the Production Area and more north to south across the Landfill Area. Data collected indicates that groundwater in the shallow aquifer underlying the site is tidally influenced and is hydraulically connected to the Boyne Estuary. Groundwater likely discharges along the southern site boundary directly to the Boyne Estuary via groundwater flow through the sand and gravel aquifer. Therefore, there is a viable pathway between groundwater underlying the site to the adjacent Boyne Estuary, which is designated a Special Area of Conservation (SAC) and a Special Protection Area (SPA).

The site is underlain by the **Locally Important Aquifer, which is moderately productive only in local zones (Lm)**, of the Mornington Formation and the **Regionally Important Aquifer - Karstified (diffuse) (Rkd)** of the Tullyallen Formation.

The site is located within the Water Framework Directive (WFD) groundwater body (GWB) '*Industrial Facility (P0784-01)*' which in turn is located within the larger Drogheda GWB and is bounded by the Boyne River to the south. The '*Industrial Facility (P0784-01)*' GWB comprises groundwater underlying and downgradient of IPC Licenced Facility P0784, which is located c. 400 m north-west of the development site. This GWB has been designated a '*Poor*' WFD status for the period 2016-2021, while the wider Drogheda GWB has attained a classification of '*Good*' WFD status for the same period.

While localised impacts on groundwater quality were observed down-hydraulic gradient of the on-site landfill and Stockpile 3, investigations completed and routine bi-annual groundwater monitoring indicate that water quality in the River Boyne is not impacted by site activities. This is likely due to substantial dilution occurring in the gravel aquifer and in the receiving Boyne Estuary.

The disused Mell Quarry comprises three quarry voids now filled with groundwater / surface water run-off. Freshwater is currently abstracted from one of the quarry voids for industrial use at the PPL facility. There are two source protection areas identified in close proximity with the eastern part of the quarry located within the Ballymakenny Group Water Scheme (GWS) Inner Protection Area (SI) and the Drybridge Public Water Supply (PWS) SI located c. 400 m to the west.

7.3 Characteristics of the Proposed Development

7.3.1 Construction Phase (including Demolition)

Activities during redevelopment and construction works with the potential to impact underlying soil, geology and hydrogeology are summarised below.

- **Decommissioning, deconstruction & demolition works:** Demolition works will be completed over a c. 20 month period. Works will be carried out in accordance with a detailed *Clean-Out Plan* and a *Demolition Method Statement* to ensure appropriate handling and waste management of hazardous substances in order to protect soil and groundwater quality. All groundwater monitoring wells located within the footprint of the Proposed Development will be decommissioned in line with best practice prior to demolition works to prevent them acting as preferential pathway for contaminant movement.
- **Soil Remediation Works:** will be completed as part of the Proposed Development to remove localised hotspots of hydrocarbon contamination and management of asbestos contaminated areas. Excavation works from Stockpiles 1, 2 and A, B and C will be supervised by an Environmental Consultant to allow visual screening of all material and segregation as required.
- **Earthworks:** Extensive earthworks and site re-grading are required as part of the Proposed Development. Cut and filling to achieve design levels shall be undertaken in accordance with appropriate industry standards. Re-use of appropriate site won material will be maximised.
- **Closure of on-site Landfill:** During earthworks, suitable material from Stockpile 1 (Lime kiln dust) and Stockpile 2 (Clinker / lime kiln dust) will be moved to the onsite licensed landfill, as well as minor volumes from other operational spoil heaps on site. The landfill will be capped according to EPA requirements and final contours and landscaping will be such that the finished slopes of the landfill are structurally stable and resistant to erosion.

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- **Storage and use of fuels / hazardous substances during construction works:** As detailed in the *Outline Construction Environmental Management Plan* (CEMP), measures in relation to use and storage of hazardous materials to protect soil and groundwater quality will be implemented.

7.3.2 Operational Phase

As the Proposed Development is located on an existing brownfield site there will be no net land take[9] as a result of the development. Activities during the operational phase with the potential to impact underlying soil, geology and hydrogeology are summarised below.

- **Storm Water Management:** Change in ground cover and installation of new storm water management incorporating Sustainable Urban Drainage System (SuDS) measures will result in a decrease in impervious ground cover at the site leading to increased rainwater infiltration and groundwater recharge and decreased storm water run-off compared to the current baseline conditions.
- **Firewater Run-off Retention:** Firewater run-off retention capacity installed as part of the redevelopment works will serve to protect soil and groundwater quality by preventing loss of potentially contaminated firewater run-off to ground in the event of a fire.
- **Continued Abstraction of Freshwater from Littlegrange / Mell Quarry Regime:** This registered water abstraction will remain as a source for industrial process use and will continue to be operated as per the current situation on site. Change to the groundwater regime in the vicinity of Mell Quarry is not predicted given that there will be no change to the existing freshwater abstraction regime.
- **Landfill Aftercare:** PPL will retain responsibility for the on-going management of the Landfill Area during the restoration and aftercare period in line with IE Licence requirements. Following closure of the inert landfill, a 10-year aftercare maintenance programme will be implemented, subject to agreement with the EPA.
- **Hazardous Material Storage:** In order to protect local soil and groundwater quality, hazardous materials stored at the Proposed Development will be stored and managed according to EPA '*IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities, 2004*'.

7.4 Potential Effects, Mitigation Measures and Monitoring of Effects

7.4.1 Construction Phase (including Demolition)

In order to minimise and, where possible, eliminate potential effects on relevant geological / hydrogeological features mitigation measures have been incorporated into construction planning for the Proposed Development. The *Outline Demolition Method Statement* and the *Outline CEMP* detail mitigation measures to be implemented to protect the local soil and groundwater quality. In addition, during the Construction Phase, the Contractor will comply with the conditions and limit values in the site's existing IE Licence to ensure there will be no significant effects on the receiving environment.

Prior to commencement of demolition works on-site, remaining groundwater monitoring wells will be sampled and analysed for contaminants of concern to establish the current background and baseline conditions. The wells will be monitored and sampled periodically during the demolition and construction works to identify any effect the works may have on the local groundwater quality. Groundwater Monitoring Reports will be prepared by the Environmental Consultant to document analytical results and trends.

[9] Land take is 'removal of productive land from potential agricultural or other beneficial uses' or 'the transformation of natural and semi-natural land to urban and other artificialized land'

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7.4.2 Operational Phase

In order to minimise and, where possible, eliminate potential effects on relevant geological / hydrogeological features mitigation measures have been incorporated into the design of the Proposed Development. In addition, following redevelopment, site operations will comply with the conditions and limit values detailed in the site's IE Licence to ensure there will be no significant effects on the surrounding environment.

During the operational phase of the development, routine groundwater monitoring will recommence with groundwater samples collected from groundwater monitoring wells as per IE licence requirements.

7.4.3 'Do Nothing' Scenario

Should the Proposed Development not proceed, PPL propose to continue to operate as a magnesia and magnesium hydroxide production facility in compliance with IE Licence Reg. No. P0376-02, issued by the EPA, with production reverting to peak production capacity.

In the 'Do Nothing' scenario, the PPL site would continue to operate in compliance with the site's IE Licence which includes conditions and limit values in order to ensure a high level of protection of human health and the environment. As such, no significant adverse effects on relevant geological / hydrogeological features are predicted.

7.5 Conclusion

The assessment concludes that the Proposed Development during the demolition and construction phases will not result in significant adverse residual effects on relevant geological and hydrogeological features. As such, there will be no significant effects on the Water Framework Directive status of the underlying groundwater body as a result of the construction of the Proposed Development.

Similarly, the assessment concludes that the Proposed Development during the operational phase will not result in significant adverse residual effects on relevant geological and hydrogeological features. As such, there will be no significant effects on the Water Framework Directive status of the underlying groundwater body as a result of the Proposed Development.

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8 Biodiversity

8.1 Introduction

The biodiversity (ecology) assessment included a review of available published data and desk studies to identify any features of ecological value, as well as field surveys. This enabled a consideration of the potential impacts of the Proposed Development on biodiversity (including aquatic and marine environments) and the prescription of mitigation measures to minimise identified effects.

8.2 Assessment Methodology

The biodiversity (ecology) assessment included review of available published data and desk studies to identify any features of ecological value, as well as a suite of field surveys of habitats, bats, ground mammals, breeding and wintering birds (including Species of Conservation Interest / Annex I birds), amphibians and reptiles to inform the Biodiversity assessment. Aquatic surveys and surveys for marine mammals were not undertaken owing to the fact that the Proposed Development is land based and does not directly intersect the aquatic environment.

The Zone of Influence (ZoI), or distance over which a likely significant effect may occur will differ across the key ecological receptors (habitats, fauna species, bats, breeding birds and wintering birds, fish and aquatic macroinvertebrates) and may depend on the predicted impacts and the potential impacted pathway(s), i.e. the potential impacts to bat roosts would not be expected to exceed approximately 200m while wintering birds could extend up to approximately 300m. These ZoI's are then used to determine the baseline for each ecological receptor. The Biodiversity Chapter considered the potential impacts of the Proposed Development, including the three auxiliary sites (namely Baltray, Mell Quarry and Littlegrange, for which no works are proposed) on biodiversity (including aquatic and marine environments) in the context of legislative requirements and guidance as described in the Biodiversity Chapter.

8.3 Receiving Environment

The receiving environment includes the existing main site, as well as three auxiliary sites (Littlegrange abstraction point, Mell Quarry holding pond, and the Baltray abstraction/discharge pipes that support it, but for which no works are proposed as part of the planning application). The majority of the Proposed Development is built ground with processing equipment and access roads. There are areas of the site that are grassland habitats with scrub and treelines along the site's periphery. Across the road from the southern site boundary is the River Boyne and the Boyne estuary.

The Proposed Development is in the vicinity of the following European designated sites, namely: River Boyne and River Blackwater SAC, Boyne Coast and Estuary SAC, Rockabill to Dalkey Island SAC, Lambay Island SAC, Boyne Estuary SPA, River Boyne and River Blackwater SPA, North-West Irish Sea SPA, River Nanny Estuary and Shore SPA, Dundalk Bay SPA, Stabannan – Braganstown SPA, and Rockabill SPA. The Proposed Development does not overlap with any European sites.

The baseline surveys and desktop study identified a number of habitats on site, most of which were highly disturbed and of limited ecological value. No groundwater dependant terrestrial Annex I habitats (QI freshwater habitats) will be impacted. A range of adjacent QI coastal habitats were noted outside Proposed Development boundary.

No protected plant species were identified or recorded within the Proposed Development, although some Flora Protection Order 2022 species were noted from the desktop study as being within 2km of the Proposed Development.

A range of Third Schedule non-native invasive species are noted within 2km of the Proposed Development.

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Low levels of bat activity were recorded during the surveys, with no tree roosts noted and no evidence of building roosts, therefore, a bat derogation is not required from NPWS in respect of the Proposed Development.

Some signs of badger activity were recorded, but no habitation features were identified on site.

There is no suitable habitat for otters within the Proposed Development site, but they are known to inhabit the nearby River Boyne for which they are a Qualifying Interest (QI) species of the River Boyne and River Blackwater SAC.

No evidence of amphibians or reptiles was recorded during the surveys and habitats within the Proposed Development site were noted as being unsuitable for amphibians.

A variety of common breeding birds were identified during the desktop study, including the Annex I listed kingfisher (Special Conservation Interest (SCI) species for the River Boyne and River Blackwater SPA), Roseate, Common and Arctic Terns (SCI species for the North West Irish Sea SPA and Rockabill SPA), however none were recorded on site during surveys as the habitat within the Proposed Development is not suitable for them. Other than Herring Gull, no other wintering bird species were recorded making use of the Proposed Development site as most are confined to estuarine mudflats of the River Boyne. Non SCI population (SCI species for the Wicklow Mountains SPA) Peregrine were recorded perching on site during surveys and may forage in the wider environment.

Aquatic surveys were not undertaken as there is no potential for them within the Proposed Development works. However, it is recognised that a potential impact, via unattenuated hydrological discharges could occur and as such they are assessed, based on desktop assessment and an IFI consultation response which noted the ecological importance of the River Boyne for a range of salmonid and QI species, which are considered in the assessment.

Similarly, marine mammal surveys were not undertaken as there is no potential for them within the Proposed Development works area. However, it is recognised that there is a potential impact, via unattenuated hydrological discharges that could occur and as such they are assessed, based on desktop assessment which noted a range of marine cetaceans and the NPWS 2019 Article 17 reporting on the status of protected species.

8.4 Do Nothing Scenario

In the case that the Proposed Development does not receive planning permission, it is likely that PPL will return to full scale production in accordance with the terms of its existing IE licence.

8.5 Potential/Predicted Impacts

The potential impacts of the Proposed Development on biodiversity for the Construction (including demolition) Phase are considered to be; habitat loss and fragmentation, habitat degradation / effects as a result of hydrological impacts, habitat degradation as a result of introducing / spreading non-native invasive species, disturbance/displacement, and habitat degradation as a result of air quality impacts.

The potential impacts on biodiversity assessed for the Operational Phase of the Proposed Development include; habitat loss and fragmentation, habitat degradation as a result of surface water quality, habitat degradation as a result of introducing / spreading non-native invasive species, disturbance/displacement, and direct injury/mortality.

8.6 Mitigation Measures

The Construction Phase will be undertaken in line with the requirements of the mitigation measures presented in the Biodiversity Chapter (Section 8.8) which includes measures from other environmental topics, all of which are included in the project Construction Environmental Management Plan (CEMP). The CEMP includes a number of procedures and plans that will mitigate impacts on biodiversity arising during the Construction Phase and these include:

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- Preconstruction checks to confirm potential changes in the baseline surveys such as badger surveys, changes to trees and the presence of Potential Roosts Features, presence of Third Schedule Invasive species etc. prior to any works commencing;
- Seasonal restrictions will be put in place for site clearance where protected species such as birds, bats, otters and birds have been identified;
- Measures (design mitigation and construction mitigation) to manage surface water discharges to water from the Proposed Development and construction compounds areas including those that might occur during flood events;
- Measures to manage incursion by protected species e.g. badger through specification of mammal-proof fencing and prevent direct injury/mortality to protected species;
- Measures to manage lighting spill on protected species – bats, badger, otter etc.;
- A landscape design to increase the native hedgerow around the perimeter and cap area of heretofore bare ground (where there are no new buildings occurring);
- An Environmental Emergency Response Plan will be developed to manage any incidents that have potential to impact the receiving environment;
- During the Operational Phase mitigation measures will be implemented, including but not limited to the following:
- Measures to manage and treat groundwater discharges to surface water during operation;
- Monitoring and maintenance of the Sustainable Urban Drainage Systems (SuDS) mitigation measures that will be installed during the Construction Phase to ensure there is no degradation of aquatic/coastal habitats and prey resource used by protected species – otter, bird's, marine mammals;
- Landscape design monitoring into the Operational Phase;
- Monitoring as required (and conditioned by separate EPA IEL licencing) updates to the Environmental Management System;
- Installation of lighting measures to ensure the operational light spill effects on protected species, bats, badger in particular are avoided.

8.7 Residual Effects

Following the full implementation of the mitigation measures prescribed in Sections 8.10.1 and section 8.10.2 of the EIAR Biodiversity Chapter, the Proposed Development will not result in any significant residual effects during the Construction (including demolition) Phase or the Operational Phase.

8.8 Appropriate Assessment

In addition, the potential impacts on designated European sites (Natura 2000 network of sites) are specifically assessed in the standalone Appropriate Assessment Screening Report and thereafter the Natura Impact Statement (NIS) (Scott Cawley Ltd., 2024a,b), which also forms part of the Proposed Development planning application. The conclusion of the NIS was that following an examination, analysis and evaluation of the relevant information, including in particular the nature of the predicted impacts from the Proposed Development and with the full implementation of the mitigation measures proposed therein, that the Proposed Development will not adversely affect (either directly or indirectly) the integrity of any European site, in view of their conservation objectives either alone or in combination with other plans or projects.

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9 Noise & Vibration

9.1 Introduction

Chapter 9 Noise and Vibration assesses the potential effects in relation to noise and vibration from the Proposed Development during the construction and operational phases. The assessment was carried in accordance with appropriate national guidelines and legislation.

9.2 Receiving Environment

Baseline noise surveys were carried out by PM Group in March 2024 at 5 no. noise sensitive locations (NSL) in the vicinity of the PPL site as shown in Figure 9.1.

Figure 9.1: Locations of Baseline Noise Monitoring Points (Site Boundary in red)

The results of the baseline noise survey would be typical of what would be expected of a site in the PPL's setting, with traffic being the dominant noise for the majority of measurements taken during the survey. None of the NSLs were classified as a 'Quiet Area' or an 'Area of Low Background Noise' as defined in the EPA's NG4 guidance note[10].

PPL carries out annual noise monitoring in accordance with its existing Industrial Emissions licence (Reg. No.: P0376-02). Details from the 2014 annual noise monitoring survey[11] have been provided in the EIAR to demonstrate baseline noise levels in the area when the site was in full scale production. The results of the daytime and night-time noise monitoring surveys carried out in 2014 demonstrated compliance with the daytime and night-time noise limits specified in the site's licence.

[10] EPA (2016). "*Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)*"

[11] Byrne Environmental Consulting Ltd. (2014). "*Technical Report for Premier Periclase Ltd., Boyne Road, Drogheda, Co. Louth. Annual Noise Monitoring Survey – 2014*"

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9.3 Characteristics of Proposed Development

9.3.1 Construction Phase (including Demolition)

As discussed previously in the EIAR NTS, demolition works will be carried out, comprising specialist designed explosive demolition. Explosive felling of large structures reduces the time required for operatives to work at height. It also reduces the duration of potential noise and vibration effects from demolition works.

The other plant and machinery proposed to be used during this phase would be typical of construction projects of this scale.

Vibration during the construction phase will be limited to the explosive demolition works, as well as breaking/hammering of existing structures and slabs. Piling is not proposed for the Proposed Development; pad and strip style foundations will be utilised.

9.3.2 Operational Phase

The Proposed Development will comprise both internal and external noise emitting sources.

In relation to internal sources, there will be 9 no. gas engines housed within the Energy Centre. There will be louvres on the external façade of each of the gas engine rooms to allow fresh air enter the room and reject air exit the room. This will lead to noise breakout from the rooms to the external environment.

All other internal noise sources will be located within rooms with no potential of significant noise being emitted to the external environment.

External noise sources will include cooling equipment such as air handling units and condensers, transformers in the substation and BESS, and the gas engine flue exhaust stacks. A full list of sources anticipated during the operational phase of the Proposed Development is provided in *Chapter 9 Noise and Vibration* of the EIAR.

There are a number of potential operating scenarios, all of which have been considered in the assessment included in the EIAR, as follows:

- Scenario 1a: Daytime and evening time operations when the daytime ambient temperature is below 24°C.
- Scenario 1b: Night- time operations when the daytime ambient temperature is below 24°C.
- Scenario 2a: Daytime and evening time operations when the daytime ambient temperature is above 24°C.
- Scenario 2b: Night-time operations when the daytime ambient temperature is above 24°C.

9.4 Potential Effects, Mitigation Measures and Monitoring of Effects

9.4.1 Construction Phase (including Demolition)

As assessment was carried out to determine the potential noise effects of the construction phase (including demolition) on the nearest NSLs shown in Figure 9.1. The assessment considered the plant and machinery to be used during the works, the activities being carried out and noise generated by construction traffic.

The assessment concluded that the construction phase of the Proposed Development with respect to noise will have a short-term, slight-moderate negative effect at NSL1, while it will have a short-term, not significant neutral effect at all other NSLs shown in Figure 9.1.

The assessment concluded that the construction phase of the Proposed Development with respect to vibration will have a neutral, short-term, and imperceptible effect at all sensitive receptors. Good liaison between the demolition team and neighbours (such as residents and commercial properties in the vicinity) will be established, and all neighbours will be made aware of the proposed dates and

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times of the explosive demolition works well in advance of such works occurring. Additionally, the explosive demolition works will be restricted to daytime hours (07:00-19:00).

9.4.2 Operational Phase

Predictive noise modelling of a number of possible operating scenarios has been carried out, using sound power level data provided by the design team for each of the potential noise sources included in the Proposed Development.

The assessment concluded that the Proposed Development, when considered in isolation, will comply with limits expected to be included in the site's Industrial Emissions licence for the site.

When added to the existing baseline noise levels, it is predicted that there will be a negligible effect at all NSLs shown in Figure 9.1 during the daytime (07:00-19:00) and evening time (19:00-23:00) periods. A minor effect is predicted at NSL1 only at night-time (23:00-07:00), with a negligible effect predicted at all other NSLs during this period.

In relation to vibration, the rotating uninterruptible Power Supply (UPS) and engines within the Energy Centre building have some potential for vibration but it is considered to be negligible. The bases for the equipment have been designed to prevent any possible vibration effects. There will be no other vibration sources associated with the operational phase of the Proposed Development, which could impact on the environment. On this basis, an assessment of potential vibration effects during the operational phase is not considered relevant for inclusion in the EIAR.

9.4.3 'Do Nothing' Scenario

Should the Proposed Development not go ahead, PPL could envisage a return to peak production at the existing facility. Therefore it is likely that noise levels at the site and in the vicinity of the site will return to noise levels similar to those described measured during the site's 2014 annual noise survey. As discussed, the site was in compliance with its Industrial Emissions Licence requirements when the site was in full scale production in 2014.

There will also be an reversion to higher levels of deliveries to and from the site should the site return to full scale production. Historically there were ca. 70 truck deliveries per day to the site.

9.5 Conclusion

With the mitigation measures outlined in Section 9.7.1 of the EIAR in place, the effects of the construction phase of the Proposed Development on the noise environment are likely to be short-term, negative and slight. There are no vibration effects associated with the construction phase of the development.

With the mitigation measures outlined in Section 9.7.2 of the EIAR in place, the effects of the operational phase of the Proposed Development on the noise environment are likely to be long-term, negative and imperceptible. The site will comply with the requirements of its Industrial Emissions Licence. There are no vibration effects associated with the operational phase of the development.

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10 Water & Wastewater

10.1 Introduction

Chapter 10 *Water and Wastewater* assesses the potential effects on the surrounding water environment from the Proposed Development during the construction and operational phases. The assessment was carried in accordance with appropriate national guidelines and legislation. This Chapter is written with reference to a detailed hydrological assessment completed by SLR Environmental Consulting Ltd. included in Attachment 10.1 of the EIAR Report.

10.2 Receiving Environment

Based on a review of the surrounding hydrological environment, the study area for the CORE development includes (see Figure 10.1):

- The Irish Sea as the receiving water body for treated wastewater from the site at IE Licensed emission point SW1 located c. 5.6 km east of the site;
- Surface water bodies located in the vicinity of the site including the Boyne Estuary located adjacent the southern site boundary;
- Surface water intake point from the River Boyne at Littlegrange located c. 7 km west of the site; and
- Seawater intake point from the Boyne Estuary and the storage reservoir at Baltray located c. 3 km east of the site.

The abstraction of freshwater from Mell Quarry as part of the Littlegrange / Mell Quarry abstraction regime is considered further in Chapter 7 *Soils, Geology and Hydrogeology*.

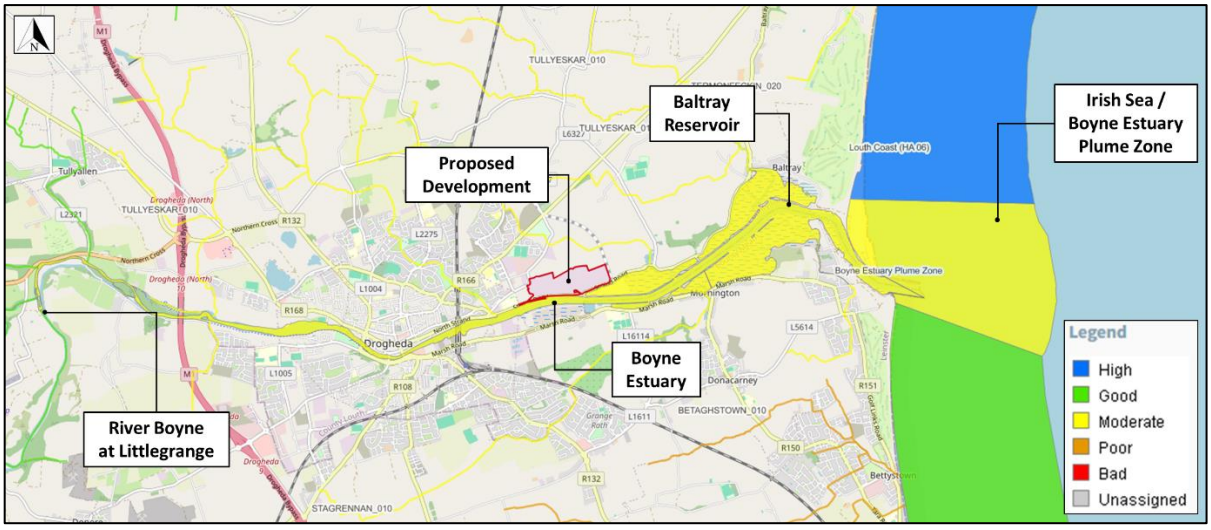

Figure 10.1: Study Area showing Water Framework Directive (WFD)[12] Status of relevant hydrological features (Source: EPA Maps)

In accordance with NRA Guidance (2008), the importance of relevant hydrological features within the study area is summarised in Table 10.1.

[12] Water Framework Directive (2000/60/EC) "*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*"

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Table 10.1: Importance Ratings for Relevant Hydrological Features

Hydrological Feature	Importance	Reason / Justification for Importance Rating
Boyne Estuary transitional water body	Extremely High	Designated SAC and SPA '*Moderate*' WFD status and '*At risk*' of failing to achieve WFD objectives by 2027
Boyne Estuary Plume Zone coastal water body **(North West Irish Sea SPA)**	Extremely High	Designated SPA Designated Bathing Areas and Shellfish Area within a 5 km radius of PPL treated effluent outfall (IE Licenced Emission Point SW1) '*Moderate*' WFD status and '*At risk*' of failing to achieve WFD objectives by 2027
River Boyne upstream of the site at Littlegrange	Extremely High	Designated an SAC, a Drinking Water Protected River and a Salmonid River '*Good*' WFD status and '*Not at risk*' of failing to achieve WFD objectives by 2027

10.3 Characteristics of the Proposed Development

An overview of water and wastewater management at the proposed development is presented below:

- **Sanitary wastewater discharges:** As per the current situation, sanitary wastewater collected from proposed buildings will be discharged to the existing Uisce Éireann foul sewer and will be conveyed to Drogheda municipal wastewater treatment plant (MWWTP) for treatment prior to ultimate discharge to the Boyne Estuary. Discharges comply with ELVs specified by the EPA in Drogheda's Wastewater Discharge Licence Reg. no. D0041-01 in accordance with relevant legislation to ensure environmental objectives for the receiving water body established under the WFD are achieved.
- **Process wastewater discharges:** As there is no manufacturing type facility proposed as part of the development for which this planning application relates, no process effluent will be generated following development.
- **Storm water discharges:** Proposed management of clean uncontaminated rainwater run-off is as follows:
  - A newly constructed storm water drainage network will be provided which will include Sustainable Drainage System (SuDS) elements and a number of attenuation structures. Rainfall run-off collected from the main part of the site will undergo clarification in the onsite settlement pond prior to mixing with seawater and ultimate discharge at licenced emission point SW1 in the Irish Sea. Discharges will comply with ELVs set by the EPA in accordance with the IE Directive to ensure a high level of protection of human health and the environment.
  - Due to the significant level difference at the main entrance, storm water from the access road will be directed to a soakaway to be located near the site entrance and allowed to infiltrate to groundwater. An overflow connection to the existing storm water outfall to the Boyne Estaury will be provided for cases where the inflow exceeds the 100-year rainfall event.

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- **Firewater Run-off Retention:** In accordance with best practice and EPA Guidance[13], firewater run-off retention is required at the proposed development. It is proposed to provide:
  - An underground attenuation / firewater retention tank under the Battery Energy Storage System (BESS) sized to contain contaminated water arising from a possible fire at the BESS along with a 1 in 10-year, 24-hour rainfall event.
  - A separate sewer system under the Data Centre and Energy Centre to collect potentially contaminated firewater run-off in the event of a fire at either of these locations, which will be pumped a to the firewater retention tank under the BESS.
- **Water Supply:**
  - **Potable Water:** As per the current situation, potable water facilities (canteen, toilets, etc.) will be supplied from Uisce Éireann mains water network. A confirmation of feasibility without the need for an upgrade was received from Uisce Éireann.
  - **Freshwater Supply:** As per the current situation, the existing freshwater abstraction will continue for use in industrial processes within the site and to fill a static firefighting storage tank to supply the firemain. Excess freshwater abstracted will overflow to the former seawater process tanks in the eastern part of the site which will, in turn, eventually overflow to the outfall weir on site for discharge to the Irish Sea via emission point SW1.
  - **Seawater Supply:** As per the current situation, the existing seawater abstraction at Baltray Reservoir will continue. Abstracted seawater will be mixed with storm water run-off from the site to comply with IE Licence conditions for storm water discharges and also used as a secondary supply to the firemain.
  - **Water for Closed Loop Cooling System:** This system will require de-mineralised water sourced from specialist suppliers. A complete system flush out approximately every 10 years for maintenance purposes will be required.
- **Flood Risk:** The main development site is located outside Flood Zone A and Flood Zone B. A Stage 1 Flood Risk Assessment concludes that the Proposed Development is not at risk from flooding.

10.4 Potential Effects, Mitigation Measures and Monitoring of Effects

10.4.1 Construction Phase (including Demolition)

In order to minimise and, where possible, eliminate potential effects on the surrounding water environment, mitigation measures have been incorporated into construction planning for the Proposed Development. The *Outline Demolition Method Statement* and the *Outline Construction Environmental Management Plan* (CEMP) detail mitigation measures to be implemented to protect the local water environment. In addition, during the Construction Phase, the Contractor will comply with the conditions and limit values in the site's existing IE Licence Reg. No. P0376-02 to ensure there will be no significant effects on the receiving hydrological environment.

10.4.2 Operational Phase

In order to minimise and, where possible, eliminate potential effects on the surrounding water environment, mitigation measures have been incorporated into the design of the Proposed Development. In addition, following redevelopment, site operations will comply with the conditions and limit values detailed in the site's IE Licence to ensure there will be no significant effects on the receiving hydrological environment.

[13] '*EPA Guidance on Retention Requirements for Firewater Run-off' (2019)*

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10.4.3 'Do Nothing' Scenario

Should the Proposed Development not proceed, PPL propose to continue to operate as a magnesia and magnesium hydroxide production facility in compliance with IE Licence Reg. No. P0376-02, issued by the EPA, with production reverting to peak production capacity.

In the 'Do Nothing' scenario, the PPL site would continue to operate in compliance with the site's IE Licence which includes conditions and limit values to ensure a high level of protection of human health and the environment. As such, no significant adverse effects on the local water environment are predicted.

10.5 Conclusion

The assessment concludes that no significant adverse residual effects on relevant hydrological features are predicted as a result of the construction phase (including demolition) of the Proposed Development. As such, construction phase activities will not affect the Water Framework Directive objective of relevant water bodies to achieve '*Good*' status by 2027.

Similarly, the assessment concludes that no significant adverse residual effects on relevant hydrological features are predicted as a result of the operational phase of the Proposed Development. As such, operational phase activities will not affect the Water Framework Directive objective of relevant water bodies to achieve '*Good*' status by 2027.

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11 Air Quality

11.1 Introduction

Chapter 11 Air Quality assesses the potential effects on air quality from the Proposed Development during the construction and operational phases. The assessment was carried in accordance with appropriate national guidelines and legislation.

The construction phase of the Proposed Development will involve demolition, excavation and earthmoving activities, temporary stockpiling of excavated materials along with associated construction traffic. These activities could give rise to dust emission during dry conditions. Construction vehicles, in addition to exhaust emissions, also have the potential to create occasional dust emissions, particularly during dry weather.

In relation to operational emissions to atmosphere, the Proposed Development includes nine 4.5 MW (electrical output) gas engines. The new engines will generate emissions of oxides of nitrogen (NO_x)[14] and carbon monoxide (CO). Air dispersion modelling was performed in order to predict the maximum ground level concentrations (GLCs) of pollutants in the waste gases from the engines to compare with the relevant Air Quality Standard (AQS) Limit Values.

It is noted that proposed gas engines will not operate continuously and operation will be constrained to operate only when it is beneficial when compared to the national grid or in reserve (expected to be approximately 5-10% of the hours of the year). As the actual hours of operation of the gas engines are unknown at this point, the air dispersion modelling has conservatively included all nine gas engines running continuously 24/7.

Other operational emissions to atmosphere from the Proposed Development are related to operational traffic emissions.

11.2 Receiving Environment

11.2.1 Ambient Air Quality

The Proposed Development along with the surrounding area is located within Air Quality Zone C[15]. The EPA produces an annual report on air quality, which details the results from monitoring stations throughout the various Air Quality Zones within Ireland. This information was used to derive background concentrations for NO_2, NO_x and CO.

11.2.2 Sensitive Receptors

The nearest special area of conservation (SAC) to the site is River Boyne and River Blackwater SAC (site code 002299) which is directly adjacent to the south of the site and connects to Boyne Coast and Estuary SAC (Site code 001957). The nearest Special Protection Area (SPA) to the site is Boyne Estuary SPA (004080) which overlaps the Boyne Coast and Estuary SAC and extends to the south. Existing Emissions to Atmosphere

Premier Periclase Limited (PPL) hold an IE Licence for the existing site (Reg. No.: P0376-02). Emission points included within this licence will not remain active in the Proposed Development. Should the Proposed Development not go ahead, PPL intend to resume full scale production in accordance with the terms of its existing Industrial Emissions (IE) licence. This is referred to as the 'Operational Baseline Scenario'. A return to the Operational Baseline Scenario would result in emissions to air from the existing, licensed sources and from operational activities at the PPL facility.

Three emission sources are included within the existing PPL IE licence, A1-1, A1-2 and A2-4. Only A2-4 has been in operation since 2014. This is a combined emission point from a lime kiln, multi

[14] Complex chemical reactions with ozone take place during which a portion of the Nitrogen Oxide is converted to Nitrogen Dioxide (NO_2)

[15] EPA Air Zones map. Available at: https://gis.epa.ie/EPAMaps [accessed April 2024].

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hearth furnaces and shaft kilns at the existing PPL site. Emissions of NO_2, NOx, Sulphur Dioxide (SO_2), CO, particulate matter (PM_{10}, $PM_{2.5}$) and hydrogen chloride (HCl) are emitted through emission point A2-4 from these sources.

Nearby emission sources to the Proposed Development include Boylan Print Limited (licence P0784-01) emission points which emit NO_x and CO. These emission points were included in the cumulative air dispersion modelling assessment.

11.3 Characteristics of the Proposed Development

11.3.1 Construction Phase (including Demolition)

The proposed works include the demolition of specified above ground structures. The duration of the demolition phase of the Proposed Development will be approximately 14 months. Emissions to air during this phase will arise from construction machinery and from:

- Demolition & removal of structures;
- Concrete slabs and foundations breakout across site;
- Crushing of demolition rubble;
- Infill of voids;
- Levelling of site;
- Construction Traffic.

The duration of the construction phase of the Proposed Development will be approximately 24 months. Emissions to air during this phase will arise from construction machinery and from:

- Excavation and earthmoving activities;
- Temporary stockpiling of excavated materials;
- Construction Traffic.

11.3.2 Operational Phase

Emission points

As part of the Proposed Development, it is planned to install nine 4.5 MW gas engines located in the Energy Centre, which provide power to the campus. Each engine has a dedicated vertical flue. Engine operation will be controlled to match the facilities requirement. The best available technology (Selective Catalytic Reduction (SCR) system) will be installed on the engine exhausts in order to reduce emission concentrations.

Reserve power is provided by the nine no. gas engines. It is noted that proposed gas engines will not operate continuously and operation will be constrained to operate only when it is beneficial when compared to the national grid or in reserve (expected to be approximately 5-10% of the year). The air dispersion modelling assessment has conservatively included all nine gas engines running continuously 24/7. Emission data was supplied by Clarke Energy (gas engine suppliers) and emissions are within the limits in the *European Union (Medium Combustion Plants) Regulations (2017)* for NO_x.

Operational Traffic

Refer to the Section 6.7 of *Chapter 6 Traffic and Transportation* for a description of the operational traffic increases as a result of the Proposed Development.

Odour

The likelihood of odours was assessed and discounted on the basis of the activities planned on this site, within the context of the planning application. There is no proposal for any systems on site, which would have odour emissions. Therefore, effects of odour on ambient air quality are not considered further.

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11.4 Potential Effects Mitigation Measures and Monitoring of Effects

11.4.1 Construction Phase (including Demolition)

The various construction activities could result in the temporary generation of dust, which could negatively affect ambient air quality in the absence of mitigation measures. In line with relevant guidance, the site was allocated to a risk category based on two factors:

- The scale and nature of the works, which determines the potential dust emission magnitude as small, medium or large;
- The sensitivity of the area to dust impacts, which is defined as low, medium or high sensitivity.

The dust risk associated with construction (including demolition) activities in the absence of mitigation measures are outlined in Table 11.1 below:

Table 11.1: Dust Risk Associated with Construction Activities

Potential Effect	Demolition	Earthworks	Construction	Track out
Dust Soiling	Medium Risk	Low Risk	Low Risk	Low Risk
Human Health	Medium Risk	Low Risk	Low Risk	Low Risk
Ecological	High Risk	High Risk	High Risk	High Risk

In order to effectively manage all potential environmental effects during the construction phase, an Outline Construction Environmental Management Plan (CEMP) has been prepared. A *Demolition Management Plan* has also been written detailing the key works and anticipated demolition methods. The CEMP sets out the responsibilities, environmental standards and requirements for the duration of the construction phase of the project. This includes the necessary environmental controls and mitigation measure to prevent/mitigate any potential effects on ambient air quality.

Dust monitoring units will be required to be in place at various locations on the site boundary perimeter during the construction phase. Regular inspections and audits of the construction activities will be carried out by the CMT to ensure that all mitigation measures have been implemented in full.

Any potential cumulative effects air emissions are anticipated to be minimal. Cumulative effects will be negative, not significant, temporary in nature and will only exist for the period that the construction phases overlap with each other.

Traffic

The effects on air quality due to the estimated construction phase traffic associated with the Proposed Development can be considered to be neutral, not significant and is short-term in terms of local air quality.

11.4.2 Operational Phase

Air dispersion Modelling

Air dispersion modelling was performed in order to predict the maximum ground level concentrations (GLCs) of pollutants (NO_2, NO_x and CO) from the nine 4.5 MW gas engines located in the Energy Centre engines to assess air quality impacts on human health and vegetation.

It is noted that in addition to the conservative approach that has been taken in the modelling regarding the gas engine operation (proposed gas engines will not operate continuously, only when it is beneficial when compared to the national grid or in reserve). As the actual hours of operation of the gas engines are unknown at this point the air dispersion modelling has conservatively included all nine gas engines running continuously 24/7.

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Additionally, Carbon monoxide emission rates modelled do not take into account the significant reduction which will be seen due to the Selective Catalytic Reduction (SCR system) which will be installed on the engine exhausts to reduce emission concentrations.

Air dispersion modelling results are outlined below:

- **Nitrogen Dioxide:** The maximum annual mean result for NO_2 was combined with the appropriate background concentration to give an overall maximum annual ground level concentration. The predicted environmental concentration represents 75% of the air quality standard for the protection of human health;
- **Sensitive Receptors (Human Health):** The maximum annual mean result for NO2 at sensitive receptors relating to human health was combined with the appropriate background concentration to give an overall maximum annual ground level concentration. The predicted environmental concentration represents 44% of the AQS for the protection of human health.
- **Sensitive Receptors (Ecological Sites):** The results of the air dispersion model show that the highest ground level concentration of NOx occurred at SR10 (River Boyne and River Blackwater SAC). In combination with the background NOx concentration the maximum annual average PEC River Boyne and River Blackwater SAC is equivalent to 92% of the AQS.
- **Carbon Monoxide:** The 8-hour mean result combined with the appropriate background concentrations for CO represents 34% of the air quality standard.

Based on the results, the operational effect of air emissions human health and vegetation from the Proposed Development can be deemed as negative and long-tern but not significant.

- Significant Photovoltaic (PV) arrays (3MW) on the Data Centre roof and southern façade, EC roof and on grade at capped Stockpile no. 3 and the Landfill;
- Building design with a high thermal performance of envelope;
- Passive water cooling will be utilised for the Data Centre from the existing freshwater infrastructure at the PPL site to limit cooling load;
- Monitoring of energy consumption of each fuel type will implemented

Additional cumulative air dispersion modelling analysis was carried out including the Boylan Print Limited (licence P0784-01) main emission points. Results fell below the AQS limits for protection of human health and for the protection of vegetation. Therefor the cumulative operational effects can be deemed as negative and long-tern but not significant.

Engine operation load will be minimised through the implementation of energy conservation design measures and renewable energy sources. This site will be governed by an IE Licence from the EPA and all emissions to atmosphere will be controlled under this. A number of proposed technologies to both limit energy consumption and maximise sustainable energy generation includes:

Traffic

The operating traffic associated with the Proposed Development can be considered to be neutral and long-term but not significant in terms of local air quality.

11.4.3 'Do Nothing Scenario

Construction Phase

In this scenario, the Proposed Development would not proceed as planned, and there would be no demolition or construction effects on the existing environment.

Therefore, this scenario can be considered to be a neutral and imperceptible effect on the environment with respect air quality.

Operational Phase

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Should the Proposed Development not go ahead, PPL intend to return to peak production at the facility under its current IE Licence. A return to the Operational Baseline Scenario would result in emissions to air of NO_2, NO_x, PM_{10}, $PM_{2.5}$, SO_2, CO and HCL from the operation of the lime kiln, multi hearth furnaces and shaft kilns at the existing PPL site. An air dispersion modelling assessment completed in 2014 is included as part of the EIAR and reflects the Operational Baseline Scenario.

The results of the air dispersion modelling assessment show GLCs of the pollutants arising from these emissions to air are in compliance with AQS. Therefore, this scenario can be considered to be a negative and long-term but not significant impact on air quality

11.5 Conclusion

With the mitigation measures outlined in Section 11.7.1 of the EIAR in place, the effects of the construction phase of the Proposed Development on air quality are likely to be short-term, negative and slight.

No significant effects were predicted for the operational phase of the Proposed Development. Based on predicted results and the conservative nature of the assessment, the effects on air quality are likely to be negative and long-term but not significant. With the mitigation measures outlined in Section 11.7.2 of the EIAR in place, the effects of the operational phase of the Proposed Development on the air quality are likely to be long-term, negative and imperceptible. The site will comply with the requirements of its Industrial Emissions Licence.

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12 Climate

12.1 Introduction

A climate impact assessment has been prepared to assess the potential for effect on climate from the proposed development during the construction and operational phases at the Premier Periclase Ltd. (PPL) Site at Boyne Avenue, Newtownstalaban, Drogheda, Co. Louth.

The proposed development to which this planning application relates is collectively known as 'Phase 1 CORE' and will comprise an Energy Centre and related infrastructure including Battery Storage, 3 MW of solar Photo Voltaic (PV) arrays, a 25.5 MW (operating capacity electrical load[16]) Data Centre Building, and all associated and ancillary development.

The innovative energy solutions proposed on site involves the use of a connection to the national electricity grid (referred to hereinafter as 'the grid') alongside onsite solar generation, on-site flexible generation and large-scale battery energy storage system (BESS), to deliver digital services and infrastructure with minimum carbon intensity, and with a clear pathway to net-zero Data Centre operations. This proposed development will act to actively support the electricity grid as opposed to other conventional large energy users whose operations tend to put a significant strain on the grid.

In accordance with the IEMA (2022) Guidance, this Climate Impact Assessment assesses:

- The extent to which the trajectory of GHG emissions from the project aligns with Ireland's GHG trajectory to net zero by 2050. For the purposes of this assessment, the Carbon Budgets and Sectoral Emission Ceilings set out for Ireland in the Climate Action Plan 2024 (CAP24) under the Low Carbon Development (Amendment) Act 2021 have been used to provide context for the assessment where appropriate.
- The level of mitigation taking place.

Demonstration of the proposed development's compliance with Section 15 of the Low Carbon Development (Amendment) Act 2021 is also assessed throughout the Climate Chapter of the EIAR as appropriate and further developed in Attachment 12.1 of the EIAR.

12.2 Characteristics of the proposed development

A detailed description of the proposed development is included in *Chapter 2 Description of Proposed Development* of this EIAR, which includes details of the demolition works required at the existing site, details of the construction of the new buildings and structures, and details of the various elements that will make up the proposed development when it will be operational.

The following subsections provide an overview of the various phases of the proposed development which have the potential to give rise to effects on climate.

12.2.1 Construction Phase

The proposed development will include the demolition of most of the main existing industrial structures on site, site clearance and remediation works, and the construction of the first phase of a new commercial and technology development on the overall landholding.

Some existing infrastructure at the existing site will be retained for the purpose of respecting the architectural heritage of the site and additionally, to facilitate the new, cleaner activities onsite where appropriate, including via the improvement of that existing infrastructure where beneficial and appropriate. Existing resources available on site will be utilised such as the 38 KV electricity connection, existing gas connection (4 Bar) from the Gas Networks Ireland 70 Bar main transmission line running through the site, and private water systems to support the proposed development.

[16] Operating Load equates to ca. 70% of Design Load (32 MW)

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12.2.2 Operational Phase

The proposed upgrades to existing infrastructure, alongside the integration of renewable energy sources and advanced energy storage systems will provide a new infrastructure line-up at the sustainably powered enterprise campus which will have significantly decarbonised (trending towards fully decarbonised) electrical and heat networks. The first tenant and Large Energy User (LEU) for the campus will be the 32 MW (design load) Data Centre which is included in the proposed development to which this application relates.

The CORE Energy Centre will play a pivotal role in supporting sustainable and regenerative energy systems both within the campus itself, and also within the wider community. The campus will adopt a number of technologies to both limit energy consumption and maximise sustainable energy generation. The proposal includes a significant solar photovoltaic (PV) array on the Data Centre Building roof and southern façade, Energy Centre roof and on grade at capped Stockpile no. 3 and the Landfill.

Where fossil fuels are required, the scheme will seek to minimise the environmental effects through the use of less carbon-intensive natural gas engines, instead of more widely used diesel generators.

The CORE Energy Centre operates at Medium Voltage (MV) and incorporates power electronics and switchgear that operate as the manifold for the flows of electricity from all assets on site (a mix of onsite renewable generation, energy storage, gas generation) and the grid.

PPL will optimise the import, storage or production of energy, based on real-time emissions constraints to significantly decarbonise industrial operations, and provide real-time flexibility to the energy systems.

The proposed development will operate both as a Consumer and Producer of electricity. Electricity will be consumed when the grid's fuel-mix is predominantly renewable and electricity demand on the grid is low which will usually occur at night. At peak electricity demand, the grid is most vulnerable and at its highest carbon intensity due to the increased demand requiring older more carbon intense national energy generators (e.g. coal) to be switched on to provide the necessary extra power to meet demand. At these times, the proposed development will provide a flexible demand response and support the loads with its own assets.

The CORE Energy Centre, coupled with renewable electricity generation, will enable the reduction/elimination of emissions in real-time (hour-for-hour) on the campus. The CORE Energy Centre also has the ability to potentially provide a comprehensive set of grid services enabling deeper penetration of renewable energy supporting the decarbonisation of Ireland's grid.

An overview of the proposed technologies to be employed at the proposed development is illustrated in Figure 12.1.

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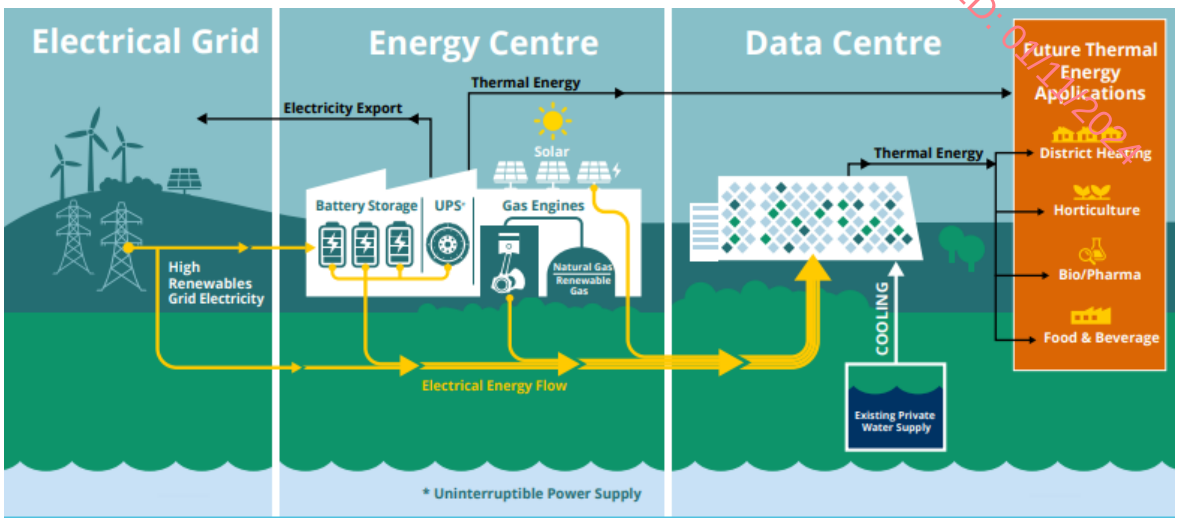

Figure 12.1: Overview of the Energy Technology to be employed at the Proposed Development

12.3 Assessment Methodology

The effect of the proposed development on climate is assessed through a GHG Emissions Assessment of the nature and magnitude of GHG emissions including:

- an Embodied Carbon Assessment for the construction phase of the proposed development;
- an Operational Carbon Assessment for the operational phase of the proposed development

Two scenarios are included in the GHG Emissions Assessments as described in Table 12.1.

Table 12.1: Explanation of the Baseline (Business as Usual) and Proposed Development Assessment Scenarios Used for the GHG Emissions Assessments

	Embodied Carbon Assessment	Operational Carbon Assessment
Business-As-Usual (BAU)	An alternative basic project design for a development of this type with no carbon saving initiatives included.	The existing PPL Magnesia and Magnesium Hydroxide Production Facility at peak production (refer to Section 12.7).
Proposed Development	Proposed development with carbon saving initiatives included to reduce embodied carbon.	Proposed development including energy technology to reduce operational carbon.

The vulnerability of the proposed development to climate change is assessed through a Climate Change Resilience Assessment for the construction phase and the operational phase of the proposed development.

12.3.1 Construction Phase - Embodied Carbon Assessment

An embodied carbon assessment has been completed by AtkinsRéalis using the OneClickLCA Carbon tool for the proposed development and is summarised within the Climate Chapter. All information relating to the embodied carbon assessment presented herein has been provided by AtkinsRéalis.

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The embodied carbon assessment for the proposed development was categorised into four groups as follows:

- The Energy Centre
- The Data Centre
- The Bio-Solar Façade (Data Centre)
- The External Works (Landscaping/Campus)

A minimum carbon reduction target of 10% for upfront carbon emissions from the BAU scenario was set for the project based on the CAP24 key target to decrease embodied carbon in construction materials produced and used in Ireland through product substitution by 10% before 2025. Upfront carbon emissions are GHG emissions associated with materials and construction processes up to practical completion (life cycle modules A0–A5) and are seen to make up the majority of the total embodied carbon in the study.

The carbon reduction strategies implemented in the proposed development primarily relate to material specifications and have been integrated into the design including:

- Concrete Specification: The proposed development will specify a concrete mixture with 10% Cement replacement for foundations and beams (CEMII/A-V) and 60% Cement replacement for structural elements (CEMIII/A).
- Steel Rebar Specification: The Proposed Development will specify the use of rebar which is made of 95% recycled steel, or equivalent.
- Design Efficiency: As part of the effort to reduce carbon emissions by minimising materials usage, one enhancement proposal included in the proposed development involves improving design efficiency to decrease steel tonnage by 10%.
- PV Panels Specification: The proposed development will specify the use of PV panels with 89% recycled content (assumed to be procured from Europe).

12.3.2 Operational Carbon Assessment

The nature and magnitude of GHG emissions associated with the operational phase of the proposed development are presented within the Climate Chapter of the EIAR based on the *Energy and Emissions Modelling Report* which accompanies this planning application. The modelling has been completed by Gyrogy in co-operation with Baringa (leading energy consultancy experts in energy system analysis).

Energy models of the Integrated Single Electricity Market (ISEM) for Ireland and Northern Ireland were prepared to simulate the performance of the energy infrastructure and energy technology solutions included in the Proposed Development. The energy modelling was completed with the use of PLEXOS, a modelling software designed for intricate energy system simulations.

12.3.3 Decommissioning Phase Carbon

Considering the design life of the proposed development (assumed to be at least 60 years), future technological advancement, accelerated future carbon reduction and increase in uptake of circular economy principles in Ireland, it is not possible to predict when the decommissioning of the proposed development would occur and what carbon emissions this would generate.

As the required data to allow a quantitative GHG emissions estimate of the decommissioning phase is not available at this stage, the GHG emissions are qualitatively assessed. This approach is in line with IEMA (2022) Guidance which states *'a high-level or qualitative GHG assessment for certain project elements or activities can be carried out as long as it is justified'.*

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12.3.4 GHG Significance Criteria

The IEMA (2022) Guidance states that "the crux of significance therefore is not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050".

The significance criteria set out in the IEMA (2022) and TII (2022) Guidance has been used for the impact assessment significance criteria.

The Carbon Budgets and Sectoral Emission Ceilings set out for Ireland in the CAP24 under the Low Carbon Development (Amendment) Act 2021 (refer to Section 12.6.1 of the Climate Chapter) have been used to provide context for the assessment where appropriate in accordance with the IEMA (2022) Guidance.

12.3.5 Climate Change Resilience Assessment

Risk Assessment Method

The aim of the Climate Change Resilience Assessment is to identify and minimise the vulnerability of the proposed development to climate change.

The assessment is based on the approach set out in the guidance documents by the European Commission (2013) *"Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment" and IEMA (2020) "Climate Change Resilience and Adaptation".*

The Climate Change Resilience Assessment completed in the Climate Chapter takes cognisance of the climate adaption and mitigation measures included in the National Adaption Framework (NAF) and the Louth County Development Plan 2021 to 2027 (LCDP).

A Climate Change Resilience Risk Assessment has been completed to identify potential climate change impact hazards which may affect the operational phase of the proposed development, and considers their potential consequences and likelihood of occurrence. Appropriate control/mitigation measures have been identified and incorporated into the design of the proposed development to reduce these hazards.

12.3.6 Potential Cumulative Effects

The (IEMA, 2010) Guidance states that GHG emissions from all projects will contribute to climate change, the largest interrelated cumulative environmental effect.

It is not appropriate to limit a cumulative impact assessment to local developments. Instead, the GHG assessment addresses the cumulative effect at a national level by considering the proposed development in the context of Ireland's national GHG emissions and national carbon reduction targets for the construction and operational phases of the project. This contextualisation of GHG emissions by its nature incorporates the cumulative contributions of other GHG sources which make up that context.

The cumulative effects of the cessation of the existing operations at the PPL site are assessed under the '*Potential Operational Effects'*. This section provides a contrast between the proposed development operational carbon effects and that of the *'Do Nothing Scenario'* where the existing PPL site would return to peak production of magnesia products at the facility should the proposed development not go ahead.

Potential Future Phases of CORE

Potential future phases of CORE will be subject to separate planning applications and environmental impact assessment. Future phases of the development may require additional mitigation measures to ensure the mitigation of potential effects on Climate. These measures will be identified and detailed as part of the EIAR for any additional respective phases of the development to ensure the potential future phases do not have any significant adverse effects with respect to Climate.

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12.4 Potential Effects – Do Nothing Scenario

In the case where the Proposed Development does not receive planning permission, it is likely that PPL will return to full scale production in accordance with the terms of its existing IE licence.

As discussed previously, the existing PPL facility has faced economic challenges in recent years. Due to this production at the PPL facility has been ramped down in recent years, but at no point did activities cease on site. A key factor in the scaling back of operations on site was the extreme rises in the price of gas resulting from Russia's invasion of Ukraine. Gas prices have now fallen from their 2022 peak[17] and are stabilising, meaning that a return to full scale production on site within the terms of the existing IE licence would be economically viable into the future. There is also continued strong demand for the type of products produced on the PPL site.

12.4.1 Construction Phase

In the scenario the proposed development would not proceed as planned, there would be no construction carbon emissions associated with the proposed development.

Therefore, this scenario can be considered **neutral and imperceptible** effect on climate due to the carbon emissions associated with the construction phase.

12.4.2 Operational Phase

As discussed above, should the proposed development not go ahead, PPL could envisage a return to peak production of magnesia products at the facility in accordance with the terms of the site's IE Licence and GHG permit.

In this scenario production would ramp up steadily to peak production which would generate approximately 215,900 tCO_2e from the facility annually.

Therefore, this scenario can be considered to have a **negative, significant, and long-term** effect on climate due to the carbon emissions associated with the operation of the existing facility at peak production.

12.5 Potential Construction Effects

12.5.1 Embodied Carbon

The construction phase of the proposed development will give rise to GHG emissions. To assess the effects of GHG emissions on climate, the embodied carbon associated with the construction phase of the proposed development has been estimated in the embodied carbon assessment for the four groups (Energy Centre, Data Centre, Bio-Solar Façade, and External Works) included in the assessment.

For the Energy Centre, the Business as Usual upfront carbon emissions (with no carbon saving initiatives included) are 10,195 tCO_2, and when incorporating the carbon reduction enhancements included with the proposed development, the upfront carbon estimate for the proposed development (enhanced) Energy Centre is reduced by 30% to 7,165 tCO_2.

For the Data Centre, the Business as Usual upfront carbon emissions (with no carbon saving initiatives included) are 42,222 tCO_2, and when incorporating the carbon reduction enhancements, the upfront carbon estimate for the proposed development (enhanced) Data Centre is reduced by 21% to 33,267 tCO_2.

In relation to the Solar Façade on the southern face of the Data Centre, Business as Usual carbon emissions are 1,147 tCO_2, and when incorporating the carbon reduction enhancements, the upfront carbon estimate for the proposed development (enhanced) Bio-Solar Façade is reduced by 16% to 967 tCO_2.

[17] SEAI Average gas prices to business (seai.ie)

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There have been no carbon reduction enhancements yet agreed for the External Works at this stage of project design and therefore there is no reduction from the Business as Usual scenario to the proposed development scenario.

Overall the enhancements included in the proposed development demonstrate a notable 19% reduction in upfront carbon emissions compared to the Business as Usual model.

These reductions have been achieved as a result of the carbon reduction strategies which have been incorporated into the design of the proposed development: concrete specification, steel rebar fabrication, structural steel enhancements and recycled content of PV panels.

Alignment with the Climate Action and Low Carbon Development (Amendment) Act 2021 and CAP24

The following key targets have been set for the Industrial Sector in relation to embodied carbon in construction materials:

- By 2025: Decrease by 10% for materials produced and used in Ireland.
- By 2030: Decrease by 30% for materials produced and used in Ireland.

While the key targets have been set for the Industrial Sector as a whole and are not mandatory targets on a specific project basis, these reduction targets have been used as a guidance to set the upfront carbon emissions reduction target of 10% for the proposed development.

The carbon reduction strategies for the proposed development will result in a 19% reduction in upfront carbon emissions from the BAU scenario.

It is noted that the use of recycled steel will be required to be sourced from outside of Ireland as it is not currently manufactured here. In addition the PV panels included in the proposed development will not be manufactured in Ireland. Therefore reductions of upfront carbon achieved due to the carbon reductions made in relation to steel and the PV panels will not contribute directly to the Carbon Budget targets set out for a reduction of embodied carbon from materials produced and used within Ireland. However, the proposed development will increase the demand for recycled steel and PV panels within Ireland therefore contributing positively to the CAP24 key targets for the reduction of embodied carbon associated with the Industrial Sector.

Alignment with Ireland's Sectoral Emissions Ceilings for Industry

As the majority of the construction phase of the proposed development is likely to take place between the years 2026 - 2028, the embodied carbon associated with the proposed development is compared against Ireland's defined carbon budget period of 2026 to 2030. The Industry Sector Carbon Budget for this period is 24 $MtCO_2$. Therefore, the total upfront embodied carbon calculated for the proposed development (53,062 t CO_2e) would constitute 0.2% of this carbon budget for the Industry Sector.

The results of the embodied carbon assessment demonstrate tangible carbon savings achieved through selected carbon reduction interventions, paving the way for a more sustainable development. The project is committed to meeting carbon reduction targets set by industry benchmarks underscoring its dedication to environmental stewardship and responsible construction practices.

As demonstrated above, the proposed development is firmly aligned with direction of national and local policy including the Climate Action and Low Carbon Development (Amendment) Act 2021, CAP24, Ireland's Long Term Strategy on GHG reductions 2024, the NAF, Ireland's national climate objective, and the LCDP 2021 - 2027.

Having regard to the overall reductions of embodied carbon for the project, we consider the proposed development will have a '*minor adverse'* impact as the initiatives being implemented by the applicant represent industry best practice and support the achievement of reduction in the total embodied carbon in the industry sector and "*Ireland's trajectory towards net Zero*".

In addition, it is noted that the embodied carbon emissions will be once-off and unavoidable carbon emissions associated with development. Therefore, it is considered the overall effects of the total

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embodied carbon emissions, having regard to national industry carbon targets set-out in the CAP24 are considered '*minor adverse'* and therefore '*not significant'* in accordance with the criteria set out in the IEMA (2022) Guidance.

12.5.2 Climate Change Resilience Assessment

Examples of climate risks associated with the construction phase of the proposed development include:

- Health and Safety risks to workforce in severe weather events;
- Obstruction of access to the construction site due to consequences of a severe weather event (storms, flooding, snow, ice);
- Delays caused by unsuitable conditions for certain construction activities due to extremes of hot, wet or cold weather;
- Damage of construction equipment, plant, materials and temporary construction buildings/facilities due to stormy weather.

The above climate change resilience effects during construction are expected to be potentially negative but imperceptible and short term (in accordance with the impact assessment criteria provided in Section 3.7.3 of the EPA (2022) Guidance) if correctly managed by the Construction Management Team.

12.6 Potential Operational Effects

12.6.1 Operational Carbon

The operation of the proposed development will generate GHG emissions in the following ways:

- The operation of the tertiary reserve gas engines;
- Indirect GHG emissions from electricity imported from the national grid;
- Consumption of water (excluded from calculation due to minimal use).

Mitigation and offsetting of operational GHG emissions is an inherent part of the design of the proposed development. As described in detail in the *Energy and Emissions Modelling Report* included as Attachment X with this EIAR, the proposed development follows a decarbonisation pathway to net-zero GHG emissions from operations that aligns with the EPA (2022) Guidelines in relation to mitigation and offsetting of operational GHG emissions.

The proposed development has firstly included mitigation as part of the development design (change of activity from current operations), systematic (cumulative) decarbonisation second (inclusion of on-site assets to generate/provide lower carbon energy than that of the grid), and finally will look to offset or compensate for the remaining operational GHG emissions through the use of PPA's as required.

Alignment with the Climate Action and Low Carbon Development (Amendment) Act 2021 and CAP24

CAP24 Chapter 12: Electricity

The impact/contribution of the proposed development on the three main measures highlighted in the CAP24 for the Electricity Sector is described here:

1. Accelerate Renewable Energy Generation

   The proposed development will help to strengthen the electricity system by using the existing grid infrastructure (38kV) to deliver renewable generation from solar as well as energy storage in the BESS.

   The proposed development will support a number of grid services (enhanced frequency response, reserve power, and voltage support) required under Eirgrid's *Delivering a Secure,*

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Sustainable Electricity System (DS3) program which are required to address the inherent challenges posed by high penetration of renewable energy sources into the grid.

2. Deliver a Flexible System

   The proposed development will produce its own electricity on-site when it can out-perform the carbon intensity of centralised power plants supplying the national grid.

   The proposed CORE Energy Centre has been designed to deliver the full gambit of grid services to provide the potential for power generation from low or zero carbon sources and will be available to displace existing carbon heavy energy sources by the expected opening year 2028, pending planning permission. The gas engines running on natural gas can generate electricity more efficiently and with lower GHG emissions than all centralised peat, coal, oil and open cycle gas turbine (OCGT) national generators suppling the grid.

3. Manage Electricity Demand Growth

   Managing Ireland's growing electricity demand effectively will necessitate greater demand flexibility, enhanced infrastructure, and supportive policies. A crucial strategy will involve limiting peak demand during times when renewable resources are scarce, emphasising the importance of improved flexibility and demand management techniques. In the immediate and medium term, the expanding demand from LEUs, like Data Centres, will need to be carefully managed to safeguard the security of supply and align with established carbon budget initiatives.

   The proposed development supports the Data Centre as a LEU to achieve carbon-free demand in Ireland so that electricity decarbonisation, demand efficiency and flexibility, and enterprise growth can go hand in hand. This will contribute to the CAP targets to achieve 20% to 30% Demand flexibility by 2030.

   The proposed development could potentially export surplus lower carbon electricity onto the grid when possible. Therefore, there is a significant benefit of reduced GHG emissions associated with power on the grid achieved as a result of the flexible demand response and export of power from the proposed development.

CAP24 Chapter 13: Industry

The applicable emissions ceiling in the final year of the 2026 – 2030 carbon budget period (2030) is set at 4 $MtCO_2$.

The 'Do Nothing Scenario' industrial GHG emissions (215,900 tCO2) equates to 5% of the emissions ceiling for industry in 2030 (carbon budget 4 MtCO2).

There would be 66,300 tCO2 operational GHG emissions associated with the operational of the proposed development prior to the proposed mitigation measures which equates to 2% of the emissions ceiling for industry in 2030 (carbon budget 4 MtCO2). This is the GHG emissions which would be generated if all electricity required for operation of the Data Centre was imported from the grid.

The inclusion of the proposed mitigation measures with the proposed development as described under the first three steps of the decarbonisation pathway in Section 12.9.1 of the EIAR (implementation of a wind PPA by the Data Centre tenant alongside the use of the on-site assets (solar PV panels, batteries, and gas engines)) will lead to a 73% reduction in GHG emissions compared to that which would be generated if all electricity required for operation of the Data Centre was imported from the grid (66,300 tCO2).

The total GHG emissions from the operation of the proposed development with these mitigation measures (17,750 tCO2) equates to 0.4% of the emissions ceiling for industry in 2030 (carbon budget 4 MtCO2).

The implementation of these various mitigation steps as part of the site's decarbonisation pathway show significant reductions in GHG emissions which can be achieved by the use of the on-site assets in a flexible demand response compared to importing electricity from the grid.

As demonstrated in this Section, the proposed development is firmly aligned with national and local policy including the Climate Action and Low Carbon Development (Amendment) Act 2021, CAP24,

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Ireland's Long Term Strategy on GHG reductions 2024, the NAF, Ireland's national climate objective, and the LCDP 2021 - 2027. This is because the proposed infrastructure has been designed to achieve low to no carbon power consumption in real-time allowing PPL to become a leader in industrial decarbonisation. The proposed development will have a positive effect in helping Ireland to reduce GHG emissions in both the Industry and Electricity sectors.

Therefore, the significance of operational GHG emissions from the proposed development is considered as '*negligible*' and therefore *'not significant'* in accordance with the criteria set out in the IEAM (2022) Guidance. A project with '*negligible*' effects has: GHG impacts which are mitigated beyond design standards, gone well beyond existing and emerging policy requirements; and is well *'ahead of the curve'* for Ireland's trajectory towards net zero.

12.6.2 Climate Change Resilience Assessment

Climate resilience for the operational phase of the proposed development has been assessed in the form of a Climate Change Resilience Risk Assessment which can be found in Appendix C of the EIAR.

The risk assessment identifies project specific climate risks, considers the implications for the buildings and workers; spaces; infrastructure; services and biodiversity, sets out the magnitude of this risk, and measures which have been adopted in the design of the proposed development to avoid or reduce these risks, where applicable.

The net risk for identified hazards in the climate resilience risk assessment is considered to be low for all climate hazards following the integration of controls in the design of the proposed development where relevant to mitigate climate variable risk. The proposed development meets the requirements of national and local policy regarding climate adaptation and resilience as set out in the NAF and LCDP 2021 - 2027.

Therefore, it is considered that the impact of climate change on the operational phase of the proposed development will be neutral, non-significant and long-term in accordance with the impact assessment criteria provided in the EPA (2022) Guidance.

12.7 Potential Decommissioning Effects

12.7.1 GHG Assessment

It is not possible to accurately predict what future long-term changes and or which adaptions would occur at the site.

It is considered decommissioning would be undertaken in a timeframe and scale similar to that of the construction activities. However, there will be no embodied carbon emissions associated with decommissioning, only potential GHG emissions associated with the decommissioning activities on site and that of the waste materials generated.

Decommissioning will be undertaken in compliance with relevant national and local climate policy at the time.

Based on the above, it is considered that the potential GHG emissions to be generated from the decommissioning of the proposed development will be 'negligible' and therefore 'not significant' in accordance with the IEMA (2022) Guidance significance criteria.

12.7.2 Climate Change Resilience Assessment

Decommissioning activities will be somewhat similar to the construction activities but will not involve excavation or in-ground works.

Receptors including the construction workforce, equipment, vehicles, materials and workplace may be vulnerable to a range of climate risks during the decommissioning phase. Examples of these climate risks include:

- Health and Safety risks to workforce in severe weather events;

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- Obstruction of access to the construction site due to consequences of a severe weather event (storms, flooding, snow, ice);
- Delays caused by unsuitable conditions for certain construction activities due to extremes of hot, wet or cold weather;
- Damage of construction equipment, plant, materials and temporary construction buildings/facilities due to stormy weather.

The above climate change resilience effects during decommissioning are expected to be potentially negative but imperceptible and short term in accordance with the impact assessment criteria provided in the EPA (2022) Guidance. They will be managed by the Construction Management Team with appropriate measures as dictated by weather forecasts during the decommissioning phase.

12.8 Mitigation Measures and Monitoring

12.8.1 Construction Phase

Embodied Carbon Mitigation Measures

A number of carbon reduction strategies have been incorporated into the design of the proposed development relating to concrete specification, steel rebar and structural steel enhancements, and PV panel recycled content.

The energy consumption associated with the construction phase of the proposed development will be minimised through the implementation of energy conservation measures where possible.

Contractors will be required to complete; pre-construction checks on vehicles; pre-start checklists for daily checks; and service of plant and machinery to ensure there is no excessive pollution from plant and machinery.

The construction project contractor will operate a continuous incentive scheme to encourage car-pooling and lift sharing by all construction staff, with eligibility for the incentive scheme based on a minimum vehicle occupancy rate of two construction staff per vehicle.

Embodied Carbon Monitoring

As the design of the proposed development progresses, ongoing monitoring and optimisation of embodied carbon emissions will be implemented to ensure continued alignment with the projects carbon reduction goals and industry standards. The procurement stage will focus on implementing the following elements:

- Responsibly sourced materials with certificates to prove their sustainable supply chain credentials;
- Materials with higher recycled content;
- Any re-useable/repurposed materials;
- Favouring products with Environmental Product Declarations (EPDs) to allow a clear comparison between different products, giving priority to products with a lower embodied carbon impact.

Contractors will be required to monitor and report energy usage during construction including fuel, water, and transport emissions for materials and staff commuting to and from the site.

Climate Change Resilience Assessment Mitigation Measures

Climate change resilience impacts will be managed by the Construction Management Team with appropriate measures as dictated by weather forecasts.

Climate Change Resilience Assessment Monitoring

No specific monitoring is proposed at this time as mitigation measures for climate hazards will only be implemented in a severe weather event.

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12.8.2 Operational Phase

Operational Carbon Mitigation Measures

The mitigation measures implemented to ensure minimal generation of GHGs from the operation of the proposed development are included as part of the design of the proposed energy infrastructure at the site and are described in detail under Section 12.2.2 and 12.9.1 of the Climate Chapter.

These sections include details on the measures included in the design of the proposed development with the aim of achieving net-zero emissions on an hourly basis.

In addition, an Energy Use Intensity (EUI) reduction, in comparison to the Building Regulations (Part L Amendment) Regulations (S.I. No. 538 of 2017), is being targeted for the Data Centre.

The total rated thermal input (MW_{th}) from the proposed gas engines will exceed 20 MW_{th} and therefore the CORE campus will require a GHG permit which will control the emissions of CO_2 from this plant under the European Commission (EC) (Greenhouse Gas Emissions Trading) Regulations 2012, (S.I. No. 490 of 2012) and amending Regulations.

In addition, the following measures are included in the proposed development in relation to reducing water usage and therefore mitigating carbon emissions from water usage:

- Use of dry cooling for most of the year and water-based evaporative cooling only during peak summer temperatures allows for a more efficient cooling system contributing to reduction in freshwater use;
- Existing freshwater abstraction point from Littlegrange/Mell Quarry to be utilised for Fire Water supply and Data Centre Cooling on site;
- The proposed Landscape Plan includes planting that does not require irrigation systems post establishment;
- It is the intention to include low flow and flush fixtures and fittings during detailed design stages for the proposed development.

Operational Carbon Monitoring

- As a GHG permit holder, PPL will be required to monitor GHG emissions generated from the operation of the proposed gas engines at the site and report this on an annual basis to the EPA;
- > 90% of regulated energy use will be targeted to be metered. The intention is also to monitor the remaining quantity of energy consumed;
- Estimated energy consumption of each fuel is to be identified, with 100% of all fuel types being continually monitored in real time;
- Unregulated energy as this will form part of the overall energy campus efficiency.
- Water usage during the operation of the proposed development will be monitored through water metering.

Climate Change Resilience Assessment Mitigation Measures

A number of adaption/mitigation measures have been incorporated into the design of the proposed development in relation to climate hazards identified in the Climate Change Resilience Risk Assessment.

Climate Change Resilience Assessment Monitoring

The Climate Change Resilience Risk Assessment will be reviewed and updated as necessary to ensure that any design-related adaptation measures have been implemented.

12.8.3 Decommissioning Phase

No mitigation measures are proposed for the decommissioning phase at this time.

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12.9 Conclusion

12.9.1 Construction Phase

The mitigation measures outlined in Section 12.8.1 ensure the proposed development contributes positively to the achievement of the key targets for the Industrial Sector from CAP24 to decrease embodied carbon for materials produced and used in Ireland as it will create a demand for lower carbon materials thereby encouraging producers to work towards the supply of such materials.

Given the current estimated embodied carbon associated with the proposed development, the residual effect on climate change from the proposed development is deemed to be '*minor adverse'* and therefore '*not significant'* in accordance with the criteria outlined in Section 12.4.1 *'GHG Significance Criteria*' of the Climate Chapter of the EIAR.

12.9.2 Operational Phase

The mitigation measures implemented to ensure minimal generation of GHGs from the operation of the proposed development are included as part of the design of the proposed energy infrastructure at the site and are described in detail under Section 12.2.2 and 12.9.1 of the Climate Chapter of the EIAR.

With the implementation of the mitigation/offsetting of carbon emissions as set out in Section 12.9.1 of the Climate Chapter, the residual effect of the operational phase of the proposed development would be '*negligible'* and therefore '*not significant'* in accordance with the criteria outlined the IEMA (2022) Guidance.

In addition, the IEMA (2022) Guidance[18] states:

"Where there is embedded mitigation in the form of project commitments to GHG reductions but the details are not secured within the project design at the time of assessment, further detail of the potential mitigation measures to achieve that commitment can also be considered within the additional mitigation section and assessment of residual effects."

Future mitigation measures envisaged for the campus (but not relied on for the purposes of this application) include the use of biomethane or hydrogen to fuel the gas engines at the campus as described in Section 8 of the *Energy and Emissions Modelling Report* which accompanies this planning application. The proposed CORE Energy Centre is equipped with reciprocating gas engines that have been tested and proven to run on natural gas, biomethane or hydrogen to future-proof the proposed infrastructure for the future scenarios when these clean fuels can be obtained.

The modelling completed predicts that the use of biomethane to fuel the gas engines on site, along with the use of the other on-site assets (solar PV array, and batteries) as well as a 60 MW PPA for grid imports will supply 183,028 MWh to the Data Centre and give a total reduction of GHG emissions of 52,934 tCO_2 (80% reduction) compared to the that which would be associated with 100% electricity grid imports alone (66,300 tCO_2).

It is noted that these future measures are not relied on in the climate impact assessment for the proposed development as set out in Section 12.9.1 of the Climate Chapter.

Mitigation through displacement of natural gas with hydrogen

As the energy transition in Ireland progresses towards 2050 there is the potential for hydrogen to become part of the fuel mix within the national gas grid and as such the emissions intensity of the gas in the grid will reduce. As the use of biomethane will be a commercial decision made by the tenant the mix of fuel used in the gas engines is not set at this stage but the inclusion of hydrogen in the grid gas mix offers a further opportunity for the decarbonisation of the operation of the gas engines. This has also not been relied on for the purposes of the climate impact assessment.

[18] Institute of Environmental Management & Assessment (IEMA) (2022) "*Guide: Assessing Greenhouse Gas Emissions and Evaluating their Significance"*

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Potential Future Phases of CORE

Given the upgrade plans for existing infrastructure at the site, alongside the integration of renewable energy sources and advanced energy storage systems via the proposed Energy Centre, it is envisaged that the site will be able to accommodate LEUs such as further Data Centres on the electrical side and Food/Beverage/Biopharma on the thermal side. A new ring main will be constructed in order to provide a gas supply to the Energy Centre included in the proposed development for the engines via a manifold. The ring main will also be capable of supporting the build out of further Energy Centres on-site as energy demand on-site grows over time.

CORE will have significantly decarbonised (trending towards fully decarbonised) electrical and heat networks. Coupled with PPL's private water systems, the proposed development will ensure that new industry can be attracted to Drogheda to support sustainable economic growth.

12.9.3 Decommissioning Phase

No residual impacts are foreseen for the decommissioning phase at this time.

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13 Waste Management

13.1 Introduction

Chapter 13 Waste Management assesses the potential effects in relation to waste management as a result of the Proposed Development during the construction and operational phases. The assessment was carried in accordance with appropriate national guidelines and legislation.

The chapter describes the following:

- Materials currently on the PPL site that will become waste and will require removal from the site if the Proposed Development is approved and existing production processes are terminated;
- The waste that is expected to result from the construction phase of the Proposed Development, including the demolition of the existing site structures, and how this waste will be managed;
- An appraisal of wastes likely to arise during the operation of the Proposed Development.

13.2 Receiving Environment

The PPL Waste Management Procedure (included as an attachment to the EIAR) sets out the steps and procedures for the appropriate management of waste onsite.

Segregation is carried out at source. Inert waste from production which includes Lime Dust, Slaker Grits and other inert waste is disposed of in the licenced landfill on site. Other wastes that are not licenced for landfilling on site are, where possible sent for recovery or recycling to a licenced contractor.

The PPL Sales and Environment Manager is responsible for maintenance of all waste management and documentation. This includes waste container, tracking forms, waste inventory data and waste shipment documentation.

A summary of the quantities of wastes generated onsite for the year 2023 is described in Table 13.1. This table reflects the waste generated with operations onsite scaled down. In addition, a summary of the quantities of wastes generated for the year 2014 reflecting the PPL site at peak operations is described in Table 13.2.

Table 13.1: Waste Generated at PPL site and Percentage Recovered/Recycled for the Year 2023[19]

Waste Type	Total in Tonnes	Recovered/ Recycled %	% Increase / Reduction on 2022
Non-Hazardous	1.08	45%	82% decrease
Hazardous	11.94	65%	>100% increase
Inert	15.43	100%	93% decrease

Table 13.2: Waste Generated at PPL site for the Year 2014 (Operational Baseline Scenario)[20]

Waste Type	Total in Tonnes	Recovered/ Recycled %
Non-Hazardous	121.6	32%
Hazardous	6.05	100%
Inert	11,075	0%

[19] PPL (2024) "*Annual Environmental Report 2023*"
[20] PPL (2015) "*Annual Environmental Report 2014*"

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The recovery and disposal of waste onsite was initiated to deal with the waste arising from magnesia production in the early 1980s and the full breadth of activities for which PPL is currently licensed have been ongoing on a continuous basis at this site since 1981.

PPL's current Industrial Emissions licence (Reg. No. P0376-02) permits it to carry on the following activities:

- Class 10.3: Production of lime in kilns with a production capacity exceeding 50 tonnes per day.
- Class 11.5: Landfills, within the meaning of section 5 (amended by Regulation 11(1) of the Waste Management (Certification of Historic Unlicensed Waste Disposal and Recovery Activity) Regulations 2008 (S.I. No. 524 of 2008)) of the Act of 1996, receiving more than 10 tonnes of waste per day or with a total capacity exceeding 25,000 tonnes, other than landfills of inert waste.

Condition 3.5.1 of the current licence (P0376-02) requires PPL to maintain a Landfill Operation Plan. The purpose of the Landfill Operation Plan is to monitor, control and minimise the effects of landfill activities on the surrounding environment.

PPL prepared an initial Plan in 2007. This Plan was approved by the EPA. It is reviewed annually by PPL and reported to the EPA. The Plan states that only inert or inactive waste is to be placed in the landfill and that the lifespan of the landfill is 18.5 years from 2012. The Plan further details how the landfill is to be managed and the aftercare and monitoring regime that will be carried out during the operation of the landfill and on its final closure.

As part of the Proposed Development, it is intended to move stockpiles 1 and 2 to the landfill (further details provided in Chapter 7 of this EIAR NTS). The landfill will be capped with 0.3 m of clay after the addition of inert material from stockpiles 1 and 2 and other inert wastes during construction phase of the Proposed Development. The landfill will then provide a suitable location to add additional solar array for the generation of renewable electricity.

13.3 Characteristics of Proposed Development and Potential Effects

13.3.1 Construction Phase (including Demolition)

Prior to undertaking demolition, the site must be cleared of all material and waste that is present on the site. This will involve in the first instance the removal of all existing plant and equipment that will be sold on and/or recycled.

A full list of waste expected to be generated during the construction phase (including demolition) is provided in *Chapter 13 Waste Management* of the EIAR, as well as the Resource and Waste Management Plan accompanying this planning application (PM Group Report No. IE0313391-22-RP-0004). This list includes asbestos which was identified onsite as per the pre-demolition asbestos survey carried by Phoenix Environmental Safety Ltd. (Attachment 13.2 to the EIAR[21]), including insulation within the fabric of the existing buildings. According to the AtkinsRéalis GQRA Report which accompanies this planning application, asbestos has also been identified in soil at the site within the Made Ground beneath the site, and in buried pipework.

All waste will be removed from site by appropriately competent and licensed waste contractors to appropriately licensed waste facilities. Where possible the waste will be recovered / recycled.

All activities involving waste during the construction phase (including demolition) was be managed in accordance with the RWMP and Construction Environmental Management Plan (CEMP) (PM Group Report No. IE0313391-22-RP-0003), outline versions of each accompany this planning application.

[21] Phoenix Environmental Safety Ltd. (2023) "*Asbestos Survey Report (Refurbishment / Demolition Survey)*"

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13.3.2 Operational Phase

A full list of waste expected to be generated during the operational phase of the Proposed Development is provided in *Chapter 13 Waste Management* of the EIAR.

Consistent with the ethos of the Proposed Development, a site wide Environmental Management System (EMS) will be established for the operation of the Proposed Development. All operational staff at the site will be required to conform to the site wide EMS.

This will ensure the ongoing management and minimisation of waste. There will be a continued pursuit of objectives and targets to reduce resource and material use and waste generation insofar as practicable as a principal of CORE.

All waste and resource material that cannot be used on site will be sent to licenced recycling and recovery outlets (off-site), thus ensuring the potential long-term impact of waste generation will be minimised.

13.3.3 'Do Nothing' Scenario

If the Proposed Development does not go ahead, there will be no demolition, excavation or construction at this site. The site will return to full production, and waste production is expected to return to 2014 levels as set out in Table 13.2.

When it is decided to cease production at the site in the future, the plant may be closed down and if so, the site will be subjected to the works outlined in the site's Closure, Restoration and Aftercare Management Plan (CRAMP) as approved by the EPA.

13.4 Conclusion

The residual impact of the construction phase (including demolition) of the Proposed Development is predicted to be negative, slight and short-term, while the residual impact of the operational phase of the Proposed Development is predicted to be neutral, moderate and long-term.

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14 Material Assets

14.1 Introduction

Chapter 14 Material Assets assesses the potential effects on material assets as a result of the Proposed Development during the construction and operational phases. The assessment was carried in accordance with appropriate national guidelines and legislation.

Material Assets comprise the physical resources in the environment, which may be of human or natural origin that are valued and intrinsic to specific places. The objective of the assessment is to ensure that these assets are used sustainably for the Proposed Development.

A number of different environmental factors are considered in other chapters of the EIAR. The following Material Assets that have not been considered in other chapters of the EIAR are assessed in this chapter:

- Electricity;
- Natural Gas and Oil;
- Solid Fuels;
- Telecommunications;
- Fill Material.

14.2 Electricity

The subject site is currently serviced by electricity from a dedicated 38 kVA substation (Newtownstalaban substation) located 250 m north of the existing site. High voltage cables run from the substation via a 10 m wide wayleave across agricultural land and enter the site on the northern boundary of this site. The ESB database shows a Medium Voltage overhead power cable traversing the site supplying the Port Area.

The Proposed Development will operate both as a consumer and producer of electricity. Electricity will be consumed when the grid's fuel-mix is predominantly renewable and electricity demand on the grid is low which will usually occur at night. At peak electricity demand, the grid is most vulnerable and at its highest carbon intensity due to the increased demand requiring older more carbon intense national energy generators (e.g. coal) to be switched on to provide the necessary extra power to meet demand. At these times, the Proposed Development will provide a flexible demand-response (reduces its grid electricity demand to near zero and provides its own power), leaving the energy market and supporting the loads with its own assets enabling the reduction/elimination of emissions in real-time (hour-for-hour) on the campus. The Energy Centre will also potentially be able to export to the grid in order to displace the highest carbon intensity energy generators on the grid.

An overview of the proposed technologies to be employed at the Proposed Development is illustrated in Figure 2.3 of this EIAR NTS.

In the north-west corner of the site, the intention is to utilise the existing entrance on the L2307 road to facilitate access to that portion of the site only with a separate access gate for the ESB to access the proposed new on-site substation. This substation will be powered by the existing Newtownstalaban substation via a cable that the ESB will run along the L2307 (subject to its own planning consent) (refer to Figure 14.1 which shows an indicative route for the cable along the L2307).

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Figure 14.1: Indicative Route for Connection to Offsite Substation along the L2307

14.3 Natural Gas and Oil

Gas Networks Ireland's (GNI) Drogheda Transmission Station is located adjacent to the PPL site and operates at 70 bar, which in-turn provides a 4 bar connection to an existing Above-Ground Installation (AGI) on the PPL site to serve the site gas requirements. The on-site gas distribution AGI will be modified and upgraded to suit the new operations on site. A new natural gas ring main will be constructed in order to provide a gas supply to the Energy Centre for the engines via a manifold.

The current oil storage, both diesel and fuel oil will be cleaned by specialist contractors, dismantled, removed and the metals sent for recycling.

14.4 Solid Fuels

Historically PPL used considerable quantities of solid fuel in the form of Petroleum Coke (PetCoke). In 2014 (the operational baseline scenario) almost 17,000 metric tonnes were combusted for heat.

If the Proposed Development is approved and planning permission granted, the use of PetCoke will cease and the site's PetCoke infrastructure will be cleaned, dismantled and recycled.

14.5 Telecommunications

A significant internal telecommunication network will be developed to include broadband requirements. To service this need, it is foreseen that additional services for both telecommunications and broadband will be required.

Similar to the connection to the nearby substation (Section 14.2 above), the routing of any telecommunications connection will be by the tenant of the proposed data centre building. The Data Centre tenant will review and assess the routing options and obtain the necessary consents for the connection.

14.6 Fill Material

It is proposed to move uncontaminated material from stockpile 1 (ca. 9,000m^3) and stockpile 2 (32,000m^3) to the landfill. For stockpile 3, it is proposed to carry out minimal levelling works to facilitate the installation of a Solar PV array. The proposed Solar PV array on Stockpile 3 is designed for minimal intrusion as it will be mounted on a ballasted foundation system sitting on the levelled ground, and will not require any excavations for in-ground foundations. The PV panels

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themselves will be mounted on a proprietary steel frame system fixed to the ballast system. The ballast system will take the form of prefabricated concrete blocks.

Post the demolition stage of the Proposed Development and the moving of material from stockpiles 1 and 2, the landfill will be capped and used to mount a solar array on it in a similar fashion to that of stockpile 3. This solar array will add considerable generation capacity to the campus, thus making a significant contribution to the generation of green electricity and the ethos of the Proposed Development.

14.7 Conclusion

The residual effects of the Proposed Development on the material assets during the construction phase (including demolition) are likely to be short-term, neutral and imperceptible, while the residual effects of the operational phase of the Proposed Development on the material assets are likely to be long-term, positive and significant. The site will comply with the requirements of its Industrial Emissions Licence.

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15 Archaeology, Architectural & Cultural Heritage

15.1 Introduction

The archaeology, architectural and cultural heritage (cultural heritage) chapter assesses the potential of the proposed redevelopment of the PPL magnesia and magnesium hydroxide production facility into a sustainably powered enterprise campus to give rise to potential cultural heritage effects. The assessment comprised a desk based review of documentary and cartographic research from all available sources, including the Record of Monuments and Places, the Sites and Monument Records, the topographical files of the National Museum, the Development Plan, local sources, and other literary and documentary references. The results of previous excavations in the immediate vicinity were also reviewed. This was supported by a field inspection to assess the upstanding structures on site.

15.2 Receiving Environment and Potential Effects

There are no recorded archaeological sites within the proposed development area. No previously unidentified sites of archaeological potential were identified as a result of this assessment within the proposed development area. Two archaeological complexes are in agricultural land directly outside of the proposed development boundary to the north: an enclosure site and its associated field system (RMP No.: LH024-074) and a church and graveyard and access path to it (RMP No.: LH025-003001-002) in the townland of Newtownstalaban. The proposed development will not directly affect these sites; however, there are indirect positive effects relating to the reinstatement/landscaping of the lands within the proposed development area.

The proposed development is on the banks of the River Boyne which would have attracted settlement activity since the prehistoric period. It is in a highly sensitive archaeological landscape as testified by the number of recorded archaeological sites in its vicinity and new archaeological discoveries of previously unknown archaeological sites in advance of developments in greenfield areas. The site is however a fully developed brownfield site and is predominantly made-ground, and as such, this archaeological potential is deemed to be negligible.

There are no designated architectural heritage sites (RPS, NIAH) within the proposed development boundary. No designated architectural heritage sites will be affected by the proposed development, either directly or indirectly. The proposed development shares its northern and eastern boundary with agricultural lands in the outer demesne lands associated with Newtown House (NIAH Garden Survey Ref: 1337) and Beaulieu House (NIAH Garden Survey Ref: LH0007), which comprise agricultural fields bound by hedgerows. The site's eastern boundary is also Newtownstalaban/ Beaulieu townland boundary. There will be no direct impact on the demesne lands; however, the proposed development will have an indirect positive effect on the demesne lands and the surrounding landscape relating to the reinstatement /landscaping of the lands within the proposed development.

Field inspection and desk-based assessment have established that the cement factory (opened in 1938) played a pivotal role in developing the new Irish state and was closely linked to improvements in housing, transport, and infrastructure. It was also a significant direct and indirect employer for Drogheda. It had a dominant visual presence at the eastern outskirts of the town on the banks of the river Boyne and during its peak, it had an overhead aerial ropeway with moving buckets traversing the northern landscape of Drogheda from a quarry in Mell, its own rail sidings, and a pier on the river. These features are all documented in the 1946 OS Map. In 1977, it was adapted into a Magnesia and Magnesium Hydroxide Facility.

All the structures within the site are mid-20th-century and later. The concrete and steel buildings and associated towers, gantries, settlement ponds, etc., were purpose-built and functional; they developed haphazardly, infilling the site to adapt to economic change as necessary and have little heritage value. The former cement factory, however, is of social and historical value to the town of Drogheda and played an essential role in the development of the State. As such, as a designed-in mitigation measure, it is proposed to retain at the entrance into the site three storage silos and three bays of the pitched roof crane store shed associated with the original cement factory. These

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structures are representative of the scale and density of the industrial structures on the site and are visually dominant at the entrance to the facility. The retention of these features is positive as they connect to the past and will be a testament to the new State's economic needs and Drogheda's industrial importance. The structures will be incorporated into a high-quality design, forming part of a new chapter in the site's development. There is one structure in the northeastern corner of the site considered to be of industrial and technical heritage merit: an undesignated late 20th-century workshop. This structure shall be retained as a workshop within the proposed development as a designed-in mitigation measure.

15.3 Mitigation Measures and Monitoring

It is recommended that a comprehensive photographic and written record of all the structures across the site be carried out to record the site's industrial origins prior to their demolition to form a record of the past. An interpretation area that includes signs and digital media linkages, such as QR codes, is recommended to provide a comprehensive history and backdrop of the site's industrial heritage development. It is proposed to construct a viewing platform in the south easternmost part of the site. This platform will not only offer a vantage point overlooking the historic Millmount and the Viaduct within the town; it will also preserve and display any fragmentary remains associated with the railway line that is recovered within the site.

Given the site's built-up and heavily disturbed brownfield nature, archaeological finds or features are unlikely to be identified during earthmoving works associated with the construction phase. Full-time archaeological monitoring of the earthmoving works is not considered necessary at the site. It is recommended, however, that an archaeologist be retained as part of the construction team. Their responsibility would be to assist and provide guidance on a strategy to recover any railway or other industrial objects found on the site during site clearance and demolition works in collaboration with the contractor. The archaeologist will assess these items to determine their suitability for exhibition in the viewing platform display area. Additionally, they would assist in the interpretation of the site for the signage panels.

15.4 Conclusion

There are no residual effects during the construction phase. Once the mitigation measures are implemented in full, previously unknown subsurface archaeological features that are identified will be resolved and recorded in full.

Upon the completion of the Proposed Development, there will be no negative residual effects on the archaeological or cultural heritage resource. The current site is a dominant industrial site within the town of Drogheda and on the banks of the river. The proposed landscaping and rehabilitation of the visually dominant mounds of spoil and structures on the site will improve the existing scenario.

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16 Major Accidents & Disasters

16.1 Introduction

Chapter 16 Major Accidents and Disasters describes the potential negative effects on the environment arising from the vulnerability of the proposed development to risks of major accidents and/or disasters.

The assessment of the vulnerability of the proposed development to major accidents and disasters is carried out in accordance with the EIA Directive that entered into force on 16 May 2017 (EC, 2014) which states the need to assess:

"the expected significant adverse effects of the project on the environment deriving from the vulnerability of the project to risks of major accidents and/or disasters which are relevant to the project concerned"

The underlying objective of this assessment is to ensure that appropriate precautionary actions are taken for any development projects which *"because of their vulnerability to major accidents and/or natural disasters, are likely to have significant adverse effects on the environment".*

A site-specific risk assessment analysis methodology was used which covers the identification, likelihood and consequence of major accidents and/or disasters as a result of the construction and operation of the propose development. The risk assessment identified and quantified potential risks focusing on unplanned, but possible and plausible events occurring during the construction and operation of the proposed development. Risks identified were assessed for the likelihood of the risk occurring and consequence of the risk.

16.2 Potential Effects

No plausible major accidents or disaster hazards were identified, to which the proposed development will be particularly vulnerable. All potential risks identified were determined to be low to medium risk scenarios.

No plausible potential risks were identified which would result in the proposed development causing a major accident or disaster on or outside of the proposed development.

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17 Interactions and Cumulative Effects

17.1 Introduction

In addition to the requirement under the Planning and Development Regulations 2001 (as amended) to describe the likely significant effects of the proposed development on particular aspects of the environment, it is also required to consider the interaction of those effects. These are assessed in *Chapter 17 Interactions and Cumulative Effects* of the EIAR.

This section addresses the intra project significant effects (i.e. those occurring between environmental topics within the project). Inter project effects (i.e. those which are likely to occur as a result of the likely impacts of the proposed project interacting with the impacts of other projects in the locality) have also been considered.

A review of a number of planned and permitted projects that have the potential to interact with either the construction or operational phases of the Proposed Development has been carried out. The projects considered most likely to interact with the proposed development are identified in Chapter 2 of the EIAR.

17.2 Assessment Methodology

17.2.1 Inter-Relationships / Interactions

In practice many potential effects from various sources have slight or subtle interactions with other sources of effects. However, the EIAR concludes that most inter-relationships are neutral in impact when the mitigation measures proposed in each chapter are incorporated into the operation of the proposed development.

A matrix of potential interactions identified between the various environmental factors assessed in the EIAR is provided in Table 17.1.

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Table 17.1: Matrix of Potential Interactions between Environmental Factors

	Population & Human Health		Landscape & Visual		Traffic & Transportation		Soils, Geology & Hydrology		Biodiversity		Noise & Vibration		Water & Wastewater		Air Quality		Climate		Waste Management		Material Assets		Archaeology, Architectural & Culture Heritage		Major Accidents & Disasters	
	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op
Population & Human Health			X	X	X	X					X	X			X	X			X	X						X
Landscape & Visual									X	X																
Traffic & Transportation											X	X			X	X										
Soils, Geology & Hydrology									X	X			X	X	X				X							
Biodiversity											X	X	X	X	X	X			X	X						X
Noise & Vibration																										
Water & Wastewater																										
Air Quality																										
Climate																										
Waste Management																					X	X				
Material Assets																										
Archaeology, Architectural & Culture Heritage																										
Major Accidents & Disasters																										

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17.3 Cumulative Effects

17.3.1 Introduction

Cumulative effects may result by the addition of many minor or insignificant effects from the Proposed Development and other relevant projects to create larger, more significant effects.

A review of Louth County Council (LCC) and Meath County Council planning applications received was performed to identify a list of projects in the vicinity of the Proposed Development site that have been granted planning permission which either are existing, unbuilt and have extant permission or are under construction. The list has been filtered down to exclude minor projects that are unlikely to interact with the Proposed Development to any level of significance.

Details of the relevant planned or permitted developments within the vicinity and context of the Proposed Development which have been considered as part of the assessment of potential cumulative effects are outlined Table 17.2. The locations of these developments are shown in Figure 17.1.

Table 17.2: Projects considered in respect of Cumulative Effects

Planning Ref:	Project	Brief description
LCC Ref: 2360053	Large Scale Residential Development.	A large scale residential development to include 42 houses,150 Apartments, a Crèche, a Café, a Gymnasium and associated works.
LCC Ref: 2360137	Self-Storage Facility.	Permission for the construction of a self-storage facility comprising approximately 2588sqm gross floor area, in 4 blocks, with individual units ranging in size from 12sqm to 30sqm, a single storey office/service building, signage, car parking spaces and all associated site development works.
LCC Ref: 2288	Boyne Mills	The development applied for included the demolition of various existing buildings on the site and the construction of circa. 22,093 m^2 gross floor area of a mixed-use scheme comprising the construction of a four storey building, providing a digital innovation hub, co-working space and a restaurant; the construction of a two storey building providing 5 no. retail units and office space; the construction of a two storey over basement building providing a cultural facility, as well as a car park at ground floor and basement levels; the construction of a two storey building providing a restaurant; the construction of 2 no. five storey buildings providing 64 no. apartment units; and the renovation and adaption of the former Boyne Mill Yarn Store to provide a five storey 120 no. bedroom hotel with an ancillary restaurant.

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Planning Ref:	Project	Brief description
LCC 22504 / Bord Pleanála 316379-23	New Apartment Development at Cord Road	The development applied for includes the demolition of an existing warehouse; the construction of a 3-6 storey apartment development comprising a total of 40 no. units; the provision of a communal courtyard open space; the provision of under croft car park with new access from North Strand Road and providing 20 no. parking spaces; and the refurbishment and alteration to Boyne Cottage to provide for a single residential dwelling with separate private garden and vehicular access from Cord Road/Greenhills Road.
N/A	Drogheda Port, Tom Roe's Point Facility	Detailed consultation has taken place between PPL and the Port on its future plans. PPL and the Port will collaborate across multiple workstreams including the PANCR Road development, and increased business for the Port from the new enterprises operating from the PPL CORE Campus.
N/A	Port Access Northern Cross Route (PANCR)	A new Port access road from the R132 Dublin Road across the Twenties Road and to tie into the Ballymakenny road and upgrading of the adjacent roads.
LCC Ref: 21600	Road extension & Realignment	Construction of road extension and realignment of the existing junction at the Boyne Business Park entrance at Newtownstalaban Drogheda.
LCC Ref: 211000	Office Extension	The Development includes a proposed new two storey extension to front and side of existing office building together with alterations to existing elevations, new signage to front elevation, foul and surface drainage and associated site works.
LCC Ref: 20733	Cargo Warehouse building Drogheda Port	For the construction of a new cargo warehouse building on the existing quayside storage area at Drogheda Port, Co. Louth.
N/A	Existing Flogas Terminal	Existing Flowgas LPG importation and storage facility.

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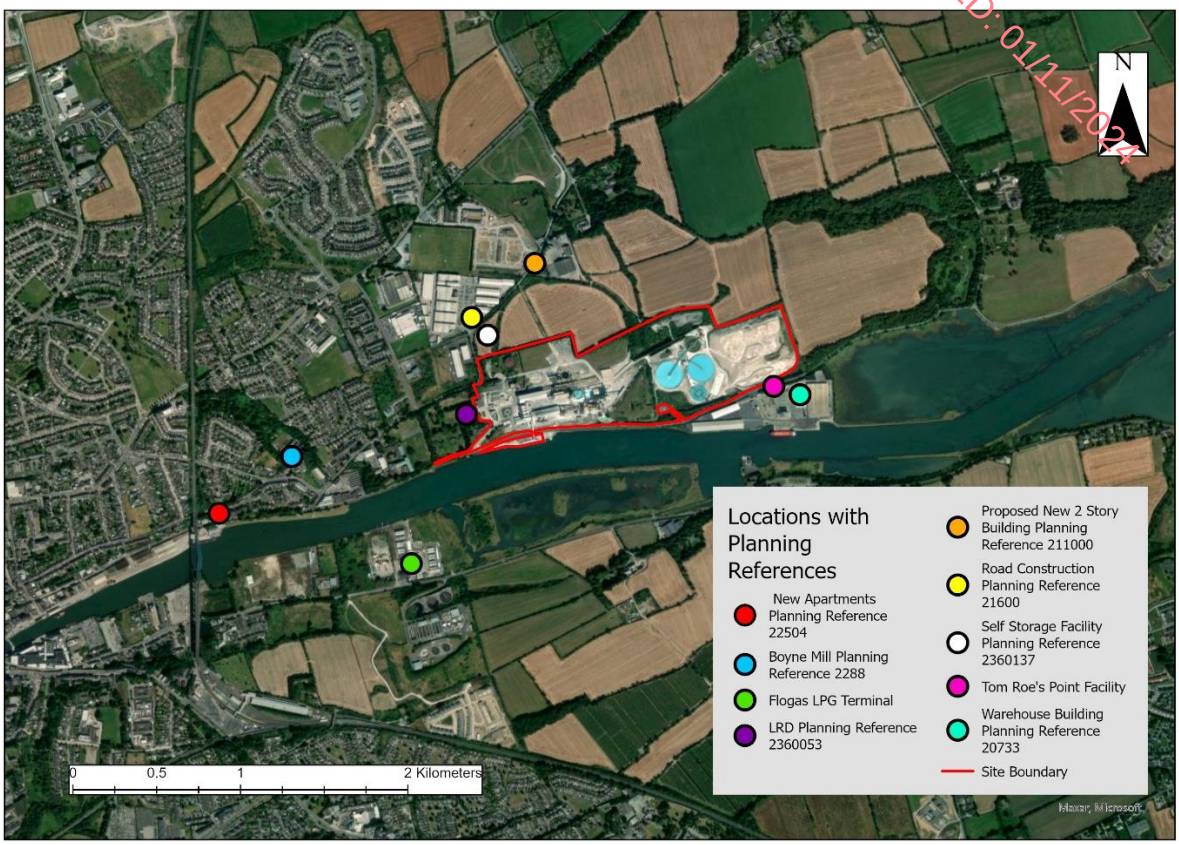

Figure 17.1: Projects Identified for the Consideration of Cumulative Effects

Chapters 4-16 of the EIAR contain specific sections on the potential cumulative effects associated with each environmental topic.

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18 Summary of Mitigation Measures and Monitoring

Chapters 18 Summary of Mitigation Measures and Monitoring of the EIAR summarises all mitigation measures proposed in the preceding chapters of the EIAR in order to provide a single comprehensive overview of the full range of mitigation measures discussed within each chapter.