



APPENDIX 2.6



CLIENT: Red Admiral DC Limited

PROJECT: Preliminary Construction Environmental Management Plan (CEMP)

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TABLE OF CONTENTS

1	INTRODUCTION	1
1.1	Purpose and Objective	4
1.2	Revisions of the CEMP	5
2	LEGISLATION AND GUIDANCE	6
2.1	National and International Legislation	6
2.2	Environment Liability Regulations	7
2.3	Best Management Guidelines	7
2.4	Waste Management Context	8
3	SITE DETAILS	11
3.1	Site Location	11
3.2	Site Compound	13
3.2.1	Temporary Construction Compound Facilities	13
4	CONSTRUCTION WORKS	17
4.1	Overview	17
4.2	Phase 1 Construction works	20
4.2.1	Data Centre (DC) Buildings 1 and 2	20
4.2.2	Fuel Cell (Power Tower 1)	20
4.2.3	BESS	21
4.2.4	Solar Farm – Typical Construction Works	22
4.2.5	Grid Connection	22
4.2.6	Ancillary Site Works, including specifications, internal roads and drainage.	23
4.3	Phase 2 Construction Works	25
4.3.1	Data Centre (DC) Buildings 3 and 4	25
4.3.2	Fuel Cell (Power Tower 2)	25
4.3.3	Solar Farm - Parcels 2 & 3	26
4.4	Phase 3 Constructon Works	27
4.4.1	Data Centre (DC) Buildings 5 and 6	27
4.4.2	Fuel Cell (Power Tower 3)	27
4.5	Sequence Of Construction Activities	28
4.5.1	Site Set Up	28
4.5.2	Phase 1	28
4.5.3	Phase 2	28
4.5.4	Phase 3	28
4.5.5	Pre-commissioning/commissioning	28
4.6	Organisational Structure and Responsibilities	29
4.7	Contacts	29
4.7.1	Primary Contacts	29
4.7.2	Third Party Contacts	30

4.8	Training	34
4.9	Communication	35
4.9.1	Internal.....	35
4.9.2	External	36
4.10	Document Control	36
4.11	Design	37
4.12	Contract Checks and Inspections.....	37
4.13	Records.....	37
4.14	Audits	37
4.15	Management Review	37
4.16	Schedule and Working Hours	37
4.16.1	Accommodation /Facilities	38
5	CONTROLS AND MITIGATION MEASURES	39
5.1	Subcontractors.....	39
5.2	Resource Use.....	41
5.2.1	Construction Carbon Management	43
5.3	Waste Management	43
5.3.1	Waste Controls.....	44
5.4	Fuel and Oil Storage	46
5.5	Materials Storage	49
5.6	Water	50
5.6.1	Control of Construction Site Surface Water Runoff Quality	51
5.6.2	Fuel Oil, other Petroleum based substances and chemicals	54
5.6.3	Water Monitoring	57
5.7	Noise	57
5.7.1	Noise Controls.....	57
5.7.2	Noise Monitoring	58
5.8	Air.....	59
5.9	Wildlife & Ecology	60
5.9.1	Consents	61
5.9.2	Biodiversity Protection Measures	61
5.10	Landscape and Visual.....	63
5.11	Archaeology and Heritage.....	64
5.11.1	Archaeology and Heritage Protection Measures	64
5.12	Construction Site Compound.....	65
5.12.1	Road signage and cleaning	66
5.13	General Health & Safety	67
5.14	Emergency Preparedness/Environmental Incidents	68
5.14.1	Roles and Responsibilities.....	70
5.14.2	Initial Steps.....	70

5.14.3	Pollution Prevention	71
5.14.4	Environmental Incidents /Non-Conformances.....	71
5.14.5	Notification	72
5.14.6	Review and Reporting	75
5.14.7	Site Evacuation /Fire Drill	75
5.14.8	Periodic Testing	75
5.14.9	Spill Kits	76

TABLES

Table 4.1	Primary Contacts
Table 4.2	Third Party Contacts
Table 5.1	Subcontractors
Table 5.2	Management of Resources
Table 5.3	Waste Controls
Table 5.4	Fuel and Oil Storage
Table 5.5	Material Storage
Table 5.6	Air Quality Controls
Table 5.7	Biodiversity
Table 5.8	Construction Site Compound Set Up
Table 5.9	Hazards associated with emergency situations
Table 5.10	Emergency Contacts List
Table 5.11	Spill Kit Types

FIGURES

Figure 1.1	Proposed Overall Site Layout
Figure 1.2	Landscape and Biodiversity Mitigation Plan
Figure 1.3	Landscape and Biodiversity Mitigation Plan
Figure 1.4	Landscape and Biodiversity Mitigation Plan
Figure 1.5	Landscape and Biodiversity Mitigation Plan
Figure 2.1	EU and National Waste Hierarchy
Figure 2.2	EU and National Waste Hierarchy
Figure 3.1	Site Location Map
Figure 3.2	Site Layout Drawing showing Locations of Construction Compounds
Figure 3.3	Construction Compounds A, B (& G) Layout
Figure 3.4	Construction Compound D, E & F Layout

Figure 3.5	Construction Compounds C Layout
Figure 4.1	Estimated Monthly Average of Workers over months 1-32 of project
Figure 4.2	Estimated Monthly Average of Workers over months 33-62 of project
Figure 4.3	Indicative Construction Programme
Figure 4.4	Solar Farm – Phase 1
Figure 4.5	Solar Farm Phase 2 – (Northern Section)
Figure 4.6	Solar Farm 3 – Phase 2 (Southern Section)
Figure 5.1	Hierarchy of Controls
Figure 5.2	Emergency Preparedness and Response Plan Contents
Figure 5.3	Construction Site Management Structure

APPENDICES

Appendix A	Construction and Demolition Resource Waste Management Plan
Appendix B:	Environmental inspection checklist
Appendix C:	Ecology constraints and seasonal calendar
Appendix D:	Traffic and delivery management checklist
Appendix E:	Carbon data capture / monthly reporting template
Appendix F:	Archaeology stop-work / discovery protocol
Appendix G:	Complaint and stakeholder communication log

1 INTRODUCTION

This Revised Preliminary Construction Environmental Management Plan (CEMP) has been prepared by Halston Environmental & Planning Limited (Halston) on behalf of Red Admiral DC Limited. ("the applicant") and is submitted to support applications for planning permission for the development of a Data Centre facility and a Decentralised Energy Resource (DER) on lands in the in the townlands of, Gneevebane, Oldtown, Farthingstown, Castlelost and Kiltotan and Collinstown, Co. Westmeath.

The Admiral Project includes two main elements, namely:

- 1. The Data Centre (DC) facility**, comprising six two-storey Data Centre buildings, car parking, landscaping, drainage and other associated works. The DC facility will be constructed and secured within a 48ha campus. Each DC building will have a footprint of 13,978 m² (sqm) and have a gross floor area of 28,561 sqm. Each DC building will contain:
 - Data halls fitted with server racks and distribution units,
 - Mechanical and electrical (M&E) plant rooms /spaces which will house advanced cooling equipment, pumps, piping and medium voltage (MV) and low voltage (LV) switchgear, and
 - Administration and support areas including reception, offices, meeting rooms and welfare facilities.
- 2. Decentralised Energy Resource (DER)**, which will be constructed across 192ha of lands adjoining the DC facility. The DER incorporates several power assets which will generate, store and manage electricity close to the DC facility. The DER comprises the following assets:
 - Fuel Cell Power System – 160MW,
 - Battery Energy Storage System (BESS) – 250MW,
 - Solar PV installation (180MWp), and
 - Grid connection to the 220kV Castlelost GIS substation, which adjoins the proposed development site.

Figure 1.1 Proposed Overall Site Layout

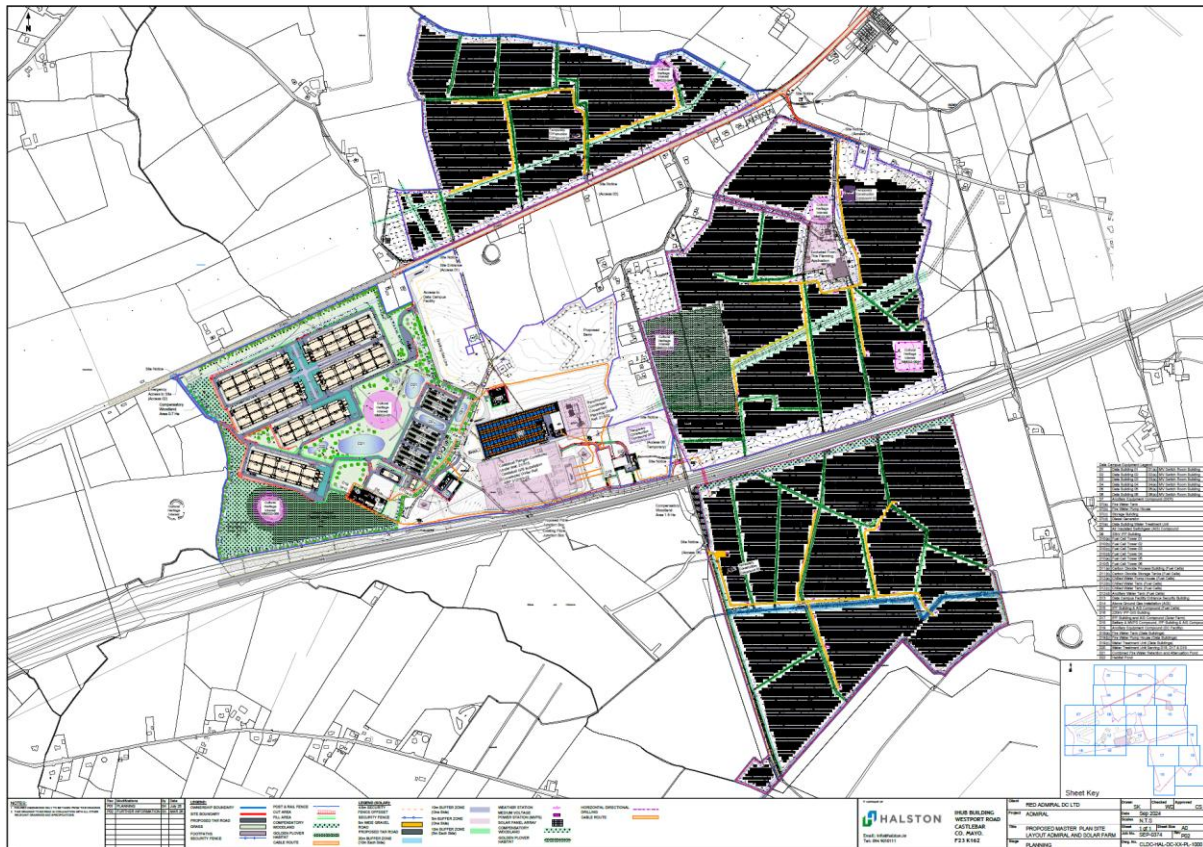


Figure 1.2 Landscape and Biodiversity Mitigation Plan

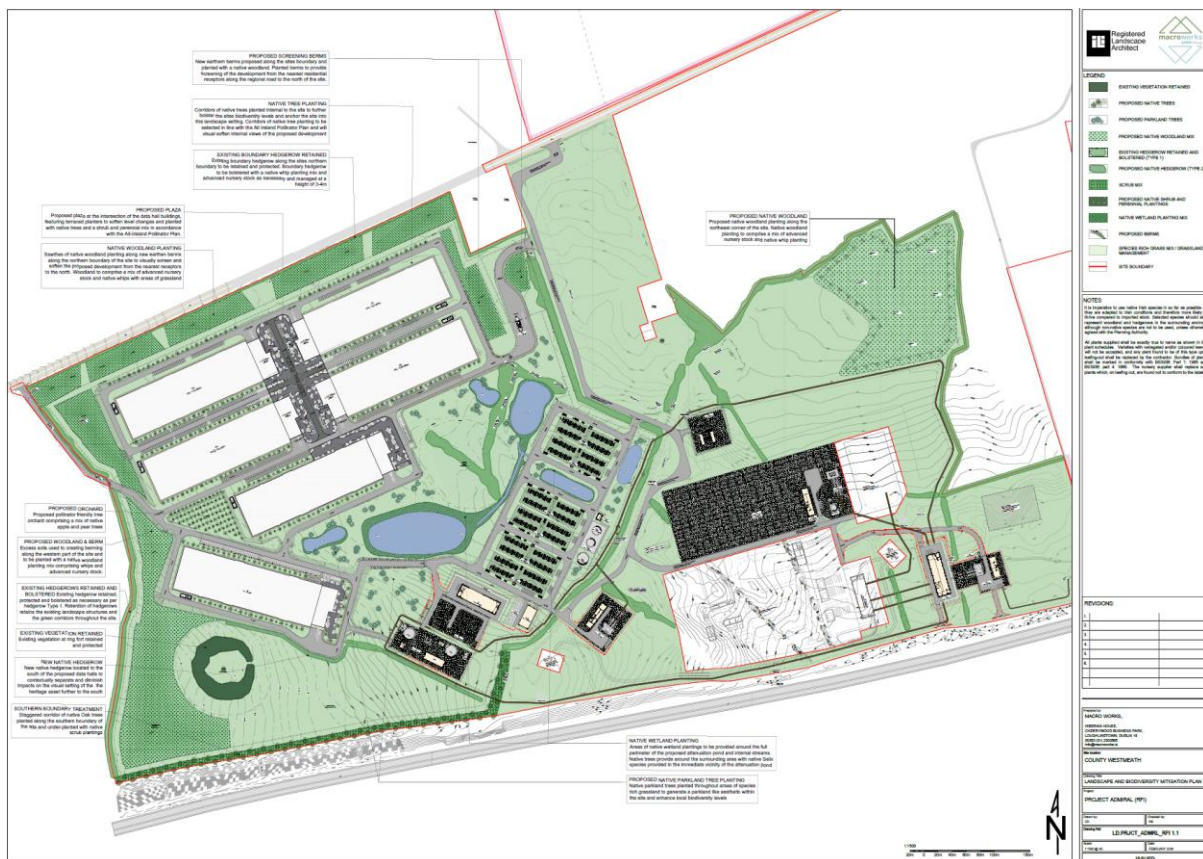


Figure 1.3 Landscape and Biodiversity Mitigation Plan

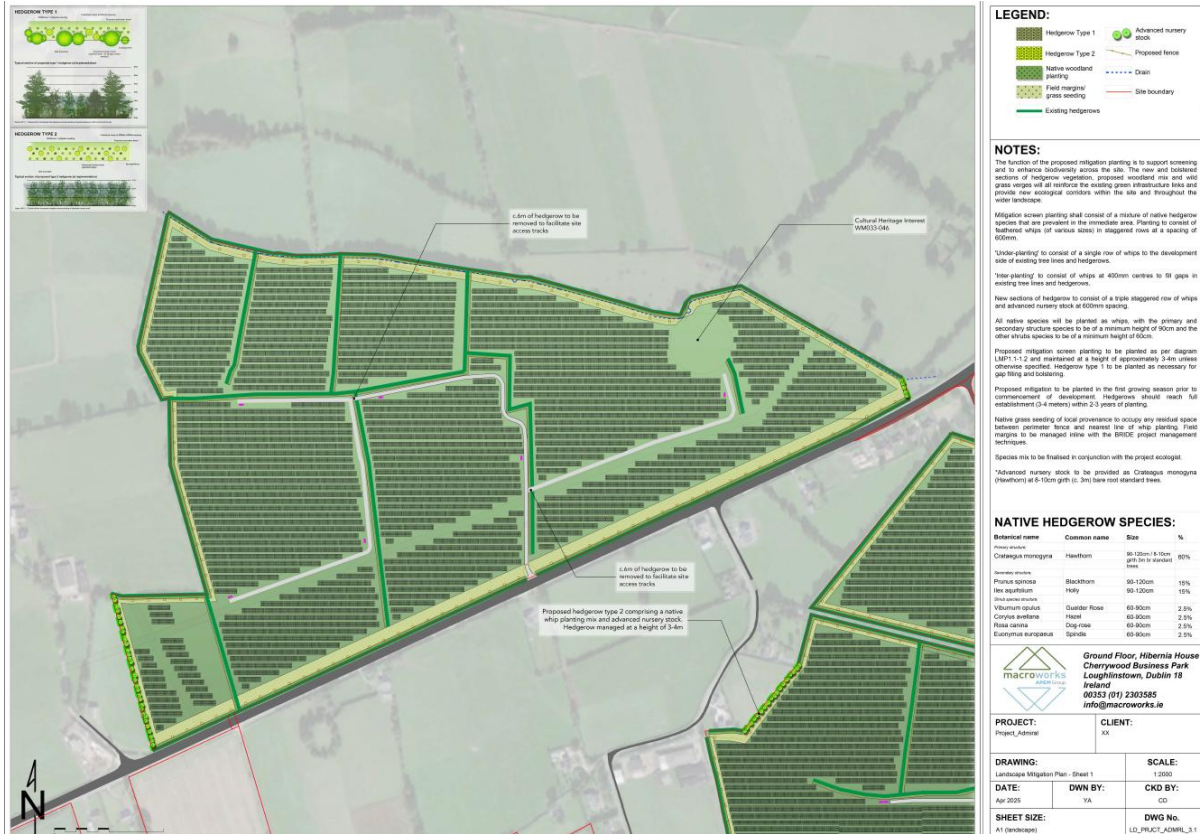
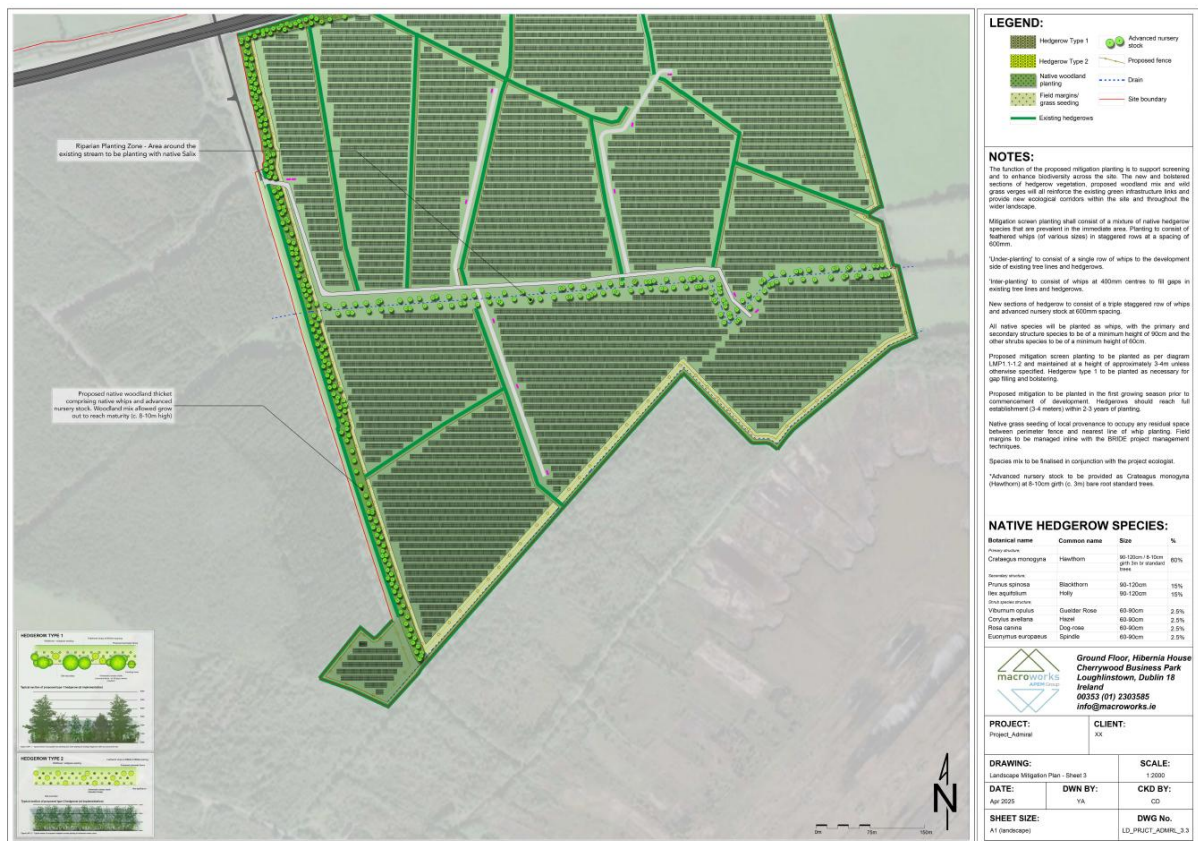


Figure 1.4 Landscape and Biodiversity Mitigation Plan



Figure 1.5 Landscape and Biodiversity Mitigation Plan



A full description of the project is provided in Chapter 2 of the EIAR (Volume 2). Further details regarding the proposed development, including drawings, are submitted in support of the planning applications.

The project has been determined as being distinct in the context of applying for, and obtaining, valid planning consents under the Planning and Development Act 2000, as amended, ("*the Act*"). This Preliminary CEMP incorporates the Construction Waste Management Plan and Incident Response Plan.

1.1 PURPOSE AND OBJECTIVE

This CEMP outlines the approach to environmental and waste management throughout the construction works of the proposed development and associated activities with the primary aim of reducing any adverse impacts from construction on the environment and improving the overall environmental performance of the appointed construction contractor.

The purpose of this Plan is:

- To help ensure compliance with legal and contract requirements,

- To control and where possible minimise, the environmental impact of the construction works,
- To minimise the risk of causing pollution or a nuisance and associated costs and delays, and
- Promote best construction and environmental on-site practices for the duration of the works.

The plan and methodology seek to demonstrate how works on the project can be delivered in a logical, sensible and safe sequence with the incorporation of specific measures to mitigate the impact on people, property and the environment. This document should be viewed as an outline plan with the site-specific CEMP to be developed by the Main Contractor /EPC Contractor for implementation throughout the project in consultation with Statutory Undertakers / Authorities and affected Stakeholders prior to works commencing on site.

Proposed environmental measures that will be installed on site during construction are included in this preliminary CEMP. This document will be updated to include any additional conditions proposed by the relevant local authority as a result of their review of the preliminary CEMP. The CEMP is an integral part of the site health, safety, environmental and quality management system and constitutes a component of the Construction Health and Safety Plan documentation. The CEMP is also subject to the requirements of the site quality management system with respect to documentation control, records control and other relevant measures.

1.2 REVISIONS OF THE CEMP

All the elements of this CEMP will be included in the Contractor's CEMP, which will be produced prior to construction by the Contractor. The CEMP will be updated prior to the commencement of the development, to include any additional mitigation measures, conditions and or alterations to the EIAR and application documents that may emerge during the course of the planning process. The final CEMP will be submitted to the Planning Authority for written approval in advance of commencement of any construction works on site.

This CEMP is a live document, and contents will be communicated to all site personnel and reviewed every month. In the event of an accident or emergency on site during the construction period, the CEMP will be reviewed, and procedures amended if necessary. All personnel and sub-contractors will be made aware of the CEMP during the toolbox talks. The site manager or his environmental manager will be responsible for maintaining and updating the approved document.

This document should be read in conjunction with the mitigation measures expressed in the Halston Environmental Impact Assessment Report (EIAR) and EIAR Addendum. The Contract CEMP shall be updated to incorporate all relevant mitigation, monitoring, phasing, pre-construction survey, traffic management, landscape implementation, climate/carbon management and environmental protection commitments arising from the EIAR, EIAR Addendum, Specialist Ecology and Traffic reports, Water Framework Directive Assessment, Revised Flood Risk Assessment, documents supporting the FI Request Response, Planning Statement and Project Carbon Management Plan.

The Contractor is required to include further details and / or confirmation in the Contractor's CEMP which will include;

- Details of emergency plan including personnel and contact numbers.
- Details of fuel storage areas (including location and bunding).
- Site and traffic signage.
- Method statements.

2 LEGISLATION AND GUIDANCE

Relevant legislation and best practice guidance that have been considered includes but is not limited to the following.

2.1 NATIONAL AND INTERNATIONAL LEGISLATION

- Water Framework Directive (2000/60/EC);
- European Communities Environmental Objectives (Surface Waters) Regulations, 2009 (S.I. No. 272 of 2009, as amended);
- Local Government (Water Pollution) Acts 1977, as amended;
- Habitats Directive (92/43/EEC);
- Air Pollution Act, 1987;
- Birds Directive (2009/147/EC); and
- Wildlife Act, 1976 (S.I. No. 39 of 1976)
- The Circular Economy and Miscellaneous Provisions Act, 2022
- Circular Economy (Waste Recovery Levy) Regulations 2024

2.2 ENVIRONMENT LIABILITY REGULATIONS

The Regulations supplement existing National and European Legislation to achieve the prevention and remediation of environmental damage. Environmental damage under the European Communities (Environmental Liability) Regulations 2008 means:

- Water damage that has significant adverse effects on water status under the Water Framework Directive (2000/60/EC);
- Land damage that creates a significant risk to human health as a result of the direct or indirect introduction, in, on or under land, of substances, preparations, organisms or micro-organisms; and
- Damage to protected species and natural habitats.

The Regulations represent an overarching piece of legislation that can be used in concert with all the Agency's existing powers but will only be used in the appropriate circumstances when environmental damage has occurred as a result of an incident.

2.3 BEST MANAGEMENT GUIDELINES

The following Guidelines should be used, as a minimum, by the contractor to prepare their Method Statements and Environmental Management Plan:

- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters. Inland Fisheries Ireland, January 2016;
- Fishery guidelines for Local Authority works. Department of Marine and Natural Resources 1998;
- CIRIA – Guideline Document C532 – Control of Water Pollution from Construction Sites;
- CIRIA – Guideline Document C624 – Development and Flood Risk – Guidance for the Construction Industry;
- CIRIA Guidance C515: 'Control of groundwater for temporary works' (Somerville et al., 1986);
- CIRIA Guidance C741: Environmental good practice on site guide (Charles & Edwards, 2015);
- CIRIA Guidance C750D: 'Groundwater control: design and practice' (Preene et al., 2016); and
- CIRIA - Control of water pollution from construction sites - guide to good practice (SP156);
- CIRIA - C648 Control of water pollution from linear construction projects & Site Guide C649;

- NetRegs Guidance for Pollution Prevention for works and maintenance in or near water (NetRegs, 2017);
- Environment Agency Pollution Prevention Guidelines for construction and demolition sites (EA, 2012).
- Inland Fisheries Ireland 2016 Guidance on Protection of Fisheries During Construction Works In and Adjacent to Waters.
- Traffic Signs Manual / Department of Transport requirements for temporary traffic control.
- PAS 2080:2023 Carbon Management in Buildings and Infrastructure
- EN 15978:2011 and EN 17472:2022 for whole-life carbon modules

Should this document further develop to contract stage, the following documents should be reviewed and associated requirements applicable to this contract be included within this Plan:

- Tender/contract documents
- Site Investigation
- Planning Application Documents (EIAR) and Planning Permission Conditions

2.4 WASTE MANAGEMENT CONTEXT

The Department of Environment, Climate and Communications (DECC) published the Waste Action Plan for a Circular Economy in September 2020 and is Ireland's new roadmap for waste planning and management. This Plan shifts focus away from waste disposal and looks instead to how we can preserve resources by creating a circular economy. The 2020 Plan replaced "A Resource Opportunity – Waste Management Policy in Ireland" (DoECLG, 2012).

The Plan outlines the contribution of the sector to the achievement of a number of other national plans and policies including the Climate Action Plan. It also matches the level of ambition being shown across the European Union through the European Green Deal, which encompasses a range of actions supporting circularity and sustainability. The Waste Action Plan for a Circular Economy sets out a range of aims and targets for the State and the measures by which these will be achieved, including increased regulation and measures across various waste areas such as Circular Economy, Municipal Waste, Consumer Protection and Citizen Engagement, Plastics and Packaging, Construction and Demolition, Textiles, Green Public Procurement and Waste Enforcement.

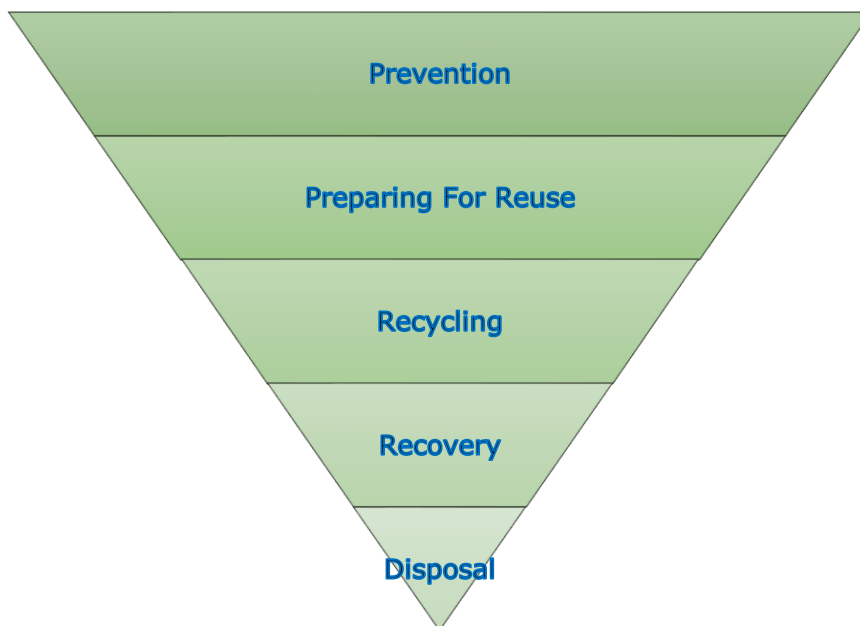
The Circular Economy and Miscellaneous Provisions Act 2022, which was signed by the President and has become law, underpins Ireland's shift from a "take-make-waste" linear

model to a more sustainable pattern of production and consumption, that retains the value of resources in our economy for as long as possible and that will to significantly reduce our greenhouse gas emissions.

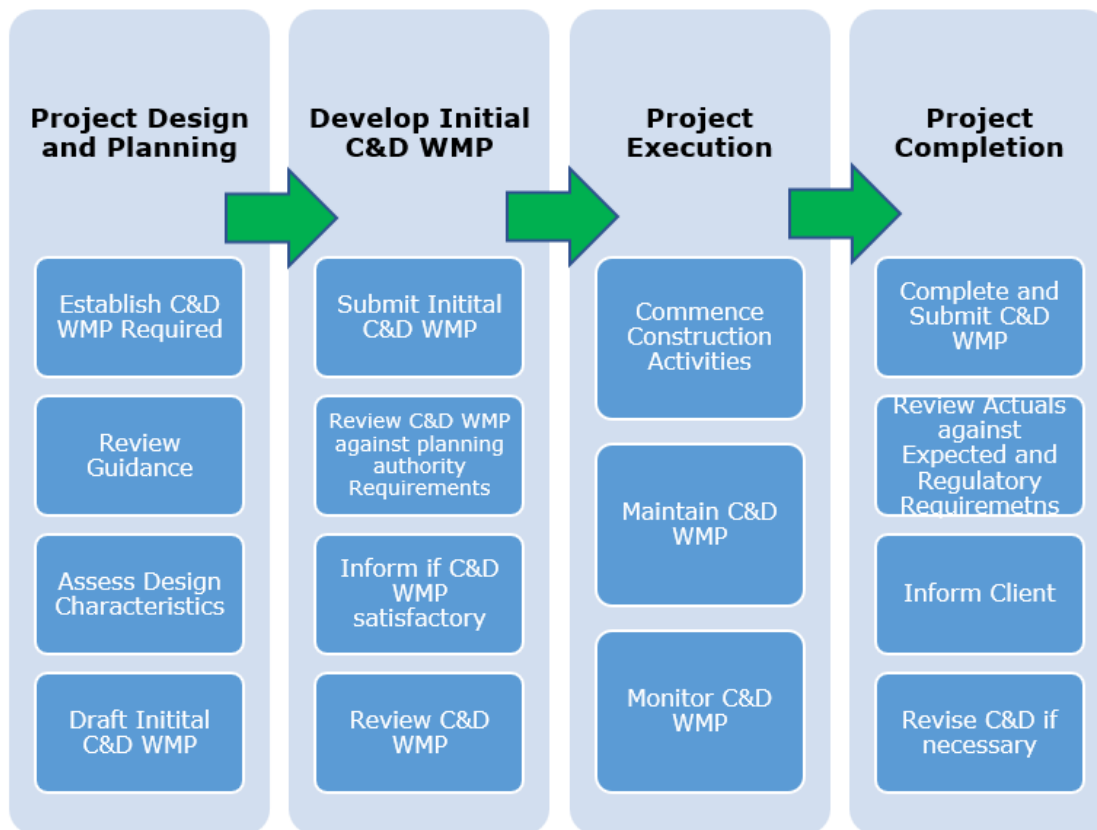
The Eastern Midlands Waste Management Plan 2015-2021 provides the framework for solid waste management in the region and sets out a range of policies and actions to meet specified mandatory and performance-based targets. The Eastern and Midlands Waste Region comprises 12 local authority areas of Dublin City, Fingal, Dún Laoghaire-Rathdown, Kildare, Laois, Longford, Louth, Offaly, Meath, Wicklow, Westmeath and South Dublin.

In terms of planning, the Plan sits alongside county and city development plans, guiding the development of regional and national waste treatment infrastructure. However, the scope of the regional plan is more than just the identification of infrastructure for the waste sector; it provides a roadmap for better coordination, prevention, resource efficiency and regulatory activities. This plan is currently being revised to accord with National Policy.

Figure 2.1 EU and National Waste Hierarchy



Waste management on construction sites is an iterative and step-by step process and accordingly the C&D WMP will be considered as a live document which requires inputs and updates over the entire construction phase.

Figure 2.2 EU and National Waste Hierarchy

In terms of the current Westmeath CDP and of relevance to the development proposal and waste management during the lifecycle (construction to decommissioning) of the project are the following waste management policies:

CPO 10.122: Support the implementation of the Eastern Midlands Region Waste Management Plan 2015-2021 and any updates made thereto.

CPO 10.123: Encourage and support waste prevention, minimisation, reuse, recycling and recovery as methods of managing waste.

CPO 10.124: Facilitate the transition from a waste management economy to a green circular economy to increase the value recovery and recirculation of resources.

CPO 10.126: Promote and facilitate communities to become involved in environmental awareness activities and community-based recycling initiatives or environmental management initiatives that will lead to local sustainable waste management practices.

3 SITE DETAILS

3.1 SITE LOCATION

The proposed development is located on a 240 hectares (ha) site in the townlands of, Gneevebane, Oldtown, Farthingstown, Castlelost and Kiltotan and Collinstown, Co. Westmeath (see Figure 3.1). The proposed development lands are located approximately 2km southwest of Rochfortbridge and 3.5km northeast of Tyrrellspass. The M6 motorway defines the southern boundary of the proposed site and the R446 (N6) provides the proposed main access point to the site and defines part of the northern site boundary.

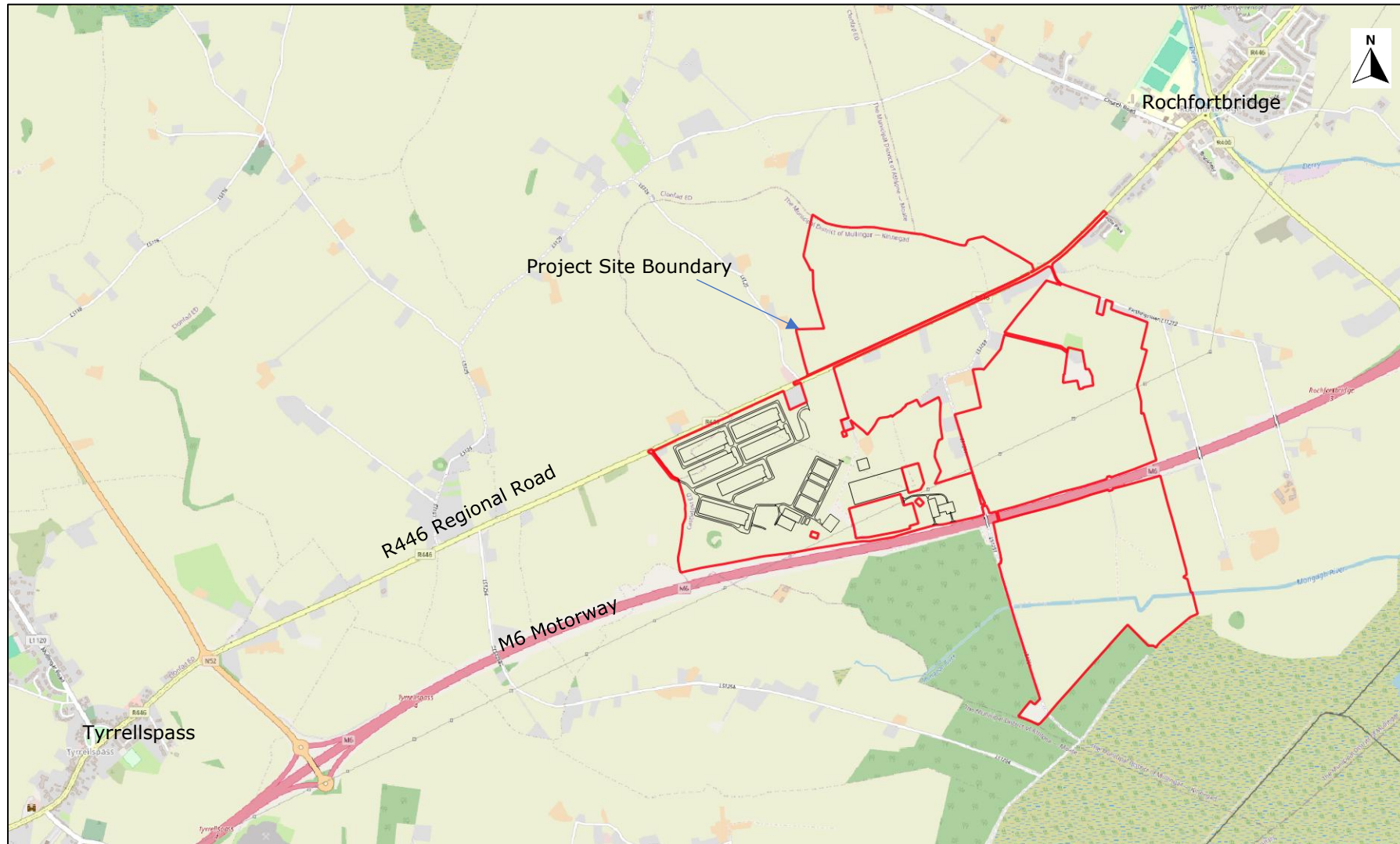
The lands within the development boundary gently rise from the lowest point of 93.5m OD in the southeast close to the boundary with the M6 motorway to 107.1m OD in the west of the site and 105m OD and 107m OD at the position, where the lands border the R446. The proposed development is located adjacent to the existing Castlelost Flexgen Power Plant and 220kV Gas Insulated Switchgear (GIS) electrical substation.

There are areas of extensive cutaway bogs, quarries and forestry located to the south and beyond the M6 motorway. Lands in the general area of the site are predominantly agricultural pastures with some parcels of arable lands.

The development lands contain some farm sheds, outbuilding and a derelict house which will be demolished and removed from site in accordance with best practice.

A map showing the Site Location is presented in Figure 3.1.

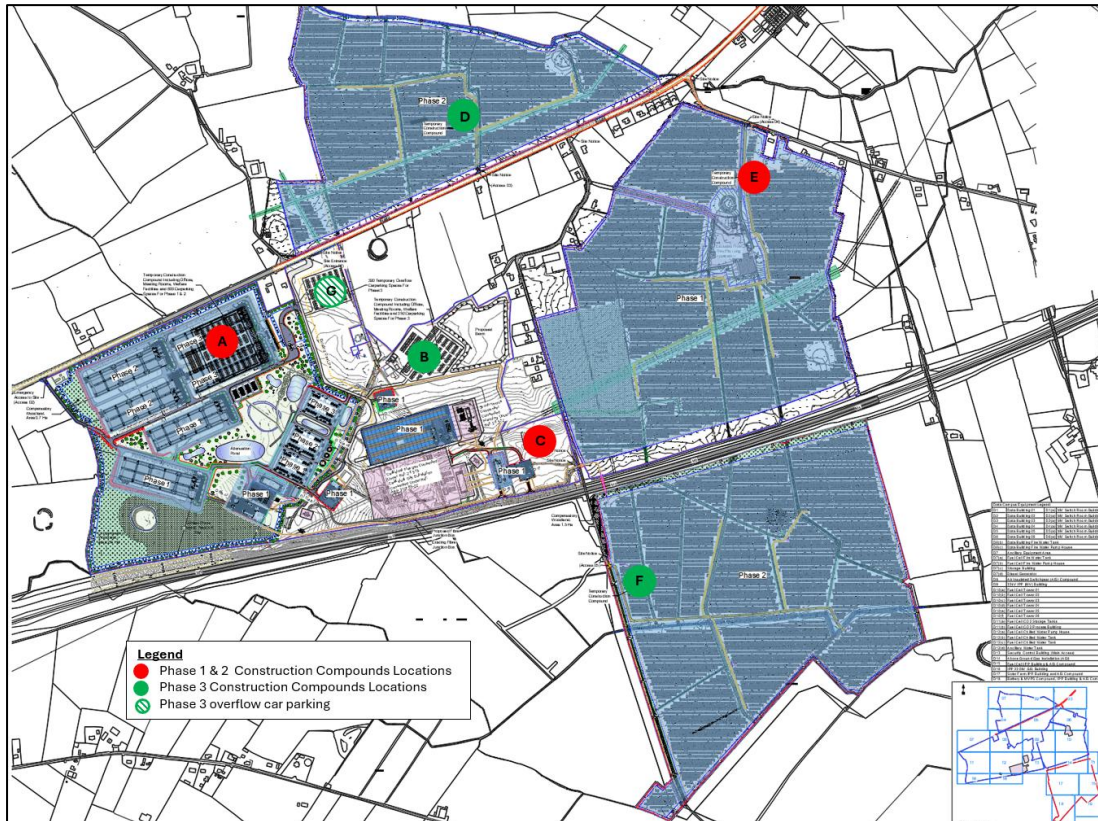
Figure 3.1 Site Location Map



3.2 SITE COMPOUND

Temporary site compounds shall be provided during the construction stage at various locations across the site to provide for a phased sequence of works. These are illustrated in Figure 3.2 and labelled (A-F) for description purposes.

Figure 3.2 Site Layout Drawing showing Locations of Construction Compounds



3.2.1 Temporary Construction Compound Facilities

Construction compounds will typically contain the following facilities at a minimum:

- Canteen space for all construction workers;
- Office space with lighting, heating and internet facilities;
- Diesel generator to provide power;
- Toilets and adequate welfare facilities for construction staff in accordance with the relevant statutory Health & Welfare guidelines;
- Parking space for both light and heavy vehicles;
- Waste storage area;
- Site offices;
- Meeting rooms;

A storage unit to securely hold equipment and materials required for site operations.

Figure 3.3 Construction Compounds A, B (& G) Layout

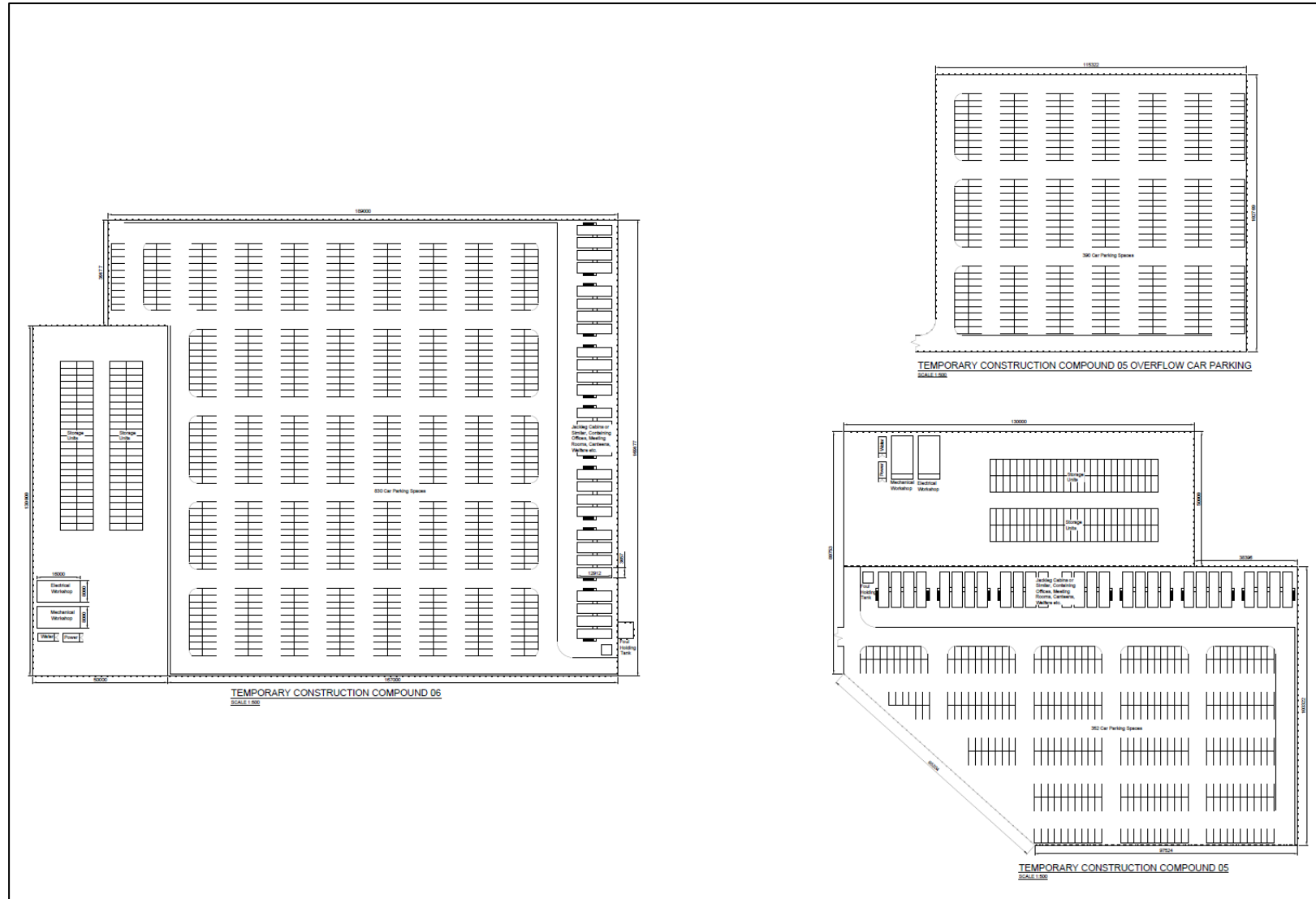


Figure 3.4 Construction Compound D, E & F Layout

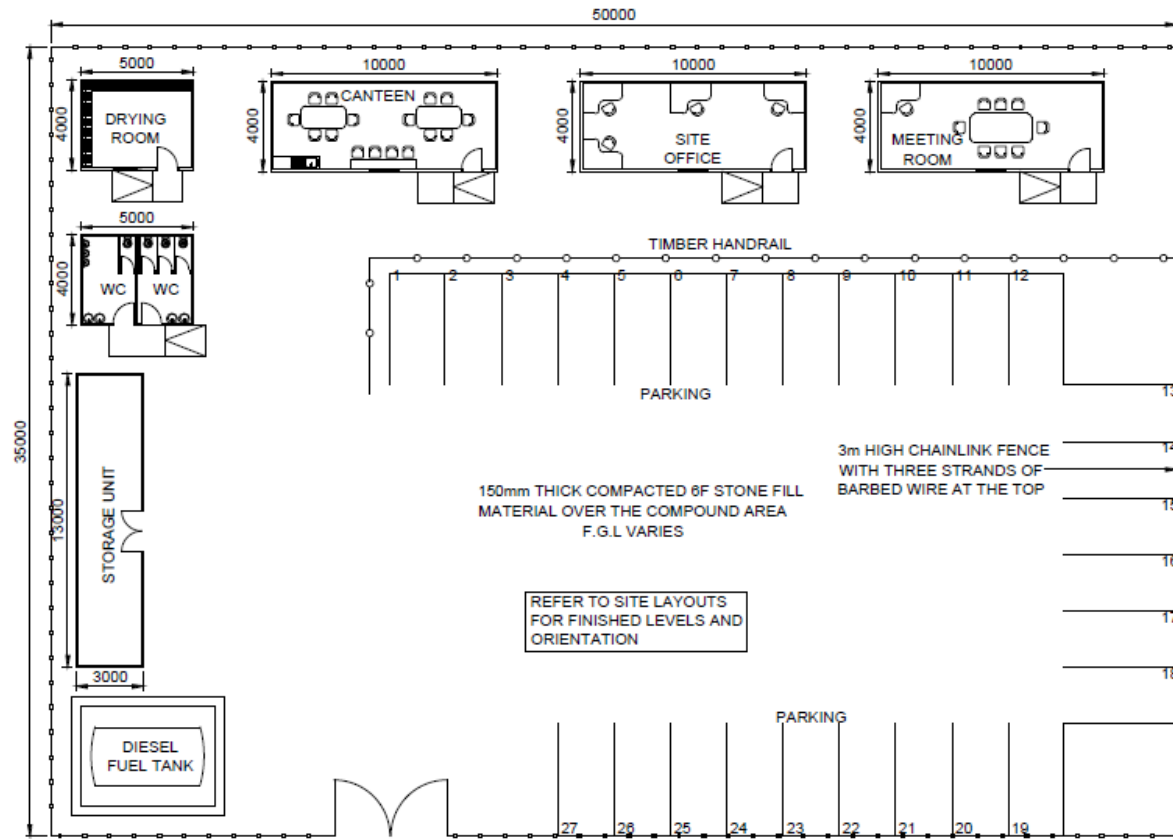
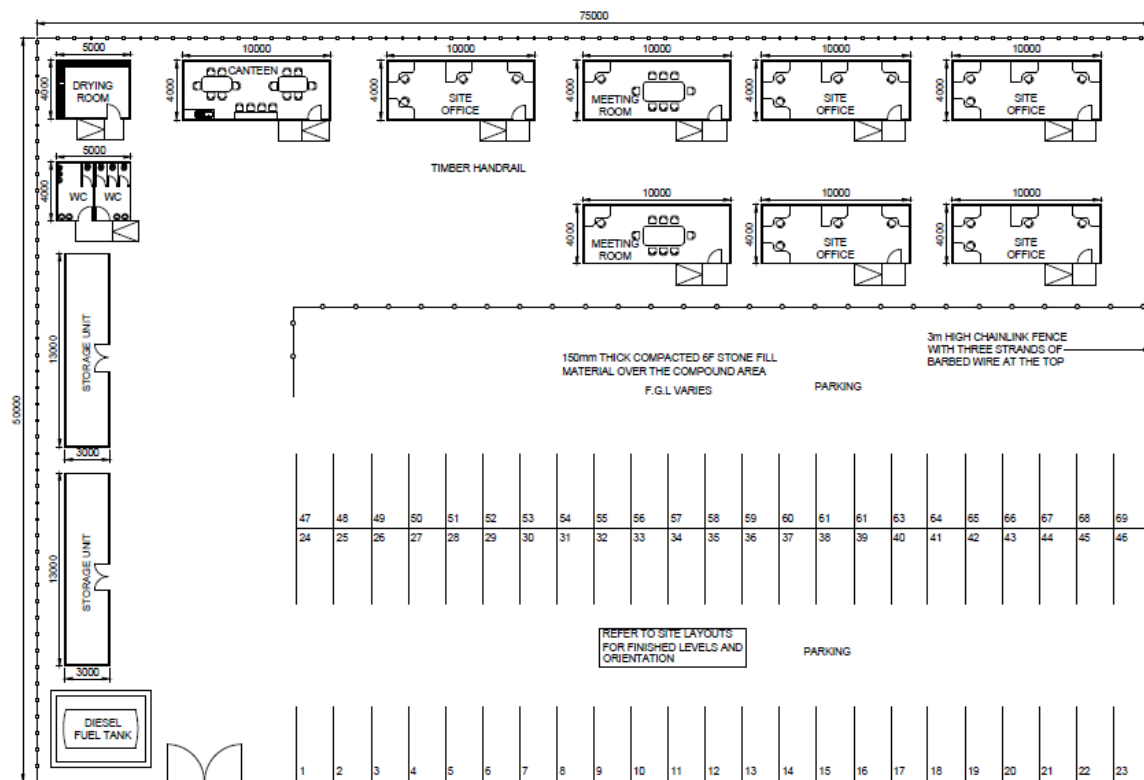


Figure 3.5 Construction Compounds C Layout



The final configuration of the construction compounds will be tailored to the site and will be agreed with the Planning Authority prior to commencement of development. The location of these temporary facilities has been considered as part of the design of the proposal, the layout of which will include a geotextile base and silt fencing as part of environmental controls. On completion of the construction stage the compound areas will be repurposed as proposed in layout drawings.

All relevant statutory welfare facilities will be provided as part of the temporary construction compound, including canteen facilities and drinking water supply, toilet, wash up and locker facilities, first aid facilities and offices for site engineers and contractors.

Portable toilet and wash facilities will be provided from a licenced sanitation supplier bound by Environmental Protection and Health & Safety legislation. Toilets will be serviced on a weekly basis or where necessary, according to type. A record of servicing will be kept by the operator.

Washing and changing areas will be located adjacent toilet facilities and a supply of clean warm and cold water maintained. Soap and other means of cleaning and towels or other suitable means of drying will be provided and replenished as part of servicing arrangements by the licenced sanitation supplier. All wastewater will be collected and removed from the site. Sufficient ventilation and support lighting will be provided.

A supply of drinking water will be stored and made readily available. Rest facilities will provide shelter from wind and rain. These will have adequate numbers of tables and seating, a means for heating water for drinks and for warming up food will be provided. Rest areas will not to be used to store plant, equipment or materials.

4 CONSTRUCTION WORKS

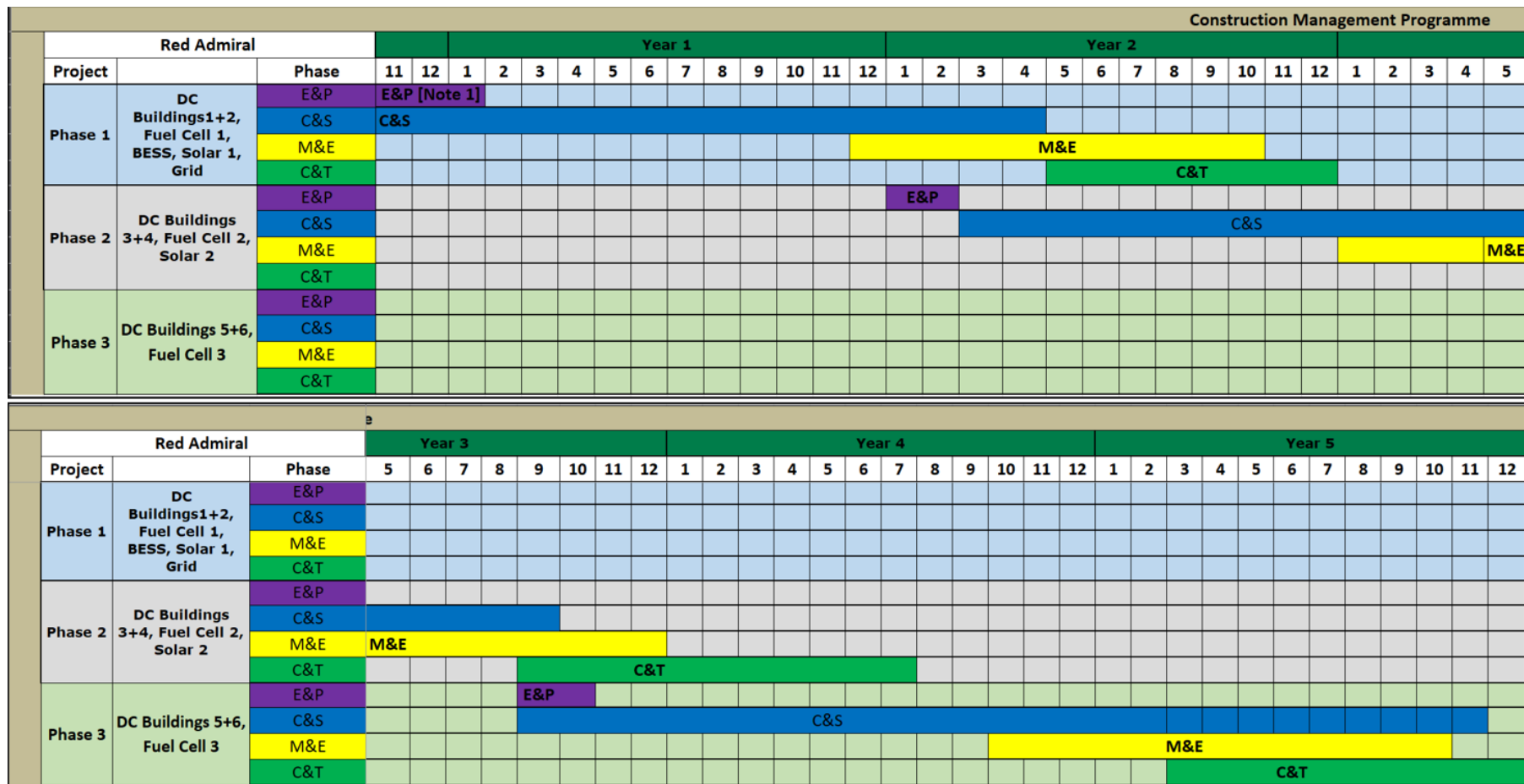
4.1 OVERVIEW

It is envisaged that the proposed development will be constructed over an estimated 62-month period. After the estimated 62-month construction period, it is expected that all components will be fully constructed, commissioned and capable of operating as designed.

The specific details of the construction programme are not currently known as such this programme will be developed under EPC contract as part of the detailed design phase. It is therefore difficult to assess the staffing and delivery levels for the development; however, an estimate is provided in Figure 4.1 and Figure 4.2. It is considered that the design and proposed layout of projects has developed sufficiently to discuss the potential environmental impacts of proposed construction methods. An estimate of construction traffic volumes has been made for a site of this size and typical works associated with a development of this type are described.

The timing of the commencement of construction is subject to planning, design, tendering and ecological constraints. Any works associated with site clearance and removal of soils and internal hedging would be seasonally limited to mitigate against any adverse ecological effects. The impact of construction activities on Biodiversity and Roads and Traffic are assessed in the EIAR. This preliminary construction environmental management plan will be developed and implemented for the construction phase of the development. The document will provide a framework under which construction activities, which have potential for environmental impact (e.g., generation of dust, ecological impacts, surface water discharge, etc.), will be managed. Mitigation measures as outlined in the EIAR are included within this plan. An indicative construction schedule for each project relative to each other is outlined below in Figure 4.3. It should be noted that the timing and phasing of projects and activities are approximate and are indicative rather than a definitive programme of works.

Figure 4.3 Indicative Construction Programme



Notes:

1. The construction timelines for each project are indicative and will be finalised at detailed design stage of the projects.
2. E&P = Site Evaluation and Preparation (Works)
 C&S = Civil & Structural (Works)
 M&E = Mechanical & Electrical (Works)
 C&T = Commissioning and Testing (Works)

4.2 PHASE 1 CONSTRUCTION WORKS

4.2.1 Data Centre (DC) Buildings 1 and 2



4.2.2 Fuel Cell (Power Tower 1)



4.2.3 BESS

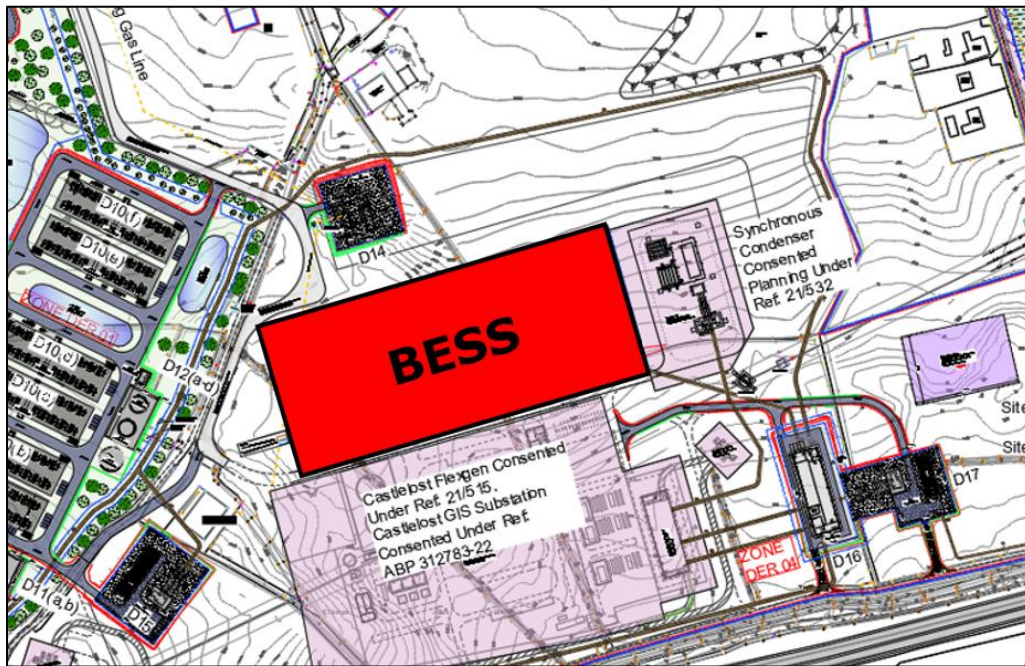
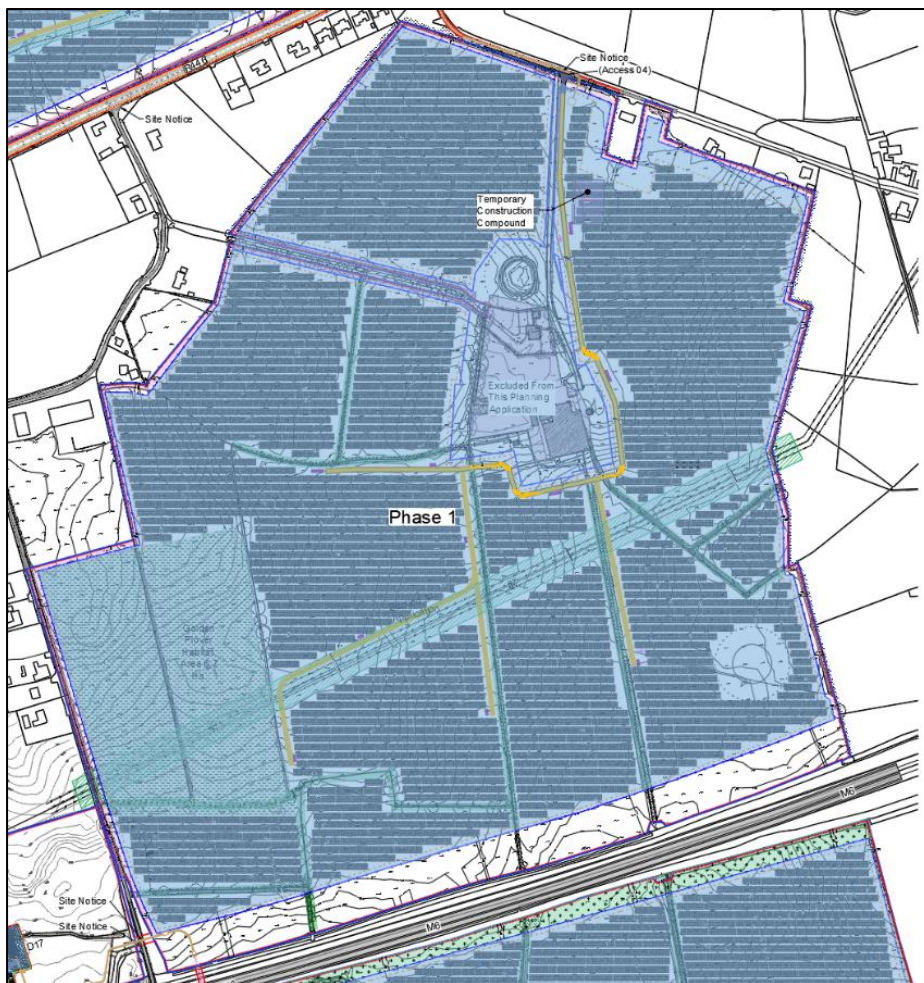


Figure 4.4 Solar Farm – Phase 1



4.2.4 Solar Farm – Typical Construction Works

The solar PV panels will be mounted on supporting structures, in the form of metal frames, which are typically anchored by driven or screw piles to a depth of up to 2m, causing minimal ground disturbance and occupying less than 1% of the land area. The angled racks will be anchored to the ground using one of the following methods:

- Screw piles or rammed piles: This is the preferred method of founding the racks, as it is the quickest to construct and most economical. This can be considered the default method and it is expected that the vast majority of the site will use screw or rammed piles as anchors;
- Pre-drilled holes with backfilling/concrete: In certain cases, geotechnical conditions such as the presence of rock close to the surface may require foundation holes to be pre-drilled prior to ramming the piles. These holes would then be backfilled with concrete or other aggregate. A pre-construction geotechnical assessment will confirm if this type of anchor is required. It is expected that this would only be deployed in localised pockets of land where rock was present, if at all;
- Ballast foundations: This foundation type can be used in localised circumstances where penetration of the ground surface is not possible. This method uses concrete anchors to counteract any lift forces generated by wind loading on the modules. Ballast foundations could be deployed in areas of the site in the event of rock near the surface, or where there is potential for sub-surface archaeology.
- With the exception of a specific scenario where pre-drilled holes are necessary, there are no concrete works required in the installation process. The anchoring of panels will be followed by DC cabling, connections to inverters/transformers and a period of associated testing.

4.2.5 Grid Connection

The 220KV IPP GIS grid connection comprises a two-storey building positioned and secured within a palisade fenced compound. The GIS building will contain a battery room, generator room, stairs, cable pits, switchgear rooms, workshop, messroom and stores. The 220kV IPP GIS Building will be located east and adjacent to the existing Castlelost 220kV GIS substation (an existing node on the electricity transmission system) and connect the DC facility and collocated storage and generation DER assets to the national grid facilitating the use of renewable energy from the grid through commercial power purchase agreements (CPPAs) when abundant. Because of its proximity to the Castlelost node, the extent of the necessary grid connection infrastructure works, and potential associated impacts are limited (two underground HV cables (<100m distance). Associated

internal roads, fencing, lighting, civils and drainage works will be appropriately developed for the subject development.

It will be constructed in accordance with EirGrid's *Transmission Policies and Standards* and the associated ESB Networks general specifications. Foundations will be constructed to engineer's specifications and the steel frame building will be clad with non-combustible insulated coated metal cladding.

4.2.6 Ancillary Site Works, including specifications, internal roads and drainage.

4.2.6.1 Drainage

As part of detailed design and in advance of any construction activities, a construction site drainage plan will be developed to assist with micro siting of proposed drainage controls. Artificial drains will be excavated and settlement ponds constructed to eliminate any suspended solids within surface water running off the site. Drainage infrastructure will include:

- Interceptor drains will be maintained up-gradient of all proposed infrastructure to collect clean surface runoff, in order to minimise the amount of runoff reaching areas where suspended sediment could become entrained.
- Swales/roadside drains will be maintained to intercept and collect runoff from access roads and hardstanding areas of the site, likely to have entrained suspended sediment and channel it to settlement ponds for sediment settling;
- Check dams will be maintained at regular intervals along interceptor drains and swales/roadside drains in order to reduce flow velocities and therefore minimise erosion within the system during storm rainfall events; and,

Settlement ponds, emplaced downstream of swales and roadside drains, will buffer volumes of runoff discharging from the drainage system during periods of high rainfall, thus reducing the hydraulic loading to watercourses. The settlement ponds will be sized according to the size of the area they will be receiving water from but will be sufficiently large to accommodate peak flows storm events. Inspection and maintenance of all settlement ponds will be ongoing through the construction period. Best practice and practical experience on other similar projects suggest that in addition to the drainage plans that are included in the EIAR, there are additional site-based decisions and plans that can only be made in the field through interaction between the Site Construction Manager and Environmental Advisors. In relation to decisions that are made on site it is important to stress that these will be implemented in line with the associated drainage controls and mitigation measures of the EIAR and to ensure protection of all watercourses.

- Site boundary markings to safeguard features of interest/value, including drains and streams.
- Silt fencing may be installed strategically around and through the site. The location of the silt fencing will be determined in the construction stage CEMP and will be subject to a detailed assessment of the planned works methodology and works area. The purpose of the silt fencing is to prevent silt laden water leaving the site and entering adjoining lands and the existing watercourse with the potential to impact watercourses. It will consist of a double layer of geotextile membrane fixed to wooden stakes approximately 600mm high. The membrane will be anchored into the ground to form a continuous barrier to silt laden water from the works site. Silt fences will be monitored via a silt inspection log (to be maintained by the Environmental Manager/ ECoW) and periodically maintained during the construction period. Typical maintenance will consist of repairs to damaged sections of membrane and removal of a build-up of silt on the upslope side of the fence. Daily silt fence inspections are recommended as part of their operation ensuring that any necessary repairs can be expedited.
- Drainage ditches will be installed to intercept surface water where there is a risk of significant water flow into excavations, adjoining lands or the existing watercourse. There will also be a requirement to periodically pump water from excavations. All collected and pumped water will have to be treated.
- Emergency contact numbers for the Local Authority Environmental Section, Inland Fisheries Ireland, the Environmental Protection Agency and the National Parks and Wildlife Service will be displayed in a prominent position within the site compound. These agencies will be notified immediately in the event of a pollution incident.
- Site personnel will be trained in the importance of preventing pollution and the mitigation measures described here to ensure same.
- The Environmental Manager or ECoW will be responsible for the implementation of these measures. They will be inspected on at least a daily basis for the duration of the works, and a record of these inspections will be maintained.
- Any temporary storage of soil, hardcore, crushed concrete or similar material will be stored 50m from any surface water drains. All temporary storage areas should also have surface run-off controls in place to prevent migration of possible materials. There can be no direct pumping of silty water from the works directly to any watercourse. All water from excavations must be treated by infiltration over lands or via settlement areas, silt busters etc.

4.3 PHASE 2 CONSTRUCTION WORKS

4.3.1 Data Centre (DC) Buildings 3 and 4



4.3.2 Fuel Cell (Power Tower 2)



4.3.3 Solar Farm - Parcels 2 & 3

Figure 4.5 Solar Farm Phase 2 – (Northern Section)

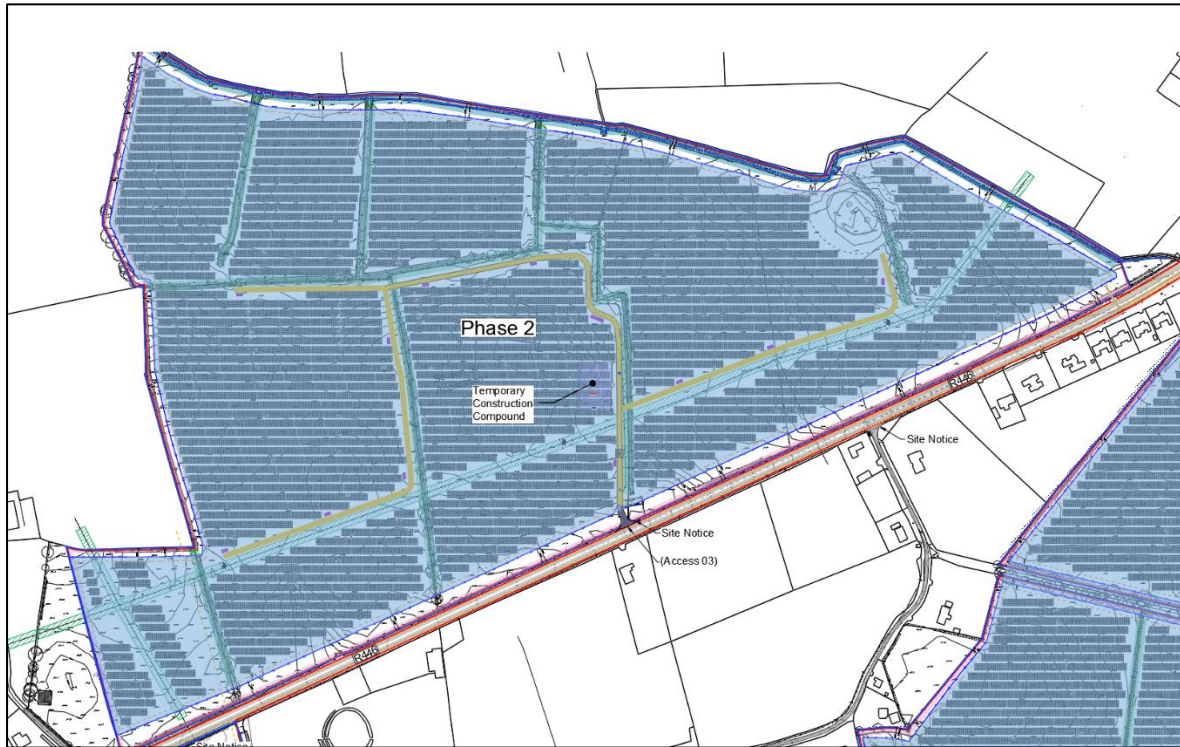
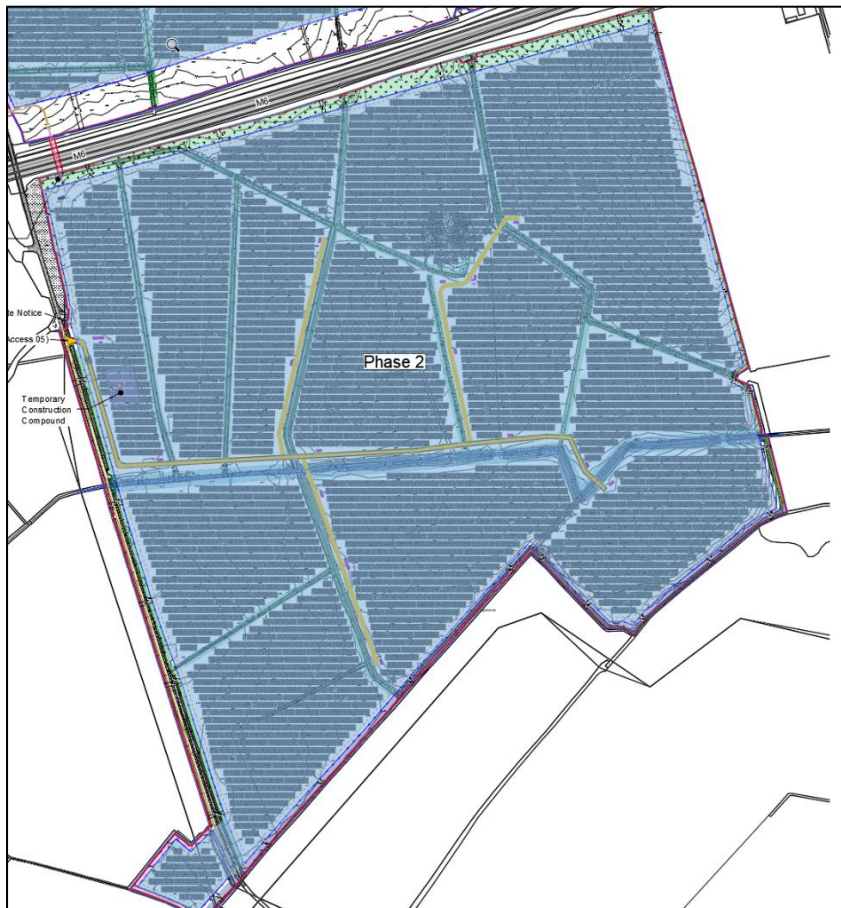


Figure 4.6 Solar Farm 3 – Phase 2 (Southern Section)



4.4 PHASE 3 CONSTRUCTION WORKS

4.4.1 Data Centre (DC) Buildings 5 and 6



4.4.2 Fuel Cell (Power Tower 3)



4.5 SEQUENCE OF CONSTRUCTION ACTIVITIES

4.5.1 Site Set Up

This activity will typically take between 2-3 months within each phase. Initial set up works in each phase will involve the establishment of temporary construction compounds, site excavation, foundation work, and other groundwork activities. The location of the construction compounds is identified in Figure 3.2. Phase 1 Excavation and Piling (E&P) works are estimated to take 3 months to complete, (months 1-3). Phase 2, (E&P) works are estimated to take two months to complete (months 15 & 16). Phase 3, (E&P) works are estimated to take two months to complete (months 43 & 44).

4.5.2 Phase 1

Civil and structural (C&S) works will commence in month 1 through to month 18 and will include the construction of DC buildings 5 and 6, Fuel Cell (Power Tower) 1, BESS, Solar Farm (central parcel), and Grid Connection (220kV IPP GIS). Mechanical and Electrical (M&E) works will be carried out from months 14-24 and will involve the installation of mechanical and electrical systems. Finally, Commissioning and Testing (C&T) works will be carried out from months 19-26 to ensure all aspects of Phase 1 are functional and meet specifications.

4.5.3 Phase 2

C&S works will commence from month 17 through to month 35. It will involve the construction of DC Buildings 3 and 4, Fuel Cell (Power Tower 2) and Solar Farm (northern and southern parcels). It is expected that M&E works will be carried out from months 27-38 and will involve the installation of mechanical and electrical systems. Finally, C&T works will be carried out from months 35-45 to ensure all aspects of Phase 2 are functional and meet specifications.

4.5.4 Phase 3

C&S works will commence from month 35 through to month 61. It will involve the construction of DC Buildings 1 and 2, Fuel Cell (Power Tower 3). M&E works will be carried out from months 48-58 and will involve the installation of mechanical and electrical systems. Finally, C&T works will be carried out from months 53-62 to ensure all aspects of Phase 3 are functional and meet specifications.

4.5.5 Pre-commissioning/commissioning

The pre-commissioning survey work will be completed following the construction of the solar farm and will comprise the inspection of all electrical equipment, earthing and bus

wiring. All relevant site tests will be completed, including conductivity, resistance, timing and other mechanical operational checks. Follow on commissioning tests will then be completed.

4.6 ORGANISATIONAL STRUCTURE AND RESPONSIBILITIES

The construction project will be managed by an EPC /Main contractor. The EPC /Main contractor will appoint a Construction Project Manager who will have responsibility for coordinating and managing good environmental and health and safety practices during construction.

The Construction Project Manager shall maintain monthly environmental programmes to ensure that construction activities on this contract are planned and managed in accordance with the environmental requirements stipulated by the Client /Owners Engineer. This management structure will be further defined by the appointed contractor and will include the names of the assigned personnel with the appropriate responsibility and reporting structure.

4.7 CONTACTS

4.7.1 Primary Contacts

Table 4.1 Primary Contacts

Title	Name	Phone	Email
Project Manager			
Construction Manager			
SHEQ Advisor			
Site Engineer			
Quantity Surveyor			
Waste Representative			

The EPC Contractor /Main Contractor is responsible for ensuring that all employees and sub-contractors follow the requirements of the CEMP. The Contractor will be required to provide training and supervision to ensure that the requirements are adhered to. It is anticipated that the main environmental responsibilities for the key staff will be as set out below (TBC by the Contractor).

4.7.2 Third Party Contacts**Table 4.2 Third Party Contacts**

Organisation	Position	Name	Phone	Email
Westmeath County Council				
Inland Fisheries Ireland				
Transport Infrastructure Ireland (TII)				
Office of Public Works (OPW)				
Environmental Protection Agency (EPA)				
National Parks and Wildlife Services (NPWS)				
Health and Safety Authority (HSA)				
Emergency Services				
Department of the Environment, Heritage and Local Government				
Other				

The **Construction Project Manager** will:

- Provide information on contract requirements, including scope of works and forecast of waste quantities to SHEQ Advisor following contract award and prior to start of works on site and also when any changes occur;
- Nominate the following as required: Waste Rep, person to undertake weekly Site Compound checks, person to check drip trays and bunds and person to supervise refuelling of tanks and bowsers, person to complete watercourse monitoring Booklet (where applicable), person to complete air quality and noise booklet (where applicable);
- Ensure a forecast of waste types, quantities and disposal routes is produced before works start on site;
- Ensure required consents are obtained before associated works start;
- Ensure environmental waste minimisation and environmental mitigation measures are incorporated into design, construction method and/ or materials employed, where possible;
- Ensure environmental and waste requirements are included on Requisitions and in Subcontracts and Orders;
- Ensure a current version of the Contract Organisation Chart is displayed on site notice boards and individuals with environmental responsibilities are named on the Authorised Signatures List where appropriate;
- Ensure oil, including diesel, is stored in properly bunded tanks/ bunded mobile bowsers/ drip trays;
- Report Incidents in accordance with the reporting system;
- Report Non-conformances via the non-conformance tool;
- Report Incidents and Non-conformances to the SHEQ Advisor as soon as possible;
- Ensure the SHEQ Advisor is informed of environmental complaints;
- Liaise with Statutory Authorities and Client as required and ensure records of communication (including verbal) are kept. Ensure Statutory Authorities are always accompanied on site (preferably by the Project Manager and the SHEQ Advisor);
- Notify the Environmental Health Officer of any particularly noisy works or any works outside the contract hours before construction begins;
- Ensure all residents are notified of noisy works before they begin;
- Ensure environmental performance including review of Incidents and Non-conformances, Waste arisings and any Contract Objectives and Targets are included as part of Contract Review Meetings;

- Approve the Contract Environmental Management Plan and ensure employees and subcontractors implement the environmental controls;
- Ensure employees and subcontractors receive Induction Training (including environment) and Tool Box Talks as appropriate;
- Ensure staff needed for audits are available when required;
- Ensure actions resulting from Corrective Action Requests and Observations raised during audits are completed by the deadlines and signed off copies of Corrective Action Requests are forwarded to the relevant SHEQ Advisor;

The Ecological Clerk of Works (ECoW)

- Ensure that all mitigation measures used to protect the environment are in place and are maintained during the work;
- Undertake and report on the weekly monitoring and undertake the weekly site audits;
- Revise the mitigation measure if the monitoring evidence indicates that the measure is not effectively protecting the environment;
- Undertake an invasive species survey in advance of any soil being excavated for disposal off-site. If invasive species are identified the ECoW will prepare an Invasive Species Management Plan;
- Supervise any excavation; and
- Provide toolbox talks to all sub-contractors before they start on site.

The **SHEQ Advisor** will:

- Ensure the implementation of the Environmental Management System, and associated documentation on a daily basis.
- Address day to day environmental matters and communicate with construction management team
- Obtain environmental regulatory consents/permits as required (e.g. EPA, Westmeath County Council, OPW. National Waste Collection Permit Office (NWCPO), Inland Fisheries & NPWS).
- Report Environmental Incidents to the Statutory Authorities if necessary.
- Log and monitor Environmental Incidents and Non-conformances.
- Disseminate information including changes to legislation, to relevant employees.
- Identify employees that require environmental training, provide training and maintain training records.
- Provide advice and deal with queries and correspondence on environmental issues.

- Identify significant environmental impacts for contracts and help set-up contracts and site compounds to include necessary controls.
- Identify any environmental consents that are required and ensure they are obtained.
- Produce the Contract Environmental Management Plan and / or Site-Specific Information.
- Produce/ maintain or ensure production/ maintenance of all aspects of Site Waste Management Plan
- Monitor waste quantities and verify & validate the waste records obtained from site.
- Undertake contract environmental inspections to ensure controls are in place and working.
- Monitor progress in closing out Corrective Action Requests and Observations raised during audits.
- Agree process for regular reporting to senior management on the Contract.
- Ensure all environmental records are kept and readily available.
- Obtain prior agreement from site management in writing for any deviations from assigned Procedures (e.g. use of client procedures or forms).

Quantity Surveyor will:

- Check that Waste Carriers are registered and Waste Management Sites are licensed before subcontracts or orders are placed.
- Ensure environmental and waste requirements are included on Requisitions/ Subcontracts or Orders.
- Reconcile waste invoice against Waste Transfer Notes/ Consignment Notes and tip receipts before authorising payment.
- Monitor waste quantities and costs and provide information to assist in the production of Site Waste Management Plan Reports.

Waste Rep will:

- Arrange for collection of waste.
- Keep an up-to-date record of waste removed from Site
- Confirm with SHESQ Advisor that Waste Collection Permits/ Waste Facility Licenses are valid and either keep a record of confirmation or obtain copies for site files
- Complete and sign Waste Transfer Notes/ Hazardous Waste Consignment Notes. Give copies to Drivers, send top copy to invoicing and keep photocopy on file.
- If hazardous waste is being removed, complete and retain a copy of the Waste Transfer Form.

- Ensure waste storage/ segregation/ recycling activities are correctly implemented and appropriate waste records and statistics are maintained.

Subcontract Buyers will:

- If a subcontractor is to act as a Waste Carrier and dispose of waste provide details of their Waste Collection Permit and the intended disposal sites Waste Licence to SHEQ Advisor before placing subcontract.
- Include environmental and waste requirements in subcontracts.

Drivers will:

- Inform the Waste Rep. what waste they are removing and where it is being taken prior to removing any waste from site.
- Collect Waste Transfer Note/ Consignment Note from Waste Rep when collecting waste.
- Only take waste to a licensed Waste Management Site as instructed by the Waste Rep/ SHESQ Advisor.
- Get Waste Management Site to sign Waste Transfer Note/ Consignment Note and give to SHESQ Advisor along with all associated receipts.

All Construction Staff will:

- If there is an incident, stop work, contain it and report it to the Site Manager.
- Contact the Waste Rep when waste needs to be removed.
- Pass any queries or correspondence on environmental issues to SHESQ Advisor.
- Work in accordance with Group SHESQ Procedures, Contract Environmental Management Plan and Method Statements.

4.8 TRAINING

Environmental awareness training on this project will include:

- Induction Training
- Tool Box Talks
- Communication/ Briefing Sessions

Environmental awareness training included at induction shall cover the following basic elements:

- The SHEQ Policy

- Overview of applicable environmental legal and regulatory requirements
- The Construction Environmental Management Plan including works specific environmental aspects and impacts
- Carbon-management requirements, materials data capture and anti-idling expectations
- The Environmental Emergency response training including Spill Control & Spill Kits.
- The Construction Waste Management Plan
- CTMP routing, road safety, cyclist awareness and delivery rules
- Water Pollution Prevention and incident response
- Environmentally sensitive areas
- Fuel /chemical handling
- Wildlife/ Invasive Plants
- Ecology protection, bat/bird constraints and stop-work procedures
- archaeology chance-finds / exclusion zones
- Dust management controls
- Noise and vibration Controls
- Material Storage and Refuelling
- Complaints handling and public communications
- Reporting an Environmental Incident
- Other matters of environmental interest

The Environmental Advisor shall retain details and records of all training provided. Additional environmental training shall be provided as required by the Environmental Advisor or environmental experts.

Contract specific information will be displayed on notice boards and briefed to all staff. Site-specific Environmental Do's & Don'ts, which list the key controls specified in this Plan, will be issued to site operatives and subcontractors.

Training will be provided in accordance with the Core Skills Matrix. A Training Attendance Form will be completed for each training session and an Environmental Training Matrix will be maintained.

4.9 COMMUNICATION

4.9.1 Internal

Environmental issues will be reviewed at the monthly Contract Review meeting, in accordance with the appointed contractor's management system. The issues covered will include:

- Compliance contractor management system and any contract specific environmental requirements.
- Legal compliance e.g. consent requirements
- Environmental Incidents & Non-conformances
- Audit Corrective Action Requests to ensure actions are completed by deadlines.

4.9.2 External

The Project Manager (in conjunction with the SHEQ Advisor) will be responsible for receiving, documenting and responding to any environmental communication from third parties. All verbal communication from third parties will be logged in the contract Communication Log in accordance with the agreed Communication Plan.

The SHEQ Adviser will meet as required and as agreed with the client, with statutory agencies, e.g. Environmental Protection Agency, local authority (Westmeath County Council) Environmental Health Officers, Inland Fisheries Ireland, NPWS, other Stakeholders (Gardai, local business owners, landowners) and the local community to ensure works are carried out with minimal environmental disturbance.

The contractor will:

- Erect a site notice board at the entrance,
- display Site Manager /Traffic Coordinator contact details, hours of work and emergency numbers,
- notify nearby residents/businesses in advance of high-impact works or abnormal deliveries,
- log complaints from the public on a complaint record form record on the Complaint Register
- keep records of delivery schedules, incidents, inspections and complaints.

4.10 DOCUMENT CONTROL

All environmental documents will be controlled by the Appointed Contractor Procedures /Method Statements.

4.11 DESIGN

Environmental impacts of design will be managed in accordance with the Appointed Contractor Procedures /Method Statements. This involves including Environmental Design Aims in the Design Brief and monitoring these through the Design Review meetings.

4.12 CONTRACT CHECKS AND INSPECTIONS

The following inspections will be undertaken:

- Supervisor Weekly Checklist
- SHEQ Monthly Inspection
- Management Tours

4.13 RECORDS

Records will be maintained in accordance with the Appointed Contractor Procedures.

4.14 AUDITS

Internal audit of this contract will be undertaken in accordance with the Appointed Contractor Procedures.

4.15 MANAGEMENT REVIEW

A Contract Management Review will be undertaken every 3 months. Management reviews will be undertaken in accordance with the Appointed Contractor Procedures. Monthly environmental review meetings should also address:

- incidents/non-conformances,
- complaints,
- ecology constraints,
- traffic issues,
- audit findings,
- carbon/logistics reporting, and
- corrective actions.

4.16 SCHEDULE AND WORKING HOURS

It is envisaged that construction of the development proposal is likely to occur over an estimated 62-month period; refer to Figure 4.3 for the overall indicative timeframe and timeframes for each of the three projects.

Subject to agreement with the planning authority, it is anticipated that the following times will constitute the standard working hours¹ on the construction site.

- Monday to Friday 08:00 to 19:00
- Saturdays 09:00 to 14:00
- Site closed on Sundays and Bank Holidays,

Working hours may vary slightly depending on weather conditions and daylight hours during winter months. Heavy construction activities will be avoided where possible outside the normal working hours outlined above. Lighting for night-time working will be downward facing and directed towards the centre of the site so as to minimise any nuisance outside of the site in relation to residential receptors or light disturbance to ecological receptors.

4.16.1 Accommodation /Facilities

The relevant statutory requirements will be provided for all workers on the construction site as discussed in 3.2.1

¹ Typical Construction hours will apply with the exception of commissioning and specific engineering works (e.g., concrete pours) which could take place outside these hours, as and when agreed with the planning authority. It is likely that some construction activities will be required to continue for 24 hours for limited durations. The facility may be operational at any point during a 24-hour period during commissioning (and operation).

5 CONTROLS AND MITIGATION MEASURES

Controls specified in this section are designed to:

- Meet legal and contract requirements
- Limit the identified significant impacts
- Deal with unexpected environmental issues

Environmental controls (e.g. consent conditions) that are more specific to certain activities will be discussed and agreed in advance with the Project Manager and the appropriate public bodies including local authorities and the Environment Agency. The controls will then be included in site specific Method Statements in accordance with the Group Procedure – Preparation and Issue of Method Statements Risk Assessments.

5.1 SUBCONTRACTORS

Subcontractors will be appointed in accordance with the Appointed Contractor (EPC Contractor) Procurement Policy Procedures:

Subcontractors are required to work in accordance with this Construction Environmental Management Plan and Method Statements.

Table 5.1 Subcontractors

Subcontractor (name)	Scope of Works	Main Activities	Environmental Controls
TBC	Earthworks, Drainage & Services	Bulk excavation, filling, installation of drainage & site services	Subcontractor's Method Statement's environmental controls reviewed by Main Contractor
TBC	Concrete and Structural Works	Construction of concrete foundations and Buildings	Subcontractor's Method Statement's environmental controls reviewed by Main Contractor
TBC	Mechanical Works	Installation of modular equipment and process pipework	Subcontractor's Method Statement's environmental controls reviewed by Main Contractor
TBC	Electrical Works	Installation of SCADA and process electrical works	Subcontractor's Method Statement's environmental controls reviewed by Main Contractor
TBC	Testing & Commissioning	Testing & Commissioning of the process	Subcontractor's Method Statement's environmental controls reviewed by

Subcontractor (name)	Scope of Works	Main Activities	Environmental Controls
TBC	Earthworks, Drainage & Services	Bulk excavation, filling, installation of drainage & site services	Subcontractor's Method Statement's environmental controls reviewed by Main Contractor
			Main Contractor controls reviewed by Main Contractor
TBC	Site Fencing	Installation of Permanent boundary fence	Subcontractor's Method Statement's environmental controls reviewed by Main Contractor
TBC	Landscaping	Hard & Soft Landscaping of the site	Subcontractor's Method Statement's environmental controls reviewed by Main Contractor
TBC	Waste Disposal & Difficult waste disposal	Skip Supply Waste Removal/ Disposal	Duty of Care Waste Collection Permit
TBC	Dust Monitoring	Set up dust deposition jars Collection of the dust deposition jars and lab analysis (if required)	Subcontractor's Method Statement's environmental controls reviewed by Main Contractor
TBC	Noise Monitoring	Set up noise monitors at agreed locations (if required)	Subcontractor's Method Statement's environmental controls reviewed by Main Contractor
TBC	Site Compound	Installation, maintenance & removal of temporary site compound & security	Subcontractor's Method Statement's environmental controls reviewed by Main Contractor

The above is a non-exclusive list of the main subcontracted works.

5.2 RESOURCE USE

Measures to reduce resource usage during the planning and operational phases of the works will include the actions given in the table below.

Table 5.2 Management of Resources

TASK	RESPONSIBILITY
Fuel Combustion (Transport/Plant)	
Collect data on quantities of diesel/ petrol used in vehicles and plant.	Project Manager/ SHEQ Advisor/ Manager
Collect data on quantities of gas oil used.	Project Manager/ SHEQ Advisor/ Manager
Collect data on modes of transport to and from work and business miles travelled.	Project Manager/ SHESQ Advisor/ Manager
Explore options to reduce the amount of car travel to and from work and minimise the adverse environmental effects of business-related travel.	Project Manager/ SHEQ Advisor/ Manager
Promote good practise by encouraging use of sustainable modes of transport and where feasible use minibuses/ vans to transport staff.	Project Manager/ SHEQ Advisor/ Manager
Promote fuel efficiency and good driving practices	Project Manager/ SHEQ Advisor/ Manager
Ensure the correct vehicle, plant & equipment is provided and used for the work being undertaken. I.e. do not select equipment that is over-powered for the task being carried out.	Project Manager/ SHEQ Advisor/ Manager
Ensure vehicles, mobile plant, generators and other equipment are serviced regularly to maintain their efficiency.	Foreman
Switch off vehicles and other mobile plant when not in use.	All staff
Electricity	
Minimise the use of generators to provide electricity. Wherever possible connect to mains electricity as soon as possible.	Project Manager
Collect data on quantities of directly purchased electricity.	Project Manager/ SHEQ Advisor/ Manager

TASK	RESPONSIBILITY
Install energy efficient devices/ renewable energy where reasonably practicable e.g. Infrared sensors linked to lighting, air conditioning and heating controls.	Project Manager
Promoting energy efficiency with all staff. Identifying where energy savings can be made and implement them. E.g. turning off computers/ photocopiers when not in use.	SHEQ Advisor/ Manager
Water	
Measure per capita water use in the site offices.	Project Manager/ SHEQ Advisor/ Manager
Install water efficient devices in washrooms e.g. push taps, flow regulator/ restrictors, low flush toilets, cistern devices e.g. hippo, save-a-flush to reduce flush volumes	Project Manager
Promoting water efficiency with all staff and encourage good behaviour. e.g. maintaining hoses, pipes and water using equipment in good condition and checking for leaks regularly	SHEQ Advisor/ Manager
Fit trigger nozzles on hosepipes and flow restrictors and automatic shut off devices to hoses and water supply pipes where appropriate	Foreman
Use recycled or grey water for damping down dust where possible	Foreman
Use scrappers to clean up mud rather than washing down with water	Foreman
Waste	
Minimise waste by ensuring materials are stored properly and used efficiently.	Project Manager/ Foreman
Consider waste when purchasing materials. Where possible/ practicable select materials that can be re-used or recycled.	Project Manager
Recycle and reuse materials where possible.	Project Manager/ SHEQ Advisor/ Manager
Collect data on quantities of waste produced and percentage recycled (diverted from landfill).	Project Manager/ SHEQ Advisor/ Manager
Materials	
Procure materials from certified sources.	Project Manager/ Buying Department

TASK	RESPONSIBILITY
Designing out unsustainable materials where possible and minimising waste.	Designers
Specifying materials/ products that have less impact on the environment.	Designers
Specifying the use of peat free product for landscaping.	Project Manager
Procure recycled materials where possible.	Project Manager/ Buying Department
Introduce a 'take-back policy' on suppliers, so where possible, no delivery will leave the site without taking associated waste and packaging with them.	Project Manager/ Buying Department

Note: Reducing resource usage by minimising wastage and preventing pollution is also addressed under the other sub-headings in this section of the Plan.

5.2.1 Construction Carbon Management

The contractor shall:

- implement the Project Carbon Management Plan principles during construction;
- apply the PAS 2080 hierarchy of avoid, reduce, replace, offset only as last resort;
- capture construction embodied carbon for materials, transport to site, site energy, temporary power, welfare facilities, site waste and disposal of excavated material where applicable;
- embed carbon requirements into procurement and supplier engagement;
- source lower-carbon/local materials where practicable;
- prevent unnecessary idling and manage plant efficiently;
- maintain a carbon data room / controlled data set for quantities, EPDs, transport assumptions, fuel and electricity use;
- report monthly construction emissions/logistics data and contribute to as-built whole-life carbon reporting.

5.3 WASTE MANAGEMENT

All waste arising on the Contract, including that generated by sub-contractors will be managed in accordance with the *Appointed Contractors Procedures /Method Statements*; The principle of "Duty of Care", as set out in the Waste Management Act 1996, as amended, will apply, whereby the waste producer is responsible for all waste from generation to recovery or disposal.

A separate Site Waste Management Plan (Attachment A) has been produced detailing how waste will be managed on this contract. The Construction and Demolition Waste

Management Plan describes the controls and processes that will be used to manage materials effectively and reduce the amount of waste disposed of to landfill by identifying opportunities to reduce, re-use and recycle.

Waste quantities and management options will be identified prior to works commencing on site and recorded on a Waste Forecast.

Throughout the course of the Contract, whenever waste is removed from site, information on the identity of the person removing the waste, the type and quantity of the waste and the site where the waste is being taken to will be recorded using a Waste Transfer Note or Hazardous Waste Consignment Note and/ or summarised on the Record of Waste Movements.

Actual waste quantities and disposal routes will be reviewed periodically and summarised in a *Waste Report*. This review will monitor performance against the Contract Waste Forecast and identify opportunities for improvement. The review will be discussed at the Progress Meetings.

Upon completion of the works the total waste produced on the Contract, the costs associated with its disposal, the disposal locations and the percentage recycled will be summarised on the *Contract Waste Report*. The Report includes a review of performance and any recommendations for waste management on future contracts.

A copy of the Construction Waste Management Plan comprising the Waste Forecast, the Quarterly Waste Returns Contract Waste Report will be retained at the site offices for three years after completion of the works.

The Resource/C&D Waste Management Plan is a live document and should:

- maximise reuse on site,
- minimise unsegregated waste,
- record destination and fate of key waste streams,
- link waste reduction to embodied carbon reduction,
- and manage excavated material and surplus soils consistently with the carbon and reinstatement strategy

5.3.1 Waste Controls

The following environmental controls and monitoring activities will be implemented on site:

Table 5.3 Waste Controls

TASK	RESPONSIBILITY
Ensure all waste disposal is arranged via the Waste Rep.	Project Manager/ SHEQ Advisor/ Manager
Where possible waste will be retained and reused on site to reduced traffic movements.	All staff
Plan to segregate waste as far as technically, environmentally and economically practicable into reusable and recyclable waste.	Project Manager/ SHEQ Advisor/ Manager
Introduce a ' <i>take-back policy</i> ' on suppliers, so where possible, no delivery will leave the site without taking associated waste and packaging with them.	Project Manager/ Buying Department
Documentation:	
Ensure that copies of the following are retained on site: <ul style="list-style-type: none"> • Evidence of all relevant Waste Collection Permits. • All relevant Waste Management Licences / Exemption Certificates. • Waste Transfer Notes and Consignment Notes. • Site Waste Management Plan/ Hazardous Waste Register. 	SHEQ Advisor/ Manager/ Waste Rep.
Do not accept damaged skips/ waste containers on to site	Foreman/ Waste Rep.
Locate skips/ waste containers away from drains, watercourses and heavily trafficked areas.	Foreman/ Waste Rep.
Ensure hazardous waste containers are covered and located on hardstanding.	Foreman/ Waste Rep.
Locate non-hazardous skips/ waste containers on hardstanding if possible.	Foreman/ Waste Rep.
Ensure that waste is segregated and placed in the right skip/bin	Foreman/ Waste Rep.
Ensure all waste is stored securely so that it cannot escape (wind/ vermin).	Foreman/ Waste Rep.
Remove waste, disused materials, packaging and other debris at frequent intervals to ensure the site is kept clean and tidy.	Foreman/ Waste Rep.

TASK	RESPONSIBILITY
Ensure all hazardous waste containers are covered.	Foreman/ Waste Rep.
Ensure all skips and bins are labelled with their contents (incl. EWC Code).	Foreman/ Waste Rep.
Place the correct waste in the correct skip.	All staff
Report skips that are leaking or overfull to your supervisor.	All staff
Report fly-tipping to the Foreman/ SHEQ Advisor/ Manager	All staff
Eliminate unnecessary wastage by: <ul style="list-style-type: none"> • storing materials neatly on flat solid ground to avoid damage and loss; • keeping materials in their packaging for as long as possible to protect them from damage; • protecting materials from the weather to avoid loss from exposure to the elements; • ensuring existing material containers are empty before opening new ones; and • keeping significant off-cuts for use elsewhere. 	Foreman/ All staff

Should any contaminated land be encountered it will be stockpiled separately; covered to prevent wind or water spreading contaminants to the wider environment; tested, at a UKAS accredited laboratory and sent for remediation/ disposed of in accordance with 'Duty of Care'.

Other aspects of waste management such as inspections and waste training requirements are addressed in the relevant sections elsewhere in this CEMP.

5.4 FUEL AND OIL STORAGE

Fuel and oils will be stored in a manner to minimise the risk of pollution or ecological damage during fuel handling. The implementation of good fuel management practices and increased environmental awareness can significantly reduce the risk of environmental pollution or impact of ecological damage. Any waste oils or hydraulic fluids will be collected, stored in appropriate containers and disposed of offsite in an appropriate manner.

Secondary containment will be provided for all oil and diesel tanks:

- For a single tank, the secondary containment will be at least 110% of the maximum storage capacity

- For two or more tanks in one secondary containment system, the secondary containment will be at least 110% of the biggest tank's maximum storage capacity or 25% of the total maximum storage capacity of all the tanks, whichever is the greatest.

The types of fuel and oil that will be stored on this contract and how and where they will be stored are given in the table below:

Table 5.4 Fuel and Oil Storage

Type of Material	How and Where it will be stored
Diesel	<ul style="list-style-type: none"> • To be stored in bunded tanks or bowsers. • Fuel tanks and mobile bowsers must be kept locked when not in use and overnight. • Where a bulk tank is used, a 130-litre spill kit will be stored near the bunded area. • Metal jerry cans are to be used for hand carrying of fuel around the site. • Where practicable, only restricted hand carrying of fuel should be allowed on the site. • Metal jerry cans must be stored in a bund or drip tray when not in use. <p>In vans /vehicles:</p> <ul style="list-style-type: none"> • To be stored secure & upright in jerry cans (25 litres or less)

Type of Material	How and Where it will be stored
Oil	<ul style="list-style-type: none"> • To be stored in original container or in an appropriate container designed for the storage of oils. • Bowsers should be stored within site security compounds when not in operation. • Any tanks or drums should be stored in a secure container or compound, which should be kept locked when not in use. • Metal jerry cans are to be used for hand carrying of oil around the site. • Where practicable, only restricted hand carrying of fuel should be allowed on the site. • Metal jerry cans must be stored in a bund or drip tray when not in use. • The refuel of mobile plant will be undertaken well away from any drains or water bodies • A suitable spill kit or absorbent materials to be held in the vicinity

All refuelling and lubrication of equipment will take place on sealed and banded surfaces within this area in order to avoid the potential for accidental spillage of hydrocarbons.

5.5 MATERIALS STORAGE

Materials and waste will be stored in a manner that minimises risk to the environment and reduces the potential for wastage due to exposure to the elements or damage. The types of potentially polluting materials associated with these works and how and where they will be stored is given in the table below:

Table 5.5 Material Storage

Type of Material	How and where it will be stored
Topsoil	<ul style="list-style-type: none"> • To be stored beside the works to a height of no more than 3m. • Do not compact. • To be stored separately from subsoil. • Topsoil must be stored at least 3 metres away from any trees and hedgerows.
Subsoil	<ul style="list-style-type: none"> • To be stored beside the works to a height of no more than 5m. • Do not over compact. • To be stored separately from topsoil. • Subsoil must be stored at least 3 metres away from any trees and hedgerows.
Sand / Stone	<ul style="list-style-type: none"> • To be stockpiled in the allocated lay down area in the site compound in a way to minimise dust and wastage.
Cement	<ul style="list-style-type: none"> • To be stored in the original packaging on pallets inside the COSHH stores. • If cement is to be stored outside temporarily it should be stored off the ground on pallets, away from sensitive or heavily trafficked areas and covered with tarpaulin.
Other bagged materials	<ul style="list-style-type: none"> • To be stored inside a container where practicable otherwise off the ground on pallets and protected from the weather.
Chemicals, Bitumen, Paints, Solvents, Grease	<ul style="list-style-type: none"> • To be stored in the original packaging inside a drip tray. All chemicals should be stored appropriately in the COSHH stores. • Consult the SDS or COSHH sheets for details of particular storage requirements.
Batteries / fluorescent light tubes	<ul style="list-style-type: none"> • In a leak proof container within a designated covered storage area.
Contaminated Material	<ul style="list-style-type: none"> • To be stockpiled separately in a quarantined area, clearly marked and sealed off. To be covered to prevent wind or water spreading
Empty drums / containers	<ul style="list-style-type: none"> • To be stored in a designated area prior to disposal. • Away from sensitive boundaries and watercourses • Screening from external receptors, if possible

Type of Material	How and where it will be stored
Inert waste	<ul style="list-style-type: none"> To be kept separate from non-hazardous and hazardous waste in a clearly designated area, in a labelled skip located on hardstanding where possible.
Non-Hazardous waste	<ul style="list-style-type: none"> To be kept separately from inert and hazardous waste. To be segregated into its component streams where technically, environmentally and economically practicable. To be kept in clearly labelled containers/ skips. Containers/ skips to be in good condition, covered and located on hardstanding Containers/ skips to be located away from sensitive boundaries and
Hazardous waste	<ul style="list-style-type: none"> To be kept separately from inert and non-hazardous waste. To be segregated into its component streams and kept in clearly labelled containers/ skips. Containers/ skip to be in good condition, covered and located on hardstanding Containers/ skips to be located away from sensitive boundaries and watercourses Containers/ skips to be screened from external receptors if possible.

5.6 WATER

The development lands are located within the hydrological catchment of the Mongagh River. The proposed development lands are located approximately 500m to the north of the water course. The Mongagh River flows east into the River Boyne with its associated European sites, the River Boyne and River Blackwater SAC (Site Code 002299) and the River Boyne and River Blackwater SPA (Site Code 004232), which are located over 20 river km to the northeast of the proposed development lands.

There are no significant hydrological features identified within or near the site. However, some surface water drains (drainage ditches) were identified within the site boundary. The drainage ditches originate within the site boundary and run in a southerly direction before flowing in culvert under a gravel surfaced access road (farmers lane) and then into a TII drain that runs along the crest of the motorway cutting in an easterly direction within an oversized grassy channel. The TII drain meets a headwall and culvert that goes under the M6 in a southerly direction. Waters from the drain discharge to the Mongagh River to the south. On the various dates when site walkover visits were undertaken during the

months of June to December 2021, the drainage ditches within the boundary of the development lands were found to be dry and overgrown with vegetation.

Downstream, the Mongagh River flows east into the River Boyne with its associated European sites, the River Boyne and River Blackwater SAC (Site Code 002299) and the River Boyne and River Blackwater SPA (Site Code 004232), which are located over 20 river km to the northeast of the proposed development lands.

5.6.1 Control of Construction Site Surface Water Runoff Quality²

Any material or substance which could cause pollution, including fuels or silty water will be prevented from entering groundwater, surface water drains or watercourses by the appropriate use of and temporary installation of silt fences, cut-off drains, silt traps and drainage to vegetated areas where appropriate. Stilling ponds will be used to minimise the risk of suspended solids, where necessary.

The drainage proposals will be developed further prior to the commencement of construction; however, any such improvements will be in line with the principles and mitigation presented in the EIAR and with conditions which be attached to planning. The protection of watercourses and downstream catchments that they feed is of utmost importance in considering the most appropriate drainage proposals for the site of the proposed development.

The temporary construction compounds will incorporate these relevant measures, with suitable provision made for a geotextile base and support silt fencing on any downslope edges to watercourses/drains. Stockpiles of soil will be stored well away from the watercourses on site and (if appropriate) ringed with silt fences. The contractor will carry out environmental awareness training as part of the site inductions for all staff.

The project proponent will ensure that the engineer setting out the works is fully aware of the ecological constraints and construction management requirements.

Run-off into excavations/earthworks cannot be prevented entirely and is largely a function of prevailing weather conditions. Care will be taken to ensure that exposed soil surfaces are stable to minimize erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts. All runoff will be prevented from directly entering any water courses as no construction will be undertaken directly adjacent to open water.

² It should be noted that the controls measure are not prescribed to avoid or reduce adverse effects on European sites and are not considered in the determination of conclusions in the Screening Report for Appropriate Assessment.

Fuel pipes on plant, outlets at fuel tanks etc. will be regularly checked and maintained to ensure that no drips or leaks to ground occur. The following precautions will also be installed on fuel delivery pipes:

- Any flexible pipe, tap or valve must be fitted with a lock where it leaves the container and be locked when not in use.
- Flexible delivery pipes must be fitted with manually operated pumps or a valve at the delivery end that closes automatically when not in use.
- Warning notices including "No smoking" and "Close valves when not in use" shall also be displayed.
- Spill kits will be available within each plant/vehicle on site and located close to identified pollution sources or sensitive receptors (fuel storage areas, etc.).
- Interceptor drip trays (or similar, e.g. plant nappies, – open metal drip trays are not acceptable) will be available in accordance with standard good practice across the construction industry.
- Interceptor drip trays will be positioned under any stationary mobile plant to prevent oil contamination of the ground surface or water. Plant and site vehicles are to be well maintained and any vehicles leaking fluids must be repaired or removed from site immediately. Any servicing operations shall take place over drip trays.
- Areas used to store fuel and oil on the site will be appropriately lined and bunded to prevent the downward percolation of contaminants to natural soils and groundwater.
- Fuel for construction vehicles will be stored on an impervious base within a bund able to contain at least 110% of the volume stored. Rainwater will not be allowed to accumulate within the bund and in any way compromise the required 110% volume capacity. No tanks or containers may be perforated or dismantled on site. A competent operator shall empty all contents and residues for safe disposal elsewhere.
- Suitable wheel wash facilities, complete with C/W silt traps will be put in place to ensure vehicles entering/exiting the site do not carry/transport debris.

During the construction phase as part of standard practice, appropriate measures to prevent water pollution to any watercourses near the site will be implemented during all of the construction phases and will include referral to:

- Control of Water Pollution from construction Sites, Guidance for consultants and contractors (C532).

- Environmental Good Practice on Site (3rd edition) (C692).
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016).

MANAGEMENT OF GROUNDWATER CONTAMINATION

The following measures will be required to avoid easy and rapid pathways to the ground water via high level bedrock:

- Stockpiles of soil shall be kept at areas of the site with low bedrock levels where there is at least 1m of soil above the bedrock.
- Silt fencing and settlement ponds shall be placed in areas with low bedrock levels where there is at least 1m of soil above the bedrock. Silt fences shall be inspected as part of the daily inspection regime. Trapped silt shall be removed from silt fencing at regular intervals and especially prior to any predicated flood event.
- Earthworks shall be left exposed for the minimum time possible. Earthworks formations shall be protected by a layer of imported granular fill.
- Landscaping and seeding of the site shall be carried out as early as possible.
- Site compounds, fuel storage areas, generators and the like shall be sited away from areas of high level bedrock.

Good housekeeping and facility management during the construction period will ensure that there will be no negative environmental impacts from the construction of the proposed facility. Sedimentation presentation controls include the following:

- Minimisation of exposed ground and soil stockpiles, through careful earthworks design.
- Minimising the time that ground is exposed and excavations are open through careful construction programming.
- Temporary stockpiles will be located away from drainage ditches, limited in height to 3m (topsoil) and the surface smoothed.
- Silt fences will be placed around the stockpiles where required to limit the potential for rainfall to wash fines into the drainage system. These comprise a technical filter fabric positioned as a fence around the exposed soil and sediment to catch fines within the runoff and reduce the input of fine sediment to the drainage system. Stockpiles which may be present for some time will be covered or seeded.
- Areas around infrastructure will be landscaped and restored with topsoil and revegetated as soon as possible.

- Track drainage, designed to prevent the interception of large volumes of water, will be porous and act as soakaways thereby minimising any direct discharge to watercourses.
- Wheel washing activities will be conducted in designated areas, with runoff waters being conducted to soakaways constructed according to best practice.
- Use of buffer zones, silt traps and settlement ponds to avoid sediment reaching drains and watercourses.

5.6.2 Fuel Oil, other Petroleum based substances and chemicals

- Construction compounds will be located at least 30m from local on site drains.
- Dedicated areas of hard standing for material deliveries separated a minimum of 10m drainage ditches
- Specific areas for oil storage and refuelling, separated a minimum of 10m from adjacent watercourses and comply with legislation, including providing bunds which contain 110% of on-site fuel storage capacity;
- Use spill kits, fill point drip trays, banded pallets and secondary containment units;
- Enclosed and secured site and fuel storage areas will be secondarily secured;
- Develop a Construction Waste Management Plan;
- Develop a site-specific Incident Response Plan;
- Works involving the use of chemicals which are potentially harmful to the aquatic environment will be undertaken in a contained or lined area;
- Excavation and disposal off-site of contaminated soils (where required).
- Good housekeeping (daily site clean-ups, use of disposal bins, etc.) on the project site, and the proper use, storage and disposal of many substances used on construction sites, such as lubricants, fuels and oils and their containers can prevent soil contamination.

CONCRETE AND CEMENTOUS PRODUCTS

Wet concrete and cement are very alkaline and corrosive and can cause serious pollution to watercourses. Disposal of raw or uncured waste concrete will be controlled to ensure that watercourses will not be impacted.

- Best practice in bulk-liquid concrete management addressing pouring and handling, secure shuttering / form-work, adequate curing times will be implemented.
- Wash water from cleaning ready mix concrete lorries and mixers may be contaminated with cement and is therefore highly alkaline, therefore, washing will not be permitted on site.

- A suitable casing will be used where wet concrete is proposed to ensure protection of watercourses until concrete has set.
- No batching of wet-cement products will occur on site;
- Supply of ready-mixed wet concrete products where possible or emplacement of pre-cast elements,
- No washing out of any plant used in concrete transport or concreting operations will be allowed on-site;
- Where concrete is delivered on site, only chute cleaning will be permitted, using the smallest volume of water possible. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed.
- Use weather forecasting to plan dry days for pouring concrete;
- Ensure pour site is free of standing water and plastic covers will be ready in case of sudden rainfall event;

ACCIDENTAL SPILLS AND LEAKS

- Bulk fuel storage areas should be adequately protected with the provision of appropriate bunding to provide a minimum storage volume of 110% of total fuel storage capacity with the provision of a spill kit and the use of drip trays. Fuel storage must be sited away from any watercourse or on-site services as far as possible and have a designated area.
- Where sub-contractors are required to refuel vehicles on-site, this will be carried out at a central refuelling location only. The sub-contractor will be required to make the necessary arrangements with the Main Contractor to access and purchase fuel oil from a central supply. All refuelling areas will be on areas of hard standing only at designated agreed locations. Open valves will not be left unattended.
- All fuel, oil and chemical deliveries will be supervised by a responsible person who will be trained to deal with any spillage to prevent a pollution problem occurring.
- Storage tank levels will be checked before delivery to prevent overfilling and to ensure that the product is delivered to the correct tank.
- The storage of materials in the main compound and work sites will be controlled in such a manner to ensure that materials are not damaged prior to use either through vehicle or people movements or through exposure to the elements.
- All fuel, oil and chemicals will be stored on an impervious base within a bunded area and secured. The bund shall have a capacity of 110% of the volume of the products stored within it. All tanks and containers will be kept in a secure compound and be protected from vandalism and will be clearly marked with their contents. Stores shall be located at least 10 metres from any watercourse.

- All mobile plant will be refuelled in a designated area on an impermeable surface and away from drains. In case of any spillages, there will be a spill response kit available at each refuelling point and within each machines working area. Where it is impractical to refuel within a bunded area, a drip tray will be available to catch any spills caused by over fuelling.

Every effort will be made to prevent pollution incidents associated with spills during the construction of the proposed development. The risk of oil/ fuel spillages will exist on the site and any such incidents will require an emergency response procedure. Given the scale and extent of the proposed development all contractors will carry spill kit materials in their site cabins.

The following steps provide the procedure to be followed in the event of an oil/ fuel spill occurring on site:

- Identify and stop the source of the spill and alert people working in the vicinity.
- Notify the Environmental Manager immediately giving information on the location, type and extent of the spill so that they can take appropriate action.
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident.
- Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill.
- If possible, cover or bund off any vulnerable areas where appropriate such as drains, watercourses and/ or sensitive habitats.
- If possible, clean up as much as possible using the spill control materials.
- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited.
- The Environmental Manager will notify the appropriate stakeholders, such as Westmeath County Council, National Parks and Wildlife Service, Department of Communications, Climate Action and Environment and Department of Housing, Planning and Local Government and/or the EPA.
- Environmental incidents are not limited to just fuel spillages, therefore, any environmental incident must be reported, recorded and investigated in accordance with the procedures described.

5.6.3 Water Monitoring

Proposed water quality monitoring is limited to the fact that there are no significant water features within the development lands. The water monitoring that will be undertaken on is outlined below

- Check downstream watercourse to the south daily for:
 - Change in water colour.
 - Change in water transparency.
 - Oily sheen on water surface.
 - Scums & foams.
 - Dead / decaying plants, animals & fish.
- Turbidity, pH, Temperature, DO and Conductivity will be monitored at a chosen location along the downstream water course using a portable meter to ensure that the levels/concentrations are within expected and typical ranges.
- Keep a record of these checks in the Sampling Register.
- Ensure gullies/ drains are kept free from ingress of stone, spoil, tarmac and other material by checking daily

5.7 NOISE

5.7.1 Noise Controls

Noise will be minimised and managed in accordance with the controls specified in the EIAR (Chapter 11). Proposed contract working hours are Monday to Friday 08.00 to 19.00 and 09:00 to 14:00 on Saturdays. The site will be closed on Sundays and Bank Holidays. Controls that will be in place on this project are given in the table below.

- A Site Representative will be appointed for matters related to noise and vibration.
- Any complaints received will be thoroughly investigated.
- A written complaints log will be maintained by the Site Representative. This will, at a minimum, record complainant's details (where agreed) the date and time of the complaint, details of the complaint including where the effect was observed, corrective and preventative actions taken and any close-out communications. This will ensure that the concerns of local residents who may be affected by site activities are considered during the management of activities at the site.
 - Noise monitoring with capability for real-time review both on-site and remotely will be conducted at the boundary points when works are planned in close proximity.

- In the event of meeting or exceedance of the threshold values at NSRs, works will be ceased and measures implemented immediately to ensure that the limits are complied with.
- The operation of certain pieces of equipment, where substitution, enclosure etc. cannot be carried out will be managed through monitoring and timing of use to ensure that noise levels remain below the threshold values/criteria specified.
- Temporary acoustic screening or hoarding will be placed along the boundaries where possible with the proposed access route and the nearest NSR; - NSR36. As a general rule of thumb, it is recommended that temporary screening break the "line of sight" from the sources to the lower windows of the nearest NSRs where possible.
- As a precautionary measure and as part of good practice, vibration monitoring will be carried out where works such as the use of rollers are in close proximity to NSRs, 1 and 2.
- Measures such as the use of low noise plant and/or the use of enclosures will be chosen to minimise construction noise impact.
- During the construction phase all equipment will be required to comply with noise limits set out in EC Directive 2000/14/EC and the 2005/88/EC amendment on the approximation of the laws of the Member States relating to the noise emission in the environment by equipment for use outdoors. The directive covers equipment such as compressors, welding generators, excavators, dozers, loaders and dump trucks.
- Due regard should be given to the outline CTMP. The following items should be adhered to.
 - heavy vehicle movements should be managed within designated hours where practicable;
 - loads should be covered;
 - engines should be turned off when stationary for extended periods;
 - acoustic barriers or additional dust suppression may be used near sensitive receptors if required;
 - vibration monitoring may be triggered and carried out in locations affected by traffic movement or near sensitive receptors /road conditions;
 - complaints and corrective actions should be logged and reviewed.

5.7.2 Noise Monitoring

Noise monitoring will be undertaken to ensure compliance with required limits. Noise monitoring with capability for real-time review both on-site and remotely shall be

conducted at nearby NSRs throughout site development and construction. Monitoring shall be conducted in accordance with any planning conditions which may be attached to a grant of permission.

5.8 AIR

As part of the air quality control measure a Dust Management Plan (DMP) will be developed and implemented. The appointed contractor will carry out dust monitoring along the site perimeter to confirm that the dust levels do not exceed 350mg/m²/day average over 30 days in accordance with TA LUFT VDI Method (Bergerhoff Gauge). Dust gauges will be put in place at a number of locations (6No.) and the samples analysed at an accredited laboratory.

Controls that will be in place on this contract are given in the table below.

Table 5.6 Air Quality Controls

Dust	A designated Site Agent will be assigned overall responsibility for Dust Management;
Dust	Implementation of the Construction and Environmental Management Plan.
Dust	The design of the site and Construction programme considers dust impact management and chooses design approaches to minimise dust emissions;
Dust and general air quality	An effective training programme for site personnel will be implemented for the duration of the Construction Programme;
Dust and general air quality	A strategy for ensuring effective communication with the local community will be developed and implemented;
Dust	A programme of dust minimisation and control measures will be implemented and regularly reviewed;
Dust	A monitoring programme will be implemented.
Dust	Activities with potential for significant emissions will wherever possible be located at a position as far as possible removed from the nearest residential and commercial receptors;
Dust	The areas on site which vehicles will be travelling on will generally be hard-surfaced or compressed ground thus significantly reducing the potential for dust emissions from the vehicles;
Dust	The construction compound area will have hard standing areas to minimize dust generation from windblow.

Dust	In order to minimise the potential for wind-generated emissions from material storage bays, these bays will be oriented away from the dominant wind direction to minimise the effects of wind on release of dust and particulate.
Dust	Fixed and mobile water sprays will be used to control dust emissions from material stockpiles and road and yard surfaces as necessary in dry and/or windy weather.
Dust	A daily inspection programme will be formulated and implemented in order to ensure that dust control measures are inspected to verify effective operation and management.
Dust	A dust deposition monitoring programme will be implemented at the site boundaries for the duration of the construction phase in order to verify the continued compliance with relevant standards and limits.
Aspergillus Risks	The National Guidelines will be followed with regard to the effective management of Aspergillus risks.

In addition to the above, the Construction Site Manager shall enforce the following:

- Enforce appropriate an on-site speed limit on surfaced roads. Have sign posts indicating these speed limits.
- Turn off engines when not in use. If any plant or equipment is emitting black / heavy smoke, cease use and send for servicing
- No burning on site.
- Ensure vehicles do not queue at the site entrance.
- Provide wheel washing facilities at the entrance to the extension construction site lands to remove mud from haulage vehicles and to ensure mud is not transferred onto the surrounding road network (detergents will not be used and washes will incorporate appropriate containment systems).

5.9 WILDLIFE & ECOLOGY

There are no designated conservation areas within or close to the proposed development site. Therefore, the proposed development site does not directly impact on any Special Area of Conservation (SAC), Natural Heritage Area (NHA), Special Protection Area (SPA), National Parks or Nature Reserves. Control measures associated with the potential impact on water quality are dealt with under the Water Quality Section of the CEMP.

5.9.1 Consents

No specific consents are required for the project works, but shall be reviewed as part of Contract CEMP preparation works.

5.9.2 Biodiversity Protection Measures

Wildlife will be protected in accordance with the controls specified in the Environmental Handbook. Mitigation measures that will be in place on this contract are given in the table below.

Table 5.7 Biodiversity

In addition to the tasks set out below, due regard should be given to the mitigation measures for biodiversity protection as set out in the EIAR and EIAR Addendum.

- retain all hedgerows/treelines in the Solar farm lands and maximise retention elsewhere;
- replant mature hedgerow proportionately where removed;
- maintain minimum 5m buffers to drain ditches, hedgerows and tree lines;
- implement compensatory woodland, bat habitat measures and wild bird cover planting commitments;
- maintain dark zones low-lux zones in construction lighting design, keeping the western boundary near Building 1, the emergency road, woodland and ponds unlit;
- keep construction lighting low intensity, sensor-based and directed away from mature trees /treelines /woodland;
- require tree felling in the preferred seasonal windows, or otherwise subject to ECoW verification;
- require at-height inspection of trees with potential roost features before felling;
- require vegetation clearance outside nesting season, or pre-clearance nesting-bird checks and 48-hour clearance window where no nests are found;
- provide ornithologist /ECoW attendance during sensitive works where needed;
- maintain a 100m exclusion zone where breeding barn owl nesting is identified during breeding season;
- brief all staff on biodiversity stop-work procedures and unexpected wildlife discoveries;
- require specialist invasive-species control if encountered.

TASK	RESPONSIBILITY
General:	
Ensure all staff are aware of any conditions/ requirements attached to consents/ licences and of the controls detailed below.	Project Manager/ SHEQ Advisor
If any wildlife is found unexpectedly (e.g. reptiles, badgers or bats), contact your SHESQ Advisor.	All Staff
Implement controls as instructed by the SHEQ Advisor.	Project Manager/ Foreman
Nesting Birds:	
Check the site for nesting birds (including ground nesting birds). Make a record of this survey.	Project Manager/ Foreman
If any nesting birds are found, fence off the area and inform all staff of their location. Do NOT conduct works in this area.	Project Manager/ Foreman
Check trees for nesting birds before removing them or trimming any branches	All Staff
Do not disturb any nesting birds.	All Staff
When working near trees:	
If trees that are suitable as bat roosts are to be removed arrange for inspection by a bat licence holder.	Project Manager/ SHEQ Advisor/ Manager/
If bats are present obtain a derogation licence prior to felling and supervise the work.	Specialist/ SHEQ Advisor
Undertake any pruning, crown lifting or removal of trees at an appropriate time of year (i.e. outside the bird-breeding season, which is March to August). Employ specialist contractors to carry out all tree cutting/surgery.	Project Manager/ SHEQ Advisor/ All Staff
Only remove the minimum of branches to allow access.	All Staff
Where branches must be lopped, make a clean cut above a joint.	All Staff
Undertake any pruning, crown lifting or removal of trees at an appropriate time of year (i.e. outside the bird-breeding season, which is March to August). Employ specialist contractors to carry out all tree cutting/surgery.	Project Manager/ SHEQ Advisor/ All Staff
Ensure all site staff are briefed regarding the NJUG Guidelines on working in close proximity to trees and that the guidelines are implemented on site.	Project Manager/ SHEQ Advisor/ Manager/

TASK	RESPONSIBILITY
Work as far away from the trees as possible. Where trees are in close proximity to the works set up protection zones around the trees to prevent damage to their branch and root system.	Project Manager/ Foreman
Ensure the tree protection zone is cordoned off and if possible is large enough to prevent access under the canopy of the tree.	Project Manager/ Foreman
Do not lean any materials up against tree trunks.	All Staff
<p>If excavation under the canopy is required:</p> <ul style="list-style-type: none"> • Hand-dig around tree roots • Retain as many roots as possible • If a root must be severed, make sure it is a clean cut • If roots are to be left exposed overnight cover with damp sacking 	All Staff
Invasive Plants:	
<p>No invasive species were identified as part of EIA survey works undertaken in support of the planning application. However, in accordance with best practice, invasive plant species is included as a task.</p> <p><i>Invasive and Non-native Flora.</i> Japanese knotweed (<i>Fallopia japonica</i>) and Rhododendron (<i>Rhododendron ponticum</i>) have been recorded from within a 2km radius of the proposed development site, according to the NBDC data online. Should any of these plants be found in the general vicinity of the development site, please contact your SHEQ Advisor/ Manager for instructions on how to proceed.</p>	Project Manager
If invasive plants are identified, contact specialist contractor to remove the plant off site in a safe manner in accordance with the relevant legal and other requirements.	SHEQ Advisor
Implement controls as instructed by the SHESQ Advisor/ Manager.	Project Manager/ Foreman

5.10 LANDSCAPE AND VISUAL

The following measures shall be implemented:

- all tree protection measures to be installed at commencement and removed on a phased basis;

- landscape works to be implemented to tender drawings/specifications and supervised by a suitably qualified landscape architect;
- planting in the first available planting season after the main civils/building works;
- contractor to keep site clean, tidy and safe and phase works to minimise visual clutter;
- compound fencing/hoarding and lighting to avoid nuisance to neighbouring properties;
- photo-record of compound areas before set-up;
- three-year establishment /maintenance period for landscape planting, including replacement planting, weed control and pruning

5.11 ARCHAEOLOGY AND HERITAGE

The following measures should be undertaken based on the information presented in the EIAR and EIAR Addendum.

- Geophysical survey works shall be carried out in northern and eastern parts not previously assessed;
- Archaeological test trenching is required in western, northern and eastern parts as directed;
- recorded monuments, the previously unknown monument and related anomalies are to be fenced off and buffered before works;
- townland boundary survey /recording is to be completed where affected;
- upstanding structures for demolition associated with the linear settlement are to be visually and photographically recorded by a suitably experienced archaeologist/built-heritage specialist;
- where features are encountered, mitigation may include preservation in situ, excavation/preservation by record and/or archaeological monitoring of topsoil stripping;
- adequate programme/time must be allowed for archaeological resolution and reporting.
- Works in proximity to Boyhan's Forge at Farthingstown shall be carried out in accordance with protections detailed in the EIAR Addendum – this shall include signage, barriers, toolbox talks and supervision by a licensed archaeologist.

5.11.1 Archaeology and Heritage Protection Measures

The requirement for any such works shall be reviewed as part of Contract CEMP works.

5.12 CONSTRUCTION SITE COMPOUND

The Outline Construction Traffic Management Plan (CTMP) presented as part of the planning application supporting documents should also be consulted in advance of Construction Site Compound set-up. The following should be integrated.

- site access/egress arrangements and access gate set-back to prevent blocking the carriageway;
- Construction Vehicle Routing Plan;
- designated logistics manager / Traffic Coordinator;
- staff parking within compounds only;
- loading/unloading within the site boundary only;
- pedestrian and cyclist protection measures near accesses, including warning signs, reduced speed zones and lane markings where required;
- priority awareness for public transport on relevant route sections;
- temporary traffic signs/control measures in accordance with Traffic Signs Manual;
- flagmen /temporary lights/barriers where required;
- pre-commencement, annual and post-completion road condition surveys, with defects made good in agreement with WCC;
- uninterrupted emergency access arrangements;
- on-site speed limit of 15 km/h;
- traffic logs, complaint records and periodic review/update of the CTMP.

The location of the Site Compounds are shown in Figure 3.2. The following presents the tasks and responsibilities associated with their set-up.

Table 5.8 Construction Site Compound Set Up

TASK	RESPONSIBILITY
Before site set up works begin photograph the condition of the site compound area (to help avoid erroneous claims after the works have been completed).	Project Manager/ Foreman
Provide perimeter fencing /hoarding at any location such that the environment in the area is not blighted by the construction site.	Project Manager
Provide signage with out of hours contact details.	Project Manager
Ensure that perimeter fencing /hoarding are regularly checked and kept free damage.	Foreman
Position site lighting to prevent intrusion /nuisance to neighbouring properties	Project Manager

TASK	RESPONSIBILITY
Locate temporary site toilets/ waste skips away from site neighbours.	Project Manager
Ensure that the sites are kept clean, tidy and safe.	Project Manager
Store plant, equipment & materials at least 10m away from drains.	Project Manager/ Foreman
Keep cabins/containers locked outside working hours	Foreman
Provide site drainage arrangements that comply with the requirements of any discharge consents	Project Manager/ Foreman
Prevent materials, waste, and dust from blowing around.	Foreman
Allocate a person to supervise all fuel deliveries.	Project Manager/ Foreman
Display a notice giving details of safe delivery and storage procedures.	SHEQ Advisor/ Manager
Supervise all deliveries at all times.	Nominated person
Check level in tank prior to delivery to prevent overfilling.	Nominated person
Check delivery before discharge to ensure the correct fuel is being delivered.	Nominated person
Ensure that valve on bunded tank is closed and kept locked when not in use	All staff
Only re-fuel in designated areas within the site compound, using drip trays.	All staff
Ensure that hose is kept within bund at all times	All staff
Never leave a vehicle/ plant unattended during re-fuelling.	All staff
Ensure any emergency vehicle maintenance is carried out using drip trays.	Fitters/ Foreman
Appoint a member of staff to be responsible for liaising with local groups	Project Manager
Consult with local resident groups about planned activities that may cause a nuisance, e.g. rock breaking, major deliveries etc.	Appointed person/Liaison Officer

5.12.1 Road signage and cleaning

Appropriate warning signs adopted from Chapter 8 'Temporary Traffic Measures and Signs for Roadworks' – Road Signs Manual will be erected to advise motorists and others of works affecting the public roads. Mitigation measures will also be put in place to ensure that public roadways are kept free of mud, dust and debris at all times. Such measure will

be described in the final construction management plan provided by the contractor prior to construction.



5.13 GENERAL HEALTH & SAFETY

As required by the Safety Health and Welfare at Work (Construction) Regulations 2001-2006, a Project Supervisor Design Process (PSDP) will be appointed by the developer to co-ordinate the design effort and to address and minimise construction risks during the design period. Notification of this appointment will be sent to the HSA by means of their Approved Form 1 (AF1). As design advances and before tender stage, a Preliminary Health and Safety Plan will be drawn up by the PSDP and reviewed by the project team.

This will then be issued with the tender package(s) and ultimately will be passed on to the appointed Project Supervisor Construction Stage (PSCS) to be developed into a full project Health and Safety Plan. Notification of this appointment and the commencement date of construction will be sent to the HSA by means of their Approved Form 2 (AF2).

The construction areas will be delineated and will be under the control of the PSCS who will co-ordinate and supervise all safety aspects of the project. A Safety File will be compiled and maintained on site for the duration of the project and this and the implementation of the Plan will be subject to regular audits.

The main contractor will engage the services of a safety consultant to prepare a site-specific health & safety plan, carry out safety risk assessments, notify the HSA of commencement, and carry out audits of the site. All personnel and their subcontractors who will be working on or attending site will attend and comply with a Site Safety Induction Course to be provided by the Site Safety Officer.

All contractors will be requested to provide a sound working environment for all employees involved in the project. This shall take into account all applicable national laws, guidelines and standards.

5.14 EMERGENCY PREPAREDNESS/ENVIRONMENTAL INCIDENTS

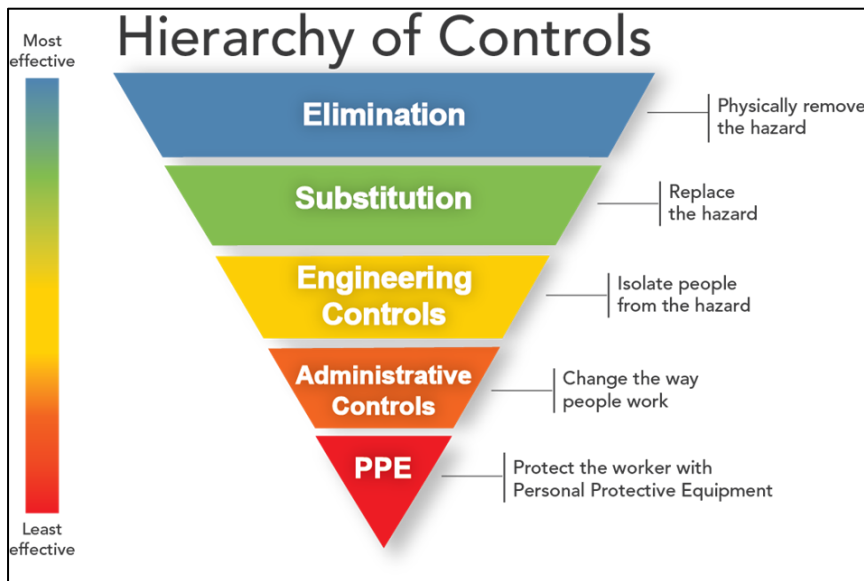
An Emergency Response Plan (ERP) is presented in this section of the Preliminary CEMP. It provides details of procedures to be adopted in the event of an emergency in terms of site health and safety and environmental protection.

Environmental incidents have the potential to adversely affect the appointed contractor through potential prosecution, blight to a site, contractual issues, public relations issues, through to increased costs for clean-up / management fees and delays to the build programme. The reporting of environmental incidents is vital in order to ensure they are dealt with correctly, adverse effects negated or minimised and that valuable lessons are learnt. Where environmental incidents are reported, actions can be formally completed that ensure control measures are put in place to avoid any future recurrence on site and, where relevant, across the company as a whole.

Emergency response scenarios have been identified as part of the implementation of the IMS and the controls for prevention and management of these scenarios are documented in the "*Emergency Preparedness and Response Plan*". The purpose of this plan is to identify the potential emergencies and the measures that are in place to prevent the emergency or procedure to follow should the emergency occur. Emergency scenarios include:

- Fire
- Gas Release
- Gas Explosion
- Major Spillage
- Minor Spillage
- Personnel Injury
- Adverse, Severe Weather Conditions
- Road Traffic Collision
- Mechanical Entrapment

For each scenario, actions and environmental controls are prescribed in accordance with the hierarchy of controls. The effectiveness of actions and controls are considered during internal audits, at monthly operations meetings, quarterly management meetings and at the Management Review.

Figure 5.1 Hierarchy of Controls

It provides details of procedures to be adopted in the event of an emergency. The site ERP includes details on the response required and the responsibilities of all personnel in the event of an emergency. The ERP will require updating and submissions from the contractor/PSCS and suppliers as the project progresses. Where approved subcontractors on site are governed by their own emergency response procedure, a bridging arrangement will be adopted to allow for inclusion of the sub-contractor's ERP within this within this document. This is a working document that will requires updating and review throughout the various stages of the project.

The *Emergency Preparedness and Response Plan* contains the following detail which should be considered as part of finalisation of the development of the Outline CEMP to Contract CEMP:

Figure 5.2 Emergency Preparedness and Response Plan Contents

In relation to the proposed construction project, the Emergency and Preparedness Response Plan will include the following:

- Roles Responsibilities;
- Definitions;
- Pollution Prevention;
- Environmental Incident Action;
- Notification;
- Review and Reporting;
- Fire;

- Evacuation;
- Periodic Testing;
- Spill Kits.

5.14.1 Roles and Responsibilities

The chain of command during an emergency response sets out who is responsible for coordinating the response. The Construction Site Manager will lead the emergency response which makes him/her responsible for activating and coordinating the emergency response procedure. The other site personnel who can be identified at this time who will be delegated responsibilities during the emergency response is the SHEQ manager. In a situation where the Site Manager is unavailable or incapable of coordinating the emergency response, the responsibility will be transferred to the SHEQ manager.

5.14.2 Initial Steps

In order to establish the type and scale of potential emergencies that may occur, the following hazards have been identified as being potential situations that may require an emergency response in the event of an occurrence.

Table 5.9 Hazards associated with emergency situations

Hazard	Emergency Situation
Construction Vehicles: Dump trucks, tractors, excavators, cranes etc	Collision or overturn which has resulted in operator or third-party injury.
Abrasive wheels/Portable Tools	Entanglement, amputation or electrical shock associated with portable tools
Contact with services	Electrical shock or gas leak associated with an accidental breach of underground services
Fire	Injury to operative through exposure to fire
Falls from heights including falls from scaffold towers, scissor lifts and ladders	Injury to operative after a fall from a height
Sickness	Illness unrelated to site activities of an operative e.g. heart attack, loss of consciousness, seizure

In the event of an emergency situation associated with, but not restricted to, the hazards outlined in the above table, the Site Manager will carry out the following:

- Establish the scale of the emergency situation and identify the number of personnel, if any, have been injured or are at risk of injury.
- Where necessary, sound the emergency siren/foghorn that activates an emergency evacuation on the site.
- Make safe the area if possible and ensure that there is no identifiable risk exists with regard to dealing with the situation e.g. if a machine has turned over, ensure that it is in a safe position so as not to endanger others before assisting the injured.
- Contact the required emergency services or delegate the task to someone if he is unable to do so. If delegating the task, ensure that they follow the procedures for contacting the emergency services.
- Take any further steps that are deemed necessary to make safe or contain the emergency incident e.g. cordon off an area where an incident associated with electrical issues has occurred.
- Contact any regulatory body or service provider as required e.g. ESB Networks, Westmeath County Council, Fire Brigade,
- Contact the next of kin of any injured personnel where appropriate.

5.14.3 Pollution Prevention

The first priority is to prevent pollution occurring, in this regard, similar steps should be taken to managing the environment on site. In particular:

- Preplanning (e.g. Storage Bunding, Consent Licenses, Drainage Plan)
- Hazard identification and risk assessment
- Protective and preventative pollution measures incorporated into the Environmental Management Plan (EMP), Method Statements and systems of work.
- Emergency planning e.g. procedures, spill kits etc.
- Information, instruction and training
- Inspection, supervision
- Performance auditing
- Review

5.14.4 Environmental Incidents / Non-Conformances

For the purposes of the CEMP, environmental incidents/ non-conformances are defined as follows:

- **Environmental Incident:** a failure to implement adequate environmental controls that has resulted in pollution of water, air or land, damage to wildlife and ecosystems (habitats) or nuisance to a local community.

- **Environmental Near Miss:** something that occurs that has the potential to cause an environmental incident but didn't.
- **Environmental Non-conformance:** a failure to implement environmental controls associated with planning conditions.
- **Complaint:** A significant grievance, dissatisfaction or accusation made by a client, member of the public or other third party relating to activities being completed by the appointed contractor

5.14.4.1 Types of Environmental Incident

To help with trend analysis incidents should be classified according to the type of incident. Incidents can usually be classified under one of the ten types listed below. However, this is not a definitive list and a different classification can be used if the incident does not fit within one of these.

- Air
- Archaeology & Heritage
- Contaminated Land
- Ecology
- Groundwater
- Noise & Vibration
- Oils & Chemicals
- Surface Water
- Traffic
- Waste

5.14.5 Notification

5.14.5.1 Response to an incident or imminent threat of an incident

All employees will be instructed to bring any environmental incidents they identify to the immediate attention of the Project /Site Manager, after first taking what steps they can to contain/ remediate the incident (without putting the health and safety of themselves or others at risk). If appropriate/ necessary the Project Manager/ SHEQ Manager will also inform the Client/ Statutory Authorities and liaise with their personnel in investigations, assessments and the implementation of appropriate corrective and preventive actions. Incident reports shall be completed within 1 day of occurrence. investigations shall be closed out within two weeks of occurrence. For more severe incidents, a full investigation report shall be carried out.

5.14.5.2 Emergency Communications Procedure

In the event of requiring the assistance of the emergency services the following steps should be taken:

- Stay calm. It's important to take a deep breath and not get excited. Any situation that requires 999/112 is, by definition, is an emergency. The dispatcher or call-taker knows that and will try to move things along quickly, but under control.
- Know the location of the emergency and the number you are calling from. This may be asked and answered a couple of times but don't get frustrated. Even though many emergency call centres have enhanced capabilities meaning they are able to see your location on the computer screen they are still required to confirm the information. If for any reason you are disconnected, at least emergency crews will know where to go and how to call you back.
- Wait for the call-taker to ask questions, then answer clearly and calmly. If you are in danger of assault, the dispatcher or call-taker will still need you to answer quietly, mostly "yes" and "no" questions.
- If you reach a recording, listen to what it says. If the recording says your call cannot be completed, hang up and try again. If the recording says all call takers are busy, WAIT. When the next call-taker or dispatcher is available to take the call, it will transfer you.
- Let the call-taker guide the conversation. He or she is typing the information into a computer and may seem to be taking forever. There's a good chance, however, that emergency services are already being sent while you are still on the line.
- Follow all directions. In some cases, the call-taker will give you directions. Listen carefully, follow each step exactly and ask for clarification if you don't understand.
- Keep your eyes open. You may be asked to describe victims, suspects, vehicles, or other parts of the scene.
- Do not hang up the call until directed to do so by the call taker.

Table 5.10 Emergency Contacts List

Contact	Telephone No.
Emergency Services – Ambulance, Fire, Gardaí	112/999
Gardai (Westmeath)	112/999
Fire Brigade	112/999
Midlands Regional Hospital	(044) 934 0221
Environmental Protection Agency	To be completed
Health & Safety Authority	To be completed
Eirgrid	To be completed
ESB Networks	1850 372 999
Westmeath County Council	To be completed

Inland Fisheries	To be completed
Other	

5.14.5.3 Reporting of Accidents and Dangerous Occurrences

HEALTH AND SAFETY AUTHORITY

Accidents and dangerous occurrences must be reported to the HSA in accordance with the Safety, Health and Welfare at Work (Reporting of Accidents and Dangerous Occurrences) Regulations 2016 (S.I. No. 370 of 2016).

The key points in relation to reporting of accidents and dangerous occurrences are:

- Only fatal and non-fatal injuries are reportable. Diseases, occupational illnesses or any impairments of mental condition are not reportable.
- Fatal accidents must be reported immediately to the Authority or Gardaí. Subsequently, the formal report should be submitted to the Authority within five working days of the death.
- Injuries to any employee as a result of an accident while at work where the injury results in the employee being unable to carry out their normal work duties for more than three consecutive days, excluding the day of the accident, must be reported to the Authority.
- Non-fatal accidents or dangerous occurrences should be reported to the Authority within ten working days of the event.
- Accidents to a person who is not your employee and is not at work but is injured by a work activity resulting in the person being taken to a hospital or medical facility must be reported.

A 'dangerous occurrence' means an occurrence arising from work activities in a place of work that causes or results in –

- The collapse, overturning, failure, explosion, bursting, electrical short circuit discharge or overload, or malfunction of any work equipment,
- The collapse or partial collapse of any building or structure under construction or in use as a place of work,
- The uncontrolled or accidental release, the escape or the ignition of any substance,
- A fire involving any substance, or
- Any unintentional ignition or explosion of explosives, as may be prescribed.

The prescribed dangerous occurrences which must be reported to the Authority are listed in Schedule 15 of Safety, Health and Welfare at Work (Reporting of Accidents and Dangerous Occurrences) Regulations 2016 (S.I. No. 370 of 2016)

5.14.6 Review and Reporting

The cause of any incident shall be determined by those involved when the incident or emergency occurred and those involved in the clean-up procedure. The appropriate corrective actions shall be implemented as soon as possible on detection of the incident. All incidents must be reported and documented on a site register. Where there has been direct damage to the environment it may be necessary to report this to the Regulator (e.g. Environmental Protection Agency /Local Authority). If direct damage has occurred the Construction Site Manager shall also be informed as soon as an incident has occurred.

5.14.7 Site Evacuation /Fire Drill

A site evacuation/fire drill procedure will provide basis for carrying out the immediate evacuation of all site personnel in the event of an emergency. The following steps will be taken:

- Notification of the emergency situation. Provision of a siren or foghorn to notify all personnel of an emergency situation.
- An assembly point will be designated in the construction compound area and will be marked with a sign. All site personnel will assemble at this point.
- A roll call will be carried out by the Site Manager to account for all personnel on site.
- Once all personnel have been accounted for the Site Manager will decide the next course of action which be determined by the situation that exists at that time. The Site Manager will advise all personnel accordingly. All personnel will be made aware of the evacuation procedure during site induction. The Fire Services Acts of 1981 and 2003 require the holding of fire safety evacuation drills at specified intervals and the keeping of records of such drills. Cognisance, integration and knowledge of emergency procedures associated with the existing biogas plant will be undertaken as part of Contract CEMP development works.

5.14.8 Periodic Testing

It is the responsibility of the Construction Site Manager or nominated SHEQ advisor to ensure that the emergency procedure is periodically tested to ensure it is effective. Frequency for testing should be determined by the level of risk for a particular project,

however, it is recommended that this be carried out at least once every six months or once during the project lifetime where project duration is less than one year.

The test should be logged as good practice. The test should be reviewed to determine the effectiveness of the procedure and the need to amend the requirements if necessary.

5.14.9 Spill Kits

Sufficient types and quantities of spill response equipment should be available on site and should be kept where spills may occur. The quantity of spill response equipment should be sufficient to contain any likely spill that may occur on site. Types of spill equipment suitable for containing spills arising from different types of pollutants are provided below:

Table 5.11 Spill Kit Types

Spill on Ground	Pollutants				
	Concrete Cement	Paints	Oils	Silt	Detergents
Sand	✓	✓	✓	X	✓
Straw Bales	X	X	✓	✓	X

APPENDICES

APPENDIX A

Construction and Demolition Resource Waste Management Plan

Construction and Demolition Resource Waste Management Plan

Introduction

The following matrix³ (Table 1) was developed by Halston and is used to provide indicative construction and demolition (C&D) waste management complexity scoring. The matrix uses six key metrics to assess how likely the project is to require a high level of regulatory attention and the level of detail which should be contained in the C&D WMP. The overall score for the project is calculated by adding the individual score for each of the metrics. The level of detail which should be contained in the C&D WMP is appropriate to the rating of the site:

- No requirement for C&D WMP's are those with score of up to 6
- Standard C&D WMP's are those with score of 7 -15
- Detailed C&D WMP's are those with a score of >15

Table 1 Matrix to Estimate Site C&D WMP Complexity

Metric		Score 1	Score 2	Score 3	Score 4
1	Do works involve infrastructural demolition works and /or is there potential ground contamination	Greenfield – undeveloped site	Existing buildings on site –non-industrial /commercial use or agricultural	Former light Industrial brownfield Use – potential for ground contamination	Former heavy industrial brownfield site with known ground contamination
2	Site Setting and Environmental Sensitivity including invasive species	Low	Medium	High	Very High
3	Duration of Construction Phase	<3 months	3-12 months	12 months – 2 years	>2 years
4	Expected Volume of Waste (export)	<100m ³	100-500m ³	500 – 1,000m ³	>1,000m ³
5	Floor Area	<125m ²	125-1,250m ²	>1,250m ²	
6	Estimated Cost of Project	<€300,000	€300,000 – €1,000,000	€1,000,000 – €10,000,000	>€10,000,000

³ Matrix adapted from WG (Welsh Government), 2013. Waste (Wales) Measure 2010: Site Waste Management Plans Consultation Document and consideration of Irish Waste Regulations and Best Practice Guidance

Table 2 Matrix Score Assigned to Project

Metric	Answer	Score	Overall Score
Do works involve infrastructural demolition works and /or is there potential ground contamination	Yes, ground contamination unlikely.	2	16 (Detailed C&D WMP)
Site Setting and Environmental Sensitivity	Low	1	
Duration of Construction Phase	28 months	4	
Expected Volume of Waste (export off-site)	<100m ³	1	
Floor Area	>1,250m ²	4	
Estimated Cost of Project	>10M -	4	

As can be seen in Table 2, the proposed development characteristics resulted in a score of 16; a detailed C&D WMP requirement. Outline details in respect of this is provided below.

Waste Classification

The EPA and the Eastern Midlands Waste Management Plan 2015-2021 defines Construction and Demolition (C&D) waste as "...all waste that arises from construction and demolition activities including excavated soil from contaminated sites....listed in Chapter 17 of the European Waste Catalogue (EWC)"⁴.

If demolition waste is generated as part of the proposed development works, it will involve careful decommission and removal of all plant and structures at the site (to provide for extension to the feedstock reception building and office building).

Other anticipated wastes which will be generated on site include soils, blocks; concrete and reinforced concrete; timber; metal sheeting, steel, bituminous materials such as bitumen macadam and asphalt; paving slabs; kerbs; used shuttering; scrap metal, scrap pipes and other plastics; canteen and office waste; lubricating oil, hydraulic oil, scrap parts and other fluids generated from equipment maintenance; sewage from construction phase site toilets. The expected primary non-hazardous and hazardous waste streams that will be generated during construction activities are classified in accordance with the European Waste Catalogue in Table 3 below.

⁴ It is worth noting, however, that the C&D W stream can overlap into other EWC chapters (Chapters 8, 15 and 20)

Table 3 EWC Classification of Wastes

Waste Description	EWC Code
Waste plastics	02 01 04
Soil and Stone	17 05 04
Concrete	17 05 07
Wood	17 02 01
Bituminous mixtures	17 03 02
Gypsum	17 08 02
Iron and steel	17 04 05
Insulation materials	17 06 04
Mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03	17 09 04
Canteen waste	20 03 01

Construction Site Waste Management

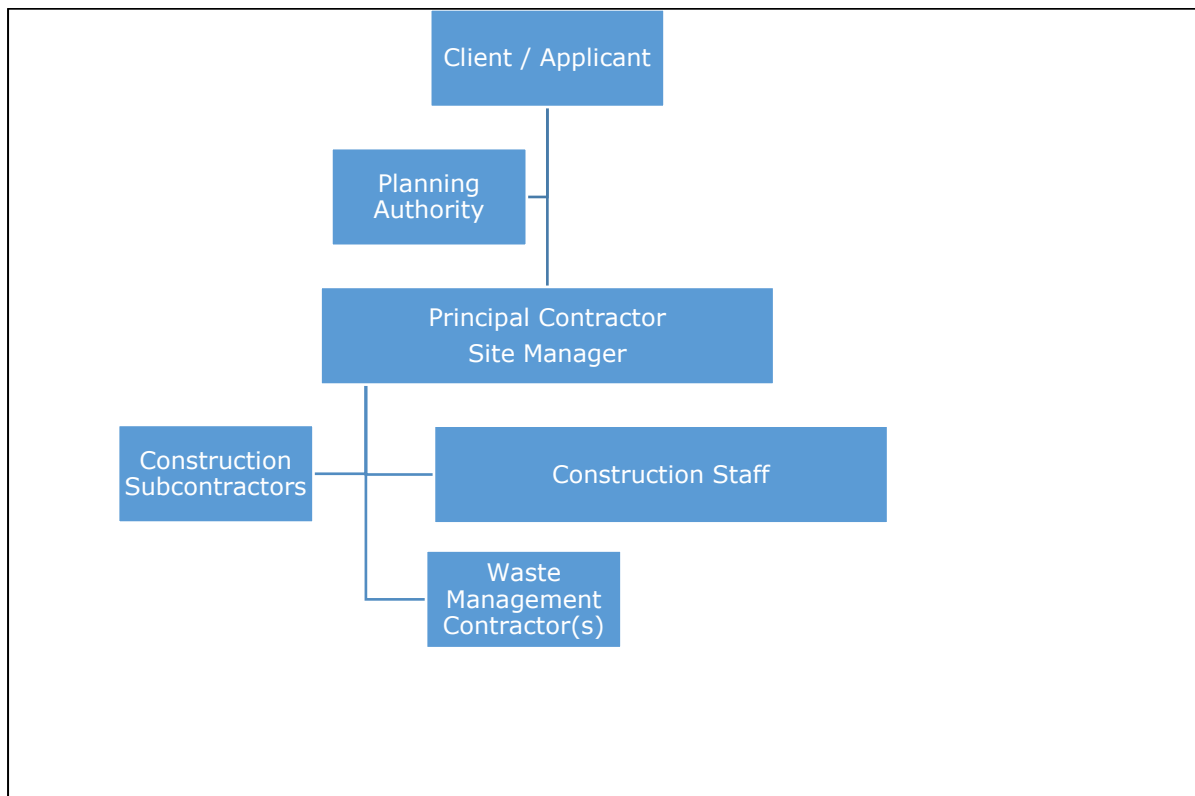
Roles and Responsibilities

Both the applicant and principal contractor have roles and responsibilities in relation to the C&D WMP. The Appointed Contractor will be responsible for most aspects of the Construction Waste from the date of the contract.

The Site Construction Manager will be designated as the Responsible Person and have overall responsibility for the implementation of the on-site C&D WMP. The site manager will be assigned the authority to instruct all site personnel to comply with the specific provisions of the C&D WMP. At the operational level, a nominated Environmental Representative from each sub-contractor company on the site will be assigned the direct responsibility to ensure that the discrete operations stated in the overall construction plan are performed on an on-going basis. Figure 5.3 provides a management structure for the construction site.

Table 4 Roles and Responsibilities

Description of Duty	Client	Principal Contractor
Ensure that from the start of the Project, an approach to waste management is taken that complies with all relevant waste regulations Produce and submit a C&D WMP that meets Westmeath Co. Council requirements and industry guidance	✓	
Give reasonable directions to any contractor so far as is necessary to enable the Principal Contractor to comply with his duties under these Regulations.	✓	✓
Make and maintain arrangements to record waste arisings within the Project.		✓
Communicate the C&D WMP to all those affected by it, including workers on site and any subcontractors, and undertake monitoring checks to ensure that it is implemented.		✓
Receive and record waste carrier registration details and waste transfer notes in the C&D WMP to ensure that waste removed from the site is transferred to the prescribed destination and is managed in accordance with applicable waste management legislation		✓
Ensure so far as is reasonably practicable that every worker carrying out the construction work is provided with (i) suitable site induction; and (ii) any further information and training which the worker needs for the particular work to be carried out within the terms of the C&D WMP		✓
View, revise and update the C&D WMP as and when necessary, ensuring that any changes in roles and responsibilities are clearly communicated to those affected	✓	✓
Take reasonable steps to ensure that sufficient site security measures are put in place at the site to prevent any illegal disposal of waste	✓	✓
Inform the Client on the requirements of a construction waste management plan to ensure that Client is aware of obligations to meet under regulations (applies to Principal Contractors where appointed)		✓

Figure 5.3 Construction Site Management Structure

Designated skips and receptacles will be provided on site for all recyclable wastes. The appointed waste contractor will collect and transfer the recyclable wastes as skips are filled. The non-recyclable waste will be transferred by an authorised waste collector to licensed facilities (e.g. canteen waste, general waste). Numerous licensed waste contractors are available in the area and will be obtained from the waste management authority listing.

A successful C&D WMP is largely dependent on how readily it can be integrated into normal site operations by site manager. The C&D WMP will be implemented to compliment site construction activities and will be promoted by raising awareness and its importance via site inductions, site training, toolbox talks, etc.

Demolition Waste Generation

The majority of the C&D waste will be clean, inert material and it is proposed to reuse it for construction purposes where possible. The existing house farm outbuilding, farm will be demolished and removed from site in accordance with best practice. Works will involve careful decommission and removal of all farm structures at the site. Anticipated wastes which will be generated include soils, bricks and blocks; concrete and reinforced concrete; timber; metal sheeting and steel. Materials arising from this process will be recycled /disposed of at authorised waste management facilities.

Construction Waste Generation

During construction activities, it is expected that construction waste will be produced from surplus materials such as broken or off-cuts of timber, plasterboard, concrete, glass, packaging waste, steel etc.

Soils, Subsoils and Bedrock

A key aspect in the design stage of the project was to aim to eliminate the off-site disposal of excavated materials wherever possible and to reduce the potential for landscape and visual effects.

Construction activities during the construction phase have the potential to release contaminants to the surface waters via drainage channels, specifically silt /sediment, concrete /grouting materials, foul effluent and oils. However, these impacts can be controlled and mitigated and considered as imperceptible negative temporary impacts on the basis that construction mitigation measures are carried out as outlined below.

- Prior to commencement of construction, the outline CEMP will be further development and submitted to the planning authority for agreement.
- Planned construction works will be carried out with the least feasible disturbance of soils. It is proposed that no excavated soil materials (spoil) will be exported off site and will be near boundaries (particularly to the north). Soil stripping and site levelling works will be confined to the site itself. Low lying areas of the site will be filled and levelled with the spoil material. Timetabling of vegetation removal, topsoil stripping and the development of earthworks on-site will fully consider seasonal, ecological and hydrological constraints.
- An accident management plan will be developed to provide spill response procedures, emergency contact details in addition to equipment inventories and their location. All staff will be made aware of this document, and its content, during site induction and it will be available in the site office. Staff will be trained in the implementation of the Plan and the use of any spill control equipment as necessary.
- A drainage plan will be prepared for the construction programme and showing proposed sediment traps and monitoring /discharge control points. The plan will include use of settlement features and traps.
- Concrete will be mixed off-site and imported to the site. The pouring of concrete will take place within a designated area to prevent concrete runoff into the soil / groundwater media.
- Wash down and washout of concrete transporting vehicles will take place at an appropriate facility offsite.

- Good housekeeping (daily site clean-ups, use of disposal bins, etc.) on the project site, and the proper use, storage and disposal of many substances used on construction sites, such as lubricants, fuels and oils and their containers can prevent soil contamination.
- Pollution of aquatic systems during the construction phase will be reduced by the implementation of the following best practice mitigation measures. Due cognisance is paid to the following guidance documents for construction work on or near water;
 - IFI (2016) Guidelines on protection of fisheries during construction works in and adjacent to waters - Guidance for consultants and contractors;
 - CIRIA (2004) – Guideline Document C697 The SUDS Manual;
 - CIRIA (2004)– Guideline Document C624 Development and flood risk - guidance for the construction industry;
 - CIRIA (2006) Control of water pollution from linear construction projects. Site guide;
 - SEPA (2010) Engineering in the water environment good practice guide sediment management;
 - SEPA (2009) Engineering in the Water Environment Good Practice Guide: Temporary Construction Methods; and,
 - SEPA (2017) Works and maintenance in or near water. GPP 5.
- All chemical and fuel fill points and hoses will be contained within bunded areas. Adequate protection measures will be put in place to ensure that all hydrocarbons used during the construction phase are appropriately handled, stored and disposed of in accordance with recognised standards as prescribed out by the EPA.
- Foul drainage from all site offices and construction facilities will be contained and disposed of in an appropriate manner to prevent pollution of local watercourses in accordance with the relevant statutory regulations.
- Routine monitoring of water quality will be carried out at appropriate locations during construction. Parameters to be monitored should include pH, total suspended solids, BOD and COD.

It is not expected that any contaminated material will be encountered during the construction works due to the history of the site (greenfield). However, in this unlikely instance, the material will be segregated, classified and suitably disposed of under waste permit to a waste licensed facility following notification to the Council. This highly unlikely event would increase the off-site disposal rates.

Plastic

As plastic is now considered a highly recyclable material, much of the plastic generated during construction will be diverted from landfill and recycled. The plastic will be segregated at source and kept as clean as possible and stored in a dedicated skip.

Timber /Wood

There will be timber waste generated from the construction work as off-cuts or damaged pieces of timber from building construction. Timber that is uncontaminated (free from paints, preservatives, glues etc.) will be recycled. Again, designated signed areas will be used for segregation and collection on site. A permitted contractor will be used to transfer the material to a waste licensed facility for recovery /recycling (e.g. energy use, wood chips, etc.).

Scrap Metal

Steel is a highly recyclable material and there are numerous companies that will accept waste steel and other scrap metals. A segregated skip will be available for steel/metal storage on-site pending recycling.

Cardboard Packaging

Cardboard packaging will be flattened and placed in a covered skip to prevent it getting wet prior to its recovery off site.

Plasterboard

Waste gypsum can be recycled into new plasterboard. A skip will be provided for the separate collection of waste plasterboard and collected as necessary.

Hazardous Wastes

On-site storage of any hazardous wastes produced will be minimised with off-site removal organised on a regular basis. Appropriate storage of all hazardous wastes on-site will be undertaken including bunding of fuels, lubricants etc. to minimise exposure and risk to human beings and environmental receptors. Segregated hazardous wastes (such as waste oils) will be recovered wherever possible and failing this, disposed of appropriately.

Canteen and General Waste

Regular housekeeping of the temporary canteen/W/C areas will be carried out. Removal of domestic waste from the construction compound will be carried out by a permitted waste contractor. Any temporary W/C utilities used on site during the construction phase will be maintained by an approved and permitted contractor.

There will be a general skip or receptacle for C&D waste not suitable for reuse or recovery. This skip will include general wet waste (mixed food waste and food packaging), contaminated cardboard, contaminated plastic etc. Workers on the site will be encouraged to recycle as much municipal waste as possible and segregated bins will be provided. Prior to removal, the municipal waste receptacle will be examined to confirm not cross contamination has occurred.

Tracking and Documentation

The site manager will maintain a copy of all waste collection permits in the construction site office. A record of all imported material (such as clean fill material such as broken rock, clause 804 gravel, etc.) will also be kept on file. If waste is being transported to another site, a copy of the waste permit or EPA waste licence will be kept on file at the site construction office. It is not expected that any waste will be produced on site that will require transfrontier shipping documentation (TFS). If this instance arises, this will be arranged via the national competent authority; Dublin City Council is designated as the National Competent Authority for the export, import and transit of waste shipments under S.I. No. 419 of 2007 Waste Management (Shipments of Waste) Regulations, 2007.

Estimated Cost of Waste Management

The cost associated with waste management for the site will be further developed and incorporated into the CEMP (containing Construction Waste Management Plan) by the construction site manager once construction contracts have been put in place and appointments made. Estimated waste totals will initially be calculated during costing of the project and these will be compared against actual waste total as construction on the project progresses. The CEMP will be updated with this information when available will be inputted to the CEMP and a summary overview will be available.

Training of construction staff in relation to the CEMP will be the responsibility of the site manager. A copy of the CEMP will be made available to all personnel on site. All site personnel and sub-contractors will be instructed about the objectives of the CEMP and informed of the responsibilities which fall upon them as a consequence of its provisions.

Where source segregation, selective demolition and material reuse techniques apply, each member of staff will be given instructions on how to comply with the CEMP. Signage will be designed to reinforce the key messages within the CEMP and will be displayed prominently for the benefit of site staff.

Record Keeping and Waste Audits

Records will be kept for each waste material which leaves the site, whether for reuse on another site, recovery, recycling or disposal. A system will be put in place to record the construction waste arising on-site.

The waste manager or delegate will record the following:

- Waste taken off-site for reuse.
- Waste taken off-site for recovery.
- Waste taken off-site for recycling.
- Waste taken off-site for disposal.
- Waste (soil & stone) accepted on-site for recovery.

For each movement of waste off-site, a signed waste collection docket will be obtained by the waste manager (or delegate) from the contractor. This will be carried out for each material type. This system will also be linked with the delivery records. A signed waste acceptance docket will be issued for each movement of waste on-site.

Waste Audits

The site manager will be responsible for conducting waste audits at the site during the construction of the development. The site manager will arrange for full details of all arisings, movements and treatment of construction and demolition waste discards to be recorded during the construction stage of the project. Each consignment of C&D waste taken from the site will be subject to documentation to ensure full traceability of the material to its final destination.

Review of Records and Identification of Corrective Actions

A review of all the records for the waste generated and transported off-site, as well as waste accepted, will be undertaken mid-way through the C&D phase. If waste movements are not accounted for, the reasons for this will be established in order to see if and why the record keeping system has not been maintained. Each material type will be examined in order to see where the largest percentage waste generation is occurring. The waste management methods for each material type will be reviewed in order to highlight how

the waste reduction targets can be achieved. Waste management costs will also be reviewed.

Consultation with Relevant Authorities

The site manager will consult and respond to any planning requirements of Westmeath County Council during the construction phase of the project. The Council will also be consulted to discuss all available all available waste reduction, re-use and recycling opportunities are identified and utilised.

Post-Construction

Within three months of all construction works being completed, a final version of the CEMP (including construction waste management plan) will be completed and made available to the planning authority for inspection. The report will summarise the outcomes of waste management processes adopted and the total recycling/reuse/recovery figures for the development.

Appendix B:
Environmental inspection checklist

Appendix C:
Ecology constraints and seasonal calendar

Appendix D:
Traffic and delivery management checklist

Appendix E:
Carbon data capture / monthly reporting template

Appendix F:
Archaeology stop-work / discovery protocol

Appendix G:
Complaint and stakeholder communication log



APPENDIX 2.7

Our Ref SEP-0374/Admiral/Ltr01_20260319_v5

Date: 20 March 2026

Planning Department
Westmeath County Council
Áras an Chontae
Mullingar
Co Westmeath

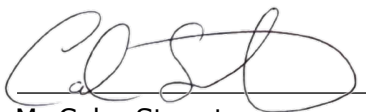
Re. Data Centre Facility and Decentralised Energy Resource – Planning Case Ref. 25/60344, located at Gneevebane, Oldtown, Farthingstown, Castlelost, and Kiltotan and Collinstown, Rochfortbridge, County Westmeath

We act on behalf of Red Admiral DC Limited, the applicant in the subject case. Any correspondence in respect of this appeal should be sent to the offices of Halston Environmental & Planning Limited.

Red Admiral DC Limited lodged a planning application with Westmeath County Council on 08 July 2025 with Westmeath County Council (WCC) under Section 34 of the Planning and Development Act 2000, as amended. WCC requested the applicant to furnish further information (FI) in relation to the proposed development on 01 September 2025. The following Planning Statement presents our response to each FI item of the request.

An EIAR Addendum (with accompanying EIAR Appendices) and a Revised Report for the purposes of Appropriate Assessment (AA) Screening are provided in support of the FI responses. Revised Planning-Stage Drawings are provided as per the Drawing Register contained in Attachment A to this Planning Statement. Attachment B contains a schedule of third-party observations reviewed as part of this response. Stormwater Calculations and a Fire Risk Assessment Report are also provided with the supporting Engineering Drawing package.

Yours sincerely,



Mr Colm Staunton

Director
Halston Environmental & Planning Limited

CLIENT: RED ADMIRAL DC LIMITED

PROJECT NAME: ADMIRAL

PROJECT DETAILS: PROPOSED DATA CENTRE FACILITY AND
DECENTRALISED ENERGY RESOURCE, AT
GNEEVEBANE, OLDTOWN,
FARTHINGSTOWN, CASTLELOST, AND
KILTOTAN & COLLINSTOWN CO.
WESTMEATH

DOCUMENT: PLANNING STATEMENT



DATE MARCH 2026

PROJECT REF. SEP-0374

FI Item 1 - Compliance with EIA Directive requirement – Project Splitting

The supporting documentation fails to adequately assess the combined impacts of the current proposal alongside previously permitted developments on the same landholding, most notably the adjoining Castlelost energy projects, including the 275 MW FlexGen plant.

Ambiguities exist regarding the proposal’s relationship with, and reliance on, these adjoining projects. While earlier permissions were granted on the basis that they would support national grid capacity and resilience through demand-responsive services, the current proposal appears to repurpose the battery energy storage system (BESS) element from permission ref. 21/532, redirecting its use to serve the proposed data centre rather than the grid, thereby altering its original intended function. Notably, the subject application references this BESS component as key to demonstrating compliance with the Commission for Regulation of Utilities’ (CRU) Large Energy User Connection Policy (CRU/202504).

This situation raises several critical issues:

- 1. Concerns arise around project splitting, particularly in the context of EU case law, which underscores the requirement for cumulative assessment of interrelated or functionally linked projects to ensure a comprehensive environmental evaluation.***
- 2. The substitution of the permitted vanadium-based BESS with a lithium-ion system, without reference to prior consents or explanation of its operational or environmental implications, raises concerns regarding compliance, justification, and potential impacts on grid services.***

Having regard to the ambiguities within the current application, the apparent reliance on adjoining permitted developments, and the lack of a cumulative assessment of both the proposed and previously permitted developments on this landholding, the applicant is requested to clarify the following:

- a) Given the proximity, scale, and potential functional interrelationship between the proposed data centre and the adjoining Castlelost energy projects (including the FlexGen plant), the Planning Authority requires the applicant to:***

- I. *Demonstrate clearly whether the proposed development operates independently of the adjoining Castlelost energy projects, or whether it is functionally and/or operationally linked to them.***
- II. *Clarify whether the proposed data centre relies on the adjoining Castlelost energy projects—in particular, the 275 MW FlexGen plant—to meet the requirements of the CRU’s Draft Large Energy User Connection Policy (CRU/202504).***
- III. *Clearly specify the intended role of the proposed Battery Energy Storage System (BESS), clarifying whether it is primarily designed to serve the proposed data centre or to support the wider electricity grid as originally permitted (ref. 21/532). Additionally, provide a clear and evidence-based statement confirming whether this proposal should be considered a standalone project or assessed cumulatively in combination with the adjoining Castlelost projects. In this regard, the applicant is specifically requested to address the issue of project splitting within the meaning of the EIA Directive and relevant EU case law, including but not limited to Case C-142/07 (Ecologistas en Acción-CODA), and to demonstrate compliance with cumulative assessment requirements.***
 - b) *Detail and justify how the proposed BESS differs in function from the previously permitted BESS development as permitted under file ref 21/532.***
 - c) *Submit justification for the change in technology which appear to be repurpose the BESS to store energy for the Data Centre rather than trading electricity on a demand-responsive basis to provide national grid services as presented under file ref 21/532.***
 - d) *Regularise any such changes which may result in non-compliance with conditions of permission file ref 21/532.***

RESPONSE

The Applicant has had regard to the requirements of Directive 2011/92/EU, as amended, and to relevant EU case law concerning project splitting, including Case C-142/07 *Ecologistas en Acción-CODA*. The proposed Admiral development has been described and assessed as a whole, including all constituent, ancillary, enabling and associated works

required for its construction and operation. The application does not seek to divide the proposed development into separate elements for the purpose of avoiding or reducing environmental assessment.

The EIAR supporting the planning application assesses the likely significant effects of the proposed development as a whole and also considers cumulative effects with other relevant existing and /or approved developments. In this regard, the Applicant has identified relevant projects and developments in the receiving environment and has assessed likely cumulative effects in accordance with the EIA Directive, Annex IV, the European Commission's guidance on the preparation of the EIAR, and the EPA's 2022 Guidelines on the Information to be Contained in EIARs.

Based on the application documentation originally submitted and the response to this FI request, it is submitted that the application and EIAR comply with the requirements of the EIA Directive in relation to overall project assessment, avoidance of project splitting, and cumulative effects assessment.

(a)(I) Demonstrate clearly whether the proposed development operates independently of the adjoining Castlelost energy projects, or whether it is functionally and/or operationally linked to them.

RESPONSE

We understand that the projects referred to are Westmeath Planning Ref 25/60344 (Admiral – the proposed development), 21/515 (Castlelost FlexGen) and 21/532 (Castlelost ESS) are independent technically and commercially; they are on adjoining land but are not connected electrically.

Planning permission for Castlelost FlexGen project (i.e. Westmeath Planning Ref. 21/515) was applied for in 2021. Construction of the 275MWe reserve gas-fired generator is nearing completion and is due to enter into commercial operation shortly. The plant is contracted to provide dispatchable power generation to the grid under a capacity contract (Capacity Auction T-3 2024); 10-year capacity award. The plant comprises five (5no.) open cycle gas turbines (OCGTs) and is designed and optimised for fast and reliable operation. OCGTs are not designed to operate continuously and differ from baseload units (such as combined cycle gas turbines (CCGTs)), which fulfil this need with a lower marginal cost. The use of OCGT technology by Castlelost FlexGen enables it to support grid operator requirements and accommodates increasing volumes of non-dispatchable renewable wind

and solar generation to the grid. Castlelost ESS (Ref/ 21/532) was granted planning permission in March 2022 but has not been constructed.

Assessment of the proposed location is discussed in Section 3.2.2 of the EIAR. The Red Admiral DC Limited project location was guided by a number of factors including proximity to existing key services and distance to sensitive receivers. The lands comfortably accommodates the DC and collocated DER and avoids and reduces adverse environmental effects (following the mitigation hierarchy of avoid, reduce and, if possible, remedy). The site is comprehensively served from a fibre and telecoms perspective, providing the opportunity for a straightforward and secure fibre and telecoms connection, whilst also limiting the works and associated impacts of the same. Several dark fibre options are available near the site which meet the capacity and performance requirements for the DC facility (low latency, diverse fibre routes and multiple designated fibre pairs). It should also be pointed out that the proposed site is located in an unconstrained grid area and therefore aligns with the Statement’s *"grid-capacity-and-efficiency"* principle and avoids intensifying grid stress in the Greater Dublin Area. The 220kV transmission corridor and Castlelost GIS substation (node) within the site, provides the project with firm Maximum Import Capacity (MIC) without triggering major off-site reinforcement works. The Castlelost 220kV GIS was built in accordance with Eirgrid requirements, which stipulates that such infrastructure includes room for future connections.

A summary of the benefits of the chosen location is illustrated in Figure 1.

Figure 1 Summary of Benefits of Proposed Project Location



(a)(II) Clarify whether the proposed data centre relies on the adjoining Castlelost energy projects—in particular, the 275 MW FlexGen plant—to meet the requirements of the CRU’s Draft Large Energy User Connection Policy (CRU/202504).

RESPONSE

We understand that the projects referred to are Westmeath Planning Ref 25/60344 (Admiral – the proposed development), 21/515 (Castlelost FlexGen) and 21/532 (Castlelost ESS) are independent technically and commercially; they are on adjoining land but are not connected electrically.

The Large Energy Users (LEU) connection policy under development did include a concept of “*proximate generation*” in the February 2025 consultation however this was not defined clearly to date. The Castlelost FlexGen project (275MW) is now connected to the electrical grid and will operate commercially in the coming months regardless of project Admiral.

Project Admiral will be grid-connected (non-islanded DC) and is designed with significant on-site renewables (Solar PV farm), low carbon generation (SOFC) and an energy storage system (BESS). This will allow the project to optimise its use of energy sources for cost, carbon intensity, reliability and matching of demand. In addition, it will minimise strain and loading of the grid by smoothening the demand from the DC facility and replacing energy imported from the grid (with on-site generation and stored energy). Using the BESS, project Admiral will also be capable of absorbing renewable energy from the grid for use at later times, which will greatly assist the grid in maximising the use of renewable energy.

The Castlelost FlexGen project resulted in some infrastructure development which eventually may support further development by virtue of the standard design approach used by EirGrid and Gas Networks Ireland. For example, the GIS grid substation has been built to an EirGrid functional specification which includes a stipulation as part of build out to allow for future connections. The new GIS substation provides a connection point to the national transmission grid, enabling the connection of new generation /demand. The transmission network in this location is lightly loaded and can support additional demand.

The gas pipeline constructed to supply natural gas to Castlelost FlexGen was constructed with additional capacity. This is a function of the design process where the next size up of standard pipe diameter, consistent with the standard sizes used by GNI nationally, is used to ensure sufficient margin.

The proposed road access will be shared with the Castlelost FlexGen project at the road entrance and within the development to access energy infrastructure adjoining the Castlelost FlexGen site.

(a)(III) Clearly specify the intended role of the proposed Battery Energy Storage System (BESS), clarifying whether it is primarily designed to serve the proposed data centre or to support the wider electricity grid as originally permitted (ref. 21/532). Additionally, provide a clear and evidence-based statement confirming whether this proposal should be considered a standalone project or assessed cumulatively in combination with the adjoining Castlelost projects. In this regard, the applicant is specifically requested to address the issue of project splitting within the meaning of the EIA Directive and relevant EU case law, including but not limited to Case C-142/07 (Ecologistas en Acción-CODA), and to demonstrate compliance with cumulative assessment requirements.

RESPONSE

The consented Castlelost ESS project (Westmeath Ref 21/532) comprises a grid connected (a) BESS (flow battery technology) and (b) synchronous condenser. An application was made to secure a connection offer to the grid in 2023 however it was rejected due to a lack of export (Maximum Export Capacity "MEC") on the overhead transmission line in the area. This line may be upgraded in due course to increase capacity, but no plan is in place at present to do this, it may take place post 2030 if EirGrid and ESB Networks include the work in their development works. In addition to the problems securing a suitable grid connection it became apparent that the proposed vanadium flow battery technology did not advance to full commercialisation and battery technology generally has moved on significantly since 2021. With these issues in mind, and the LEU connection policy direction which was signalled by the CRU, the Castlelost BESS area has been repurposed to use a different type of battery (LFP) and to serve the data centre project in a number of ways, still to the benefit of the national electrical grid. The rationale for repurposing is as follows:

- grid export capacity currently lacking,
- advances / change in technology since 2021,
- supporting the grid by facilitation of variable demand / demand flexibility,
- smoothening demand: to avoid grid disturbances and manage demand changes.
- shifting demand to better avail of renewable energy via the grid
- reducing system curtailment during periods of high renewable generation.

The CRU LEU connection policy consultation places a strong emphasis on the ability of data centres to have demand flexibility where possible. Integrating a BESS of suitable scale will allow the data centre facility to manage its demand and grid demand flexibly, including smoothing of demand to reduce disturbances to the grid, management of change between using grid energy and on-site generation, absorption of renewable energy at times of surplus thereby reducing system curtailment. The use of BESS in conjunction with an data centre campus is consistent with the aims of the CRU LEU policy proposed in the February 2025 consultation. In practical terms the battery layout is adjusted to better accommodate the typical container sized enclosure used for lithium-ion batteries and matching MVPS equipment. The overall appearance is similar to the original design.

(b) Detail and justify how the proposed BESS differs in function from the previously permitted BESS development as permitted under file ref 21/532.

(c) Submit justification for the change in technology which appear to be repurpose the BESS to store energy for the Data Centre rather than trading electricity on a demand-responsive basis to provide national grid services as presented under file ref 21/532.

RESPONSE

The revised configuration arises primarily due to changes in electricity network connection conditions since the grant of planning permission under ref 21/532.

Lumcloon Energy lodged a planning application with Westmeath County Council (planning ref. 21/532) in September 2021 for a 10-year permission for development of an Energy Storage System (ESS) facility designed to provide system support services to the electricity grid on a c.13.52 ha site located in the townlands of Kiltotan and Collinstown and Oldtown, Rochfortbridge, County Westmeath. Westmeath County Council granted planning permission for the ESS on 21 March 2022. The proposed development comprises: (i) an open area battery energy storage system (BESS) compound (area of 26,317sqm) containing 264no. battery modules and associated medium voltage power station (MVPS) enclosures (12.192m long x 2.438m wide x 3.896m high), (ii) IPP building (40m long x 10m wide x 6.853m high), (iii) synchronous condenser compound (area of 9,309sqm) containing a horizontal synchronous generator positioned within a building (30.0m long x 18.0m wide x 12.15m high), 5no. control modules each (12.192m long 2.438m wide x 3.332m high), associated banded transformers and electrical plant, (iv) high voltage (HV) customer compound containing 1no. banded transformers (9m high) and electrical plant to provide for connection to the electricity transmission system, and (v) all ancillary development, including; lightening mast protection, perimeter fencing with access gates,

landscaping, lighting, car parking, internal access roads and all civil engineering works for the disposal of foul and surface water.

As described in planning application documents submitted in support of Planning Ref 21/515, the development comprises two grid connected energy storage technologies (a synchronous condenser and a flow battery (BESS)) designed to store surplus renewable energy generated during periods of low demand and release this to the grid with demand is greater. The development was designed to provide load shifting (energy arbitrage) and ancillary services to the electricity grid by connecting to the 220kV Castlelost Gas Insulated Switchgear (GIS) electrical substation. Both the BESS and synchronous condenser technologies were proposed within separate and securely fenced compounds as part of Planning Ref 21/515.

However, since that grant of permission (Planning Ref 21/532), EirGrid's export capacity constraints at this specific node have changed resulting in low Maximum Export Capacity (MEC) available for energy storage and therefore the project, in its current form permitted under ref 21/532, cannot fulfil its primary contributions for system services, electricity and participation in electricity markets.

As part of the development of project Admiral, it was decided to repurpose the BESS component of Planning Ref 21/532 to function as a behind-the-meter energy buffer for the demand /load created by the data centre campus (i.e. see BESS component of Admiral DER presented in Westmeath Planning Ref. 25/60344). Rather than acting as a generator for the grid, the BESS proposed as part of project Admiral will function as a "*Load-Shedding*" or "*Peak-Shaving*" asset. Its functions will be directly linked project Admiral's internal demand rather than the grid's external supply, representing a shift in its operational classification. The BESS proposed as part of project Admiral does not interact with the electricity network in the manner envisaged under the ref 21/532. This type of system is commonly deployed within large industrial and datacentre developments to optimise electricity usage and improve system reliability by providing local consumption, load balancing and power quality support on site of the development. Importantly, the revised BESS does not increase the scale or intensity of development previously assessed under ref 21/532, and in certain respects represents a reduction in operational interaction with the electricity network.

As part of the project Admiral BESS proposal (Westmeath Planning Ref 25/60344) it is proposed to utilise LFP battery technology rather than the Vanadium Redox Flow Battery (VRFB) technology referenced in the original planning documentation. This change relates

to battery chemistry only and the change does not alter the physical boundaries of the permitted development. Both technologies perform the same fundamental function of storing of electrical energy for later discharge.

The applicant acknowledges that lithium-based battery systems differ from flow batteries in internal electrochemical design. However, LFP technology is widely recognised as one of the safest lithium-ion battery chemistries available, due to its high thermal stability and lower thermal runaway risk relative to other lithium-ion technologies. The BESS proposed as part of project Admiral has been designed in accordance with the following regulatory and standardisation framework and has layered controls built in for its fire-fighting strategy.

- UL 9540A (2019); *"Standard for Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems"*
- NFPA 855 (2026); Standard for the Installation of Stationary Energy Storage Systems
- NFCC (2024) *"Grid-scale BESS Planning – Guidance for FRS"*
- Energy Storage Ireland, (July 2021) *Safety of Grid-Scale Battery Energy Storage Systems - Information Paper*

Repurposing of the BESS from a demand-response trading asset to a dedicated storage unit for project Admiral DC also aligns with the Government Statement on the Role of the Data Centres (2022). This policy explicitly encourages large energy users to provide their own *"dispatchable on-site generation and storage"* to mitigate impacts on the national grid. By decoupling BESS into a behind-the-meter configuration, the applicant is ensuring that the storage capacity is utilised to reduce the Datacentre peak demand on the constrained network, reducing utilisation of the National Grid and overall, the carbon footprint. This transition from grid-trading asset to load-shedding asset serves the same mission of the original application that is system stability, but through a different technical mechanism adapted to the current grid realities.

Separately, Lumcloon Energy will apply to Westmeath County Council to amend the granted permission for the ESS development (Ref 21/532), request permission to remove the BESS component and retain the synchronous condenser compound. The synchronous condenser would then exist as a standalone grid-supporting asset providing essential non-export services (inertia, voltage control and short-circuit support) under 0 MW Maximum Export Capacity. It is proposed that the internal configuration of the synchronous

condenser will also be slightly modified to increase the efficacy of Low Carbon Inertia Services (LCIS) and fully comply with EirGrid LCIS procurement requirements.

Because the synchronous condenser provides a different type of service to the grid (such as Synchronous Inertial Response (SIR) and Steady State Reactive Power (SSRP) along with short circuit contribution), this element of the ESS proposed under Planning Ref 21/532 will be able to connect and provide support to the national grid. Integration of carbon zero technologies such as synchronous condensers provides system inertia and will protect the grid from shutdown of older fossil fuel conventional plant arising from the increased penetration of renewables.

(d) Regularise any such changes which may result in non-compliance with conditions of permission file ref 21/532.

As mentioned above, Lumcloon Energy will submit a concurrent section 34 planning application with the requisite supporting assessments and documentation to Westmeath County Council to amend the grant of planning obtained for Planning Ref. 21/532. Primarily the applicant will seek to regularise the development by removing the vanadium flow battery (this is now replaced with the BESS proposed under Ref 25/60344 and retain the synchronous condenser. The synchronous condenser will be a standalone grid-supporting asset (independent of project Admiral (Planning ref. Ref 25/60344)) and will provide essential non-export services (inertia, voltage control and short-circuit support) under OMW Maximum Export Capacity. It is proposed that the internal configuration of the synchronous condenser will also be slightly modified to increase the efficacy of Low Carbon Inertia Services (LCIS) and fully comply with EirGrid LCIS procurement requirements.

The section 34 planning application for the regularisation of Planning Ref. 21/532 will demonstrate that there is no intensification or significant change to the synchronous condenser compound footprint /proposal and the amendment will result in positive effects while the overall changes will continue to conform with National Planning Framework (NPF) objectives regarding sustainable data infrastructure.

2) **Engineering**

i. Roads

Please submit a Traffic Management Plan for the consideration of the planning authority, which reviews site access, traffic impacts and traffic management measures during the construction phase, operation phase and decommissioning phase. This should include a transport plan with a pre-condition survey on all roads accessing the development.

You are requested to clearly identify anticipated haul routes, in particular for the supply of aggregate and the solar panels and how access to the site is proposed.

RESPONSE

See attached Outline Construction Traffic Management Plan (CTMP) in Appendix 13.7 of the EIAR Addendum.

A pre-condition survey of the road structure of the R446 in the immediate vicinity of the proposed development and the local road network will be carried out prior to construction commencement to verify and record the condition of the road. The pre-condition survey extents and survey type will be agreed with Westmeath County Council.

Annual condition surveys and a post completion condition survey will be carried out to determine defects deemed to be resulting from the construction of the proposed development. These defects should be "made good" within an agreed timescale with Westmeath County Council. If defects to the structure of local road which have the potential to impact on road safety are observed outside of the aforementioned reviews, the defects should be made good within an agreed timescale with Westmeath County Council.

ii. Cable route

The underground cable route is shown along the L11272 and R446 on drawing CLDC-HAL-DC-XX-PL-3030 "Proposed Cable Trenched in Public Roads". However, the full extent of the cable route is unclear. Please submit revised drawing that clearly shows the full extent of the cable route, on the public road and to the connection point in the proposed development.

RESPONSE

The full extent of underground cables crossing public roads is shown on Halston Drawing No. CLDC-HAL-DC-XX-PL-1000 (Masterplan Site Layout). It is proposed that underground cabling will be undertaken in accordance with the details as specified in Halston Drawing No. CLDC-HAL-DC-XX-PL-1003 and CLDC-HAL-DC-XX-PL-1006. Horizontal Directional drilling (Halston Drawing No. CLDC-HAL-DC-XX-PL-1013) will be used to install cables across the M6 and L-51251 public roads. We also draw your attention to Halston Drawing No. CLDC-HAL-DC-XX-PL-3030. The drawing has been revised and includes plan views of the subject areas and full extent of cable routes on the public road and to the connection point (D17- Solar Farm IPP building and AIS Compound) in the proposed development.

For reference the Planning-Stage Drawings Register is provided in Attachment A to this FI response letter.

iii. Surface Water

The details regarding the proposed stormwater discharge to the existing drain located along the southern boundary of the site are currently unclear. To allow for a full and informed assessment, you are requested to submit the following:

a. A Stormwater Drainage Layout Drawing that clearly and independently illustrates the full extent of the stormwater drainage system across the entire site, separate from other utility services.

b. The drawing must explicitly indicate the discharge point, including the connection to the existing drain along the southern boundary, as referenced in the submitted Foul and Stormwater Design Report.

RESPONSE

In response to points (a) and (b), please refer to planning-stage engineering drawing (Halston Drawing No. CLDC-HAL-DC-XX-PL-1080) prepared in support of this planning application. For reference the Planning-Stage Drawings Register is provided in Attachment A to this FI response.

iv. Compliance with Roads Sector Engagement Framework

The Planning Authority notes that the proposed development involves the installation of high-voltage electricity infrastructure, including [substations, overhead lines, underground cabling, and ducting], which may interact with or impact the public road network.

In this regard, you are requested to submit details demonstrating how the proposed development complies with the Electricity Transmission Infrastructure Development – Roads Sector Engagement Framework, as published by the Department of Transport.

RESPONSE

The *Electricity Transmission Infrastructure Development - Roads Sector Engagement Framework*¹ covers development of Transmission Grid by EirGrid and related to cables going into the public roads. *“The purpose of the 'Engagement Framework' is to establish a clear and consistent engagement, consultation, and agreement protocols, between EirGrid, ESBN, and Road Authorities, for all EirGrid/ ESBN high voltage transmission network projects that have the potential to impact public roads.”* The proposal does not include for layout of high voltage cables beneath public road and the proposed routing of HV cables within the development land will not result in impact to public roads.

We also note the *Interim Guidance to Road Authorities regarding the proposed placement of Medium or High Voltage electricity assets, including ducts, cables, and associated infrastructure under public roads*². The document was developed to assist in the delivery of the grid infrastructure rollout by the energy sector while also seeking to mitigate impact and ensure the continued proper management of the road network

The full extent of underground cables crossing public roads is shown on Halston Drawing No. CLDC-HAL-DC-XX-PL-1000 (overall layout drawing). It is proposed that underground cabling will be undertaken in accordance with the details as specified in Halston Drawing No. CLDC-HAL-DC-XX-PL-1003 and CLDC-HAL-DC-XX-PL-1006. Horizontal directional drilling (Halston Drawing No. CLDC-HAL-DC-XX-PL-1013) will be used to install MV cables across the M6 and L-51251 public roads. In terms of the laying of an MV cable connecting the northern solar farm parcel with the central solar farm array (Phase 2), we confirm *that that applicant will follow the “Process” guidance outlined in the Interim Guidance document.*

For reference, the Planning-Stage Drawings Register is provided in Attachment A to this FI response letter.

¹ EirGrid (2025) *Electricity Transmission Infrastructure Development – Roads Sector Engagement Framework*.

² Department of Transport (2025) *Interim Guidance to Road Authorities regarding the proposed placement of Medium or High Voltage electricity assets, including ducts, cables, and associated infrastructure under public roads*.

3) *Archaeology*

- i. It is noted that there is a protected structure RPS 033-001 located within the application site (redline boundary) located addressing the L-L11272 which relates to a former forge/smithy, built c.1830s. You are requested to submit proposals for the protection and preservation of this rare structure for the consideration of the planning authority.*

RESPONSE

Boyhan's Forge at Farthingstown is located immediately adjacent to the Local Road L-11272 just south of the former Dublin to Galway Road and southwest of Rochfortbridge. The forge was built c 1830 and is indicated on the 1st edition Ordnance Survey map. It is built of local limestone and is in good structural condition, with a pitched natural slate roof, clay ridge tiles, and a square-headed carriage arch to the main east gabled elevation, with double timber-sheeted doors.

Plate 1 Photograph of RPS 033-001 (Boyhan's Forge)



The forge is located outside the red line boundary for the proposed development and therefore there will be no direct impact on the structure. A proposed underground cable will be laid beneath the local road (L-11272) which runs along the edge of the structure. Prior to construction works commencing, temporary barriers will be placed along the road edge in front of the forge in order to prevent any access to the structure for construction machinery. Appropriate signage will be provided to alert the construction crew to the sensitivity of the site and all crew will be briefed by way of a Toolbox Talk in advance of works commencing. Machinery operators will exercise extreme caution when turning machinery not to impact on either the structure itself or the area in front of the forge. All works in the road will be done through open excavation and any vibration will be kept to

a minimum to avoid any potential damage to the structure. All excavations along this section of road will be monitored by a licensed archaeologist in order to ensure that these mitigation measures are adhered to.

- ii. Please submit plans clearly illustrating a 20-metre minimum buffer zone between development sites and the national monuments/archaeological sites within the landholding.*

RESPONSE

Please refer to Masterplan Site Layout Drawing (Halston Drawing No. CLDC-HAL-DC-XX-PL-1000) and associated individual Site Layouts (Halston Drawing No. CLDC-HAL-DC-XX-PL-1001 to CLDC-HAL-DC-XX-PL-1019) prepared in support of this planning application which shows a minimum 20-metre minimum buffer zone between development and the national monuments /archaeological sites within the landholding. Refer to Planning-Stage Drawings Register provided in Attachment A to this FI response letter.

4) Environment

- i. There does not appear to be a chapter in the EIAR with regards to Major Accidents & Natural Disasters/Emergencies. A chapter should be included in the EIAR which describes the likely significant effects on the environment arising from the vulnerability of the proposed project (the "Proposed Development") to risks of major accidents and/or natural disasters. This chapter should be included in accordance with the guidance set out by the Environmental Protection Agency (EPA) in 'Guidelines on Information to be contained in Environmental Impact Statements' (EPA, 2022) and the European Commission 'Guidance on the preparation of the Environmental Impact Assessment Report' (Directive 2011/92/EU, as amended by 2014/52/EU) (European Commission, 2017). You are requested to address this issue for the consideration of the planning authority.*

RESPONSE

An EIAR Addendum has been prepared as part of the response to this FI request. Chapter 17 of the EIAR Addendum provides a dedicated assessment of the vulnerability of the Proposed Development to the risks of major accidents and/or disasters relevant to it and, where appropriate, the expected significant adverse effects on the environment arising from such events. The assessment has been prepared having regard to the EIA Directive

(as amended) and the EPA Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EIAR) (2022).

ii. You are requested to submit a full schedule of mitigation and monitoring measures compiled from across all of the reports submitted which should be included in one overall mitigation and monitoring table and included in the EIAR for both the construction stage and the operational stage of the development for the reasons of co-ordination and clarity.

RESPONSE

An EIAR Addendum has been prepared as part of the response to this FI request. A consolidated Schedule of Mitigation (Chapter 18) has been prepared to provide a clear description of (i) the features (if any) of the proposed development (as amended) and (ii) the measures (if any) envisaged to avoid, prevent or reduce and, where feasible, offset likely significant adverse effects on the environment.

iii. It appears that there are discrepancies in the reporting of groundwater vulnerability classes across the EIAR chapters and Appendices. According to GSI mapping, the Groundwater Vulnerability across the site is classed as varying from High to Moderate with a small portion of the site to the southeast corner classified as Low. However, Chapter 8 of the EIAR (Water Environment) describes the vulnerability as Moderate and Poor. It is assumed that these maybe errors in the reports submitted you are requested to clarify these discrepancies.

RESPONSE

The errors are corrected in the updated Chapter as follows.

(a) Figure 8.6 Caption is updated to *Aquifer Vulnerability. The development lands are in areas with Low (Green) Moderate (Yellow) or High (Orange) vulnerability.*

(b) The second paragraph of Section 8.4.3.3 has been updated as follows:

"Low vulnerability aquifers, on the other hand, have substantial natural protection due to thick, low-permeability layers that significantly restrict water movement and contaminant transport. These aquifers often lie beneath extensive deposits of clay, shale, or unfractured bedrock, forming an effective barrier against pollution. The recharge rate in these systems tends to be low, meaning water takes a longer time to percolate through the protective layers. As a result, contaminants have difficulty penetrating these aquifers,

making them secure. However, high vulnerability aquifers are still at risk in scenarios where deep wells bypass protective layers or where fractures allow unexpected permeability. Additionally, once contamination does occur, remediation is challenging due to slow water flow and limited natural flushing capacity.”

Chapter 8 of the EIAR (Volume 2) has been revised and is included in the EIAR Addendum submitted in response to this FI request.

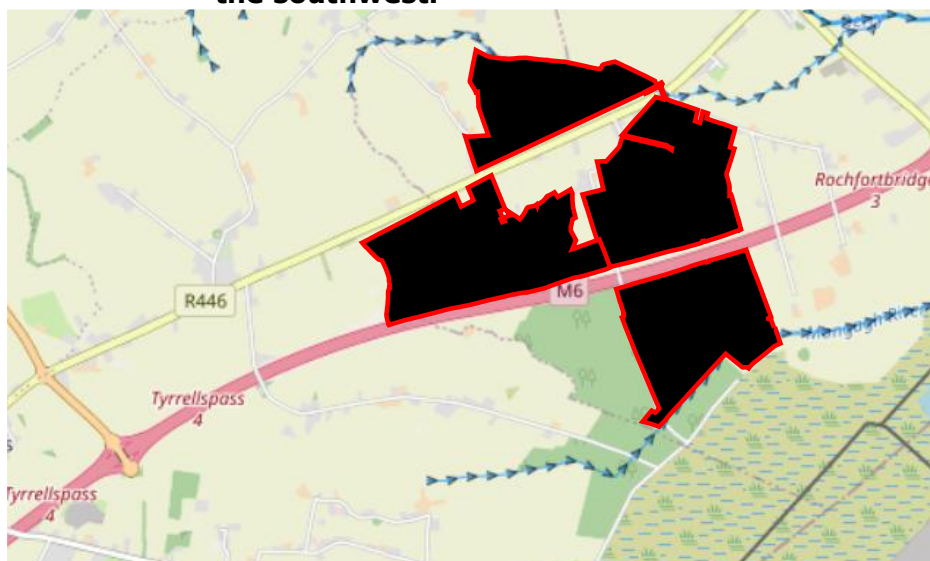
iv. It is noted that Figure 8.20 in the EIAR Volume 2 appears to show the northern boundary of the proposed development set back from the Castlejordan_010, whilst Site Layout out drawings show the site boundary adjacent to the waterbody. You are requested to address this anomaly.

RESPONSE

Please refer to Halston Drawing No. CLDC-HAL-DC-XX-PL-1000 to CLDC-HAL-DC-XX-PL-1003 showing boundary in this area of the proposed development. Planning-Stage Drawing Register provided in Attachment A to this FI response letter.

There was a graphical error in the EIAR Figure 8.20 which is corrected in the revised Figure 8.20 shown below. The correct version is also included in the Water Framework Directive Assessment report submitted with the response to the Request for Information. The correct boundaries were considered in the assessment, but the graphical error affected the reproduction of the Drawing in the EIAR.

Figure 8.20 Site location map showing local surface water features. Drainage across the development area flows towards the River Monagh to the southwest.



Chapter 8 of the EIAR (Volume 2) has been revised in full and is included in the EIAR Addendum submitted in response to this FI request.

v. Reference is made in Chapter 8 of EIAR stating that the proposed site is located 500m north of the River Mongagh watercourse. However, site layout maps provided show that the development site boundary adjoins the River Mongagh. You are requested to address this anomaly.

RESPONSE

This is a typographical error. The main areas of the site (Data Centre Campus) where development works will be undertaken are north of the River Monagh but it is acknowledged that part of the proposed development site adjoins the River. The data centre campus and a parcel of compensatory habitat is located approximately 500-550m northwest of the River Mongagh watercourse. The *River Mongagh watercourse* flows through the southern parcel of the proposed solar farm. Paragraph 1 of Section 8.4.4 is therefore updated as follows:

“The proposed development lands are located adjacent to and to the north of the water course.”

Chapter 8 of the EIAR (Volume 2) has been revised in full and is included in the EIAR Addendum submitted in response to this FI request.

vi. You are requested to submit a full hydrogeology and hydrology report to assess and describe the water resources and water cycle within the specific area and to ensure that there are no negative effects caused as result of the proposed development. It is an objective of the Water Framework Directive and the River Basin Management Plan (Water Action Plan 2024) to ensure that the status of all surface water bodies that could be impacted by any future development is fully protected. Please detail these water bodies, their current status and take an integrated catchment approach to outline how their status will be preserved throughout all stages of this proposed development by means of the submission of a hydrogeology and hydrology assessment.

RESPONSE

A Water Framework Directive (AFD) Assessment Report has been prepared and is provided in Appendix 8.4 of the EIAR Addendum. A revised Flood Risk Assessment (FRA) is also provided in Appendix 8.2 of the EIAR Addendum.

vii. It is not clear from the EIAR submission if the cumulative impact associated with the emissions from the high voltage (HV) modern electricity node (Castlelost GIS substation) and the 275MWe Castlelost Flexgen Power Plant, currently under construction and nearing completion have been taken into consideration in this assessment of air quality impacts. You are requested to amend the air quality assessment in Chapter 10 and supporting appendices, accordingly.

RESPONSE

The cumulative impact associated with the emissions from the high voltage (HV) modern electricity node (Castlelost GIS substation) and the 275MWe Castlelost Flexgen Power Plant, currently under construction and nearing completion have been taken into consideration in this assessment of air quality impacts.

As stated at Section 10.3.2.4 cumulative impacts with other known developments in the area were considered in the assessment. Section 10.5.3 sets out the projected emissions associated with operation of proposed development which are negligible. Most of the development has no quantifiable emission associated with the activity and the minor emissions associated with the SOFC and the emergency generator that will operate for less than 100 hours per year were considered and assessed using a dispersion model as set out at Appendix 10.1. Section 10.6.2 summarises the assessment conclusions and demonstrates that the impact of the emissions on air quality is not measurable due to the extremely low level of emission associated with the proposed development. Since the impacts are not measurable it is clear that there can be no cumulative effect with any other developments in the area.

Section 10.8 of the EIAR specifically sets out consideration of potential cumulative impacts of the emissions during both construction and operation phases of the proposed development with the adjoining facility (Castlelost Flexgen). The assessment concludes the following:

The potential cumulative operation phase air quality impacts are limited to the potential impact of nitrogen oxide emissions from the two facilities. The rate of emission from the proposed facility is very low and the predicted impacts are not discernible from background impacts. The assessment considered cumulative impacts by considering the ambient levels of nitrogen oxides including the minor contributions from the Lumcloon Energy [Castlelost Flexgen] facility.

The Planning Authority notes that Chapter 15 of Volume 2 of the EIAR provides a detailed overview of the climate objectives of the proposed development and the relevant policy framework. However, the assessment appears to be limited primarily to the principal campus area of approximately 48 hectares and does not sufficiently address the wider development, including the associated solar farms and ancillary works.

There are concerns regarding the calculation and presentation of the carbon footprint across all stages of the development—construction, operation, and decommissioning. In particular:

- The embodied carbon figure of 567 kg CO₂/m² cited for the campus construction lacks clarity on how this estimate was derived.*
- When extrapolated over the 48-hectare campus, this figure suggests an embodied carbon total that significantly exceeds the values presented in Section 15.6.1.3 of the EIAR, leading to inconsistencies in the reported data.*
- There is an absence of a detailed breakdown of embodied carbon across the various components of the campus construction.*
- Furthermore, the embodied carbon footprint of the wider facility, including the solar farms and ancillary infrastructure, has not been clearly quantified or explained.*

Accordingly, you are requested to provide:

- i. A comprehensive and transparent breakdown of embodied carbon emissions for the entire development, including the principal campus, solar farms, and ancillary works.*
- ii. Detailed calculations supporting the carbon emission estimates at each stage of construction, with clear methodology and assumptions.*
- iii. A tabulated summary of all carbon emissions across construction, operation, and decommissioning phases for the full scope of the development.*

This information is required to fully assess the climatic impact of the proposal in accordance with relevant policy and legislative requirements.

RESPONSE

An EIAR Addendum has been prepared as part of the response to this FI request. A revised Climate Assessment (Chapter 15) is included and should be read in conjunction with the following reports:

- The previously submitted Climate Assessment (Chapter 15, EIAR Volume 2)
- The updated Bitpower Energy Report entitled Carbon Impact Statement & Alignment with National Large Energy User Policies (EIAR Addendum, Appendix 3.3),
- The Project Carbon Management Plan (EIAR Addendum, Appendix 15.1)

A comprehensive and transparent breakdown of embodied carbon emissions for the entire development, including the principal data centre campus, solar farm, and ancillary works, is provided in Appendix 15.1.

The Carbon Impact Statement & Alignment with LEU Policies Report prepared by Bitpower (Appendix 3.3 of the EIAR Addendum) was used to inform the GHG assessment for the operational phase of the proposed development. The Bitpower Carbon Impact Statement & Alignment with LEU Policies Report includes additional carbon emissions modelling and more detailed carbon emission data is now available for the operational phase of the proposed development.

An EIAR Addendum has been prepared as part of the response to this FI request. A revised Climate Assessment (Chapter 15) is included.

5) Energy Use, Carbon Emissions, and CPPA Details

- i. The Bitpower Energy Report estimates that the solar farm will supply approximately 167 GWh annually, covering about 38% of the facility's energy demand at minimum capacity, but only around 7.6% at full 250 MW capacity, averaging roughly 13% under typical operating conditions. Given the facility is likely to operate near maximum capacity for profitability, this indicates a significant reliance on the electrical grid, the adjacent gas network, and Solid Oxide Fuel Cells.***

You are requested to provide clear details on the expected energy consumption and carbon emissions over the project's lifetime, particularly in relation to the stated carbon-neutral target. The assumption that decarbonisation of the grid and gas networks will address emissions is

considered overly reliant on external factors beyond the applicant's control and is insufficient for climate impact assessment.

RESPONSE

A Carbon Impact Statement & Alignment with LEU Policies Report prepared by Bitpower is contained in Appendix 3.3 of the EIAR Addendum submitted in support of this FI response.

ii. Additionally, the application references Corporate Power Purchase Agreements (CPPAs) to procure renewable energy, but no supporting details have been submitted. Please provide further information on any CPPA arrangements.

RESPONSE

The Applicant confirms that the reference to Corporate Power Purchase Agreements (CPPAs) is intended to describe one potential route by which a portion of operational electricity demand for the proposed data centre may be supplied with renewable electricity. The proposed development is designed as a data centre supported by a collocated decentralised energy resource system, comprising collocated generation and storage, including Solar PV, BESS and SOFC technologies.

In that context, the Applicant confirms that one potential route for the procurement of renewable electricity in respect of the imported electricity component is through one or more CPPAs and/or supplier-sleeved arrangements with licensed suppliers. No CPPA has been executed at the date of response, and the detailed commercial terms are commercially sensitive. Notwithstanding this, the Applicant recognises that operational electricity demand, the pathway to supply, and associated climate /energy considerations are relevant to the planning assessment and can be addressed without disclosure of private contractual instruments, by reference to objective and verifiable pathway evidence and operational commitments.

The Applicant confirms that it will apply for and progress an electricity connection through the competent system operators (including the TSO, EirGrid, as applicable) and will comply with all applicable legislation, codes and regulatory policy, including the CRU Large Energy Users (LEU) Connection Policy (CRU/2025236) and any subsequent amendments/directions, as well as the applicable EirGrid connection framework and relevant CRU decisions. Renewable electricity procurement, including any future CPPA arrangement, and any associated reporting or verification requirements, will be progressed

through those market and regulatory frameworks. The current CRU LEU connection policy provides the relevant framework for renewable electricity obligations and compliance reporting for qualifying large-demand connections.

The Applicant confirms that its intended approach is that the operational electricity demand of the proposed data centre will be met by the DER assets and through grid-supplied electricity, supplemented by the procurement of renewable electricity through market-based arrangements. This may include one or more CPPAs and/or supplier-sleeved arrangements with licensed suppliers, with the objective of sourcing renewable electricity generated in the Republic of Ireland. The final procurement structure has not yet been fixed and no binding contract has yet been entered into.

Having regard to OPR Practice Note PN03³, the Applicant submits that it would be inappropriate to impose a condition requiring the production or approval of private commercial agreements, or purporting to regulate matters falling for determination under separate statutory and regulatory codes. However, the Applicant acknowledges that the planning authority may include an advice note drawing attention to the need to comply with all applicable regulatory requirements. An example of such advice is provided below.

In order to ensure that the electricity supply and operational energy arrangements for the development are clearly defined, capable of being verified, and consistent with the assessment of the proposed development, and in order to support the proper planning and sustainable development of the area having regard to national policy (including policy applicable to LEUs), the developer shall, at least three months prior to commencement of operations, submit to the planning authority documentary evidence of the development's LEU grid connection pathway; this shall comprise either (i) a connection offer/connection agreement issued by EirGrid, or (ii) where a connection offer has not yet issued, evidence of a valid and progressing LEU connection application (including the relevant application reference/identifier and a status update) together with an indicative programme to offer.

³ We note the advice prescribed by the Office of Planning Regulator (OPR), in their Practice Note PN03 published October 2022. This states that "It is not acceptable to require, by way of a condition attached to a planning permission, that a licence or some other authorisation under another code must be obtained for the proposed development" and "The grant of planning permission does not absolve a developer from the necessity to obtain any other consent required by law". The advice notes further states that "there is nothing to preclude the planning authority from furnishing, with the final grant of permission, general advices on other relevant codes". We therefore understand that is the developer's responsibility to obtain whatever other consents are required by law, and that planning authorities may instead provide general advisory notes on other codes with the grant of permission (see section 5.0, Appendix C of PN03 – *Obligations under other statutory codes*)

The Applicant further submits that any planning-relevant energy and climate mitigation commitments relied upon in support of the application may appropriately be secured by standard conditions requiring the development to be carried out in accordance with the plans and particulars lodged, including the mitigation measures and operational commitments set out therein.

This above response provides further information on the intended CPPA arrangements for planning purposes, without requiring disclosure of commercially sensitive contractual instruments. It also provides clarity and enforceability of the electricity supply arrangements for the proposed development and enables proper planning and sustainable development of the area, whilst ensuring that the proposed development aligns with national policy and the applicable LEU grid-connection framework, without duplicating or replacing the functions of the relevant regulatory authorities.

iii. The application refers to the capture of CO₂ from fuel cell operations for off-site reuse but provides no details or commitments regarding the industrial processes that will utilise this carbon. This raises concerns that emissions may simply be displaced, with additional emissions from transport.

You are requested to clarify the intended recipients of the captured CO₂ and provide assurances that the CO₂ will not be released into the atmosphere at any downstream facility

RESPONSE

As discussed in the EIAR, the proposed Carbon Capture and Utilisation (CCU) element forms part of a circular-economy approach to managing an unavoidable process by-product by recovering a portion of the carbon dioxide (CO₂) generated during periods of fuel cell operation. The CO₂ will be produced to a specification suitable for beneficial use, and supply as a secondary raw material into established value chains (for example as a feedstock for food and beverage applications, industrial applications, and wider chemical processing where CO₂ is routinely used). This approach reduces direct atmospheric releases during the periods when capture is operating and, importantly, can displace CO₂ that would otherwise be produced, purified and supplied from alternative (often more carbon-intensive) sources. The proposal is directed at abating anthropogenic emissions on a system basis while also creating a useful product stream rather than a waste stream. The recovered CO₂ will be temporarily stored on site in vacuum-insulated storage vessels which will be compliant with the Pressure Equipment Directive (PED) 2014/68/EU.

It is proposed that captured CO₂ will be transferred off-site solely as a product for utilisation, via appropriately licensed /competent gas suppliers and /or industrial users that routinely handle, store and consume CO₂ as a feedstock. At this stage no contractual arrangements with any downstream users for commercial and practical reasons. The applicant can commit that any CO₂ dispatched off-site will be supplied only into sectors where CO₂ is demonstrably used as an input (rather than disposed of), and will be conditioned and quality-assured to recognised industry standards for bulk liquid CO₂ supply, including documented quality control /quality assurance processes and verification sampling appropriate to the intended end use (for example, food and beverage grade requirements and associated source qualification and testing regimes as set out in EIGA⁴ guidance).

CO₂ transport is a well-established part of industrial gas supply chains and emissions associated with delivering captured CO₂ to users are minor relative to avoided emissions (i.e. captured CO₂ and displacement of CO₂ production from more polluting sources) Logistical measures that minimise transport emissions, such as using high-capacity bulk deliveries to maximise payload per trip and optimising routing and scheduling to avoid partial loads and unnecessary mileage will reduce fuel consumption and transport related emissions.

7) Appropriate Assessment Screening Report:

i. The Appropriate Assessment (AA) screening report has not demonstrated that all significant potential impacts on the qualifying interests associated with the Natura sites has been fully considered. You are requested to submit a revised AA Screening report outlining the Qualifying Interests on each identified site along with the potential effects (Source-Pathway-Receptor model) to include but not limited to Habitat Loss, Release of suspended solids and/or other pollutants to watercourses, Disturbance due to machinery usage and presence of construction workers, Air and Dust emissions, Noise and Vibration, Vehicle emissions, Increased recreational pressure etc. In addition, a number of raised bogs were screened out on the basis of the absence of hydrological connectivity. Pathways other than hydrological should be considered when appropriate.

RESPONSE

⁴ European Industrial Gases Association (EIGA) (2017) *Carbon Dioxide Food and Beverages Grade: Source Qualification, Quality Standards and Verification*

A revised AA screening report is provided in support of this FI response.

ii. A desktop review of the EPA Catchment maps, and NPWS maps identify that the River Boyne & Blackwater SAC and SPA are located approx. 19km away from the proposed development site while. The Flood Risk Assessments submitted with the application note that River Boyne & Blackwater SPA & SAC are located 24km away. The AA Screening report submitted as part of planning Ref 21/515 (neighbouring LEL Flexgen – Gas Powered Generator) also prepared by Moore Group confirms that the River Boyne & Blackwater SAC and SPA is located 20km away. You are requested to review these apparent discrepancies and submit a revised AA Screening report and/or other reports such as Flood Risk Assessment etc clarifying these apparent discrepancies on the distances between the proposed site and all Natura 2000 sites.

RESPONSE

A revised AA screening report is provided in support of this FI response.

iii. The AA report notes that the majority of the NHAs and pNHAs are outside of the Zone of Influence and that there are no areas of supporting habitat that will be affected by the Proposed Development. Figure 4 of the AA Screening Report confirms that there are multiple NHAs and pNHAs within the zone of influence. It is considered that significant effects are inadequately addressed and considering the size and nature of the proposed development all European sites within the Zone of Influence should be addressed. For Example, Wood down Bog SAC/NHA is with the 15km Guidance and is not considered in the AA Assessment. Please address accordingly.

RESPONSE

A revised AA screening report is provided in support of this FI response.

iv. The Appropriate Assessment submitted fails to address the potential impact of potential glint and glare from the solar installations i.e. collision risks and displacement effects from the solar installations on wildlife, including invertebrates and in particular on the Special Conservation Interest (SCI) species for the relevant European sites within the Zone of Influence. You are requested to submit a revised Appropriate Assessment to address this matter.

RESPONSE

Solar farms can be mistaken as water by birds and aquatic species, and this issue has been addressed by appropriate design. Insects that lay eggs on water, (e.g. mayflies, stoneflies) may mistake solar panels for water bodies, due to reflection of polarised light. Under certain circumstances, insects have been found to lay eggs on their surfaces, reducing their reproductive success and food availability for birds, fish and other aquatic invertebrates. A laboratory study undertaken by Grief & Siemers (2010) showed that that bats attempted to drink from the panels and occasionally collided with them. If plates were vertically aligned, they often crashed into them when attempting to fly through them. There is evidence that this potential effect can be mitigated by a non-polarising white grid, partitioning on solar panels to reduce or eliminate their reflection of polarised light. Thus, this measure has been included as a design feature to avoid potential effects on commuting bats. RSPB (2014) states "Solar farms can be mistaken as water by birds and aquatic species, and this issue has been addressed by appropriate design. Insects that lay eggs on water, (e.g. mayflies, stoneflies) may mistake solar panels for water bodies, due to reflection of polarised light". It should be noted they also state they are in favour of solar given the impacts climate change is having on bird life.

A revised AA screening report is provided in support of this FI response. Please also refer to revised Biodiversity Chapter contained in the EIAR Addendum.

v. It appears that the AA Screening report has omitted in its assessment of Potential In-Combination Effects of:

- ***Gas Pigging Station development (Ref no 25/60006);***
- ***Underground Gas transmission line connection which was an application to the Commission for Regulation of Utilities (CRU).***
- ***Yellow River Wind Farm.***

You are requested to submit a revised AA screening Assessment to include the above developments to assess the Potential In-Combination Effects.

RESPONSE

A revised AA screening report is provided in support of this FI response.

In addition, there is insufficient evidence provided in support of the conclusion when assessing the in-combination effects of other projects. With regards to Planning permission 21/515 (and its associated amendment permissions), the

report states "No potential for in-combination effects given the Proposed Development will have no effect on any European site."

You are requested to fully assess in detail the in-combination effects for all existing and permitted projects in the vicinity.

RESPONSE

A revised AA screening report is provided in support of this FI response.

vi. The development appears to be crossing multiple internal drainage ditches which are connected to the EPA mapped watercourses. Drawings submitted show proposed installation of bridge beam sections and culverts sections. This work appears to involve "In-channel works" and therefore without mitigation measures could have the potential to have a negative effect on the water quality of the drainage ditches and the Natura 2000 sites given that there is a direct Hydrological link established albeit a distance away. This does not appear to have been fully considered in the screening report. A revised stage 1 and if necessary, a Stage 2 Assessment (Natura Impact Assessment) should be submitted.

RESPONSE

A revised AA screening report is provided in support of this FI response. For clarity, two main crossings of the watercourse as shown (Bridge 1 and 2) and these are clear span (no in channel works are proposed). Other proposed crossings of field drains (not significant watercourses) within the overall development lands will be by culvert.

Please refer to Planning-Stage Drawings Register provided in Attachment A to this FI response letter; Specifically, Drawing No. CLDC-HAL-DC-XX-DR-PL-3010 - Stream & Field Drain Crossings Details.

vii. Based on the information submitted with the application and having regard to the scale of the proposed development, it is considered that the applicant has not fully demonstrated that the impact on the integrity of the European Sites can be screened out for further assessment. The Applicant should revise the stage 1 assessment accordingly and if necessary, submit a Stage 2 Appropriate Assessment for the proposed development.

RESPONSE

A revised AA screening report is provided in support of this FI response.

8) Construction Environmental Management Plan (CEMP)

You are requested to submit an updated CEMP to identify all the proposed construction mitigation measures identified across all the reports submitted with the application and the list should be compiled in table format as an appendix to the CEMP for the reasons of co-ordination & clarity.

RESPONSE

See attached updated CEMP with proposed construction mitigation measures provided in tabular format as an Appendix to the CEMP.

9) Biodiversity

i. The Biodiversity Chapter (Chapter 6) of the EIAR, which notes that Japanese Knotweed was identified on-site during a survey conducted in May 2019. However, the submitted Construction and Environmental Management Plan (CEMP) states that no invasive species were identified. This presents a clear discrepancy in the documentation. In this regard, the applicant is requested to:

- Clarify the current status of Japanese Knotweed and address the inconsistency between the 2019 survey findings and the CEMP*
- Submit a detailed Invasive Species Management Plan (ISMP), outlining proposed measures for control, removal, and ongoing monitoring in accordance with best practice and relevant guidance*

Provide a revised and up-to-date invasive species survey, undertaken by a suitably qualified ecologist. The existing survey from May 2019 is now over six years old and is no longer considered valid to inform the current application.

This information is necessary to ensure the appropriate identification, control, and mitigation of invasive species risks as part of the proposed development.

RESPONSE

Small patches of Japanese Knotweed were noted and recorded to be present along a section of the L-51251. The area is located on the access road to the east and was treated

in the past 5 years having reduced an extensive patch along the road in that area to a few persistent plants. A photo of these from April 2025 is provided below.



No other invasive species were identified during ecological baseline survey works. This localised area of invasive species will be managed in accordance with statutory requirements. Measures will ensure that accidental spread inside or outside of the site does not occur during construction works.

The site will be monitored by an Invasive Species Specialist and an Invasive Species Management Plan will inform the requirement for further treatment. The removal of invasive plant materials off-site will only take place under licence and will be disposed of at a licensed facility.

ii) The EIAR states that badger surveys were undertaken on the following dates: 20/08/2024, 31/10/2024, 01/04/2025, and 07/05/2025. However, a full Badger Survey Report does not appear to have been included in the documentation submitted with the planning application. Accordingly, the applicant is requested to:

- Submit the full Badger Survey Report to the Planning Authority for review, including methodology, survey results, mapping of any setts, and conclusions;***

- *Review third-party submissions received in relation to this application, which have identified alleged badger presence within the development site, including specific X-Y coordinates;*
- *Revise the badger survey and impact assessment, if necessary, in light of this new information and ensure the findings are reflected in the Biodiversity Chapter of the EIAR.*

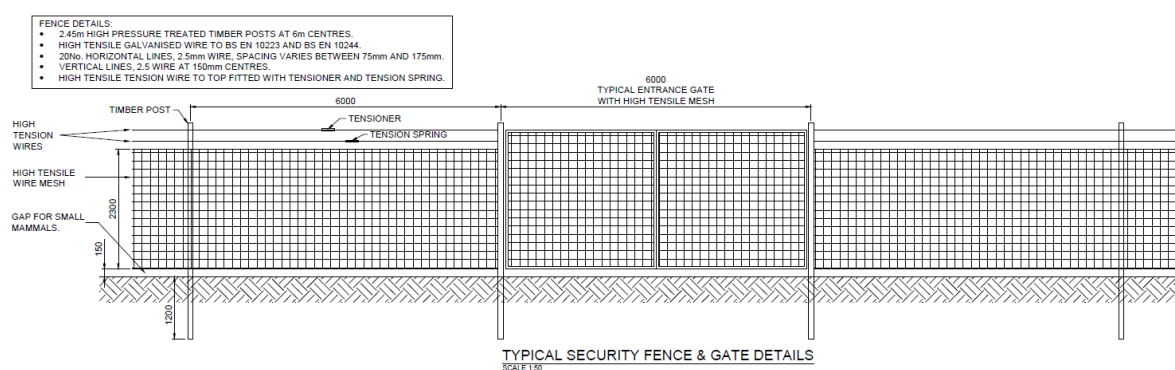
iii) it is noted that the absence of badger activity during the survey period does not definitively confirm the absence of the species from the site. Therefore, it is recommended that appropriate mitigation measures for badgers be included in the EIAR, in line with best ecological practice and to ensure compliance with the Wildlife Acts 1976–2018. You are requested to address these matters accordingly.

iv) It does not appear that the applicant has allowed for the security fencing to have mammal gates or a gap of at least 10cm at the bottom to allow free movement of badgers and other mammals through the site. You are requested to submit revised details to provision for mammal movement through the site.

RESPONSE

Security fencing around the data centre campus is designed as part of a layered physical security system, where the perimeter is expected to deter, delay, detect, and support a rapid response. In practice this means a continuous boundary with no intentional openings at ground level, robust mesh or palisade-style systems with anti-climb and anti-cut characteristics, and foundations or ground treatments that prevent lifting, digging, or tunnelling. Access is concentrated into a small number of controlled entry points that are monitored and integrated with access control, security staffing, lighting, and CCTV. Similar secure fencing will be installed electrical compounds, storage compounds, substations etc within the DER to mitigate safety hazards and operational risk. It should be noted that the data centre campus includes habitat corridors, shallow wildlife friendly ponds and setbacks outside the security fence, to provide for wildlife movement around rather than through the secure campus. Extensive outer compensatory habitat has been provided within the overall layout (illustrated in the Landscape and Biodiversity Mitigation Plan and discussed in the EIAR) and is designed to promote biodiversity enhancement (e.g. 3.6ha of golden plover habitat).

Fencing around the ground-mounted solar farm is provided for public safety and livestock control as well as security. The perimeter of the solar farm incorporates "wildlife-permeable" features such as mammal gates or a deliberate gap at the bottom of the fence, to allow small mammals to pass through the solar farm site without becoming trapped or forced onto roads and other hazards.



The solar panels array themselves account for approximately 72ha of the total 168ha with the remaining solar lands fallow. Buffers to third party boundaries, internal hedgerows, drainage ditches, and watercourse are provided which will be managed as uncut grassland or sown with native wild-flower mixes. This will create continuous ecological corridors that enhance habitat connectivity, pollinator forage and small-mammal cover.

Where ecological mitigation is required, data centre developments generally achieve it without compromising the secure perimeter by using measures such as habitat corridors and setbacks outside the security fence, routing wildlife movement around rather than through the secure campus, or employing dual-boundary concepts where an outer ecological boundary and landscaping sit beyond an intact inner security perimeter.

v) The EIAR states that otter surveys were carried out on the following dates: 20/08/2024, 31/10/2024, 01/04/2025, and 07/05/2025. However, it appears that a complete Otter Survey Report has not been submitted as part of the application documentation. Accordingly, the applicant is requested to submit the full Otter Survey Report, including survey methodology, results, mapping of any signs of otter activity (e.g., holts, couches, spraints, tracks), and assessment of potential impacts.

RESPONSE

Please refer to revised Biodiversity Chapter provided in the EIAR Addendum submitted in support of this FI response. Please also refer to Appendix 6.3 (Ecology Impact

Assessment) of the EIAR Addendum submitted in support of this FI request. The report provides information on ecological features if present within the potential Zone of Influence of the Proposed Development, of particular significance, primarily designated habitats and species, including Water Courses, Badgers, Otters and Non-Volant Mammals.

vi) Is noted that the absence of otters during the survey period does not definitively confirm the absence of the species within the site. Otters are known to have transitory and nocturnal habits, and therefore, it is recommended that appropriate mitigation measures for otters are included in the Biodiversity Chapter of the EIAR, consistent with best ecological practice and to ensure compliance with the Wildlife Acts 1976–2018 and relevant EU Habitats Directive requirements.

RESPONSE

Please refer to revised Biodiversity Chapter provided in the EIAR Addendum submitted in support of this FI response. Please also refer to Appendix 6.3 (Ecology Impact Assessment) of the EIAR Addendum submitted in support of this FI request. The report provides information on ecological features if present within the potential Zone of Influence of the Proposed Development, of particular significance, primarily designated habitats and species, including Water Courses, Badgers, Otters and Non-Volant Mammals.

vii) There appears to be no survey of Aquatic Ecology submitted with the application. Given the proximity of drains and streams within and around the site, you are therefore requested to carry out a full survey of aquatic ecology to determine what species are present and what if any potential effects may be caused as a result of the proposed development.

Please refer to revised Biodiversity Chapter provided in the EIAR Addendum submitted in support of this FI response. Please also refer to Appendix 6.3 (Ecology Impact Assessment) of the EIAR Addendum submitted in support of this FI request. The report provides information on ecological features if present within the potential Zone of Influence of the Proposed Development, of particular significance, primarily designated habitats and species, including Water Courses, Badgers, Otters and Non-Volant Mammals.

viii) You are requested to clarify and address the following biodiversity-related issues to allow for a full assessment of the proposed development:

Compensatory Woodland Planting

The application proposes the planting of compensatory woodland in the southwestern corner of the western section of the site to offset tree loss. However, there is a discrepancy in the reported area whereby the Bat Report states the area measures 4.34 hectares, while the planning drawings indicate an area of only 2.4 hectares. The applicant is requested to clarify the correct area and submit revised documentation as necessary to ensure consistency across reports and drawings.

RESPONSE

The discrepancy in the reported area of compensatory woodland planting in the Bat report is acknowledged. For clarity, 4.6ha of compensatory native woodland in parcels of 0.7ha (west of DC campus), 2.4ha (southwest of DC campus) and 1.5ha (close to the southern boundary of the M6 motorway and within the solar farm development) is incorporated with the overall development lands. In addition, a total of 10.3ha of golden plover habitat is provided with the overall development lands, comprising 3.6ha (south of the DC campus) and 6.7 ha of golden plover habitat (within the solar farm component). This is shown and evidenced on the various site layout drawings provided in support of the planning application.

Breeding Barn Owl Mitigation

The Bat Report states that a breeding pair of Barn Owls was observed nesting on-site and that mitigation measures are proposed to protect the species during the construction phase. However, the details of these mitigation measures have not been submitted. Without this information, the Planning Authority is unable to fully assess the potential impacts of the proposed development on this protected species. The applicant is therefore requested to submit the relevant information, including any targeted surveys, nest location details, and proposed mitigation strategies.

RESPONSE

The Bat Survey Report references the presence of Barn Owl for completeness only and does not constitute the primary assessment document for avian species. Information on all birds including barn owl was submitted separately to the bat report. See Appendix 6.2 (Bird Survey Report) contained in EIA Volume 3 (Appendices). Information relating to Barn Owl, including survey findings, nest locations (where relevant), and mitigation measures, was submitted separately within the Bird Survey Report. All ornithological

mitigation measures, including seasonal restrictions, Ecological Clerk of Works (ECoW) oversight, and protection of nesting sites, will be implemented in accordance with the submitted Bird Survey Report.

Post-Development Bat Monitoring

To ensure that the proposed mitigation measures for bats are effective, a post-development monitoring schedule should be included in the updated Biodiversity Chapter of the EIAR. This schedule should include monitoring at key intervals (e.g., Years 1, 3, and 5) following the commencement of development, with provisions for additional mitigation if required.

Please address the above points accordingly and submit revised or supplementary documentation where necessary.

RESPONSE

Bat activity, roosting potential, and habitat usage were assessed through extensive field surveys conducted in accordance with Bat Conservation Trust and NPWS guidance. While some loss of foraging habitat will occur, this has been fully assessed and mitigated through habitat retention, compensatory woodland planting, lighting controls, roost enhancement, and post-construction monitoring. A post-construction bat monitoring programme is proposed and detailed in Section 7 of the Bat Survey Report. Monitoring will be undertaken at Years 1, 3 and 5 following commencement of development, focusing on activity levels, habitat usage, and effectiveness of mitigation measures. Should monitoring identify any unforeseen adverse impacts, adaptive mitigation will be implemented as necessary.

With mitigation in place, no significant residual impacts on bat populations are predicted.

ix) There is no mention of Pine Martin, deer, buzzards, hares etc in any of the documents submitted. The applicant is requested to review the submission by local residents which state an abundance of these mammals in the area. The Ecological Surveys should be updated if necessary.

RESPONSE

Multiple submissions raise identical /very similar concerns regarding the presence of protected species including Barn Owl, Pine Marten, Badger, Hare, Buzzard, and Yellowhammer. These matters are addressed collectively above and within the EIAR Volume 2 and specialist ecological reports contained in the EIAR Volume 3 (Appendices).

Badgers, Pine Martin, Hares, Foxes

The EIAR includes a comprehensive assessment of terrestrial mammals based on field survey, habitat suitability, and National Biodiversity Data Centre (NBDC) records. No active badger setts were identified within the development footprint during site surveys. Pre-construction checks will be undertaken in accordance with best practice, and appropriate buffers applied should any setts be identified.

Pine Marten, Irish Hare, Fox, and other mammals were considered within the baseline assessment. No significant impacts on breeding or resting sites are predicted due to habitat retention, avoidance of key features, and implementation of standard mitigation measures. The EIAR is not required to catalogue all fauna potentially present but to assess likely significant effects, which has been appropriately undertaken.

Deer

Ireland's conservation and planning frameworks (Wildlife Acts, Habitats Directive, Birds Directive, NPWS site designations) do not confer habitat protection on the basis of non-native deer populations. Fallow, sika, and muntjac have no habitat-based protection. Their presence cannot be used to justify habitat retention, mitigation, or avoidance under Irish or EU law. These deer species require a reduction in population as they are having a negative impact on native woodland and habitats.

Based on a review of historical NBDC records it appears the deer referred to in many of the submissions is the fallow deer. This species is considered invasive (of national concern under S.I. 374/2024) and habitats are not protected.

The only native deer species in Ireland, Red Deer (*Cervus elaphus*), has no records within the zone of influence of the proposed development, with the closest record found 22km to the east.

Buzzards

See Appendix 6.2 (Bird Survey Report) contained in EIAR Volume 3 (Appendices). Buzzard (*Buteo buteo*) is comprehensively addressed within the Ornithological Assessment. Buzzards were recorded on numerous occasions during vantage point surveys, with 63 observations recorded and a maximum of seven individuals observed concurrently (Tables 3-1 and 3-2). No breeding activity was recorded within the site; however, potential future breeding was acknowledged. The species' ecological significance was evaluated (Table 3-11), and potential impacts on the local population (within 5 km) were assessed (Table 4-3). No significant residual impacts were identified.

x) You are requested to submit a revised Ecology Impact Assessment (EcIA) to address the potential impact of potential glint and glare from the solar installations i.e. collision risks and displacement effects from the solar installations on wildlife, including invertebrates and in particular on the Special Conservation Interest (SCI) species for the relevant European sites within the Zone of Influence.

RESPONSE

Please refer to Appendix 6.3 (Ecology Impact Assessment) of the EIAR Addendum submitted in support of this FI request. The report provides information on ecological features if present within the potential Zone of Influence of the Proposed Development, of particular significance, primarily designated habitats and species, including Water Courses, Badgers, Otters and Non-Volant Mammals.

In terms of potential glint and glare and wildlife, solar farms can be mistaken as water by birds and aquatic species, and this issue has been addressed by appropriate design. Insects that lay eggs on water, (e.g. mayflies, stoneflies) may mistake solar panels for water bodies, due to reflection of polarised light. Under certain circumstances, insects have been found to lay eggs on their surfaces, reducing their reproductive success and food availability for birds, fish and other aquatic invertebrates. A laboratory study undertaken by Grief & Siemers (2010) showed that that bats attempted to drink from the panels and occasionally collided with them. If plates were vertically aligned, they often crashed into them when attempting to fly through them. There is evidence that this potential effect can be mitigated by a non-polarising white grid, partitioning on solar panels to reduce or eliminate their reflection of polarised light. Thus, this measure has been included as a design feature to avoid potential effects on commuting bats. RSPB (2014) states "*Solar farms can be mistaken as water by birds and aquatic species, and this issue has been addressed by appropriate design. Insects that lay eggs on water, (e.g. mayflies, stoneflies) may mistake solar panels for water bodies, due to reflection of polarised light*". It should be noted they also state they are in favour of solar given the impacts climate change is having on bird life.

A revised AA screening report is provided in support of this FI response. Please also refer to revised Biodiversity Chapter contained in the EIAR Addendum.

xi) It appears that the biodiversity chapter in the EIAR has omitted in its assessment of Potential In-Combination Effects of:

- *Gas Pigging Station development (Ref no 25/60006)*
- *Underground Gas transmission line connection which was an application to the Commission for Regulation of Utilities (CRU).*
- *Yellow River Wind Farm.*

You are requested to submit a revised Ecological Impact Assessment to include the above developments to assess the Potential In-Combination Effects.

In addition, there is insufficient evidence provided with regards to the assessment of the in-combination effects of other projects. With regards to Planning permission 21/515 (and its associated amendment permissions), the report states "No potential for in-combination effects given the Proposed Development will have no significant effects on Biodiversity."

There is insufficient detail of the assessment and the potential in combination effects to make any judgement on this assessment. You are requested to assess in detail the in-combination effects for all projects in the vicinity.

RESPONSE

Please refer to Appendix 6.3 (Ecology Impact Assessment) of the EIAR Addendum submitted in support of this FI request. Please also refer to revised Biodiversity Chapter contained in the EIAR Addendum.

x) You are requested to submit an appropriate Biodiversity Management Plan (BMP) in relation to the final landscaped areas. The document should identify a Biodiversity Net Gain as a result of the proposed development.

RESPONSE

The Proposed Development will entail the loss of open areas of arable crops and improved grassland under the footprint of the proposed data centre aspect of the development and a change in use from mixed silage to grassy meadow under the solar farm areas which will be available for sheep grazing. There will be a biodiversity net gain in terms of the replacement of arable land with grassland meadow type habitat and the loss of mature trees will be replaced and increased by planting additional woodland and treelines as outlined in the Landscape Plan.

Please refer to Landscape and Biodiversity Mitigation Plan provided in Appendix 12.4 of the EIAR Addendum submitted in response to this FI request.

xi) The proposed development involves the removal of a significant number of trees and hedgerows to facilitate site works. To allow for a full assessment of these impacts, the applicant is requested to submit the following:

- a) A detailed Arboricultural Assessment Report, prepared by a qualified arborist, identifying all trees and hedgerows proposed for removal or retention, including their species, condition, age, and ecological or visual value.***
- b) Include a Tree Protection Plan (TPP) outlining measures to protect retained trees and hedgerows during the construction phase, in accordance with best practice (e.g. BS 5837:2012 – Trees in relation to design, demolition and construction).***

RESPONSE

The existing tree lines, hedgerows and other principal habitats within the proposed development lands are identified in Figure 1 (Aerial View of Habitats) and described in Chapter 6 (Biodiversity) of the EIAR.

As outlined in the EIAR, the field boundary hedgerows across the site vary in quality and condition. Many have become degraded and now persist only as remnant vegetation along fence lines. Better-managed hedgerows occur in parts of the western section of the site, including within the proposed Data Centre Campus lands, while occasional outgrown hedgerows contain mature specimen trees of higher landscape and ecological value. Species composition is typical of the surrounding agricultural landscape and includes Hawthorn (*Crataegus monogyna*), Elder (*Sambucus nigra*), Ash (*Fraxinus excelsior*), Blackthorn (*Prunus spinosa*), Wild Privet (*Ligustrum vulgare*), Sycamore (*Acer pseudoplatanus*) and Grey Willow (*Salix cinerea*). Ivy, bramble and honeysuckle are also widespread, with occasional woodland-edge flora such as Wood Avens and Ground Ivy.

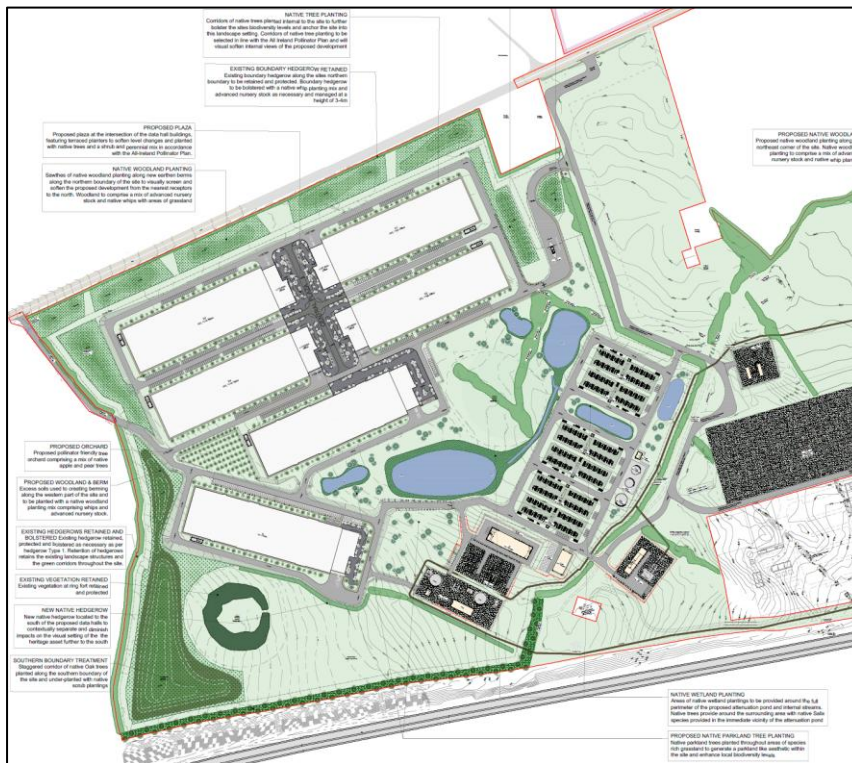
Notable tree features on the site include the avenue to Farthingstown House within the central solar farm parcel, comprising a double row of Copper Beech (*Fagus sylvatica* var. *purpurea*) and Ash, together with a row of large specimen Beech trees defining the western edge of the farm. As is now common throughout Ireland, a proportion of Ash trees within site hedgerows and treelines show symptoms consistent with Ash Dieback.

For clarity in relation to likely impacts, Figure 2 illustrates the areas within the Data Centre Campus lands where existing trees and hedgerows are to be retained, while Figure 3 (Proposed Data Centre Campus Landscape Plan) shows retained vegetation together with the extent of proposed new planting. In addition, it is confirmed that no hedgerow or tree removal is proposed within the solar farm site east of the Data Centre Campus.

Figure 2 Treelines Hedgerows to be retained on the DC Campus Lands



Figure 3 Proposed Data Centre Campus Landscape Plan



Should planning permission be granted, a detailed assessment of tree and hedgerow constraints, including those proposed for retention or removal, together with their condition, category and value, will be set out in a dedicated Arboricultural Assessment Report prepared by a qualified arborist. A corresponding Tree Protection Plan will be prepared to identify the protection measures required during construction for all retained trees and hedgerows, in accordance with BS 5837:2012, Trees in Relation to Design, Demolition and Construction.

10) Glint & Glare

i) Please submit a revised Glint & Glare Assessment that evaluates the potential impacts of glint and glare from the solar installations on local wildlife. This assessment should specifically consider effects on invertebrates and, importantly, on the Special Conservation Interest (SCI) species associated with the relevant European sites within the project’s Zone of Influence.

RESPONSE

Solar farms can be mistaken as water by birds and aquatic species, and this issue has been addressed by appropriate design. Insects that lay eggs on water, (e.g. mayflies,

stoneflies) may mistake solar panels for water bodies, due to reflection of polarised light. Under certain circumstances, insects have been found to lay eggs on their surfaces, reducing their reproductive success and food availability for birds, fish and other aquatic invertebrates. A laboratory study undertaken by Grief & Siemers (2010) showed that bats attempted to drink from the panels and occasionally collided with them. If plates were vertically aligned, they often crashed into them when attempting to fly through them. There is evidence that this potential effect can be mitigated by a non-polarising white grid, partitioning on solar panels to reduce or eliminate their reflection of polarised light. Thus, this measure has been included as a design feature to avoid potential effects on commuting bats. RSPB (2014) states "*Solar farms can be mistaken as water by birds and aquatic species, and this issue has been addressed by appropriate design. Insects that lay eggs on water, (e.g. mayflies, stoneflies) may mistake solar panels for water bodies, due to reflection of polarised light*". It should be noted they also state they are in favour of solar given the impacts climate change is having on bird life.

A revised AA screening report is provided in support of this FI response. Please also refer to revised Biodiversity Chapter contained in the EIAR Addendum.

ii) In addition, you are requested to provide a Glint & Glare Monitoring Programme. This programme should include provisions for ongoing monitoring post-installation and outline clear procedures for implementing additional mitigation measures if required. It should also address the potential need for amendment or removal of any elements of the development that cause significant glint or glare, particularly where such effects may impact road safety on the M6 motorway and surrounding road network.

RESPONSE

A comprehensive Glint and Glare assessment (see Appendix 12.3 EIAR Volume 3) was submitted in support of the planning application and concludes there will be no significant reflectance effects at dwellings, no hazardous glint and glare effects for road receptors, no potential for reflectance along the M6 corridor, and only one residual road receptor point (R249 on the L11273) with a limited theoretical residual glare window after mitigation, which was not considered significant or hazardous. Embedded design mitigation measures were incorporated into the design, including retained and reinforced hedgerows and woodland planting, particularly along the M6 boundary and western boundary of the southern parcel.

However, in the interests of road safety and environmental control, it is proposed that any grant of permission may be subject to a condition requiring the developer to implement all mitigation measures identified in the submitted Glint and Glare Assessment and landscape proposals, and to undertake a targeted post-installation glint and glare verification and monitoring programme during the first 24 months of operation. The programme shall include seasonal inspections during the periods identified in the assessment as having theoretical potential for glare effects, maintenance and replacement of mitigation planting where necessary, and a procedure for recording and investigating any substantiated complaint received from the Planning Authority, Transport Infrastructure Ireland, road users or other relevant parties. Where such monitoring or investigation identifies a significant glint or glare effect, particularly one with the potential to affect road safety on the M6 motorway, the R446 or the surrounding road network, the developer shall submit for the written agreement of the Planning Authority, within a specified period, details of additional mitigation measures, which may include supplementary planting, additional screening, amendment to the arrangement of panels or, if necessary, the omission, relocation, deactivation or removal of the specific element or elements giving rise to the effect. The agreed measures shall be implemented within a specified timeframe.

The proposed condition represents a balanced and proportionate control measure in the interests of traffic safety and environmental protection. The condition is limited to post-installation verification and targeted monitoring during the early operational period, together with a clear mechanism for the investigation and remediation of any substantiated issue, rather than requiring continuous or open-ended monitoring.

11) Noise

i) There appears to be a number of dwellings to the north and northeast of the R446 which are in close proximity to the northern section of the Solar Farm which are not included as noise sensitive receptors. You are invited to provide evidence as to demonstrate why these receptors should be excluded, or alternatively to amend the noise assessment accordingly.

RESPONSE

The worst-case scenario has been assessed in the EIAR submitted in support of the planning application through the Noise Sensitive Receptors (NSRs) chosen. We have reviewed the amendments to the site layout submitted as part of this FI response. NSR3 is located to the north of the R446. The breakdown of predicted noise levels from the

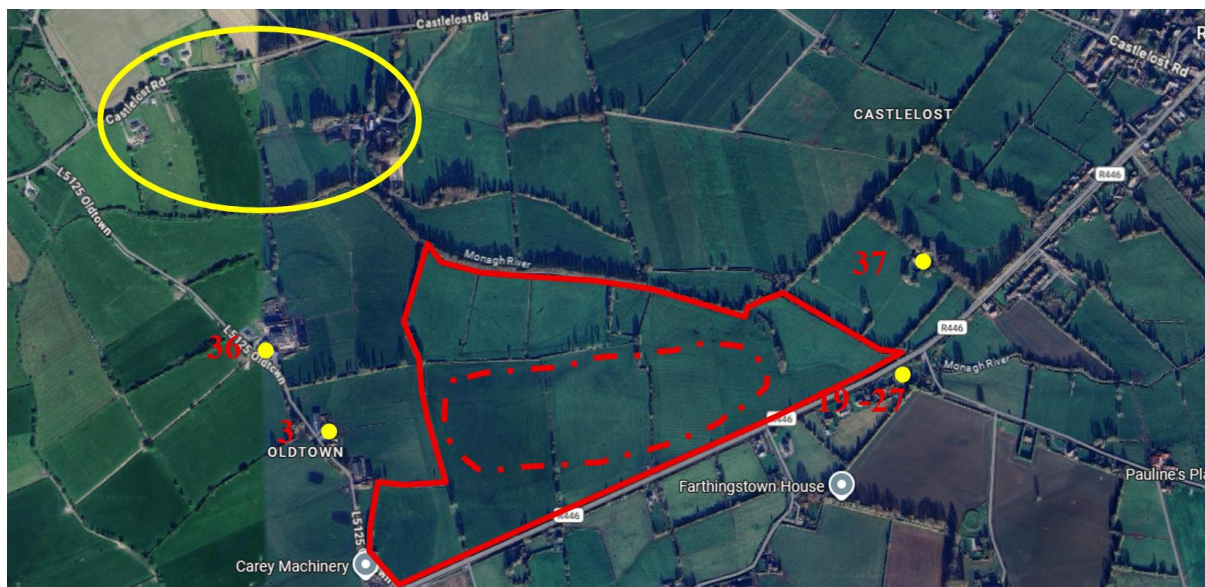
grouped sources including the cumulative total predicted noise level with the permitted Flexgen development at NSR3 is set out in Table 1 below:

Table 1 Breakdown of Source Contributions to Total Predicted Noise Level at NSR3

Source	R3_Southern Façade dB(A)	R3_Eastern Façade dB(A)
SOFC Energy Centre	31.2	31.2
Solar Farm Inverters	25.5	28.8
Data Centre Sources	28.4	25.0
BESS	30.2	30.4
Transformers	10.4	10.4
Flexgen	27.8	27
Total Project Admiral	36	36
Total Project Admiral without Solar	35	34
Total Cumulative with Flexgen	36	36

NSR36 has been added to the noise model. This is located north of NSR3 as shown in Figure 4 below.

Figure 4 Location of NSR36



*Note. Red-Line boundary indicative only. Location of proposed solar inverters in dashed area.
Yellow circle represents NSRs further north*

The breakdown of the predicted noise levels for NSR36 is given in Table 2.

Table 2 Breakdown of Source Contributions to Total Predicted Noise Level at NSR36

Source	R3_Southeast Façade dB(A)	R3_Northeast Façade dB(A)
SOFC Energy Centre	29.4	30.2
Solar Farm Inverters	27.3	24.4
Data Centre Sources	25.9	20.7
BESS	28.2	30.1
Transformers	12.0	11.3
Flexgen	26	26.4
Total Project Admiral	35	35
Total Project Admiral without Solar	33	33
Total Cumulative with Flexgen	35	35

As can be seen in Tables 1 and 2 above, there is little difference between NSR3 and NSR36 in terms of predicted noise level as noise calculations are logarithmic. In simple terms, with every doubling of distance, a source, radiating sound spherically with no screening will reduce by 6 decibels (db). Initially, there will be a greater reduction close to the source e.g. a reduction from 10m to 20m distance will give the same theoretical reduction as from 500m to 1000m.

Receptors further north (circled in yellow on Figure 1) of NSR3 and NSR36 will experience reducing noise levels albeit reductions will be smaller than closer to the source. e.g. the SOFC energy centre is approximately 950m from NSR36 and approximately 1,400m distant from the next NSR north. Reductions therefore for this source due to distance alone will be approximately 3 dB . It can be concluded that the predicted noise levels at receptors further north as circled in yellow will be $\leq 31\text{dB(A)}$ during the daytime and $< 30\text{dB(A)}$ at night-time (without solar). These estimates are conservative in nature. Predicted noise levels for NSRs to the north are expected to be below existing background noise levels.

Receptors north-east of the R446:

There is one NSR to the northeast of the R446 close to the solar farm which has been numbered NSR37 on Figure 1. Taking account of the preceding discussion, it is considered that the NSRs south of the R446 and numbered 21 – 27 sufficiently represent this NSR in terms of noise impact. The village of Rochfortbridge lies further northeast.

The breakdown of sources impacting NSR27 to the south of the R446 is listed in Table 3 below:

Table 3 Breakdown of Source Contributions to Total Predicted Noise Level at NSR27

Source	R27_Southern Façade dB(A)	R27_Northern Façade dB(A)
SOFC Energy Centre	23.8	23.8
Solar Farm Inverters	28.6	27.3
Data Centre Sources	16.6	16.2
BESS	20.9	20.6
Transformers	6.3	5.6
Flexgen	22.1	21.6
Total Project Admiral	31	30
Total Project Admiral without Solar	26	26
Total Cumulative with Flexgen	31	30

It is therefore conservatively estimated that receptors to the northeast will experience noise levels during the day-time as < 30 dB(A) and <25 dB(A) at night-time. The predicted noise levels for NSRs to the northeast of the R446 are expected to be well below existing background noise levels as concluded for NSR3 and NSRs 21-27 in the EIAR.

ii) The Noise Chapter in the EIAR identifies that NSRs, 2, 4, 5 and 6, are above the existing background levels during the operational phase of the development. You are requested to confirm what additional operational mitigation measures are proposed to ensure all noise at noise sensitive receptors are within the acceptable guidelines and demonstrate compliance with same.

RESPONSE

The EIAR sets out the reasoning as to why additional mitigation is not required. BS4142: 2014 notes that the effect on receptors is not just dependent on the difference in noise levels between background and the predicted noise levels. The context in which the change occurs should also be considered. To reiterate:

*The difference between background levels and predicted noise levels at NSRs 2, 4,5 and 6 ranges from +3 (NSR2), +5 (NSR4 and 5) to +9 (NSR6) and therefore represents a potentially adverse to significant adverse impact **depending on context.***

Additional comment: It should be noted that the potential significant adverse impact is in relation to NSR6 and not NSRs 2,4 and 5.

The model represents a worst-case scenario. For example, the AHU supply inlets on the sides of the data centre buildings will be placed behind acoustic louvres. Therefore, actual noise levels at NSR2 (and 1) are likely to be lower than predicted and below the existing mode value for background levels at NSR1 and 2.

The predicted noise levels at NSRs 4, 5 and 6 are predominantly influenced by the BESS and the SOFC energy centre. In terms of total noise impact, the placing of the AHU supply inlets behind acoustic louvres as proposed will reduce the total predicted noise level at NSRs 4 and 5 by 1 dB(A). The magnitude rating or excess over background at these NSRs is therefore + 4 dB(A). The magnitude of impact indicates a likely adverse impact depending on context. Context takes account of factors such as the existing ambient or residual noise level; - e.g. will the proposal be incongruous or not with the existing ambient noise environment. Taking account of context and the magnitude rating, it is expected that a minor negative long-term noise impact is expected to occur at NSRs 4 and 5.

The impact is not considered to be significant.

Additional comment: note that a minor negative impact would not constitute a significant negative impact.

Furthermore, in this regard, internal noise levels required for good sleeping conditions as set out in BS8233:2014 will not be exceeded with closed or partially open windows in the dwellings as a result of the proposed development.

As noted earlier, NSR6 represents a landowner associated with the proposed development. Therefore, any further mitigation requirements will be agreed directly with the occupant.

In addition to the assessment in the EIAR, it is also noted that NSRs 2, 4 and 5 are located directly off the R446. Therefore, traffic noise is part of the context in which the project noise will be perceived.

Predicted noise levels at all receptors, with the exception of NSR6, will be below the typical night-time noise limit for development which is 45 dB(A).

The developer will undertake to ensure that there are no clearly audible tones at night-time.

Any additional mitigation measures can be developed into the equipment specifications during the detailed design stage to reduce noise levels further.

iii) The cumulative noise impacts have only been assessed at noise sensitive receptors 4 to 17 inclusive, whereas the noise sensitive receptors for the Data Centre and Solar Farm project assesses noise sensitive receptors 1 to 35 inclusive. You are requested to include all noise sensitive receptors in the assessment of the cumulative noise impacts from the Data Centre & Solar Farm projects along with the Flexgen project.

RESPONSE

Please see below, the updated table of results for the cumulative impact at NSRs 1-35 plus the additional NSR36. The model for Project Red Admiral was updated to take into account the Flexgen project which was previously modelled in accordance with ISO 9613-2 1996 which was in force at the time. The latest model is based on the 2024 updated version of ISO 9613-2 and takes account of any permitted changes to the Flexgen project. There is little variation in the results presented in Table 4 below compared to Table 11.24 in the EIAR for NSRs 4 -17. The results are either the same or slightly less by 1-2 decibels.

Table 4 Cumulative impact at NSRs 1-35 and NSR36 (additional)

Receptor No.	Receptor Height (m)	Total Predicted Noise Level (dB(A))	Total Predicted Noise Level (dB(A)) (no solar)	Predicted Noise Level Flexgen (dB(A))	Total Cumulative Predicted Noise Level (dB(A))	Total Cumulative Predicted Noise Level (dB(A)) (no solar)
1	2	37	37	24	37	37
2	2	40	39	23	40	39
3	4	36	35	28	37	36
4	2	42	42	33	42	42
5	2	42	42	33	43	43
6	2	46	46	39	47	47
7	2	36	34	29	37	35
8	4	39	38	32	40	39
9	4	39	39	33	40	40
10	2	37	36	31	38	37
11	2	37	37	32	38	38
12	2	38	37	33	39	38
13	2	38	37	32	39	38
14	4	40	40	38	42	42
15	2	36	35	31	37	37
16	2	33	31	27	34	33
17	2	33	31	27	34	32
18	2	34	31	24	34	32
19	2	34	31	26	35	32
20	2	34	29	24	34	30
21	2	32	29	23	32	30

Receptor No.	Receptor Height (m)	Total Predicted Noise Level (dB(A))	Total Predicted Noise Level (dB(A)) (no solar)	Predicted Noise Level Flexgen (dB(A))	Total Cumulative Predicted Noise Level (dB(A))	Total Cumulative Predicted Noise Level (dB(A)) (no solar)
22	2	32	29	25	33	30
23	2	31	29	24	32	30
24	2	32	28	23	32	29
25	2	32	29	24	33	30
26	2	31	28	24	32	29
27	2	31	26	22	32	27
28	4	37-39*	23 -32*	22-29*	37 – 39*	26 – 34*
29	2	33	27	23	33	29
30	4	34	27	25	35	29
31	4	32	27	26	33	29
32	2	33	31	26	34	32
33	2	32	30	25	33	31
34	2	31	30	24	32	31
35	4	32	29	26	33	31
36	4			26	36	34

*4 facades assessed.

iv) The cumulative noise impact identifies numerous exceedances in allowable noise levels at various noise sensitive receptors. You are requested to confirm what additional operational mitigation measures are proposed to ensure all noise associated with the cumulative assessment at noise sensitive receptors are within the acceptable guidelines and demonstrate compliance with same.

RESPONSE

We respectfully wish to note that the EIAR does not identify numerous exceedances in allowable noise levels at various noise sensitive receptors.

Predicted cumulative noise levels at all receptors, with the exception of NSR6, will be below the typical night-time noise limit for development which is 45 dB(A).

As noted under Item (iii) above, the revised predicted cumulative impact is slightly less than previously predicted. The revised text, taking into account all NSRs 1 – 36 is as follows:

The cumulative noise level is predicted to be at or below the mode value for background levels at NSRs 1, 3, 7-13, 15 – 36. A total of 31 NSRs.

The cumulative noise level is predicted to be +2 dB above the mode value for background levels at NSR 14.

The cumulative noise level is predicted to be +3 dB above the mode value for background levels at NSR 2.

The cumulative noise level is predicted to be +5 dB above the mode value for background levels at NSR 4.

The cumulative noise level is predicted to be +6 dB above the mode value for background levels at NSR 5. If the input from the data centre AHU supply inlets is removed (as these will be placed behind acoustic louvres) the magnitude rating reduces to +5 dB.

The cumulative noise level is predicted to be +10 dB above the mode value for background levels at NSR 6.

The magnitude of impact indicates a potential adverse cumulative impact depending on context at NSRs 2, 4,5 and 14 and a potentially significant adverse impact at NSR6 also depending on context.

It is noted that the Flexgen unit will not operate continuously and responds to demand from the grid. Therefore, taking this factor into account as part of the context of the proposed development, the conclusion on cumulative impact are the same as those listed earlier under Item (iii) in relation to the proposed development.

v) Facilities D9, D15, D16, D17, and D18, are each individually catered for through 32,000-litre foul holding tanks with a High-Level Alarm. The report notes that the reason for the foul water holding tanks is due to the low occupancy nature of the buildings when operational. You are requested to submit additional information to clearly justify this method of foul wastewater disposal as it remains unclear. Service & operation details should be provided in this regard.

RESPONSE

Areas D9 (Data Centre 33kV Switchgear Substation), D15 (SOFC IPP), D16 (220kV IPP GIS), D17 (Solar Farm IPP) and D18 (BESS IPP) are all low-occupancy, intermittently attended operational buildings located within secure, dedicated compounds. These buildings are not permanently staffed and will only be accessed periodically by authorised operations and maintenance personnel for inspection, switching, monitoring, servicing and repair activities. Accordingly, foul wastewater generation at these locations during the operational phase will be very low and infrequent.

The Applicant considers that the proposed foul wastewater strategy is appropriate, proportionate and consistent with the functional characteristics of these low-occupancy buildings /compounds. In the absence of regular staffing levels or continuous foul effluent generation, a sealed holding tank solution with monitored high-level alarm and routine licensed pump-out provides a robust and environmentally sound method of foul wastewater management.

The proposed 32,000-litre capacity for each holding tank provides a substantial storage buffer relative to the anticipated low and intermittent foul wastewater generation from each building. This capacity has been selected to ensure robust operational flexibility, to minimise the frequency of tanker visits, and to provide a conservative margin of safety in the event of variable maintenance attendance patterns.

The low volumes of foul waste and low biological loading, associated with this type of building, may impact the successful continual operation of a conventional septic tank and any polishing filter system reliant on bacterial action. Given the infrequent use profile of the buildings, the storage volume is considered more than adequate to accommodate wastewater arisings between routine inspections and scheduled pump-out events. Each tank will be fully sealed and watertight and fitted with a high-level alarm linked to the site management / monitoring system. This ensures that tank levels can be actively managed and that any requirement for emptying is identified well in advance of capacity being reached.

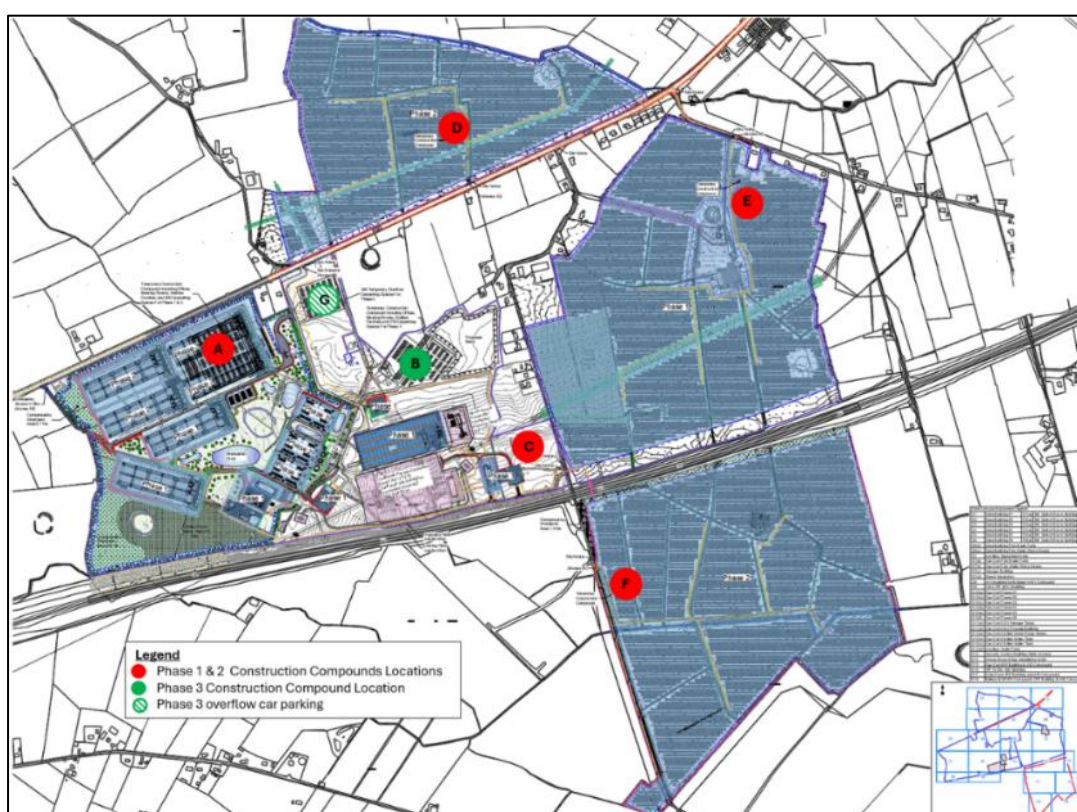
vi) There are a significant number of construction compounds proposed which show toilets and canteens etc which will host a significant amount of construction workers. There are no details submitted with the application as to how wastewater is being discharged from the site during the construction stage. You are requested to submit details of construction stage welfare facilities and associated wastewater design.

RESPONSE

The following response is in relation to construction-stage welfare facilities and the associated foul wastewater management arrangements. This response should be read in conjunction with the submitted Outline CEMP and the construction compound layout drawings. The CEMP confirms that temporary construction compounds will be established at various locations across the site to support the phased delivery of the development. These compounds will include site offices, canteen facilities, toilets and associated welfare infrastructure. It also confirms that portable toilet and wash facilities will be provided by

a licensed sanitation contractor, and that foul drainage from site offices and construction facilities will be contained and managed appropriately to prevent pollution of local watercourses.

The development will be constructed over an approximate 62-month period in three overlapping phases. As shown on the submitted drawings, temporary compounds will be distributed across the site to serve active construction areas. The principal construction compound for Phases 1 and 2 will initially be located in the area of future DC Buildings 5 and 6, before being relocated eastwards to the position marked "B" when Phase 3 works commence. Overflow parking will be provided in the area marked "G".



Source: Figure 2.33 Layout showing locations of temporary construction compounds (Admiral EIAR (Volume 2)).

The final detailed arrangement of all compounds will be agreed prior to commencement in accordance with the CEMP. The compound layouts shown on drawings CLDC-HAL-DC-XX-DR-PL-3020 and CLDC-HAL-DC-XX-DR-PL-3021, included as planning-stage drawings in the Drawing Register at Attachment A to this letter, demonstrate that the temporary compounds will accommodate the welfare infrastructure typically required for a project of this scale. This includes site offices, meeting rooms, canteens, drying rooms, WCs, wash-up areas, storage units and staff parking.

Welfare provision will be concentrated within the main contractor compounds rather than dispersed across the site. This is considered appropriate for a development of this scale and is consistent with established construction practice in Ireland. It also allows welfare and wastewater infrastructure to be managed from a limited number of controlled locations, thereby reducing environmental risk.

The proposed construction-stage wastewater design comprises a fully contained temporary foul drainage system. No foul wastewater generated by welfare facilities will discharge to ground, surface water drainage, field drains or watercourses. Instead, foul effluent from toilets, wash-hand basins, canteen sinks and other welfare facilities will be collected in sealed proprietary storage systems and removed from the site by a licensed contractor.

Depending on the scale and duration of activity within each compound, this will either involve self-contained portable welfare units with integral storage or modular welfare cabins connected by sealed temporary pipework to dedicated sealed holding tanks located within the compound. This is considered the most appropriate and environmentally robust solution for a temporary construction project of this nature, where welfare demand is significant but temporary and permanent foul drainage infrastructure is not warranted during the construction period.

This approach provides a conservative and flexible foul wastewater solution for a long-duration project with overlapping phases and changing compound locations. It allows welfare facilities and associated wastewater storage to be scaled, serviced and relocated in line with the construction programme, while avoiding the need for temporary on-site treatment systems or any discharge to ground. In doing so, it removes the potential for untreated or partially treated foul effluent to affect soils, groundwater, field drains or surface waters.

The temporary foul wastewater arrangements for each active compound will be designed and operated in accordance with standard Irish construction practice and relevant health, safety and environmental requirements. Welfare facilities will be provided in numbers appropriate to the workforce assigned to each compound at any given time, and the contractor will maintain them in accordance with applicable statutory welfare requirements. The principal contractor and PSCS will keep welfare provision and foul storage capacity under review throughout the construction period to ensure that provision reflects actual workforce demand across the three overlapping phases.

In practice, compounds will generally comprise grouped welfare cabins connected to one or more dedicated sealed holding tanks, while smaller or more transient compounds may use self-contained portable sanitation units. In all cases, the tanks and units will be proprietary, watertight and used solely for foul effluent storage. They will be located within secure compounds, protected from accidental damage, and positioned away from temporary drainage features and surface water controls.

The operational management regime will be straightforward and robust. Portable toilets and welfare units will be supplied and serviced by an approved and licensed sanitation contractor. Toilets will be serviced at regular intervals, and more frequently where required by workforce levels or usage. Where welfare cabins are connected to holding tanks, those tanks will be routinely inspected and emptied by licensed tanker before reaching capacity. All wastewater removed from the site will be transported by an authorised collector to an authorised wastewater treatment or reception facility. Records of servicing, removal and disposal will be maintained on site as part of the environmental management documentation.

The foul wastewater system will remain entirely separate from the temporary surface water management system serving the compounds. Clean runoff from roofs, yards and parking areas will not be directed to foul holding tanks, and foul wastewater will not be permitted to enter temporary drains, settlement measures or silt control infrastructure. The temporary foul wastewater arrangements will be integrated with the wider construction drainage and environmental protection measures set out in the CEMP, ensuring that foul and surface water remain fully segregated throughout the construction period.

Having regard to the scale, duration and phased nature of the proposed development, the use of temporary modular welfare compounds served by sealed self-contained sanitation units and/or sealed holding tanks with routine licensed pump-out is considered the most appropriate construction-stage wastewater solution. It is technically robust, adaptable to the three overlapping construction phases, consistent with the submitted compound layouts, and aligned with standard practice for major construction projects in Ireland. Most importantly, it ensures that all foul wastewater generated during construction will be fully contained and removed off site, with no discharge to ground or watercourses.

12) Receiving Environment

i) It is noted that it is proposed to divert all associated stormwater through bypass separators, habitat ponds, Firewater/Attenuation ponds with hydrobrake

overflows or cellular storage discharging to existing 450 Diameter pipe on the eastern side of the site. There is insufficient information with regards to this outfall pipe, you are requested to address this issue.

RESPONSE

See Envirollogic Report (Ref. 3151C), dated 02 March 2026, provided in Appendix 8.3 of the EIA Addendum. This short report provides a response to Item 12(i). The report demonstrates and confirms that the proposed development works do not result in any increase in flood risk to the TII drainage network or M6 Motorway.

ii) Whilst stormwater drawings have been submitted with the application, there appears to be no stormwater design calculations showing that the proposed system is fit for purpose. You are requested to address this issue.

RESPONSE

Stormwater calculations are provided as part of the engineering package supporting this FI response.

iii) There appears to be no surface water design for the Solar farm elements of the project. Problems with surface water discharge from large solar farms stem from increased runoff due to soil compaction and removal of vegetation from the concentrated discharge point from the solar panel units, leading to erosion, sedimentation, and downstream flooding. You are requested to address this matter.

RESPONSE

Whilst the potential for surface-water issues associated with large-scale solar PV arrays are acknowledged, the proposed development has been configured and will be constructed to avoid these mechanisms and to ensure that surface-water runoff behaviour remains comparable to the existing (greenfield) regime, with no increased risk of erosion, sedimentation or downstream flooding attributable to the solar farm elements.

In terms of baseline conditions, the solar farm lands are relatively flat with no steep topographical gradients that would otherwise promote high-energy overland flow or erosive velocities. The site is located in Westmeath where the ground conditions comprise moderately permeable glacial till over limestone with well-drained soils and a moderate groundwater vulnerability (M). These characteristics indicate that the receiving ground is

generally capable of accommodating infiltration-led SuDS measures and that there is no inherent requirement for a piped drainage approach. The solar array coverage is approximately 72 ha within a total landholding of 168 ha, with the remaining lands continuing in fallow /agricultural use; critically, the proposal does not require wholesale stripping of topsoil across the solar farm nor the creation of large impermeable paved areas that would materially change catchment response. Phased development (Phase 1 being the central parcel and Phase 2 comprising the northern and southern parcels) is also proposed for this component of the DER.

During construction, the principal control is the avoidance of widespread compaction and sediment mobilisation. Construction and maintenance vehicular movements will be largely confined to designated internal access tracks constructed in gravel /stone with infiltration capacity and to defined working corridors, thereby limiting trafficking across the wider development and reducing compaction risk. Wet-weather working controls will be implemented to avoid rutting and localised compaction in periods of prolonged rainfall. Construction-stage erosion and sediment controls will be implemented through the CEMP, including stabilised entrances, protection of downslope margins where required, and temporary interception/settlement measures appropriate to the works phasing, ensuring that any short-term sediment risk is effectively managed.

During operation, the infiltration greenfield runoff maintained, while preventing any panel-related concentration of flow from developing into preferential pathways. No removal of existing vegetation, hedgerows or trees is proposed as part of the solar array installation works, and ground cover beneath and between panel rows will be retained and managed as grassland to preserve soil structure, surface roughness, interception and infiltration capacity. The layout incorporates appropriate buffer zones to retained hedgerows, mature trees, watercourses and site boundaries, protecting established ecological features and maintaining the natural drainage and roughness corridors present at field edges; these buffers are shown on the site layout drawings.

Therefore, based on the flat site profile, retained vegetation cover, confined trafficking strategy, and the suitability of ground conditions for infiltration-led SuDS, the solar farm elements will not result in a material increase in surface-water runoff rates or volumes relative to existing conditions. The permanent drainage measures will be designed in accordance with SuDS "management train" principles to mimic the existing drainage regime. Accordingly, the development will not give rise to increased flood risk, erosion, sedimentation or downstream impacts arising from surface-water discharge during either construction or operation.

iv) It is noted that the applicant intends to install 3 number groundwater wells to serve the project during the construction & operational stage. There appears to be a number of private wells within the vicinity of the project. You are requested to identify all private wells in the immediate area and demonstrate that the private wells will not be negatively affected (Yield & Quality etc) by the proposed development.

RESPONSE

The Applicant confirms that groundwater abstraction associated with the proposed development was assessed in the submitted Environmental Impact Assessment Report (EIAR). EIAR Volume 2 states that three groundwater wells are proposed to serve the development, with a combined abstraction requirement of less than 40m³ per day (approximately 0.46 l/s) across the DC facility and DER. This abstraction volume forms the assessed groundwater demand envelope for the development.

Since submission of the EIAR, Uisce Éireann has issued a Confirmation of Feasibility (CoF) confirming that 10m³ per day can be supplied from the public water network. Taking account of this confirmed public supply contribution, reliance on groundwater abstraction will be reduced relative to the ≤40m³ day envelope assessed in the EIAR. The maximum groundwater abstraction will therefore not exceed approximately 30m³ per day and is anticipated to be approximately 26m³ per day based on current operational demand calculations. This remains within, and below, the abstraction envelope assessed in the EIAR.

The EIAR includes a review at section 8.4.5.5 of groundwater wells and springs listed on the Geological Survey Ireland database within a 5km radius of the development lands. Identified records include IE_GSI_GW_Well_32279 (approximately 50m east; formerly in agricultural/domestic use), IE_GSI_GW_Well_32242 (approximately 1.5 km north-north-west; agricultural/domestic use) and IE_GSI_GW_Well_27153 (approximately 3.5 km southeast; domestic use). These wells are typically low-volume domestic /agricultural abstractions within a locally important aquifer and are not public supply sources. The aquifer beneath the site is classified as a locally important bedrock aquifer, moderately productive in local zones, with groundwater flow influenced by fractures in the bedrock.

A review has been undertaken of available Geological Survey Ireland (GSI) well data for GSI Well 2323SEW202 (Well Unique ID IE_GSI_GW_Well_32279; ITM 644777, 738794), together with the ground investigation (GI) information collated for the subject lands

(appendix 7.1 of the EIAR (Vol 3) and adjoining lands to the east (Castlelost Flexgen), and regional hydrogeological mapping and source protection information.

According to the available GSI records, GSI Well 2323SEW202 is a drilled borehole with 150mm diameter casing, completed to 60.9 m below ground level (bgl), with bedrock encountered at 12.2 m bgl. The first reported water strike was recorded at 45.7 m bgl and a source yield of 76.30m³/day was reported. On the basis of this data, the borehole penetrates approximately 48.7m of bedrock below rockhead, with the first significant groundwater inflow occurring approximately 33.5 m below the top of bedrock.

The site and adjoining lands were confirmed to be underlain by limestone bedrock with groundwater flow controlled principally by secondary permeability in fractures and localised karstic features. The overburden comprises predominantly heterogeneous glacial deposits of moderate permeability, allowing moderate but spatially variable recharge to bedrock.

In terms of groundwater recharge, the setting indicates average recharge of 200mm/year, moderate groundwater vulnerability, well-drained soils, limestone-derived till subsoil of moderate permeability, and a bedrock aquifer classification of LI, namely a Locally Important Aquifer described as bedrock which is moderately productive only in local zones. Therefore, it is reasonable to conclude that GSI Well 2323SEW202 derives its yield from a discrete deeper transmissive zone rather than from pervasive shallow groundwater flow, and its reported productivity (76.30m³/day) is consistent with a "*locally important aquifer that is moderately productive only in local zones.*" Assuming annual recharge of 200mm/yr and applying a recharge coefficient of 60%, the effective groundwater recharge is estimated at 120mm/yr equivalent to approximately 3.29m³/day/ha. An abstraction rate of 40m³/day would therefore require a notional recharge area of approximately 12.2 ha, equivalent to a circle of about 400m diameter (the proposed wells will be suitably positioned with the overall 243ha development lands). This provides a preliminary indication of the scale of the recharge area needed to sustain the abstraction under average conditions.

Source protection area mapping assessed indicates that the nearest mapped groundwater-fed public water supply source protection area is the Toberdaly Public Water Scheme (PWS). The dataset defines these mapped SPAs around public groundwater abstractions, including an inner protection area and an outer protection area covering the remainder of the source catchment or zone of contribution. Based on the information provided, the closest such area lies approximately 8km to the southeast of the development lands, and

the proposed development is well outside the mapped protection area for that supply. On that basis, no direct hydrogeological linkage is indicated between the proposed development lands and the mapped source protection area for the Toberdaly PWS.

With respect to groundwater quality, the EIAR sets out construction-phase pollution prevention and groundwater protection measures, including controlled storage and handling of fuels and chemicals and implementation of a Construction Environmental Management Plan. No discharge to ground is proposed as part of the development. The abstraction volumes assessed are modest relative to the aquifer classification described and are not predicted to result in significant changes to groundwater chemistry.

Having regard to the abstraction envelope assessed in the EIAR, the hydrogeological characteristics of the receiving environment, and the confirmed public water contribution reducing reliance on groundwater abstraction, it is concluded that the proposed development will not result in significant adverse effects on the yield or quality of private wells in the vicinity of the site.

v) You are requested to submit a detailed plan showing the locations for all chemical, hazardous material, fuels etc. and a report detailing bunding/spillage mitigation arrangements for all hazardous liquids/materials.

RESPONSE

The Applicant confirms that the submitted Site Master Layout drawing CLDC-HAL-DC-XX-DR-PL-1000 (Site Master Layout) identifies the locations of the relevant plant areas and compounds. The storage locations and containment measures for fuels, chemicals and other hazardous materials are set out below.

Diesel fuel will be stored within integral day tanks associated with the proposed generators located within D7 (Ancillary Equipment Compound for DER), and within integral day tanks associated with the diesel-driven fire water pumps located within D7 (Ancillary Equipment Compound for DER) and D19 (Ancillary Equipment Compound for DC Facility). No bulk diesel storage tanks are proposed. All diesel day tanks will be double-skinned or provided with integral secondary containment and will be located on impermeable hardstanding within designated plant compounds.

Oil-filled transformers will be located within designated transformer compounds. Each transformer will be installed on a purpose-designed concrete plinth incorporating oil containment measures to retain transformer insulating oil in the unlikely event of a leak.

Surface water drainage from transformer areas is directed through appropriately sized bypass separators to prevent hydrocarbon contamination of the receiving environment.

Two (2no.) 1000m³ chilled water storage tanks are proposed as part of the closed-loop cooling system at D12 (Chilled Water Tanks). These tanks will contain a water /glycol mixture and are located within the designated chilled water plant area as shown on the Site Master Layout. The tanks are provided within a bunded arrangement comprising a concrete wall and base constructed to the Engineer's specification. This bunding provides secondary containment such that, in the unlikely event of tank failure, the contents would be retained within the bunded area and prevented from migrating to soil, groundwater or entering the surface water drainage network.

Three (3no.) proprietary modular potable water treatment plants are proposed, located within D7 (Ancillary Equipment Compound for DER), D19 (Ancillary Equipment Compound for DC Facility), and D20 (Water Treatment Unit Serving D16, D17 and D18). Small operational quantities of treatment chemicals required for dosing will be contained within each individual treatment unit. Any bulk or stock chemical storage associated with the potable water treatment process will be held within the designated chemical storage area in D7. All chemical storage areas will be provided with appropriate secondary containment and located on impermeable hardstanding, in accordance with best practice and relevant guidance, to prevent any accidental release to soil, groundwater or surface water.

The development also includes carbon dioxide storage tanks associated with the fuel cell process located at D11 (Carbon Dioxide Storage Tanks). These tanks are purpose-designed pressure vessels located within the designated energy compound. As a pressurised gas system, they do not present a liquid hydrocarbon risk to soil or groundwater. The installation will comply with all relevant safety and design standards.

The battery compound comprises lithium-ion battery enclosures and associated power stations. These are sealed systems and do not involve the storage or handling of bulk liquid hazardous materials. Fire protection and monitoring systems will be provided in accordance with applicable standards.

In addition to operational systems described above, limited quantities of maintenance materials will be stored on site, including transformer insulating oil for top-up purposes (approximately 1m³ per transformer, circa 5m³ total), closed-loop cooling system glycol top-up (approximately 5m³), and generator lubricating and maintenance oils (less than 200 litres stored at any one time). These materials will be stored within designated maintenance or plant storage areas on impermeable hardstanding within designated plant

compounds (principally within D7) and provided with appropriate secondary containment measures to prevent accidental release.

Across the site, areas where there is potential for oil contamination of surface water are provided with bypass oil separators, as illustrated on the submitted Surface Water Drainage Layouts. Fuels and hazardous liquids are located within designated plant compounds on impermeable hardstanding and provided with appropriate secondary containment measures. No discharge of hazardous liquids to ground is proposed as part of the development.

vi) Lighting drawings were submitted with the application, but it appears that there is no lighting calculations submitted. A lighting design report is requested confirming that the lighting scheme will have no impacts on residents or wildlife within the immediate vicinity.

RESPONSE

Revised Lighting Design Package is provided in Appendix 5.3 of the EIA Addendum.

13) Planning & Design

i) Data Centre – Design, Siting & Visual Impacts

The Planning Authority requires the submission of Further Information in order to fully assess the visual, architectural, and landscape impacts of the proposed Data Centre development. The following concerns have been identified:

It is considered that the siting, orientation, and overall layout of the proposed Data Centre buildings would create a visually dominant, industrial-scale frontage along the R344. This would result in a significant adverse impact on the visual character of the surrounding rural landscape. The six buildings are presented as repetitive, industrial-scale structures more typical of a heavy industrial estate, with little or no evident response to the visual sensitivity of the rural setting. The development would benefit from significantly improved architectural quality and stronger design integration to better reflect and respect the surrounding rural landscape context.

The layout of both the Data Centre and Distributed Energy Resource components appears constrained, offering limited opportunity for the surrounding landscape or site boundaries to absorb the visual bulk of the scheme. The proposed 20–24

metre landscape buffer along the road frontage is considered insufficient to mitigate the development's visual prominence.

There is potential for the proposed Data Centre to adversely impact on the residential amenity of the two adjoining dwellings located along the Regional Road. It is considered that the current scale, layout, and siting of the data centre buildings demonstrate limited regard for the proximity, setting, and amenity value of these existing residential properties.

The photomontages submitted fail to adequately depict the true scale and impact of the Data Centre on adjoining residences. Critical elements, including high palisade security fencing, lighting masts, and security camera masts are omitted, which would further exacerbate visual and residential impacts both from the dwellings and the R344.

Accordingly, you are requested to submit the following:

a. Site layout plans to be submitted showing a revised configuration of the proposed data centre buildings that allows for clear separation from the regional road and existing roadside dwellings, thereby reducing visual impact and ensuring a more sympathetic relationship with the rural setting.

RESPONSE

Revised site layout plans showing revised configuration of the proposed data centre buildings that allows for clear separation from the regional road and existing roadside dwellings, thereby reducing visual impact and ensuring a more sympathetic relationship with the rural setting is provided. Please refer Halston Drawing No. CLDC-HAL-DC-XX-PL-1000 to CLDC-HAL-DC-XX-PL-1019 and CLDC-HAL-DC-XX-PL-1100 to CLDC-HAL-DC-XX-PL-1103. Planning-Stage Drawings Register is provided in Attachment A to this FI response letter.

Please also refer to Architect's Design Statement provided in Appendix 2.5 along with the following Appendices provided as part of the EIAR Addendum.

- Appendix 12.4 Revised Landscape and Biodiversity Mitigation Plans
- Appendix 12.5 Additional Photomontages - updated photomontage booklet, comprising representative viewpoints located closest to the proposed development
- Appendix 12.6 Landscape Architect Design Statement
- Appendix 12.7 Landscape Architect FI Response Statement

A series of targeted design refinements have been developed to address the relationship between the buildings and the R446 corridor, the landscape strategy, the architectural articulation of the DC buildings, and the overall composition of the DC campus.

The key elements of the design response can be summarised:

1. Increased setback of the data centre buildings from the R446, with the distance increased from approximately 49 metres to approximately 75 metres.
2. Expansion of the landscape buffer zone along the R446 and adjacent residential boundaries to provide enhanced visual screening and ecological planting.
3. Reduction in the overall building height of the data centre blocks fronting the R446, with parapet heights reduced from 18 metres to 16 metres.
4. Introduction of an architectural veiling system using a simple metal mesh fabric to soften the appearance of the large-scale building volumes.
5. Breaking the linear repetition along the R446 frontage through the introduction of contrasting architectural elements.
6. Creation of a campus-style development, centred around a strong architectural identity for the office component, providing a focal point for the scheme and helping to humanise the overall development

b. A comprehensive Design Statement outlining the design rationale, architectural intent, and detailing proposed materials and finishes.

RESPONSE

Please refer to Architect's Design Statement provided in Appendix 2.5 of the EIAR Addendum submitted in support of this FI response. The purpose of the Architect's Design Statement is to outline a holistic design response which seeks to reduce the perceived scale of the development, enhance its integration within the surrounding landscape, and strengthen the overall architectural quality of the scheme.

Visual interpretations of Admiral Data Centre Campus are provided below

Figure 5 Proposed campus plaza



Figure 6 Front elevation - Road side showing both buildings



Figure 7 Office campus view



Figure 8 Proposed office facade



Figure 9 Central plaza area – view north



Figure 10 Central plaza area – view south



Figure 11 Data Centre Building Elevation

c. Enhanced landscape proposals, including mitigation measures and cross-sections showing how the development will be screened over time

RESPONSE

Please refer to the following Appendices provided as part of the EIAR Addendum submitted in support of this FI response.

- Appendix 12.4 Revised Landscape and Biodiversity Mitigation Plans
- Appendix 12.5 Additional Photomontages
- Appendix 12.6 Landscape Architect Design Statement
- Appendix 12.7 Landscape Statement

d. Revised, accurate photomontages illustrating the Data Centre in combination with security fencing, lighting infrastructure, and security cameras.

RESPONSE

Please refer to the following Appendices provided as part of the EIAR Addendum submitted in support of this FI response.

- Appendix 12.4 Revised Landscape and Biodiversity Mitigation Plans
- Appendix 12.5 Additional Photomontages
- Appendix 12.6 Landscape Architect Design Statement
- Appendix 12.7 Landscape Statement

e. Updated plans clearly showing the extent, design, and finish of all security-related infrastructure

RESPONSE

Please refer to Halston Drawing No. CLDC-HAL-DC-XX-PL-3001 (Data Centre), CLDC-HAL-DC-XX-PL-1300 (Data Centre Facility Entrance Security Building), CLDC-HAL-DC-XX-PL-3000 (solar farm) showing the design and finish of all security-related infrastructure. The extent of security related infrastructure is presented on the site layout plans (Halston Drawing No. CLDC-HAL-DC-XX-PL-1000 to CLDC-HAL-DC-XX-PL-1019).

relevant drawings as listed in the Planning-Stage Drawings Register provided in Attachment A to this FI response statement.

f. Revised viewpoint photomontage locations taken from the rear garden boundaries of all dwellings within 600m of the site.

RESPONSE

Please refer to Appendix 12.7 (Landscape Architect FI Response Statement) of the EIAR Addendum submitted in support of this FI response.

g. Additional viewpoint locations taken at 500m intervals from the site entrance extending along both the eastern and western approaches of the R344 for 2km.

RESPONSE

Please refer to Appendix 12.7 (Landscape Architect FI Response Statement) of the EIAR Addendum submitted in support of this FI response.

h. A photomontage of the Data Centre, including associated security fencing, lighting, and cameras, as viewed directly from the R344.

RESPONSE

Please refer to Appendix 12.5 (Additional Photomontage) and Appendix 12.7 (Landscape Architect FI Response Statement) of the EIAR Addendum submitted in support of this FI request.

ii) While the submitted Landscape and Visual Impact Assessment acknowledges local visual sensitivities, it is considered that the assessment significantly underestimates the proposal's visual impacts, particularly from key viewpoints along the R344, the roadside boundaries, and nearby residential properties. Large sections of the solar array will be located adjacent to several one-off dwellings, with the closest separation approximately 26m, which is considered insufficient to safeguard residential amenity. The proposed 2.4m timber post and tensile mesh fencing, in some cases located within 5.6m of residences, would create an overbearing and intrusive impact. You are therefore requested to submit revised plans illustrating a minimum set back of 40m of the solar array from all residential boundaries.

RESPONSE

Extended buffers /setbacks to nearest residential properties have been incorporated into the overall development layout. A minimum set-back of 40m of the solar array from all residential boundaries is now provided. Please refer to the relevant layout drawings as listed in the Planning-Stage Drawings Register provided in Attachment A to this FI response letter. Halston Drawing No. CLDC-HAL-DC-XX-PL-1006 also shows that the solar arrays and security fencing have been repositioned to provide for additional buffer to residential properties.

A Landscape Architect FI Response Statement (Appendix 12.7 of the EIAR Addendum) is also submitted in support of this FI request.

iii) You are therefore requested to submit revised photomontages of the solar array from the rear of all residential properties within 600m of the application site together with additional viewpoints at 500m intervals along both the eastern and western approaches of the R344 for a distance of 2km to enable a full assessment of visual and residential impacts.

All photomontages should clearly illustrate security fencing, lighting, and security camera infrastructure.

RESPONSE

Please refer to Appendix 12.5 (Additional Photomontage) and Appendix 12.7 (Landscape Architect FI Response Statement) of the EIAR Addendum submitted in support of this FI request.

iv) It is noted that security cameras are proposed together with lighting masts. Please submit revised plans clearly illustrating the number, location and height of these structures.

RESPONSE

A CCTV camera is proposed near all entrances to the solar farm for the purposes of security. In addition, CCTV cameras along with other security measures will be installed within the DC campus (including at the Security Entrance Building) and at various locations across the DER.

14) Community Benefit

Having regard to the scale and nature of the proposed development within this rural area, you are requested to provide an outline of proposed schemes that would deliver tangible benefits to the local community. This should be based on consultation with the local community and accompanied by a clear commitment to implement the scheme should planning permission be granted.

RESPONSE

See attached Community Benefit Framework Report contained in Appendix 5.4 of the EIAR Addendum. The report provides an initial assessment of community benefit and an outline framework and set of principles for informing a fully-fledged community benefit Scheme or fund once the project is developed and operational.

15) Fire Safety

Your attention is drawn to the Chief Fire Officers Report (copy attached). You are invited to liaise with the Chief Fire Officer in advance of responding to this further information request.

The Planning Authority, should seek, by way of additional information, the following:

a) Calculations on the design of the static water storage on site to indicate that this quantity is sufficient for the proposed development.

b) A preliminary fire risk assessment for the development , given that the majority of the buildings on site fail to meet the requirements of Part B of the Building Regulations (2024).

c) Additional information regarding the storage of CO2 on the proposed facility and protection measures for same.

RESPONSE

In response to Items a-c above, see attached Preliminary Fire Risk Assessment Report prepared by Ryan & Associates. Consultation was undertaken with the Fire Officer in October 2025 to inform the response.

16) Additional Matters

i) You are requested to submit a detailed Planning Statement which outlines the responses to the above referenced items of further information.

RESPONSE

This Planning Statement has been prepared to provide the responses to all referenced items of the further information request.

ii) You are invited to consider and respond to the third-party submissions received in respect of the development proposed for the consideration of the Planning Authority.

RESPONSE

We have undertaken a comprehensive review of the observations file and we have considered each and every submission (see Schedule in Attachment B). Our review demonstrates that the observations are characterised by a substantial degree of repetition and overlap. While the submissions contains a large number of individual matters, these come from a total of 65no. submissions. Submissions comprise repeated articulation of the same or similar core concerns (approximately one-third) made elsewhere. The principal themes raised are concentrated in a limited number of topic areas, most notably planning and policy matters, community and human-health concerns, biodiversity, water environment, landscape and visual effects, roads and access, and related infrastructure concerns. The overall pattern is therefore not one of a wide range of separate planning issues, but rather a relatively narrow body of recurring concerns repeated across multiple submissions.

Our review also shows that the vast majority of those matters are already captured within the Planning Authority's FI request letter dated 01 September 2025. In particular, over 90% of the scheduled entries are marked as not requiring any separate response outside the FI process. That is consistent with the scope of the FI Request itself, which specifically seeks detailed responses on project-splitting and the relationship with adjoining Castlelost energy infrastructure, carbon footprint and climate impacts, biodiversity and ecological effects, glint and glare, noise, hydrology, drainage and private wells, design and visual impact, community benefit, and fire safety. Those are the same broad issues that repeatedly arise in the third-party observations.

Accordingly, while the volume of observations is noted, our review demonstrates that many of the submissions are substantially overlapping and repetitive in content, rather than raising distinct new issues. The applicant's responses to the Planning Authority's FI items therefore substantially address the principal matters raised by third parties, but in a more focused, technical and evidence-based manner. In that regard, the FI response provides the primary mechanism through which the recurring issues identified in the observations can be properly assessed by the Planning Authority.


You are requested to submit hard copy of all documentation requested in this Request for Further Information.


RESPONSE

One hard copy of all documentation supporting this Response to the Further Information Request is submitted to the planning authority.

ATTACHMENT A

ENGINEERING PLANNING STAGE DRAWING REGISTER

Drawing Register			
Project Name	Admiral	H = Hardcopy	
Project No.	SEP-0374	E = Electronic Copy	
Stage	Planning S34		
Distribution	Issue Number	1	2
	Issue Date	07.07.25	19.03.26
	Issued By:	SK	SK
Westmeath County Council		E	E&H
Drawing	Title		
CLDC-HAL-DC-XX-DR-PL-900	Proposed Site Location	P01	
CLDC-HAL-DC-XX-DR-PL-901	Proposed Site Location	P01	
CLDC-HAL-DC-XX-DR-PL-1000	Site Master Plan	P01	P02
CLDC-HAL-DC-XX-DR-PL-1001	Site Layout	P01	
CLDC-HAL-DC-XX-DR-PL-1002	Site Layout	P01	P02
CLDC-HAL-DC-XX-DR-PL-1003	Site Layout	P01	
CLDC-HAL-DC-XX-DR-PL-1004	Site Layout	P01	
CLDC-HAL-DC-XX-DR-PL-1005	Site Layout	P01	
CLDC-HAL-DC-XX-DR-PL-1006	Site Layout	P01	P02
CLDC-HAL-DC-XX-DR-PL-1007	Site Layout	P01	P02
CLDC-HAL-DC-XX-DR-PL-1008	Site Layout	P01	P02
CLDC-HAL-DC-XX-DR-PL-1009	Site Layout	P01	P02
CLDC-HAL-DC-XX-DR-PL-1010	Site Layout	P01	P02
CLDC-HAL-DC-XX-DR-PL-1011	Site Layout	P01	P02
CLDC-HAL-DC-XX-DR-PL-1012	Site Layout	P01	P02
CLDC-HAL-DC-XX-DR-PL-1013	Site Layout	P01	
CLDC-HAL-DC-XX-DR-PL-1014	Site Layout	P01	
CLDC-HAL-DC-XX-DR-PL-1015	Site Layout	P01	
CLDC-HAL-DC-XX-DR-PL-1016	Site Layout	P01	P02
CLDC-HAL-DC-XX-DR-PL-1017	Site Layout	P01	
CLDC-HAL-DC-XX-DR-PL-1018	Site Layout	P01	
CLDC-HAL-DC-XX-DR-PL-1019	Site Layout	P01	
CLDC-HAL-DC-XX-DR-PL-1020	Site Access Visibility Splays	P01	
CLDC-HAL-DC-XX-DR-PL-1030	Construction Phasing	P01	
CLDC-HAL-DC-XX-DR-PL-1040	Surface Water Drainage Layouts	P01	P02
CLDC-HAL-DC-XX-DR-PL-1041	Surface Water Drainage Layouts	P01	P02
CLDC-HAL-DC-XX-DR-PL-1042	Surface Water Drainage Layouts	P01	P02
CLDC-HAL-DC-XX-DR-PL-1043	Surface Water Drainage Layouts	P01	P02
CLDC-HAL-DC-XX-DR-PL-1044	Surface Water Drainage Layouts	P01	
CLDC-HAL-DC-XX-DR-PL-1045	Attenuation Pond Sections	P01	
CLDC-HAL-DC-XX-DR-PL-1050	Foul Water Drainage Layouts	P01	P02
CLDC-HAL-DC-XX-DR-PL-1051	Foul Water Drainage Layouts	P01	P02
CLDC-HAL-DC-XX-DR-PL-1052	Foul Water Drainage Layouts	P01	P02
CLDC-HAL-DC-XX-DR-PL-1053	Foul Water Drainage Layouts	P01	P02
CLDC-HAL-DC-XX-DR-PL-1054	Foul Water Drainage Layouts	P01	
CLDC-HAL-DC-XX-DR-PL-1060	Watermain Layouts	P01	P02
CLDC-HAL-DC-XX-DR-PL-1061	Watermain Layouts	P01	P02
CLDC-HAL-DC-XX-DR-PL-1062	Watermain Layouts	P01	P02
CLDC-HAL-DC-XX-DR-PL-1063	Watermain Layouts	P01	P02
CLDC-HAL-DC-XX-DR-PL-1064	Watermain Layouts	P01	
CLDC-HAL-DC-XX-DR-PL-1080	Existing & Proposed Site Drainage Layout		P01

Drawing Register			
Project Name	Admiral	H = Hardcopy	
Project No.	SEP-0374	E = Electronic Copy	
Stage	Planning S34		
Distribution	Issue Number	1	2
	Issue Date	07.07.25	19.03.26
	Issued By:	SK	SK
Westmeath County Council		E	E&H
Drawing	Title		
CLDC-HAL-DC-XX-DR-PL-1070	Site Longitudinal Sections	P00	
CLDC-HAL-DC-XX-DR-PL-1100	Data Building Ground Floor	P01	P02
CLDC-HAL-DC-XX-DR-PL-1101	Data Building First Floor	P01	P02
CLDC-HAL-DC-XX-DR-PL-1102	Data Building Elevations	P01	P02
CLDC-HAL-DC-XX-DR-PL-1103	Data Building Sections	P01	P02
CLDC-HAL-DC-XX-DR-PL-1110	Data Building Switch Rooms	P01	
CLDC-HAL-DC-XX-DR-PL-1120	Bicycle Shelter Details	P01	
CLDC-HAL-DC-XX-DR-PL-1200	Storage Building Details	P01	
CLDC-HAL-DC-XX-DR-PL-1201	Fire Water Tanks, Pump House & Water Treatment (Data Halls)	P01	
CLDC-HAL-DC-XX-DR-PL-1202	Fire Water Tank, Pump House, Diesel Generators (Fuel Cells)	P01	
CLDC-HAL-DC-XX-DR-PL-1203	Chilled and Ancillary Water Tanks & Pump House (Fuel Cells)	P01	
CLDC-HAL-DC-XX-DR-PL-1204	Water Treatment Unit Ref: D20	P01	
CLDC-HAL-DC-XX-DR-PL-1300	Security Building Entrance	P01	
CLDC-HAL-DC-XX-DR-PL-1500	33kV IPP Building Plans & section	P01	
CLDC-HAL-DC-XX-DR-PL-1501	33kV IPP Building Elevations	P01	
CLDC-HAL-DC-XX-DR-PL-1600	Carbon Dioxide Storage Tanks & Process Building Details	P01	
CLDC-HAL-DC-XX-DR-PL-1700	Fuel Cell Floor Layouts & Section	P01	
CLDC-HAL-DC-XX-DR-PL-1701	Fuel Cell Elevations	P01	
CLDC-HAL-DC-XX-DR-PL-1800	Fuel Cell IPP Building and Compound Details	P01	
CLDC-HAL-DC-XX-DR-PL-1801	Solar Farm IPP Building and Compound Details	P01	
CLDC-HAL-DC-XX-DR-PL-1900	Battery, MVPS, IPP Building & Compound Layout	P01	
CLDC-HAL-DC-XX-DR-PL-1901	Battery, MVPS, IPP Building & Compound Elevations	P01	
CLDC-HAL-DC-XX-DR-PL-1902	Battery IPP Building & Fire Water Tank Details	P01	
CLDC-HAL-DC-XX-DR-PL-2000	AGI Compound Details	P01	
CLDC-HAL-DC-XX-DR-PL-3000	Solar Panel, Weather Station, MVPS, Gate & Road Details	P01	P02
CLDC-HAL-DC-XX-DR-PL-3001	Data Campus Entrance and Security Fence Details	P01	P02
CLDC-HAL-DC-XX-DR-PL-3010	Stream & Field Drain Crossings Details	P01	
CLDC-HAL-DC-XX-DR-PL-3020	Temporary Construction Compounds 01, 02, 03 & 04	P01	
CLDC-HAL-DC-XX-DR-PL-3021	Temporary Construction Compounds Data Area	P01	
CLDC-HAL-DC-XX-DR-PL-3030	Cable Trenches in Public Roads	P01	P02
CLDC-HAL-DC-XX-DR-PL-3040	Buildings to be Demolished	P01	
CLDC-HAL-DC-XX-DR-PL-3041	Dwelling to be Demolished	P01	

ATTACHMENT B

THIRD PARTY SUBMISSION REVIEW

Third Party Submissions

EIAR Topics	Red Admiral
	Qty
Planning & Policy	202
Material Assets	48
Biodiversity	79
Water Environment	67
Archaeological & Cultural Heritage	30
Landscape & Visual	48
Traffic & Transport	42
Soils & Geology	35
Population & Human Health	101
Climate	24
Noise & Vibration	10
Air Quality & Climate	11
Other	5
	702

Third Party Submissions

Submission Topics	Red Admiral Quantity
Other	5
Noise & Vibration	10
Air Quality & Climate	11
Climate	24
Archaeological & Cultural Heritage	30
Soils & Geology	35
Traffic & Transport	42
Material Assets	48
Landscape & Visual	48
Water Environment	67
Biodiversity	79
Population & Human Health	101
Planning & Policy	202
Total submission topics raised:	702

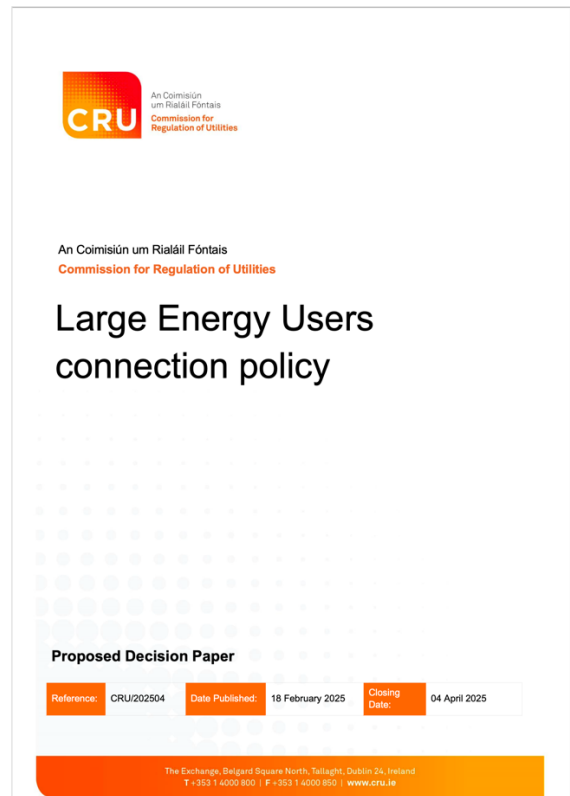
Topics raised within the 68 individual submissions



APPENDIX 3.1

Red Admiral - Energy Statement and approach to Sustainable Data Centre Development

County Westmeath



Prepared for Red Admiral DC Ltd by:



July 2025

Table of Contents

1	Foreword.....	3
2	Introduction	4
3	Red Admiral Distributed Energy Resource (DER).....	5
3.1	Energy Concept	5
3.2	Energy Mix	5
3.3	Castlelost FlexGen	11
3.4	Energy and Carbon Modelling	12
3.5	Hourly Modelling Examples.....	16
3.6	Battery Energy Storage System Examples	19
3.7	Annual Energy and Emissions	21
4	Six Principles for sustainable data centre development.....	22
4.1	Economic Impact.....	23
4.2	Grid Capacity and Efficiency	23
4.3	Renewables Additionality	24
4.4	Co-Location or Proximity with Future-proof Energy Supply	24
4.5	Decarbonised Data Centre by Design.....	25
4.6	SME Access and Community Benefits	26
5	Projecting future trajectories	27
6	Conclusions.....	29
7	List of Figures	30
8	References & Lins.....	30

1 Foreword

Data centres provide the enabler for digitalisation. They also impact our decarbonisation goals. The servers that enable our digital world depend on electricity. Ireland is moving towards having surplus renewable generation in the future. Deployment of these renewables will take time, and flexible, adaptive and low-carbon energy systems are the only credible means to power digital infrastructure.

Ireland has seen significant growth in data centresⁱ, made more prominent by the relatively small scale of our national electricity grid. Ireland's exports are heavily tilted towards technology and ICT, with approximately €200 billion of ICT services exported each year.

Globally, energy demand from data centres is forcing a shift in how electrical power is generated to support their growth. The imperative to be sustainable leads to the adoption of low carbon technologies. Innovative strategies are needed to facilitate the implementation of new technologies. Data centre developers in Ireland are facing these challenges ahead of their counterparts in other countries, but other countries are not far behind in exploring solutions also.

Ireland has two key policy drivers in this regard - The *Government's statement on the Role of Data Centres in Ireland's Enterprise Strategy* and the CRU's *Large Energy Users connection policy*. In designing the Red Admiral project, the developer has sought to address the principles outlined in these policy documents. The Climate Action Plan is a central driver for these policies.

Red Admiral is being proposed by an established utility provider, with a proven track-record of operating in the Irish energy system. The project will be grid-connected but will also comprise behind the meter technologies that will allow it to operate off-grid. These include hydrogen-ready fuel cells and a large solar PV farm. A battery energy storage system will be utilised, and no diesel engines will be used for back-up.

Key energy attributes of the RED Admiral project:

1. A proven utility developer with experience in the Irish energy system.
2. The project will not have any adverse impact on the electrical grid. It is not in a constrained grid location. No new powerlines are needed beyond the site boundary.
3. The energy system can help reduce national curtailment of renewables by offering flexibility - It can draw and store electricity at times of high wind generation using a 500 MWh Battery Energy Storage System (BESS). It can operate off-grid.
4. Emissions - at least a 9.7% improvement on emissions per kWh of electricity used, with up to 62.9% improvement at lower demand levels. Capability to monitor and report hourly emissions data.
5. On-site renewables - it includes a 184 MWp commercial-scale solar photovoltaic farm on-site.
6. Fuel cells - efficient electricity generation (58.5%) by utilising Solid Oxide Fuel Cells.

This report outlines how these achievements are to be realised and quantifies their value. The generous scale of the site has allowed the developer to allocate significant space to energy systems. We modelled extreme operational scenarios and calculated the annual energy and emissions characteristics based on grid and solar data for 2023. The model has helped the developer to make informed technology decisions for the optimisation of the design.

2 Introduction

The Red Admiral project is a proposed data centre development consisting of six data centre buildings and a decentralised energy resource (DER) system. It is a new energy park located in the midlands approximately 60 km west of Dublin adjacent to the M6 motorway. In Ireland in 2025, new data centres need to demonstrate that they can operate with no adverse impacts on the electricity grid.

Energy policy is moving in a direction of requiring additional resilience and support to the national grid. A key policy lever is the CRU Large Energy Users connection policy which is currently in the draft stages (CRU202504). The energy strategy for the Red Admiral project is to align with the principles set out in the draft policy, namely:

- The location of the data centre applicant with respect to whether they are within a constrained or unconstrained region of the electricity system.
- The ability of the data centre applicant to bring onsite or proximate dispatchable generation (and/or storage) capacity equivalent to or greater than their demand, that participates in wholesale market arrangements, is separately metered, which meets appropriate availability and other technical requirements as may be specified by the relevant SO, in order to support security of supply.
- The ability of the data centre applicant to bring demand flexibility provisions if deemed necessary by the relevant SO.
- The applicant's commitment to self-report to SOs on the data centre site's emissions and use of renewable energy on an annual basis.

The project is located adjacent to a newly built 220kV GIS substation and a 275 megawatt (MW) dispatchable power plant which is under construction by the same developer and has secured a grid capacity contract with EirGrid through the Single Electricity Market. The Midlands based project is located in a sufficiently unconstrained part of the electricity grid where electricity demand is low.

The DER, which will support the high electricity demand of proposed data centre, includes a 184 MW Solar PV farm, a 500 MWh battery energy storage system (BESS), and 160 MW of high efficiency Solid Oxide Fuel Cells (SOFC).

The SOFC is designed to provide variable baseload power. The BESS provides resilience and demand flexibility. The Solar PV farm will be either used directly or stored in the BESS to provide further resilience. This arrangement will eliminate any demand pressure on the grid. The project will be grid connected which allows for import of electricity and facilitates power purchase agreements.

The project optimises its electricity supply for highest efficiency and lowest carbon intensity by monitoring the data centre demand, DER availability, the national grid and selecting modes of energy supply based on hourly data.

This document describes the energy system and how it will align with national energy and data centre policy.

3 Red Admiral Distributed Energy Resource (DER)

The project will comprise an innovative hybrid energy system consisting of fuel cells, battery energy storage, and solar PV assets on site. The facility will be grid connected, allowing it to import renewable energy from external sources through CPPAs to the DC campus when abundant. It optimises the use of these assets based on minimising the carbon impact and supporting the national grid to reduce curtailment of renewable energy resources.

The project owner is also in the process of bringing onsite / proximate dispatchable generation (and storage) capacity equivalent to demand of the Red Admiral project. This generation asset participates in wholesale market arrangements, is separately metered, and meets prescribed availability and other technical requirements as specified by EirGrid, in order to support security of supply.

It is proposed that the data centre operator will report to the System Operator annually in relation to their use of renewable energy (directly or through Corporate Power Purchase Agreements (CPPAs)) and their site's emissions. Reporting will align with the requirements of the EU's EED article 12 on data centre reporting.

3.1 Energy Concept

The energy centre monitors the national grid for stability and low carbon energy content on a predictive basis. In this way, it can procure green electricity from the grid, absorb energy from the grid. The adjacent Castlelost FlexGen plant will export electricity to the grid when required.

The system can adapt to the available energy sources to optimise for the most sustainable solution at all times, for example, at times when the grid has surplus renewable electricity generation. This is enabled by the ability of the onsite generation and storage to modulate energy output and to store energy when available using the on-site battery energy storage with a minimum of two hours of backup capacity.

By pooling the energy assets on site, the optimum mix can be adjusted based on live carbon intensity data. The data centre will be able to monitor and report its hourly carbon footprint. Predictive analysis can help the data centre tenant to best avail of the available power supply and to balance workload and the prevailing carbon intensity of the energy supply.

3.2 Energy Mix

The facility will comprise a mix of technologies at scale capable of powering the data centre with or without the electricity grid. These are detailed in the following section and summarised in Figure 1.

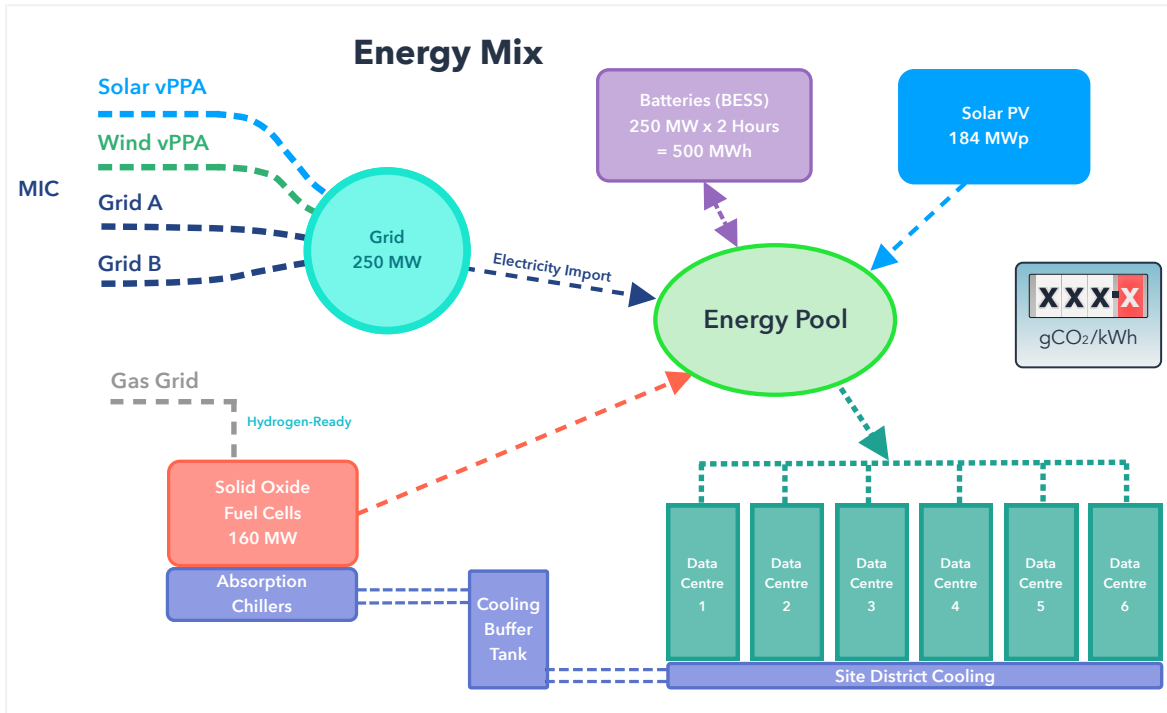


Figure 1 - Red Admiral Energy Mix.

3.2.1 Electricity Grid Connection

The site will have redundant (A and B) feeds connected to the transmission grid at the 220kV level. The site location is adjacent to an existing 220kV node on the transmission system, which has the capability to provide additional connection points.

3.2.2 Wind & Solar Power Purchase Agreements

Data centres can procure renewable energy from producers connected to the electricity grid. Virtual power purchase agreements (PPA) can link to real projects and those that do not receive support from the PSO levy and that would not be built without a contracted off-taker. Such renewable power would feed through the national grid. The procurement of additional renewables will depend on the corporate sustainability strategy of the data centre tenant(s).

3.2.3 On-Site Solar PV

A 184 MW AC peak solar PV installation is planned for initial operation. 400 acres of the site are allocated to solar power. Solar power can be used directly by the data centres or stored in the BESS for later use, for example during peak hours to alleviate demand from the grid.

3.2.4 Battery Energy Storage System (BESS)

A 250 MW Battery Energy Storage System (BESS) with 2 hours of storage capacity (i.e. 500 MWh) plays a central role in enabling the Red Admiral Datacentre Campus to operate on a fully optimised, net-zero carbon energy mix.

During the daytime, the BESS works in tandem with the 184 MWp on-site solar PV array to firm and smooth solar output, delivering a stable and continuous supply of power—even during intermittent dips in irradiance or cloud cover. This ensures that the datacentre load remains reliably met with 100% renewable power throughout daylight hours.

At night, when solar production ceases, the BESS can be recharged using renewable electricity procured via virtual or physical power purchase agreements (PPA). These agreements will prioritise excess wind energy, particularly during periods of high grid curtailment, transforming the BESS into a national wind absorption asset. This helps mitigate the curtailment of zero-carbon wind generation on the Irish grid, unlocking additional climate benefits at a national level.

Moreover, the BESS provides:

- Enhanced resilience: instantaneous response to voltage/frequency disturbances and smooth technology transitions.
- Flexible dispatching: optimised charge/discharge based on grid emissions intensity and pricing signals.
- Grid service capability: participation in system services (e.g. DS3), improving stability and unlocking revenue streams.

While all battery systems incur some round-trip efficiency losses—typically around 10% for lithium-ion—these are significantly outweighed by their advantages. By enabling the datacentre to displace fossil-fuel peaker plants and traditional diesel backup, the BESS delivers far greater environmental and operational value. Instead of relying on carbon-intensive generators during peak demand or emergencies, the battery discharges clean, stored energy—often sourced from surplus wind or solar – when it is needed most.

This not only prevents the need for polluting, high-emission backup solutions, but also helps capture renewable electricity that would otherwise be curtailed and smooths the datacentre’s load profile to align with low-carbon supply periods. In effect, the BESS transforms backup power from a passive liability into an active, climate-aligned energy asset.

Through intelligent optimisation of storage cycles and sourcing strategies, the BESS enables the Red Admiral campus to maintain net-zero operations 24/7, aligned with corporate sustainability targets and the EU Taxonomy for sustainable activities.

The project developer (Lumcloon Energy) has proven experience in operating a grid-connected BESS, for example:

- Lumcloon Energy developed Lumcloon Power and Shannonbridge Power plants in 2021. These are 100 MW x 0.5 hours each. Their design is optimised for grid frequency response. i.e. controlled output response sub 150ms with very high ramping rate.

At the time this was by far the largest battery project in Ireland and one of the largest in Europe. Lumcloon Energy partnered with Hanwha Energy to construct the project. Lumcloon Energy remains a minority owner of both plants. These two units have been operating successfully since 2021 and have on occasion been called upon maintain the stability of the Irish grid.

- Lumcloon Energy is currently constructing Shannonbridge Power B, which is a 2.5-hour x 63.5 MW battery coupled with a 4,000 MW large synchronous condenser (grid stabiliser). This is due to operate commercially in Q3 of 2025. This again is a partnership with Hanwha Energy.
- Lumcloon Energy is developing several other BESS plants on the Irish grid which will provide long duration energy storage. Lumcloon Energy is also supporting Energy dome in the development of a long duration mechanical energy storage system. This project is due to operate commercially by October 2028.

Such large scale grid-connected battery projects have not been seen in the Irish data centre sector to date. Lumcloon Energy's expertise will be invaluable in applying BESS technology to a data centre.

3.2.5 Solid Oxide Fuel Cells (SOFC)

A 160 MW modular Solid Oxide Fuel Cell (SOFC) system will generate electricity from natural gas or hydrogen, or indeed a blend of natural gas (including biomethane) and hydrogen (as the supply of renewable gas develops). Fuel cells operate at an efficiency of between 54% and 64%. This innovative technology can also be configured to capture high purity carbon dioxide. Waste heat from the fuel cells will also be recovered, further improving the efficiency of fuel utilisation (up to 80%) and providing cooling to the datacentre.

The modular fuel cells will be run at least at 10% of load at all times to optimise carbon emissions and efficiency. Biomethane, when available, can be imported through the national gas grid to negate the carbon impact of this baseline running.

Fuel cells produce negligible NO_x and SO_x emissions compared to conventional generation.

3.2.6 Above Ground Installation (AGI)

A new Above Ground Installation (AGI) will provide natural gas from the national grid. The Gas Networks Ireland transmission pipework system runs alongside the site.

3.2.7 Cooling Technology

The data centre will initially be configured for air-cooling. As densities increase (with A.I. applications, for example), closed-loop liquid cooling at the rack (or chip) level may be incorporated. The air-cooled system is closed-loop (not evaporative) and will not therefore require large quantities of water. Data centres in Ireland use only very small quantities of water for cooling.

Quote from Irish Water - ⁱⁱ

"Data centres are non-domestic customers and pay for water. Water usage nationally for data centres is less than 0.2% of overall total demand and, due to the use of advanced technology in this area, we don't envisage this level of demand significantly increasing."

"We have strategies in place to mitigate demand from data centres, such as limiting peak flows to the development and ensuring the developer provides adequate private storage to manage needs during periods of peak demand."

The Red Admiral system will, as needs evolve, collect waste heat from the fuel cells (SOFC) for re-use. This heat can be fed to an absorption chilling system providing chilled water to the data centre cooling system in a closed-loop. This will allow up to 80% fuel utilisation, significantly reducing the carbon intensity of the facility when operating on the fuel cell energy supply.

3.2.8 Waste heat re-use District Heating

There are no significant heat customers in the vicinity of this development, as it is in a rural setting. It is proposed instead to re-use the waste heat from the fuel cells to power the supplementary data hall cooling system using absorption chillers.

3.2.9 Monitoring and control

The various energy systems will be optimised based on real-time carbon dioxide intensity monitoring. The lowest carbon emitting technologies will get priority.

Typically, the priority order will be:

1. Renewables first (solar). Any solar power available from the 184 MWp Solar PV farm will be either used directly or stored in the BESS.
2. Grid or SOFC (whichever is has a lower carbon intensity at that time - checked hourly).
3. BESS for managing transients and transient loads and time-shifting renewable energy surpluses.

This priority order is modelled further in the analysis contained in this report.

The emissions factors used in this analysis are shown in Figure 2 below.

Emissions Factors - Summary

Resource	gCO2/kWh	Note
Electricity Grid	97 - 478	Hourly variation in 2023
Natural Gas	204	Natural gas grid
SOFC on Biomethane	0	Zero Emissions
SOFC on Natural Gas	349	58.5% Efficiency
SOFC with Absorption Chillers	255	80% Efficiency
Solar PV	0	Zero Emissions

Figure 2 - Emissions factors used in this analysis.

3.3 Castlelost FlexGen

The RED Admiral facility shares its location with Castlelost FlexGen. Under construction by the developer (Lumcloon Energy), this grid-connected, market participating peaking plant aligns perfectly with the CRU proposed decision on large energy users connection policy (CRU 202504). It provides dispatchable generation to the grid greater than the maximum demand of the proposed data centre. Refer to Figure 3 - Red Admiral and Castlelost FlexGen.

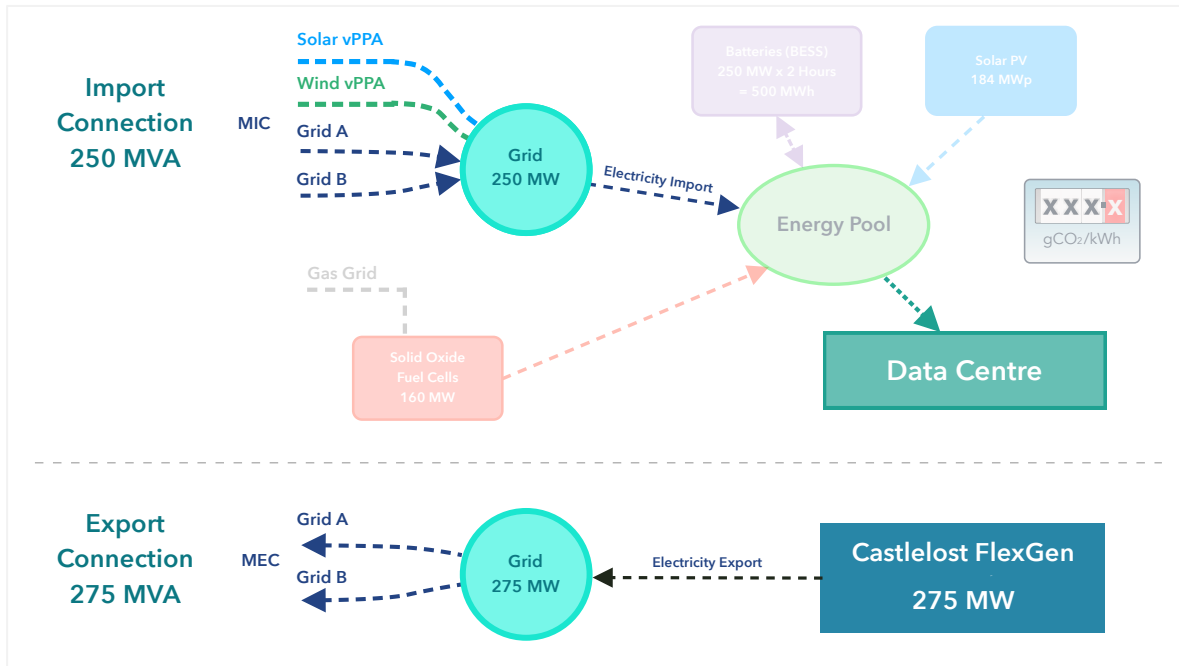


Figure 3 - Red Admiral and Castlelost FlexGen.

The RED Admiral and Castlelost FlexGen projects share a node on the 220kV network, connected using separate transformers. They are electrically independent but also proximate.

3.4 Energy and Carbon Modelling

In this section we model the energy system to demonstrate the benefits of the distributed energy resources, and compare its benefits against using just the national grid.

3.4.1 System Model Inputs

Real grid carbon intensity data from 2023 (ref. Figure 4) was used to understand the expected hourly carbon footprint of the data centre. Fifteen-minute data from EirGrid was combined to show hourly carbon intensity in the Irish grid. The hourly grid carbon intensity of the Irish electricity grid ranged from 97 gCO₂/kWh to 478 gCO₂/kWh in 2023. This variation in grid carbon intensity is a function of the availability of renewable energy, the baseload generation type, and demand on the system at that time.

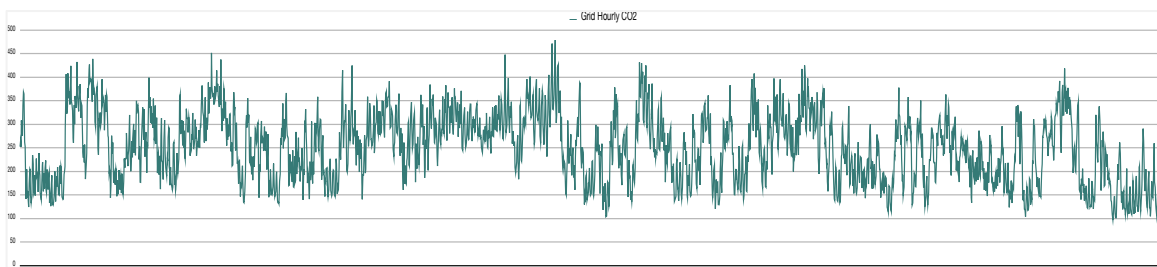


Figure 4 - Hourly Grid Carbon intensity data for 2023.

A solar irradiance model using 2023 data for the specific site location was used to calculate the expected hourly output from a 120 MWp solar PV farm. This was later scaled up in our model to 184 MWp. The model, "Photovoltaic Geographical Information System"¹ is operated by the EU's Joint Research Centre (JRC) and is freely available. The summed daily (MWh) output for a 120 MWp Solar PV farm located in the midlands is shown in Figure 5.

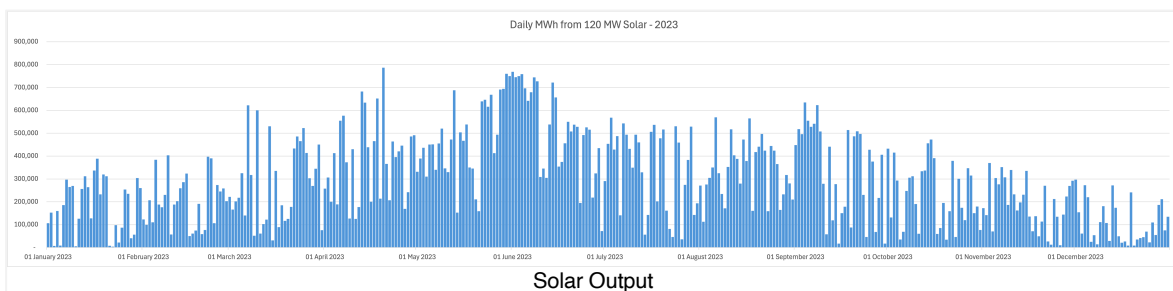


Figure 5 - Solar Output model (120MWp PV) using 2023 solar data at the location.

¹ JRC Photovoltaic Geographical Information System: https://re.jrc.ec.europa.eu/pvg_tools/en/

3.4.2 Scenario Selection

To understand how the DER might operate in typical and extreme scenarios, we selected daily (24 hours) grid and solar data for twelve specific days. These include the windiest day and sunniest day, as well as typical days as listed in the table in Figure 6 below, and shown on the 2023 calendar in Figure 7. This gives a wide spread across seasons in varying conditions.

Date	2023	Attributes
17 January 2023	Coldest Day	Lowest average temperature
23 January 2023	Dullest Day	Least solar output
23 February 2023	Feb Day	Typical day
20 April 2023	Sunniest Day	Most solar irradiance
20 May 2023	Calmeast Day	Lowest wind generation
21 June 2023	Carbon Intense day	Highest grid CO2 intensity
9 July 2023	July Day	Typical summer day
23 August 2023	Typical Day	Typical August day
7 September 2023	Warmest Day	Highest average temperature
16 October 2023	October Day	Typical October day
13 November 2023	Windiest Day	Highest Wind generation
16 December 2023	Greenest Day	Lowest grid CO2 intensity

Figure 6 - Twelve days with different scenarios.

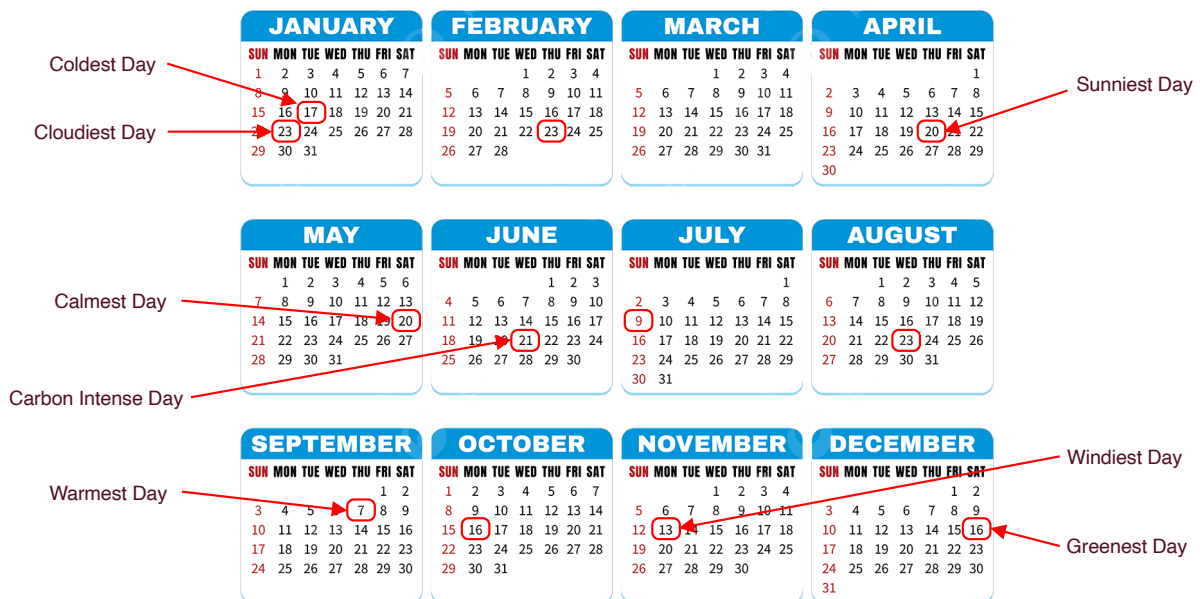


Figure 7 - 2023 calendar showing selected days.

3.4.3 Scenario Analysis - Resource Selection

The analysis in Figure 8 demonstrates each hour of these twelve selected days illustrating the various energy components. Grid is used only when the grid CO₂ intensity is low, solar is always used when available, fuel cells (SOFC) are used when optimum to do so. These scenarios assume that the data centre is operating at full load (250 MW), which represents an extreme and untypical setup. Typical annualised data centre loads would be 50 - 60% of capacity, with higher power demand levels only experienced on, for example, the warmest days when more cooling is required. Data centre infrastructure is designed for maximum demand.

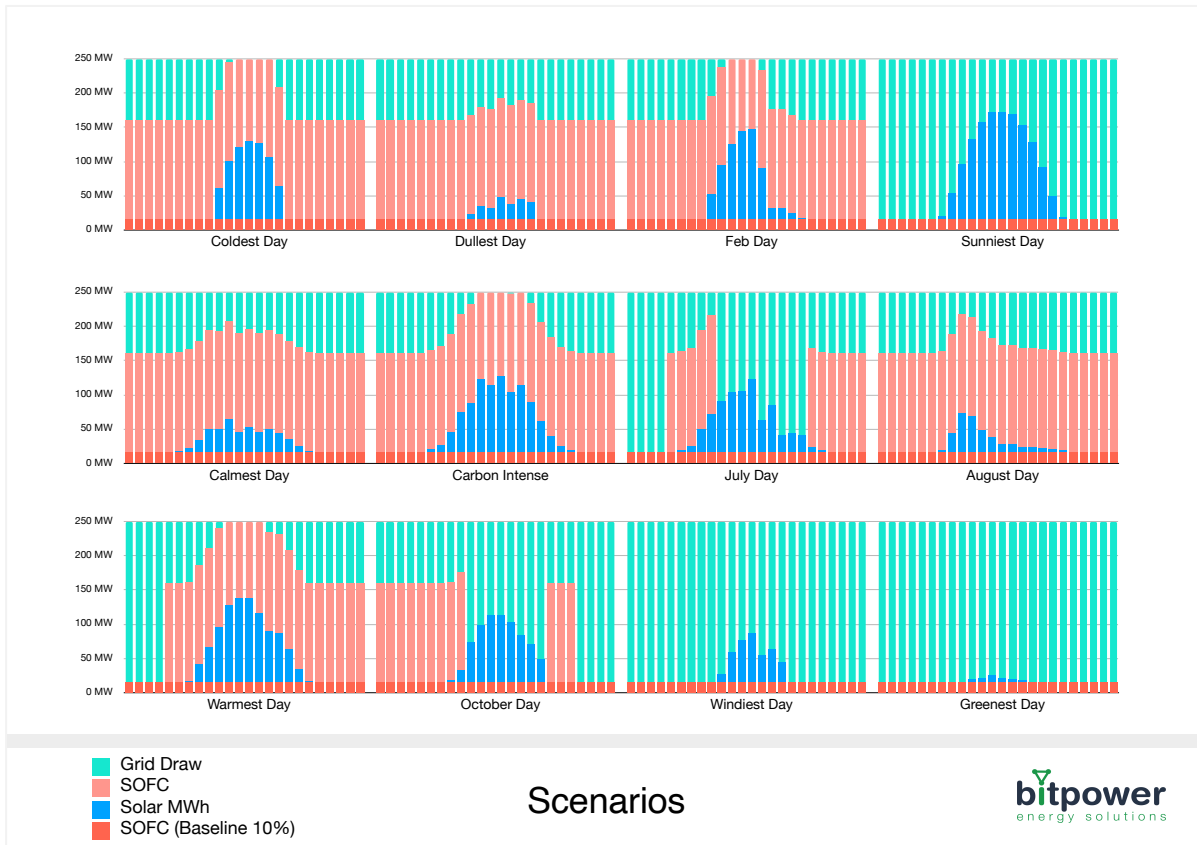


Figure 8 - Scenarios and optimised energy source selection.

These scenarios show which resources would be called upon to power the data centre during each hour of the selected days. On the sunniest day in 2023, for example, when the solar irradiance was highest, the grid happened also to have relatively low carbon intensity, and so grid would have been used. The calmest day would have correspondingly low wind generation and therefore have a higher grid carbon intensity. The SOFC would have received priority on that day. The greenest day (lowest grid carbon intensity) also had very low solar irradiance. Each scenario presents different options for resource allocation.

3.4.4 Scenario Analysis - Carbon Intensity

We calculated the carbon intensity of the electricity that would have been used by the data centre on each hour of these twelve days, based on the selected resource usage at that time. This is shown in Figure 9 below. Green lines are the actual grid carbon intensity on those days, and the blue lines show the resulting carbon intensity from the DER.

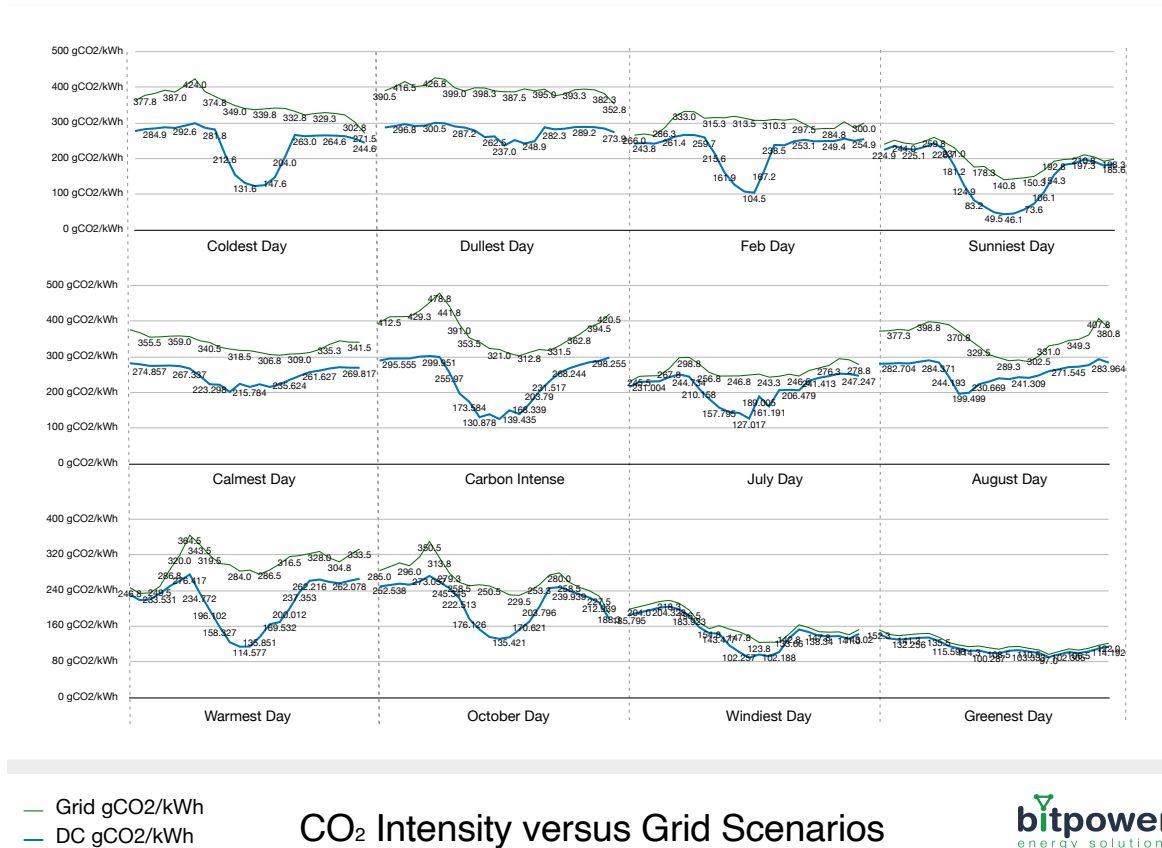


Figure 9 - CO₂ Intensity on selected days versus grid (2023 data).

The analysis shows that the DER can achieve better carbon intensity than the national grid in any of the selected extreme and typical scenarios. As the SOFC needs to run at least 10% of its capacity at all times, the analysis assumes the SOFC is powered with renewable biomethane for its baseload demand.

The RED Admiral Distributed Energy Resource system can deliver a demonstrably improved carbon intensity of power over using just the national electricity grid. It should also be noted that the ultimate tenant in the data centre can further improve their carbon intensity by procuring additional renewable energy through PPAs with renewable energy generators located on the Irish grid.

The analysis assumes that the BESS is used solely for transient management. Utilising the BESS to fine-tune interaction with the grid would further enhance the benefits of the DER. The developer has experience with grid-connected BESS on the Irish system and is well-placed to apply learnings from those projects to the benefit of the RED Admiral project and the overall electricity grid by enabling reduced renewable curtailment and improving grid stability. We describe some operation modes for the BESS in section 3.6.

3.5 Hourly Modelling Examples

To demonstrate the DER approach in more detail, we modelled some hourly examples to show how the different sources of energy would be utilised and the resulting carbon intensity. For these examples, we assume the data centre is at full demand (250 MW), which is the worst-case. Each example draws from different sources on an hourly basis.

3.5.1 Hourly Modelling Example 1 - Sunny and Windy

The example below (Figure 10) shows 90 MW available from the Solar PV plant, and the grid intensity is 332.1 gCO₂/kWh. SOFC is running at its minimum 10%, and BESS is not in use / fully charged. The grid delivers 144 MW. The carbon intensity of the power delivered to the data centre is 216.0 gCO₂/kWh, which is a 35% improvement on the grid. Solar availability is the main contributor to the carbon improvement.

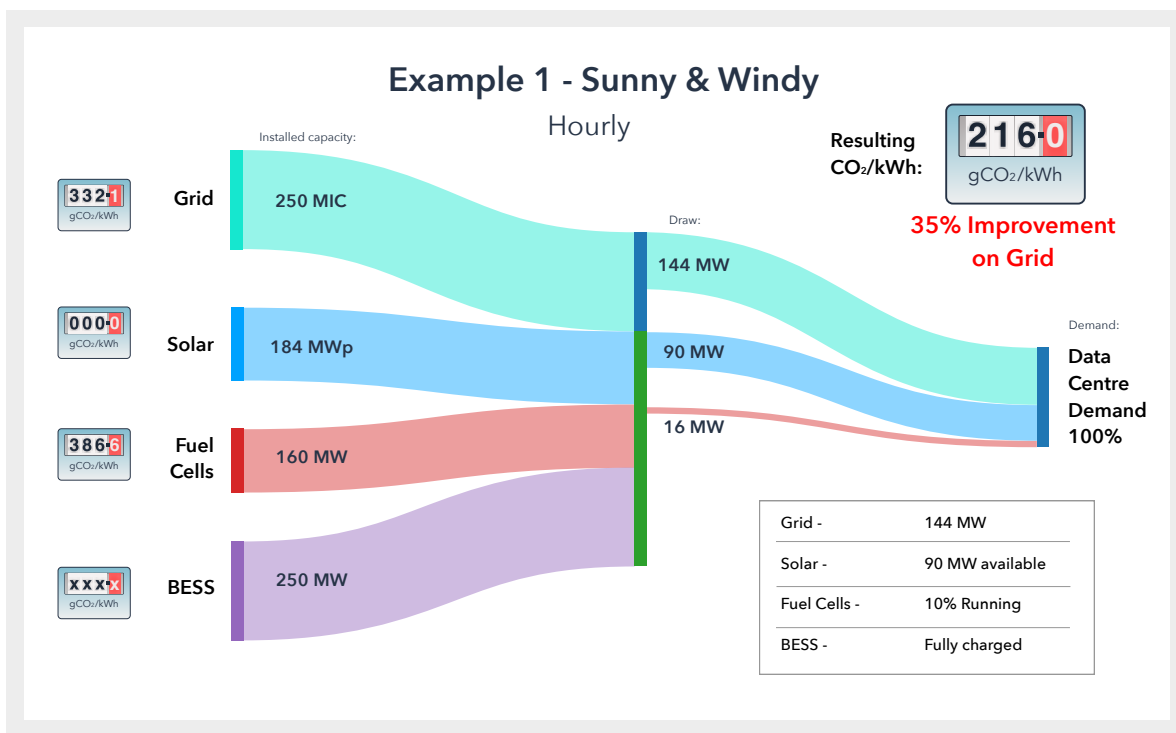


Figure 10 - Example 1 - Sunny & Windy.

3.5.2 Hourly Modelling Example 2 - Sunny and Calm

This example (Figure 11) shows 90 MW available from the Solar PV plant, and the grid intensity is 442.1 gCO₂/kWh. SOFC is running at 100%, as it is greener than the grid at the hour. The BESS is not in use / fully charged. The power delivered to the data centre is 247.4 gCO₂/kWh, a 44% improvement on the grid.

The relatively high carbon intensity of the grid at this hour is related to the calm conditions, yielding very low wind generation. The high solar irradiance helps to further improve the carbon intensity of the data centre. These are the conditions that best demonstrate the benefits of using the DER. The data centre draws no power from the grid when the grid is under pressure for renewables.

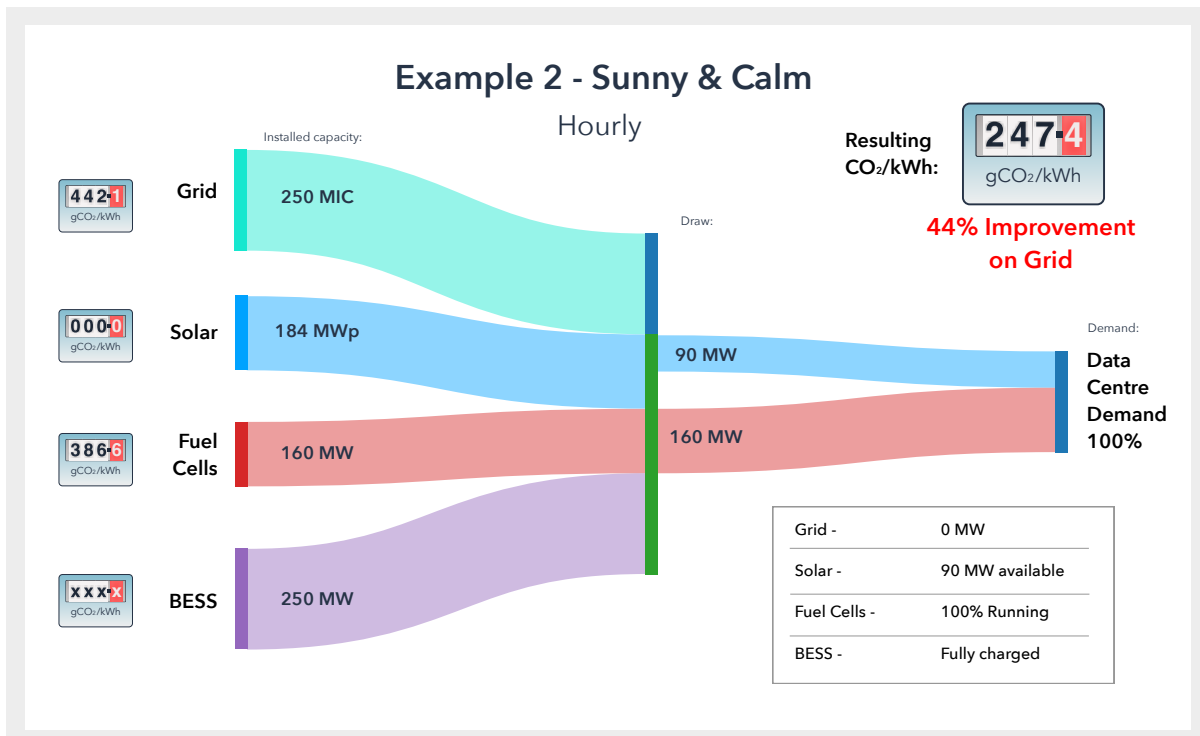


Figure 11 - Example 2 - Sunny & Calm.

3.5.3 Hourly Modelling Example 3 - Dull and Windy

This example (Figure 12) shows just 10 MW available from the Solar PV plant, and the grid intensity is low at 255.1 gCO₂/kWh. SOFC is running at its minimum 10%, and BESS is not in use / fully charged. The grid provides 288 MW. The power delivered to the data centre is 253.3 gCO₂/kWh. This is marginally better than just grid, with just 0.7% improvement.

This situation demonstrates that the data centre can absorb wind power when available. The windy conditions yield low grid carbon intensity, making the grid the better choice.

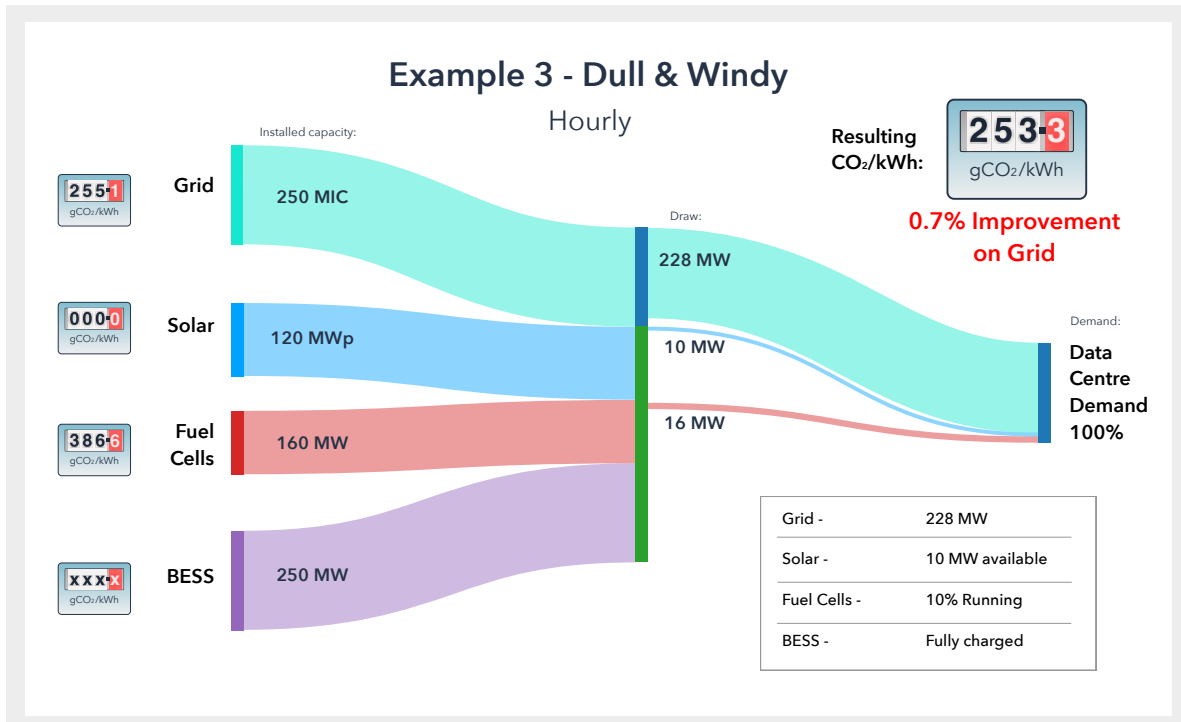


Figure 12 - Example 3 - Dull & Windy.

3.5.4 Hourly Modelling Example 4 - Dull and Calm

The example below (Figure 13) shows 10 MW available from the Solar PV plant, and the grid intensity is high at 420.1 gCO₂/kWh. SOFC is running at 100%, and BESS is not in use / fully charged. The grid provides 80 MW in this condition. The power delivered to the data centre is 381.9 gCO₂/kWh, a 9.1% improvement on the grid.

Low solar and wind availability in this hour means the data centre provides 68% of its requirement behind the meter, and 32% from the grid.

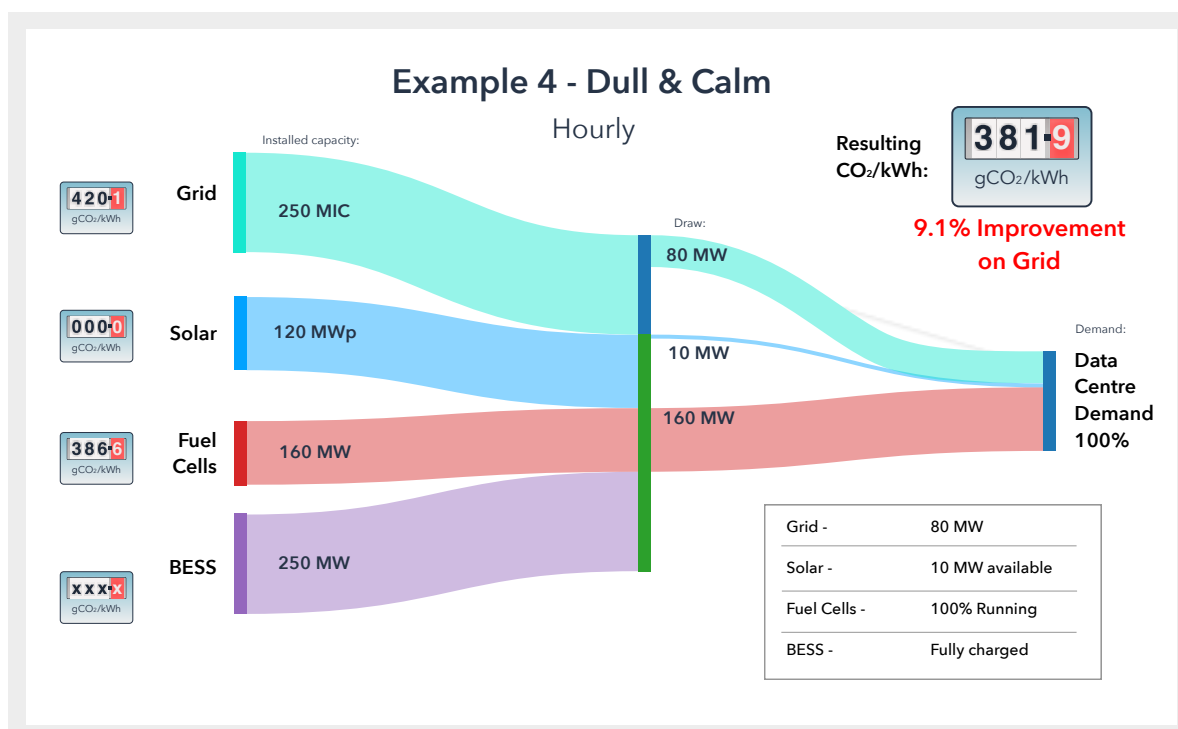


Figure 13 - Example 4 - Dull & Calm.

These examples assume that the data centre demand is 100% (i.e. 250 MW). In reality, the data centre demand will always be less than the maximum, allowing for more flexibility in selection and optimisation of resources, whilst also providing guaranteed power availability to the data centre tenant. This satisfies both the grid and the customer.

For the wider analysis in section 3.7, the selection criteria were applied to every hour of 2023.

3.6 Battery Energy Storage System Examples

The examples demonstrated in section 3.5 do not consider the additional benefits associated with the battery energy storage system (BESS). The 250 MW x 2 hour capacity can store 500 MWh of electricity for use at times of grid constraint. It can, for example, absorb surplus wind energy to avoid curtailment and use it later to power the data centre and thereby remove demand from the grid. It also provides stability for the data centre and the grid. Some BESS charging / discharging examples are illustrated in the charts:

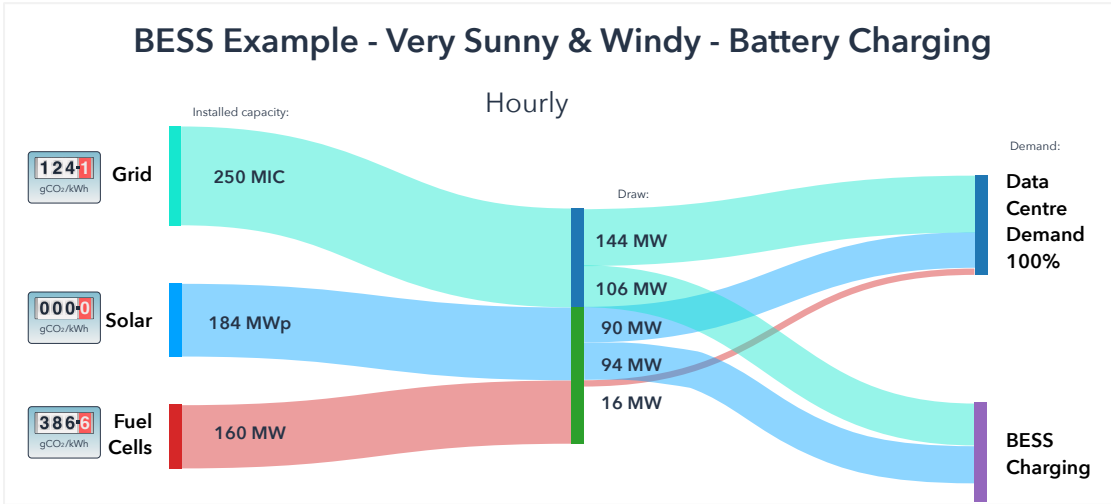


Figure 14 - BESS example 1.

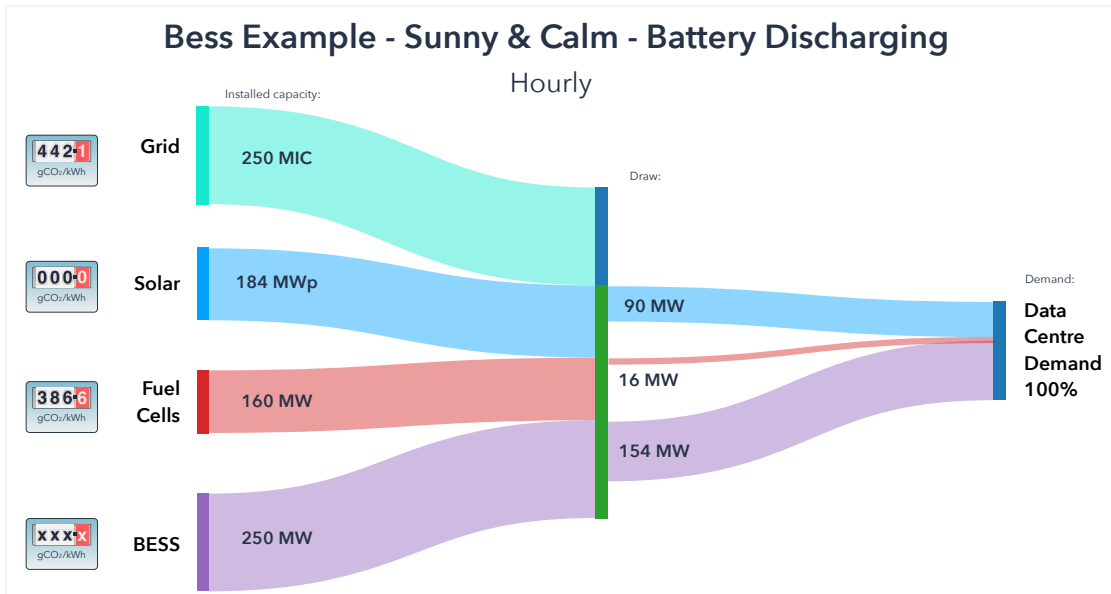


Figure 15 - BESS example 2.

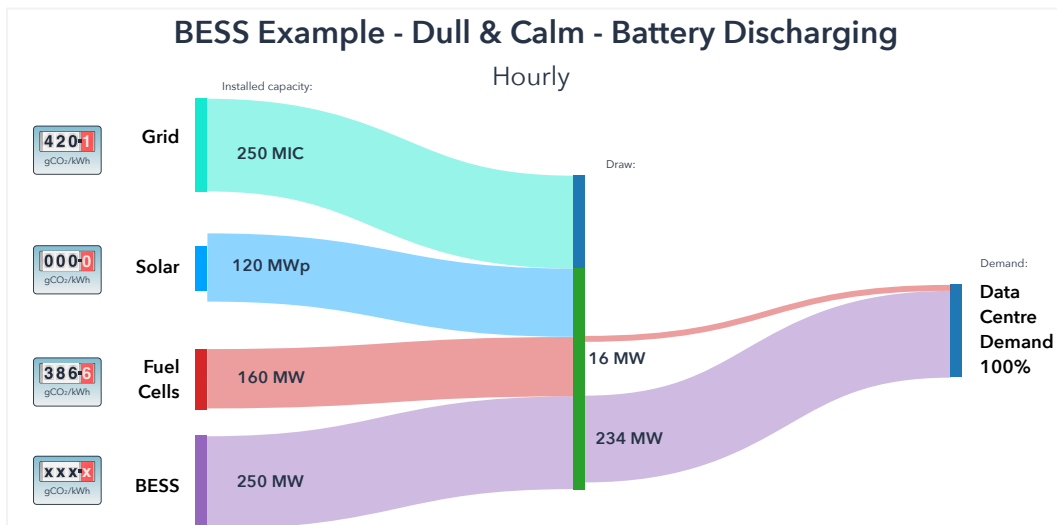


Figure 16 - BESS example 3.

3.7 Annual Energy and Emissions

The annual contribution of the various energy resources is modelled below (Figure 17) for increasing ramp rates in 50 MW steps from 50 MW to 250 MW. At 50 MW, the fuel cell (SOFC) generates 200 GWh over the course of the year. The 184 MW solar farm would have produced 167 GWh. This is based on 2023 solar irradiance and grid carbon intensity data. The grid would have provided the remaining 71 GWh required. As the demand grows, the solar output remains static at 167 GWh, and the SOFC increases until its maximum capability is reached (742 GWh).

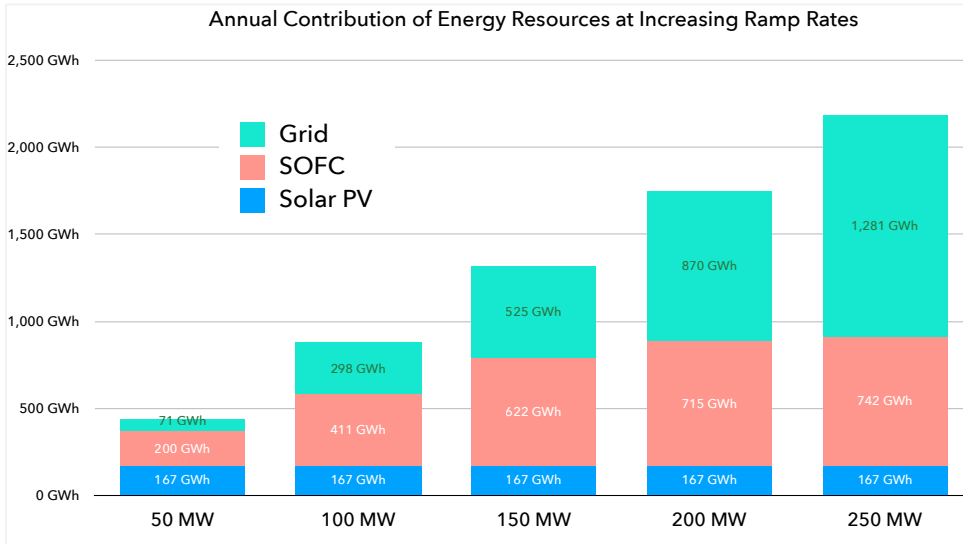


Figure 17 - Annual contribution of electricity.

The annual CO₂ emissions are favourable compared to the national grid which is modelled at 249.1 gCO₂/kWh for 2023 (based on 15-minute EirGrid data). At the full 250 MW demand for a full year (worst case), the DER achieves 225 gCO₂/kWh, which is a 9.7% improvement on grid. At 50 MW demand, the DER can achieve 94.9 gCO₂/kWh, which is a 61.9% improvement on the grid. Other demand levels (100 MW, 150 MW and 200 MW) are illustrated also.

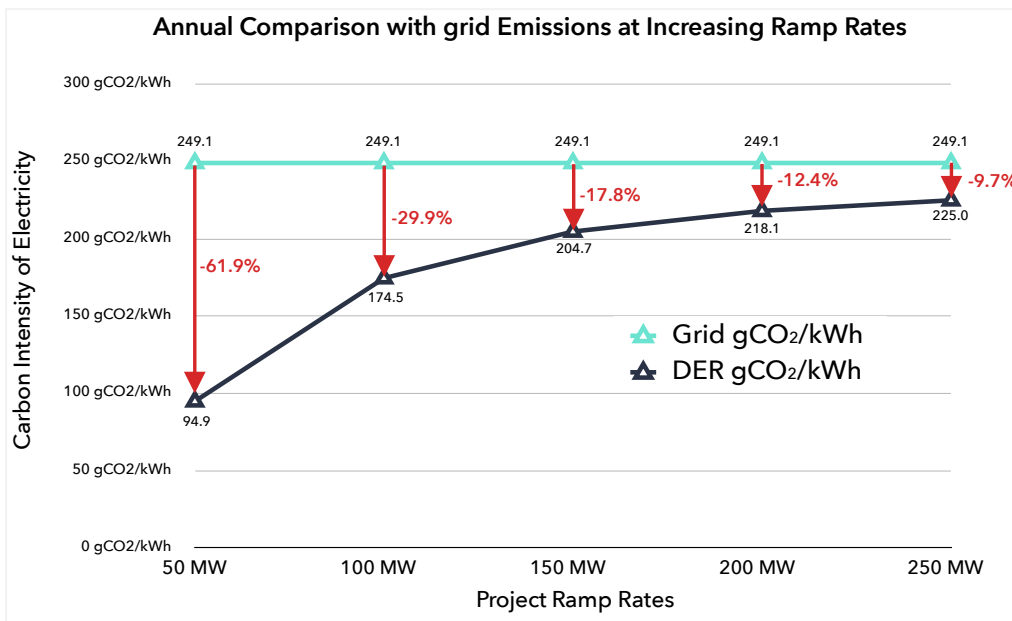


Figure 18 - DER emissions compared to national grid.

4 Six Principles for sustainable data centre development

In 2022, the Irish Government issued the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy. The statement outlines the importance of data centres and suggests principles for future development. Some quotes relevant to the Red Admiral project are outlined below:

"Data centres are core digital infrastructure and play an indispensable role in our economy and society. Data centres provide the foundation for all almost all online aspects of our social and work lives, including video calling, messaging and apps, retail, banking, travel, media, and public service delivery such as healthcare and welfare."

"...The capacity that will be available will be in regional locations and must assist in national ambitions to deliver an efficient, low-carbon energy system..."

"This Statement therefore sets out the principles that will ensure that the data centre infrastructure that can be accommodated contributes positively to our climate and digital ambitions."

Electricity Grid Capacity:

*"...data centres in **regional locations** could be located near to renewable generation to reduce their burden on the grid and ensure that they consume renewable energy when available. While further network reinforcement might open up more regions to data centre development, this investment will need to ensure that network reinforcement also serves grid decarbonisation objectives through connection of renewables."*

*"Outside of Dublin, there may also be opportunities to develop additional grid capacity where private investment can co-deliver grid connection, electricity generation and demand opportunities, perhaps alongside fibre optics / telecoms infrastructure, in strategically and environmentally suitable locations close to significant national infrastructure. For example, **the availability of high-capacity transmission system infrastructure, renewable energy generation and existing gas grid in parts of the Midlands may make the region suitable for 'energy park' type developments.**"*

Decarbonisation:

"Given the intermittency of our renewables, flexibility of data centre demand to 'match' renewable generation will become increasingly important in future and can assist in meeting our decarbonisation objectives."

The statement identified six principles for sustainable data centre development:

1. Economic Impact
2. Grid Capacity and Efficiency
3. Renewables Additionality
4. Co-Location or Proximity with Future-Proof Energy Supply
5. Decarbonised Data Centre by Design
6. SME Access and Community Benefits

This section discussed how the Red Admiral project proposes to adhere to these principles.

4.1 Economic Impact

The Government has a preference for data centre developments associated with strong economic activity and employment. In particular, it favours developments in regional locations, aligned with the National Planning Framework and Regional Spatial and Economic Strategies, which will embed the technology sector in locations and communities that can benefit from this investment, employment and spillover effects. In assessing economic impact, the totality of the Irish-based economic impact should be considered and factors such as associated total corporate employment, exports, wage levels, Irish materials/services purchased taken into account.

The availability of digital infrastructure should serve our national digitalisation objectives, drive innovation, productivity and skills across our economy aligned to the National Digital Strategy.

The multi-billion euro development is set to deliver significant economic benefits to the Midlands region, creating hundreds of construction jobs during its build phase and generating long-term employment in data centre operations, energy management, and associated industries. Strategically located near two dark fibre networks, the site offers a prime position for the storage and processing of cloud and AI data without the need for extensive works. By situating the project in the Midlands, Red Admiral DC aligns with Ireland's digitalisation and decarbonisation transition policies, supporting balanced regional development, alleviating infrastructural pressure on Dublin, and revitalising the local economy.

The Economic Impact Assessment report estimates the project will create 760 direct jobs in construction and operations and over 1,000 indirect jobs for the region. It will contribute €117.8m in gross value add for the regional economy.

4.2 Grid Capacity and Efficiency

The Government has a preference for data centre developments that make efficient use of our electricity grid, using available capacity and alleviating constraints. Datacentres should engage collaboratively with the respective system operators to understand capacity availability and required grid services across geographic locations, and where connection can be facilitated, provide grid services such as to best utilise available infrastructure to the benefit all electricity customers.

This is in line with the CRU Direction to the System Operators related to Data Centre grid connection processing (CRU/21/124).

The development is located on the 220kV line between Shannonbridge [SH] and Maynooth [MAY] 220kV Substations. A new Substation Castlelost [CST] has been constructed on the site to facilitate a new reserve-gas grid-connected generation facility (Castlelost FlexGen). That project is due to go live in 2025. The new CST substation has spare connection points sufficient for the Red Admiral project.

The CRUs LEU Connection Policy Proposed Direction to System Operators (2025) proposes a criteria for grid connections for data centres:

“The ability of the data centre applicant to bring onsite or proximate dispatchable generation (and/or storage) capacity equivalent to or greater than their demand, that participates in wholesale market arrangements, is separately metered, which meets appropriate availability and other technical requirements as may be specified by the relevant SO, in order to support security of supply.”

Castlelost FlexGen (275 MW) satisfies this proposed criterion for on-site or proximate dispatchable generation, alternatively the onsite DER may also satisfy this proposed criterion.

Planned EirGrid capacity upgrades to the lines - from EirGrid’s Transmission Development Plan - “Castlelost to Maynooth” circuit upgrade is in the early stages.

The Red Admiral project integrates advanced Decentralised Energy Resource (DER) technologies, enabling the facility to achieve energy independence while actively supporting the national electricity grid.

“By integrating cutting-edge energy technologies, we are ensuring energy independence with the added ability to modulate the onsite generation to prioritise the lowest carbon intensity energy source via the grid and onsite solar continuously.”

The project is designed with grid support in mind. The developer is closely monitoring the CRU grid policies for data centres and strives to meet the expected conditions. EirGrid have been engaged to provide the grid connection via existing infrastructure (220kV overhead lines). A grid connection offer (MIC) is expected to be issued to the project in due course.

4.3 Renewables Additionality

The Government has a preference for data centre developments that can demonstrate the additionality of their renewable energy use in Ireland. Developments should provide clear additionality in renewable energy delivery in Ireland, whether through new generation, repowering or otherwise increasing in-country renewable energy capacity - proportionate to the impact of their energy demand.

The data centre will include a 184 MWp (peak) behind-the-meter solar PV farm, which is projected to produce 167 GWh of carbon-free electricity annually for the project. The solar PV farm is not subsidised by RESS.

The solid oxide fuel cells are a future-proofed hydrogen-ready technology. Biomethane may be sourced via PPA to provide baseline power for the fuel cells. Approximately 260 GWh (Th) of biomethane per annum will be sourced for this purpose.

As well as the on-site renewables, the data centre customer has the option to procure additional renewable electricity through the grid using virtual power purchase agreements.

4.4 Co-Location or Proximity with Future-proof Energy Supply

The Government The Government has a preference for data centre developments in locations where there is the potential to co-locate a renewable generation facility or advanced storage with the data centre, supported by a CPPA, private wire or other arrangement. Where the combination of technologies at a generation facility is built to match the demand capacity factor (e.g. endeavouring to match the maximum import capacity with export capacity), the same infrastructure may be able to assist both demand customers and generation facilities (wind/solar/battery farm).

This would make efficient use of grid investments, reduce curtailment and potentially enable significant decarbonisation of the data centre. The Government also encourages the co-location of downstream value-adding activities that can make use of carbon, excess heat and other outputs from the data centre activity, such as for horticultural activities or district heating schemes.

The project includes a variety of future-proof technologies at scale including solar, battery energy storage, fuel cells, and absorption chilling. These technologies are designed to provide resilience and decarbonisation.

A 250 MW (500 MWh) Battery Energy Storage System (BESS) will supplement the power supply and enable flexibility. Fuel cells will make up the bulk of the electricity supply when the grid has low capacity (or at times of high carbon intensity). Excess heat from the fuel cells will be used to provide cooling to the data centre through absorption chillers.

The data centre's innovative DER system sets it apart from traditional facilities. Rather than relying heavily on the national grid, it will generate, store, and manage its own energy on-site using a combination of technologies. This includes a 160 MWe Solid Oxide Fuel Cell (SOFC) system for efficient and clean power generation, a 250 MW (500 MWh) Battery Energy Storage System (BESS) for stability and resilience, and a 184 MWp solar photovoltaic array to harness renewable energy. These features will reduce reliance on grid electricity at times of low renewable generation or at grid generation supply constraints, and minimise transmission losses.

4.5 Decarbonised Data Centre by Design

The Government has a preference for data centres developments that can demonstrate a clear pathway to decarbonise and ultimately provide net zero data services. It is expected that data centres will align with the EU Climate Neutral Data Centre Pact energy efficiency and water use targets and set themselves targets to achieve zero-carbon electricity use at all hours. System operators will work with large energy users to facilitate accurate hourly emissions reporting, grid carbon-intensity transparency, and allow data centre to optimise computing loads to maximise use of renewables and minimise carbon emissions (as per Action 99 of Climate Action Plan 2021).

The project monitors the carbon intensity of the grid on an hourly basis to optimise the energy supply. Different scenarios have been modelled and a full year's hourly analysis demonstrates that the energy centre will **on average and at all times** operate at lower carbon intensity than the national grid.

The development will feature six two-story data halls designed with environmental sustainability in mind. Advanced cooling and heat recovery systems will optimise energy efficiency and water conservation. Designed to meet Leadership in Energy and Environmental Design (LEED) standards, Project Admiral underscores Red Admiral DC's commitment to sustainability and operational excellence.

The data centre will be capable of using absorption chilling technology to optimise the efficiency of the fuel cells and cool the data centre.

Red Admiral DC will meet the objectives of the Climate Neutral Data Centre Pact including metrics for water and PUE.

All data centres over 500 kW are required to report to the EU's EED database.

4.6 SME Access and Community Benefits

The Government has a preference for data centre developments that provide opportunities for community engagement and assist SMEs, both at the construction phase and throughout the data centre lifecycle. Data centres should provide benefits for regional locations and their surrounding areas through place-making, community engagement and collaboration with local and regional stakeholders to ensure they offer value to the communities in which they locate.

Data centres are also construction projects, built environment and physical investments of scale. By necessity, they have an impact on the geography and communities in their vicinity. Data centre developers should make every effort to minimise the disruption of their construction on these communities.

The developer (Lumcloon Energy) is active in supporting local projects.

Lumcloon Energy and its subsidiary companies have a track record of community engagement which will continue at a scale appropriate to the project.

The Economic Assessment Report outlines how the development will support local policies and strategies including the Local Economic and Community Plan (LECP), the draft County Development Plan, the Regional Spatial & Economic Strategy, various Sector Strategies, Westmeath Economic Development Strategy, Local Climate Action Plan, Just Transition Plan for region, and the Westmeath County Council Corporate Plan.

5 Projecting Future Grid Trajectories

The analysis in this report assumes a freezing of the carbon intensity of grid electricity at 2023 levels (c. 249 gCO₂/kWh). With increasing wind and solar generation, these intensities are expected to reduce significantly. Government ambition is to deploy significantly more renewables, thereby improving the carbon intensity of electricity generation. The EPA’s latest (May 2025) “Ireland’s Greenhouse Gas Emissions Projections 2024-2055”ⁱⁱⁱ states that emissions from energy industries are projected to decline from 7,860 kTCO₂ eq. in 2023 to 4,362 kTCO₂ eq. in 2030 and 2,462 kTCO₂ eq. in 2040 with existing measures – see Figure 19.

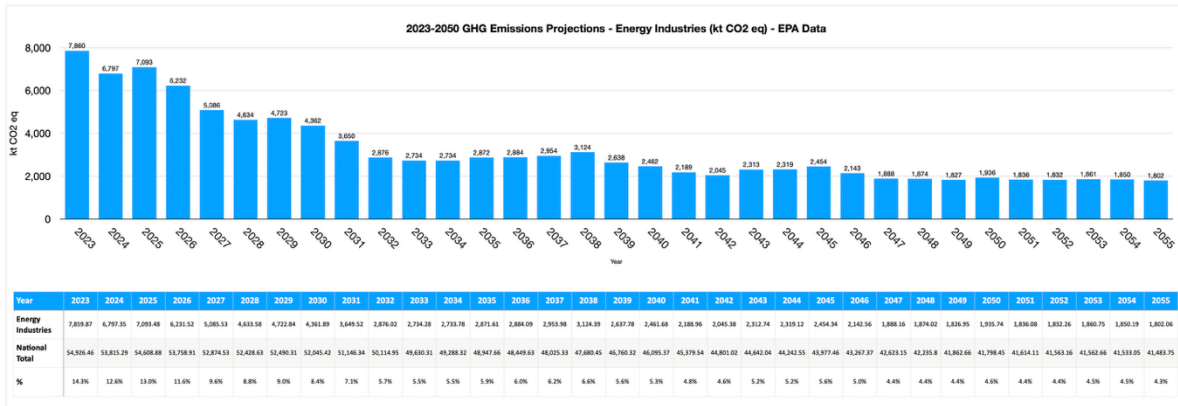


Figure 19 - EPA Emissions projections for Energy Industries 2023 - 2055.

SEAI projections^{iv} show that electricity demand is expected to increase from 31TWh in 2023 to 57.5 TWh by 2040. Assuming that the EPA and SEAI projections are aligned, we can see what the carbon intensity of grid electricity is expected to be up to 2040 (see Figure 20).

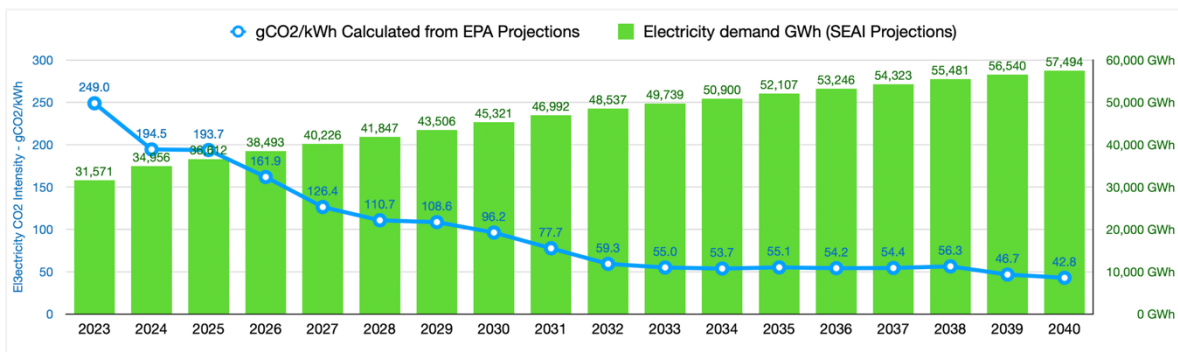


Figure 20 - Grid electricity demand and carbon intensity to 2040.

The 2023 intensity of 249 gCO₂/kWh would be 96.2 gCO₂/kWh in 2030 and 42.8 gCO₂/kWh in 2040. These levels will change the dynamic of the DER, effectively reducing the emissions footprint in line with the grid.

GNI have also set an ambitious target to repurpose the gas transmission network using biomethane and hydrogen by 2045 with intermediate phased development. Pathway to a Net Zero Carbon Network (2024) (<https://www.gasnetworks.ie/pathway-net-zero>). The increasing availability of renewable gas on the GNI network will significantly improve the carbon intensity of the SOFC, potentially to zero, and the facility operation overall, in line with the overall electrical grid.

The Red Admiral project is equipped to take full advantage of whichever source of energy has the least carbon impact on an ongoing basis. The analysis, scenarios, and examples detailed in this report are effectively the worst-case, taking a snapshot of 2023 and running the data to demonstrate the result. As Ireland's gas and electricity grids decarbonise, Red Admiral will further improve.

6 Conclusions

The Red Admiral project utilises a combination of energy resources to deliver a robust energy system that sits alongside the national grid without being fully dependent on it. It takes advantage of renewable energy when available. It achieves lower carbon intensity than the grid whilst being adaptable to accommodate future improvements in national renewables.

The policy for grid connections for data centres could well have been developed with this type of project in mind. It is in an unconstrained grid area, it provides dispatchable power to the grid, it offers flexibility in demand, and it monitors and controls based on hourly carbon intensity.

The government statement on data centres holds a preference for projects that embrace renewables and energy parks. This project locates diverse and low-carbon energy resources on site. It is proposed by an established Irish utility developer and brings development to a region outside Dublin.

Operational conditions and regulations for data centres are evolving at an EU level. The development will adhere to reporting requirements and will, by its nature of operating at an optimum level on an hourly basis, have granular data and metrics available for reporting.

Our analysis shows that utilising the distributed energy resource, removing diesel engines, and using biomethane for maintaining fuel cells, the project can achieve at least 9.7% emissions improvement on grid electricity at full load. At 60% of full load, the data centre would show a 17.8% improvement on the grid.

Future use of absorption chilling as the cooling needs of the data centre evolve will improve the emissions profile further. This project represents the best-in-class sustainable energy system for a data centre and will likely be a model for future developments.

The projected improvements in grid electricity emissions will further benefit the project towards 2030 and 2040. As more renewables (solar and wind) are deployed on the grid, supported by flexible energy systems such as the Admiral DER, the project will also benefit in line with the grid.

7 List of Figures

Figure 1 - Red Admiral Energy Mix.	6
Figure 2 - Emissions factors used in this analysis.	10
Figure 3 - Red Admiral and Castlelost FlexGen.	11
Figure 4 - Hourly Grid Carbon intensity data for 2023.	12
Figure 5 - Solar Output model (120MWp PV) using 2023 solar data at the location.	12
Figure 6 - Twelve days with different scenarios.	13
Figure 7 - 2023 calendar showing selected days.	13
Figure 8 - Scenarios and optimised energy source selection.	14
Figure 9 - CO ₂ Intensity on selected days versus grid (2023 data).	15
Figure 10 - Example 1 - Sunny & Windy.	16
Figure 11 - Example 2 - Sunny & Calm.	17
Figure 12 - Example 3 - Dull & Windy.	18
Figure 13 - Example 4 - Dull & Calm.	19
Figure 14 - BESS example 1.	20
Figure 15 - BESS example 2.	20
Figure 16 - BESS example 3.	20
Figure 17 - Annual contribution of electricity.	21
Figure 18 - DER emissions compared to national grid.	21
Figure 19 - EPA Emissions projections for Energy Industries 2023 - 2055.	27
Figure 20 - Grid electricity demand and carbon intensity to 2040.	27

8 References & Lins

ⁱ Refer to Bitpower reports on the Irish data centre industry:

<https://bitpower.ie/index.php/dashboard>

ⁱⁱIrish Water: https://www.water.ie/sites/default/files/projects/strategic-plans/national-water-resources/rwrp/south-west/RWRP-SW-QA_vF.pdf

ⁱⁱⁱ EPA emissions projections to 2055: <https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/irelands-greenhouse-gas-emissions-projections-2024-2055.php>

^{iv} SEAI Energy Data Portal: <https://www.seai.ie/data-and-insights/energy-data-portal>



APPENDIX 3.2

LEED Site Credits Assessment Report

LEEDv4 Data Centers

Project Reference:
24.094

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Prepared for:
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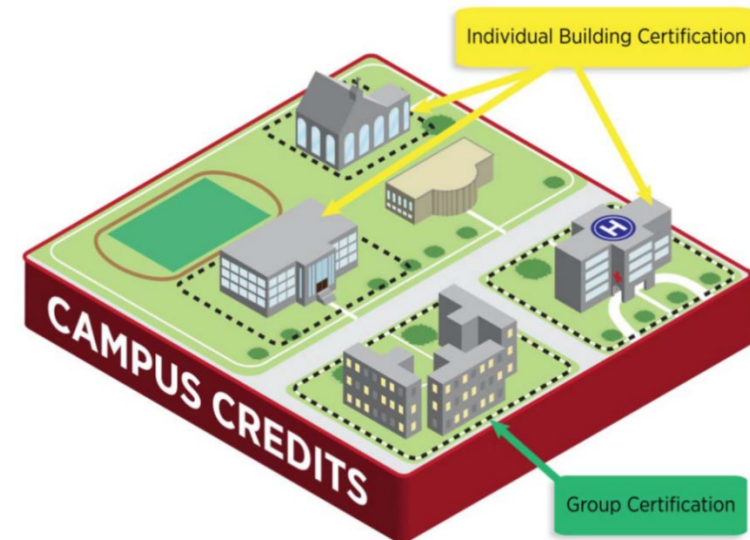
Table of Contents

1.0	Executive Summary	1
1.1	Basis of Assessment	2
1.2	Overview of the Rating System	2
1.3	LEED Timelines	2
1.4	Credits Classification	3
2.0	LEED Prerequisites	3
3.0	LEED Credits	6
4.0	Certification Process and Fees	12
5.0	Client, Design Team & Contractor LEED Expectations	12

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Rev0 – 23.05.2025	KM	CH
Rev1 – 07.07.2025	KM	CH

1.0 Executive Summary

Admiral Data Centres project is considering LEED certification under the LEED BD+C v4 Rating System for Data Centres. The project includes 6 Data Centres and supporting infrastructure and buildings. It's advised that the project pursues **LEED Campus Approach**, which is tailored for the projects involving multiple buildings within a single development site. Campus approach allows for efficiency in certification process as shared site features (e.g., stormwater management, landscaping, renewable energy, parking) can be documented once and applied across multiple buildings.



Every LEED BD+C project must achieve all twelve prerequisites in order to achieve certification. This report includes preassessment of all the 12 prerequisites and only the credits relating to the project location and masterplan. To achieve a specific level of certification (Certified, Silver, Gold, Platinum) projects need to score certain number of points through compliance with the requirements of LEED credits.



In terms of potential LEED certification target, if close to or all energy points are achieved, then **LEEDv4 Gold is a likely certification target**, as long as all of the site related credits are maximized.

However, a detailed energy analysis is required to make sure the target is reached. Please refer to the Energy and Atmosphere section of the report for further details.

It is advisable to **register the projects on LEED Online** as soon as the intent to achieve LEED is confirmed, to ensure the present rating system that this pre-assessment is based on remains current, otherwise the ongoing updates to LEED certification system may undermine the assessment.

Final Registration Deadline for LEED v4: January 31, 2026

After this date, new projects can no longer register under LEED v4 (including v4.1 credit substitutions). However, previously registered projects can still pursue certification as long as they meet the ongoing requirements and timelines.

After that deadline, currently assumed to be Q2 2032 (exact date tbd) new projects will need to register under **LEED v5** or any newer available system.

1.1 Basis of Assessment

This LEED preassessment is undertaken in the Pre-planning Phase and aims to review the following:

1. LEED Rating System Selection
2. LEED Prerequisites
3. Site Based Strategies
 - a. Rainwater Management
 - b. Heat Island Effect
 - c. Biodiversity
 - d. Irrigation
 - e. External light pollution
4. Transportation
 - f. EV approach
 - g. General approach to public transit and bike parking
5. Water
 - h. Define a low water consumption approach
6. Materials and Resources

This LEED assessment document is a result of preliminary analysis of the following:

- LEED Workshop held with Design and Planning Team on April 14th, 2025
- Information shared in emails post meeting.

The premises that this assessment is based on include, but are not limited to:

- The proposed development includes the construction of 6 data centre buildings and their supporting infrastructure including extensive photovoltaic power system.
- This study includes the assessment of site related LEED credits and does not reflect the whole scope of LEED preassessment.
- Some of the LEED credits are assessed based on two different scenarios: including photovoltaic system into LEED site boundary and excluding same.
- Indication is given whether the credits are eligible or ineligible for LEED Campus approach:
 - o Eligible - This credit may be documented once at the level of the master site, and then individual projects within the master site boundary earn the credit without submitting additional documentation.
 - o Ineligible - Each LEED project may pursue the credit individually. Each project within the campus boundary may earn the credit but each project must document compliance separately.

- Building areas:

Gross floor area of each data building 27561m²

Photovoltaic fields area – 168.62 ha

Total building occupancy – 60 employees per building in shifts across 24 hours

Each building will be equipped with a max of 80 car parking spaces, 5% of the spaces will be fitted with electric car charging points

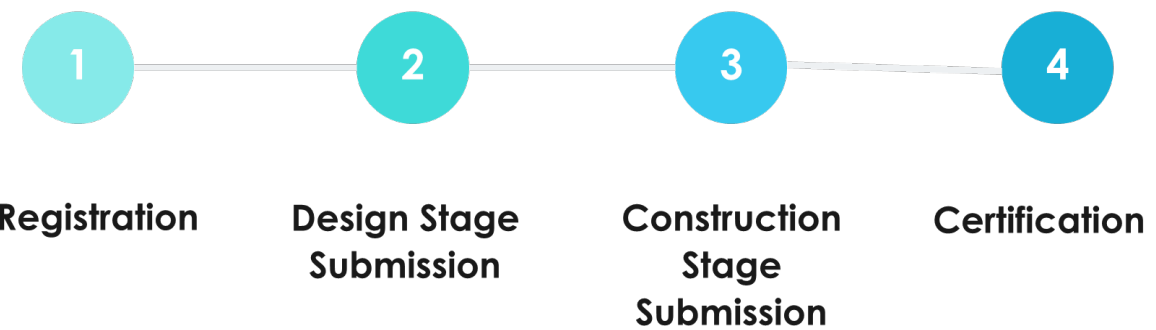
1.2 Overview of the Rating System

The LEED for New Construction and Major Renovation (NC) Version 4 Rating System was established by the U.S. Green Building Council (USGBC). It addresses design and construction activities for both new buildings and major renovations of existing buildings. This includes major HVAC improvements, significant building envelope modifications and major interior rehabilitation.

LEED NC v4 is organized into the following credit categories and point allocations:

Credit Category	Total Possible Points	Prerequisites
Integrative Process (IP)	1	0
Location & Transportation (LP)	16	0
Sustainable Sites (SS)	10	1
Water Efficiency (WE)	11	3
Energy and Atmosphere (EA)	33	4
Materials and Resources (MR)	13	2
Indoor Environmental Quality (IEQ)	16	2
Innovation and Design Process (ID)	6	-
Regional Priority (RP)	4	-
Total	110	12

1.3 LEED Timelines



Registration: Following the pre-assessment, register the project on the LEED Online platform. [LEED Online](#) Commit to certification and pin the addenda version of the LEED Standard the project will follow. Estimated registration

Design Stage Submission: Design stage coordination with the project team, gather required documentation for design credits, assemble and submit them for GBCI review. Estimated design submission

Construction Stage Submission: Construction stage coordination with the main contractor, gather and assemble required documentation for construction credits, assemble and submit them to GBCI review. Estimated construction submission

Certification: Achieve certification.

1.4 Credits Classification

There are four possible levels of LEED certification, based on total points achieved. Points are achieved by meeting the criteria and strategies outlined in the different LEED credits.

The following keys are used throughout the pre-assessment to summarise the current status of each LEED credit:

Prerequisite	The requirement is a Pre-requisite. It is mandatory and must be adhered to for the project to be LEED certified.
Targeted	Feasibility has been confirmed, and credit is targeted. All applicable requirements and strategies will need to be integrated into project design and construction documentation and reconfirmed by the team.
Maybe	Credit is likely to be achieved however feasibility cannot be determined yet, or decision to pursue will be deferred until a later stage.
Less Likely	The credit is less likely due to significant design impact or cost associated.
Not Targeted	Credit is not targeted or not possible under existing conditions.

2.0 LEED Prerequisites

There are *twelve* prerequisites in LEED BD+C v4. All twelve need to be met in order to be eligible for a LEED rating. If any one of them is not met, a LEED rating is not possible. Therefore, it is critical that these items be addressed first by the Design Team and Contractor.

The full language of the prerequisite requirements can be found in the [LEED BD+C v4 Rating System Document](#).

Construction Activity Pollution Prevention (SSp1): *Required.*

Requirement

The team must develop and follow an Erosion and Sedimentation Control plan for all construction and demolition activities associated with this project. The plan must describe the measures implemented to accomplish the following objectives:

- To prevent loss of soil during construction by storm water runoff and/or wind erosion, including protecting topsoil by stockpiling for reuse.
- To prevent sedimentation of storm sewers or receiving streams.
- To prevent pollution of the air with dust and particulate matter.

Follow the requirements in the [U.S. EPA's 2012 Construction General Permit](#) or local requirements if they are more stringent.

Campus Approach: Ineligible. Each LEED project may pursue the credit individually.

Status

Requirements of the credit will be covered by Construction Environmental Management Plan or supporting plan by the Contractor.

Next steps

Sustainability consultant will issue the "LEED Contractor Requirements document" to be included in the tender pack. Sustainability consultant will liaise with the contractor throughout the duration of the construction works to ensure compliance with the prerequisite.

Outdoor Water Use Reduction (WEp1): *Required.*

Requirement

Reduce outdoor water use by at least 30% for the peak watering month by either Option 1. Installing no permanent irrigation; or Option 2. Reducing irrigation potable water requirement by 30% from a calculated baseline. Non-vegetated surfaces, such as permeable or impermeable pavement, should be excluded from the landscape area calculations. Athletic fields and playgrounds (if vegetated) and food gardens may be included or excluded at the project team's discretion.

Campus Approach: Eligible

Status

The project will meet this prerequisite by not having irrigation installed.

Next steps – N/A

Water Use Reduction (WEp2): *Required.*

Requirement

Employ strategies that in aggregate use 20% less water than the indoor water use baseline calculated for the building. This prerequisite does not include process water loads (dishwashers, clothes washers, etc.), only those loads mentioned below:

WCs	6 l/flush
Urinals	3.8 l/flush
Wash hand basin taps	1.9 l/min
Showers	8.3 l/min
Kitchen taps	9.5 l/min

Appliances, equipment and processes such as dishwashers, cooling towers, etc. will also need to meet minimum efficiency requirements.

Process	Requirement
Heat rejection and cooling	No once-through cooling with potable water for any equipment or appliances that reject heat
Cooling towers and evaporative condensers	Equip with: <ul style="list-style-type: none"> • makeup water meters • conductivity controllers and overflow alarms • efficient drift eliminators that reduce drift to maximum of 0.002% of recirculated water volume for counterflow towers and 0.005% of recirculated water flow for cross-flow towers

Campus Approach: Ineligible. Each LEED project may pursue the credit individually.

Status

According to preliminary conversations with design team, the project will not have an issue achieving the minimum 20% reduction required. This is to be confirmed with the actual sanitaryware selection.

Next steps

- Architect to provide sanitaryware schedules and datasheets showing flush/flow rates to Sustainability Consultant to inform water efficiency calculations. Process water use will need to be a
- Architect to review requirements relevant to appliances and include them in specification accordingly.

Building Level Water Metering (WEp3): *Required.*

Requirements

Install permanent water meters that measure the total potable water use for the building and associated grounds.

Meter data must be compiled into monthly and annual summaries; meter readings can be manual or automated.

Building owner must commit to sharing with USGBC the resulting whole-project water usage data for a five-year period beginning on the date the project accepts LEED certification or typical occupancy, whichever comes first. This commitment must carry forward for five years or until the building changes ownership or lessee.

Campus Approach: Ineligible. Each LEED project may pursue the credit individually.

Status

No issues were noted with this requirement during the pre-assessment meeting.

Next steps – N/A

Fundamental Commissioning and Verification (EAp1): *Required.*

Requirement

A Commissioning Authority (CxA) must be engaged by the owner, from early design through to 10 months post occupancy. The CxA must be employed before the end of design development stage. This individual must have commissioning experience on at least 2 similar projects.

The CxA oversees the Cx process, reviews Owners Project Requirements (OPR), Basis of Design (BOD) documents and project M&E design, develops and implements the Cx Plan, incorporates CxA requirements into the construction documents, develop construction checklists and system test procedure, verifies system test execution, maintains an issues log and submits a final commissioning process report to owner.

The CxA needs to be an individual not otherwise involved in the design and construction. The CxA may be a qualified employee of the owner, an independent consultant, or a disinterested subcontractor of the design team

Requirements for exterior enclosures are limited to inclusion in the Owner's Project Requirements (OPR) and Basis of Design (BOD), as well as the review of the OPR, BOD and project design. NIBS Guideline 3-2012 for Exterior Enclosures provides additional guidance. The review of the enclosure design may be performed by a qualified member of the design or construction team (or an employee of that firm) who is not directly responsible for design of the building envelope.

The credit also requires producing an Operations and Maintenance (O&M) Plan that contains the information necessary to operate the building efficiently.

Campus Approach: Ineligible. Each LEED project may pursue the credit individually.

Status

An external commissioning authority has not been appointed yet to perform the activities for this prerequisite.

Next steps

- Further investigation is required in order to clarify whether the internal commissioning activities are sufficient to comply with the LEED prerequisite.
- A decision must be made by the Client to appoint the external Commissioning Authority, before the end of BOD stage.

Minimum Energy Performance (EAp2): *Required*

Requirements

Projects registered after March 1, 2024 are subject to the v4 2024 Update

To demonstrate compliance, a whole building energy simulation model will need to be prepared. To meet the prerequisite, the energy model must show a reduction in annual energy costs by at least 8% and when compared to the baseline ASHRAE 90.1-2010 case. On-site renewable energy may be subtracted from the proposed building performance in accordance with ASHRAE 90.1-2010 Section G2.4.

The proposed design must comply with the mandatory provisions of ANSI/ASHRAE/IESNA Standard 90.1-2010, with errata (or a USGBC-approved equivalent standard for projects outside the U.S.)

Because of the high process loads associated with IT equipment and its electrical infrastructure, many project teams look to these traditionally unregulated energy end uses for energy savings. Though not required, if the project team is attempting to claim energy savings from these end uses, the data center calculator may provide a simplified method. The reduced energy consumption of the IT and electrical equipment can help reduce HVAC energy usage. Project teams have the option of claiming the process load savings in isolation or creating an additional energy model based on the adjusted loads to capture the associated HVAC energy savings.

Campus Approach: Ineligible. Each LEED project may pursue the credit individually.

Status

An external energy consultant has not been appointed yet to perform the energy modelling of the building in compliance with LEED requirements.

Next steps

- A decision must be made by the Client to appoint the external energy consultant to complete a LEED energy model,
- Early iterations of energy model recommended during Planning stage based on assumptions, to allow for early feedback on energy performance to inform decision making.

Building Level Energy Metering (EAp3): *Required.*

Requirements

Install new or use existing base building-level energy meters, or sub-meters that can be aggregated to provide base building-level data representing total building energy consumption (electricity, natural gas, chilled water, steam, fuel oil, propane, etc.). Utility-owned meters capable of aggregating base building-level resource use are acceptable.

Owner must commit to sharing with USGBC the resulting energy consumption data and electrical demand data (if metered) for a five-year period beginning on the date the project accepts LEED certification. At a minimum, energy consumption must be tracked at one-month intervals.

Campus Approach: Ineligible. Each LEED project may pursue the credit individually.

Status

No issues were noted with this requirement.

Next steps – N/A

Fundamental Refrigerant Management (EAp4): *Required.*

Requirements

All new equipment shall use refrigerants that comply (CFC-free).

If reusing existing HVAC&R equipment, complete a comprehensive CFC phase-out conversion before project completion. Phase-out plans extending beyond the project completion date will be considered on their merits.

Campus Approach: Eligible

Status

All refrigeration equipment for this project will be new, CFC-free in line with European legislation.

Next steps – N/A

Storage and Collection of Recyclables (MRp1): *Required.*

Requirements

Dedicated space in the buildings and on the site must be allocated for the storage and collection of paper, cardboard, glass, metals and plastic (at a minimum) during operational phase. The design team, owner and building management should coordinate with the future waste management contractor to determine the most effective method of sorting and collecting recyclables in the building. Take appropriate measures for the safe collection, storage, and disposal of two of the following: batteries, mercury-containing lamps, and electronic waste.

Campus Approach: Eligible

Status

No issues noted.

Next steps

- Architect to confirm whether there are enough waste storage and segregation areas planned, and all waste streams required above are being separately handled.

Construction and Demolition Waste Management (MRp2): *Required.*

Requirements

The contractor will be required to prepare a construction and demolition waste management plan identifying waste diversion goals for the project, targeting at least five different material streams for diversion.

Campus Approach: Ineligible. Each LEED project may pursue the credit individually.

Status

The requirement extends to any construction and demolition works, including enabling works.

Next steps

Meehan Green to issue the "LEED Contractor Requirements document" to be included in the tender pack and review the Main Contractor's waste management plan. Meehan Green will coordinate with contractors to ensure a sufficient level of record keeping is in place to meet the LEED pre-requisite.

Minimum IAQ Performance (EQp1): *Required.*

Requirements

The project must comply with the minimum outdoor air intake flow as outlined on ventilation rate procedure of ASHRAE Standard 62.1-2010 Sections 4 through 7 OR else CEN Standards EN 15251: 2007 and EN 13779: 2007.

The HVAC systems must also provide a direct outdoor airflow measurement device, with an accuracy of +/- 10%. Constant volume systems can monitor the status of the supply fan.

Campus Approach: Ineligible. Each LEED project may pursue the credit individually.

Status

It is expected all occupied spaces will comply with ASHRAE 62.1 minimum ventilation rates.

All regularly used stair cores, lobbies and corridors will require ventilation, except those designated as fire escape only. This can be a challenge which will need to be addressed early in design.

Next steps

- M&E team to complete minimum indoor air quality calculator with ventilation rates for all spaces.
- M&E team to review and confirm requirements with regards to outdoor air flow monitoring.
- A dedicated workshop on stair core, lobbies and corridors ventilation including Mech, Arch and Client to be arranged early in design.

Environmental Tobacco Smoke Control (EQp2): *Required.*

Requirements

Smoking will be prohibited in the buildings. If smoking will be allowed outside the building but within the project boundary, this must be limited to designated smoking areas at least 8 m from any building entrance, opening or air intake.

Campus Approach: Eligible. Projects can demonstrate compliance with a campus-wide no-smoking policy in lieu of building signage. The policy must be widely communicated to all occupants (including transients and visitors) through ongoing methods such as site signage and other media (brochures, websites, etc.)

Status

No issues noted.

Next steps

Ensure smoking shelters are located at least 8 m from the building openings.

3.0 LEED Credits

The full language of the LEED credits mentioned in the sections below can be found in the [LEED NC v4 Rating System Document or Online Reference Guide \(LINK\)](#). The information below is only a summary of credits to give guidance to the Design Team and Contractors. The above-mentioned document should be referenced by the bidders for more detail on each of the credit requirements.



Location & Transportation (LT)

LTc1 LEED for Neighbourhood Development Location: *Not Applicable*

Only applicable to projects located on LEED Neighbourhood Development certified sites.

LTc2 Sensitive Land Protection: *Not Achievable*

Requirements

Option 1 - Locate the project on previously developed land

OR

Option 2 - Locate the project on a greenfield that does not meet one of the sensitive land criteria: Prime farmland, Floodplains, Habitat (Natura 2000 site), 30 m from water bodies, 15 m from wetlands.

Status

The project is located on farmland, mainly used as pastures, that is defined as prime farmland by the U.S. Code of Federal Regulations, Title 7, Volume 6, Parts 400 to 699, Section 657.5:

'Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses (the land could be cropland, pastureland, rangeland, forest land, or other land, but not urban built-up land or water).'

Next steps – N/A

LTc3 High Priority Site: *Targeted*

Requirements

Locate the project on a site meeting one of the following criteria:

Option 1 – Infill location in a historic district.

Option 2 – Priority designation by relevant authority promoting regeneration of economically disadvantaged or low-income areas.

Option 3 – Develop on a brownfield site, with significant contamination present in soil or groundwater. Review with the authority any applicable remediation required and complete these works to the authority's satisfaction.

LEED v4.1 Upgrade Option 1 Path 1 – Economically Disadvantaged Community Location – Locate in an area in which average household income is at or below 80% area median income (AMI)

Campus Approach: eligible

Status

The project can pursue Option 2 – Priority designation through the Pathway for [Just Transition programme](#), aimed at economic development of the Irish Midlands Area

Next steps: Document the credit

LTc4 Surrounding Density and Diverse Uses: *Not Targeted*

Requirements

Surrounding Density – 2 points for surrounding development density of >5,000m² GFA / hectare of buildable land; 3 points for >8,000m² GFA / Ha.

Diverse Uses – 1 point for 4-7 diverse uses within 800m walking distance from site entrance. 2 points for 8+ uses.

Campus Approach: Ineligible. Each LEED project may pursue the credit individually.

Status

The buildings are located in an area where the surroundings are not dense and are not within 800m walking distance for different uses (services such as banks, grocery, pharmacy, etc)

Next steps – N/A

LTc5 Access to Quality Transit: *Maybe -Less likely*

Requirements

Points are awarded for the public transportation trips available to occupants daily. Qualifying distances (walking) are 400m to bus stops, 800m to LUAS/train stops. Points are awarded following table below:

Weekday trips	Weekend trips	Points
72	40	2
144	108	5
360	216	7

LEEDv4.1 Upgrade Path 2: Access to Project-Sponsored Transit Service

Provide project-sponsored transit service (total daily trips 30 for 1 point, 45 for 2 points)

Campus Approach: Ineligible. Each LEED project may pursue the credit individually.

Status

There are no qualifying transit stops close enough to the building entrance. The project is not eligible for this credit. Planned stops may count if they are funded and scheduled to be in use within 2 years of building occupancy.

Next steps

Client to indicate whether project sponsored bus services can be provided

LTc6 Bicycle Facilities: *Maybe - Less likely*

Requirements

For commercial projects:

-*Short-term bicycle parking*, 1/40 peak occupants, no fewer than four, within 30m of main entrance.

-*Long-term secure bicycle storage* for 1/20 regular occupants, no fewer than four, within 30m of any entrance.

-*Showers with changing facility*, 1/150 first regular occupants, 1/100 thereafter.

Project must also be within 180m of a bicycle network connecting to diverse uses or a main public transit station. Roads with a speed limit of 40kph may be considered part of the bicycle network for the purpose of this credit. Planned network expansions may be counted if they are completed within one year of building occupancy.

Campus Approach: Eligible.

Status

There is no existing connection to bicycle network and there is no direct connection planned. The planned/proposed route leaves the section of the R446 which serves the proposed data centre element of the development.

Next steps

- MG / Team to confirm cycling network (greenway) can be connected to the site and cyclable to train station, and 20kph speed limit on campus, via maps or photographs.

LTc7 Reduced Parking Footprint – LEEDv4.1 upgrade: *Targeted*

Requirements

Do not exceed minimum local code requirements for parking capacity, and achieve a 30% reduction from the following base ratios of allowable spaces per total GFA, for each space type.

Campus Approach: Eligible. All the parking located within the LEED campus boundary must be included in the calculations (including parking associated with projects that are not pursuing LEED certification). Submit a site plan that illustrates a reasonable distribution of preferred parking spaces for the projects seeking LEED certification.

Status

The project has a baseline capacity of 256 parking spaces per data centre building, 80 spaces proposed per data centre

Part of building	Area	Base Ratio / 100m ²	Baseline	Design	Reduction
Office	2,513.00	3.00	75.39		
Data Hall	25,048.00	0.72	180.35		
TOTAL			255.74	80.00	68.7%

The calculation for this credit was taken per data centre. The reduction in comparison with the base ratio is over 68%, meeting this credit and the Exemplary Performance.

Next steps N/A

LTc8 Electric Vehicles – LEEDv4.1 upgrade: *Targeted*

Requirements

Install electrical vehicle supply equipment for 5% of all parking spaces used by the project, but no fewer than 2.

The charging stations must be Level 2 charging capacity (208-240V) or greater, comply with all relevant local standards (IEC 62196) and be capable of responding to time-of-use market signals and demand response programmes.

Campus Approach: Eligible. Submit a site plan that illustrates a reasonable distribution of preferred parking spaces for the projects seeking LEED certification.

Status

Planned 80 car parking spaces per building, 24 (=5% required) to have fully equipped EV charging stations on project completion.

Next steps

M&E consultant to confirm that charging capacity and additional criteria are met by proposed stations.

Sustainable Sites (SS)

SSc1 Site Assessment: *Targeted*

Requirements

This credit requires a site assessment on the sites applicable features including climate, human use, human health effects, hydrology etc. and detail how these influenced the project design.

Campus Approach: Eligible

Status

An Environmental Impact Assessment is prepared for planning application covering all the required site features.

Next steps

- Sustainability consultant to document the credit based on the EIAR

SSc2 Site Development – Protect & Restore Habitat: *Maybe - Less Likely*

Requirements

Option 1. Upgrade to v4.1 Restore 15% (1 point) or 25% (2 points) of the disturbed site area using soils and vegetation that is suitable to match the project pre-development conditions. Preserve 40% of the existing greenfield area onsite (if any).

Option 2. Financial Support (1 point) Provide financial support equivalent to at least US\$4 per square meter for the total site area (including the building footprint).

Campus approach: Eligible

Status

Option 1: Most of the existing site area is classified as previously undeveloped. Landscapes altered by current or historical clearing or filling, agricultural or forestry use, or preserved natural area use are considered undeveloped land.

Option 2: Financial Support

\$1,258,840.00 of financial support would need to be dedicated to a qualifying land trust or conservation organization in a scenario where solar field is not included into project boundary.

Next steps

- Client to consider financial support option.

SSc3 Open Space: *Targeted*

Requirements

Provide outdoor open space equal to 30% of total site area. A minimum of 25% of that outdoor space must be vegetated. Open space must be physically accessible to all occupants and include elements of human interaction.

Campus Approach: Eligible The open space does not have to be adjacent to the individual buildings but it must be contained within the LEED campus boundary.

Status

The project is meeting the credit criteria based on a scenario where solar fields are excluded from the project boundary OR in case the landscaping between solar panels can be accounted for as accessible outdoor space. Outdoor landscaped area forms 49% of the total site area in these scenarios.

Next steps

Landscaping to include the following:

- 25% of the outdoor area to be vegetated (turf grass does not count as vegetation)
AND
- a garden space with a diversity of vegetation types and species that provide opportunities for year-round visual interest

SSc4 Rainwater Management: Targeted

Requirements

Option 1. A minimum 100th percentile of the sites annual rainfall needs to be retained and entirely managed by Low Impact Development, Green Infrastructure which replicate natural hydrology strategies on site, possibly combined with reuse of rainwater onsite.

OR

Option 2. Natural land cover conditions

Manage on site the annual increase in runoff volume from the natural land cover condition to the post developed condition.

Campus approach: Eligible

Status

This credit is likely to be met, as all the runoff volume will be managed on site through attenuation ponds, rainwater collection, the site will not be connected to a centralised rainwater drainage.

Next steps

Civil engineer to confirm which option project would like to pursue, provide rainfall volume calculation and % of rainfall that is managed on site under natural land cover conditions and under proposed design

SSc5 Heat Island Reduction: Maybe

Requirements

Option 1:

The project will achieve, on average:

- A Solar Reflectance value (SR) of ≥ 0.33 , on 50% or more of non-roof (i.e. hardscape, walkways and terraces) area.
- Solar Reflectance Index (SRI) of ≥ 82 , for 75% or more of roof area.

Option 2: Parking under cover

Campus approach: Eligible

Status

Roof and paving finishes under review and yet to be confirmed. It's confirmed that the roof membrane can be chosen with SRI>82.

Assuming at least 75% of roofs are exposed (not covered by equipment) and have SRI>82 AND all walkways are in grey concrete with SR>0.33, the project can comply with the requirements for 2 points.

No cover or shading for parking is proposed, so Option 2 is not targeted.

Next steps

- Architect and civil engineer to ensure that selected roof and hardscaping finishes meet the above SR and SRI ratios, respectively.
- Further strategies to be considered:
 - o use of open-grid pavement system for parking would also contribute to the rainwater management credit.

SSc6 Light Pollution Reduction: Targeted

Requirements

- All exterior luminaires to meet up-light requirements (i.e. lumens emitted above horizontal).
- Light trespass beyond the site boundary to not exceed limits (i.e. lux on the vertical plane).
- Internally illuminated exterior signage must not exceed a luminance of 200 cd/m² at nighttime, and 2.000 cd/m² at daytime.

Status

Exterior lighting has not been designed yet, but the intention is that the project complies with the BUG rating requirements. Glare parameter is defined in the EIAR as G3.

Next steps

- MG to share BUG requirements for the applicable lighting zone. Please refer to the following [requirements](#)
- M&E consultant to ensure the BUG requirements are targeted.

Water Efficiency (WE)



WEc1 Outdoor Water Use Reduction: Targeted

Requirements

Option 1 - Show that the landscape does not require a permanent irrigation system beyond a maximum two-year establishment period.

Campus Approach: Eligible

Status

No permanent irrigation system is proposed to be installed; project can target all points.

Next Steps: N/A

WEc2 Indoor Water Use Reduction: Targeted

Requirements

Achieve a reduction of annual potable water use for sanitaryware fittings from the baseline set out or the pre-requisite Indoor Water Use Reduction. Sources of on-potable water such as Rainwater Harvesting can contribute to savings. Points are awarded as follows:

25%	30%	35%	40%	45%	50%
1 point	2 points	3 points	4 points	5 points	6 points

Campus Approach: Ineligible. Each LEED project may pursue the credit individually

Status

A 30% reduction for 2 points is estimated, based on a low water-use sanitaryware selection available in the market. Including waterless urinals would further reduce required water use, and with a harvested rainwater used for flushing, the savings are expected to go above 50%.

Rainwater harvesting confirmed 20 000 l per data building, confirmed to be used for process and flush fixtures.

Next steps

- Architect to provide sanitaryware specifications to MG, to complete the LEED water use calculation.

WEc3 Optimize Process Water Use for Cooling – LEEDv4.1 Upgrade: Maybe

Status

By choosing air-cooled systems, the project can achieve a 100% reduction in cooling water. The project is understood to use no evaporative cooling

Campus Approach: Eligible

Next steps

- M&E Consultant and Energy Modeler to confirm the strategies used and % reduction in cooling water.
- Will absorption chillers be paired with cooling towers, and if so is there plans for water treatment for increased water cycles?

WEc4 Water Metering: Targeted

Requirements

Install permanent water meters for two or more of the following water subsystems as applicable:

- Plumbing fixtures, +80% of total water use - **Domestic hot water, +80% of total water use**
- Boilers of +150kW harvesting systems - **Reclaimed water**, such as rainwater
- Other process water, +80% of total water use

Campus Approach: Ineligible. Each LEED project may pursue the credit individually.

Next steps

M&E consultant to identify 2 subsystems that might be more relevant and/or inexpensive to submeter.

Materials and Resources (MR)



MRC1 Building Life-Cycle Impact Reduction – LEEDv4.1 Upgrade: Targeted

Requirements

Option 4 – Conduct a Life Cycle Assessment (LCA) of the project's structure and enclosure. The project receives 1 point by completing the assessment. If the assessment demonstrates a 5%-20% reduction in global warming potential and 2 other impact categories, the project can achieve 1-3 additional points, for a maximum of (4 points).

Status

Meehan Green carried out an LCA assessment for the project achieving a 21% saving over the baseline. This achieves a minimum of 3 points. For 4 points material reuse will need to be incorporated.

Next steps

Adopting the findings for the pre-planning LCA and optimise further in design.

MRC5 Construction & Demo. Waste Management – LEEDv4.1 Upgrade:

Targeted

Requirements

The credit can be achieved via one of the options below:

- Option 1 – Divert 50% (1 point) or 75% (2 points) of all construction waste from landfill. Project must ensure at least 4 waste streams are segregated, either on-site or off-site. Inert material used as landfill cover is not considered diverted for the purposes of this credit.
- Option 2 – Divert 75% of demolition waste **AND** reduce total construction waste below 36.6 kg/m² GFA.

In both options, soil and land clearing debris is excluded from calculations altogether.

Status

There is no concern concerning meeting the 75% recycling rate. This requirement will be set out in the LEED Contractor Requirements document circulated by MG for the tender.

Next steps

Meehan Green to issue the “LEED Contractor Requirements document” to be included in the tender pack and review the Main Contractor's waste management plan. Meehan Green will coordinate with contractors to ensure a sufficient level of record keeping is in place to meet the LEED pre-requisite.



Energy and Atmosphere (EA)

The table below summarizes potential point scenarios depending on the energy strategy employed by the project. This is a high level potential projection, however, a detailed energy modelling analysis is required post planning stage

CASE	Assumptions	Capacity	Annual Cons	(PV %)	Emissions %	LEED Points (OEP)	Notes on LEED Score
100%	100% load (peak worst case) Tenant baseline systems	250 MW	2190 GWh/y	-7.6%	-9.7%	0	
20%	20% load Tenant baseline systems	50 MW	438 GWh/y	-38.1%	-61.9%	14	(6+8)
60%	60% load (typical annualised) Tenant baseline systems	150 MW	1314 GWh/y	-12.7%	-17.8%	3	(1+2)
60% + DC efficiency	60% load (typical annualised) Tenant high efficiency IT and electrical equipment			< -50%	< -17.8%	14-16	Lower IT load means lower emissions factor due to higher utilization of PV and SOFC. Most likely - 40-60%.
60% + DC efficiency + vPPA	60% load (typical annualised) Tenant high efficiency IT and electrical equipment* Tenant vPPA for imports**			< -50%	< -75%	18	

*Efficient IT and electrical systems, high virtualization and consolidation rates, can greatly reduce process (>50%) compared to ASHRAE baseline.

**A vPPA can further reduce emissions for any imported grid electricity. There will still be emissions from the Solid Oxide Fuel Cells, but reduction likely to exceed -75% anyway.

1. Assume 2 points for Grid Harmonization GridOptimal ACP, even in worst case scenario this will likely be achieved.
2. Safe to assume 3 points for Enhanced Cx if Admin building is developed by base developer or outside of the DC building.
3. Safe to assume 1 point for Monitoring Based Cx if Enhanced Cx above is targeted (EED requirement > LEED requirement).
4. Assume 2 points at least on Renewable Energy. Potentially up to 4 with full grid vPPA.
5. Assume 1 Innovation point for hydrogen-ready fuel cells.
6. Assume 1 point for Enhanced Refrigerant Management as large absorption chillers will likely have negligible GWP.

4.0 Certification Process and Fees

Project Registration

The registration fee for organisational level USGBC member or non-members is a standard flat fee for Master Site in Campus certification \$1,700 plus \$1,700 per each campus project registration, payable to the USGBC. Project registration for LEED NC v4 is done here: <https://www.leedonline.com>

Design & Construction Reviews

Design Review: \$1,700 for Master Site and \$0.061/sf for each project on campus over 250 000 sq ft with a minimum of \$15,500. 20% discount will be applied to all campus projects except Master site

Construction Review: \$840 for Master Site and \$0.020/sf for each project on campus over 250 000 sq ft with a minimum of \$5,000. 20% discount will be applied to all campus projects except Master site

5.0 Client, Design Team & Contractor LEED Expectations

Ensure LEED Target

To ensure the minimum LEED target is achieved, the Client, Design Team and Main Contractor should integrate the 'Targeted' points into the design and construction approach. Additionally, review the 'Maybe' and 'Less Likely' credits to determine the optimum path to LEED Gold through design feasibility and cost analysis.

Retain a Commissioning Agent (CxA)

The client must include a designated CxA on their proposed team before the end of design development stage. This individual will need to be involved for the duration of the project. The requirements for the CxA and associated tasks are outlined under EAp1 (and EAc1 if pursued).

Retain an Energy Modelling Consultant

The client must include an Energy Modeller on the team who has experience performing building energy simulation modelling for compliance with ASHRAE 90.1-2010. It is expected that this individual will be engaged early in the design process and will perform iterative modelling services at various stages of design. The requirements for energy modelling are outlined under EAp2 and EAc2.

Register Project on LEED Online

Project registration is the first official step in the LEED certification process. This allows the project team to begin communicating with Green Business Certification Inc. (GBCI) on project-specific questions. It also gives the team access to LEED Online where documentation is handled.

Incorporate LEED Requirements into Design

The Design Team will be expected to integrate LEED requirements into the design drawings and specifications to ensure that the LEED prerequisites and targeted LEED credits, at a minimum, will be met.

Implement LEED Requirements during Construction

The selected contractor(s) will be expected to implement, monitor and document LEED prerequisites and targeted credits associated with construction activities.

Manage LEED Documentation

The production of LEED evidence documentation will be the responsibility of the Design Team and their sub consultants, and Contractors. Meehan Green can act as advisor and LEED process manager for the project team for the duration of the project, but the LEED documentation itself is the responsibility of Design and Construction Team members, as related to their scope of work.

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Meehan Green will provide guidance in the use of LEED Online, and sample documentation and templates to facilitate this process.

Any comments or revisions regarding this pre-assessment report should be directed to



APPENDIX 3.3

Red Admiral - Response to Further Information Request

Carbon Impact Statement & Alignment with National Large Energy User Policies

Prepared for Red Admiral DC Ltd by:



27th February 2026

FINAL February 2026

Table of Contents

Table of Contents

1	<i>Red Admiral Project and National Policy</i>	3
1.1	Energy Concept	3
1.2	Energy Mix	4
1.3	Energy and Carbon Modelling	7
2	<i>Lifetime Energy Demand – Further Information (Item 6)</i>	8
3	<i>Lifetime Carbon Emissions – Further Information (Item 6)</i>	10
4	<i>Alternative Power Sources Considered</i>	12
5	<i>Pathways for Decarbonisation</i>	13
6	<i>Alignment with LEU and LEAP Policies</i>	16
7	<i>Conclusions</i>	18
8	<i>List of Figures</i>	19
9	<i>Abbreviations</i>	20

1 Red Admiral Project and National Policy

This report expands on the analysis prepared for the initial planning application to describe the operational energy demand and carbon emissions. Since the original application was made in mid-2025, a number of policy documents have been issued. The CRU issued their new **Large Energy User connections policy** criteria for data centres in December 2025. The Red Admiral Decentralised Energy Resource (DER) concept generally aligns with the provisions in the new policy, as outlined in this document.

The specific rules governing how the LEU conditions are to be applied are currently being drafted by the System Operators for publication at the end of March 2026. We have discussed some scenarios in the later part of this report.

Additionally, the Government's **Large Energy User Action Plan (LEAP)** launched in January 2026 supports green energy park developments in regional locations and promotes demand side flexibility.

- *The approach set out in the Large Energy User Action Plan will enable regions across Ireland to attract investment in the next generation of strategic industry, promoting long-term economic development and providing further employment across the regions.*
- *"This will enhance Ireland's proposition as a world-class place to do business in and as strategic knowledge-intensive regional hub for the ICT sector, where a secure, sustainable energy system supports innovation, investment and long-term industrial growth."*

The Red Admiral project aligns with these new industry criteria and national objectives. This report responds to the relevant parts of the **Further Information (FI) Request** by the planning authority and identifies where the development adheres to the shifting policy requirements.

1.1 Energy Concept

The development includes an energy park connected to a data centre which is also to be grid connected.

The energy centre monitors the national grid for stability and low-carbon energy content on a predictive basis. In this way, it can incorporate renewable energy from the grid when conditions favour low-carbon generation, and it can store that renewable energy on-site for later use.

The system can adapt to the available energy sources to optimise for the most sustainable solution at any point in time. For example, at times when the grid has surplus renewable electricity generation. This is enabled by the ability of the onsite generation and storage to modulate energy output and to store energy when available using the on-site battery energy storage with a minimum of two hours of backup capacity.

By pooling the energy assets on site, the optimum mix can be adjusted based on live carbon intensity data. The data centre will be able to monitor and report its hourly carbon footprint. Predictive analysis can help the data centre tenant to best avail of the available power supply and to balance workload and the prevailing carbon intensity of the energy supply.

1.2 Energy Mix

The facility will comprise a mix of technologies at scale capable of powering the data centre with or without the electricity grid. These are detailed in the following section and summarised in Figure 1.

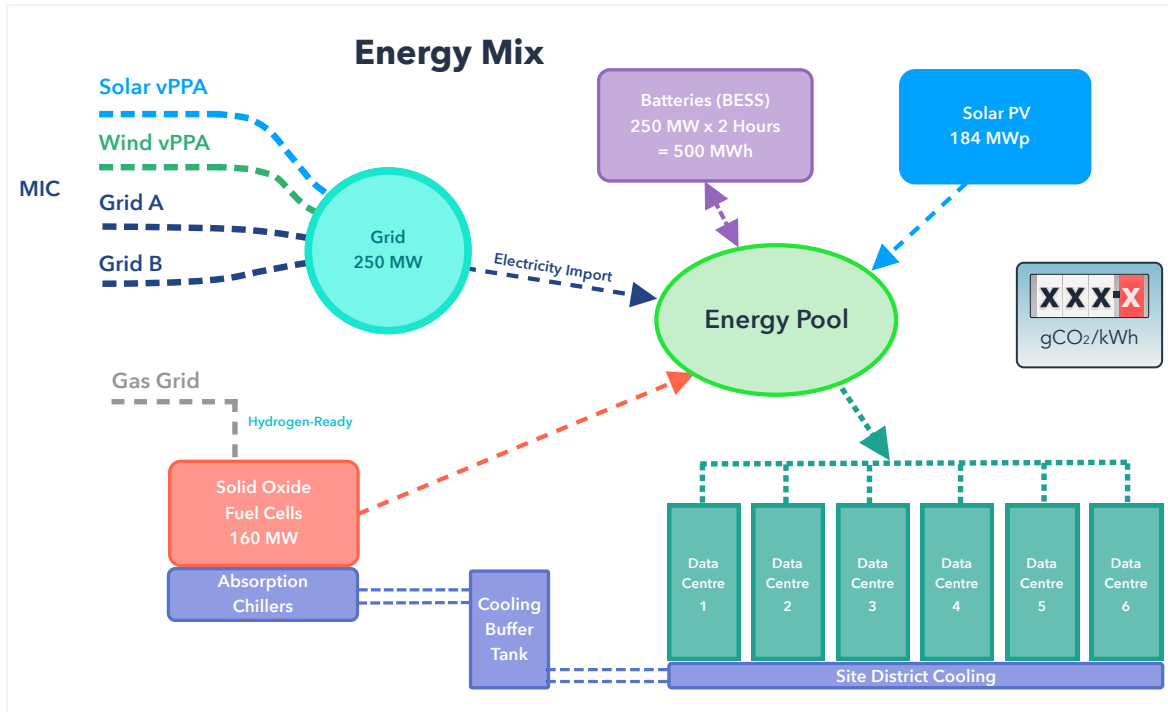


Figure 1 - Red Admiral Energy Mix.

1.2.1 Electricity Grid Connection

The site will have redundant (A and B) feeds connected to the transmission grid at the 220kV level. The site location is adjacent to an existing 220kV node on the transmission system, which has the capability to provide additional connection points. Sufficient capacity exists at the connection point to support the proposed demand.

The data centre is **not an "islanded" development**. It can operate independently of the grid for the benefit of grid decarbonisation when necessary, but it is fully integrated with the grid.

1.2.2 Wind & Solar Power Purchase Agreements

Data centres can procure renewable energy from producers connected to the electricity grid. Corporate power purchase agreements (CPPA) can link to real projects and those that do not receive support from the PSO levy and that would not be built without a contracted off-taker. Such renewable energy would feed through the national grid. The project will align with the requirements of the CRU Large Energy Users Connection Policy (CRU/2025236) or subsequent policies applicable at the time of connection.

1.2.3 On-Site Solar PV

A 184 MW peak solar PV installation is planned for initial operation. 400 acres of the site are allocated to solar power. Solar power can be used directly by the data centres or stored in the BESS for later use, for example during peak hours to alleviate demand from the grid.

1.2.4 Battery Energy Storage System (BESS)

A 250 MW Battery Energy Storage System (BESS) with 2 hours of storage capacity (i.e. 500 MWh) is included in the project. On-site generation and battery energy storage will be configured for internal use only to reduce net imports and to smooth demand. The DER will enable the DC facility to shift consumption away from the grid during constrained hours and toward periods of high renewable availability. The facility will connect to the transmission system in accordance with the grid code.

For simplification, we have not included this BESS in our calculation of the carbon impact of the project. The results presented in this report therefore present a worst-case scenario. The BESS will be used to further optimise the grid efficiency of the project.

1.2.5 Solid Oxide Fuel Cells (SOFC)

The energy system includes low carbon solid oxide fuel cell (SOFC) generation so that the use of natural gas is efficient and can be progressively displaced by renewable /low carbon gases aligning with national decarbonisation policy measures. The SOFC modules provide high electrical efficiency and low local air emissions. High grade waste heat will be captured and routed through absorption chillers for use in the DCs thermal systems, which increases overall SOFC efficiency (towards 80%). The SOFC (fuel cell) technology meets EU Taxonomy criteria¹ (due to its operating efficiency and capability of operating on renewable /low carbon gases).

The 160 MW modular Solid Oxide Fuel Cell (SOFC) system will generate electricity from natural gas or hydrogen, or indeed a blend of natural gas (including biomethane) and hydrogen (as the supply of renewable gas develops). Fuel cells operate at an efficiency of between 54% and 64%, Averaging 59% over their expected 5-year maintenance cycle. This innovative technology can also be configured to capture high purity carbon dioxide². The project includes a small-scale carbon capture system for industrial use. Waste heat from the fuel cells will also be recovered, further improving the efficiency of fuel utilisation and providing cooling via absorption chilling to the datacentre.

The modular fuel cells will operate continuously at a minimum load of 10% to optimise carbon emissions and efficiency. Biomethane, when available, can be imported through

¹ CAP25 is consistent with this transition pathway.

² Carbon capture is not considered in this analysis. If a sequestration solution becomes available during the lifetime of the project, it can be evaluated for use.

the national gas grid to negate the carbon impact of this baseline running. The baseline running hours of the fuel cells will be optimised to minimise total carbon emissions.

Fuel cells produce negligible NO_x and SO_x emissions compared to conventional generation.

1.2.6 Monitoring and control

The various energy systems will be optimised based on real-time carbon dioxide intensity monitoring. The lowest carbon emitting technologies will get priority.

Typically, the priority order will be:

1. Renewables first (solar). Any solar power available from the 184 MWp Solar PV farm will be either used directly or stored in the BESS.
2. Grid or SOFC (whichever is has a lower carbon intensity at that time - checked hourly). We have assumed grid average hourly carbon intensities (from 2023) in performing this analysis but the ultimate carbon content will be lower when 80% CPPAs are adopted.
3. BESS for managing transients and transient loads and time-shifting renewable energy surpluses.

This priority order is modelled further in the analysis contained in this report.

The emissions factors used in this analysis are shown in Figure 2.

Electricity demand will be controlled and moderated through energy-efficient hardware, virtualisation, and intelligent workload management which automatically ranks supply options in a carbon merit order.

In practice this means the datacentre will use on-site solar PV generation first and then choose between grid import and SOFC output based on their carbon intensity. The BESS enables the development to avoid import of electricity during high-intensity periods and to absorb surplus renewable electricity when available. The facility's design will enable optimised energy sourcing to control carbon intensity, cost and resilience with continuous traceable reporting systems.

Emissions Factors - Summary

Resource	gCO2/kWh	Note
Electricity Grid	97 - 478	Hourly variation in 2023
Natural Gas	204	Natural gas grid
SOFC on Biomethane	0	Zero Emissions
SOFC on Natural Gas	349	58.5% Efficiency
SOFC with Absorption Chillers	255	80% Efficiency
Solar PV	0	Zero Emissions

Figure 2 - Emissions factors used in this analysis.

1.3 Energy and Carbon Modelling

In this section we model the energy system to demonstrate the benefits of the decentralised energy resources, and compare its benefits against using just the national grid.

System Model Inputs

Real grid carbon intensity data from 2023 (ref. Figure 3) was used to understand the expected hourly carbon footprint of the data centre. 2023 data was the latest available at time of this analysis. Fifteen-minute data from EirGrid was combined to show hourly carbon intensity in the Irish grid. The hourly grid carbon intensity of the Irish electricity grid ranged from 97 gCO₂/kWh to 478 gCO₂/kWh in 2023. This variation in grid carbon intensity is a function of the availability of renewable energy, the baseload generation type, and demand on the system at that time.

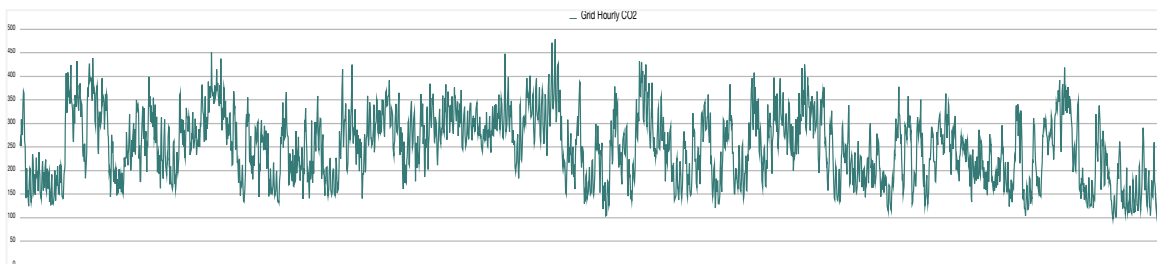


Figure 3 - Hourly Grid Carbon intensity data for 2023.

A solar irradiance model using 2023 data for the specific site location was used to calculate the expected hourly output from a 120 MWp solar PV farm. This was later scaled up and down in our model to match the expected deployment of the solar PV farm. The irradiance model, “Photovoltaic Geographical Information System”³ is operated by the EU’s Joint Research Centre (JRC) and is freely available. The summed daily (MWh) output for a 120 MWp Solar PV farm located in the midlands is shown in Figure 4.

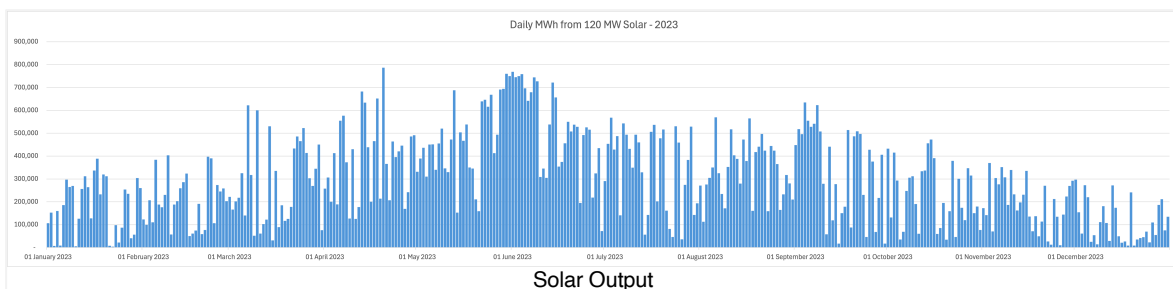


Figure 4 - Solar Output model (120MWp PV) using 2023 solar data at the location.

³ JRC Photovoltaic Geographical Information System: https://re.jrc.ec.europa.eu/pvg_tools/en/

2 Lifetime Energy Demand - Further Information (Item 6)

To model lifetime energy demand, we consider the energy demand and the contribution of different parts of the DER as they also ramp at a similar rate. The demand ramp assumed in the following analysis is shown in Figure 5. We will calculate emissions at the maximum demand of the data centre and at an industry-standard utilisation of available capacity of 66%.

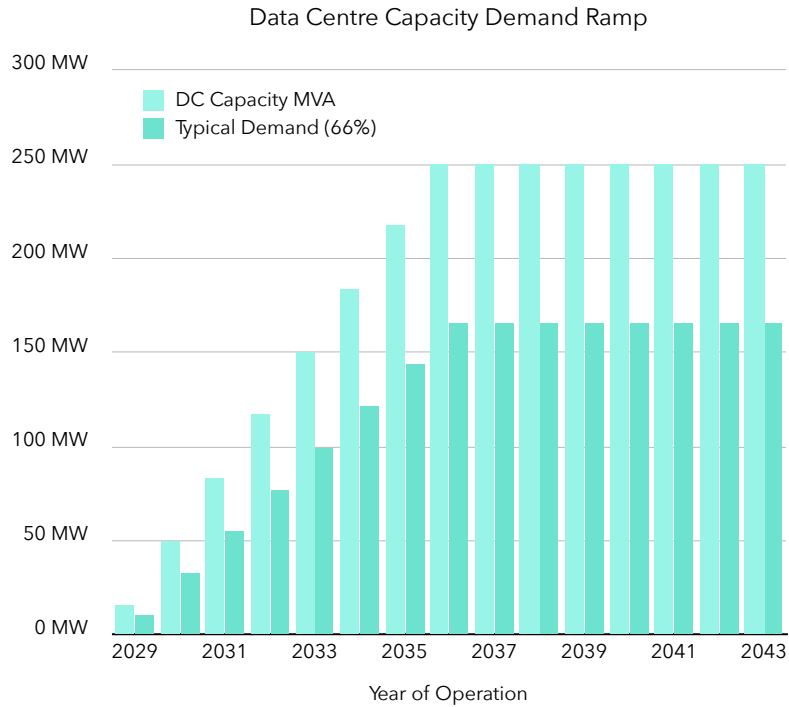


Figure 5 - Assumed data centre demand ramps.

For modelling purposes, the SOFC will be considered to ramp up to full capacity over 7 years to 2035, as indicated in Figure 6.

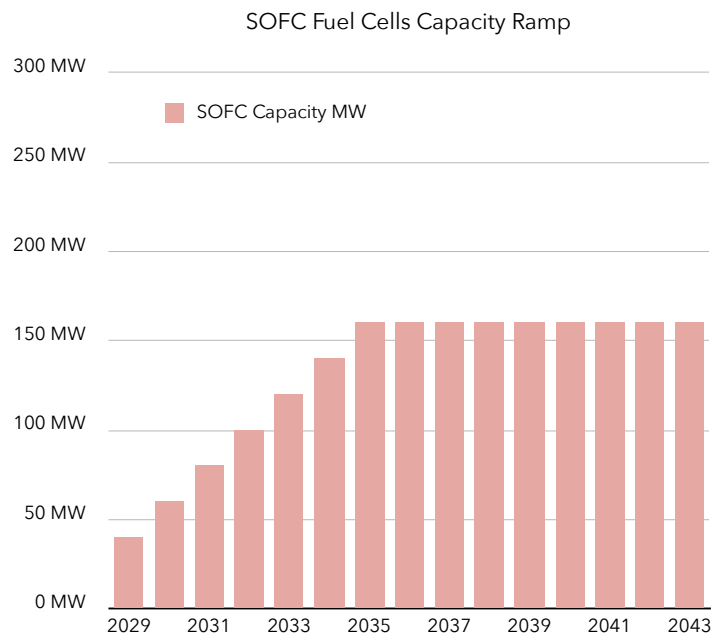


Figure 6 - Assumed SOFC Ramp.

The Solar PV farm will also be assumed to ramp up in capacity over years 1 to 8 as in Figure 7.

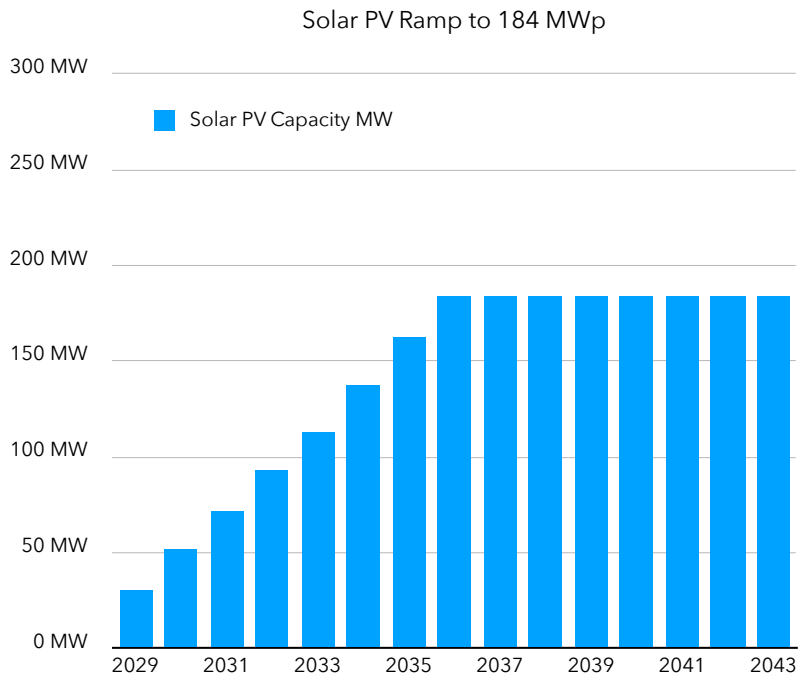


Figure 7 - Solar PV Ramp.

We note that these are presumptive ramp rates only, and practical deployment of resources will be optimised as the project develops. The BESS, for instance, will enable faster ramping of the solar PV system.

Applying these ramps in supply and demand to each year and taking the modelling data used in 1.3 (i.e. solar and grid data for 2023), we get the annualised allocation of resources shown in Figure 8. We do not assume any improvement in the grid from the 2023 level in this analysis.

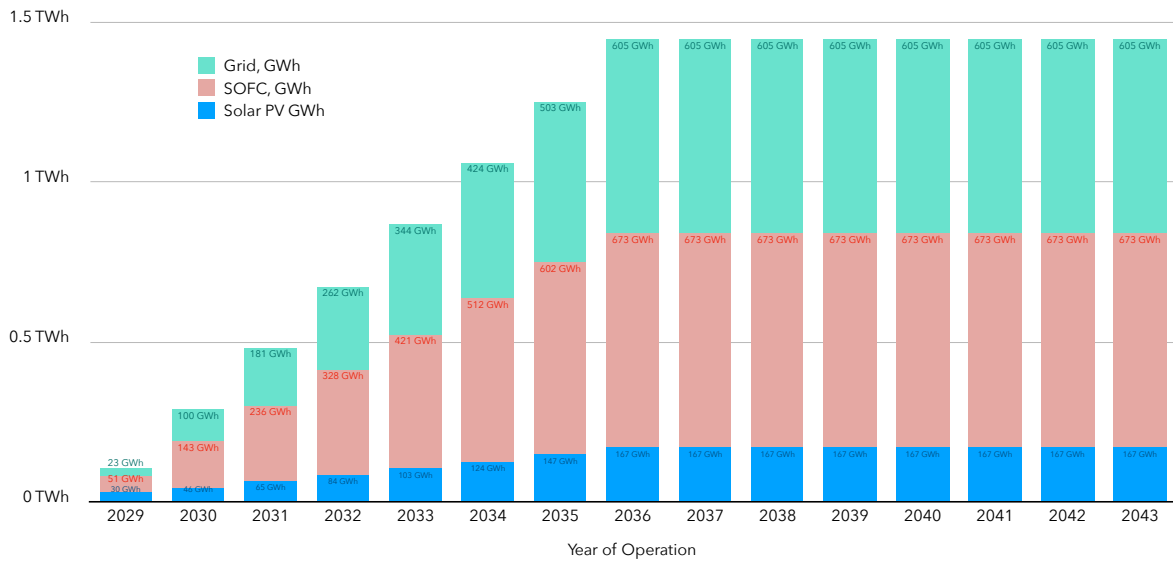


Figure 8 - Fifteen-year Electricity demand and sources.

3 Lifetime Carbon Emissions - Further Information (Item 6)

To model lifetime carbon emissions, the analysis selects hourly resources based on minimum carbon impact. This hourly analysis is run across each year applying the ramp rates discussed earlier.

The project results in Scope 1 emissions (direct emissions from on-site fuel combustion in the SOFC units) and Scope 2 emissions (indirect emissions associated with imported grid electricity), as shown in Figure 9. Solar PV generation is treated as having zero operational emissions in this analysis. Scope definitions are consistent with the Greenhouse Gas Protocol corporate accounting framework.

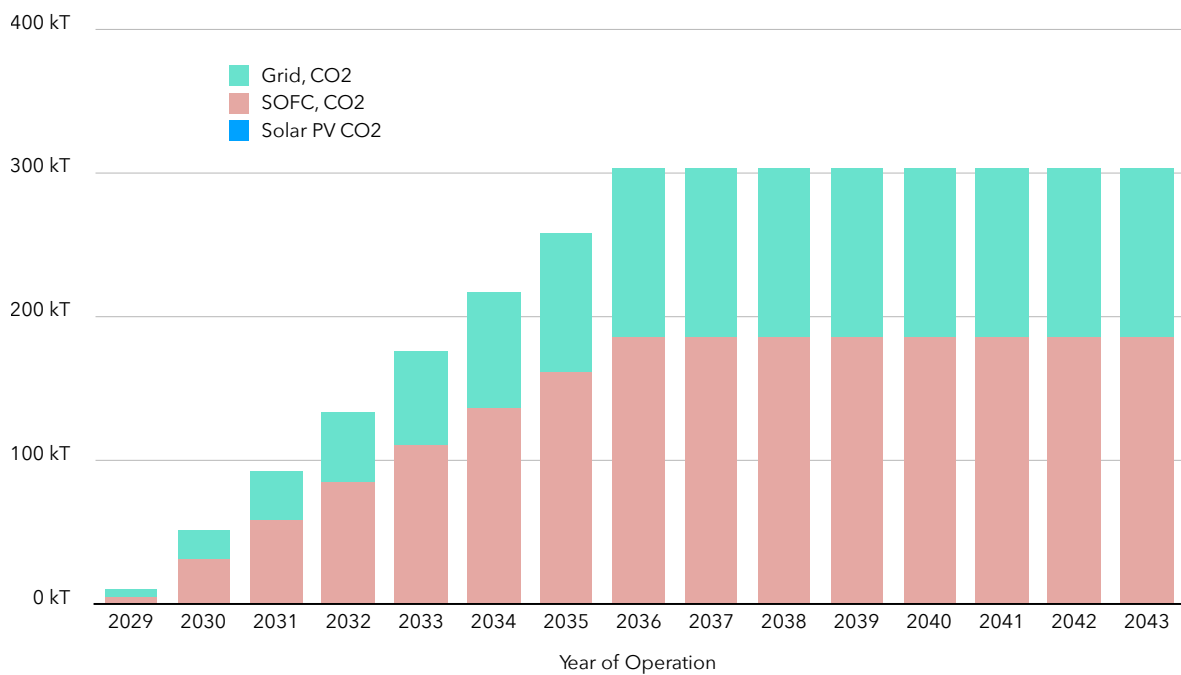


Figure 9 - Annual Emissions.

The model outputs for electricity demand and CO₂ from 2029 to 2043 are shown Figure 10 and Figure 11. Energy demand is shown in GWh (Giga-Watt Hours) and TWh (Terra-Watt Hours). Lifetime CO₂ is shown in MT CO₂ (million tonnes CO₂). Subsequent years of operation would be expected to continue at the same levels as 2036 onwards.

Model Outputs, GWh @ 66% Snapshot

Year	Solar PV GWh	SOFC, GWh	Grid, GWh	Total Demand
2029	30 GWh	51 GWh	23 GWh	104 GWh
2030	46 GWh	143 GWh	100 GWh	289 GWh
2031	65 GWh	236 GWh	181 GWh	482 GWh
2032	84 GWh	328 GWh	262 GWh	674 GWh
2033	103 GWh	421 GWh	344 GWh	868 GWh
2034	124 GWh	512 GWh	424 GWh	1,060 GWh
2035	147 GWh	602 GWh	503 GWh	1,252 GWh
2036	167 GWh	673 GWh	605 GWh	1,445 GWh
2037	167 GWh	673 GWh	605 GWh	1,445 GWh
2038	167 GWh	673 GWh	605 GWh	1,445 GWh
2039	167 GWh	673 GWh	605 GWh	1,445 GWh
2040	167 GWh	673 GWh	605 GWh	1,445 GWh
2041	167 GWh	673 GWh	605 GWh	1,445 GWh
2042	167 GWh	673 GWh	605 GWh	1,445 GWh
2043	167 GWh	673 GWh	605 GWh	1,445 GWh
Total	1.94 TWh	7.68 TWh	6.68 TWh	16.29 TWh

Figure 10 - Electricity demand and sources over 15 years.

Model Outputs, CO2 @ 66% Snapshot

Year	Solar PV CO2	SOFC, CO2	Grid, CO2
2029	0 kT	5.52 kT	4.42 kT
2030	0 kT	31.63 kT	19.29 kT
2031	0 kT	57.74 kT	34.81 kT
2032	0 kT	83.84 kT	50.41 kT
2033	0 kT	110.11 kT	66.12 kT
2034	0 kT	135.74 kT	81.48 kT
2035	0 kT	161.21 kT	96.77 kT
2036	0 kT	185.92 kT	117.83 kT
2037	0 kT	185.92 kT	117.83 kT
2038	0 kT	185.92 kT	117.83 kT
2039	0 kT	185.92 kT	117.83 kT
2040	0 kT	185.92 kT	117.83 kT
2041	0 kT	185.92 kT	117.83 kT
2042	0 kT	185.92 kT	117.83 kT
2043	0 kT	185.92 kT	117.83 kT
Total	0 MT CO2	2.07 MT CO2	1.3 MT CO2

Figure 11 - Carbon Emissions over 15 years.

4 Alternative Power Sources Considered

The decision to apply a hybrid distributed energy resource system was based on comparing the operational carbon impact of a number of options. Calculations are based on the expected consumption at steady-state demand of 66% of design capacity on average once fully developed.

Option 1 - Isolated Open Cycle Gas Turbines (OCGT) - Such a system converts gas to electricity at approximately 40% efficiency. To supply the annual 1,455 GWh of expected demand, an OCGT system would produce 736,000 tonnes of CO₂ annually.

Option 2 - Isolated Closed Cycle Gas Turbines (CCGT) - more efficient than OCGT, running at an average of 50% efficiency, this system would produce 589,000 tonnes of CO₂ annually.

Options 1 and 2 above would also produce NO_x and SO_x emissions on site. They would be isolated and therefore also run contrary to government policy on data centres.

Option 3 - Isolated Solid Oxide Fuel Cells (SOFC) - This option would greatly reduce the NO_x and SO_x emissions and produce less carbon dioxide - 504,000 Tonnes of CO₂ annually. The SOFC technology also lends itself better to carbon capture in the future.

Option 4 - Grid only - A grid connected system with no on-site generation would be linked to emissions of 369,000 Tonnes of CO₂ annually through the grid (i.e. based on the 2023 grid average emissions).

Option 5 - Grid plus solar PV - The solar PV system saves 42,000 Tonnes of CO₂ annually reducing the carbon impact to 326,000 tonnes of CO₂ annually.

Option 6 - DER - Grid plus Solar PV plus SOFC - Combining the SOFC with the grid enables the hourly variations in grid emissions to be eliminated to the benefit of reduced emissions to 304,000 tonnes of CO₂ annually. These emissions would be split between on-site (61%) and grid-related (39%).

The relative annual emissions of these options are shown in Figure 12 below.

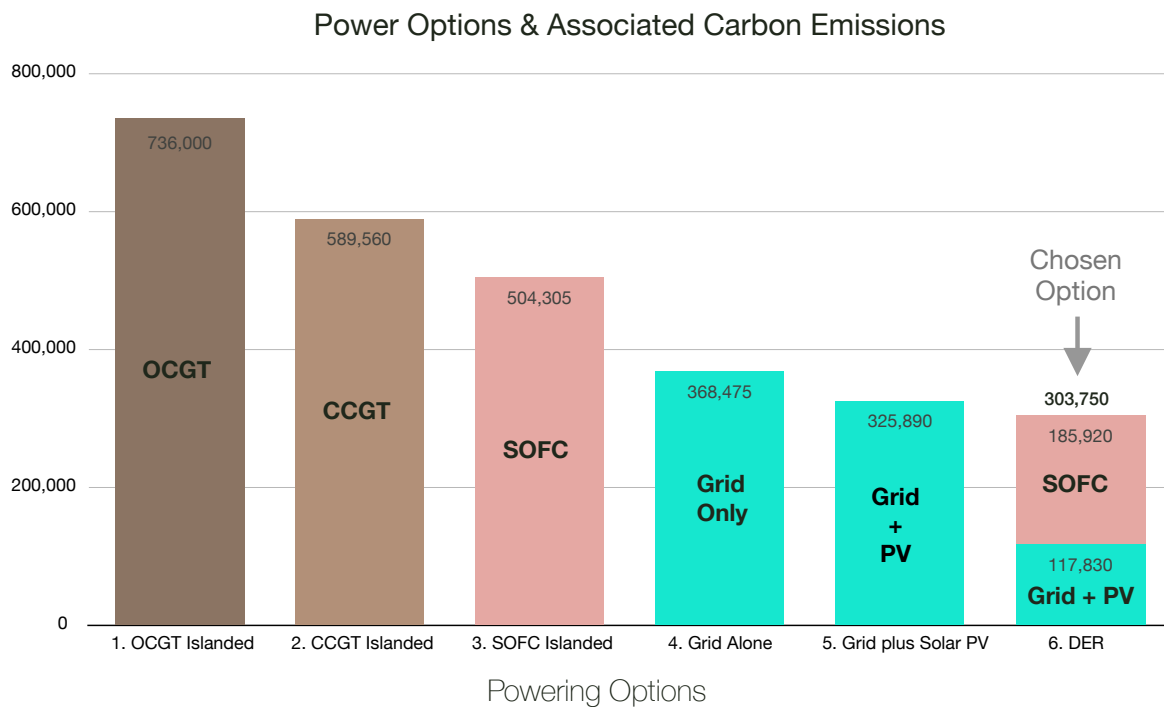


Figure 12 - Annual operational carbon emissions for options considered.

Further optimisation of the chosen (option 6) DER system will be enabled by the Battery Energy Storage System (BESS). The effects are difficult to model in terms of carbon emissions as the savings will mostly be accrued by the grid in enabling the penetration of more renewable electricity. We estimate a 10% improvement in overall emissions will be enabled by the BESS.

5 Pathways for Decarbonisation

We assess some potential pathways for decarbonisation of the operations below.

No.	Initiative	Details	Implementation	Potential impact
1	Virtual Power Purchase agreements.	Agreements with 200 MW of onshore wind or 138 MW of offshore wind or a combination of both would be sufficient to offset the grid-borne carbon impact of the data centre campus at full capacity (ramping up to 66% by 2036).	Careful alignment of CPPA supply capacity against project ramp timelines will be required. Ultimately, the tenant in the data centre will be supported by power purchase agreements.	Up to 100% reduction in Scope 2 emissions. Six-year ramp to at least 80% CPPA has been mandated in LEU policy 2025 and is discussed in the conclusions.
2	EU ETS	Carbon credits traded in the EU Emissions Trading Scheme (EU-ETS) of up to 186,000 Tonnes at full operational capacity (2034) would offset the carbon emissions of the fuel cells.	This level of scope 1 emissions can be further mitigated on-site using the technologies such as carbon capture and absorption chillers.	Mitigation of up to 100% of Scope 1 emissions.
3	Carbon Capture	The emissions from the fuel cells are concentrated carbon and would be ideal for capture and storage. There is a plan for a small-scale capture plant to provide commercially viable carbon dioxide (for chemical use).	Large-scale facilities for storage of carbon are not yet available in Ireland. The evolution of a national carbon storage programme in future could provide a viable home for carbon.	Future scenarios for CCS modelled at 20% and 40% capture.
4	Absorption Chillers	The efficiency assumed in this report for the fuel cells is 57.5%. If waste heat from the fuel cells is re-purposed via absorption chillers for use on-site, then this efficiency could increase to as high as 80%.	The requirement for mechanical cooling in the data centre is minimised with free-air cooling. When direct on-chip cooling becomes the norm, this might change. As the data centre develops, it is expected that more concentrated cooling will be required, and that absorption chilling will be more widely adopted.	Modelled at 12.5% energy saving, delivering reduction in Scope 1 CO ₂ emissions.
5	Grid decarbonisation	We have used 2023 carbon emissions for electricity on the Irish grid as the baseline for this analysis and maintained that level through the lifetime of the project in our worst-case calculations.	As the grid decarbonises, the impact will reduce, but as this is an outside factor, we do not assume it in our calculations. Propose to use CPPAs and annual reporting to demonstrate decarbonisation.	Continuous improvement. Future scenarios modelled at 20% and 40% reductions in grid carbon intensity.
6	Gas Network decarbonisation	The national gas network is evolving to include biomethane and hydrogen. The use of fuel cells is more efficient than other traditional technologies.	Opportunities for different forms of gas will become available over the lifetime of the project. Financial viability is unclear at present.	Potential full decarbonisation of scope 1 but requires extensive biomethane supply chain growth.

No.	Initiative	Details	Implementation	Potential impact
7	Battery Energy Storage opportunities	The BESS can support the grid to enable more renewable penetration at lower cost to the consumer. We have not accounted for the impact of BESS in our initial calculations, but it will lower the carbon impact.	The BESS can be utilised in many ways to support the grid by offering demand flexibility and time shifting of renewable energy and other grid support services such as fault ride-through to support grid resilience.	System-wide impacts: grid stability, absorbing renewable energy, shaping grid demand, etc. Modelled as 10% improvement.
8	District Heating	The location does not have a significant heat demand at present.	Propose to use the available waste heat for cooling through absorption chillers.	Waste heat scheme not included in design.
9	Efficient operation	Optimisation of the Distributed Energy Resource (DER) system will be based on minimising carbon impact.	Careful integration of systems and continuous monitoring of national grid performance. Lifetime PUE improvements due to technological advances.	System-wide impacts
10	Solar PV farm	The 184 MWp solar farm will be the largest of any similar scale development.	The solar farm will be optimised with the help of the BESS to ensure its output is 100% utilised.	Circa 10% reduction in overall emissions
11	Digital load shifting	In situations where the grid is underperforming in terms of carbon or system security, data centres could look to reduce demand or provide support in other ways with energy resources.	Implementation of digital load shifting depends on the digital workload, and SLA arrangements with tenants in the data centre. This is a developing area of opportunity within the area data industry.	System-wide impacts

The measures already factored into the design of the Decentralised Energy Resource (DER) will reduce the emissions compared to grid-only by 20 to 25%. Future implementation of absorption chilling using waste heat from the SOFC will save between 10% and 20% (modelled below as 12.5%). The grid portion of emissions will reduce in line with national decarbonisation as enabled by the DER.

The effects of moderate improvements in the electrical grid are illustrated below. If the average carbon intensity of electricity on the grid fell by 20%, the 2023⁴ level of 255 gCO₂/kWh would drop to 204 gCO₂/kWh. With a 40% reduction, this would be 153 gCO₂/kWh. These reductions in carbon intensity are well within the ambitions of the Climate Action Plan and will be enabled by the deployment of offshore and onshore wind and solar.

Carbon capture and sequestration when viable and backed by proven sequestration options for Ireland would yield significant reduction in carbon reductions at site level. We have modelled the overall savings for 20% and 40% CCS as an indication of the scale of this opportunity.

These combined measures (ref. Figure 13) would see the development producing up to 68% lower annual emissions than compared with the 2023 scenario. Note that this analysis goes further than that prepared for the original planning application and represents a broader set of opportunities.

⁴ CAP 2025 - "Electricity accounted for 12.5% of Ireland's GHG emissions in 2023". The renewable electricity target is 80% by 2030.

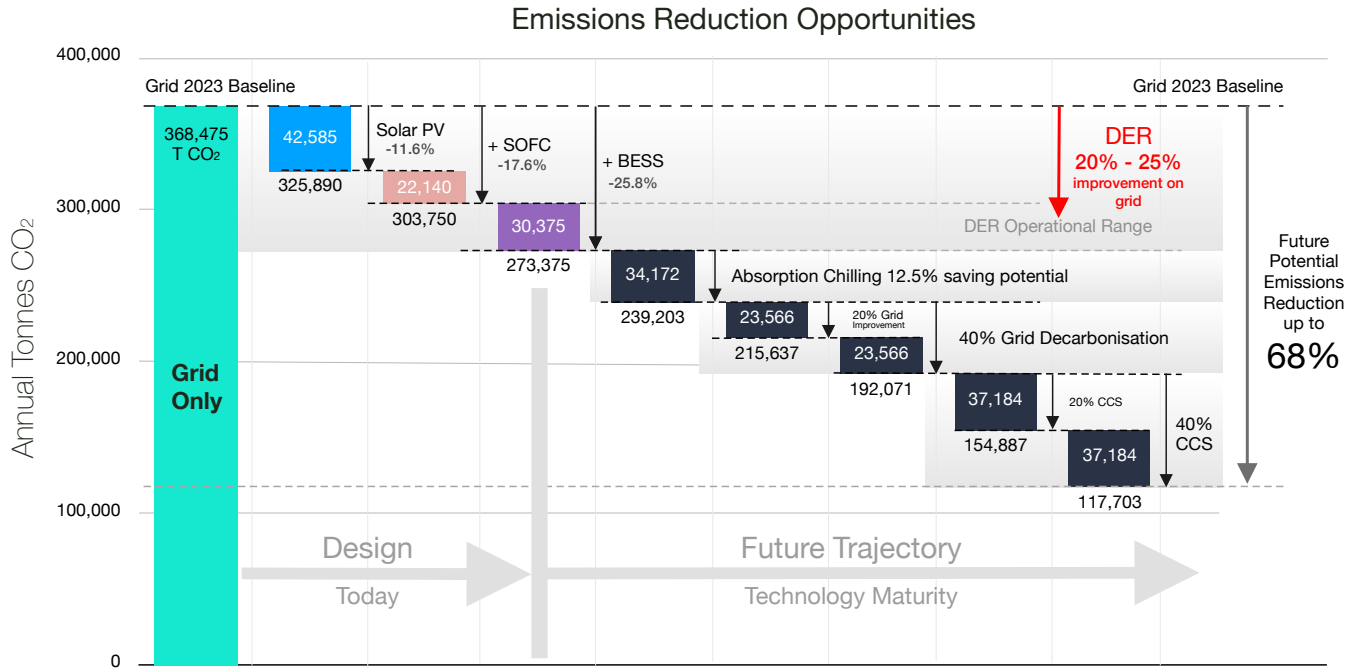


Figure 13 - Future emissions reductions opportunities.

Pathway	Annual CO2 Saving	Cumulative %	Annual TCO2
Grid Baseline	-	0%	368,475
Solar PV	42,585	12%	325,890
SOFC	22,140	18%	303,750
BESS 10%	30,375	26%	273,375
Abs. Chillers 12.5%	34,172	35%	239,203
20% Grid Improvement	23,566	41%	215,637
40% Grid Improvement	23,566	48%	192,071
20% CCS	37,184	58%	154,887
40% CCS	37,184	68%	117,703

6 Alignment with LEU and LEAP Policies

The **Large Energy Users Connections Policy** (LEU) decision was issued by the CRU in December 2025. It outlines criteria for the system operators (SO) to apply when considering grid connections for data centres.

CRU data centre connection conditions:

- *For data centre applicants with an MIC equal to or above 10 MVA , the ability of the data centre applicant to bring **new onsite or proximate dispatchable generation and/or storage** capacity equivalent to or greater than their MIC (on de-rated basis), that will be capable of participating in wholesale electricity market arrangements, is separately connected and metered, which meets appropriate availability and other technical requirements as may be specified by the relevant SO, in order to support security of supply.*
- *For data centre applicants with an MIC equal to or above the de-minimis level, the ability of the data centre applicant to **meet at least 80% of their annual demand through provision or procurement of additional renewable electricity** generated in the Republic of Ireland. Applicants will be required to demonstrate a credible plan in relation to how they intend to meet these requirements within a 6-year period from the date of the demand site's energisation. The renewable generation contribution can be reflected (up to 80% of annual demand) on a de-rated basis against the dispatchable generation requirement.*
- *The location of the data centre connection application and, if relevant, any associated onsite/proximate generation, with respect to whether they are within a **constrained or unconstrained location** on the electricity system. It is within the SOs remit to determine whether a connection can or cannot be accommodated based on their assessment of each application.*

The system operators have until the end of March 2026 to interpret these conditions and to prepare the processes for new applications. We have considered a number of scenarios which illustrate where the Red Admiral project can meet the requirements of the LEU connection policy depending on the final ruleset.

Scenario 1: The planned SOFC, BESS and Solar PV assets **will be** considered as dispatchable generation for the purposes of the LEU policy.

- In this scenario, and assuming T-4 de-rating curves, an additional 97 MW of generation capacity off-site will be required to match the 250 MW demand capacity.
- The 80% renewables will be partially made up from on-site Solar PV (>13%), and the remainder made from power purchase agreements with renewable projects.

Scenario 2: The planned SOFC, BESS and Solar PV assets **will not be** considered as dispatchable generation for the purposes of the LEU policy.

- In this scenario, and assuming T-4 de-rating curves, an additional 293 MW of generation capacity off-site will be required to match the 250 MW demand capacity. This would need to scale against MIC as the facility ramps up.
- The 80% renewables will be partially made up from on-site Solar PV (>13%), and the remainder made from power purchase agreements with renewable projects.

These scenarios illustrate the importance of the definition of proximate dispatchable generation.

The Large energy users action plan (LEAP) launched in 2026 includes 17 actions for government to progress forward planning for large energy use sectors. We have highlighted just some of the key actions where Red Admiral is pioneering solutions in the table below.

No.	LEAP Objective	Red Admiral Impact
3	Demand Flexibility	The inclusion of on-site generation assets and large-scale BESS will allow the project to deliver unprecedented flexibility to the electricity grid. This works in terms of absorbing surplus renewables and curtailing demand to support the grid.
6	Private Wires Policy	The assets being developed are effectively all on the same site, so do not depend on private wire. However, there will be benefits to the system overall if private wires can enable further interoperability between renewable assets and demand.
11	CPPA route to market	Matching renewable supply with demand requires careful alignment and timing. The project will meet its 80% PPA requirements.
12	Emissions Reporting framework	The decentralised energy resource system is designed to track and respond to emissions levels in real-time. It will easily meet any emissions reporting requirements introduced through the LEAP.
13	Market design to support colocation	The deployment of on-site solar PV, BESS and SOFC assets would provide an ideal example of colocation of renewable energy and demand. The financial and operational models will be of great value in designing such schemes.
14	Direct engagement with Green Energy Park Proposers	The developer is highly experienced in utility systems design and operation of innovative assets on the Irish grid and within the single electricity market.
16	Innovation in Energy Management	The coordination of multiple energy sources including grid in a complex market will require innovation in energy management.

7 Conclusions

Project Red Admiral will achieve a lower carbon intensity than an equivalent legacy grid-connected DC that follows the grid average. Under the 2023 grid profile, the project achieves material reductions in carbon dioxide per kilowatt-hour across a range of IT loads, with the largest percentage reductions at lower load and continued significant benefit at higher load.

Hourly scenarios demonstrate the control system turning down the SOFC when wind output is high and grid intensity is low and increasing on-site generation and BESS discharge when the grid is more carbon intensive. Over the lifetime of the project, the intensity trend improves further as cooling evolves, as battery optimisation is refined, and as SOFC fuel switching to renewable gases becomes available.

The DER will supply firming capability that eases peaks and supports the grid during periods of low wind. The proposal is aligned with the Climate Action Plan's emphasis on integrating higher shares of variable renewables with flexibility, storage and high-efficiency plant. It will also provide transparency through auditable, time-resolved carbon dioxide intensity and annual reporting. In terms of adaptation and resilience, dual 220kV feeds, ride-through and frequency support from the battery, and the ability to operate safely through grid disturbances and reduce outage risk to the facility and the local network.

Assuming the first phase of the development is operational in January 2029, the project is estimated to consume 16.29 TWh of electricity over the first 15 years of operation until 2043. Of this electricity, 59% would be generated on site (solar PV and fuel cells), and 41% would be provided through the national grid.

The lifetime carbon emissions are calculated as 3.37 million tonnes over 15 years. This peaks out at full demand (66% of capacity) at 303,000 tonnes per annum.

Scope 1 emissions (on-site) will be offset by mitigated by purchasing EU ETS credits in the first instance, and by other measures outlined in Section 5.

Scope 2 emissions (imported electricity) will be mitigated through virtual power purchase agreements with non-subsidised renewables either on-shore or off-shore.

The system will be optimised to minimise carbon emissions and is expected to perform 20% - 25% better than grid alone in terms of annual CO₂ emissions. The adoption of absorption chilling as and grid decarbonisation will enable a reduction of emissions further by one third (to 192,071 TCO₂/annum). When CCS becomes viable in Ireland, further reductions in annual emissions will be possible.

Project Red Admiral will be subject to the requirements and monitoring mandated by the Commission for Regulation of Utilities in its decision on the grid connection process for Large Energy Users. The project will be required to achieve specific goals in terms of dispatchable generation and use of renewable energy which will be monitored and policed by EirGrid as the System Operator.

8 List of Figures

Figure 1 - Red Admiral Energy Mix.	4
Figure 2 - Emissions factors used in this analysis.	6
Figure 3 - Hourly Grid Carbon intensity data for 2023.	7
Figure 4 - Solar Output model (120MWp PV) using 2023 solar data at the location.	7
Figure 5 - Assumed data centre demand ramps.	8
Figure 6 - Assumed SOFC Ramp.	8
Figure 7 - Solar PV Ramp.	9
Figure 8 - Fifteen-year Electricity demand and sources.	9
Figure 9 - Annual Emissions.	10
Figure 10 - Electricity demand and sources over 15 years.	11
Figure 11 - Carbon Emissions over 15 years.	11
Figure 12 - Annual operational carbon emissions for options considered.	12
Figure 13 - Future emissions reductions opportunities.	15

9 Abbreviations

Abbreviation	Meaning
DC	Datacentre
LEAP	Large Energy User Action Plan
LEU	Large Energy User
DER	Decentralised Energy Resource
FI	Further Information
RFI	Request for Further Information
CO ₂	Carbon Dioxide (Greenhouse Gas)
MT CO ₂	Million Tonnes CO ₂
GHG	Greenhouse Gas (emissions)
CPPA	Corporate Power Purchase Emissions
CRU	Commission for Regulation of Utilities
PSO levy	Public Service Obligation levy
PV	Photovoltaic (Solar)
BESS	Battery Energy Storage System
MWh	Megawatt hour (1000 kWh)
GWh	Gigawatt hour (1000 MWh)
TWh	Terawatt hour (1000 GWh)
MW	Mega Watt (1000 kW)



APPENDIX 5.1



Economic Impact Assessment

Red Admiral Data Centre & DER Project

Powered &
Connected



Contents

Economic & Community Benefit Assessment of Red Admiral DC Facility DER development proposal –
Report June 2025

1. Introduction

2. What are Data Centres and what do they do?

Data Centre Types
Drivers for Data Centres
Data Centre Users / Clients
Emerging formats

3. Analysis of proposal and key outputs



4. Economic Impact & Community Benefit



5. Policy towards Data Centres and Digital Infrastructure

Appendices

Case Studies
Glossary of terms
Index of key policy

Executive Summary

The Red Admiral Data Centre (DC) Facility and Decentralised Energy Resource (DER) development proposal in County Westmeath will exemplify the optimum future model for delivering the twin objectives of Digitalisation and Decarbonisation at the fore of national development policy in Ireland. The project offers lessons for the design and integration of next generation DC development which reflects the 6 key principles set out in the Government's policy statement on data centres (2022). This includes regional location preference; co-located renewable power generation; economic benefit to the host location and local enterprise ecosystem (particularly SME's); strategic grid connection and efficiency; and decarbonised design codes leading to net zero data services.

Chief among these strategic priorities is the regional development impact resulting from the significant investment in the future economy through digital infrastructure and services in an area undergoing economic restructuring away from fossil fuels extraction and processing and related heavy industries to a decarbonised cleantech economy with new and higher value employment and upgraded labourforce skills. This investment, in turn, will lead to significant secondary investment by new enterprises and a continuous and positive transition in the regional economic base.

Meeting the demand for future data centres to drive the AI revolution and big data hosting and processing will require a more robust criteria based approach to proposed projects than in the past. The Red Admiral project has carefully incorporated these critical elements to ensure current and future policy and compliance is respected and demonstrated.

The location of the proposed development with its enabling infrastructure already in place (primary grid connectivity for electricity and gas; gigabit fibre broadband; direct motorway access and close proximity to 3 rail stations) offers outstanding competitive advantage over other locations such as the Greater Dublin region which is over burdened with development pressure and labour shortages or other regional locations without the key infrastructure in place.

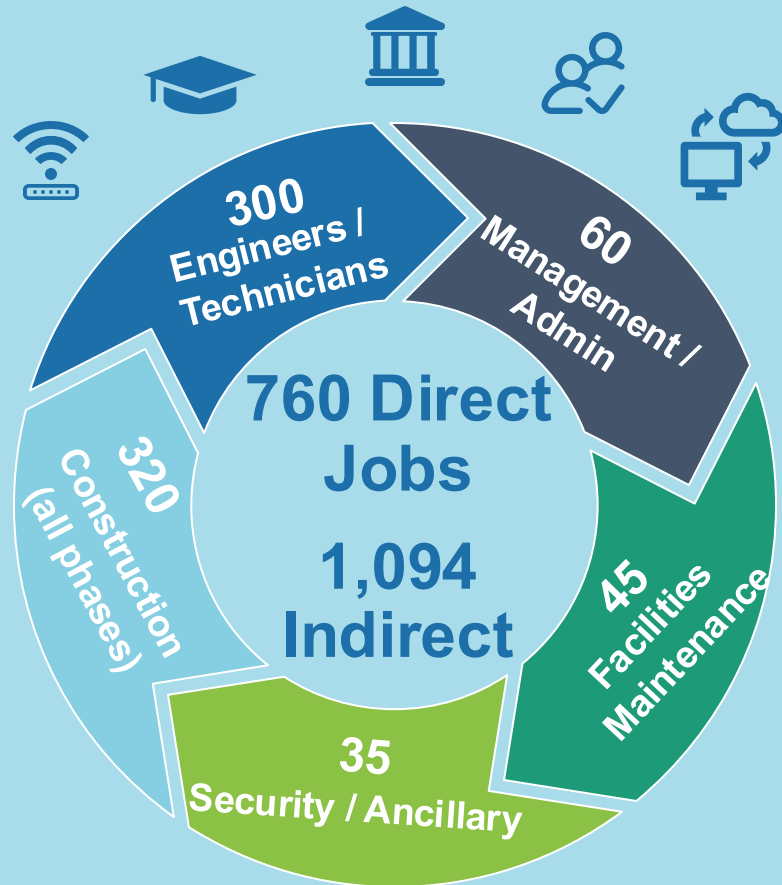
Key Economic Outputs and Impacts

It is forecast that the Red Admiral project will deliver the following economic contributions to the local and Midlands regional economy.

- Construction Investment in excess of €1bn over the five year development project;
- Construction related employment of 320 FTEs (full time equivalents) annualised for ten years;
- 440 direct operational jobs across a range of occupations ;
- 1,094 indirect and induced jobs in the local / regional service economy and the supply chain;
- Generating almost €80m in additional annual wage circulation;
- Annual GVA (Gross Value Added) of €118m to the economy.

Other key economic outputs will include (a) strategic digital and low carbon / renewable energy infrastructure to catalyse future investment and enterprise creation in the digital and greentech sectors; (b) a variety of local community benefit initiatives to support local sports clubs, schools and charitable groups. The graphic on the following page outlines these outputs and impacts resulting from the proposed Red Admiral DC and DER.

Employment related economic impacts



Key Annual Impacts by year 5	Key Assumptions & metrics used
440 direct operational jobs at Data Centre across a variety of professional, technical, management and skilled occupations	<ul style="list-style-type: none"> Data Centre jobs per sq.m (1FTE : 400sq.m) Incremental employment growth years 1 to 5. Annual impact measured at year 5 employment level.
320 annualised FTE construction jobs over all development phases	<ul style="list-style-type: none"> 320 full time equivalent (FTE) Construction jobs annualised over 10 years. It is estimated that up to 3,200 temporary construction related jobs will accrue over the lifetime of the development many of which will be short term and limited to a specific process in the development.
1,094 indirect jobs through additional demand and consumption in the local / regional economy	<ul style="list-style-type: none"> Indirect and induced employment in local / regional supply chain economy at a ratio's of 1 : 0.75 to 1 : 2 depending on the role and salary levels of direct jobs. Largely in service economy.
€79m additional annual wage circulation in the economy (direct & indirect jobs)	<ul style="list-style-type: none"> Additional wage circulation from both direct and indirect jobs. Assumed rates ranging from €40k for security and ancillary roles to €70k for management and senior engineering / IT roles.
Annual GVA Impact in local / regional economy €117.8m	<ul style="list-style-type: none"> Adjustments for leakage, displacement and deadweight factors resulting from investment between 10% and 20%. Economic impact multiplier of 1.7 applied to Data Centre employment value.

The assessment is based on forecast employment impacts only; other expenditure and investment impacts through the operation of the enterprise are not included in the economic model as they are yet unknown

1. Introduction

Data Centres have become a critical part of Ireland's Digital Infrastructure and are enmeshed in our Digital Economy. They offer significant economic benefits, contributing to high value job creation, local economic growth, and the development of the digital economy. They attract investment, facilitate technological innovation, and provide essential infrastructure for enterprise, ultimately boosting economic activity, competitiveness, and productivity. The explosive growth in AI technology in recent years is leading to growing pressure on energy demand by Large Energy Users, especially Data Centres. However, this situation is not unique to Ireland.

1. Introduction

“Ireland has emerged as a leading host for data centres in Europe... the processing and safe storage of data from all sectors of life are considered to be part of Ireland's critical infrastructure. However, by necessity data centres are very large consumers of electrical power. There have been significant technological gains in power efficiency, yet there is a direct relationship between the scale of the digital landscape we use and depend upon, and the electricity and other energy sources that data centres require” (Data Centres & Energy, Spotlight Paper No. 2, July 2024 – Library & Research Service Dail Eireann)

Ireland, and Dublin in particular, is recognised as an emerging global data centre hub. The group term ‘FLAP-D’ being Frankfurt, London, Amsterdam, Paris and Dublin is used by market analysts to describe the biggest capital hubs for ICT infrastructure in Europe. Dublin and Ireland is notable amongst these, due to the recent and rapid growth in data centres here, and, because Ireland has attracted the world's leading technology multinationals to establish their European bases. This type of clustering and agglomeration is a particular feature of data centre and tech industry locations.

Outside of the Greater Dublin region there is little investment to date in tier 3 or tier 4 Data Centres and almost no sites in rural parts of the country. The distribution of this economic activity across the regions of Ireland will be a key consideration in policy relating to Data Centres and will be a key economic driver for these regions through new large scale development projects, new employment opportunities, energy infrastructure, innovation and diversification of the enterprise base and skills transition among others.

Meeting the demand for future data centres to drive the AI revolution and big data hosting and processing will require a more robust criteria based approach to proposed projects than in the past. A number of critical features from location to site access, connectivity and capacity and co-location of renewable power will all form the basis of where and when new data centres can be supported and permitted.

Key Issues for Data Centre Policy in Ireland

- According to 2023 statistics, data centres consume 21% of all metered electricity from the grid, increasing from 18% in 2022. However, this statistic is a transitory measure and reflects a number of variables at a point in time including the number of data centres and their demand load; the relative and absolute capacity in the national energy grid; the scale of onboarding new energy generation and future demand and consumptions cycles. The rate of technology development and innovation in battery and energy storage will also be a key factor in the assessment relative energy consumption by data centres or other Large Energy Users (LEU's).
- There will be a growing need for large energy users such as data centres to consume the capacity in the grid when the full build-out of offshore renewables is met, circa 2030 and beyond.
- New policy is needed on private wire connections to the electricity grid, and data centre-associated companies pursuing private renewable electricity generation projects off the grid.
- Decisions on new connections to the electricity grid and the gas network need to be balanced against the wider climate action targets with respect to decarbonisation of electricity generation, and, the economics of the ICT sector in Ireland.

About this report

This report provides an assessment of the economic impacts and community benefits likely to arise from the development as outlined in section 3. The economic impacts are based on forecast employment outputs for the project. It does not take into account potential investment profiles or expansion of the facility in the future. The assessment also only focuses on the impacts associated with the construction and operation of the Data Centre and not the DER components. It is assumed that the build, installation and maintenance of the solar park and other energy elements will have additional impacts.

Economic context for data centre's

It is clear that the Digital Economy success story in Ireland is disproportionately linked with GDP growth over the past decade or more and which provides significant employment in both scale and value. It has become a critical source of exchequer receipts from corporation tax / income tax / VAT on digital products and services and other taxes. Our digital infrastructure and skills base has attracted many Tech Giants to not only invest in Ireland but to make it their European HQ giving Ireland an enviable position in the global digital economy.

The next wave of digital expansion driven by AI, Fintech, Cybersecurity, Internet Services and Digital Transformation in enterprise and public services will likely secure further economic growth for Ireland. It is also going to require a strong enterprise policy field and, especially cluster management strategies, to accommodate growth and new activity emerging from these sectors.

This investment and expansion of digital economy has happened despite Ireland having a relatively low level industrial energy capacity. Like many other sectors in the service and knowledge economy, Ireland's growth has been dependent on a highly skilled and educated workforce especially in the Science, Technology, Engineering and Maths (STEM) disciplines; a favourable corporate tax regime; progressive Eurozone member and English speaking and a strong policy toward supporting R&D and innovation.

Ireland's industrial and enterprise base is characterised by relatively low energy users unlike more industrialised countries with heavy industries such as chemicals and petrochemical, steel production, extractive industries, automotive and aerospace. With the exception of data centres the digital sector in Ireland is not a large scale energy user.

However, as electrification of transport, domestic heating, a reducing dependence on fossil fuel to power industry and a growing population and demand load, Ireland needs to rapidly and significantly scale up its energy production and grid infrastructure to meet growing consumption demand.

Much of this will come from an expanding renewables base and more interconnected capacity to facilitate imported (and exported) energy.

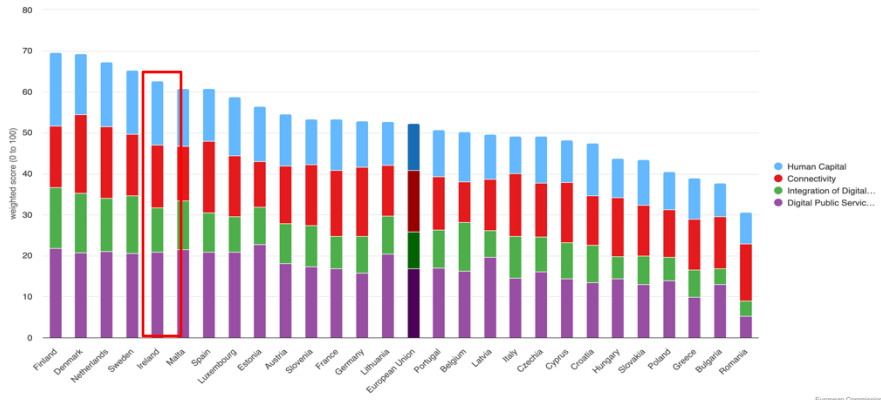
As large energy users, data centres must be seen in the context of this overall demand growth for clean energy while recognising their fundamental role in the digital and wider economy. By limiting or capping data centre operations Ireland will lose valuable investment and reinvestment from the tech sector and related enterprises while at the same time growing consumption and demand for energy from other sectors of the economy and society will continue to place pressure on our energy capacity.

The choice between energy security and capacity and future economic growth is not a sustainable trade off. Ireland must secure both aspirations in parallel. The challenge for policy makers is to spread the development of data centres into nodes with existing capacity and scope for co-located / on-site renewable power while at the same time rapidly scale up energy generation especially from on and offshore wind and solar power.

The current policy towards data centre development rest on a number of core principles that will ensure a managed and distributed growth model. Balancing demand for new grid connections in locations that can best meet the required load and provide valuable local economic impact and act as catalysts for future enterprise expansion. The critical infrastructure criteria will include primary transport access, digital connectivity, direct access to the national electricity and gas grids and potential for on-site renewable energy generation.

Section 5 of this report provides an overview and analysis of the current policy towards data centre development in Ireland and their role in the wider policy context of digitalisation, innovation and industrial policy.

Digital Economy and Society Index
Year: 2022



European Commission

Irish Digital Economy

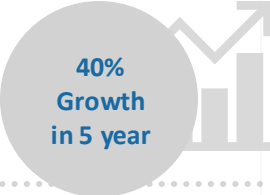
Ireland is home to most global Tech firms in a significant way. 4 of the 5 top 'Tech Giants' have their European HQ in Ireland. *(April 2025 Forbes)*



Ireland ranks 5th among the EU 27 for Digital development and maturity across 4 key indicators – Skills / Connectivity / Integration of Technology / Digital Public Services. Ireland has steadily improved its position on the DESI (*Digital Economy & Society Index*) since its introduction in 2014.

The contribution of digital to the Irish economy is huge and rapidly growing, accounting for 18% of GDP in 2023 and employing over **165,000 direct jobs** representing over 6% of national workforce.

€52+bn GVA



ICT Salaries 50% higher than average pay levels

26% of all exports are from Digital Sectors

Around 20% of total Corporation Tax receipts come from the Digital Sector €4bn (2023)

AI, FinTech, Cyber Security, Data Analytics and Internet Services all increasing at rapid pace and driving growth for Data Storage & Services

2. What are Data Centres and what do they do?

Data Centres are a fundamental part of our digital infrastructure. While they perform a specific role in terms of data storage and processing capability, they also have many contributing benefits and impacts for the economy and society as a whole. They enable investment and employment from the ICT/Tech sector in core operations such as Internet Services; Cloud Computing; Enterprise Software; Social Media; Digital Finance; e-Government and much more. Ireland has become a hub for tech operations and investment and consequently as a hub for data centre development. This ecosystem is now a fundamental part of the Irish economic landscape and is all interconnected and in many cases interdependent.

Data Centres are essential for Digital Evolution

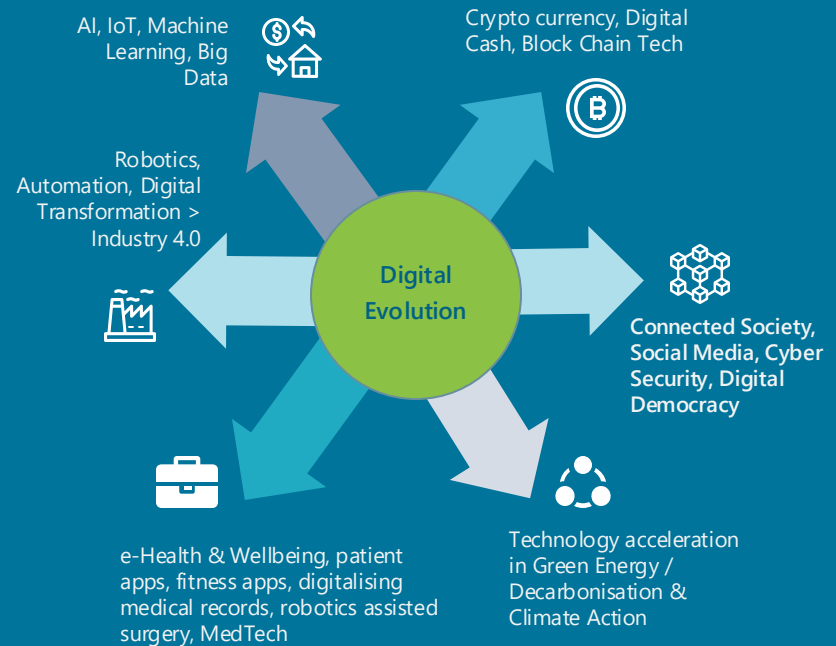
Technology and digital services are driving sectors and economies at a rate not seen before and with it an enormous wealth accumulation for those creating new markets with technology or disrupting existing ones. As we digitalise and deepen our dependence on cloud solutions, IOT, AI and other digital media and digital tools we need to ensure that the digital infrastructure, services and talent can keep pace with demand from enterprises and citizens for fast and reliable connectivity and data.

Data Centres with critical connectivity to the (lit or unlit) fibre network and to the energy grid are a fundamental part of our digital infrastructure. While they perform a specific role in terms of data storage and processing capability, they also have many contributing benefits and impacts for the economy and society as a whole. They drive investment and employment from the ICT/Tech sector in core operations such as Internet Services; Enterprise Software; Social Media and e-Finance. Digital Transformation (DX) in industry refers to the integration of digital technology into all areas of an organisation resulting in fundamental changes to processes and operations and delivering value to customers, clients, citizens and internally to the organisation and its workforce.

Without Data Centre's these digital developments and investment in innovation would not be possible. Ireland has become a hub for tech operations and investment and consequently as a hub for data centre development. This ecosystem is now a fundamental part of the Irish economic landscape and is all interconnected and in many cases interdependent.

Some of the applications and sectors that are leading this wave of technological and digital innovation are highlighted in the graphic to the right.

Digital Innovation & Emerging Technology



What are Data Centres?

Data centres are an essential component in our digital infrastructure. They enable data storage, processing, and connectivity for enterprise in the host location and across the globe. Data Centres rely on other supporting infrastructure including zoned land, grid energy access, and primary fibre connections including sub-marine connectors among other factors.

The proliferation of data through digital technologies has changed the way we engage with the world. Internet Services, mobile Apps, social networks, digital finance, e-government, and the 'cloud' have ushered in a hyper connected society. The AI revolution is accelerating the need for greater data storage and faster data processing. Data centres are the engines to facilitate this and are critical to ensuring data security.

Amazon defines a data centre as *"a physical location that stores computing machines and their related hardware equipment. A data centre contains the computing infrastructure that IT systems require, such as servers, data storage drives, and network equipment. It is the physical facility that stores any company's digital data."*

The EU adopt the definition as *"a structure or a group of structures used to house, connect and operate computer systems/servers and associated equipment for data storage, processing and/or distribution, as well as related activities"*. There is no definitive terminology in Irish Planning Law for 'Data Centre' as a use classification. The closest reference used in Section 49 of the Planning & Development (Amendment) Act 2018 describes the development class as *"A facility consisting of one or more than one structure, the combined gross floor space of which exceeds 10,000 square metres, used primarily for the storage, management and dissemination of data, and the provision of associated electricity connections infrastructure"*

Ireland is attractive to Data Centre investors and operators due to the fact that many of the large technology end users are located here; our temperate climate (reducing the need for additional energy consumption for cooling); a high level of digital skills in the workforce and a well established supply chain of providers specific to data centre construction and operation.

Spotlight on Dublin as a Global Data Centre Hub

- Around 90% of the 100+ Data Centre's in Ireland are clustered in the Greater Dublin Region. A further 6 existing data centres are located in Galway, Limerick, Cork, Drogheda and Carlow. Several other regional sites have planning permission or are at construction stage for various scale data centre including Arklow, Ennis, Letterkenny and Killala;
- Dublin ranks 16th in the world and 3rd in Europe in terms of data centre operational IT load at 738 (MW) per annum; (CW DataCentre Comparison 2024) Bitpower estimate
- Dublin's Data Centre cluster contains a range of facility types, from Hyperscale to Mid-size and small hybrid data centres. This profile is not typical of other data centre hubs and shows Dublin's deep reach into the tech industry at all levels;
- Key clusters of data centres have grown up around the M50 in Dublin including Blanchardstown, Clonee, Parkwest Campus and Profile Park / Grange Castle;
- Up to 80% of all power consumption from the sector in the Dublin region is classed as Hyperscale type users;
- One of the leading Data Centre developers and operators worldwide has 6 facilities across west Dublin offering a range of co-location support and services to the tech sector. It is estimated by KPMG that the Equinix ecosystem (cluster of 260 firms) contributes over €15bn to Irish GDP annually.

Data Centre Classification

Data centres are typically differentiated by their power capacity or operational IT load in mega-watts (MW) terms. Bitpower, an industry intelligence and research provider, estimates that there were 25 small data centres (0 – 5 MW); 30 medium sized data centres (5 – 15 MW) and 27 large data centres (15 + MW) in Ireland in June 2023. More data centres have come online since then in each category of scale. It is evident from the research that the scaling up of power capacity is making earlier size classification redundant as many planned new data centre developments are reaching capacity of over 100MW and in some cases over 200MW.

The term **Hyperscale data centre** refers to a large built-for-purpose facility generally for a single user with onsite power generation. There are roughly 10 of these such facilities in Ireland which are owned and managed by Tech Giant users including Microsoft, Amazon, Meta and Google. The other terms used are **Colocation Wholesale facilities; Colocation Data Centres** (groups of third party users) and **Private Data Centres**. Data centres are certified into four classifications referred to as tiers. Tier 4 is the highest tier and describes data centres that have their own on-site backup electricity generation to ensure uninterrupted operation. Most data centres in Ireland are classed as Tier 3 and the market forecasts this category to experience the greatest growth over the coming years.

According to Bitpower's Q4 2024 Market Review, Ireland's data centres range in size from very small (500 kW) to very large (50 MW) and everything in between. They cite 19 small private or telco data centres providing local services, internet and broadband. At the next level they cite 9 standalone Colocation data centres hosting groups of users.

The largest category or facility type is the campus style developments of multiple data centres of varying sizes and user groups from small and medium scale to hyperscale data centres. Bitpower cite 23 such campuses containing 64 individual data centres in total. Some of these are at various stages of completion with many of them operational for close to a decade.

A key trend for data centre development is towards the campus type development where the economies of scale of large site assembly and servicing together with data proximity and latency requirements lead to data centres of all types being built in clusters. Scaling and expansion in short timeframe and shared resources and services become a key feature of the cluster model.

Baxtel, an industry intelligence and research platform, cites 15 planned or under construction sites in Dublin alone in Q1 2025 but many of these are further phases of existing data parks.

Major new developments of a campus format are also approved for Naas, Co. Kildare known as Jigginstown which will accommodate up to 6 data buildings largely for Microsoft Azure. Another large project in the pipeline outside of Dublin is a phase 2 development for AWS Amazon in Drogheda, Co. Louth and a very large development site of 145 acres in Ennis, Co. Clare to accommodate Art Data. Echelon Data Centres has been approved for a hyperscale development at Arklow, Co. Wicklow on a 100 acre site. All of these projects will be in excess of €1bn investment values with some estimated to be close to €4bn in investment value.

Data Centre Investment Profile

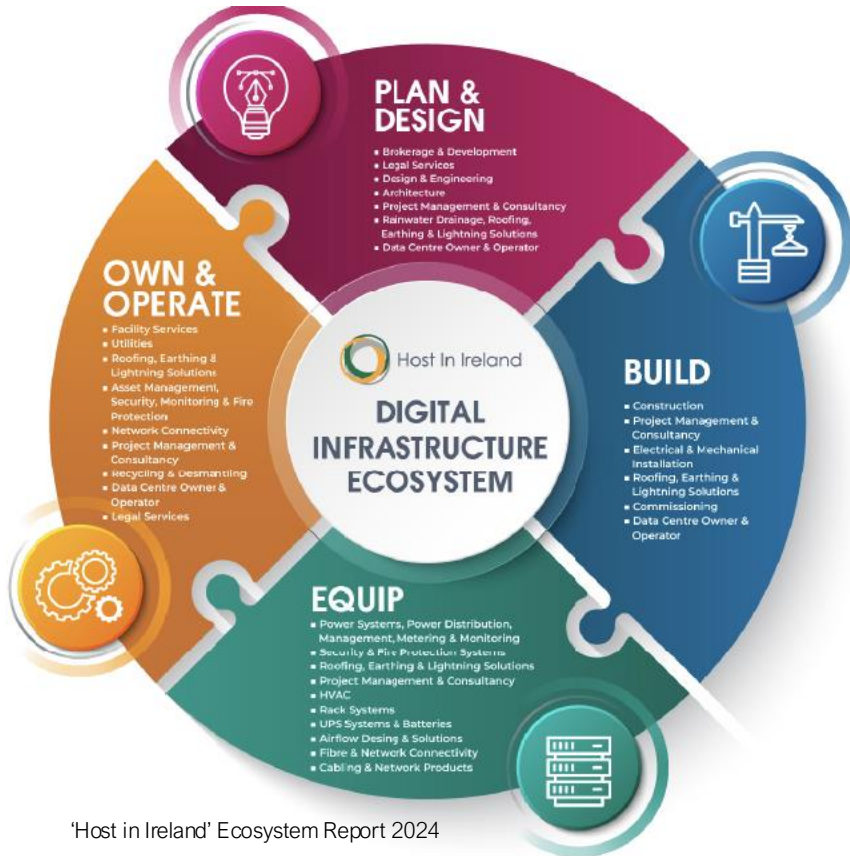
According to IDA Ireland, Data Centres not only create high-value jobs but also make Ireland more attractive to tech giants due to its strategic connectivity and well-developed infrastructure. As of 2022, IDA Ireland reports that data centre operators directly employ around 16,000 people. When contractors are included this figure rises to 27,000. Bitpower estimate that this direct employment figure is 17,000 employees by 2023.

Data centre investment is significant on any enterprise or industrial measure. Some of the Hyperscale facilities could run into investment values of €2-3bn when land assets, construction and IT & equipment fitout is factored in. Overall something in the region of €15bn has been invested in the construction of data centres in Ireland over the past decade or more which has scaled dramatically since 2018. Bitpower estimate that there will be an average investment value of €2bn per annum over the coming 5 years in the construction of data centres in Ireland.

There are a number of data centre development plans awaiting approval or commencement with a value of €8bn to €10bn currently in the pipeline in Ireland.



Data Centre Ecosystem & Stakeholders



The graphic to the left provides an illustration of the complex web of expertise and providers involved in the key stages of data centre from design and planning to kit-out and operation. This ecosystem of partners and providers is as critical as the infrastructure itself. Host in Ireland is a forum of members involved in the various disciplines and services in the development and operation of data centres.

Data Centres Workforce & Roles

Data Centres have a relatively low employment density / jobs per sq.m ratio. This is natural given that most of the space in such facilities are taken over by racks of computer servers and drives for the storage of data. However, in relative terms data centres are employment rich containing a diverse set of roles and skill sets to operate a single data centre. This includes IT technicians; data engineers, plant and M&E engineers; facilities maintenance workers; security personnel; management and communications roles; administration staff and many contracted service providers.

Data Centres & Grid Connection

The scale of the data centre operation and the planned power demand and the location, will determine what type of Grid Connection Agreement is offered to the data centre operator. In very large load cases for Hyperscale DC's in the Dublin region or medium sized facilities in rural areas or regionally a connection with EirGrid (the transmission system operator) is most likely. In other cases a connection agreement will be with ESBN (the distribution system operator).

3. Analysis of proposal and key outputs

The development will comprise six two-story data buildings designed to meet Leadership in Energy and Environmental Design (LEED) standards. These DC facilities will incorporate advanced cooling and heat recovery systems to optimise energy efficiency and water conservation. The design integrates decentralised energy resource (DER) technologies to ensure self-sufficiency, featuring a 160MW Solid Oxide Fuel Cell (SOFC) system for clean power generation, a 250MW Battery Storage System (BESS) for grid stability, and a 180MW solar photovoltaic array to harness renewable energy. The data centre campus will deliver significant economic benefits to the midlands region through new employment creation in both the construction and operation phases, additional demand in the local supply chain and as a catalyst for future enterprise and innovation in the digital and green tech sectors in the region.

Key Project Outputs: Data Halls Infrastructure, Enterprise & Employment

161,226 sq.m of DC facilities across 6 DC Buildings within a 39ha DC campus

440 direct jobs in data centre operation
320 FTE Construction jobs annualised over 10 years

1,094 indirect & induced employment in regional supply chain

€79m additional annual wage circulation in economy > Annual GVA
€118m



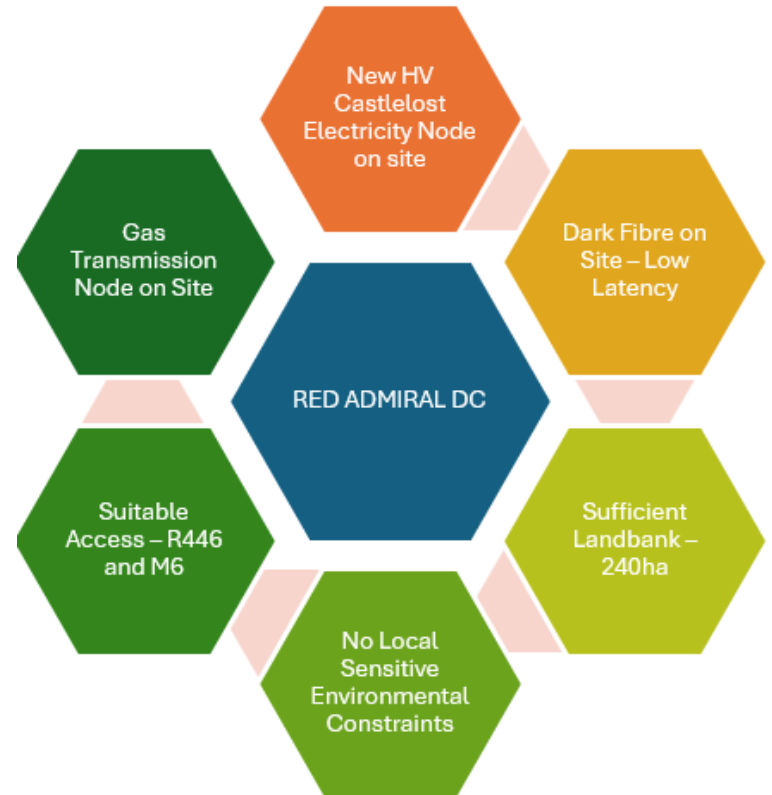
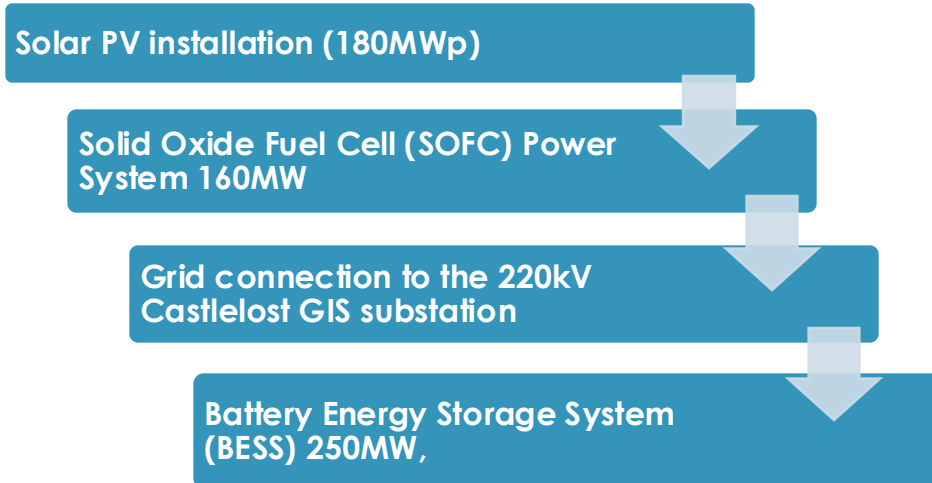
The Red Admiral project represents a significant regional Campus based DC facility supported by collocated energy generation and storage assets (DER). This DC facility is regarded as a hyperscale facility but is differentiated sustainable and innovate design and conformance with international best practice and Irish policy for the sector.

The facility will be a critical investment in the region stimulating new and transition employment opportunities; local supply chain expansion to service the enterprise and investment in the digital infrastructure of the Midland's region. The development of new skills and innovation knowledge will lead to new enterprise creation both in the Tech sector and the service economy. Potentially the site can become a host for Start-up & Innovation Supports targeted at Data Services; AI and GreenTech Economy enterprises and convergent sectors.

Key Project Outputs: DER Facilities

Infrastructure, Power Capacity

Alongside the Data Centre facilities there is Decentralised Energy Resource (DER), which will be constructed across circa 200ha adjoining land. The DER incorporates several power assets which will generate, store and manage electricity close to the DC facility. The DER will optimise the use of these assets to support operations at the DC facility and provide clean, dedicated power that tracks the DC facility's load requirements. The project has been designed to conform with the Irish Government's *Principles for Sustainable Data-Centre Development* which details a set of national principles that should inform and guide decisions on future data centre development.



Key Analysis Criteria for SWOT

We have used a criteria based approach to appraise the likely project outputs and their relative value or disbenefit. The key criteria used to underpin this analysis are the current principles on which the government policy for data centre development rests. These six principles are clear in their intention and influence towards the future accommodation for the data centre sector. Our analysis model is a simple Strengths / Weaknesses / Opportunities & Threats (SWOT) to evaluate the specific proposals, outputs and expected outcomes from the project from its construction to its operation.



1. ECONOMIC IMPACT

The Government has a preference for data centre developments associated with strong economic activity and employment.



2. GRID CAPACITY AND EFFICIENCY

The Government has a preference for data centre developments that make efficient use of our electricity grid, using available capacity and alleviating



3. RENEWABLES ADDITIONALITY

The Government has a preference for data centre developments that can demonstrate the additionality of their renewable energy use in Ireland.



4. CO-LOCATION OR PROXIMITY WITH FUTURE-PROOF ENERGY SUPPLY

The Government has a preference for data centre developments in locations where there is the potential to co-locate a renewable generation facility or advanced storage with the data centre, supported by a Corporate Power Purchase Agreements, private wire or other arrangement.



5. DECARBONISED DATA CENTRES BY DESIGN

The Government has a preference for data centres developments that can demonstrate a clear pathway to decarbonise and ultimately provide net zero data services.



6. SME ACCESS AND COMMUNITY BENEFITS

The Government has a preference for data centre developments that provide opportunities for community engagement and assist SMEs, both at the construction phase and throughout the data centre lifecycle.

Strengths associated with the Red Admiral Project

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- The selected site and supporting infrastructure is second to none. Existing power terminal on-site and plan to host large renewables generation through solar energy park and Fuel Cell Battery facility. This co-located decentralised energy resource is a fundamental policy requirement for future data centre development and all large energy users as we face the challenge of rapidly scaling our renewable energy and electricity grid capacity.
- Regional location in Midlands/East Midlands is benefiting from proximity to established data centre clusters in Dublin region but not contributing to development pressure in that region.
- Access to critical infrastructure including motorway, grid connectivity for electricity and gas and primary fibre connections are all present on-site.
- Driving new economic activity in a Just Transition Region targeted for restructured economy and employment.
- Accelerating investment towards decarbonisation and energy security by virtue of collocated renewables.

Weaknesses associated with the Red Admiral Project

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- Lack of policy clarity at national level on data centres at present is leading to hold up and delay in the planning process and potential for lost investment to other countries with clearer policy framework for such developments.
- Grid demand and energy security vulnerability and fears will lead to strategic opposition to the project irrespective of its credentials and KPI's in relative terms.
- Very high energy demand from the sector.
- Relatively low employment density compared with other forms of enterprise and investment despite its contribution to economic restructuring.
- Local labour for construction phase and operation potentially is short supply leading to additional costs and delays.

Opportunities associated with the Red Admiral Project

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- New economic activity leading to employment growth, skills development, regeneration and new enterprise creation in a Just Transition Region targeted for enterprise support.
- Strong potential for future clustering in related activity (digitalisation and decarbonisation) arising from the Red Admiral investment in key enterprise infrastructure and the regional skills base.
- Planning conditions will seek development contributions which will be reinvested in local infrastructure and amenity.
- The enterprise will become a significant commercial rate payer in the Local Authority bringing additional annual revenue for local services.
- Potential to partner with local community and statutory bodies to deliver local community benefit projects e.g. sports & recreation; education; tidy towns; biodiversity; local heritage etc.
- Development could act as a catalyst and host for innovation and research support around best practice in digital technology and renewable energy models.
- Sustaining communities through employment growth and active participation in local enterprise networks.

Threats associated with the Red Admiral Project

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- Macro economic conditions could decline and create uncertainty in the investor market leading to re-evaluation of the returns.
- Competition from other locations and countries for same investment.
- Unsupportive legal and planning environment / regime due to the conflict between the competing priorities for digitalisation and carbon neutral targets.
- Delays associated with planning policy and process leading to inertia and opportunity cost.

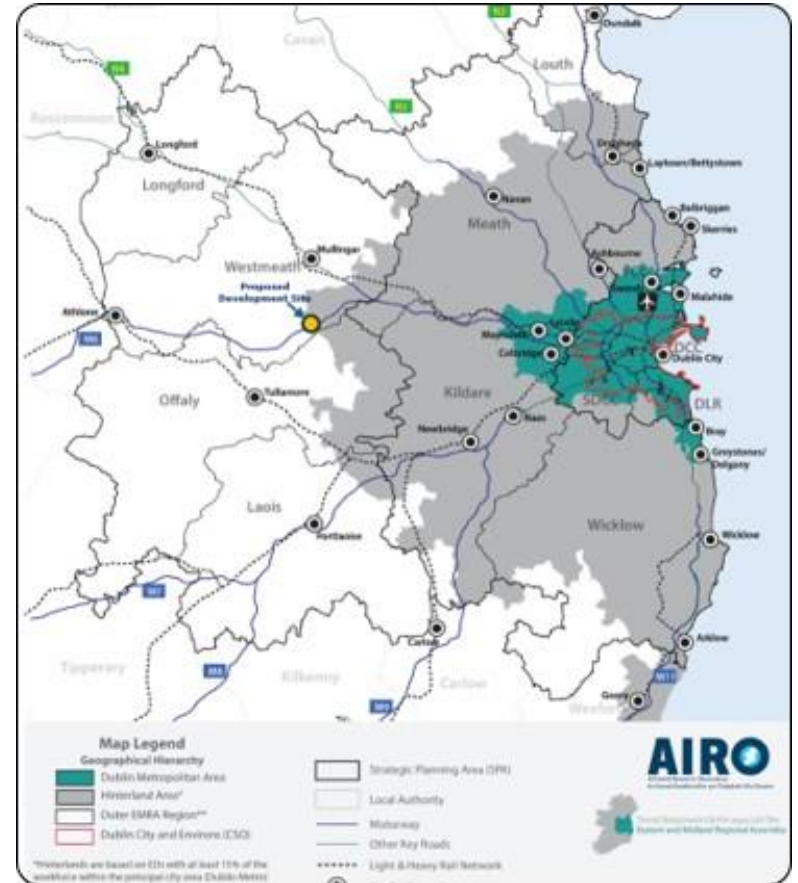
Conclusions from the SWOT Analysis

The Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy (July 2022) defines how the State will reconcile the “twin transitions” of deep digitalisation and rapid decarbonisation. The document recognises data centres as core digital infrastructure while acknowledging the finite headroom on the national electricity grid and the binding carbon-budget ceilings set under the Climate Action and Low-Carbon Development (Amendment) Act 2021. Within that strategic tension the Statement articulates six guiding principles, each of which were carefully examined and used to guide and development the proposed project.

The proposed DC facility and DER will generate high-value employment, skills and export earnings rather than speculative capacity. It is located at an existing unconstrained node on the electricity system with available network headroom. The project includes a DER which can alleviate constraints through behind-the-meter flexibility (e.g. battery storage).

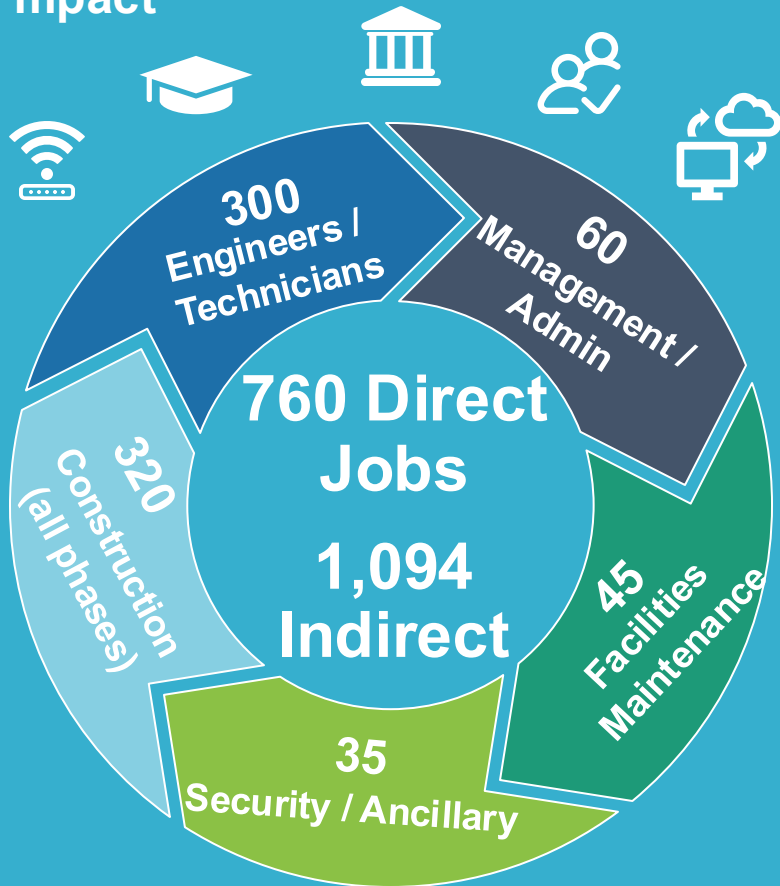
Because of its location and design, the DC facility be able to enter into long-term corporate power-purchase agreements (CPPAs) (importing low carbon and renewable generation from the national grid) in addition to it being supported by DER assets (on-site generation and storage). The DC facility adjoins the DER assets which includes to large-scale renewable and storage assets. It is also located adjacent to the existing Castlelost Flexgen project in anticipation of CRU large energy user (LEU) policy decision. The graphic to the right illustrates the key infrastructure components of the project aligning with policy.

It is clear that the project will provide tangible benefits to the local and regional communities along with indigenous small-and medium-sized enterprises (SMEs) in the region. The socio-economic benefits will include new employment creation (direct and indirect), upskilling of workers, local procurement and SME enablement, development contributions, donations to charitable organisations, local authority rates, community benefit funds and social investment as outlined in this report.



4. Economic Impact & Community Benefit

Employment related economic i mpact



Key Annual Impacts by year 5	Key Assumptions & metrics used
440 direct operational jobs at Data Centre across a variety of professional, technical, management and skilled occupations	<ul style="list-style-type: none"> Data Centre jobs per sq.m (1 FTE : 400sq.m) Incremental employment growth years 1 to 5. Annual impact measured at year 5 employment level.
320 annualised FTE construction jobs over all development phases	<ul style="list-style-type: none"> 320 full time equivalent (FTE) Construction jobs annualised over 10 years. It is estimated that up to 3,200 temporary construction related jobs will accrue over the lifetime of the development many of which will be short term and limited to a specific process in the development.
1,094 indirect jobs through additional demand and consumption in the local / regional economy	<ul style="list-style-type: none"> Indirect and induced employment in local / regional supply chain economy at a ratio's of 1 : 0.75 to 1 : 2 depending on the role and salary levels of direct jobs. Largely in service economy.
€79m additional annual wage circulation in the economy (direct & indirect jobs)	<ul style="list-style-type: none"> Additional wage circulation from both direct and indirect jobs. Assumed rates ranging from €40k for security and ancillary roles to €70k for management and senior engineering / IT roles.
Annual GVA Impact in local / regional economy €117.8m	<ul style="list-style-type: none"> Adjustments for leakage, displacement and deadweight factors resulting from investment between 10% and 20%. Economic impact multiplier of 1.7 applied to Data Centre employment value.

Estimated employment impacts from development and operation of Data Centre

Source of NEW employment	Total Direct Employment (all years)	Total Indirect & Induced Employment (all years)	Annual Job Creation (FTE)					Annual Wage Circulation (direct jobs)	Annual Wage Circulation (indirect jobs)	Adjusted for leakage & Displacement	GVA Multiplier
			Year 1	Year 2	Year 3	Year 4	Year 5				
Data Centre technicians & engineers	300.0	750.0	30	50	60	80	80	€20,400,000	€36,000,000	€45,120,000	€76,704,000.0
Management & Administration	60.0	90.0	20	10	15	5	10	€4,200,000	€4,320,000	€5,964,000	€10,138,800.0
Facilities maintenance	45.0	67.5	20	10	5	10	0	€2,160,000	€3,240,000	€4,860,000	€6,804,000.0
Security and ancillary	35.0	26.3	15	10	5	5	0	€1,400,000	€1,050,000	€2,450,000	€3,430,000.0
Construction related jobs from DC development (FTE)	320	160.0	N/A	N/A	N/A	N/A	N/A	€15,360,000	€7,680,000	€20,736,000	€20,736,000.0
TOTAL JOBS HOSTED / SUPPORTED	760	1093.8	85	80	85	100	90	€43,520,000	€52,290,000	€79,130,000	€ 117,812,800

The economic assessment is an outline model based on data and estimates of net direct employment at the site at full capacity. It does not take account of additional jobs safeguarded by the project or any future employment at the site in other operations not contained in the initial project proposal.

Indirect and induced jobs are assumed to accumulate at a range of between 0.75 to 2 jobs for each direct job accumulated by the project depending on which direct roles and their impact in terms of salary levels, propensity for innovation and security of role.

It is assumed that the employment impacts are largely local, meaning little of the wage circulation and supply chain value is lost to the region through leakage or displacement of current economic activity. However, this variable will be relative to the nature of the activity or the business sector in question.

An economic multiplier of 1.7 has been used to reflect the likely impact the investment and ongoing operation's tendency and propensity for further innovation, growth and export of goods and services within that sector and resulting 'ripple effects' in the regional economy.

Regional & Ecosystem Benefits

The project will have a number of direct, indirect and spin off benefits to the regional economy and community. Principally among these will be the significant new employment created through the initial investment and ongoing operation of the facility.

Indirectly the project will create a general stimulus to the local supply chain and service economy from the additional contracts, procurement and expenditure from the new enterprise. This will lead to an increased rate of homegrown Tech enterprises that will support the facility and its equipment and services through supply contracts. At the broader end there will be greater demand in the local / regional economy for hospitality, food, transport services, maintenance and materials, and a range of other goods and services.

Critically the facility will activate the enterprise and innovation supports of the ecosystem and capture the emerging opportunities for clustering associated with the digital and Greentech sectors. This aspect of economic impact is a result of the economic restructuring away from mature and declining industries towards emerging sectors such as digital, advanced manufacturing and engineering and other related knowledge services. As the area is covered by the Just Transition Programme to support workers transition to new roles in technology, renewable energy, high-tech construction and other future economy roles with tight labour markets, the Admiral DC and DER type of investment is crucial to ensuring this restructuring.

The project will also help reimagine the region as a dynamic and digital location. The investment in digital and other critical infrastructure will elevate its position to play in same the league as successful Digital and GreenTech clusters elsewhere in Ireland. The ecosystem intelligence will harness and foster new technology and key skills that will be critical to future success and expansion.



Supporting Local Policies & Strategies

Like any large-scale enterprise or industrial facility there is an opportunity and obligation to support core local priorities and objectives as set out in the local policy domain including the Local Economic and Community Plan (LECP), the draft County Development Plan, the Regional Spatial & Economic Strategy, various Sector Strategies, Westmeath Economic Development Strategy, Local Climate Action Plan, Just Transition Plan for region, Westmeath County Council Corporate Plan.

It will also reflect and embrace what is happening with Digital at a national and international level including the roll-out of e-Government Strategy and other strategic ICT initiatives.

Ultimately the development must ensure that local communities and economies are making the most of their competitiveness, cohesion and sustainability through the application of digital technologies and ensuring citizens have access to the tools and skills to fully participate in the digital society.

An exploration of the opportunities to support the Regional Spatial & Economic Strategy (RSES) for the Midlands & East Region and its priorities and initiatives and the Local Economic & Community Plan (LECP) and its action plan priorities is being pursued with the relevant authorities including EMRA and Westmeath County Council and LEO.

These consultations will help bring clarity to the community benefit aspects that the project can deliver by aligning the investment and enterprise opportunities with local / regional development agendas.

Additionally, opportunities for directly supporting local community projects or groups will be assessed through the relevant local fora including the Local Action Group (LAG) and other community interest groups.



5. Policy towards Data Centres and Digital Infrastructure

Digital Policy Overview

Key Policy Relating to Digital and Data Centre's

- Digital Agenda for Europe & Digital Single Market
- Digital Decade to 2030 & Digital Compass
- Green Deal for Europe & Climate Action Plans
- National Digital Strategy to 2030 – Harnessing Digital
- Government Statement on the role of Data Centre's in Ireland's Enterprise Strategy 2022
- Adapt Intelligently: A Strategy for Sustainable Growth & Innovation 2025 to 2029 IDA Ireland
- Connecting Government 2030 – ICT Strategy for Public Service
- National Broadband Plan 2019 to 2027
- National Planning Framework – Project Ireland 2040
- National Economic Recovery Plan 2021
- Future Jobs Ireland / Enterprise 2025
- National Industry 4.0 & Smart Specialisation Policy
- Digitalisation of SME's in Ireland DETE 2019
- Our Rural Future 2021 to 2025
- Regional Spatial & Economic Strategy (EMRA)
- Midlands Regional Enterprise Plan 2021 to 2024
- Midlands ICT Sector Development Plan
- Midlands Just Transition Fund 2021 to 2027
- Westmeath LECP
- Westmeath County Development Plan 2021 to 2027



National Digital Policy

The digital agenda has become a central policy priority at all levels of Government in recent years. Since the publication of the first National Digital Strategy in 2012 there has been a continuous elevation of digital and innovation measures in policy.

The second National Digital Strategy launched in January 2022 (Harnessing Digital) sets the agenda for digital transition across Ireland's economy and society up to 2030. Harnessing Digital contains four high level priorities for Digital Transition including **Digital Transformation in Business**; **Digital Infrastructure** roll-out; **Digital Skills** investment; and **Digitalisation of Public Services**. Alongside this national framework for digital is the recent Connecting Government 2030 strategy for digital development of public services across all levels of Government.

There is also strong emphasis on digital solutions, infrastructure, skills and practices in the **Our Rural Future** strategy in which local digital strategies are recognized as a core part of the realisation of the goals. The key objectives are:

- Invest significantly in **remote working infrastructure** to ensure people can continue to live in rural communities while following their career ambitions.
- Invest in **rural towns and villages** as hubs of economic and social activity.
- Transform the opportunity for the diversification of rural economies, including through the delivery of **high-speed broadband** to every part of the country.

The policy will help rural economies and rural communities to restructure and to maximise the opportunities afforded by improved digital connectivity, town centre regeneration, the resilience and leadership of local communities, and the transition to a climate neutral society.



Rialtas na hÉireann
Government of Ireland

Harnessing Digital The Digital Ireland Framework



Prepared by the Department of
the Taoiseach
gov.ie

National Data Centre Policy

Government policy seeks to enable the 'twin transitions' of digitalisation and decarbonisation of our economy and society. These transitions can - and must be - complementary. For this to happen, digital and climate change policies need to move in tandem and this Statement sets out how this will be achieved in respect of data centres.

Data centres are core digital infrastructure and play an indispensable role in our economy and society. Data centres provide the foundation for all almost all online aspects of our social and work lives, including video calling, messaging and apps, retail, banking, travel, media, and public service delivery such as healthcare and welfare.

However, in the short term, there is only limited capacity for further data centre development, as the key state bodies, regulators and the electricity sector work to upgrade our infrastructure, connect more renewable energy and ensure security of supply. The capacity that will be available will be in regional locations and must assist in national ambitions to deliver an efficient, low-carbon energy system. By addressing these capacity constraints now, we can build the longer-term foundations for a net-zero-ready economy and society that will be a competitive and attractive hub for decarbonised digital services, enabling the industries and services of the future.

This Statement signals the Government's clear preference for data centre developments that are associated with strong economic activity and employment; make efficient use of our electricity grid, deliver renewable energy in Ireland. These principles will be reflected in energy, enterprise and planning policy, regulatory and other decisions across Government Departments, local authorities, enterprise development agencies and other public bodies.



Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy

Principles for Sustainable Data Centre Development

ECONOMIC IMPACT

The Government has a preference for data centre developments associated with strong economic activity and employment.

GRID CAPACITY AND EFFICIENCY

The Government has a preference for data centre developments that make efficient use of our electricity grid, using available capacity and alleviating constraints.

RENEWABLES ADDITIONALITY

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Rialtas na hÉireann
Government of Ireland

Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy

Conclusions

This report seeks to provide an estimate of the value and nature of local and regional impact from the Red Admiral development proposal for Hyper-scale DC Facilities together with expansive and co-located Decentralised Energy Resource.

The project in scale and investment value terms will be among the largest ever in the region and will ensure enhanced infrastructure to catalyse future investment and enterprise expansion in the midlands especially among future economy sectors including digital and renewable technologies. The location of the proposed development with its enabling infrastructure already in place (primary grid connectivity for electricity and gas; gigabit fibre broadband; direct motorway access and close proximity to 3 rail stations) offers outstanding competitive advantage over other locations such as the Greater Dublin region which is over burdened with development pressure and labour shortages or other regional locations without the key infrastructure in place.

Government industrial and development policy is firmly set on the dual objectives of Digitalisation and Decarbonisation. Policy towards Data centres has recognised the value and importance of this digital infrastructure and their role in supporting our enterprise base. The six key principles as set out in the page above are interwoven into the design and operational model of the Red Admiral DC & DER development and critically delivering benefit to the host region.

As the area is covered by the Just Transition Programme to support workers, enterprises and communities transition to new roles in technology, renewable energy, high-tech construction and other future economy roles with tight labour markets, the Admiral DC and DER type of investment is crucial to ensuring this restructuring.

Key Economic Outputs and Impacts

It is forecast that the Red Admiral project will deliver the following economic contributions to the local and Midlands regional economy.

- Construction Investment in excess of €1bn over the five year development project;
- Construction related employment of 320 FTEs (full time equivalents) annualised for ten years;
- 440 direct operational jobs across a range of occupations ;
- 1,094 indirect and induced jobs in the local / regional service economy and the supply chain;
- Generating almost €80m in additional annual wage circulation;
- Annual GVA (Gross Value Added) of €118m to the economy.

Other key economic outputs will include (a) strategic digital and low carbon / renewable energy infrastructure to catalyse future investment and enterprise creation in the digital and greentech sectors; (b) a variety of local community benefit initiatives to support local sports clubs, schools and charitable groups. The graphic on the following page outlines these outputs and impacts resulting from the proposed Red Admiral DC and DER.