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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: ENVIRONMENTAL IMPACT ASSESSMENT
REPORT (EIAR) ADDENDUM



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- Appendix 2.4 Revised Proposed Development Layout - See Halston Drawing No. CLDC-HAL-DC-XX-PL-1000
- Appendix 2.5 Architects Design Statement
- Appendix 2.6 Revised Construction Environmental Management Plan (CEMP)
- Appendix 3.3 Carbon Impact Statement & Alignment with LEU Policies
- Appendix 5.3 Revised Lighting Study and Design
- Appendix 5.4 Community Benefit Framework Report
- Appendix 6.3 Ecology Report
- Appendix 8.2 Revised Flood Risk Assessment Report (FRA)
- Appendix 8.3 Envirollogic Report Ref. 3151C (FI Request Response 12(i))
- Appendix 8.4 Water Framework Directive (WFD) Assessment Report
- 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 Architect FI Response Statement
- Appendix 13.7 Outline Construction Traffic Management Plan (CTMP)
- Appendix 15.1 Project Carbon Management Plan (PCMP)

1 INTRODUCTION

This Environmental Impact Assessment Report Addendum (EIAR Addendum) has been prepared by Halston Environmental & Planning Limited (Halston) on behalf of Red Admiral DC Limited (the Applicant) in response to a request for further information (FI) from An Coimisiún Pleanála (hereafter referred to as the Commission), dated 01 September 2025.

This EIAR Addendum should be read in conjunction with the EIAR that accompanies and was originally lodged with the planning application. As a result of the FI request, this EIAR Addendum has been prepared in addition to a Planning Statement in order to respond to the EIA related matters, update the EIAR and associated appendices (as appropriate) and to allow the Planning Authority to complete a robust environmental impact assessment of the development.

1.1 STRUCTURE OF THE EIAR ADDENDUM

The structure of this EIAR Addendum follows, as far as practicable, the layout and methodology of the EIAR submitted in support of the proposed development. Following this introductory chapter, which outlines the background and the rationale for the preparation of this EIAR Addendum, Chapter 2 describes the proposed changes to the development. These are primarily related to the data centre element of the proposed development and responding to Item 13 of the FI request from Westmeath County Council, 01 September 2025. The proposed changes to the development as presented as part of the FI request are considered within this EIAR Addendum, supporting Appendices and Planning Statement.

Chapter 3 summarises and reaffirms the overall need for the development and provides an updated assessment of the reasonable alternatives considered. In recognition of the time elapsed since lodgement of the planning application in July 2025, Chapter 4 updates and confirms the alignment of the proposed development (as amended) with current national, regional and local policy and the applicable regulatory framework. Chapters 5-15 assess the project changes described in Chapter 2 under the relevant environmental disciplines and set out conclusions on the likely significant environmental effects arising from those changes. Chapter 16 identifies and summarises any cumulative effects and significant interactions associated with the proposed development. Chapter 17 provides a description of the expected significant adverse effects on the environment of the proposed development deriving from its vulnerability to risks of major accidents and /or disasters which are relevant to it. Chapter 18 provides a schedule of all mitigation measures

proposed for offsetting likely significant adverse effects, as identified, for each environmental factor.

1.2 PROJECT OVERVIEW

The proposed project includes two main elements contained within an overall development boundary area of 243 hectares (ha), 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 secured 39ha 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:
 - (a) Data halls fitted with server racks and distribution units,
 - (b) 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
 - (c) Administration and support areas including, reception, offices, meeting rooms and welfare facilities.
2. Decentralised Energy Resource (DER), which will be constructed on 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:
 - (a) Solid Oxide Fuel Cell (SOFC) Power System (hereafter referred to as Fuel Cell) – nominal capacity of 160MWe
 - (b) Battery Energy Storage System (BESS) - nominal capacity of 250MWe
 - (c) Solar PV farm - nominal capacity of 180MWp
 - (d) Grid connection to the 220kV Castlelost GIS substation which adjoins the proposed development site.

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*¹ which details a set of national principles that should inform and guide decisions on future data centre development.

Figure 1.1 Principles for Sustainable Data Centre Development

 1. ECONOMIC IMPACT The Government has a preference for data centre developments associated with strong economic activity and employment.	 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.
 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	 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.
 3. RENEWABLES ADDITIONALITY The Government has a preference for data centre developments that can demonstrate the additionality of their renewable energy use in Ireland.	 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.

1.3 APPLICANT COMPANY

There is no material change to this Section resulting from the further information response.

1.4 PLANNING FRAMEWORK

There is no material change to this Section resulting from the further information response.

1.5 SCOPING AND CONSULTATION

There is no material change to this Section resulting from the further information response.

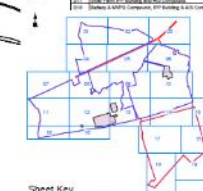
¹ Government of Ireland, Department of Enterprise, Trade and Employment (2022) *Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy: Principles for Sustainable Data-Centre Development*. Dublin: Department of Enterprise, Trade and Employment.

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1.6 ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

1.6.1 THE REQUIREMENT FOR EIA

In Irish legislation, Section 172 of the Act establishes the requirement for an Environmental Impact Assessment (EIA), stating that:

"An environmental impact assessment shall be carried out by the planning authority or the Board, as the case may be, in respect of an application for consent for proposed development where either—

- (a) the proposed development would be of a class specified in—*
 - (i) Part 1 of Schedule 5 of the Planning and Development Regulations 2001, and either—*
 - (I) such development would equal or exceed, as the case may be, any relevant quantity, area or other limit specified in that Part, or*
 - (II) no quantity, area or other limit is specified in that Part in respect of the development concerned,*
 - or*
 - (ii) Part 2 of Schedule 5 of the Planning and Development Regulations 2001 and either—*
 - (I) such development would equal or exceed, as the case may be, any relevant quantity, area or other limit specified in that Part, or*
 - (II) no quantity, area or other limit is specified in that Part in respect of the development concerned,*
 - or*
- (b) (i) the proposed development would be of a class specified in Part 2 of Schedule 5 of the Planning and Development Regulations 2001 but does not equal or exceed, as the case may be, the relevant quantity, area or other limit specified in that Part, and*
 - (ii) it is concluded, determined or decided, as the case may be by a planning authority that the proposed development is likely to have a significant effect on the environment."*

The classes of development where an EIA is mandatory are specified in the Planning and Development Regulations 2001, as amended ("the Regulations") pursuant to Section 176 of the Act. The Regulations outline the regulatory framework for planning and development activities in Ireland and provide detailed procedures and requirements for various aspects of planning and development, including the need for Environmental Impact

Assessments (EIAs). Specifically, Schedule 5 of these regulations sets out specific thresholds for various types of projects. If a project exceeds these thresholds, an EIA must be carried out as a mandatory requirement. Where a project is of a type listed in the regulations but does not meet or exceed the applicable threshold then the likelihood of the project having significant effects on the environment should be assessed. Criteria to evaluate whether significant effects on the receiving environment will arise from a proposed development are listed under Schedule 7 of the Regulations.

Data-centre projects are not identified as a standalone class of development in Annex I or Annex II of the EIA Directive, nor in Schedule 5 of the Planning and Development Regulations 2001. Instead, they are treated as “urban development” within Class 10(b)(iv) of Part 2 of Schedule 5, which covers:

“Urban development that occupies more than 2 hectares in a business district, more than 10 hectares in the other parts of a built-up urban area, or more than 20 hectares elsewhere.”

For this project the relevant threshold is 20 hectares. As the site area exceeds that figure, the project automatically falls within the category of EIA development and requires a mandatory Environmental Impact Assessment.

For completeness, and having regard to the nature, scale and land take of the Proposed Development (as amended), the overall project may also be characterised by reference to one or more of the Part 2, Schedule 5 “Infrastructure Projects” classes, in particular:

- Part 2, paragraph 10(a): *Industrial estate development projects, where the area would exceed 15 hectares; and/or*
- Part 2, paragraph 10(b)(iv): *Urban development which would involve an area greater than 2 hectares in the case of a business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere.*
- Part 2, paragraph 10 (dd)): *All private roads which would exceed 2000 metres in length.*

1.6.2 THE ASSESSMENT APPROACH AND METHODOLOGY

There are no changes or updates to this section of the EIAR.

1.6.3 FORMAT AND STRUCTURE OF THE EIAR

In response to the FI request issued by Westmeath County Council, revised and additional information is provided in support of the EIAR lodged with the planning application. The following shows where “Additional /Updated” information is incorporated into the EIAR.

1) Volume 1	Non-Technical Summary
2) Volume 2	Environmental Impact Assessment Report (EIAR)
▪ Chapter 1	Introduction – Updated
▪ Chapter 2	Description of the Proposed Development (<u>Additional /Updated</u>)
▪ Chapter 3	Need for the Development and Alternatives (<u>Additional /Updated</u>)
▪ Chapter 4	Planning and Policy
▪ Chapter 5	Population and Human Health
▪ Chapter 6	Biodiversity (Updated)
▪ Chapter 7	Soils and Geology
▪ Chapter 8	Water Environment
▪ Chapter 9	Material Assets
▪ Chapter 10	Air Quality
▪ Chapter 11	Noise and Vibration
▪ Chapter 12	Landscape and Visual
▪ Chapter 13	Traffic and Transport
▪ Chapter 14	Archaeology and Cultural Heritage
▪ Chapter 15	Climate (<u>Additional /Updated</u>)
▪ Chapter 16	Cumulative Effects and Interactions (<u>Additional /Updated</u>)
▪ Chapter 17	Major Accidents and Disasters (<u>Additional /Updated</u>)
▪ Chapter 18	Schedule of Mitigation (<u>Additional /Updated</u>)
3) Volume 3	EIAR Appendices
▪ Appendix 1.1	Landowner Consent Letters
▪ Appendix 1.2	An Bord Pleanála SID Pre-application Consultation Letters & EIA Portal Confirmation
▪ Appendix 1.3	Applicant Consent Letters to Agent
▪ Appendix 1.4	Uisce Éireann COF Letter - Foul
▪ Appendix 1.5	Uisce Éireann COF Letter – Water (<u>Additional /Updated</u>)
▪ Appendix 2.1	Proposed Development Layout
▪ Appendix 2.2	Construction Environmental Management Plan (CEMP)
▪ Appendix 2.3	Decommissioning Plan
▪ Appendix 2.4	Revised Proposed Development Layout (<u>Additional /Updated</u>)
▪ Appendix 2.5	Architects Design Statement (<u>Additional /Updated</u>)

- Appendix 2.6 Revised Construction Environmental Management Plan (CEMP) (Additional /Updated)
- Appendix 2.3 Decommissioning Plan
- Appendix 3.1 Energy Statement and Approach to Sustainable Data Centre Development
- Appendix 3.2 LEED Assessment and Life Cycle Assessment
- Appendix 3.3 Carbon Impact Statement & Alignment with LEU Policies (Additional /Updated)
- Appendix 5.1 Economic Assessment Report
- Appendix 5.2 Lighting Study
- Appendix 5.3 Revised Lighting Study and Design (Additional /Updated)
- Appendix 5.4 Community Benefit Framework Report (Additional /Updated)
- Appendix 6.1 Bat Survey Report
- Appendix 6.2 Bird Survey Report
- Appendix 6.3 Ecology Report (Additional /Updated)
- Appendix 7.1 Ground Investigation Report
- Appendix 8.1 Flood Risk Assessment Report
- Appendix 8.2 Revised Floor Risk Assessment Report (FRA) (Additional /Updated)
- Appendix 8.3 Envirologic Report Ref. 3151C (FI Request Response 12(i)) (Additional /Updated)
- Appendix 8.4 Water Framework Directive (WFD) Assessment Report (Additional /Updated)
- Appendix 9.1 Telecommunication Report
- Appendix 10.1 Ambient Air Quality Survey Data – Passive Certs
- Appendix 10.2 Air Quality Dispersion Modelling Report
- Appendix 11.1 Noise Photologs
- Appendix 11.2 Noise Monitoring Data
- Appendix 12.1 Landscape and Biodiversity Mitigation Plans
- Appendix 12.2 Photomontages
- Appendix 12.3 Glint and Glare Assessment Report
- Appendix 12.4 Revised Landscape and Biodiversity Mitigation Plans (Additional /Updated)
- Appendix 12.5 Additional Photomontages (Additional /Updated)
- Appendix 12.6 Landscape Architect Design Statement (Additional /Updated)
- Appendix 12.7 Macroworks (Landscape Architect) FI Response Statement (Additional /Updated)
- Appendix 13.1 Traffic Counts
- Appendix 13.2 Trip Generation

- Appendix 13.3 Traffic Calculations
- Appendix 13.4 PICADY Analysis
- Appendix 13.5 Road Safety Audit Report (RSA)
- Appendix 13.6 Mobility Management Plan (MMP)
- Appendix 13.7 Outline Construction Traffic Management Plan (CTMP) (Additional /Updated)
- Appendix 14.1 Archaeological & Cultural Heritage - Figures
- Appendix 14.2 Archaeological & Cultural Heritage - Plates
- Appendix 14.3 Archaeological & Cultural Heritage - Geophysical Report
- Appendix 15.1 Project Carbon Management Plan (PCMP) (Additional /Updated)

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1.6.4 EIAR PREPARATION AND CONTRIBUTORS

This EIAR has been prepared by Halston Environmental & Planning Limited (Halston), Unit 2, IHub Building, Westport Road, Castlebar, Co. Mayo Ireland, F23 K162, on behalf of the applicant. The Planning Application Stage Works were managed and coordinated by Mr Colm Staunton (Halston). Table 1.1 provides details of the author of each EIAR Chapter, and a statement of authority is provided below.

Table 1.1 List of EIAR Contributors

Chapter No.	EIAR Chapter ^[Note 1]	Contributor
1.	Introduction	Halston Environmental & Planning Ltd IHub Building, Westport Road, Castlebar, Co. Mayo Ireland, F23 K162
2	Description of the Proposed Development	Halston Environmental & Planning Ltd IHub Building, Westport Road, Castlebar, Co. Mayo Ireland, F23 K162
3	Need for the Development and Alternatives Examined	Halston Environmental & Planning Ltd IHub Building, Westport Road, Castlebar, Co. Mayo Ireland, F23 K162
4	Planning and Policy	Halston Environmental & Planning Ltd IHub Building, Westport Road, Castlebar, Co. Mayo Ireland, F23 K162
5	Population & Human Health	Halston Environmental & Planning Ltd IHub Building, Westport Road, Castlebar, Co. Mayo Ireland, F23 K162
6	Biodiversity	Moore Group and Eire Ecology 3 Gort na Rí, Athenry, Co. Galway
7	Soils and Geology	TMS Environment Ltd 53 Broomhill Drive, Tallaght, Dublin 24
8	Water Environment	TMS Environment Ltd 53 Broomhill Drive, Tallaght, Dublin 24
9	Material Assets	Halston Environmental & Planning Ltd IHub Building, Westport Road, Castlebar, Co. Mayo Ireland, F23 K162
10	Air Quality	TMS Environment Ltd 53 Broomhill Drive, Tallaght, Dublin 24

Chapter No.	EIAR Chapter ^[Note 1]	Contributor
11	Noise and Vibration	Redkite Environmental Huntersmoon, Ballykeane Road, Redcross Co. Wicklow
12	Landscape and Visual	Macroworks Hibernia House, Cherrywood Business Park, Loughlinstown, Dublin 18
13	Traffic and Transport	Traffic Transport and Road Safety Associates Barran, Blacklion, Co. Cavan
14	Archaeology and Cultural Heritage	Archaeological Consultancy Services Unit (ACSU) 21 Boyne Business Park, Greenhills, Drogheda, Co. Louth, A92 DH99
15	Climate	TMS Environment Ltd 53 Broomhill Drive, Tallaght, Dublin 24
16	Interactions	All Contributors inputted and coordinated by Halston.
17	Major Accidents and Disasters	Halston Environmental & Planning Ltd, IHub Building, Westport Road, Castlebar, Co. Mayo Ireland, F23 K162
18	Schedule of Mitigation	Halston Environmental & Planning Ltd, IHub Building, Westport Road, Castlebar, Co. Mayo Ireland, F23 K162

Note 1 Further information provided in Table 1.2

Other supporting specialist reports have been prepared in addition to, and in support of, certain Chapters of the EIAR.

Table 1.2 Supporting Specialist Reports

Chapter No.	EIAR Chapter	Assessment Report	Author
2	Description of the Proposed Development	Preliminary Construction Environmental Management Plan (CEMP)	Halston Environmental & Planning Ltd IHub Building, Westport Road, Castlebar, Co. Mayo Ireland, F23 K162
		Decommissioning Plan	Halston Environmental & Planning Ltd, IHub Building, Westport Road, Castlebar, Co. Mayo Ireland, F23 K162
		Architects Design Statement	JFA Architects The Tree House, 17 Richview Office Park, Clonskeagh, D14 XR82
3	Need for the Development & Alternatives	Energy Statement and Approach to Sustainable Data Centre Development Carbon Impact Statement & Alignment with LEU Policies	Bitpower Energy Solutions, Dublin 7, D07 P9T0

Chapter No.	EIAR Chapter	Assessment Report	Author
		LEED and Life Cycle Assessment	Meehan Green, 15 Clanwilliam Terrace, Grand Canal Dock, Dublin, D02 AK51
5	Population and Human Health	Economic Assessment report	PMG Consult, Castlebar, Co. Mayo
		Community Benefit Framework Report	
		Outdoor Lighting Report	Daramack Exterior Lighting Design 21 Burandell Manor, Lisburn, Co. Antrim, BT28 3AX
6	Biodiversity	Bat and Bird Surveys	Eire Ecology Moyglass, Loughrea, Co. Galway
7.	Soils & Geology	Ground Investigation	Ground Investigations Ireland Ltd, Catherinestown House, Hazelhatch Road, Newcastle, Co. Dublin, D22 YD52
8	Waters	Flood Risk Assessment	Envirologic Unit 49 Baldoyle Industrial Estate, Baldoyle, Dublin 13
		Water Framework Directive Assessment	
9	Material Assets	Telecommunications	Lumcloon Energy, Axis Business Park, Tullamore, Co. Offaly
10	Air Quality	Air Quality Dispersion Modelling Report	TMS Environment Ltd 53 Broomhill Drive, Tallaght, Dublin 24
12	Landscape and Visual	Glint and Glare Report and Photomontages	Macroworks Hibernia House, Cherrywood Business Park, Loughlinstown, Dublin 18
		Landscape Architect Design Statement	
13	Roads and Traffic	Outline Construction Traffic Management Plan (CTMP)	Trasky Limited 1 Dara Court, Celbridge, Co. Kildare This report was prepared by Mr Jason Walsh, BEng (Hons) PCert (RSA) CEng MIEI, who has over 20 years of experience in design consultancies in both Ireland and the UK.
15	Climate	Project Carbon Management Plan (PCMP)	Halston Environmental & Planning Ltd IHub Building, Westport Road, Castlebar, Co. Mayo Ireland, F23 K162 TMS Environment Ltd

Chapter No.	EIAR Chapter	Assessment Report	Author
			53 Broomhill Drive, Tallaght, Dublin 24

Article 5(3)(a) of amended Directive requires that the developer (applicant) shall ensure that the environmental impact assessment report (EIAR) is prepared by competent experts and that sufficient expertise, in the relevant field of the project concerned, is required for the purpose of its examination by the competent authorities in order to ensure that the information provided by the developer is complete and of a high level of quality.

This EIAR was prepared by Halston on behalf of the applicant. In accordance with EIA Regulations, Halston confirms that experts involved in the preparation of this EIAR are fully qualified and competent in their respective fields. Each expert has extensive proven expertise in the relevant field concerned, thus ensuring that the information provided herein is complete and of high quality. Details of the assessment team (including a short biography for each team member) and relevant company, as well as their respective inputs to the EIAR is presented below.

The EIA team was led and managed by Mr Colm Staunton, BSc., is the owner and founder of Halston Environmental & Planning Limited. Colm is a member and Certified Project Management Associate with the International Project Management Association (IPMA®). Colm's experience predominantly relates to Environmental Planning, Project Management of Environmental Impact Assessments (EIA) and Environmental Due Diligence (EDD). Colm has a long track record of ensuring projects are delivered to a high quality and he has worked as an environmental consultant in Ireland for over 23 years of professional experience and is currently finishing a MSc in Spatial Planning at TUD. Through his professional career, Colm has gained the required expertise and project specific technical knowledge from working as lead consultant and a specialist within multidisciplinary teams, dealing with high profile planning applications and providing expert witness testimony at public enquiries, oral hearings, planning appeals and under oath in courts of law.

Colm has prepared and project managed environmental planning and licensing components for various types of large-scale development including, Powergen projects, Solar Farms, Power-to-Gas (P2G) projects, Biogas and Anaerobic Digestion (AD) projects, Biomass fuelled power plants, and grid connected Energy Storage System (ESS) projects. His academic and professional qualifications and ongoing academic studies in Spatial Planning coupled with his experience gained of delivering planning and licensing consents for small and large-scale complex projects ensures that he has sufficient; (a) knowledge of the specific tasks to be undertaken, (b) understanding of the project type and impacts

which may arise, and (c) the experience and ability to fulfil the role and responsibilities required in carrying out duties and actions under the EIA Directive.

1.6.4.1 Biodiversity

This chapter was compiled by Mr Ger O'Donohoe M.Sc. of Moore Group providing information on habitats in the study area. Ger is the principal ecologist with Moore Group and has 30 years' experience in ecological impact assessment. He graduated from ATU Galway in 1993 with a B.Sc. in Applied Freshwater & Marine Biology and subsequently worked in environmental consultancy while completing an M.Sc. in Environmental Sciences, graduating from Trinity College, Dublin in 1999. (He also has over 15 years' experience of carrying out bat surveys and has completed the Bat Conservation Ireland, Bat Detector Workshop which is the standard training for the carrying out of bat surveys in Ireland and follows the Bat Conservation Ireland 'Bat Survey Guidelines' - Aughney *et al.*, 2008'. In addition, Ger is an active member of the Galway Bat Group and Bat Conservation Ireland, which monitors bat populations in Ireland, and facilitates the education of bat communities to the public.

Éire Ecology was commissioned to carry out preliminary Bat and Bird Surveys. The work was undertaken by Mr John Curtin of Éire Ecology. John Curtin B.Sc. is the principal ecologist with Éire Ecology and has over 10 years of experience in ecological impact assessment having conducted plant, habitats, birds, bats and mammal surveys since 2010 including at windfarm and solar sites. John conducted bird, bat and badger surveys. Shane O'Neill is an experienced ornithologist (Co-author Hen Harrier Survey, NPWS 2015) with a broad knowledge of breeding birds, waders and all aspects of ornithology. Shane has previously conducted I-WeBS surveys and taken part in the Shannon estuary wintering wader surveys. Laura Hynes has a degree in Wildlife Biology from MTU Kerry and has worked as an ecologist since 2022. Laura has worked as a Curlew officer for the NPWS.

1.6.4.2 Soils & Geology and Waters

The Soils & Geology and the Waters chapters have been prepared by Dr Nick Owen (B.Sc. Hons., M.Sc., Ph.D.), TMS Environment. Nick has over 15 years professional experience for various different types of development and has a doctorate in Geology along with over 15 years of postdoctoral experience in Earth and Environmental science.

These chapters of the EIAR were supported by a ground investigation assessment carried out by Ground Investigations Ireland Ltd (GII) located at Catherinestown House, Newcastle, Co. Dublin. GII has a team of engineering geologists, geotechnical engineers and drillers who deliver intrusive ground investigations and environmental due-diligence

services nationwide. Core field techniques include trial pitting, slit trenching, cable-percussion and rotary coring (Geobore-S), dynamic probing, window sampling, groundwater/gas monitoring and in-situ testing; samples are processed in the company's own laboratory for full geotechnical and contamination suites.

The Flood Risk Assessment report, supporting the waters chapter, was undertaken by Dr Colin O' Reilly, who is the founder and owner of Envirologic. Colin has over ten years of professional experience as a hydrogeologist, coupled with a doctorate degree (awarded by the Centre for Water Resources Research, School of Architecture, Landscape and Civil Engineering, University College Dublin) and academic research at postdoctoral level. Colin is an active member of the International Association of Hydrogeologists (Irish Group), having sat on the conference sub-committee between 2009-2012 and served as Conference Secretary in 2013 and 2014. Envirologic has key competencies in hydrogeology (groundwater) hydrology (surface water) and Flood Risk Assessments.

1.6.4.3 Material Assets and Population & Human Health

These Chapters of the EIAR were prepared by Colm Staunton (Details are provided above).

1.6.4.4 Need for the Development & Alternatives

The Energy Statement and Approach to Sustainable Data Centre Design was prepared by Bitpower Energy Solutions. Founded in 2017 by Mr David McAuley, a former SEAI energy specialist, Bitpower has worked with Industry and government over the past decade to bridge Ireland's fast-growing data-centre sector with the country's power and sustainability goal. Bitpower provides advice and guidance to various stakeholders including decarbonisation strategies and energy analysis and research reports for industry in Ireland.

The LEED Assessment and Life Cycle Assessment (LCA) was prepared by Meehan Green (MG), an accredited LEED Provider who specialise on high-performance LEED certification and whole-building life-cycle assessment (LCA). MR Cathal Heneghan, an Associate Director with MG, LEED AP BD+C & O+M, MSc, and Ms Kat Mazur a LEED and WELL AP were responsible for preparing the assessments. Both are experienced practitioners in a diverse range of projects have n-depth knowledge of sustainable design focusing on the three key areas of embodied energy (LCA), climate resilience and designing to achieve certification through the LEED (Leadership in Energy and Environmental Design) green building rating system.

1.6.4.5 Air Quality

This Chapter of the EIAR was prepared by Dr Imelda Shanahan TMS Environment Ltd who has over 30 years professional experience in preparing assessments of this type for various different types of development. Imelda has a BSc (Hons) in Chemistry from University College Dublin and a PhD in Physical Chemistry, she is a Chartered Chemist and a Fellow of the Institute of Chemistry of Ireland and a Fellow of the Royal Society of Chemistry. Imelda was assisted in the preparation of this chapter by Nathaniel Blue, also of TMS Environment Ltd who has four years of post-qualification experience in environmental assessment and holds a BS Environmental Science Seattle University and MSc Environmental Sciences Trinity College Dublin.

1.6.4.6 Noise and Vibration

This Chapter of the EIAR was undertaken by Ms. Siobhán Maher whose qualifications include a B.Sc. in Analytical Science, M.Tech. in Environmental Management and a post graduate Diploma in Acoustics and Noise Control Engineering. Siobhán is a full Member of the Institute of Acoustics (MIOA) since 2002, is a committee member since 2020 and is also a Member of the Association of Acoustic Consultants Ireland (AACI). Siobhán is the Managing Director of Redkite Environmental with over 20 years of experience providing environmental consultancy and environmental assessment services to business, industry and public sectors. In acoustics, she has experience in a range of areas but primarily specialising in noise and vibration impact assessment for new and proposed developments, environmental noise monitoring and prediction modelling and development of mitigation measures for noise abatement and control.

1.6.4.7 Population and Human Health

The economic assessment report was prepared Mr Padraic McGuinness Bsc Econ, MPA, of PMG Consult who is experienced practitioner in the fields of economic and business consultancy. An Economist by profession, Padraic has worked across Ireland and the UK for the past 24 years on a variety of projects in the areas of economics, sector development, feasibility studies, strategy development and project management. Prior to setting up PMG Consult in 2005 Padraic worked for a number of major economics and management consultancy practices including DTZ PIEDA Consulting and Strategem Ltd as well as some small niche players such as New Media Partners Ltd. Since establishing PMG Consult Padraic has concentrated mainly on Strategy development and Implementation and Project Management contracts for both the private sector and partnership-based clients in the public and community sector.

1.6.4.8 Landscape and Visual

This LVIA was prepared by Mr Cian Doughan, Associate Director at Macro Works Ltd of Cherrywood Business Park, Loughlinstown, Dublin 18; a consultancy firm specialising in Landscape and Visual Assessment and associated maps and graphics. Macro Works' relevant experience includes a broad range of infrastructural, renewable energy, industrial and commercial projects since 1999, including numerous urban, residential, and mixed-use development projects.

1.6.4.9 Traffic and Transport

This Chapter of the EIAR was undertaken by Mr Matthew Steele BA (Hons) MSc FCILT FRGS MCIHT, company director of Traffic Transport and Road Safety Associates Ltd (TTRSA) and an established specialist traffic and transportation consultant based in Ireland. Matthew: graduated from the University of Westminster in 1998, with a master's degree in Transport Planning and Management; is a Chartered Fellow of the Chartered Institute of Logistics and Transport; a fellow of the Royal Geographical Society; and a member of the Chartered Institution of Highways and Transportation. Matthew has extensive national and international experience, working on numerous traffic, transport and development related projects in the public and private sectors, including access studies; specialist input into Strategic Environmental Assessments; and preparation of traffic and transportation related sections of Environmental Impact Assessments for specific schemes including extractive industries and energy related developments.

1.6.4.10 Cultural Heritage and Archaeology

This chapter was prepared by Mr Donald Murphy and Ms Magda Lyne of Archaeological Consultancy Services Unit. Donald Murphy (BA(Hons), MA, MIAI) is the founder and Managing Director of Archaeological Consultancy Services Unit Ltd, with over 30 years of experience as an archaeological consultant. Donald has completed EIARs for a variety of projects across Ireland and has managed the archaeological work in advance of several large infrastructural schemes, such as the M3 and M4 motorways. Magda Lyne (MA, MIAI) is an Archaeologist with over 15 years of experience. She specialises in research and report production, with extensive experience in preparing cultural heritage impact assessment chapters for Environmental Impact Assessment Reports (EIARs).

1.6.4.11 Climate

This Chapter of the EIAR was prepared by Mr Tom Ryan of TMS Environment Ltd who has over 20 years professional experience in environmental monitoring and consultancy. Tom specialises in Air Quality and Climate Impact Assessment, Noise and Vibration Impact

Assessment and also works in Environmental Risk Assessment and Waste Management. Tom has an MSc. in Environmental Science, University College Cork (1995), a BSc. in Chemistry, University College Cork (1993) Certificate of Competency in the measurement and assessment of Occupational Noise (2000).

1.7 APPROPRIATE ASSESSMENT

Appropriate Assessment (AA) is an assessment carried out under Article 6(3) of the Habitats Directive. Article 6(3) of the Habitats Directive states:

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

Stage 1 AA screening of the projects was completed. A report for the purposes of Appropriate Assessment Screening has been completed for the project and is provided under separate cover in support of the planning applications. An updated report for the purposes of Appropriate Assessment Screening has been completed and is submitted as part of the response to the further information request issued by Westmeath County Council on 01 September 2025.

1.8 PLANNING STAGE DESIGN AND ENGINEERING DRAWINGS

Design of the proposed development has been undertaken by Halston in association with the applicant company and with inputs from, but not limited to, all EIA specialists, Lally Engineering and various technology manufacturers and suppliers. Revised engineering drawings and related reports are submitted as part of the response to the further information request issued by Westmeath County Council on 01 September 2025.

1.9 AUTHORISATIONS AND LICENSES

1.9.1 CRU AUTHORISATIONS AND LICENCES

The Electricity Regulation Act, 1999 as amended (the Act) gives the Commission for Regulation of Utilities (CRU) the necessary powers to licence and regulate the generation,

distribution, transmission, and supply of electricity in Ireland. One of the functions of CRU under the Act is to grant or refuse Authorisations to Construct or Reconstruct generating stations and issue generation licences. Therefore, the applicant will, in due course, apply to the CRU for the necessary authorisations and licences associated with the project.

1.9.2 EPA INDUSTRIAL EMISSIONS LICENSING

In accordance paragraph 2.1² of the First Schedule to the EPA Act 1992 as amended, the Reserve Gas-Fired Generator will require an Industrial Emissions Licence. When applying to the Environmental Protection Agency (EPA) for an Industrial Emissions licence a number of legislative requirements must be fulfilled. These are largely set out in:

- EPA (Industrial Emissions) (Licensing) Regulations, 2013 (S.I. No. 137 of 2013),
- European Union (Industrial Emissions) Regulations, 2013 (S.I. 138 of 2013),
- The EPA Act 1992, as amended.

The applicant will consult and apply, if necessary, to the EPA for an Industrial Emissions (IE) licence should the planning application for consent be successful.

1.10 GREENHOUSE GAS PERMIT

The EU emissions trading system applies to certain types of activity which produce greenhouse gases. The EPA has been given the responsibility for implementing the Emissions Trading Directive in Ireland. The Directive establishes an allowance-trading scheme for emission to promote reductions of greenhouse gases, in particular carbon dioxide. These activities are listed in Annex 1 of the EU ETS Directive. Annex 1 includes activities which involve combustion of fuels in installations with a total rated thermal input exceeding 20MW. Therefore, the applicant will consult and apply to the EPA for a greenhouse gas permit should the planning application for consent be successful.

1.11 ENERGY STATEMENT & APPROACH TO SUSTAINABLE DATA CENTRE DEVELOPMENT

An Energy Statement and Approach to Sustainable Data Centre Development has been prepared by Bitpower Energy Solutions to support this planning application. The study acknowledges the scale of the site which allows for development of a collocated decentralised energy system (DER). The report presents the results of modelled operational scenarios and calculates the annual energy and emissions characteristics based on grid and solar data for 2023. The model has inputted into design of the project

² Combustion of fuels in installations with a total rated thermal input of 50 MW or more.

and provides a rationale for making technology decisions and assisted with optimising the design. Key attributes of the project as outlined in the report are as follows:

1. The project is proposed by a proven utility developer with experience in the Irish energy system.
2. The project is designed to have no adverse impact on the national electricity grid.
3. The project is not in a constrained grid location and because of its proximity (adjoining) the Castlelost Flexgen Power Plant and GIS substation, no new powerlines are needed beyond the site boundary.
4. The proposed DER can help reduce national curtailment of renewables by offering flexibility – It can draw and store electricity at times of high wind generation using the 500 MWh Battery Energy Storage System (BESS) and it can operate off-grid.
5. The project provides at least a 9.7% improvement on emissions per kWh of electricity used, with up to 62.9% improvement at lower demand levels. The project is designed so that hourly emissions data can be monitored and reported.
6. The DER includes a 180 MWp of on-site renewable generation commercial-scale solar photovoltaic farm collocated at the DC facility site
7. The low emissions³ Fuel Cell ensures efficient electricity generation (58.5%) on site using electro chemical conversion, which converts chemical energy into electricity without combustion. Total efficiencies are further increased (~80%) when exhaust heat is recovered and used for cooling functions at the DC facility. The Fuel Cell technology allows for a smooth transition for integration and use of renewable gas (such as biomethane) and blends of hydrogen in the gas network.

In response to the FI request issued by the local Planning Authority, dated 01 September 2025, an additional report (dated 27 February 2026) was prepared by Bitpower entitled "*Carbon Impact Statement & Alignment with National Large Energy User Policies*". 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. This report is provided in Appendix 3.3 to this EIAR Addendum.

³ Eliminates NO_x, SO_x and particulate matter emissions that arise from combustion-based generation and produces lower CO₂ emissions than conventional natural gas turbines or other fossil fuel base generators.

1.12 LEED AND LIFECYCLE ASSESSMENT (LCA)

To inform the design, project undertook LEED pre-assessment to assist with LEED certification under the LEED BD+C v4 Rating System for Data Centres. 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. The LEED assessment report is contained in Appendix 3.2 of the EIAR (Volume 3).

To alignment with the project's commitment to evaluate every design alternative against technical feasibility, environmental performance, efficiency, security, reliability and cost, a dedicated piece of embodied-carbon modelling was undertaken. The exercise complements the Energy Statement and Sustainable Data-Centre Development Plan which supports this this planning application and, together with the DER strategy, provides a full picture of how the scheme will minimise greenhouse-gas (GHG) emissions across both construction and operation.

In response to the FI request issued by the local Planning Authority, dated 01 September 2025, a Project Carbon Management Plan (PCMP) was prepared and is provided in Appendix 15.1 to this EIAR Addendum. The report sets out how greenhouse gas (GHG) emissions will be managed across the whole life of the proposed development. It has been prepared for planning purposes and follows the intent and requirements of PAS 2080 (Carbon Management in Infrastructure).

1.13 ECONOMIC STATEMENT

An Economic Assessment report has been prepared by PMG Consult to support this planning application. The project will provide between 600-650 monthly construction jobs over the five-year construction period and up to 440 workers will be directly employed during operations across the DC facility and DER. The report forecast project will deliver a significant economic contribution to the Local and Midlands regional economy including annual gross value added (GVA)⁴ of €118m to the economy.

⁴ Gross Value Added (GVA) represents the project's total annual economic contribution, including the additional circulation of investment throughout the local and regional economy. By capturing these spending "multiplier" effects, GVA also serves as a proxy for the indirect and induced jobs sustained during the scheme's operational phase.

1.14 AVAILABILITY OF INFORMATION & DIFFICULTIES ENCOUNTERED

There were no significant difficulties encountered in the preparation of the EIAR.

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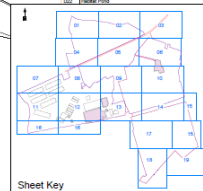
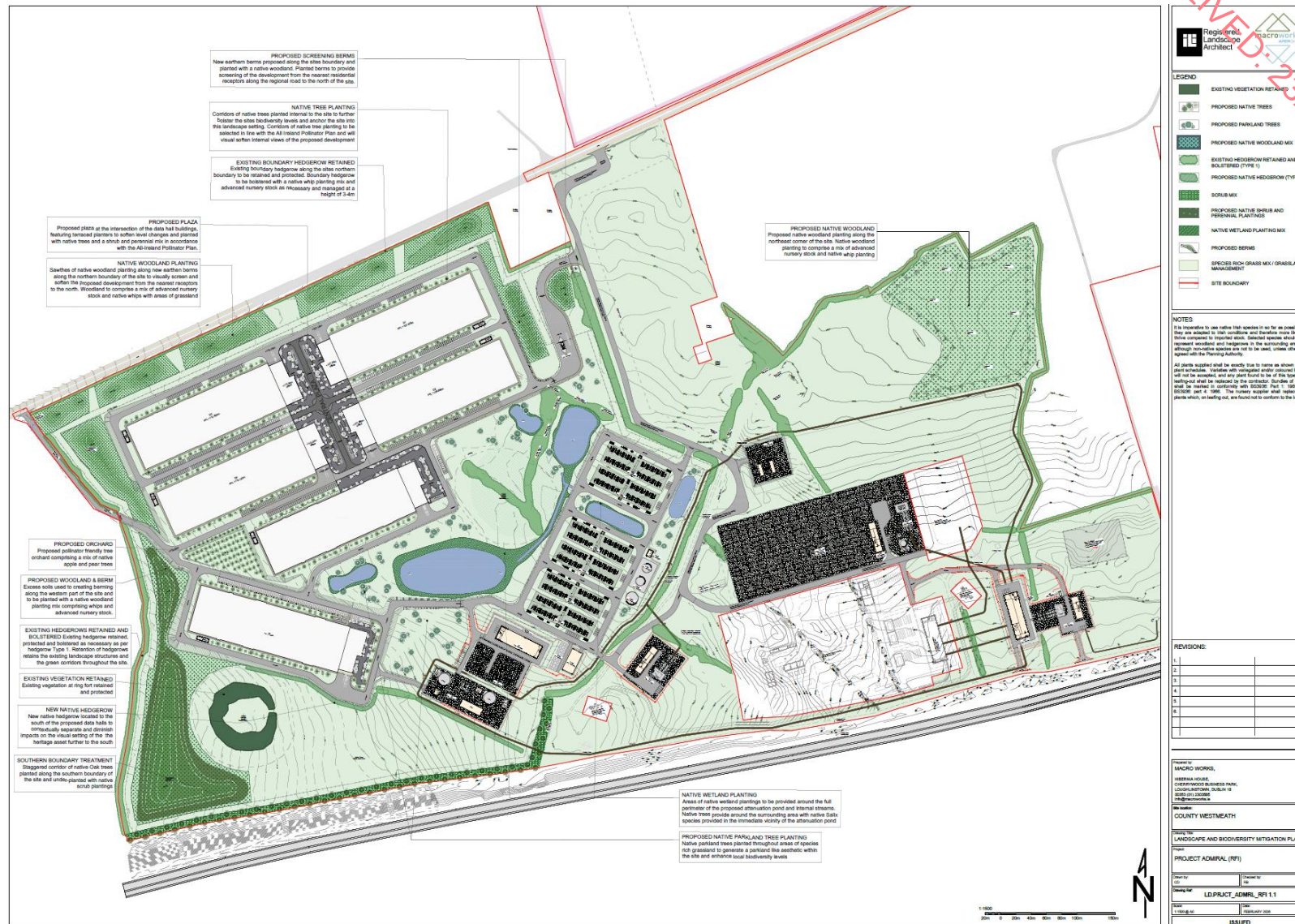


Figure 1.5 Landscape and Biodiversity Mitigation Plan – DC Facility and Western Part of DER)


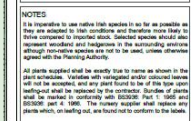


Figure 1.7 Landscape and Biodiversity Mitigation Plan – Solar Farm

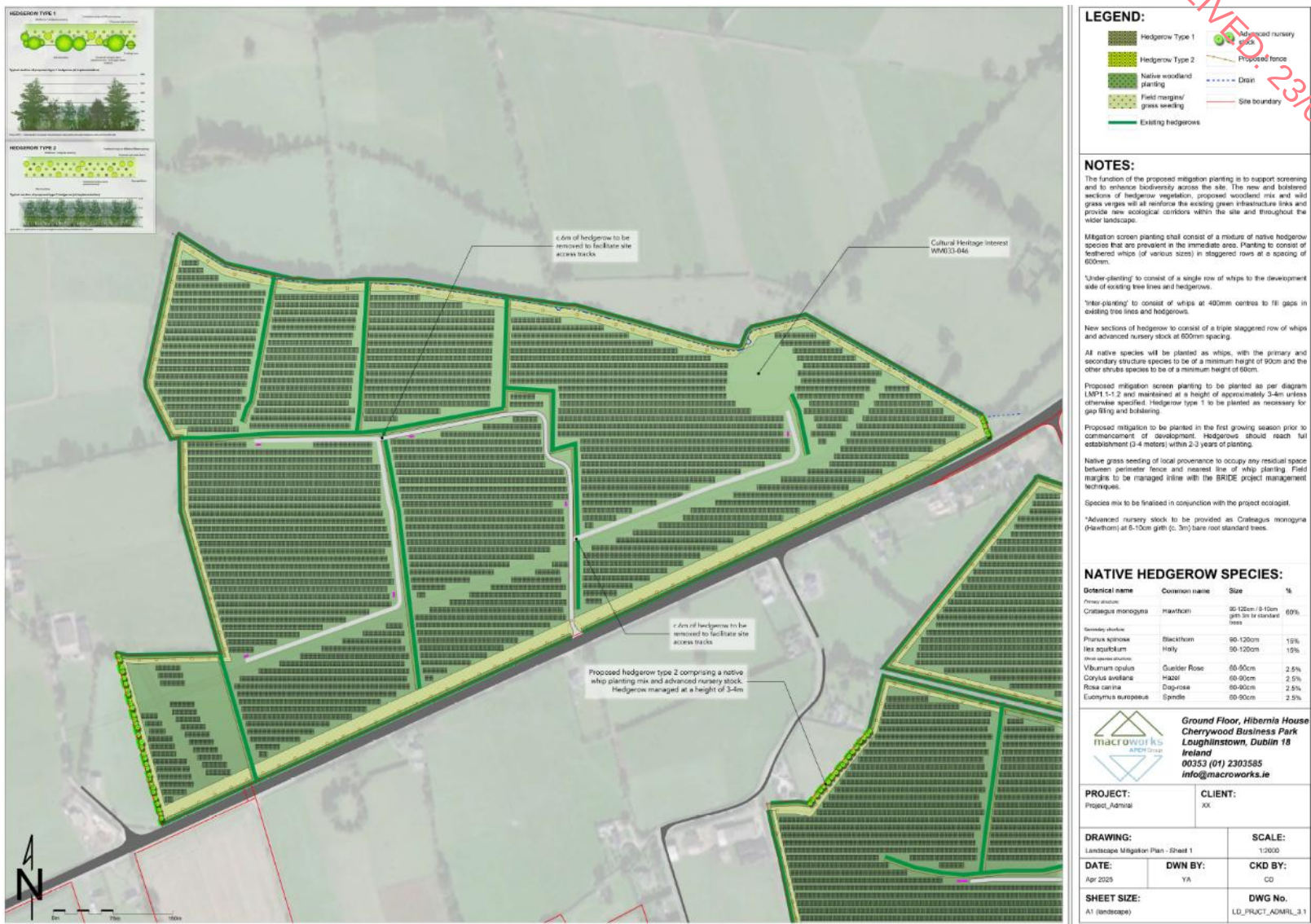
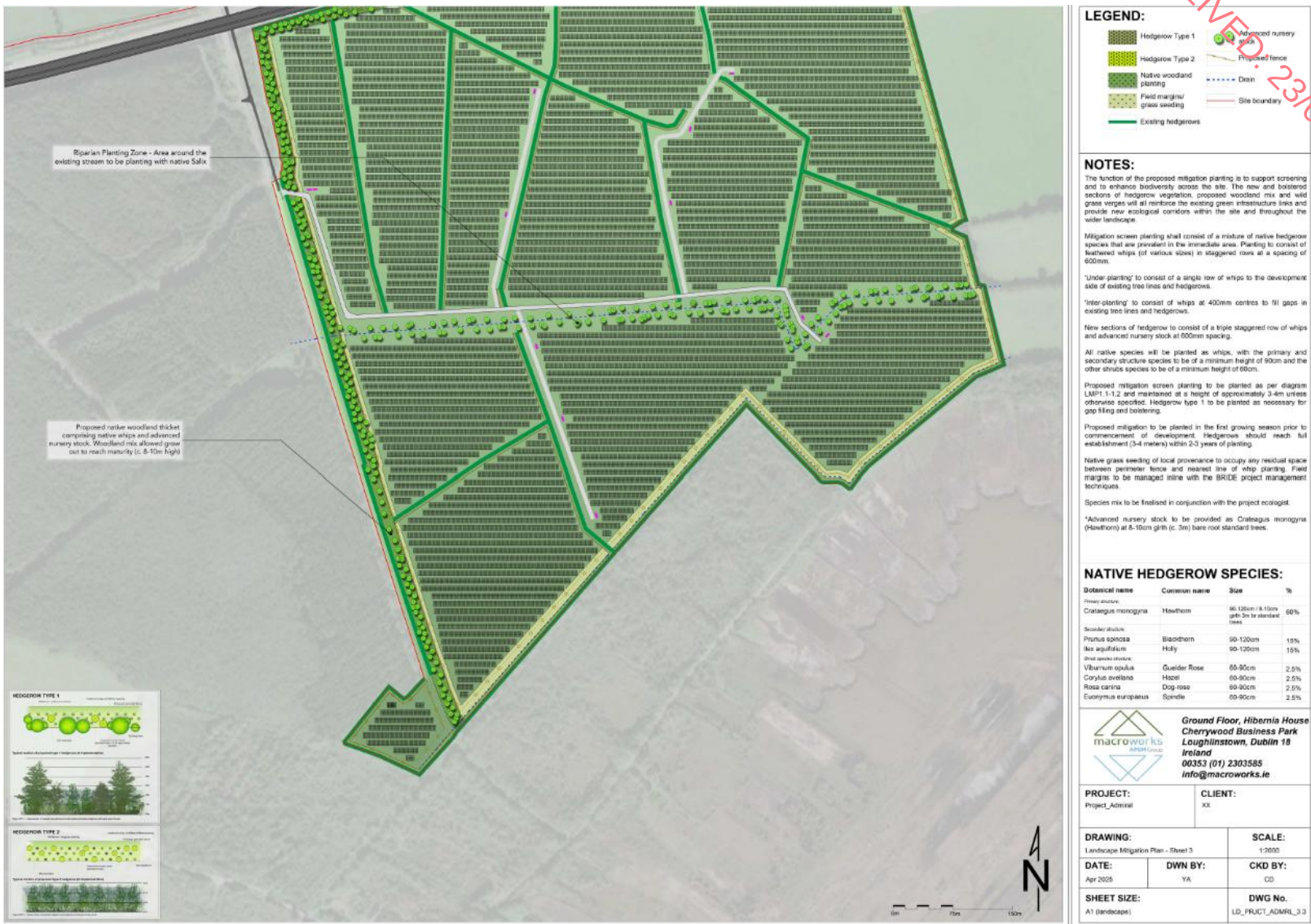


Figure 1.8 Landscape and Biodiversity Mitigation Plan – Solar Farm



Figure 1.9 Landscape and Biodiversity Mitigation Plan – Solar Farm



2 DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 INTRODUCTION

This chapter of the EIAR Addendum provides of a description of the Project in line with the requirements of the EIA Directive and implementing regulations, and the Environmental Protection Agency (EPA) *Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR)* (May 2022).

As set out in Chapter 1, 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 39ha 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:
 - (a) Data halls fitted with server racks and distribution units,
 - (b) 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
 - (c) Administration and support areas including, reception, offices, meeting rooms and welfare facilities.
2. Decentralised Energy Resource (DER), which will be constructed across approximately 200ha 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:
 - (a) Fuel Cell Power System – 160MW,
 - (b) Battery Energy Storage System (BESS) – 250MW,
 - (c) Solar PV farm (nominal 180MWp), and
 - (d) Grid connection to the 220kV Castlelost GIS substation, which adjoins the proposed development site.

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*⁵ which details a set of national principles that should inform and guide decisions on future data centre development.

The DC facility and DER together constitute the “project” for the purposes of Environmental Impact Assessment (EIA) and Appropriate Assessment (AA), and references to the “Project” in this EIAR should be read as references to the two applications taken together as one project.

2.2 DESCRIPTION OF LOCATION AND CONTEXT

The proposed project location occupies a strategic position in the Eastern and Midlands region of Ireland. The project site lies midway between the villages of Rochfortbridge and Tyrrellspass and within the Eastern and Midland Regional Assembly’s “Dublin Hinterland” growth belt. The overall c.243ha project site incorporates lands in the townlands of, Gneevebane, Oldtown, Farthingstown, Castlelost and Kiltotan and Collinstown in the south of County Westmeath, approximately 76km from Dublin city centre and 100km from Galway.

The M6 provides direct motorway access from the development to Dublin and Galway (Junction 3 Rochfortbridge and Junction 4 Tyrrellspass /N52). The R446 regional road (former N6) runs parallel and north of the M6 linking the village of Tyrrellspass and Rochfortbridge. The road was downgraded to a regional road after the M6 was opened and offers an alternative route between Galway and Dublin. The N52 national secondary road routes north from Junction 4 Tyrrellspass (2km west of the development site) connecting Dundalk to Nenagh. It is an important link between the northeast and mid-west of Ireland, providing a route through the midlands. The R400 regional road connects Rochfortbridge to Edenderry and the M4.

The project location and relationship to the regions principal towns as summarised below fits comfortably within the spatial hierarchy of the Eastern and Midlands Regional Assembly (EMRA) Regional Spatial & Economic Strategy (RSES), enabling balanced regional growth.

- Athlone (Regional Growth Centre) lies 50 km west: a key node between Dublin and Galway on the River Shannon, Athlone has direct national connectivity to towns such as Longford, Mullingar, Tullamore, Maynooth, Portlaoise, Ballinasloe and Roscommon. Due to its scale of population, employment and services, Athlone

⁵ Government of Ireland, Department of Enterprise, Trade and Employment (2022) *Government Statement on the Role of Data Centres in Ireland’s Enterprise Strategy: Principles for Sustainable Data-Centre Development*. Dublin: Department of Enterprise, Trade and Employment.

acts as a key regional centre for an extensive catchment that extends into the Northern and Western Region.

- Mullingar (Gateway Region Key Town), the county town of Wesmeath, is 16km to the north-east and operates as a strong economic driver in the region covering a relatively wide catchment. Mullingar is strategically located on the N4/M4 from Dublin to Sligo, with a national road the N55 to Athlone in proximity. The town is located on the Dublin to Sligo rail line.
- Tullamore (Gateway Region Key Town) is 25km to the south-east and acts as a key population and employment centre for the surrounding hinterland. It is located on the Dublin to Galway rail line, in close proximity to the M6 Dublin/Galway Motorway. The town has a high ratio of jobs to resident workers, reflecting its role as an employment centre and the extent of its area of influence. Continued employment and population growth coupled with placemaking and regeneration are key priorities for Tullamore, as identified in the EMRA RSES, 2019-2031.
- Maynooth (Gateway Region Key Town), is 52km east of the site and extends the corridor to the edge of the Dublin Metropolitan Area, reinforcing the logic of locating new "step-out" investment along high-capacity, multi-modal corridors.
- Kinnegad (Self-Sustaining Growth Town) is 16km east of the site and is strategically located at the junction of the M4 and M6, Kinnegad has witnessed a significant increase in population in recent decades

The development lands are greenfield and described as agricultural farmland laid out in medium to large-sized, geometric fields enclosed by dense, mature hedgerows. The development lands share the gently undulating topography typical of the Midlands low plateau, ranging from c. 90m OD in the south-east and rising to c. 120m OD in the north-west (close to the R446). The highest feature in the general area of the site is Croghan Hill (234 m OD), which is located approximately 6.3km southeast of the site.

According to 2022 Census data, the population of the village of Rochfortbridge is 1,511 and a population of 524 was recorded in the village of Tyrrellspass. Outside these villages, settlement is dispersed and linear, comprising single dwellings and small clusters strung along the R446, R400 N52 and a network of local roads.

The M6 motorway runs defines the southern boundary of the DC facility campus and the R446 regional road defines the northern boundary of campus. The Fuel Cell and BESS power assets of the DER extend east from the DC facility and are positioned on lands surrounding the Castlelost Flexgen Plant and GIS Substation. The Solar PV asset is located east of the L51251 public road and contains solar photovoltaic (PV) panels on ground mounted frames /support structures positioned with existing field boundaries. The Solar

PV farm extends to lands south of the M6 motorway and to lands north of the R446 regional road.

The Castlelost Flexgen Plant, which adjoins the development lands, comprise five (5no.) open cycle gas turbine (OCGT) electrical generating units, totalling approximately 275MWe (megawatts electrical), ancillary plant, buildings and infrastructure. The Flexgen Plant, which is under construction and due to be completed in Q3 of 2025, is designed to operate intermittently and provide generating capacity by combusting natural gas and provided power to the electricity system during periods of high demand or when renewable energy cannot meet demand. The Flexgen Plant is connected to the electricity system via the newly constructed Castlelost 220kV Gas GIS substation.

Figure 2.1 Aerial View of the Castlelost Flexgen and GIS Substation (June 2025)



The development site includes for the demolition and removal of minor agricultural buildings and associated outhouses and farm sheds (see Figure 2.2 to Figure 2.6) within the site.

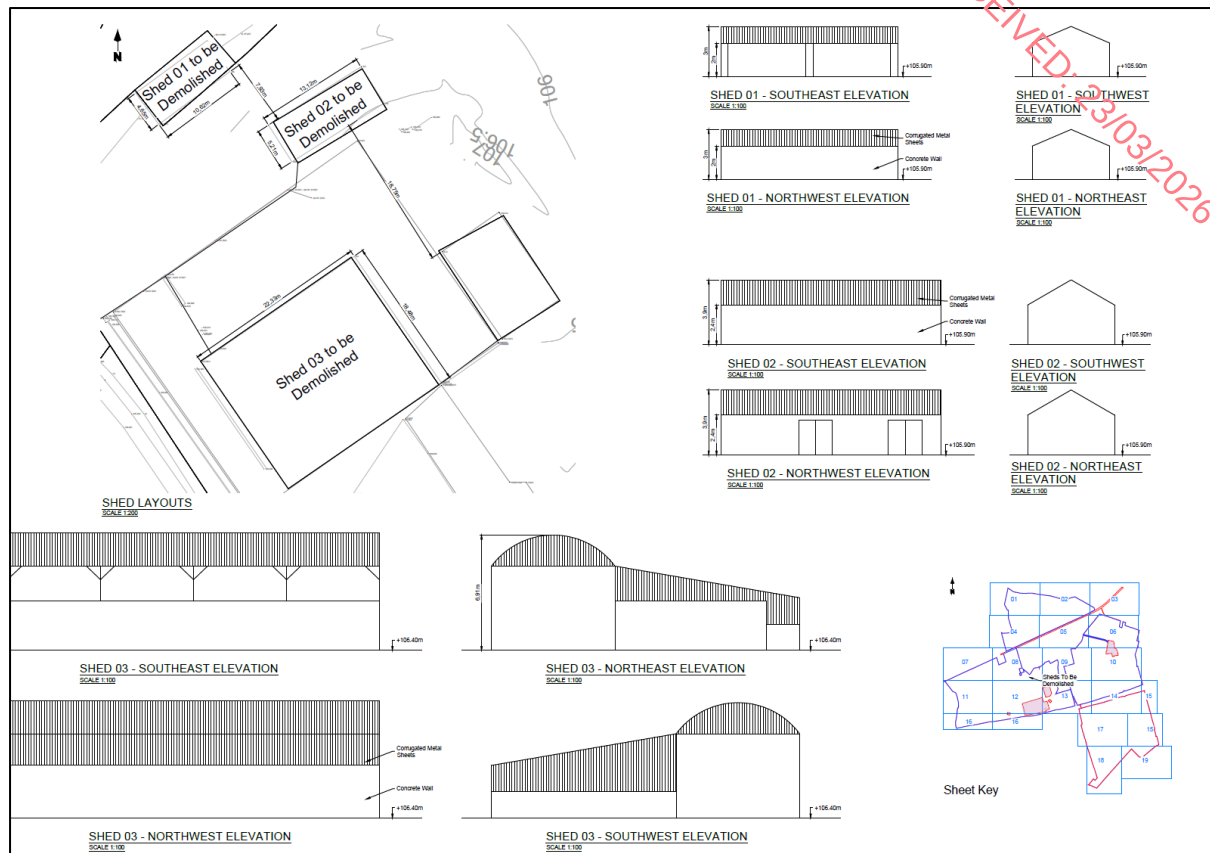
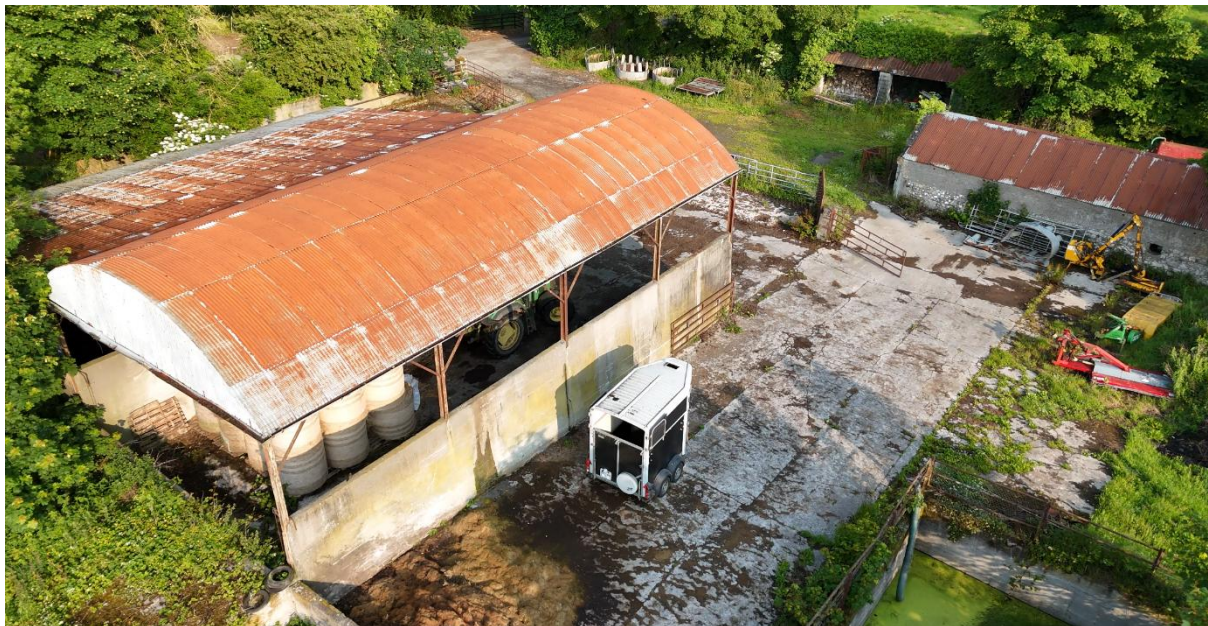
Figure 2.2 Drawing of sheds and outhouses to be demolished**Figure 2.3 Photograph of sheds and outhouses to be demolished**

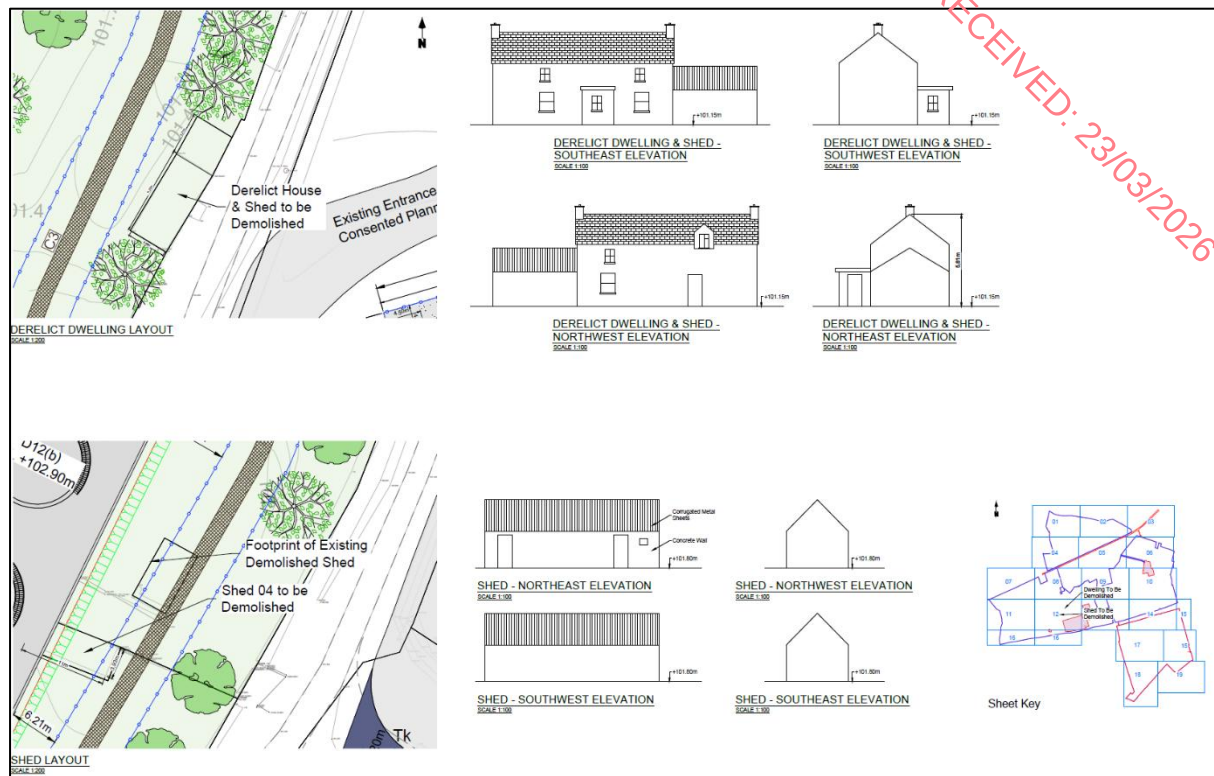
Figure 2.4 Drawing of Derelict dwelling to be demolished**Figure 2.5 Photograph of derelict dwelling to be demolished**

Figure 2.6 Photograph shed and derelict structure to be demolished



Figure 2.7 Site Location (1:50,000)

Figure 2.8 Site Location Map (1:2,500)

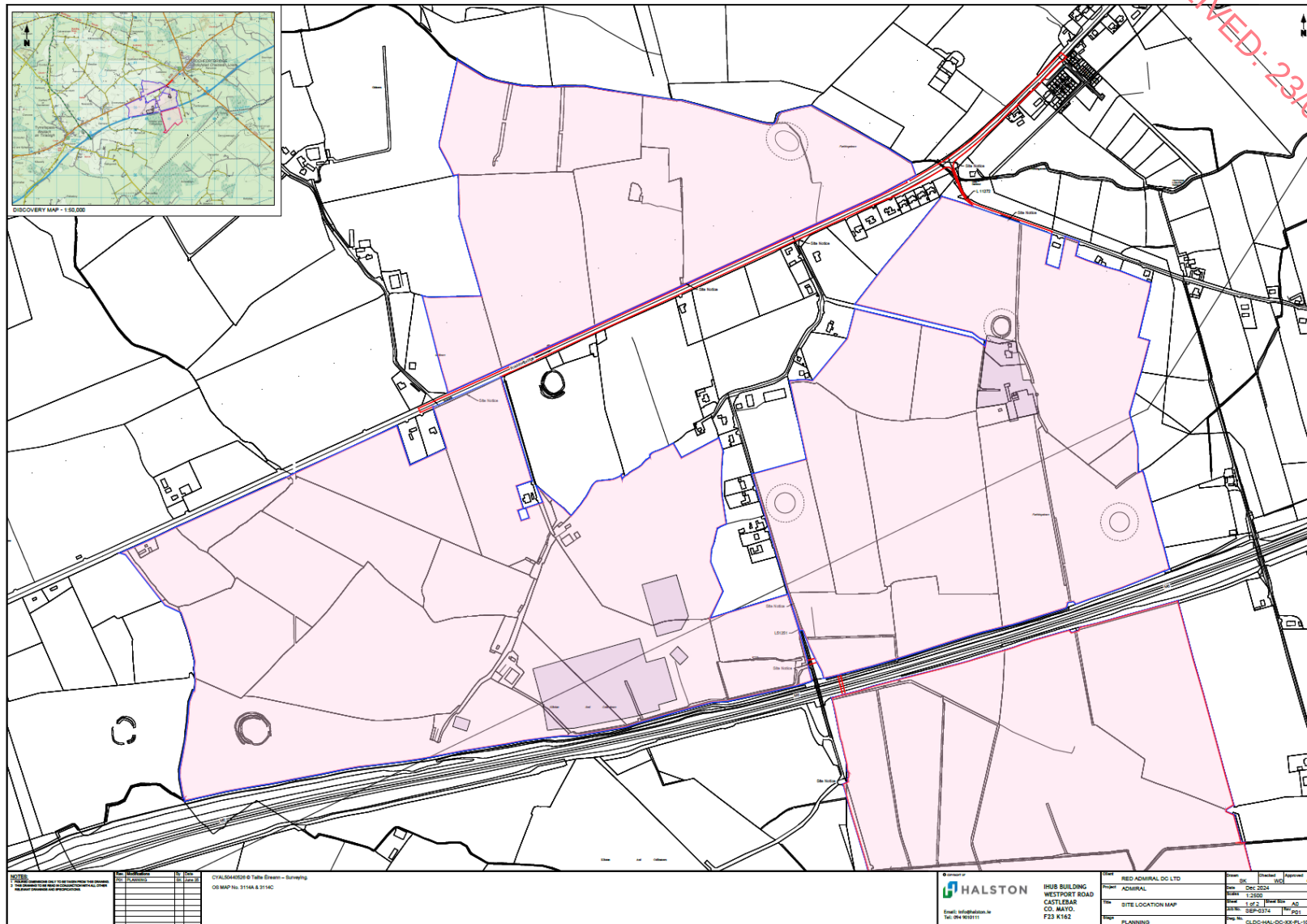
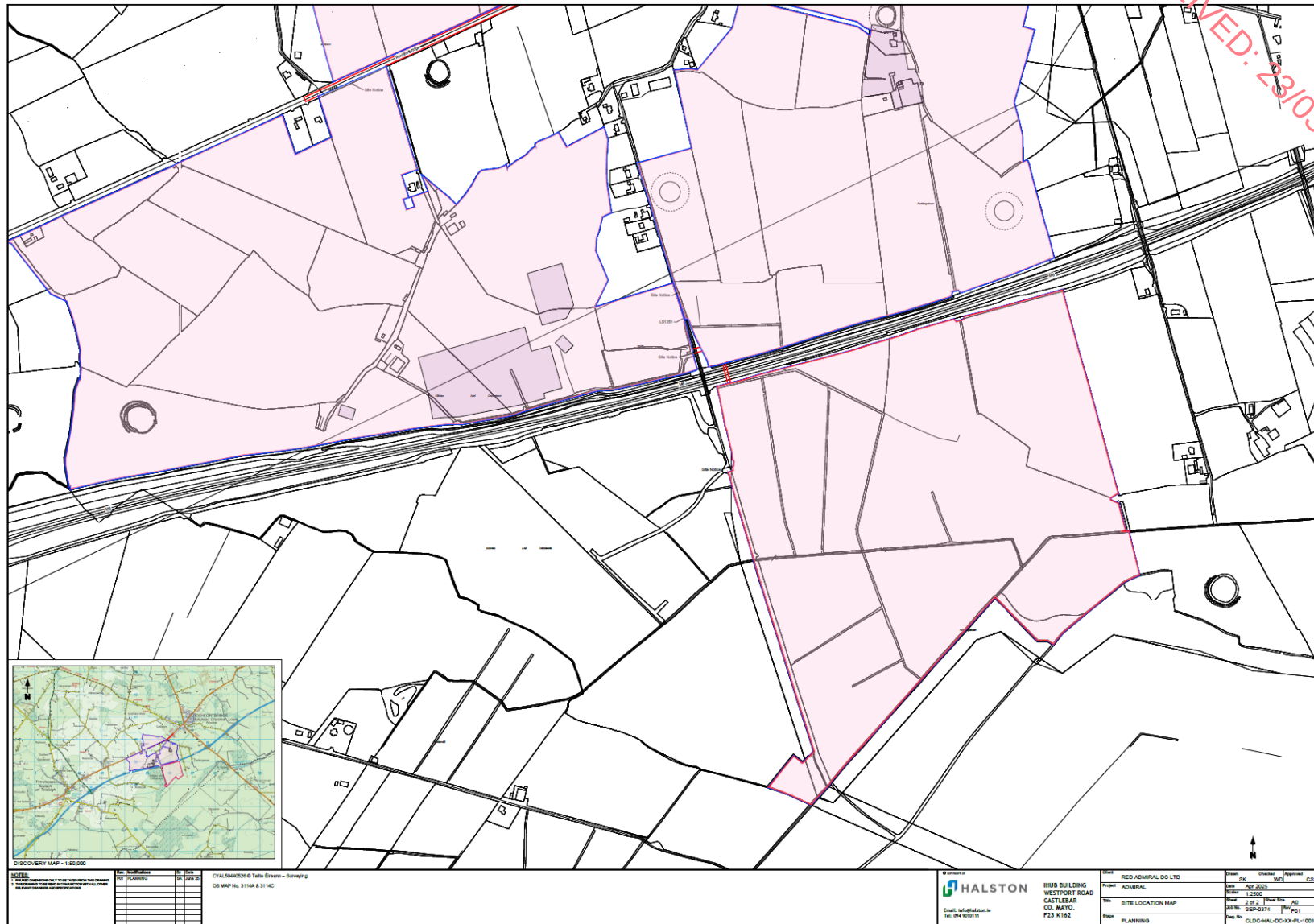


Figure 2.9 Site Location Map (1:2,500)



2.3 DESCRIPTION OF DEVELOPMENT

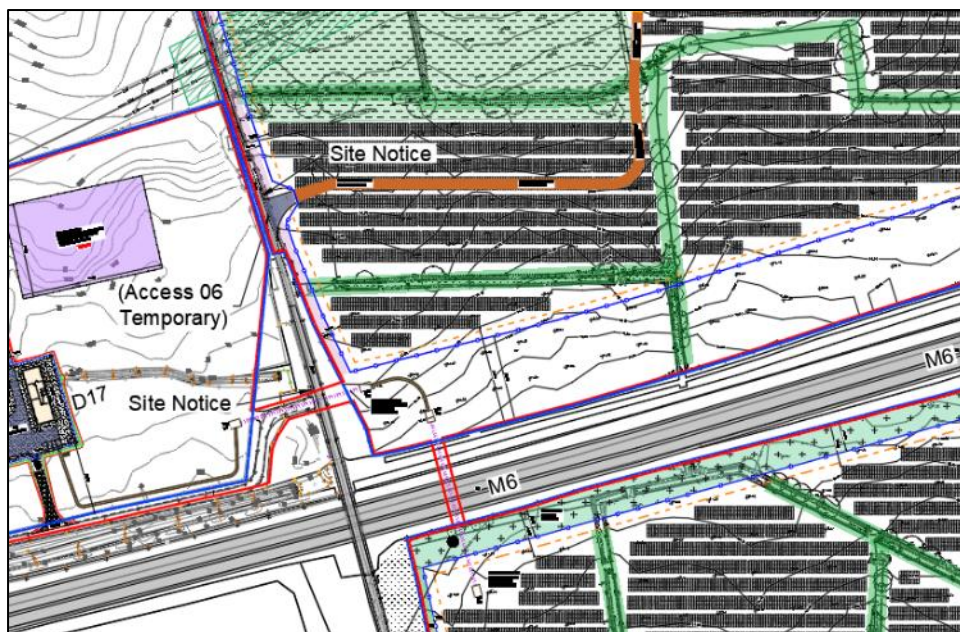
Red Admiral DC Limited propose to develop a DC facility and DER on lands in the townlands of Gneevebane, Oldtown, Farthingstown, Castlelost and Kiltotan and Collinstown in the south of County Westmeath. The project includes two main elements, namely:

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 39ha 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 approximately 200ha 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 farm (nominal 180MWp), and
 - 220kV IPP GIS Grid connection to the 220kV Castlelost GIS substation which adjoins the proposed development site.

The DC facility and components of the DER (Fuel Cell, BESS and 220kV IPP) project will be accessed from the R446 regional road via an existing private lane, which currently provides access to the Castlelost Flexgen Power Plant and Castlelost GIS. An emergency access to the DC facility in the northwestern corner of the development lands is also provided but will remain closed, i.e. it is designed for fire-service use and will be subject to security inspections. It therefore has no material impact on local traffic, noise, or residential amenity. Three separate entrances are proposed providing access to the Solar Farm (from the R446 for the northern parcel, from the L11272 for the middle parcel and from a private laneway south of the publicly owned L51251 for the southern parcel).

Figure 2.10 Project Site Access Locations

Rather than routing construction traffic south along the L51251 from the R446, it is proposed to provide an access way through the middle parcel (Phase 1) of the solar farm exiting onto the L51251 (shown as temporary access point 06) south of residential properties further north. No construction traffic will be permitted to route from or to the R446 from the proposed new access point along the L51251.

Figure 2.11 Temporary Access 06 to L51251

2.4 DATA CENTRE FACILITY

2.4.1 REVISED DESCRIPTION (MARCH 2026)

The Data Centre (DC) facility comprises six (6no.) data centre buildings, associated medium-voltage (MV) switchroom buildings, car parking, a 33kV IPP Building and AIS Compound, ancillary equipment compounds, internal access roads, landscaping, drainage and all associated site development works. The DC facility will be developed within an overall site area of approximately 48 hectares, with the principal campus arranged within a secure area of approximately 39 hectares.

The layout of the DC campus has been refined following detailed design review in order to improve the relationship of the development with the R446 corridor, adjoining residential boundaries and the surrounding rural landscape, while maintaining the operational, traffic and emergency access requirements of the facility.

The revised arrangement increases the setback of the data centre buildings closest to the R446 from approximately 49 metres (m) to 75m. This has been achieved through rationalisation of the internal campus arrangement, including refinement of building spacing, internal service routes and associated parking and circulation areas. The additional separation enables a materially wider landscape buffer along the R446 frontage and in the vicinity of nearby residential boundaries. That buffer will accommodate enhanced structural planting, native tree and shrub species, retained hedgerows where feasible, and soft landform modelling /berming so that the campus presents a more recessive and better-screened edge to the public road corridor.

The architectural response to the revised campus layout also includes a reduction in the parapet height of the data centre blocks fronting the R446 from 18m to 16m. The parapet profile will be set back toward the centre of the roof to assist in screening roof-level plant and to reduce the apparent scale and massing of the buildings when viewed from the surrounding road network and nearby properties. In addition, an architectural veiling system in the form of a simple metal mesh screen is proposed to selected primary elevations in order to soften the appearance of the larger building volumes, introduce depth and shadow, and improve the visual integration of the buildings within the maturing landscape framework.

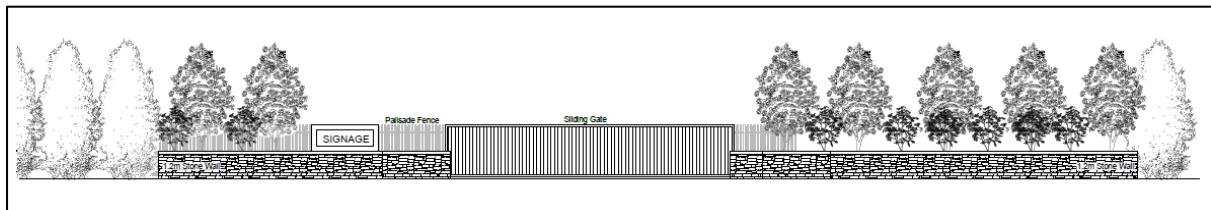
The revised design also seeks to break the linear repetition previously perceived along the R446 frontage. This is achieved through enhanced architectural treatment to the office and administration elements, variation in façade composition, and a stronger campus hierarchy within the site. The office component is intended to act as an organising element

within the development, supported by hard and soft landscaping, so that the data centre campus reads as a coordinated contemporary campus environment rather than as a continuous industrial frontage.

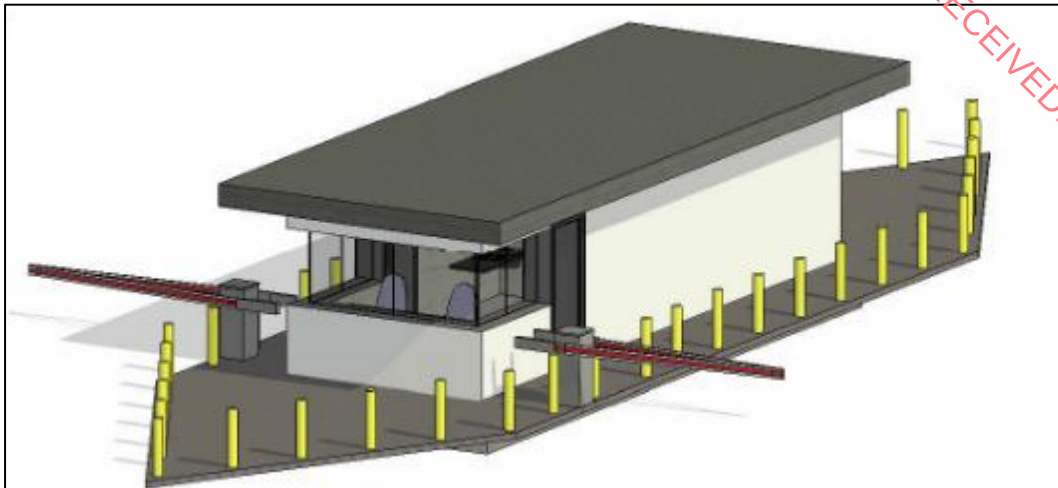
The revised campus layout does not alter the functional role of this element, nor the requirement for a secure operational campus. Rather, the revised arrangement ensures that the technical and security requirements of the development can be met in a manner that provides greater setback, more effective landscape mitigation and an improved architectural response to the site context.

The entrance to the DC facility will continue to be controlled from the Security Control Building, which forms the principal point of ingress and egress for personnel, visitors and vehicles.

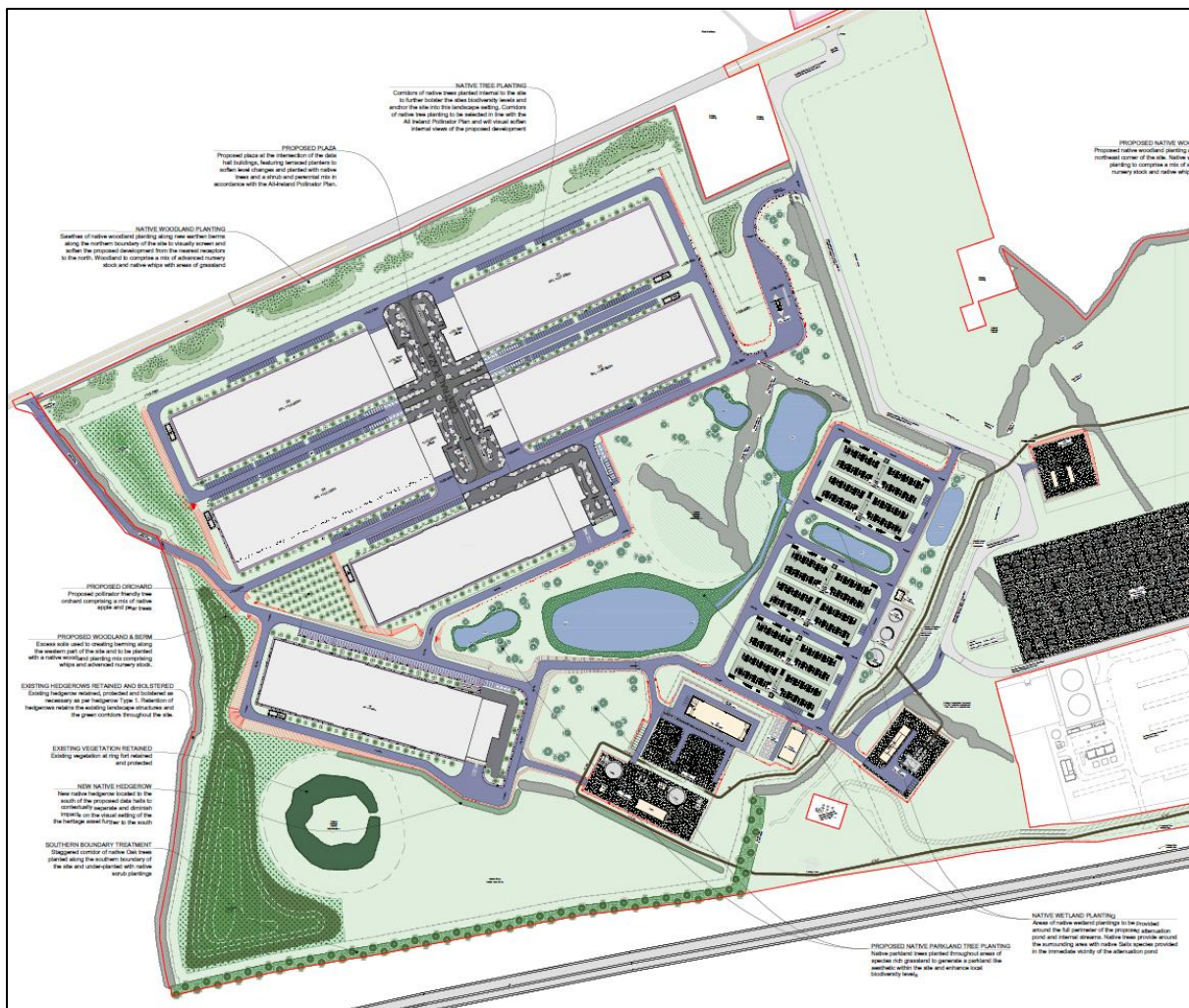
Figure 2.12 DC facility entrance



This building contains a small office /admin room for security personnel, an IT room and a WC room. The security control building is the primary point of ingress and egress for all personnel, visitors and vehicles. Although compact in footprint, the building is a critical node in the overall layout of the campus. The building is positioned on the inner side of the secure perimeter fence, centred between two dedicated carriageways, one inbound and one outbound. Each lane is controlled by an electrically actuated rising-arm barrier with LED boom lighting and induction-loop anti-tailgate logic. The area will also contain control access /egress point for pedestrians. During normal conditions one worker occupies the operations room around the clock, with a second worker present during peak-delivery periods.

Figure 2.13 3D illustration of Security Control Building

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Figure 2.14 DC Facility Layout

2.4.2 DATA CENTRE BUILDINGS

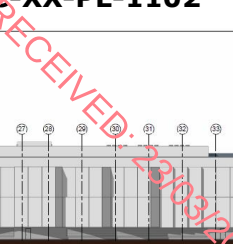
The DC facility consists of six (6no.) identical data centre buildings (labelled D1-D6 on the site layout drawing) and share the same layout. Each building is 228.19m long and 62.2m wide and are 18.0m high to roof parapet level and have dedicated car parking. A medium voltage (MV) switchroom building is collocated with each DC building.

The DC buildings have a footprint of 13,978m² (sqm) and a gross floor area of c.28,561 sqm. The buildings will be steel frame construction with metal deck first floor and proprietary insulated metal cladding. The buildings will be fitted with loading docks. Proprietary engineered acoustic louvres are incorporated into the facade of the (mechanical, electrical and plumbing (MEP) areas) and at roof level to provide for air flow and ventilation from air handling units (AHU) and electric chiller units positioned internally.

Each data centre building will contain the following:

- An administration block with a height of 13.75m, split across two floors and providing; reception offices, kitchen, welfare, toilets, security, stores, loading /receiving area, mechanical rooms and stairwells. The gross floor area of the administration block on each DC building is 2,478sq.m. The administration block's facade will combine curtainwall glazing, selected brickwork, and insulated metal cladding in complementary dark and light tones.
- Data Halls are split across two floors (10no. on each of the ground floor and first floor) and have a combined floor area of 16,403 sqm. The data halls are separated by a central circulation corridor which runs from the administration block to the opposite end of the building. Electrical (ground floor) and ventilation (first floor) rooms separate the data halls across the building's width.
- MEP plant rooms are incorporated within the shell /superstructure of the building (gross floor area of 4,772sqm) and run either side along the full length of the building interrupted by stair cores providing access between floors. The MEP areas will house advanced cooling equipment, (AHU), pumps, piping and electrical equipment.
- Single storey MV switchroom building (15.95m long x 4.95m wide x 4.1m high) will contain two room and house electrical switchgear associated with each DC building.

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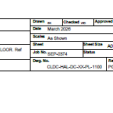
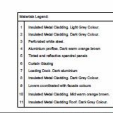
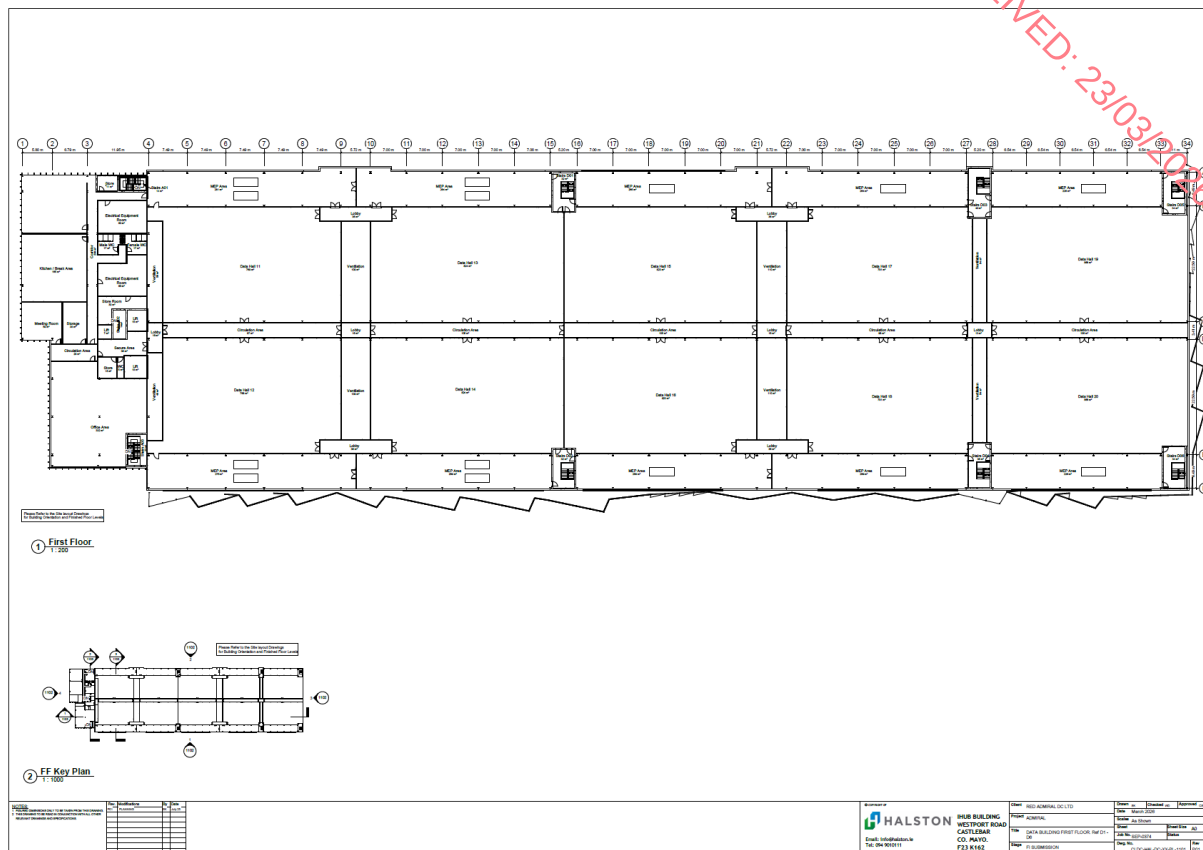


Figure 2.17 DC Building Ground Floor Layout

2.4.2.1 DC Cooling

The cooling system on for the DC facility comprises non-evaporative fresh-air cooling, closed-loop variable-speed electric chillers, and SOFC-driven absorption chillers, achieves high thermodynamic efficiency with minimal water footprint.

Under prevailing Irish climatic conditions, the data halls will be conditioned almost exclusively by a non-evaporative fresh-air system. Ambient air is filtered, temperature-controlled via modulating dampers and heat-exchange matrices and supplied to the cold aisles; return air is extracted through electronically commutated fan arrays. Annual water usage will be negligible because no adiabatic or spray evaporation is employed. This translates into a considerably lower Power Usage Effectiveness (PUE) and Water Usage Effectiveness (WUE) aligning with the principles of sustainable design.

As ambient temperatures rise during summer months, or when transient high-density computational workloads occur, the data centre facility will use mechanical cooling. Each data centre building will house electric chillers capable of supplying 7°C chilled water to the air-handling units. The chiller condenser circuit is entirely closed-loop and rejects heat to dry coolers equipped with variable-speed fans; consequently, the process introduces no

significant evaporative or blowdown water demand. Variable-frequency drives on both primary and secondary pumps will minimise parasitic power consumption.

The Fuel Cells will generate high-grade thermal energy concurrent with electrical output. When available this heat will be transferred to a double-effect lithium–bromide absorption chiller, producing chilled water at 7–10 °C. The absorption chiller is hydraulically coupled to the chilled-water header downstream of the electric chiller array. During fuel cell operation, recovery of waste heat using absorption chillers will displace mechanical compression needs associated with the electric chillers. Integration of the absorption stage raises overall fuel-utilisation efficiency to approximately 80%.

The proposed cooling is designed in accordance with:

- Climate Neutral Data Centre Pact- WUE and PUE requirements,
- LEEDv4 (EA and WE credits) through reduced process water and advanced energy recovery and,
- Ireland’s Climate Action Plan 2025, circular-economy resource efficiency and large-user demand mitigation.

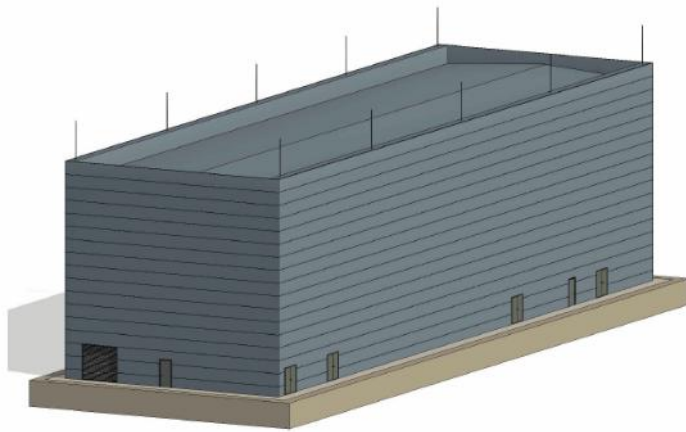
The design ensures operational resilience under variable climatic and computational conditions while substantiating compliance with sustainability frameworks for design of data centres.

2.4.3 33KV IPP BUILDING AND AIS COMPOUND

This component of the project will provide the point of common coupling between the proposed 220kV IPP GIS Building and the DC facility. To achieve grid redundancy three independent power feeds will route underground from the proposed 220kV IPP GIS Building to the 33kV IPP Building and AIS Compound located on the DC facility.

The 33kV IPP will supply and route double redundant feeders to each of the six (6no.) DC buildings. The two-storey (16.8m high) 33kV IPP Building and adjoining AIS compound will be owned and operated by the DC facility but designed and run in accordance with EirGrid Grid Code and ESB Networks specifications. The compound accommodates metering, protection and control equipment for import and generation synchronisation from the DER.

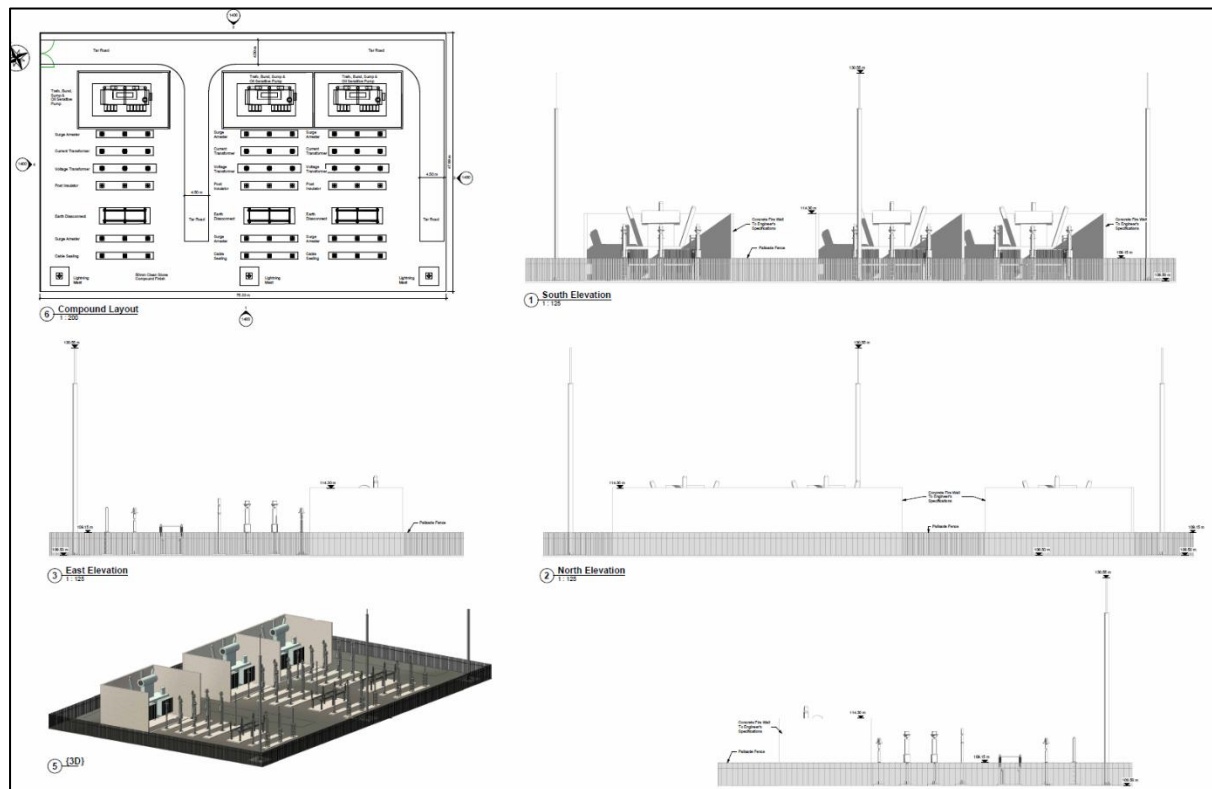
Figure 2.18 3D impression of 33kV IPP Building



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The AIS Compound is positioned to the south of the 33kV IPP building and measures 75.33m x 48.00m. The compound will contain three (3no.) banded transformers with drainage (to oil water separator) and associated above ground electrical cabling.

Figure 2.19 – Layout showing 33kV IPP Building and AIS Compound



2.4.4 ANCILLARY EQUIPMENT COMPOUNDS – DC FACILITY AND DER

An ancillary equipment compound is proposed south of the DC facility and Fuel Cell. The overall ancillary equipment compound is subdivided in two providing independent ancillary

supporting equipment to the DC facility and DER. A description of the equipment and plant contained in each compound is outlined below.

2.4.4.1 Ancillary Equipment Compound (DER)

2.4.4.1.1 Diesel Generators

Two (2no.) emergency generators will be installed in the compound to provide electricity instantly and reliably and allow the operator to put components of the DER into a verified *failsafe* state and keep safety systems alive until mains power returns. Both generators will be capable of starting unassisted and will be configured to accept essential loads and hold voltage /frequency within equipment limits.

2.4.4.1.2 Package Water Treatment Plant

A single-container water treatment module incorporating aeration, filtration, pH correction, softener and UV/chlorine disinfection will be positioned in the compound to supply potable water to welfare facilities across the DER. The water will be supplied from a proposed groundwater abstraction well⁶ which will be drilled close to the ancillary equipment area.

2.4.4.1.3 Fire Water Tank and Pump House

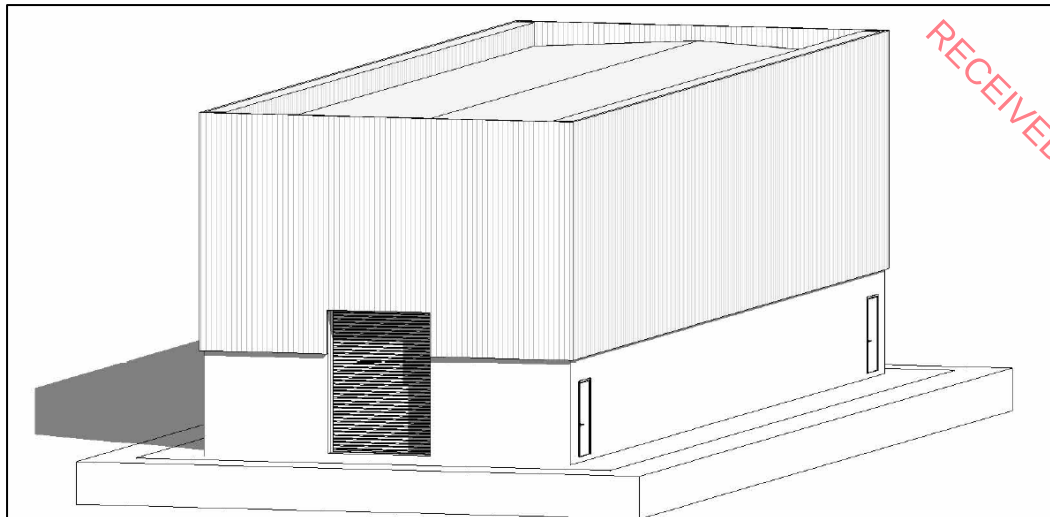
A 2,000m³ firewater storage tank will be located in the compound which will be filled from the proposed groundwater well. Once filled, the normal demand for water arising from its existence is insignificant; the tank will be topped up automatically from the site's groundwater bore whenever the level falls below 90%, ensuring that the strategic reserve is never eroded by routine testing or minor call-offs.

Together, the fire water reservoir, redundant diesel pump sets and valved ring main form a robust, self-contained fire-water infrastructure. They guarantee that, even during the worst-case scenario, hydrants and fixed suppression systems are fed with steady pressure and ample flow for the full duration of the emergency, independent of mains supply or site power conditions.

2.4.4.1.4 Storage Building

A storage building (30.7m long x 10.74m wide x 9.65m high) will be constructed in the ancillary equipment compound. This building will be used to store materials, spares, small chemicals (in volumes <1m³) and service equipment.

⁶ An existing well with a reported depth of 60.9m within the project lands has a reported source yield of 76.30m³/day – classed as moderate (GSI unique ID IE_GSI_GW_Well_32279).



2.4.4.2 Ancillary Equipment Compound (DC facility)

2.4.4.2.1 Package Water Treatment Plant

A single-container water treatment module incorporating, filtration, pH correction, softener and UV disinfection will be positioned in the compound to supply potable water to DC facility. The water will be supplied from a proposed groundwater abstraction well⁷ which will be drilled within the DC facility. The treated water will be stored in a 70m³ tank which provides at least 1.5 days treated water storage. Uisce Éireann has also issued a Confirmation of Feasibility (CoF) to the applicant confirming that 10m³ per day can be supplied from to the data centre development from the public water network.

2.4.4.2.2 Fire Water Tank and Pump House

A 2,000m³ firewater storage tank will be located in the compound which will be filled from the proposed groundwater well. Once filled, the normal demand for water arising from its existence is insignificant; the tank will be topped up automatically from the site's groundwater bore whenever the level falls below 90%, ensuring that the strategic reserve is never eroded by routine testing or minor call-offs.

Together, the fire water reservoir, redundant diesel pump sets and valved ring main form a robust, self-contained fire-water infrastructure for the DC facility. They guarantee that, even during the worst-case scenario, hydrants and fixed suppression systems are fed with steady pressure and ample flow for the full duration of the emergency, independent of mains supply or site power conditions.

⁷ An existing well with a reported depth of 60.9m within the project lands has a reported source yield of 76.30m³/day – classed as moderate (GSI unique ID IE_GSI_GW_Well_32279).

2.4.5 INTERNAL ACCESS ROADS AND PARKING

The internal roads within the development will be privately owned and will be maintained by the operator /owner. The main internal road network through the DC comprises a 7.0m wide network. Autotrack analysis has been undertaken for the site access road and the internal roads. Road arrangements have been provided at the security entrance (additional road width of 25m) so that there is no queuing of vehicles so that any rejected traffic (including HGV's) can safely turn and exist the site without blocking or causing a road safety issue.

Internal access road with separate pedestrian footpath, provide a safe and uncomplicated access to building within the campus. Car parking is located at each DC building (80no. spaces including EV and disabled spaces) near each administration block for all visitors and staff arriving by car. Bicycles shelters are also located for each DC building.

An emergency entrance is located to the north-west corner of the site the 7.0m wide internal road (185m in length) is secured with gates at two locations which will be permanently closed except in emergency circumstances. The internal road layout has been configured for security to be able to patrol this part of the site.

2.4.6 LIGHTING

The project has been designed where minimal lighting is only used when required in order to avoid *light spill* beyond the site boundary and disturbance of receptors including wildlife. Internal road lighting at the DC facility is designed to the recommendations of BS5489-1:2020 and Lighting Class P4 for roads. This is based on a safe movement of traffic level for motorised and pedestrians in an Environmental Zone 3 (sparsely inhabited rural areas), speed limit <30mph, quiet traffic flow, occasional vehicles which can be applied to the site roads.

Lighting columns are arranged to achieve the required minimum lighting levels while avoiding excessive light spill onto the site perimeter. These lighting columns are installed with luminaires mounted at 6m, with factory fitted rear shields, a 0° tilt angle and a G3 rating. This is a rating (G1 -G6) of the control of obtrusive light and upward light output with G6 being the highest.) Glare is controlled by the use of glare rated luminaires (G3). Therefore, Back-light, Upward light and Glare (BUG) has been considered to a high level.

2.5 DECENTRALISED ENERGY RESOURCE

The Decentralised Energy Resource (DER), which will be constructed across approximately 200ha 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:

- (a) Fuel Cell Power System – 160MW,
- (b) Battery Energy Storage System (BESS) – 250MW,
- (c) Solar PV farm (nominal 180MWp), and
- (d) Grid connection to the 220kV Castlelost GIS substation which adjoins the proposed development site.

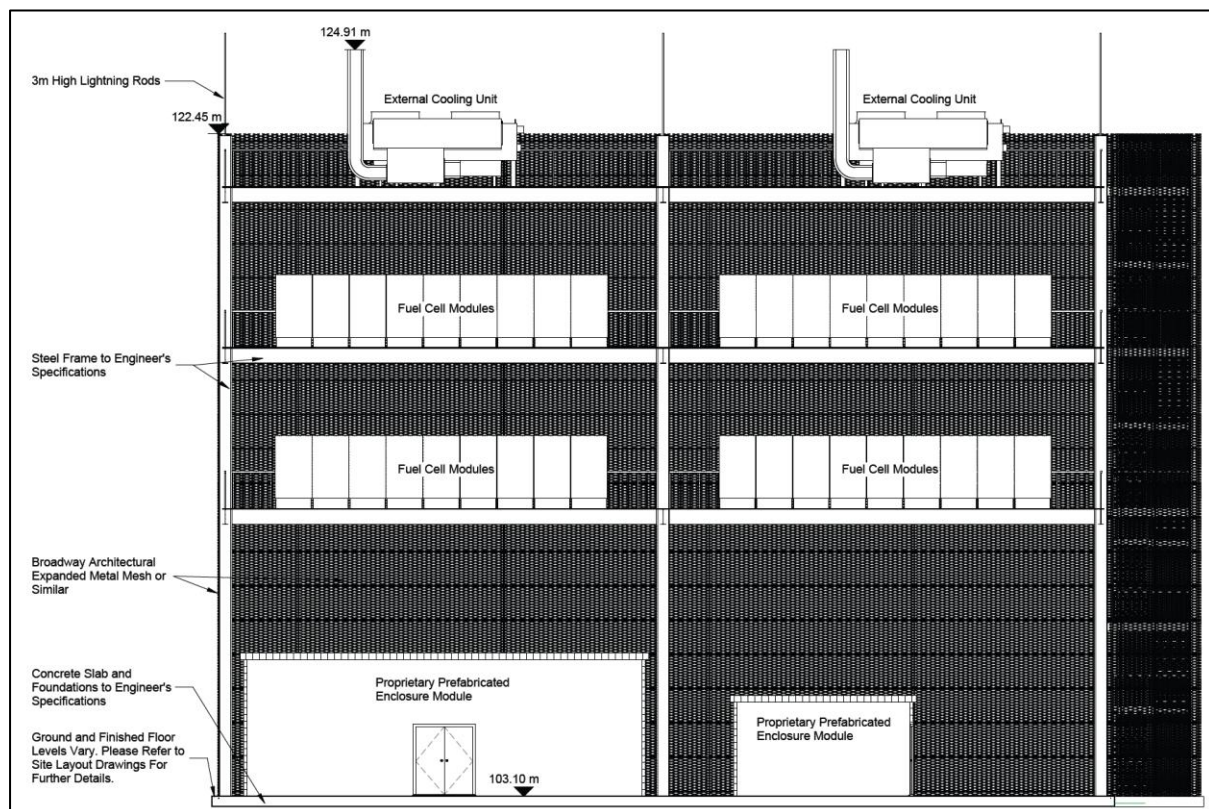
2.5.1 FUEL CELL

The project includes a fuel cell that will generate low-carbon electricity, chilled water and recoverable heat and carbon dioxide from natural gas without combustion. Natural gas will be delivered to the fuel cell power system from a proposed above ground installation (AGI) /gas receiving station which will be located within the site⁸.

The proposed use of natural gas is in line with recent EU and Irish Government direction on the use of gas for generation as a transitional fuel. The proposed generation of electricity using collocated utility scale fuel cell power system at the site avoids any negative impact from the Project on the public electricity system.

The fuel cell is designed to provide variable power to the DC facility. Generation from the fuel cell will be delivered by 330kW modular energy units (energy servers) positioned and stacked in a compact steel frame structure (power tower). Six power towers located east of the DC facility will deliver utility-scale output (160MW) of electricity as and when required. Control and electric equipment will be positioned at ground level and energy servers will be positioned on levels 1 and 2 of each structure. Absorption chillers will be positioned on Level 3 and used for recovering waste heat arising from the process.

⁸ The proposed AGI will connect to the gas transmission supply serving the adjoining Castlelost Flexgen Power Plant.

Figure 2.20 Modular Energy Servers positioned at ground level⁹**Figure 2.21 Section of Power Tower**

⁹ Source: <https://www.bloomenergy.com/technology/>

2.5.1.1 Fuel Cell Operating Principle

Fuel cells convert natural gas into electricity without combustion. Ambient air is first drawn through a recuperative heat-exchanger that raises the temperature to roughly 700°C before it reaches the cathode. Simultaneously, natural gas supplied from the proposed AGI on site enters the anode side of the fuel cell, where catalyst generate a hydrogen-rich fuel stream. Within the cell, hydrogen is oxidised at the anode electrolyte interface and the electrons released flow through an external circuit to the cathode, creating direct current. The accompanying oxygen ions migrate through the ceramic electrolyte and react with the hydrogen to form water vapour and carbon dioxide (CO₂)¹⁰. Integrated power electronics then invert the direct current to alternating current and step it up to the required voltage. The high temperature waste heat will be recovered to drive absorption chillers during periods where increased cooling is required at the DC facility. The fuel cell power system will be capable of simultaneously producing electricity, usable heat and chilled water and increasing overall efficiencies to approximately 80% (up from ~60%).

2.5.1.2 Resiliency, Predictability, Flexibility and Sustainability

Each energy server is an electrically independent string, so if a single unit is taken off-line for maintenance, the remaining energy servers continue to operate uninterrupted, yielding availability in excess of 99.5 per cent. Because generation is co-located with the primary electrical load, power is delivered without the losses or outage risks associated with long transmission routes and overhead lines. The energy servers are designed and future proofed to run on biomethane or green hydrogen in future, without wholesale redesign of the balance-of-plant.

High-grade exhaust heat from the fuel-cell stacks will be captured to drive double-effect lithium-bromide absorption chillers, yielding chilled-water capacity and increasing trigeneration efficiency of the power system. At the same time the anode exhaust provides a single high-purity CO₂ stream, free of nitrogen contaminants, that will be captured and dried using proprietary technology. Carbon dioxide recovery and purification equipment will be contained within a CO₂ process building and compressed CO₂ will be temporarily stored in 16no. insulated and vertically aligned proprietary tanks prior to being transported off site as a valuable product to end-users.

2.5.1.3 Carbon Dioxide Process Building and Storage

It is proposed to recover, purify and store carbon dioxide generated by the fuel cells during periods of operation. Recovery of the by-product reduces emissions and provides a value

¹⁰ Ranging from 15-30% less CO₂ than produced by a gas turbine

product to down-stream users (food grade CO₂). The CO₂ recovery process will operate in a dedicated steel-framed structure measuring 15.67m in width, 30.74m in length and 11.25m in height. Once purified (desiccant and carbon beds) and condensed, the liquid carbon dioxide is transferred to a bank of sixteen vertical, vacuum-insulated tanks. Each vessel stands just over fifteen metres tall and 3.6 m in diameter, with an internal design pressure of 22 bar(g). The tanks are arrayed in two rows on a reinforced concrete plint. Over-pressure protection is provided by dual relief valves.

2.5.1.4 Fuel Cell Chilled Water Storage and Pump House

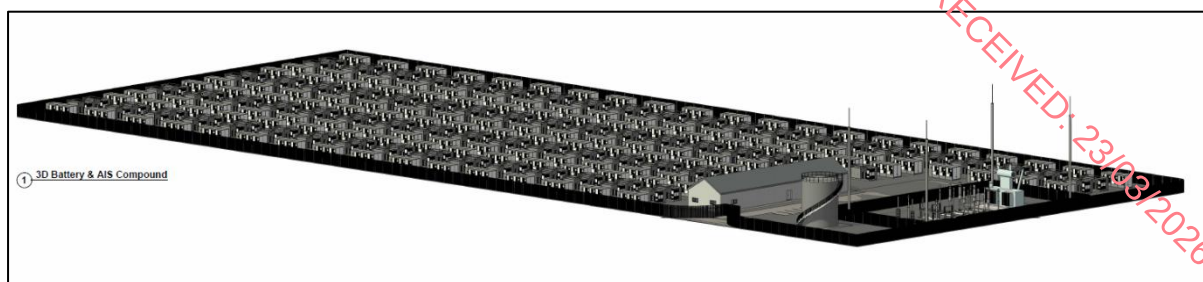
A Fuel-Cell chilled water reservoir consists of two (2no.) 1,000m³ well-insulated cold-water tanks. The chilled-water tanks, pumps and pipework form a fully closed-circuit (closed-loop) system: the same inhibited water continuously recirculates between the fuel-cell chillers, the stratified storage tank and the campus distribution ring-main, with no direct exchange to atmosphere or potable supplies. The function of this is to support the chilling function during period of warm weather.

2.5.1.5 Above Ground Installation

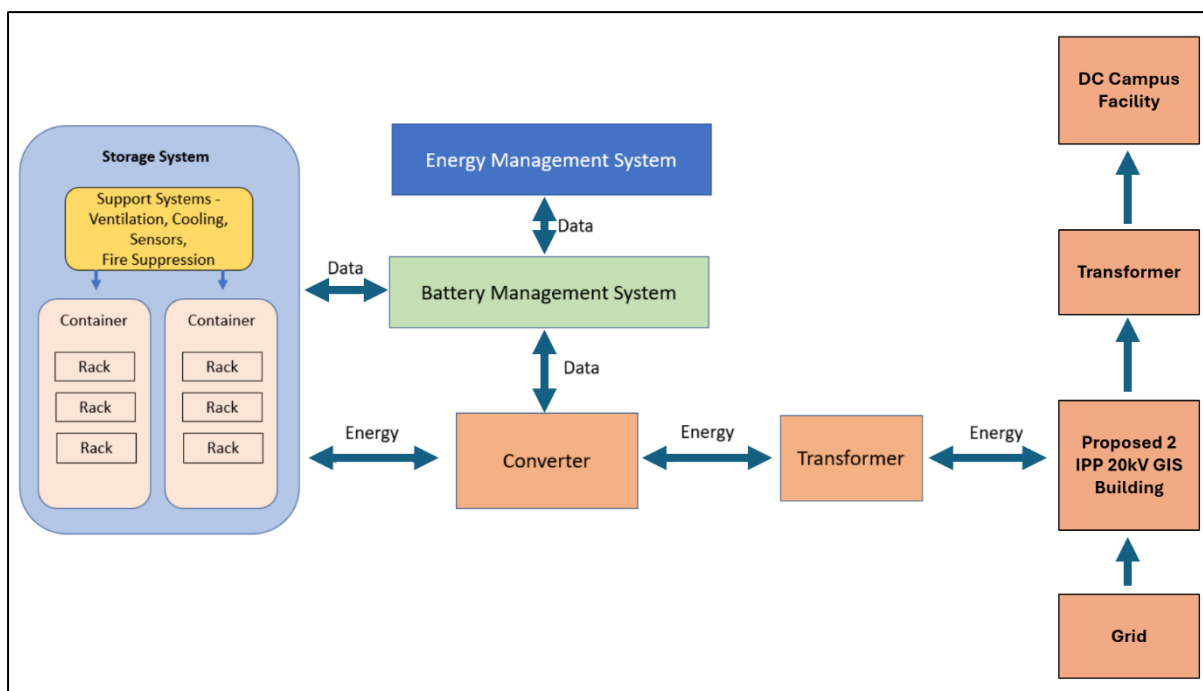
Natural gas will be supplied from the Gas Network Ireland transmission system located within the development site at a minimum guaranteed pressure of 19 bar gauge (bar(g)) and 15°C via an Above Ground Installation (AGI). The pressure of the gas will be conditioned and regulated to approximately 35 bar(g) in the proposed on-site AGI. The Fuel Cell will use natural gas to produce electricity.

2.5.2 BATTERY ENERGY STORAGE SYSTEM (BESS) FACILITY

The BESS facility comprises a total of 276no modular single storey battery enclosures and medium voltage power stations (MVPS). The IPP building and AIS compound (containing transformer) will electrically connect the BESS to the proposed 220kV IPP GIS substation using underground HV cables. The proposed 138no. battery enclosures (7.0m long x 2.6m wide) and 138no. MVPS enclosures (6.1m long x 2.4m wide) will be positioned on concrete plinth foundations. Once positioned the top of the battery enclosures will be a height of 3.1m above the finished ground level (FGL) of the BESS compound and the top of the MVPS enclosures will be a height of 2.94m above the compound FGL. The enclosures will be connected by underground ducts and cables.

Figure 2.22 3D impression of BESS including IPP and AIS Compound

The battery enclosures will house the modular array of lithium-ion (Li-ion) battery units. Li-ion battery units will be assembled to form modules and will be self-contained and certified for intrinsic safety. The battery cell is the smallest subpart of the BESS system, and the cells store the energy. The cells are aggregated into modules which has a positive and negative terminal and are contained in hard casing with a battery management system (BMS-analyser that continuously checks module parameters such as voltage, current, temperature and State of Charge (SoC)). The modules are then aggregated into a pack (or string), again with one positive and one negative terminal. MVPS (or Power Control System (PCS)) units and small transformers will be positioned in self-contained weather-proof enclosures. The plant will absorb and inject energy as demanded by the system numerous times over short-duration events. The MVPS units on each pack deliver information on the state of the pack to the superior control system for the battery ESS. A high-level diagram of a BESS is illustrated in Figure 2.23 below.

Figure 2.23 High-Level Diagram of a BESS

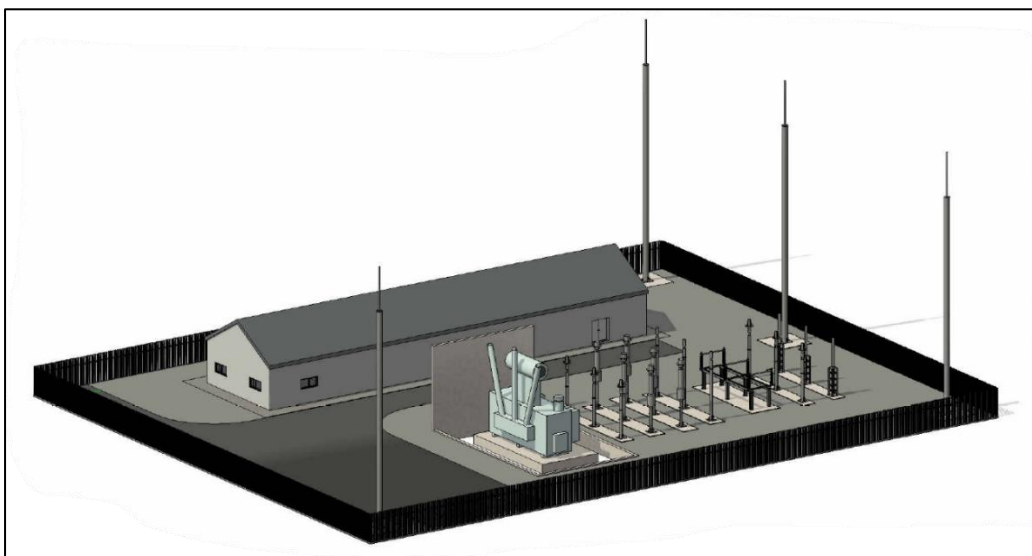
Source: Adapted from <https://www.energystorageireland.com/>

Battery energy storage systems are designed to prevent a problem in one battery cell from spreading to others in the system. The safety systems for a battery storage project operate on multiple layers from the individual battery cell right up to the whole storage system and this is managed by the battery management system (BMS). As soon as the BMS detects that a specific battery cell, or group of cells, is acting in a way that it should not it can instantly reduce the flow of electricity through the cell, switch it off or disconnect it from the power supply completely depending on the severity of the problem. This minimises the risk of a problem escalating in a cell or group of cells and spreading to others. These techniques help to dissipate heat in the event of a cell failure, and subsequent overheating, and prevent adjacent cells or modules from being affected.

The batteries for energy storage are housed in separate enclosures (containers) to prevent the risk of a problem in one container spreading. Sufficient clearance between enclosures is included within the design to provide for this and it also allows for safe access and replacement of modules. Each module includes control equipment, to provide for ventilation, air conditioning and fire suppression equipment (inert gas and detectors). A firewater tank (500m³) is also contained in the BESS facility as an additional safeguard. In the event of a fire within an enclosure the water can be applied to nearby enclosures as a cooling agent to prevent escalation.

An IPP control building and AIS compound will be east of the battery and MVPS enclosures. The IPP building (40.0m x 9.79m) will contain a control room, stores, switchgear room and WC. The AIS compound will contain a banded transformer with fire wall, lightning masts and a series of electrical equipment supported on plinths (e.g. surge arresters, post insulator, disconnects, cable sealing.).

2.5.2.1 BESS IPP Building and AIS Compound



Surface finishes within the BESS compound will comprise clean 50mm permeable stone fill. Stormwater collected from impervious areas such as the IPP building and limited bitumen macadam roads will be directed to a below ground oil interceptor and attenuation structure (volume of c.90m³) before being discharged via a hydrobrake to the open drain /stream which runs to the southeast of the compound. Foul wastewater generated from welfare facilities within the BESS compound will be discharged to a sealed foul holding tank. The holding tank will be emptied and suitably disposed of periodically by a local waste permitted contractor. A foul holding tank is recommended due to low occupancy of the facility once operational. There is no requirement for the use of water in the process.

2.5.3 SOLAR PV FARM

2.5.3.1 Layout

The development footprint is entirely confined within existing fields structures with no hedgerow removal required. Every effort has been made to align tables parallel to field margins to reduce visual intrusion. The solar panels array themselves account for approximately 72ha of the total 168ha with the remaining solar lands fallow. The design embeds the following set-back corridors:

- ≥ 10 m from all third-party boundaries (public roads, adjoining landholdings);
- ≥ 5 m from internal hedgerows and drainage ditches;
- ≥ 10 m from named streams and rivers.

These buffers will be managed as uncut grassland or sown with native wild-flower mixes, creating continuous ecological corridors that enhance habitat connectivity, pollinator forage and small-mammal cover. A suite of ecological enhancement measures, including hedgerow gapping-up with native species, will be implemented in line with the project's Biodiversity Management Plan.

It is proposed to develop a ground-mounted photovoltaic (PV) installation with a nominal of up to 180MWp. Generation will be provided by high-efficiency, PV modules rated at 620 watt (W) each, secured in portrait orientation on galvanised steel support frames. The PV panels will be grouped into three standardised "table" formats so that the plant can be efficiently replicated across the agricultural landholding while respecting existing field boundaries, hedgerows and watercourses.

Table type	Configuration (modules)	Footprint (W × L)	Notes
Type A	27 × 3	6.910 m × 30.618 m	Primary building block in larger, fields
Type B	18 × 3	6.691 m × 20.412 m	Used where field geometry or buffers shorten the available run length
Type C	9 × 3	6.691 m × 10.206 m	Employed adjacent to hedgerows, field corners or buffer zones

Each table carries three portrait strings of modules inclined at 25 degrees from horizontal and faces due south. Row-to-row spacing ranges from c. 3–4 m, providing safe access for maintenance personnel and preventing inter-row shading. Across the site, existing topography undulates gently. Finished PV table heights will therefore vary, not exceeding 3.85m at the rear edge, while the lowest leading edge of any panel will maintain a minimum ground clearance of 800mm to preserve vegetation, allow grazing and facilitate air circulation beneath the array.

Figure 2.24 Solar PV Elevation

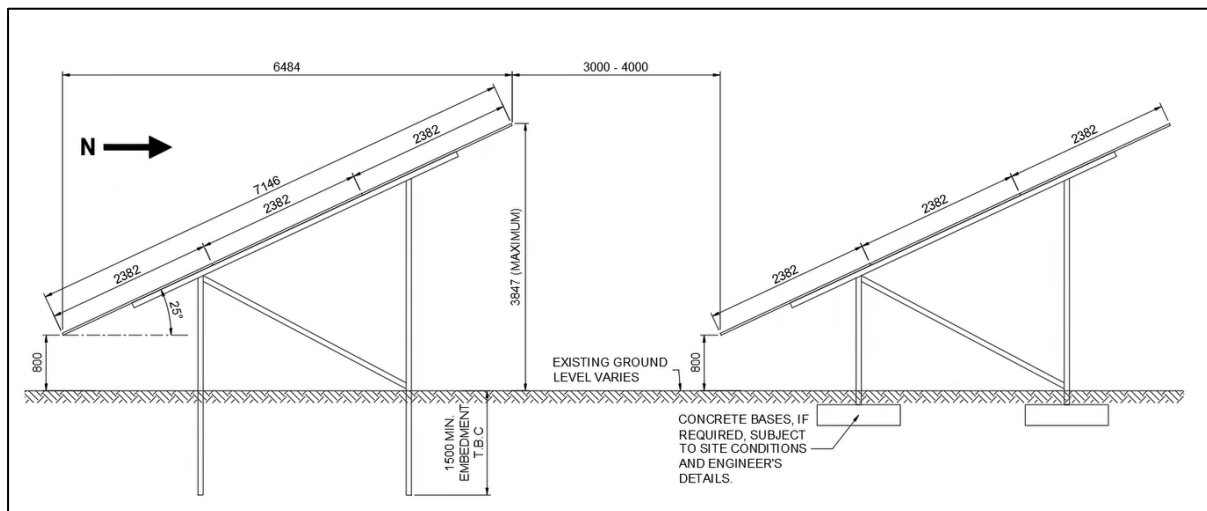
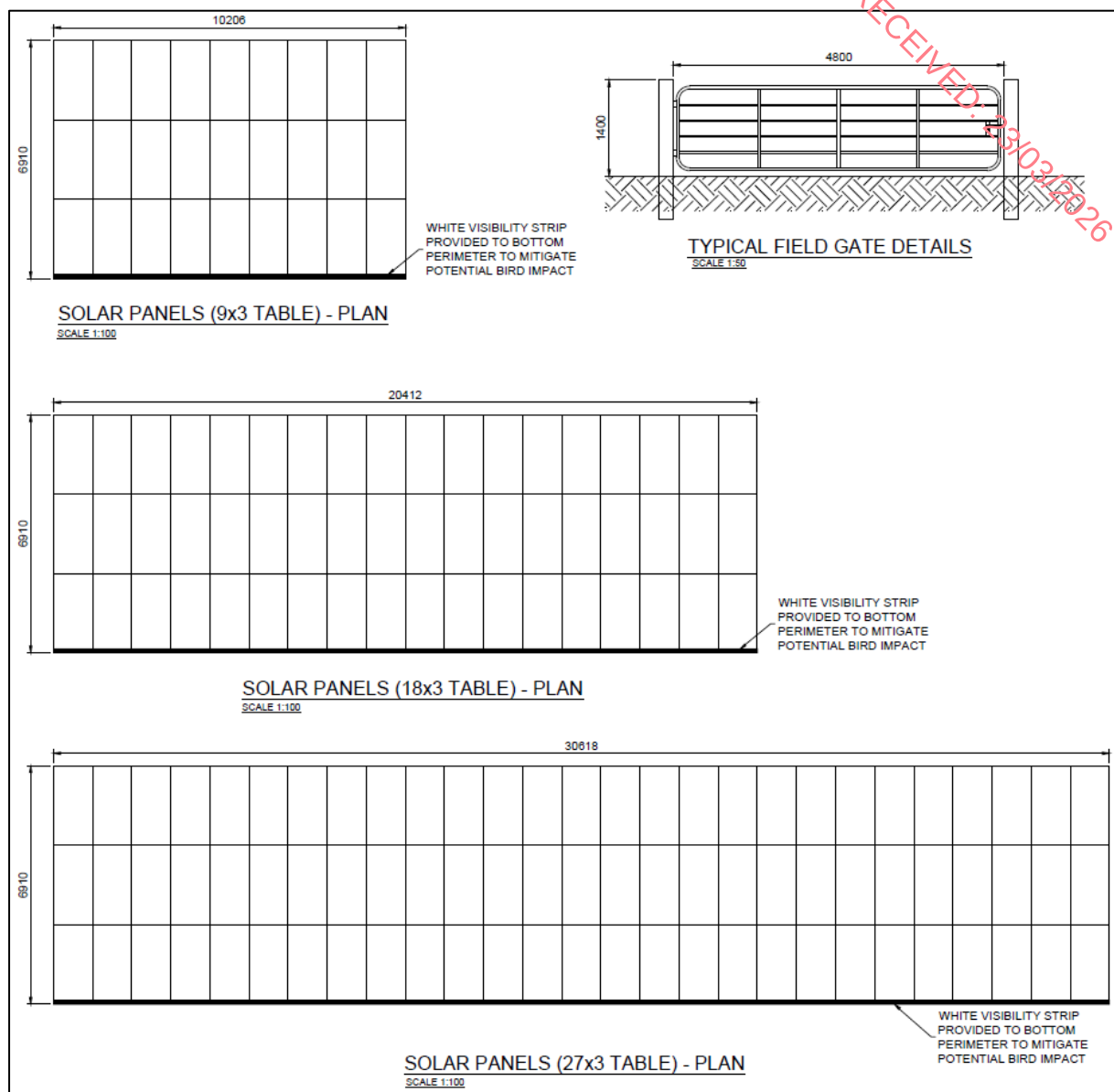


Figure 2.25 Solar PV Table Plan Details

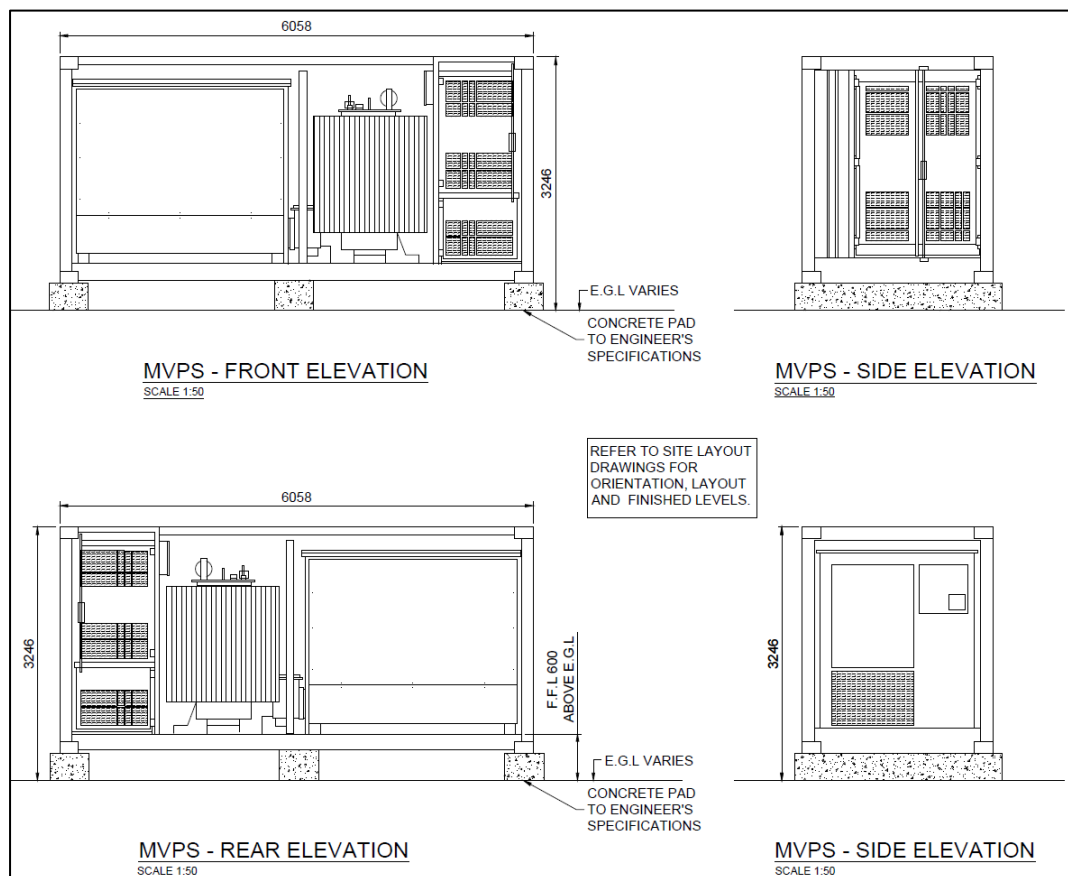
2.5.3.2 Foundations and Support Structure

PV tables will be mounted on a lightweight steel racking system consisting of vertical posts (hot-dip galvanised, typically SHS or C-section) driven or screwed to a depth of c. 1.5 m, avoiding deep excavations and enabling straightforward decommissioning. Where sub-surface obstacles such as shallow bedrock are encountered, pre-cast concrete shoes may be used. These ballast blocks sit on the surface, negating the need for intrusive groundworks. Transverse rail assemblies and mid/end clamps secure the modules and provide structural grounding continuity.

2.5.3.3 Electrical

Array LV cabling will run in cable trays fixed to the rear of each table and then in shallow trenches (typically 600 mm deep) to the nearest MV Power Station (MVPS) enclosure. Forty-five (45no) MVPS units are distributed across the site to minimise DC cable runs. Each MVPS enclosure measures 6.055 m (L) × 2.348 m (W) and stands on a reinforced concrete pad with a finished roof height of approximately 3.25 m above existing ground levels.

Figure 2.26 MVPS Details



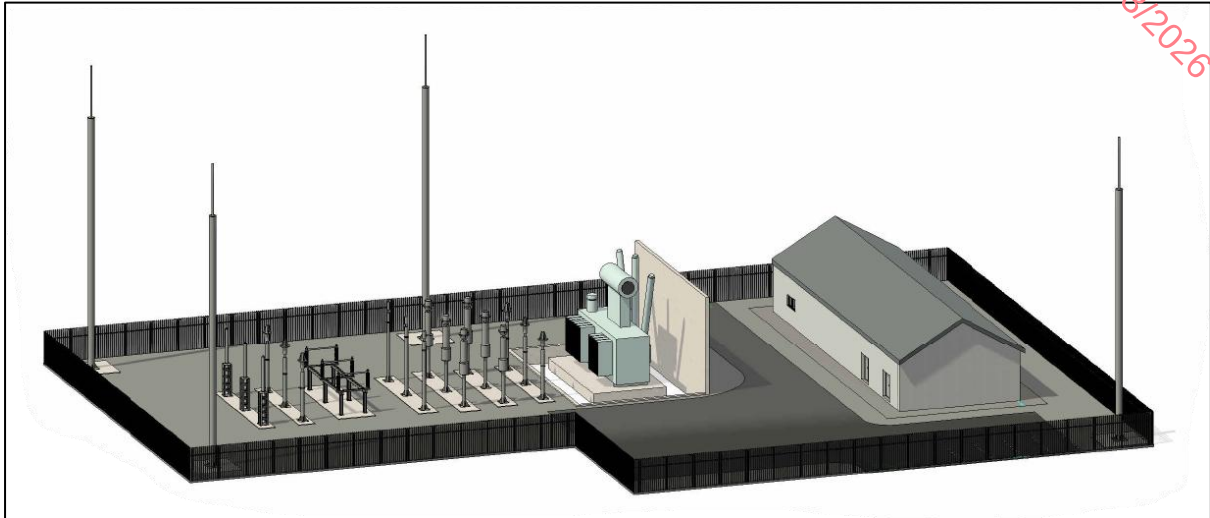
Within each MVPS, string inverters convert the panel output from direct current (DC) to low-voltage alternating current (LV AC), after which a step-up transformer raises the voltage to the medium-voltage (MV) collection network. The MV network is routed in underground ducts to the Solar PV AIS compound, containing a transformer and switchgear interface, located east of the proposed 220kV IPP GIS substation.

2.5.3.4 Solar IPP Building and AIS Compound

The output of the PV installation is firstly delivered to an Independent Power Producer (IPP) Building. It is then exported through an air-insulated switchgear (AIS) compound

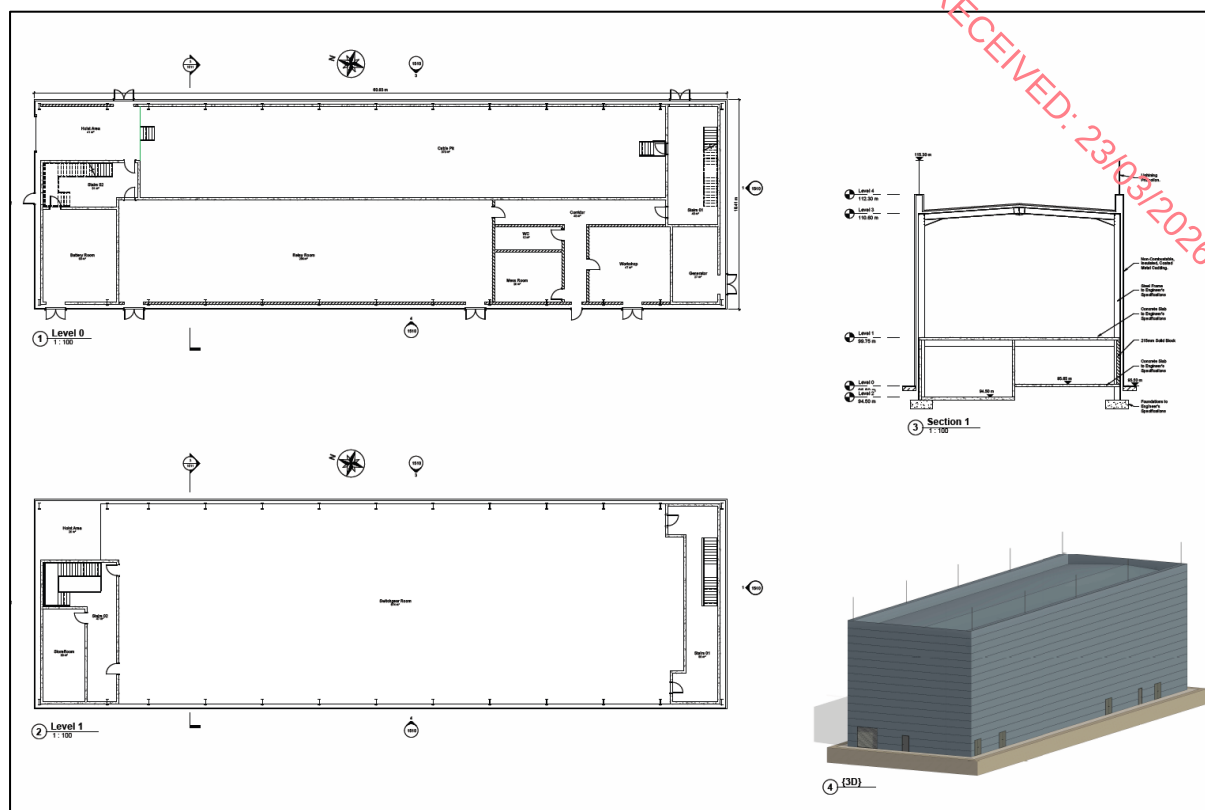
that contains the main 220 kV step-up transformer where it exports the power to the proposed 22kV IPP GIS Building via AIS switchgear (this provides HV isolation, protection and metering).

Figure 2.27 3D impression of Solar IPP Building and AIS Compound



2.5.4 GRID CONNECTION

The proposed 220kV IPP GIS will be located east and adjacent to the existing Castlelost 220kV GIS substation (an existing node on the electricity transmission system. Its connection to the national grid facilitates 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.

Figure 2.28 220kV IPP GIS

2.6 DRAINAGE

2.6.1 FOUL EFFLUENT

2.6.1.1 Data Facility

Foul effluent generated on the data-centre campus, principally from welfare facilities for an anticipated workforce of 400 persons will be managed by a new, site-wide foul drainage system designed in accordance with the Uisce Éireann Code of Practice for Wastewater Infrastructure IW-CDS-5030-03, Revision 2 (July 2020), I.S. EN 752:2017 Drain and sewer systems outside buildings, I.S. EN 12056 (Parts 1-5, 2000) Gravity drainage systems inside buildings and the Building Regulations Technical Guidance Document Part H – Drainage & Waste Water (current edition).

Each data-centre building will have its own local foul network that conveys flows by gravity to a centrally aligned sewer. This then discharges to a pumping station positioned adjacent to the security building near the campus entrance. The duty/standby submersible pumps in the pumping station are sized to limit the off-site discharge to 13.3l/s. Flow is lifted by rising main that tracks towards the main entrance of the project and then east towards Rochfortbridge along the public road (R446). The private network will terminate in a new stand-off manhole from which gravity flow enters the existing Uisce Éireann public foul

sewer. All works within the public domain will be carried out under a Road Opening Licence and to Uisce Éireann Standard Details IW-CDS-5030-01.

2.6.1.2 DER

Foul wastewater generated from IPP Buildings spread across the DER will be discharged to individual sealed holding tanks (each 32m³) collocated with associated IPP buildings, (proposed due to low occupancy of the plant when operational). The list of locations where foul holding tanks are located across the project's lands are as follows:

- Fuel Cell IPP
- BESS IPP
- Solar IPP
- 220kV IPP
- 33kV IPP

The holding tanks are proposed due to the low occupancy nature of the IPP buildings (essentially substations). 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. The foul drainage proposals will cater for the wastewater generated by the toilet and wash hand basin provided in each of the IPP buildings. The IPP building will be unmanned save for infrequent inspections and routine maintenance resulting in low rates of foul flow. The holding tanks will be fully watertight with no inlet settlement chamber, no biological treatment and crucially no discharge to ground or water. The system includes a single inlet pipe from the building's gravity drain and are fitted with an air vent and high-level alarm as standard. The alarm will connect back to a control centre in each IPP. Effluent from the tanks will be emptied biannually by a licensed wastewater contractor and taken to a municipal treatment plant.

2.6.2 SURFACE WATER DRAINAGE

The surface water drainage system is designed to collect and attenuate, as far as practically possible, surface water from impervious surfaces within the DC facility and DER and discharge this into an existing field drain serving the lands. This field drain routes south and discharges into an open drainage channel which runs alongside the M6 (northern side) before flowing south through a culvert beneath the M6 and alongside a local access road before turning east and discharging to the Mongagh River (EPA Name: Kitotan & Collinstown).

2.6.2.1 Data Facility

Combined attenuation /fire retention ponds are proposed with a total capacity of 11,630m³ (southern pond [Pond 1] being 8,513m³ & the northern pond [Pond 2] being 3,117m³).

Pond 2 will receive and attenuate all surface water from DC Building 1, DC Building 2 and associated impervious features (the DC campus access road, internal roadways and associated car parking areas). Pond 1 will collect and attenuate all surface water from DC Buildings 3-6, along and associated impervious areas. Both attenuation ponds will be paired with a hydro-brake vortex flow control to restrict and limit discharge to 2.76l/s/ha. The water will flow in open channels to a rip-rap aprons¹¹ and then enter a 450mm culverted section followed by a second rip-rap apron before entering an existing 450mm pipe currently receiving drainage from the lands.

Figure 2.29 Surface Water Drainage Features (Data Centre)



¹¹ A rip-rap apron is a pad of interlocking quarried rock, laid downstream of an outlet to soak up flow energy and shield soil from scour. Sized correctly, it is a low-maintenance and ecologically sympathetic way to protect SuDS outfalls, culverts, and small spillways across Ireland's varied soils and rainfall intensities.

Each DC Building includes a 20m³ underground rainwater harvesting tank which will be used to supplement grey water and /or firefighting water supplies. Below ground bypass separators are provided to control discharge from car parking areas. Transformer bunds have been designed utilising a water displacement system which negates the requirement for a pump to remove stormwater from within the bund. This system will be connected directly to the piped underground gravity drainage system upstream of the SUDS management train elements. This bund design can accommodate a pumped solution if required.

Both drainage catchments also incorporate bespoke shallow wildlife ponds (843m² and 1,025 m²) each with undulating, low-pitch margins and water depths shallower than 2m to provide for biodiversity enhancement. Both wildlife ponds adopt a kidney-shaped, undulating perimeter. This breaks up wind fetch, creates quiet embankments and maximises the edge effect that supports most pond-life. Retaining banks are graded no steeper than 1:3.

Pond 1 and Pond 2 have also been designed as firewater retention basins. Actuated valves penstock valves will be fitted to the outlets and will close in the event of a fire. This will retain contaminated fire wastewater from discharging to the downstream receptors. Similarly actuated penstock valves will be fitted in manholes upstream of the wildlife ponds to divert fire wastewater away from the wildlife ponds and into the Ponds 1 and 2.

The carefully modelled design which incorporates open waterbodies along with the associated controls, delivers a surface-water drainage system that

- limits discharge to 2.76l/s/ha in line with GDSDS;
- creates over 1.8ha of new, high-quality freshwater habitat;
- provides a straightforward design which is easy to maintain.

The design reinforces the site's sustainable credentials by managing rainfall at source and providing a clear biodiversity gain. The drainage system on site will be further developed as part of detailed design stage works.

2.6.2.2 DER

2.6.2.2.1 Fuel Cell and Ancillary

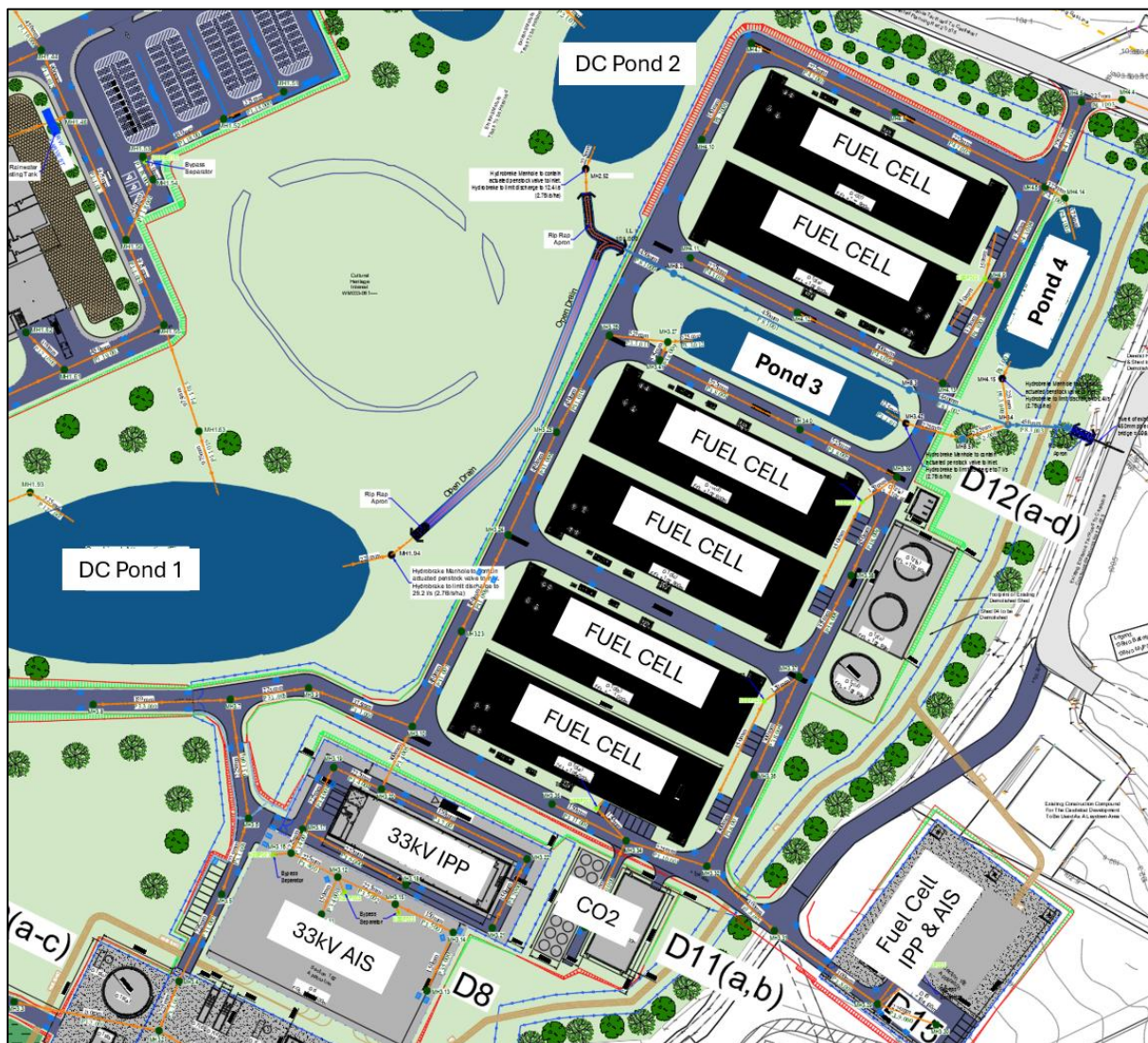
Combined attenuation /fire retention ponds are proposed with a combined capacity of 2,450m³ (Pond 3 being 1,450m³ & Pond 4 being 1,000m³).

Pond 3 will receive and attenuate surface water from impervious areas in part of the Fuel Cell compound (four most southerly positioned power towers), associated areas such as

the carbon dioxide compound and chilled water storage areas, the 33kV IPP and AIS and the Ancillary Equipment Compound. Pond 4 will collect and attenuate surface water from remaining impervious areas of the Fuel Cell compound (two most northerly positioned power towers) and the nearby AGI.

Both attenuation ponds will be paired with a hydro-brake vortex flow control to restrict and limit discharge to 2.76l/s/ha. The water will be conveyed in an underground pipe to a rip-rap apron before entering an existing 450mm pipe currently receiving drainage from the lands. Pond 3 and Pond 4 are designed as firewater retention basins. Actuated valves penstock valves will be fitted to the outlets, and these will close in the event of a fire. This will retain any contaminated fire wastewater from discharging to the downstream receptors.

Figure 2.30 Surface Water Drainage Features (Fuel Cell & Ancillary)



Below ground bypass separators are provided to control discharge from the fuel cell compound, car parking areas and the 33kV AIS compound. Transformer bunds have been designed utilising a water displacement system which negates the requirement for a pump to remove stormwater from within the bund. This system will be connected directly to the piped underground gravity drainage system upstream of the SUDS management train elements. This bund design can accommodate a pumped solution if required.

2.6.2.2.2 BESS

Finished ground conditions with the BESS compound will provide for direct infiltration of rainfall to ground. All enclosures will be elevated on support plinths and the compound will be finished with clean free-draining stone eliminating the need for drainage collection and disposal infrastructure. Hardstanding and roofed areas associated with the Solar IPP building, internal roads and AIS will be served by surface water drainage infrastructure. The collection system will be fitted with a below ground bypass separator and the discharge will route through a 750m³ firewater retention tank. The outlet pipe from the tank will be fitted with an actuated penstock valve and this will close to retain fire contaminated wastewater which may arise in the event of a fire. Clean water will route from the firewater retention tank to a below ground class 1 bypass separator and cellular storage attenuation structure. A controlled discharge of 0.7l/s will discharge via a hydrobrake to a rip-rap apron which outflows to an existing ditch within the development lands.

2.6.2.2.3 220kV IPP GIS Building

Surface water drainage from 220kV IPP GIS Building will discharge via a below ground class 1 bypass separator to a cellular storage attenuation structure before being discharged via a hydrobrake manhole (limiting discharge to 0.7l/s) to an existing open drain within the development lands.

2.6.2.2.4 Solar

Due to the fact that solar farms contain little impervious areas and cover less than 45% of the fenced compound, rainfall will be allowed to run off the panels and infiltrate straight back into the vegetated ground. The widely adopted approach for this type of development is low-maintenance, ecologically positive and fully aligned with the SuDS hierarchy set out in national and local guidance.

Surface water drainage from the Solar IPP and AIS compound will discharge via a below ground class 1 bypass separator to a cellular storage attenuation structure before being discharged via a hydrobrake manhole (limiting discharge to 0.4l/s) to an open drain which connects to an existing open drain.

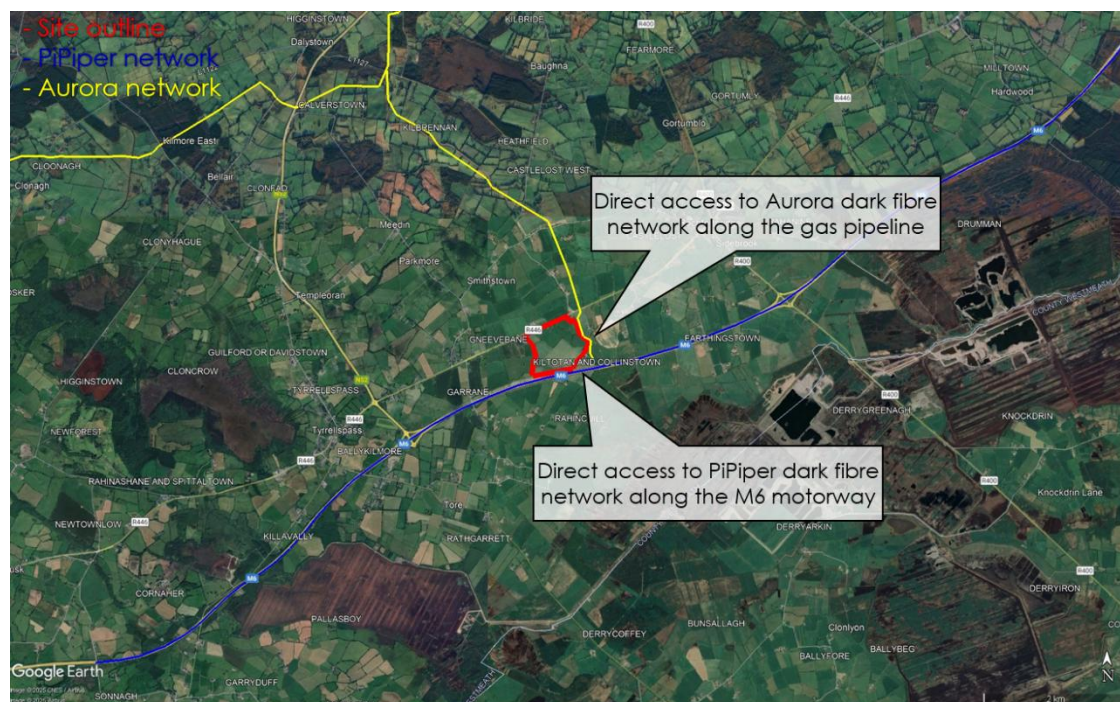
2.7 TELECOMMUNICATIONS

The Project 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. These include the following

- The project site has direct access to low latency (<1ms) high-capacity (>1 TB/s) dark fibre network which runs alongside the gas pipeline serving the existing AGI at the Castlelost Flexgen Power Plant. The ring network provides diverse fibre routes feeding the Dublin datacentre cluster and multiple designated fibre pairs are available.
- The project site has direct access to low latency high-capacity network which is planned along the M6 motorway to the south of the proposed development. This ring networks provides diverse fibre routes feeding the Dublin datacentre cluster and multiple designated fibre pairs are available.

Figure 2.31 Dark Fibre Network Map at the Proposed DC Facility



2.8 FIRE FIGHTING STRATEGY

2.8.1 DC FACILITY

The proposed DC facility (containing six identical buildings), each housing twenty data halls and a two-storey administration block has been laid out and specified to safeguard life in what are, by design, sparsely populated buildings, and protect critical ICT infrastructure. The design has been developed in full recognition of the duties imposed by Part B of the Building Regulations 1997-2014 (as amended) and the supporting Technical Guidance Document B (TGD-B). Specific reference to the following documents has also been considered:

- TGD-B 2006 + A1:2024 – fire safety guidance document
- IS 3218:2013 + A1:2019 – fire detection and alarm systems
- NFPA 13:2013 – automatic sprinkler systems (property protection)
- IS 391:2020 – hydrants and water supplies for fire-fighting

The following summarises the passive and active precautions, the fire-fighting facilities and the managerial arrangements that together will secure compliance and provide a robust platform for the Fire Safety Certificate applications. Key data for each building is presented in Table 2.1.

Table 2.1 DC Building Description

Parameter	Value (per DC Building)
Footprint	13,978 sqm
Gross Floor Area	26,781 sqm (13,326 (GF) + 13,545 sqm (FF))
Data Hall Area	16,403 sqm
Administration Block	2,478 sqm (1,223 sqm (GF) + 1255 sqm (FF))
Structure	Steel Frame with metal deck floor (or similar) and proprietary insulated metal cladding

Although the fire load of server racks is modest when compared with a typical industrial occupancy, the consequences of even a localised fire are serious, so each data hall is treated as a discrete fire compartment. A central circulation spine runs the length of every DC building; on either side, pairs of halls are bounded by fire-resisting walls and floors (exact details to be determined as part of detailed design). Mechanical-plant corridors (housing the air-handling units and chillers) and ground-floor electrical galleries are likewise enclosed, preventing lateral or vertical fire spread between halls. All load-bearing elements will meet the fire-resistance periods set out in Appendix A, Tables A1 and A2 of TGD-B. To avoid expensive facade fire-rating, the six buildings have been staggered to

respect the separation distances (in this instance minimum separation of 37m) prescribed by TGD-B for their cubic capacity, thereby curtailing external fire spread without sacrificing density on the site.

Means of escape have been planned on the same conservative basis. A grid of protected corridors connects every room to perimeter stair cores such that no point in any hall requires a travel distance greater than 18m in single direction or 45m where a choice of direction exists, mirroring clause 1.2 of TGD-B. The protected stairways discharge directly to the open air; because all cores are placed at the building edge, escaping occupants cross no higher-risk zones on their way out. While the normal staff complement in a hall is low, the campus will adopt a full-building evacuation policy on confirmation of fire. This simplifies staff training and avoids the uncertainty that can arise with phased or progressive evacuation in a lightly staffed environment.

Where passive defence finishes, active fire systems are employed. Every building will be fitted with an addressable fire-detection and alarm installation meeting Category L2/L3 of I.S. 3218. In data halls and main plant spaces this conventional point detection is backed up by early-warning aspirating detectors, providing the earliest practicable notice of cable overheating or failed power supplies. All halls, plantrooms and the administrative block are further protected by automatic sprinklers designed to NFPA 13:2013. Because accidental water discharge is almost as unwelcome as fire in a data suite, the halls and critical plant areas use double-interlock pre-action valves: two independent signals (heat or smoke detection and open sprinkler head) must coincide before water enters the pipework. The pre-action releasing solenoids are cross-zoned to the detection system, giving clear first and second-knock indications to building management and to the responding fire-service crews.

To ensure and guarantee pressure and flow at the duty side the site demands, a campus-wide 2,000m³ sectional steel fire-water reservoir served by fire pumps (contained in a pump house) on a resilient ring main. External hydrant coverage is calculated from TGD-B's formula of one hydrant per 1,000m² of ground-floor area, yielding a requirement for 13-14 hydrants per data-centre building. These will be set on the perimeter access road, which in turn affords fire appliances 100% coverage around every façade. This satisfies the appliance-access criteria for a structure of this volume.

The campus will be staffed 24/7 by trained security personnel who double as the first-response team. They investigate alarms, liaise with the fire service and, where safe to do so, operate manual fire-fighting equipment. All fuel stocks, cleaning agents and other combustibles will be stored in dedicated, ventilated compartments, and routine

maintenance of UPS batteries, switchgear and cooling modules is scheduled against the recommendations of NFPA 75 and EN 50600, so that latent ignition sources are kept in check. A master fire-safety manual will couple standard operating procedures with live computer monitoring. Any trend towards abnormal temperature or current triggers both an engineering alert and a pre-emptive fire-risk review.

Finally, each building will make its own Fire Safety Certificate submission, demonstrating point-by-point compliance with Part B. Drawings which will be prepared as part of detailed design work which will mark compartment lines, protected routes, stair cores and external access. Engineering calculations will justify the sprinkler and hydrant provision, while a fire-engineering report will document the evacuation time analysis, the designed smoke-layer interface heights and the measures taken to preserve server continuity during and after a suppression event.

The firewater storage volume is more than normally required based on 60 litres per sec (4 bar pressure) over 120 minutes. The additional capacity provides for automatic refill and reduces instantaneous pressure on water supplies (i.e. the reserve can be refilled over a longer time period than 8 hours as the stored water volume will be greater than the required water volume).

In the event of a fire, any fire wastewater generated will drain through the system and be held in either combined attenuation ponds and /or below ground fire wastewater tanks, which are designed and sized in accordance with EPA requirements¹². An actuated penstock valve will be positioned on the outlet of each pond /tank which will be activated to close upon the initiation of the fire alarm within the development. This will allow the fire water to be retained within the attenuation feature so that it can be pumped out and disposed of offsite in an appropriate manner. Gaseous extinguishing systems will also be provided for use on electrical systems.

A Preliminary Fire Risk Assessment Report was prepared in response to the FI (dated 01 September 2026) issued by the local planning authority. Consultation was undertaken with the Fire Officer in October 2025 to inform the response

2.8.2 DER

2.8.2.1 Fuel Cell

The Fuel Cell Power Towers (6no.) will deliver 160MW of resilient electricity generation to the DC facility. Level 0 contains the transformers, switchgear, local UPS, SCADA panels

¹² 2019 EPA Guidance on Retention Requirements for Firewater Run-off

and fire-pump set. Levels 1 and 2 each accommodate 40no. 330kW energy servers which are fed by low-pressure natural gas from the proposed AGI. Level 3 completes the heat-recovery cycle with two-stage absorption chillers that dump surplus thermal energy into the campus cooling system. Each of the six fuel cell towers are enclosed with Broadway architectural expanded metal mesh (or similar) to mitigate visual impact. Accordingly, the strategy focuses on passive fire protection. The steel framed structure will receive 90-minute intumescent coatings for fire protection purposes. Separation distances between towers range from 5-52m with towers arranged in blocks of two and separated by internal site roadways (thereby providing a minimum separation distance between blocks of 16.7m). Three separate stairs are provided on each tower along with an internal lift.

To provide for firefighting, the fuel cell area separately contains a 2,000m³ sectional steel fire-water tank served by fire pumps (contained in a pump house) on a resilient ring main. Isolation valves at every riser mean that maintenance on one tower does not compromise protection elsewhere. The towers will also be fitted with a sprinkler system. On Level 0 electrical plant is served by local extinguishers. An internal perimeter road network is designed to provide 360-degree access to the three fuel cell blocks

All control and indication panels, alarm, gas, mist, pump status and fuel-isolation, are repeated in the campus security hub, so that the arriving brigade receives an immediate schematic of whichever tower is in alarm, the floor of origin, the state of the fuel-isolation valves and the gas readings.

Fire safety ultimately rests on people as well as hardware, and the management regime is therefore built around continuous monitoring and rehearsed response. Written procedures mandate tower-by-tower evacuation on any confirmed fire, immediate closure of the automatic gas valves, and discussion with the statutory fire service at a clearly signed point. Each tower will make a standalone Fire Safety Certificate application. That dossier will present drawings, structural fire-resistance schedules, hydraulic calculations for mist, gas and hydrant systems, and computer modelling to show that tenable conditions for egress are maintained. Exact details will be determined as part of detailed design works.

2.8.2.2 BESS

Grid-scale battery energy storage systems have become a key component for balancing renewable electricity in modern power networks. The proposed BESS will play a central role in enabling the Red Admiral Datacentre Campus to operate on a fully optimised, net-zero carbon energy mix. The proposed BESS will comprise a series of (i) battery and (ii) medium voltage power system (MVPS) enclosures.

The major safety aspects which are considered in the design of the proposed BESS facility are categorised as electrical and electrochemical. Hazards are controlled through design, spacing, fixed protection and an evidence-based fire-fighting strategy that aligns with internationally recognised standards. There are numerous international standards which regulate the design, manufacture and distribution of lithium-ion batteries to ensure they are adequately tested for safety, reliability and durability. The proposed BESS 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 (2023); 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*

The proposed BESS facility is designed as a series of independent enclosures. The steel ISO compliant enclosures incorporate deflagration vents sized by the installation-level UL 9540A test so that an internal over-pressure event jets upwards and away from walkways. Fixed inert gas suppression systems will be provided within enclosures in order to help prevent or limit propagation between modules. Upon detection of abnormal cell temperature, smoke, or vapour concentrations, the BMS will:

- Initiate an immediate safety-shutdown sequence by opening charge and discharge contactors and de-energising the power-conversion system, thereby preventing further energy flow into the affected string.
- Transmit a suppression-release command to the fixed gaseous-agent system, ensuring agent discharge occurs only after electrical isolation is confirmed.
- Close all motorised dampers and halt mechanical ventilation to preserve the agent's design concentration and comply with NFPA 855 in conjunction with the parent suppression standard (e.g., NFPA 2001 or NFPA 2010).
- Activate audible and visual alarms locally and via SCADA to notify plant operators and first responders of the event sequence and container status.
- Log all parameters and event timestamps for post-incident analysis and verification of compliance with the site's Hazard-Mitigation Analysis.

This fully integrated control logic ensures that detection, electrical isolation, ventilation shutdown and agent discharge occur in the correct order and timeframe, satisfying both

the functional requirements of NFPA 855 (2023) and the performance criteria of the applicable clean-agent standard.

All enclosures (BESS and MVPS) will be UL9540A (2024) tested and certified. Spacing of battery enclosures to each other and MVPS units will be 3.99m (greater than the 0.9m minimum spacing specification detailed in NFPA 855. Accordingly, the BESS facility will be NFPA 855 (2023) compliant.

A 500m³ sectional steel fire-water tank and pump set is positioned within the BESS facility which will serve hydrants thereby delivering site-wide cooling for nearby enclosures and boundary areas. The water tank is positioned near the entrance to the BESS facility (40m from BESS enclosures) and safe access to hydrants is provided in the event of a fire. The reservoir will be capable of delivering a minimum of 1,900 litres per minute for just over 4 hours (minimum 2 hours normally required). The additional capacity provides for automatic refill and reduces instantaneous pressure on water supplies (i.e. the reserve can be refilled over a longer time period than 8 hours as the stored water volume will be greater than the required water volume).

In the event of a fire, any fire wastewater generated will drain through the system and be held in a proposed below ground fire wastewater retention tank, which is designed and sized in accordance with EPA requirements¹³. An actuated penstock valve will be positioned on the outlet of the tank which will be activated to close upon the initiation of the fire alarm at the BESS facility. This will allow the fire water to be retained within the attenuation feature so that it can be pumped out and disposed of offsite in an appropriate manner.

2.9 EXTERNAL BOUNDARY TREATMENTS AND LANDSCAPING

The project site is located in a robust part of the surrounding landscape with limited highly susceptible landscape or visual designations. The project lands incorporate an area of approximately 243ha. The immediate site context is influenced by the existing recently constructed Castlelost Flexgen Power Plant, the M6 motorway corridor, the R446 regional road, and typical rural land uses including pastoral farmland and conifer forest plantations. In this regard, the site and immediate study area is not considered highly distinctive or susceptible to change.

In addition to mitigation by avoidance measures, retention of existing hedgerow boundaries will visually screen and maintain the existing field pattern across most of the

¹³ 2019 EPA Guidance on Retention Requirements for Firewater Run-off

project lands. In this respect, there will be requirement for removal of some hedgerow vegetation and trees (predominantly within the 39ha DC facility).

The DC facility includes an area of approximately 39ha. The supporting 33kV OP and AIS compound will occupy an area of 0.76ha. Of the total 39ha, soft landscaping and boundary treatments amounts to 23.5ha including 0.7ha of compensatory native woodland planting (northwestern area of the site) and freshwater features (1.8ha). The Fuel Cell (and ancillary infrastructure) adjoining the eastern boundary of the DC facility will be set out on 5.7ha of land. An additional 4.6ha of compensatory native woodland will be provided to the south of the DC facility along with 3.6ha of golden plover habitat.

The solar farm component of the DER will span across 168ha of lands to the east of Castlelost Flexgen and the proposed BESS (footprint of 2.65ha). The footprint of solar panels arrays (ground coverage ratio) is 40-45% of total fenced area (approximately 72ha). Furthermore, the layout incorporates suitable buffers to third party boundaries, internal hedgerows, drainage ditches, streams and rivers. The solar scheme includes 6.7ha of golden plover habitat and 1.5ha of compensatory native woodland.

Landscape tender drawings and specifications will be produced to ensure that the landscape work is implemented in accordance with best practice and conforms with the proposed landscape and biodiversity plan. This document will include tree work procedures, soil handling, planting and maintenance. The contract works will be supervised by a suitably qualified landscape architect.

Planting works will be undertaken in the next available planting season after completion civil engineering and building work for each phase and will integrate and form the overall landscape and biodiversity plan for the project. All tree protection requirements will be installed on commencement of the development and removed on a phased basis as stages of the development are completed.

A series of targeted design refinements have been developed in response to the FI request issued by the local planning authority (dated 01 September 2025). The revised layout was undertaken to primarily address the relationship between the DC 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

In addition, extended buffers /setbacks to nearest residential properties have been incorporated into the overall development layout and a minimum set-back of 40m of the solar array from all residential boundaries is now provided.

2.10 DESCRIPTION OF CONSTRUCTION AND COMMISSION STAGES

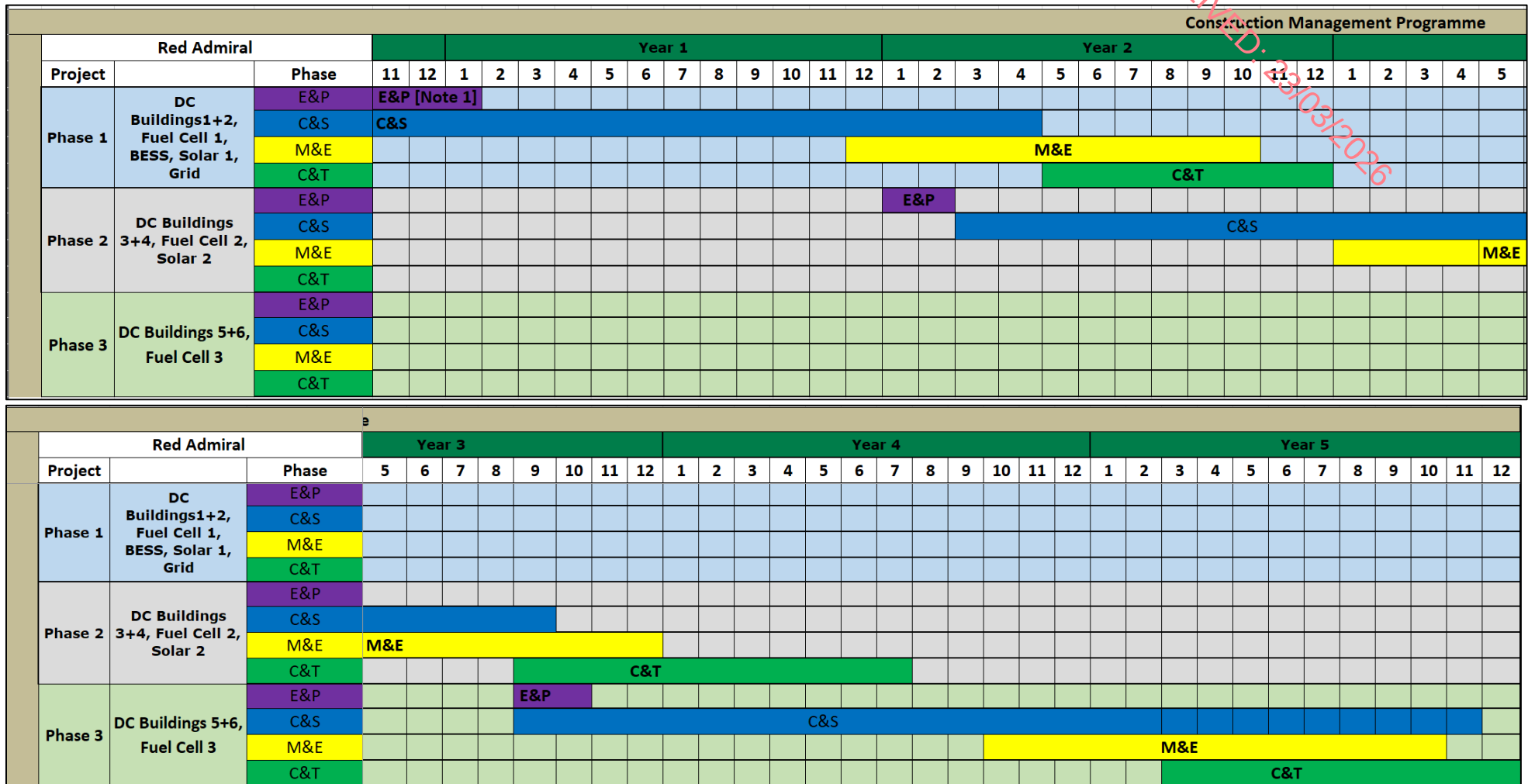
This section details the construction works associated with the proposed development and outlines general construction methods and associated mitigation measures to be implemented to ensure that potential environmental impacts are minimised.

It is envisaged that the project will be constructed over an estimated 62-month period across three phases. After the construction period, it is expected that all elements of the project 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 Engineering Procurement and Construction (EPC) contract as part of the detailed design phase. The EPC contractor will prepare a detailed Construction Environmental Management Plan (CEMP) which will be submitted for agreement with the planning authority. It is expected that the EPC contractor will appoint subcontractors to undertake all the specific construction and civil works. A preliminary CEMP has been prepared and is contained in Volume 3 of the EIAR (Appendices) and is lodged in support of the project.

It is therefore difficult to assess the staffing and delivery levels for the development. However, it is considered that the design and proposed layout of projects has developed sufficiently to discuss the potential environmental effects of proposed construction methods. An estimate of construction traffic volumes has been made for a site of this size and is described in Chapter 13 (Traffic and Transport).

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 separately in this EIAR. The CEMP 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 shall be included within this plan. An indicative construction schedule for each phase is outlined below (Figure 2.32). 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 2.32 Indicative Construction Programme

**Notes:**

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

Equipment to be used during the construction of the facility will be typical for a project of this scale. In general, the following machinery will be used:

- Tracked excavators,
- Wheeled Excavators,
- Bulldozer,
- Vibrator Rollers,
- Trucks, Dump trucks /Dumpers,
- Mobile Crane,
- Backhoe,
- Grader,
- Breakers,
- Generators /pumps,
- Hoists,
- Concrete pump – Lorry Mounted,
- Loaders,
- Compressors /compactors,
- Rollers,
- Road surfacing plant,
- Delivery vehicles for concrete, steel and other construction materials,

Heavy vehicle movements to the site will consist predominantly of plant and material deliveries. The extent of HGV movements will vary at different stages of the construction works in response to the activities taking place at any given time. The majority of machinery associated with the construction phase is likely to remain onsite for the duration of the construction process. Therefore, the traffic associated with heavy plant will be limited to their delivery and removal, with the intervening period comprising internal movements within the site.

The intensity of traffic will vary over the course of the construction programme. The values referenced are only anticipated during peak periods and therefore representative of the worse-case scenario. Further details on estimated and predicted traffic (LGV and HGV) trip generation figures are assessed in Chapter 13 (Traffic) with supporting data provided in Appendices 13.2. Deliveries during the construction phase will occur on weekdays and will be spread over the over the course of the working day.

2.10.1 DURATION AND PHASING

It is expected that the project will be constructed over an approximate 60-month construction period. Construction works will be carried out over 3 phases (overlapping).

Phase	Period	Items
Phase 1	26 months	DC Buildings 1 & 2, Fuel Cell Power Tower 1, BESS facility, Solar Farm (parcel 1), Grid Connection (including 220kV IPP GIS Building)
Phase 2	31 months	DC Buildings 3 & 4, Fuel Cell Power Tower 2, Solar Farm (northern and southern parcels)
Phase 3	28 months	DC Buildings 5 & 6, Fuel Cell Power Tower 3.

Prior to commencement of construction, geotechnical investigations such as trial pits and boreholes will be conducted to verify foundation designs and road construction. All investigations required prior to enabling works will be carried out in accordance with BS 5930 (Code of Practice for Site Investigations).

No land acquisition is required prior to construction, as the applicant has put in place agreements with the relevant landowners with respect to the entire development lands. Phase 1 of construction will not commence until the main construction contract is awarded and will initially comprise, fencing, excavation, re-grading and berming /soil deposition. The site clearance works will be undertaken in accordance with best practice. Removal of any bird habitats will be undertaken outside the bird breeding season to mitigate disturbance to birds. Mitigation measures to avoid and limit impact to biodiversity include implementation of an environmental management plan which will address water run-off, noise and dust generation, implementation of a suitable landscaping strategy to compensate for habitat loss and to benefit the wildlife of the local area, retention of hedgerows and treelines along the boundary of the site, etc. Also, site clearance will proceed only after cognisance is made to the ecological mitigation measures as detailed in this EIAR.

Where cutting or excavation is carried out, this material will then be reused in areas of the site where fill is needed or in areas requiring landscaping. If any additional material is required this will be imported into the site in a safe and controlled manner, so as to minimise the potential for nuisance and disturbance.

The applicant is committed to ensuring that all the mitigation measures are implemented in full. Haul roads, internal construction site roads, construction compound, main drainage runs, temporary car-parking and staff facilities will also be constructed during this phase. Such site preparation works are expected to be carried out within the first 6 months of the project commencing.

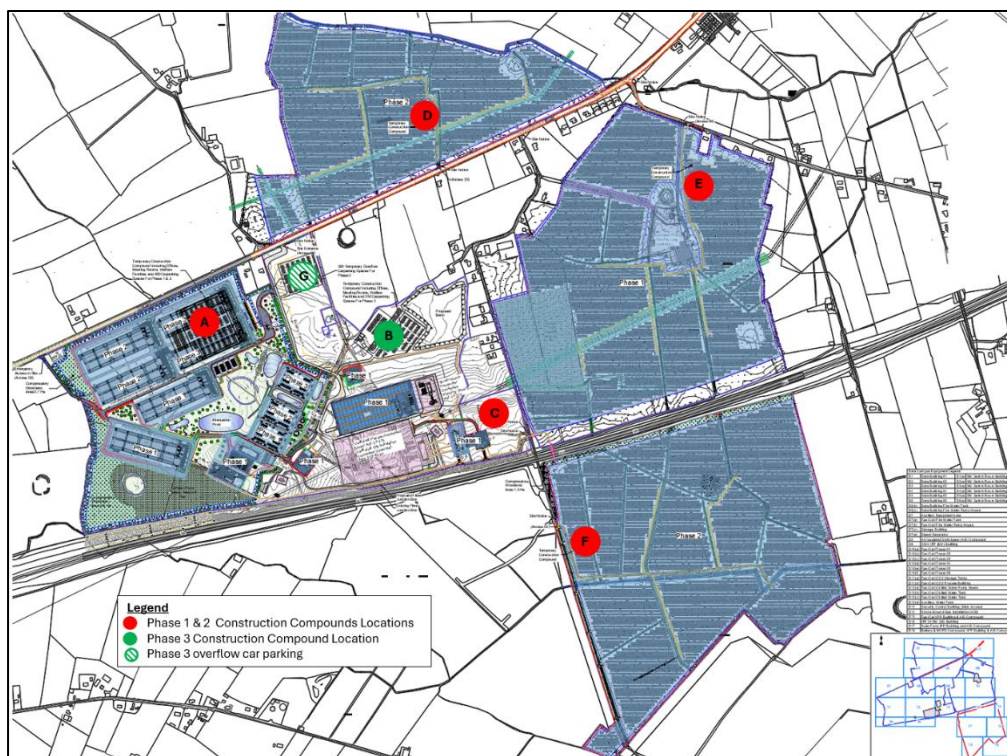
Site preparation and enabling works will also involve the site set up by the building contractor, which will include provision of a site construction compounds which will include the following:

- Site Office,
- Site Facilities (canteen, toilets etc.),
- Office for Resident Engineer,
- Secure compound for the storage of all on site machinery and materials,
- Carparking,
- Permanent/temporary fencing,
- Site Security.

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Construction traffic will enter the site via the R446 Regional Road. Internal Roads will be constructed from the public roads to the project development compounds and contractor's compounds (see Figure 2.33). It should be noted that the construction compound for Phase 1 and 2 works on the DC facility will be located in the area where DC Buildings 5 & 6 will be constructed (Phase 3). The temporary construction compound will be relocated to east (to the position marked as "B" on Figure 2.33) and an overflow car park (marked as "G" on Figure 2.33) will be located within the development lands.

Figure 2.33 Layout showing locations of temporary construction compounds



2.10.1.1 Structural Works

Structural works will comprise the construction of the foundations and buildings (e.g., DC Buildings, IPP Buildings, etc), below ground pipework and conduits for services, bunds, internal roads, drainage works, and infrastructural works completion.

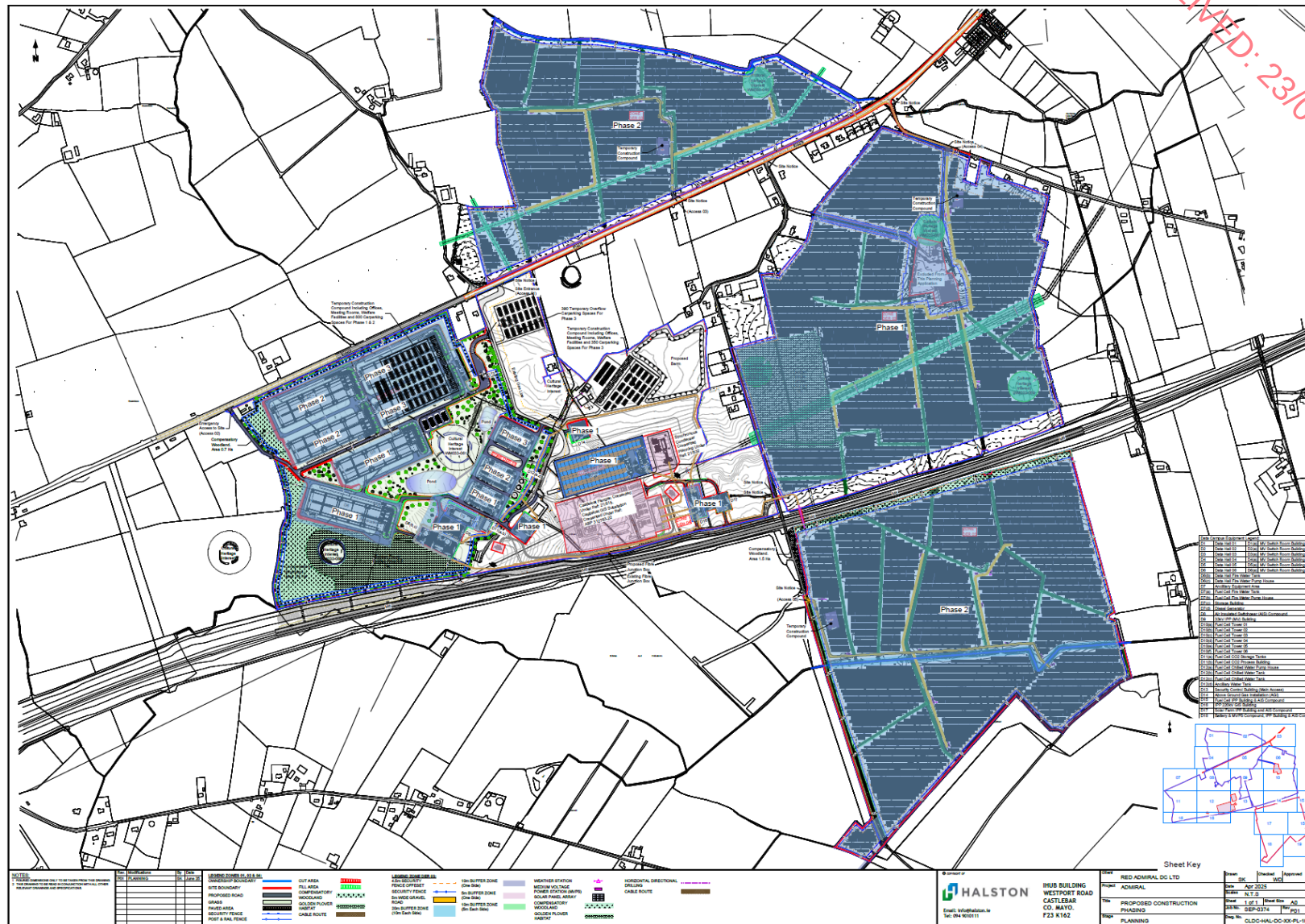
2.10.1.2 Mechanical and Electrical Works

Mechanical and electrical works include placement of plant and machinery, transformers, tanks, skid mounted structures and enclosures, above ground pipework, wiring and cabling, etc. The individual project plant components will be delivered to the site by the preferred supplier and will be installed in accordance with manufacturer requirements.

2.10.1.3 Commissioning and Testing

Commissioning and testing of mechanical and electrical equipment will be carried out in anticipation of handover of the projects to the project owner /client. It should be noted that the above phasing is indicative only and may be subject to variation by the planning authority and also to final schedule agreement with the main contractor. In terms of the DC facility, each building will undergo a five-month integrated-systems test. This will be followed by 1-2 months of snag clearance and demobilisation of contractor's compounds.

Figure 2.34 Proposed Construction Phasing



2.10.2 EMPLOYMENT

Employment levels during the development will vary depending on the construction programme and the extent of activities occurring on the site. It is expected that during peak activities there will be up to 900 construction workers at the site. An assessment of the likely traffic volumes which may arise during the construction and operational phase is discussed in the Traffic and Transport Chapter of this EIAR (Chapter 13 and in the supporting Appendices, in particular Appendix 13.2).

2.10.3 ACCOMMODATION/FACILITIES

The relevant statutory requirements will be provided for all workers on the construction site including:

- Canteen facilities and drinking water supply
- Toilet, wash up and locker facilities and hot water
- Drying room
- Car parking for workers
- First Aid Office
- Site Engineers & Resident Engineers offices
- Site offices for Contractors
- Secure site compounds

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.

2.10.4 CONSTRUCTION OPERATION HOURS

Subject to agreement with the planning authority, it is anticipated that the following times will constitute the standard working hours¹⁴ on the construction site.

- Monday to Friday 07:00 to 19:00
- Saturdays 07:00 to 13:00
- 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.

2.10.5 CONSTRUCTION TECHNIQUES

The construction techniques used will be standard and similar to those that would normally be associated with large industrial projects of this nature with both building and technology installation elements and a large civil engineering element.

¹⁴ 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).

2.10.6 MATERIALS

In so far as possible, construction materials will be from local sources to support the local economy and minimise environmental impact associated with vehicle emissions. All imported material that will be used on site will be retrieved from approved sources.

Under LEED v4.1 BD+C—Data Centres, the Materials & Resources (MR) credit framework incentivises both (i) the specification of products that can demonstrate quantifiable reductions in cradle-to-gate global-warming potential (e.g. via whole-building life-cycle assessment or EPD Optimisation pathways) and (ii) the procurement of products whose extraction, manufacture and point of purchase all occur within a 160 km radius, through the Location Valuation Factor that doubles their weighted contribution to the BPDO credits.

Crucially, these mechanisms are performance based rather than prescriptive: LEED awards points for verified embodied-carbon improvements and for documented regional sourcing, but it does not mandate either criterion in isolation. This design flexibility allows the project's procurement strategy (aiming for Gold/Platinum certification) to optimise the mix of low-carbon materials and local supply chain advantages in a manner that best meets cost, schedule and risk objectives while maximising credit uptake.

The construction of surface water systems are an important element of the project. Temporary localised settlement ponds and interceptors (where necessary) will be constructed during the initial stages of the contract mitigating against adverse impacts on receiving water receptors.

2.10.7 EMBODIED CARBON OPTIMISATION AND LCA

The baseline scenario presented for the DC facility in the LCA (Appendix 3.2) derived from the provisional estimated quantities and specifications contained in the design package. Concrete mixes in this reference case already incorporate a 20–25 % ground-granulated blast-furnace slag (GGBS) replacement to reflect prevailing Irish practice for large industrial floors and foundations, while structural steel has been assigned an emissions factor of 1.51 kg CO₂/kg in line with the latest Environmental Product Declarations (EPDs) for standard hot-rolled sections.

Applying these inputs through the LCA platform yields a cradle-to-practical-completion intensity of 567kg CO₂e/m². This figure captures the primary materials of the superstructure, envelope and internal floor systems as well as a proportional allowance for temporary works, fittings and construction-stage energy. Although respectable by historic data-centre benchmarks, the result maps the major carbon hot spots that were further considered. A component-by-component breakdown of the baseline reveals that five

material groups dominate the carbon profile, i.e. ground-floor concrete slab, upper floor, concrete slab, primary structural steel, composite façade panels and secondary steel. An iterative optioneering exercise tested alternative material specifications, supply chains and design efficiencies. The optimum blend of measures, all technically feasible within programme and budget parameters, achieves a 34% reduction, bringing embodied carbon intensity down to 373kg CO₂e/m² without compromising durability, structural integrity or fire performance.

The cumulative effect of these material switches—for the same structural spans and loading criteria—drives the embodied-carbon saving of 194kg CO₂e/m² relative to the baseline, equating to an absolute reduction of roughly 18,000t CO₂e/m² over the building's gross internal floor area.

The embodied-carbon modelling demonstrates that intelligent material choices, particularly high-GGBS concrete, low-carbon steel, and optimised façade components—deliver a quantifiable 34% reduction without diluting functional performance. Coupled with a forward-looking DER configuration, the scheme outperforms current policy baselines and provides a replicable model for how large-scale digital infrastructure can contribute positively to Ireland's legally binding climate targets. In total, the combination of design optimisation, construction-phase controls and operational net-zero capability means the proposed project will exert no significant residual impact on climate, while simultaneously underpinning the nation's digital transformation.

In response to the FI request issued by the local Planning Authority, dated 01 September 2025, a Project Carbon Management Plan (PCMP) was prepared and is provided in Appendix 15.1 to this EIAR Addendum. The report sets out how greenhouse gas (GHG) emissions will be managed across the whole life of the proposed development. It has been prepared for planning purposes and follows the intent and requirements of PAS 2080 (Carbon Management in Infrastructure). The PCMP should be read in conjunction with the Updated Carbon Impact Statement & Alignment with LEU Policies contained in Appendix 3.3.

2.10.8 EXTENSION OF INFRASTRUCTURE

Services such as ESB and Telecoms will be brought to the dedicated construction compound from the nearest available point. Where this is not practicable and deemed unnecessary, diesel generators will provide power (as required) at the more remote /low intensity construction compounds. Potable water for the development will be supplied from the on-site well which is currently serving the residential property which is to be demolished. Temporary sanitary accommodation will be provided on site until proposed

foul effluent management packages are installed. All domestic effluent generated on site will be discharged to temporary sewage containment facilities prior to transport and treatment off site.

2.10.9 WASTE MANAGEMENT

During the construction phase both solid and liquid waste will be produced at the facility. Waste oils, solvents and paints will be stored in a temporary bunded area prior to transport off site by a licensed contractor. All wastes arising from construction of the proposed development will be managed in accordance with the Waste Management Acts 1996, as amended.

It is proposed to demolish and remove some farm buildings /outbuildings and a derelict house within the development lands. These will be demolished and removed from site upon commencement of construction work in accordance with best practice. 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.

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. Non-recyclable waste (e.g. canteen waste, general 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.

It is not envisaged that there will be any excess spoil materials arising from construction, as all the excavated soil will be re-used as part of the construction process (formation of berms and landscaping). All other solid waste generated during the construction phase will be adequately segregated and stored prior to transfer to an authorised facility for recovery/recycling/disposal.

2.10.10 FENCING AND SECURITY

Secure fencing will be erected around individual development sites and temporary fencing will be erected around the construction compound. All on site machinery and materials will also be stored within the fenced compound.

2.10.11 NOISE, VIBRATION AND DUST

Dust emissions during the construction period have been detailed under temporary environmental protection measures. The CEMP will incorporate all mitigation measures detailed in the EIAR and any conditions specified in the interests of proper planning, sustainable development and environmental protection. This will include measures and trigger values to mitigate any potential impacts to nearby receptors.

2.10.12 TEMPORARY ENVIRONMENTAL PROTECTION MEASURES

During the construction stage site construction roads will be sprayed with water during dry periods to mitigate against the formation of dry dust particles. Excavated materials stored or moved on site could lead to the formation of airborne dust particles during dry weather periods. Water suppressants will be used during these dry weather conditions.

The landscaping areas proposed for the facility will be constructed and planted at the earliest opportunity thus limiting the potential for off-site migration of airborne dust. Where temporary stockpiles are required, the material will be stored in designated areas and will be covered with tarpaulins and/ or regularly dampened during dry weather periods.

All potentially polluting substances such as oils, chemicals and paints used during construction will be stored in designated storage areas. These will be bunded to a volume of 110% capacity of the largest tank/container within the bunded area with all filling and draw-off points fully located within the bunded area. Drainage for the bunded area will be diverted for dedicated collection and safe disposal.

As stated above all domestic effluent generated on site will be discharged to temporary sewage containment facilities prior to transport and treatment off site.

Temporary settlement ponds and interceptors will be constructed as necessary during the early stages of construction mitigating against silt laden run-off to the existing drainage network.

Prior to commencement of development a construction quality assurance plan (CQA) will be jointly prepared by the contractor and developer. Written approval of the CQA will be sought from the planning authority prior to commencement of construction activities on-site if required.

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.

The majority of machinery associated with the construction phase is likely to be onsite for extended periods of time. The traffic associated with these will therefore be limited to their delivery and removal, with the intervening period involving internal movements within the site. The impact of these on the surrounding road network is therefore expected to be minimal and infrequent.

2.11 DESCRIPTION OF OPERATIONAL STAGE

The operational stage of the proposed DC facility and collocated DER is designed with robust sustainability commitments which represents a critical period in the facility's lifecycle. This stage is characterised by the continuous operation of advanced digital infrastructure, supported by integrated energy systems and environmental management practices that align with international best standards. The following outlines the anticipated operational characteristics, resource consumption, emissions, waste management, and mitigation measures relevant to the project.

2.11.1 DC FACILITY

The operational phase begins once final commissioning tests are complete, and the data halls are handed over for live IT load. From that point, the facility operates continuously, twenty-four hours a day, three hundred and sixty-five days a year, to provide services. Its design philosophy links its performance with best-in-class environmental stewardship, reflecting the commitments embodied in the European *Climate Neutral Data Centre Pact*. It is proposed that as part of detailed design work (preconstruction) the project will be prepared for certification to the LEED BD+C v4 rating system for data centres.

Unlike conventional data centres that often rely on water-intensive evaporative cooling, the proposed DC facility will employ a combination of free fresh air cooling, air handling units, and, during periods of unusually high ambient temperatures, electric and absorption chillers. The primary cooling strategy utilises filtered outside air to maintain optimal server temperatures, significantly reducing water consumption and associated environmental impacts.

Electric chillers and absorption chillers will only operate when climatic conditions exceed the design thresholds for free air cooling. This hybrid approach ensures year-round thermal stability while minimising both energy and water use. The absence of evaporative

cooling eliminates the need for large-scale water abstraction and discharge, further reducing the facility's environmental footprint. The operational phase will be characterised by substantial but carefully managed resource consumption. Electricity will remain the primary input, with demand moderated through energy-efficient hardware, virtualisation, and intelligent workload management ("*Digital Carbon Passport Solution*"). The Digital Carbon Passport automatically ranks supply options in a carbon merit order. The facility's commitment to sourcing energy from the lowest carbon-intensive sources will result in a significantly reduced operational carbon footprint compared to conventional data centres.

Direct emissions will be minimal, primarily associated with periodic testing of backup systems. The use of fuel cells and renewable energy will further limit reliance on fossil-fuel-based backup generators. Air quality impacts will be negligible, with emissions well below regulatory thresholds (refer to Chapter 10). Noise emissions, primarily from cooling equipment and backup power systems, will be addressed through careful equipment selection, acoustic screening, and adherence to design criteria specified. Predictive modelling was used to ensure that operational noise levels remain within permissible limits at the site boundary and nearby sensitive receptors (refer to Chapter 11).

Operational water use is confined to domestic demand, cleaning and minor closed-loop top-ups. Groundwater abstraction, supplied through a modular water treatment unit, will serve the vast majority of the proposed demand on site and this will be supplemented by rainwater harvested from each building. Harvested rainwater stored in underground tanks and will be used as "grey water", e.g. for WC flushing or replenishment of bulk water storage tanks (e.g. firewater). Clean stormwater is attenuated on site using open ponds in accordance with SuDS principles and released to an existing receiving watercourse at greenfield run-off rates flow controls to safeguard and mitigate any risk of downstream impact. Foul effluent from the DC facility will be discharged to the public sewer.

Operational waste streams will include electronic waste (e-waste) from hardware upgrades and decommissioning, packaging materials, and general municipal waste from staff activities. The DC facility will implement a comprehensive waste management plan, prioritising reduction, reuse, and recycling in line with LEED BD+C v4 requirements and circular economy principle. Waste will be processed by certified contractors, ensuring responsible handling and material recovery. Routine training and awareness programmes will be provided for staff to support waste segregation and minimisation efforts. The facility will report on waste generation and diversion rates as part of its ongoing sustainability commitments.

2.11.2 DER

A distinguishing feature of project is the collocation and integration of a DER including a solar farm, fuel cell, and BESS, in addition to a grid connection. These systems are designed to prioritise the lowest carbon-intensive energy sources available at any given time, thereby minimising the facility's carbon footprint. The solar farm will provide renewable electricity during daylight hours, while the fuel cell offers a low-emission, dispatchable power source. The BESS will facilitate load balancing, back-up, and support to energy source integrations, enhancing overall energy resilience and flexibility.

The facility's energy management system will dynamically optimise the use of on-site and grid-sourced electricity, ensuring that the data centre's demand is met in the most sustainable manner possible. Although the fuel cell does not involve combustion, it is expected that it will require an industrial emissions licence from the EPA. EU guidance on both the IED and the ETS makes clear the oxidation of a fuel, not the presence of a flame, that brings an installation into the "combustion" category, i.e., it falls under a class of activity ("*Combustion of fuels in installations with a total rated thermal input of 50 MW or more*") as outlined in the first schedule of the EPA Act 1992, as amended.

The Solar Farm and BESS facility will operate largely unmanned and will be controlled remotely. The Solar PV farm and BESS will provide power to the DC facility via the 220kV IPP GIS. Neither project is a class of activity under the First Schedule of the EPA Act 1992, as amended. Noise emissions, primarily from DER assets has been addressed through careful equipment selection, acoustic screening, and adherence to design criteria specified. Predictive modelling was used to ensure that operational noise levels remain within permissible limits at the site boundary and nearby sensitive receptors (refer to Chapter 11).

Upon handover after the Commissioning and Testing Phase, the plant operators will provide suitably qualified and technically competent staff who will be responsible for maintenance of the facility. Employees will cover a broad range of services including safety, engineering, technical, security, maintenance and administrative support staff. Subcontracted maintenance staff will also be required at critical times throughout the life of the project. The plant will be operated in accordance with procedures which will be prescribed in management systems associated with the site operations, i.e., quality, health and safety.

2.12 DECOMMISSIONING

A decommission plan has been prepared for the project and is contained in Appendix 2.3.

3 NEED FOR THE DEVELOPMENT AND ALTERNATIVES

This chapter of the EIAR Addendum sets out the need for the development and the consideration of reasonable alternatives in terms of locations, designs and processes. The impact of not proceeding with the proposed development at all, often referred to as the "do nothing" option, is also considered.

3.1 NEED AND RATIONALE FOR THE PROJECT

Ireland's case for continued but carefully managed data-centre development is now framed explicitly by two companion policy texts: the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy (July 2022)¹⁵ and Harnessing Digital, The Digital Ireland Framework (February 2022)¹⁶. Together they set out how the twin transitions of digitalisation and decarbonisation are to be delivered, and what is expected of every new facility. The national policies are mutually reinforcing rather than competing ambitions.

The July 2022 Statement is unambiguous: Data centres are "*core digital infrastructure*" and "*indispensable*" to the economy and society, underpinning everything from banking to health-service delivery. At the same time, the document recognises acute short-term constraints which include limited spare grid capacity, tighter carbon budgets, and rising public concern over water use, which mean "*not all existing demand for data-centre development can be accommodated.*" To address this, the Statement establishes six national principles:

- demonstrable economic impact;
- efficient use of the electricity grid;
- renewables additionality;
- co-location with future-proof power or storage;
- decarbonised by design; and
- tangible SME and community benefits.

The statement sets a clear preference for projects that (i) locate outside the electricity-constrained Dublin area, (ii) make efficient use of existing transmission assets, and (iii) add renewable generation and storage "*in regional locations where capacity is available*".

¹⁵ Department of Enterprise, Trade and Employment (DETE) (2022) *Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy*

¹⁶ Department of the Taoiseach (DoT) (2025) *Harnessing Digital – The Digital Ireland Framework* (updated 2024 progress report)

Ireland's Digital Ireland Framework positions the State as a *"bridge between the United States and the European Union"* in global tech, while promising that digital solutions will also tackle climate challenges and boost inclusion and productivity. The strategy mirrors the EU's Digital Compass along four axes (a) digital transformation of business, (b) world-class infrastructure, (c) digital skills, and (d) digitised public services. The strategy insists on a *"modern, cohesive, well-resourced regulatory framework"* to keep the transition safe and trusted.

The Government Statement prioritises projects that reduce pressure on the grid through on-site renewable generation and other grid supporting technologies (such as BESS and Fuel Cell technologies). The proposed project aligns with the six principles of the 2022 Government Statement and the four pillars of the Digital Ireland Framework. The project does not result in conflicts with electricity grid capacity constraints, and the DER is a catalyst for innovation in the decarbonisation and digitalisation transition.

3.2 CONSIDERATION OF ALTERNATIVES

This Section of the EIAR sets out the reasonable alternatives considered and iterations of the design of the development which have evolved in terms of layout and processes.

Schedule 6(1)(d) to the Planning and Development Regulations, as replaced by by Article 97 of the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018, states that the EIAR should contain *"A description of the reasonable alternatives studied by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the proposed development on the environment"*. It should be noted that the assessment does not include an assessment of potential alternatives, rather it evaluates and considers "reasonable alternatives" that have been *"studied by the person or persons who prepared the EIAR"*.

In Section 4.2(d) of the *"Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment August 2018"* it states that the information provided must include

"A description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment;"

Reasonable alternatives are defined under Section 4.13 in the 2018 guidelines as the following:

The Directive requires that information provided by the developer in an EIAR shall include a description of the reasonable alternatives studied by Reasonable alternatives may relate to matters such as project design, technology, location, size and scale. The type of alternatives will depend on the nature of the project proposed and the characteristics of the receiving environment. For example, some projects may be site specific so the consideration of alternative sites may not be relevant. It is generally sufficient for the developer to provide a broad description of each main alternative studied and the key environmental issues associated with each. A 'mini- EIA' is not required for each alternative studied.

The above statement is also reiterated in the 2022 EPA EIA Guidelines (Section 3.4.1).

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

3.2.1 DO NOTHING

The European Union's Digital Decade Policy Programme 2030¹⁷, created by Decision (EU) 2022/2481, recasts the Union's long-standing digital ambitions as a legally framed contract between Brussels and every member state. The associated targets call for "secure and sustainable digital infrastructures", including 10,000 climate-neutral edge nodes, to underpin cloud uptake, e-health, digital ID and AI¹⁸. Variables that influence global locations for this type of development include power availability, latency and resilience, natural hazard score (e.g. earthquakes, hurricanes,) security, climate, workforce and regulation and tax policy.

Ireland has succeeded in establishing itself as a leading cloud destination in Europe with a significant presence of data centres and cloud computing companies. However,

¹⁷ European Parliament and Council (2022) *Decision (EU) 2022/2481 of 14 December 2022 establishing the Digital Decade Policy Programme 2030*. Official Journal of the European Union, L 323, 19 December, pp. 4–26.

¹⁸ European Commission (2025) *Europe's Digital Decade: digital targets for 2030* - https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/europes-digital-decade-digital-targets-2030_en

maintaining this position depends on providing low-carbon power expanding resilient fibre routes, keeping a predictable pro-innovation regulatory and tax environment, and growing a skilled workforce able to design, run and secure the next generation of climate-neutral facilities.

In a do-nothing scenario, the project site would remain in its current use (agricultural pastures with arable parcels.). As demonstrated by the extensive biodiversity studies carried out, there are no rare or protected habitats recorded in the study area and the proposed development area is of low local ecological value with treelines of higher local value. The open field habitats are considered of low biodiversity value at a local level as are the internal hedgerows. There are no rare or protected habitats recorded in the study area and there is no potential for connectivity to any other European sites. The project site does provide habitat for certain specified identified; however, the project is designed to allow these habitats to endure. The "*reasonable alternative*" of "*doing nothing*" would displace environmental impacts rather than eliminating them and would fail to advance Ireland's digital and climate goals.

If the proposed project is not pursued, domestic workloads would revert to using legacy in-house less efficient servers (which are collectively less efficient than cloud-based servers) or relocate to other parts of the world thereby diminishing Ireland's reputation as a technology hub service economy and the loss of high-value activity from the domestic ICT cluster. This conflicts with the EU's (75% cloud-adoption goal) and Government policy, which treats energy-efficient digital infrastructure as the twin engine of the State's digitalisation and decarbonisation agendas. A "*do-nothing*" outcome would defer not only direct employment but also the spill-over benefits for indigenous ICT firms and energy-services companies that cluster around large digital infrastructure.

A "*do nothing*" approach will impede regional diversification and the spread of growth more evenly across the island of Ireland required by National Strategic Outcomes (NSOs) stated in the National Planning Framework (NPF)¹⁹ and the National Development Plan (NDP)²⁰. Balanced regional growth is both a social imperative and economic obligation.

For reasons presented above, the "*do-nothing*" alternative can be rejected as unreasonable within the meaning of Schedule 6. The project is inconsistent with national and EU policy objectives, and a "*do-nothing*" alternative offers no superior environmental outcome when the full life cycle and system context are considered.

¹⁹ Government of Ireland (2025) *National Planning Framework: First Revision (Project Ireland 2040)*. Dublin: Department of Housing, Local Government and Heritage

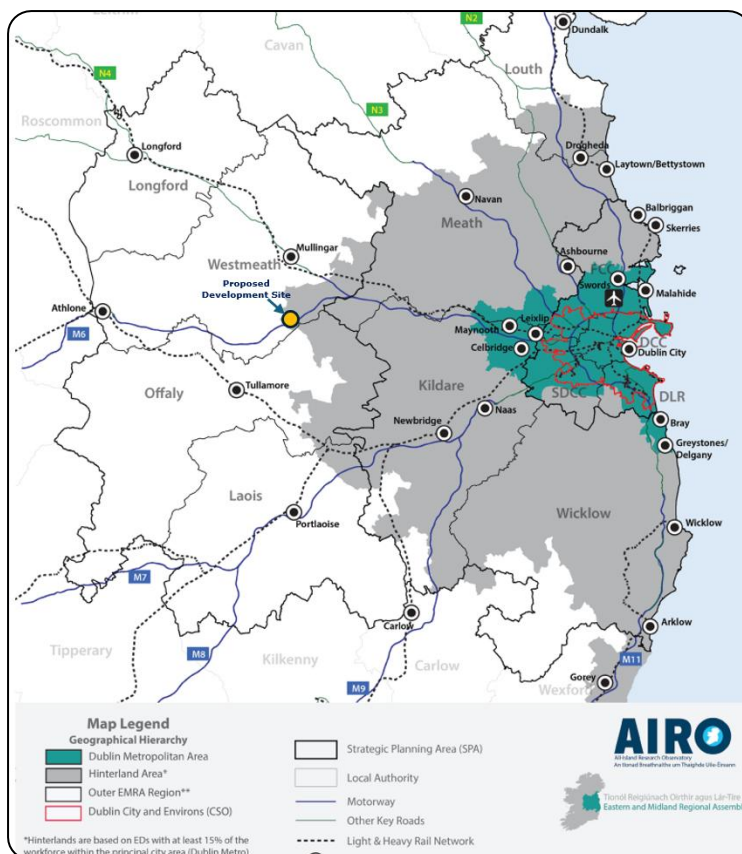
²⁰ Government of Ireland (2021) *National Development Plan 2021-2030 (Project Ireland 2040)*. Dublin: Department of Public Expenditure, National Development Plan Delivery and Reform

3.2.2 ALTERNATIVE LOCATIONS

The government guidance²¹ regarding alternative sites is clear and supports the decision to locate the development at the proposed site, i.e. *"...some projects may be site specific so the consideration of alternative sites may not be relevant..."*

The location of the proposed project was guided by a number of factors not least being the existing 220kV transmission corridor and Castlelost GIS substation (node) within the site, which provides firm Maximum Import Capacity (MIC) without triggering major off-site reinforcement works. Locating the project at the proposed site, which is an unconstrained grid area, therefore aligns with the Statement's *"grid-capacity-and-efficiency"* principle and avoids intensifying grid stress in the Greater Dublin Area.

Figure 3.1 Proposed Site Location



The c.243ha landbank comfortably accommodates the DC facility and collocated DER energy assets the DER. The project lands allow for development of a campus style DC facility with appropriate separation of project assets and purposefully designed landscapes that promote biodiversity enhancement. Ground conditions at the site are suited to the

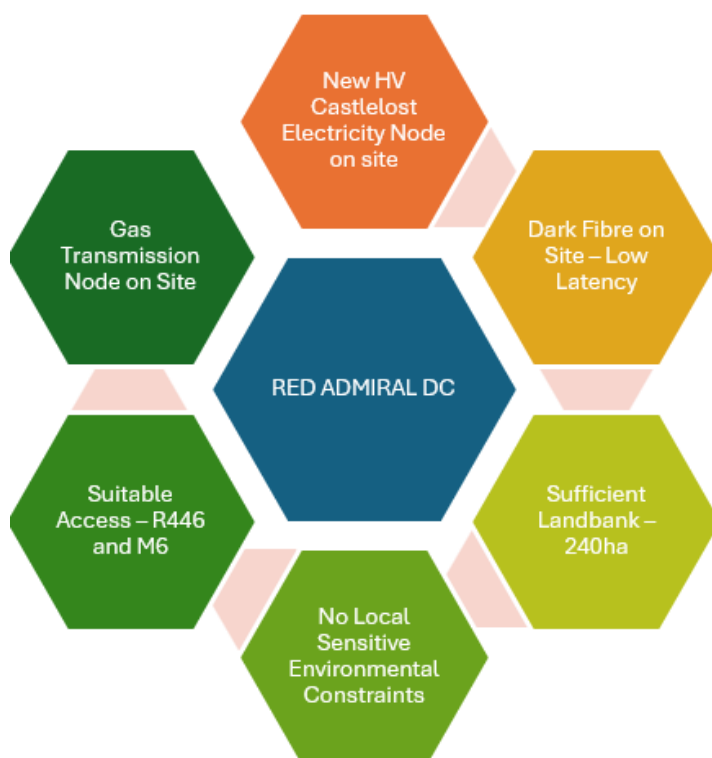
²¹ Department of Housing, Planning and Local Government (2018) *Guidelines for Planning Authorities and An Bord Pleanála on Carrying out Environmental Impact Assessment*.

proposed project and while there are recorded archaeological monuments within the site the project has been designed to avoid any known archaeological and architectural heritage constraints.

The project 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).

The existence of the adjacent high-pressure natural gas network on site allows for construction of the fuel cell asset on site without the need for off-site development for an associated gas pipeline. This eliminates the need for new wayleaves, reduces construction time and avoids potential cumulative effects. The fuel cell is designed to operate on natural gas but is also capable and future-proofed to operate on biomethane and green hydrogen in accordance with the policy as set out in the National Hydrogen Strategy (2023)²² and National Biomethane Strategy (2024)²³.

Figure 3.2 Summary of Benefits of Proposed Project Location



²² Department of the Environment, Climate and Communications (2023) *National Hydrogen Strategy*.

²³ Department of Agriculture, Food and the Marine and Department of the Environment, Climate and Communications (2024) *Ireland's National Biomethane Strategy*

The site fronts directly onto a regional road with direct access to the M6 and N52, giving HGVs, construction traffic and service buses multiple route options without passing through village cores and there are no material conflicts with zoning objectives. The nearest European site (SAC/SPA) is located over 5km from the site (Raheenmore Bog SAC) and the downstream River Boyne and River Blackwater SAC /SPA is greater than 30km from the site. The local settlement pattern is dispersed and consequently the project avoids encroaching on any sensitive receptors.

The regionally located project collocates a DC facility with a mix of low emissions and zero-carbon generation and storage DER assets. The design ensure that the development is consolidated and substantially improves cost benefit analysis of the proposed development. Developing the project at this location avoids and reduces adverse environmental effects (following the mitigation hierarchy of avoid, reduce and, if possible, remedy).

3.2.3 ALTERNATIVE TECHNOLOGIES AND PROCESSES

The proposed project incorporates a DER which shifts the DC facility design away from a legacy *"plug and play"* approach. The proposed DER approach developed from the Government's 2022 policy statement, and this is also echoed in the Commission for Regulation of Utilities (CER) draft Large Energy User (LEU) connection policy²⁴. An Energy Statement and Approach to Sustainable Data Centre Development was commissioned to inform the design and this is presented in Appendix 3.1 (Volume 3 of EIAR). This Energy Statement and Approach to Sustainable Data Centre Development is updated with the Carbon Statement and Alignment with National Large Energy Users Policies provided in Appendix 3.3 to this EIAR Addendum.

This DER approach coupled with alternative DC facility cooling technologies is presented below.

3.2.3.1 DC facility with Collocated DER

A mix of energy technologies were chosen to support the DC facility and configured as a DER. The DER component of the project is a key attribute and provides a future-proof powertrain that supports the electricity demand of DC facility.

The DER includes demonstrated proven energy generation and storage assets. This include a 180MW solar PV farm, a 500MWh BESS, 160MW of high efficiency fuel cells and a grid connection to allow for import of low carbon and /or renewable energy from the

²⁴ <https://consult.cru.ie/en/consultation/review-large-energy-users-connection-policy>

network (see Figure 3.3). The DER also incorporates technologies to facilitate recovery of by-products (waste CO₂ and waste heat) which increases its overall efficiency.

The fuel cell is designed to provide variable power to the DC facility. When compared with conventional generation technology such as a combined cycle gas turbine (CCGT), fuel cells provide more power (kWh) per cubic meter (m³) of natural gas, has lower CO₂ emissions and practically zero NO_x and SO₂ emissions. This mitigates the need for emissions abatement technology such as Selective Catalytic Reduction (SCR) catalyst. Fuel cells are modular in nature, can be deployed to match DC facility phasing and have a much smaller footprint. The technology has low noise emissions and has no requirement for water (no steam cycle).

The BESS provides resilience and demand flexibility. In terms of the BESS, a number of battery types were considered. This included lead acid, flow battery (iron, vanadium)²⁵ and NaS batteries. Criteria which informed selection of the preferred technology included, proven and demonstrated technology, long life cycling requirements and positive environmental and safety attributes.

The 500 MWh BESS will play a central role in enabling the DC facility to operate on a fully optimised, net-zero carbon energy mix. While all battery systems incur some round-trip efficiency (RTE) losses, typically around 10% for lithium-ion, these are significantly outweighed by their advantages. By enabling the datacentre to displace 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, sourced from renewable generation, when it's needed most. In effect, the BESS transforms backup power from a passive liability into an active, climate-aligned energy asset.

Power from the solar PV farm will be either used directly or stored in the BESS to provide further resilience. This asset gives the operator a direct, traceable source of zero-carbon electricity without relying on the electricity grid. It is expected that the maximum output from the solar farm will occur and coincide with the DC facility's cooling peaks (i.e. during hot sunny days).

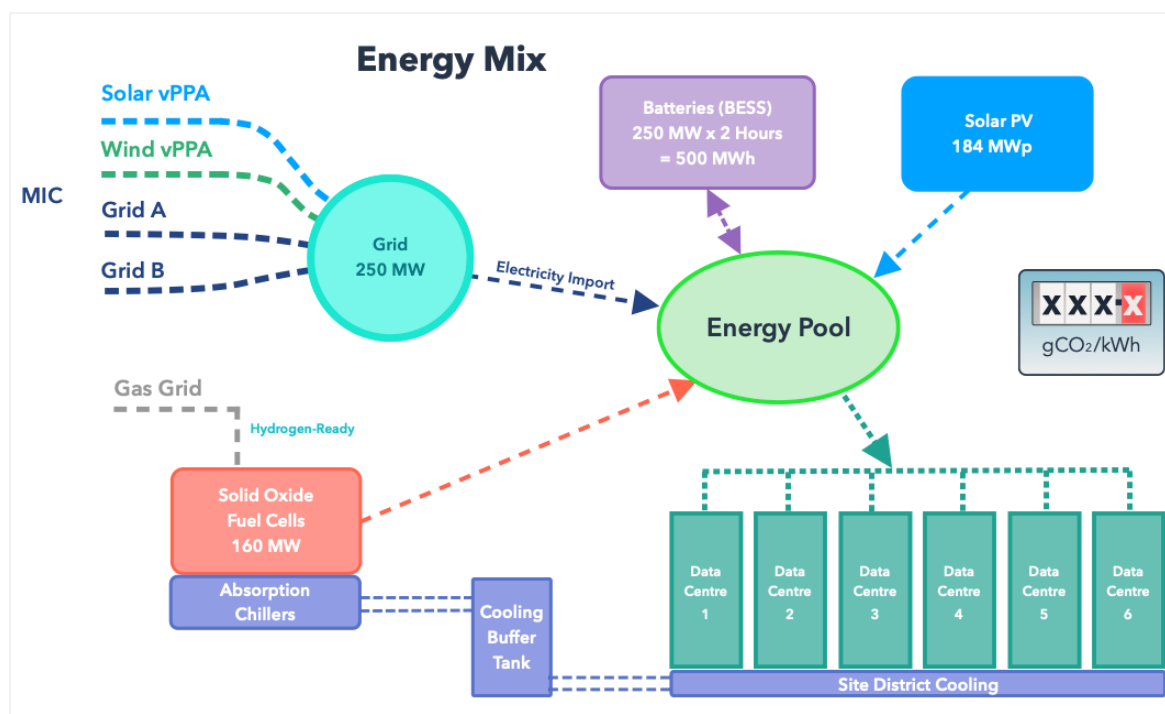
The project will be grid connected, which allows for import of electricity and facilitates power purchase agreements, but the DER is designed and configured to eliminate any demand pressure on the grid. The project optimises its electricity supply for highest efficiency and lowest carbon intensity by monitoring the data centre demand, DER

²⁵ Including the previously consented flow battery (Westmeath Co. Co. Case Ref. 21/532) proposed within the development lands.

availability, the national grid and selecting modes of energy supply based on hourly data. 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 12²⁶ on data centre reporting.

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.

Figure 3.3 Admiral DER Energy Mix



3.2.3.2 DC Cooling and Water Use

The building envelope, the climate and the cooling train have been engineered to keep water use essentially at background domestic-service levels. For roughly 95 per cent of the year the DC buildings (halls within) will be conditioned by drawing in naturally cool air, filtering it, and passing it across heat-exchange coils. By contrast, a conventional evaporative system would mist or cascade water through adiabatic pads or cooling towers every hour that the data centre load produces heat. The proposed dry-cooling alternative

²⁶ European Parliament and Council (2023) *Directive (EU) 2023/1791 of 13 September 2023 on energy efficiency and amending Regulation (EU) 2023/955 (recast)*. *Official Journal of the European Union*, L 231, 20 September, pp. 7-108 — see Article 12 'Data centres'.

avoids and removes any water usage vulnerabilities and stresses which evaporative cooling might place on local water supplies. The proposed project also incorporates recovery /harvesting of the high-grade waste heat from the fuel cells and routing it through absorption chillers. This replaces additional compressor work with waste thermal energy and further improves the overall fuel-utilisation efficiency of the fuel cell (toward 80%). This non-evaporative cooling system, which is a synergy of airside economisation, electric chillers and waste-heat recovery, underpins the sustainable design principles employed on the project.

3.2.4 ALTERNATIVE LAYOUT AND DESIGNS

Once the preferred site was selected, the design team focused on suitably positioning a proposal within the site that is sympathetic and one which integrates into the landscape and surrounding environment. The final design concept has been developed, as far as practicable, to minimise visual intrusion and accordingly the proposed finished ground levels were determined following careful consideration of cut and fill requirements and existing local topographical conditions.

During the EIA process, baseline surveys were carried out and design mitigation measures were incorporated into the overall scheme. Various design layout options were developed to minimise potential impact on sensitive receptors and accord with the natural features of the site (e.g., topography). Extensive consideration was also given in relation to devising suitable access all parts of the project development lands to mitigate potential impacts.

Key to developing the project concept was a detailed review of the policy hierarchy at EU, national and local levels. In particular, the 2022 Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy and the six principles laid down in the statement framed the thinking from the outset; (1) economic impact, (2) grid capacity and efficiency, (3) renewables additionality, (4) co-location or proximity to future-proof energy supply, (5) Decarbonised by design, and (6) SME access & community benefit.

The design also used the LEED process as a design manual to improve consider efficiency and sustainability measures within the planning stage. Given the rural setting and following consideration of baseline findings in conjunction the functional specifications of DC facility and DER technologies, it was proposed to develop the DC facility within a secure campus in the western part of the proposed project site and to collocate suitable DER technologies on adjoining available lands to the east (consolidating these assets with the Castlelost Flexgen and GIS substation). The adopted LEED preassessment (LEED BD+C v4 Rating System for Data Centres) 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.

Examples of early iterations of development layouts are presented in Figure 3.4 to Figure 3.9 and these initially focused on the DC facility.

Figure 3.4 DC Facility Site Layout Iteration #1



As can be seen, the layout of the DC campus evolves through the various iterations presented, demonstrating consideration of site constraints, building positions, building types, separation distances, access points, etc. As development of the DER advanced, proximity of key components to one another resulted in changes to the layout within the project lands. The site layout presented in Figure 3.7 incorporates the fuel cells, BESS and grid connection point (220kV IPP GIS building) and the DC facility's 33kV IPP building and AIS compound. This followed input from technology suppliers, electrical engineers (including HV infrastructure) and the EIA team of specialists.

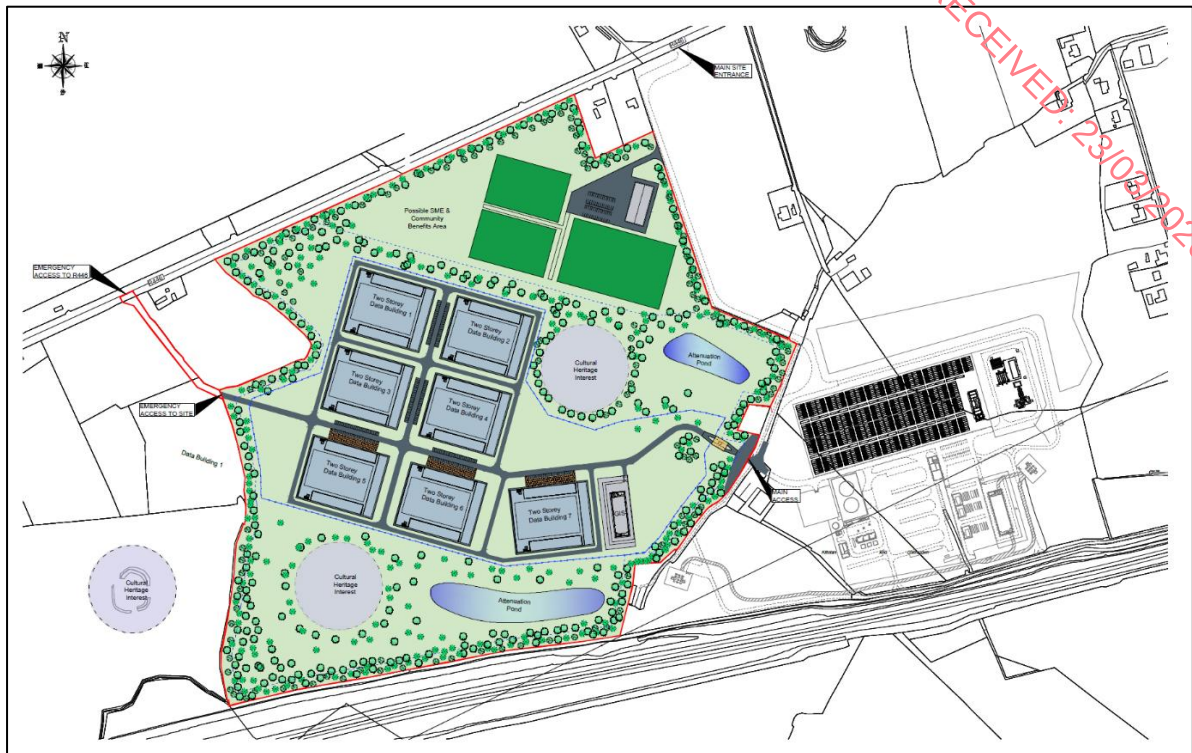
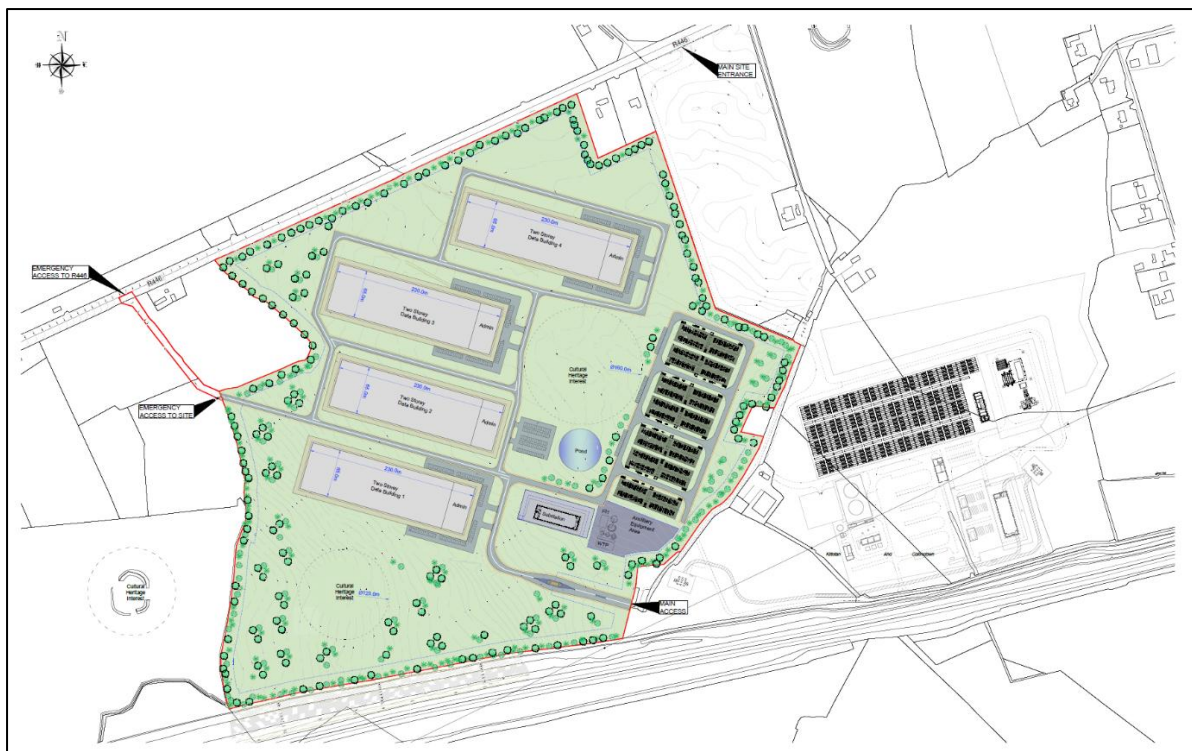
Figure 3.5 DC Facility Site Layout Iteration #2**Figure 3.6 DC Facility Site Layout Iteration #3**

Figure 3.7 Site Layout Iteration #5 (DC Facility and DER Layout)

An overall project layout shown in Figure 3.8 highlights the importance of securing land rights for the solar farm component of the DER. The solar farm layout subsequently further evolved alongside the DC facility layout and this is presented in Figure 3.9.

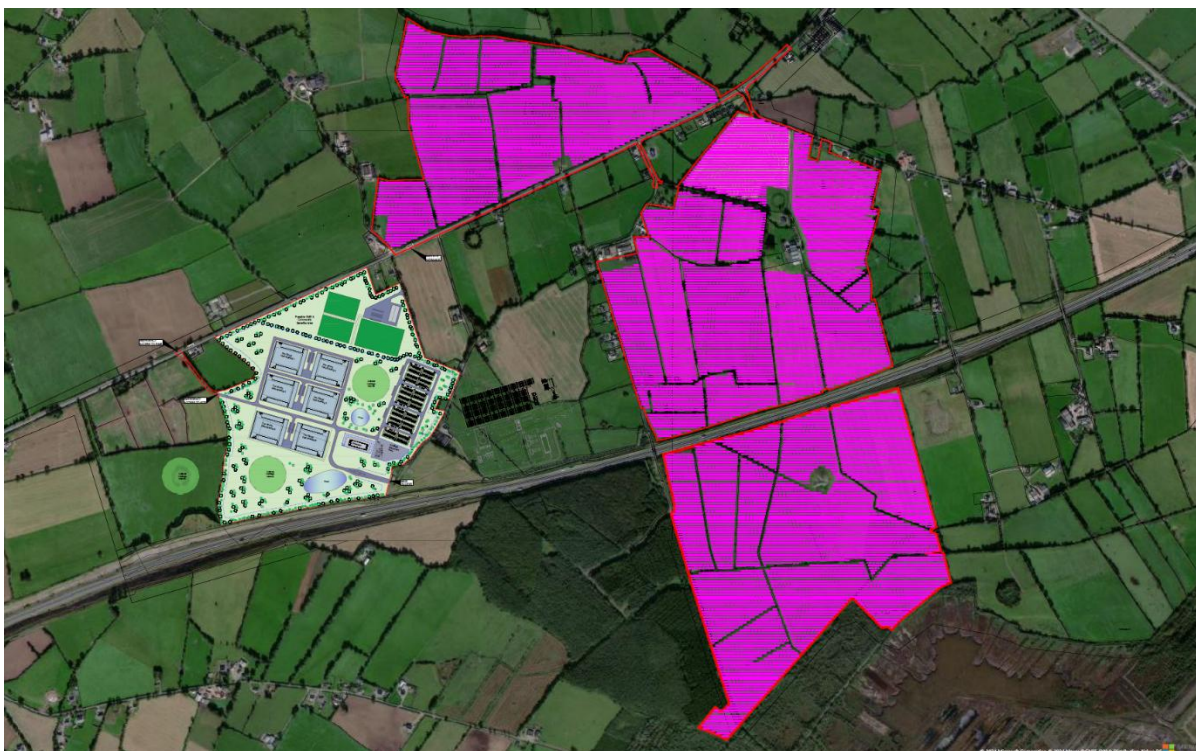
Figure 3.8 DC Facility and DER Project Layout (April 2024)

Figure 3.9 DC Facility and DER Project Layout

3.2.4.1 Revised Site Layout (March 2026)

Following review of the Further Information request dated 01 September 2025 (particularly Item 13 - Planning & Design of the Data Centre including Design, Siting & Visual Impacts), a further iteration of the layout was examined and developed. This additional design iteration focused specifically on the relationship between the data centre buildings and the R446, the extent and effectiveness of the landscape buffer, the architectural articulation of the road-facing elevations and the overall composition of the campus. The design considerations formed part of the ongoing consideration of reasonable alternatives in respect of layout and design, rather than any change to the fundamental nature or function of the proposed development.

The principal alternative design measures examined included increasing the setback of the road-facing data centre buildings; redistributing internal roads, parking and service areas to create additional landscape mitigation space; reducing the perceived massing of the buildings through lower parapets and recessed roof-edge treatment; introducing an architectural veiling system to soften the appearance of the principal elevations; and strengthening the campus character of the development through more distinctive treatment and positioning of the office component.

These measures were assessed against the operational and environmental requirements of the scheme, including internal traffic circulation, emergency access, building functionality, landscape integration and visual effects. The adopted revised layout was selected because it maintains the functional performance of the campus while materially improving the spatial and visual relationship of the development with the R446 corridor and nearby receptors. In particular, the revised arrangement increases the building setback from approximately 49m to approximately 75m, enables a broader and more robust landscape buffer, reduces the apparent height of the most exposed building edges, and introduces a more coherent campus composition.

Accordingly, the revised layout as presented in the Planning-Stage Drawings prepared in support of the planning application (see Schedule in Attachment A) represents the preferred design response having regard to the need to balance operational efficiency, emergency access, architectural quality, landscape integration and the protection of visual and residential amenities. It is considered to constitute a reasonable and environmentally preferable refinement of the previously submitted layout.

3.2.5 ALTERNATIVE PROCESSES AND TECHNOLOGIES

Ireland's 2022 *Government Statement on the Role of Data Centres in Enterprise Strategy* promotes six design principles including maximising renewables additionality, flexibility, and decarbonisation. The project was design to align with this and satisfy the twin transitions of digitalisation and decarbonisation set by Government. In terms of power demand required by the DC facility, the DER assets were chosen to (a) optimise the balance between security of supply, (b) compliment and efficiently use existing services within the site (transmission gas and HV electricity), (d) deliver carbon abatement, and (e) conform with policy and international best practice.

The proposed differs from traditional "*plug and play*" legacy models by integrating a suite of collocated DER power generation and storage assets. A range of alternative DER energy technologies were considered to ensure both operational resilience and environmental sustainability. These included open cycle gas turbines (OCGT), combined cycle gas turbine (CCGT), vanadium redox flow battery (VRFB), iron flow battery (IFB) technology and standby diesel /HVO generators.

The chosen DER design leverages fuel cell technology (avoiding combustion related air quality impacts) for power generation and this is complemented by a commercial battery energy storage system (BESS) and renewable generation (solar PV farm). The modular nature of fuel cell systems allows for incremental capacity additions and seamless its

integration with the BESS and solar farm to match the proposed phased build approach of the DC facility.

In terms of configuration, a power tower configuration (rather than ground level) of fuel cell technology is proposed. Siting and placement of the fuel cell power towers east of the DC facility and close the Castlelost Flexgen is compliment and aligns with the height and scale of nearby structures (i.e. the DC buildings to the west and Castlelost Reserve Gas Fired Generator (OCGTs and 30m high stacks) further east. Once suitably placed within the development lands, further efforts were made to minimise visual impact and integrate the structures. This included design of and external screen across the facades of the power towers (see iterations of this design in Figure 3.10 to Figure 3.12.

Figure 3.10 Fuel Cell – Tower without external screens (iteration #1)

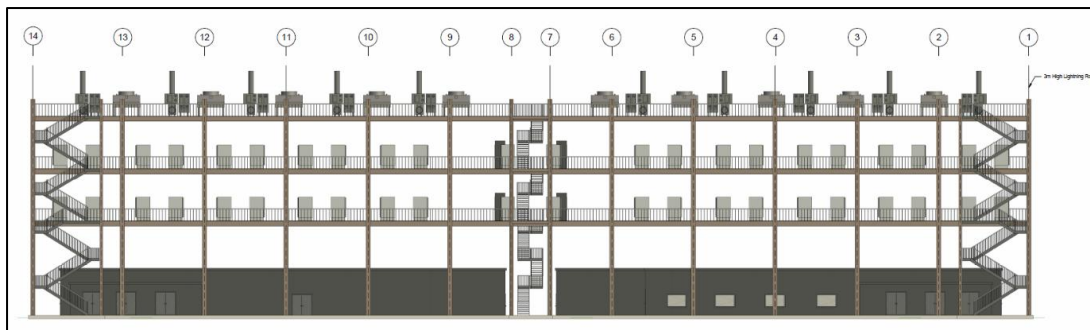


Figure 3.11 Fuel Cell – Tower with external screen (iteration #2)

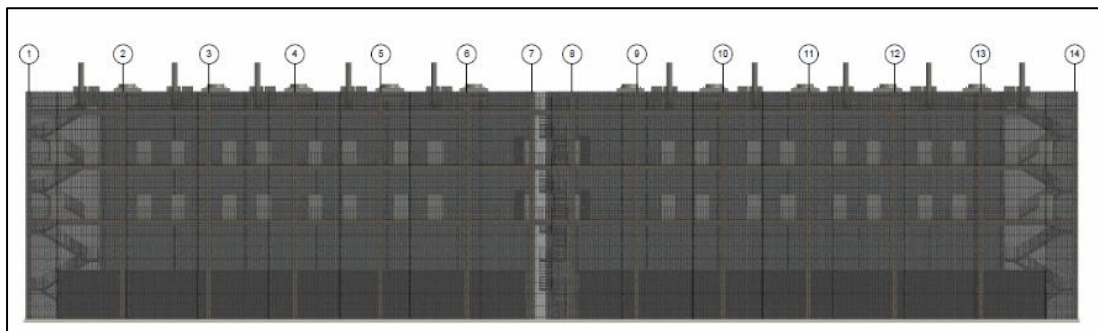
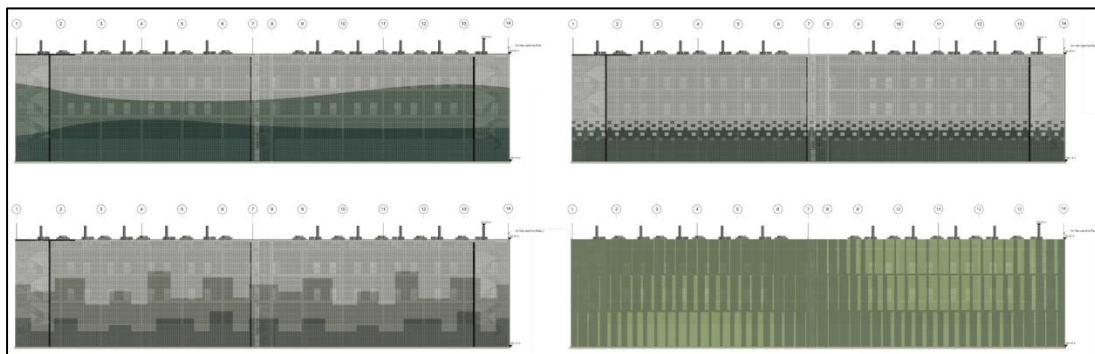


Figure 3.12 Visual consideration of Fuel Cell elevations (external screens)



The solar farm layout was optimised during project design work and most significantly this included consideration of DC/AC ratios to better utilise the available inverter capacity and adoption of a three-panel table (module) rather than a two-panel table. A two-panel table supports two portrait modules, while a three-panel table supports three. Both versions can be deployed on fixed-tilt racking and spacing was optimised to avoid inter-row shading and efficiently use the proposed development land and optimise output.

Figure 3.13 Typical section through two-panel table

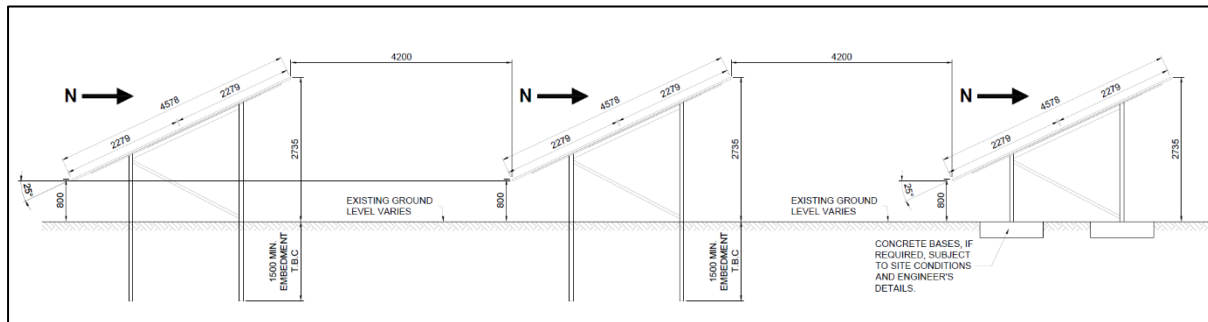
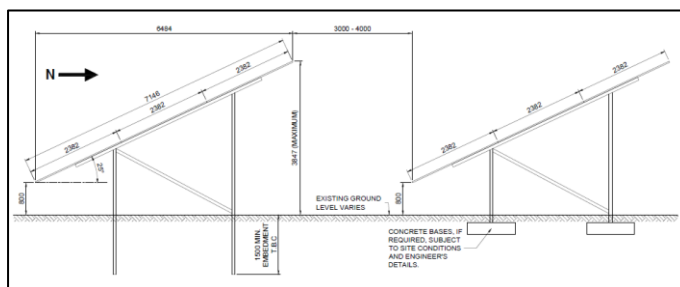


Figure 3.14 Typical section through two-panel table



The DC facility is also specifically designed without evaporative cooling or diesel standby generators. The proposed cooling technologies are complementary to the Irish climate profile and offers the simplest maintenance regime and aligns with sustainability (including LEED pre assessment) principles by minimising water and power usage. Further details related to the selected cooling technologies are presented in the project description chapter.

4 PLANNING & POLICY

4.1 INTRODUCTION

Since preparation of this EIAR chapter, the national and European policy context has continued to evolve. In particular, the National Planning Framework First Revision was approved in April 2025, the National Development Plan Review 2025 was published in July 2025, Climate Action Plan 2025 remains the current statutory climate roadmap, and the updated National Energy and Climate Plan 2021–2030 forms part of the current energy and climate framework.

At EU level, the recast Energy Efficiency Directive and related data-centre sustainability reporting regime are also materially relevant. These updates strengthen the policy emphasis on sustainable regional growth, grid and renewable integration, energy efficiency, operational transparency and delivery of critical infrastructure within environmental limits.

Accordingly, the development is reviewed in the context of the current international/EU, national, regional and local planning and climate policy framework as at 19 March 2026, including the National Planning Framework First Revision (April 2025), the National Development Plan Review 2025, Climate Action Plan 2025, the updated National Energy and Climate Plan 2021–2030, the Eastern and Midland RSES 2019–2031, and the Westmeath County Development Plan 2021–2027 together with the Westmeath County Council Climate Action Plan 2024–2029

4.2 INTERNATIONAL AND EUROPEAN

4.2.1 EUROPEAN GREEN DEAL

The European Green Deal²⁷ (launched in 2019) is the EU's flagship strategy to achieve climate neutrality by 2050, with an interim target of reducing greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels. The EGD aims to transform the EU into a modern, resource-efficient, and competitive economy, decoupling economic growth from resource use and ensuring no person or region is left behind. To turn that vision into law the EU has since adopted the European Climate Law, which makes the 2050 neutrality goal legally binding, and has rolled out the wide-ranging *Fit for 55* legislative package, a bundle of energy, transport, land-use and taxation files designed to deliver the interim 55% cut

²⁷ European Commission (2019) *The European Green Deal*. Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, COM(2019) 640 final, Brussels, 11 December 2019

this decade. The EGD is fundamentally reshaping data centre development in Europe. Operators must now integrate sustainability into every aspect of their operations, from design to daily management, to meet ambitious climate and energy targets. This transformation is both a regulatory requirement and a driver of innovation and competitiveness in the digital economy.

4.2.2 ENERGY EFFICIENCY DIRECTIVE

Since publication of the original EIAR chapter, the EU energy efficiency framework for data centres has materially evolved. Under the recast Energy Efficiency Directive, data centres are subject to enhanced reporting obligations concerning energy performance and sustainability metrics, and the European Commission has adopted an EU-wide scheme for the rating of data-centre sustainability. This reinforces the policy relevance of the project's proposed measures on renewable generation, storage, efficient cooling, operational monitoring and carbon performance reporting.

4.2.3 EUROPEAN UNION TAXONOMY REGULATION

The European Union Taxonomy Regulation, officially known as Regulation (EU) 2020/852, establishes a standardised framework for defining what constitutes "*environmentally sustainable economic activity*" within the single market. This regulation identifies six environmental objectives: climate change mitigation and adaptation, water conservation, circular economy practices, pollution prevention, and biodiversity preservation. These objectives are integral to the broader Sustainable Finance agenda and the European Green Deal. It is designed to redirect investment flows towards financing decarbonisation, enhance investment security, and prevent greenwashing. Additionally, it establishes a unified classification system for sustainable economic activities.

Companies and financial intermediaries subject to the Corporate Sustainability Reporting Directive (CSRD) or the Sustainable Finance Disclosure Regulation (SFDR) are now required to disclose the proportion of their turnover, capital expenditures, and operational expenditures that align with the Taxonomy. Consequently, project teams that can demonstrate compliance with these standards will gain preferential access to the rapidly expanding pool of green capital.

The European Commission has included gas under the transitional activity category of the Taxonomy Regulation to "*allow us to accelerate the shift from more polluting activities, such as coal generation, towards a climate-neutral future, mostly based on renewable energy sources.*" To qualify as taxonomy aligned, use of natural gas must satisfy technical screening criteria; emissions intensity, replacement logic, future proofing, transparency

(disclosure of KPIs) and "*do-no-significant-harm*" safeguards. Rather than conventional combustion, fuel cells convert energy from natural gas by an electrochemical reaction that directly transforms the fuel's chemical energy into electricity, without burning the fuel. By leveraging electrochemical conversion instead of combustion, fuel cells achieve a combination of high efficiency, lower carbon intensity, and fuel flexibility that directly supports EU sustainable finance goal.

The proposed project accords with taxonomy legislation by using fuel cell technology to convert natural gas to generate power. This DER component is coupled with recovery technologies (CO₂ and waste heat) and is part of the overall on-site energy generation and storage mix serving demand from the proposed DC facility. Another critical feature of fuel cell technology is its fuel flexibility and compatibility with low-carbon gases, which future-proofs it for long-term sustainability. The fuel cells can run on biomethane or green hydrogen in future, without wholesale redesign of the balance-of-plant allowing for decarbonisation of the gas network and use of renewable gas (such as biomethane) and blends of hydrogen.

4.3 NATIONAL POLICY

4.3.1 NATIONAL PLANNING FRAMEWORK (NPF), FIRST REVISION (APRIL 2025)

The National Planning Framework (NPF) 2018–2040, as updated by the National Planning Framework First Revision (April 2025), is the Government's high-level strategic plan for shaping Ireland's future growth and development to 2040. It seeks to secure more balanced regional development, support sustainable growth, and improve quality of life across the country. The first revision responds to updated population and housing evidence, including Census 2022, evolving climate and energy-policy requirements, and the implementation context arising from the Planning and Development Act 2024. The revised NPF continues to provide the long-term spatial framework within which public investment and infrastructure delivery are to be planned. It remains aligned with the National Development Plan through the shared set of 10 National Strategic Outcomes (NSOs), ensuring that capital investment can be assessed against national spatial and development objectives.

Figure 4.1 National Strategic Outcomes of the NDP

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The revised NPF also confirms that the updated framework will inform the review of regional strategies and local authority development plans, including updated housing requirements, projected jobs growth and renewable energy capacity allocations.

Most National Policy Objectives in the 2018 NPF have been retained in the first revision, while a number have been updated, strengthened or supplemented to reflect current national priorities. In this regard, NSO 6 – *A Strong Economy Supported by Enterprise, Innovation and Skills* recognises that a competitive, innovative and resilient regional enterprise base is essential to provide jobs and employment opportunities that enable people to live and prosper in the regions. The revised NPF places particular emphasis on decarbonisation, digital transformation, innovation, balanced regional development and strengthening enterprise ecosystems throughout the State.

Under the heading "*Digital and Data Innovation*", the revised NPF states that the impact of digitalisation will continue to grow and will require a coherent and informed policy response. It cross-refers to key national digital strategies, including *Harnessing Digital – The Digital Ireland Framework*²⁸, *Ireland's Industry 4.0 Strategy 2020–2025*²⁹, and *AI – Here for Good: National Artificial Intelligence Strategy for Ireland*³⁰. The revised NPF further notes that Ireland is attractive in terms of international digital connectivity, climatic factors, and current and future renewable energy sources for the development of

²⁸ Department of the Taoiseach. (2022) *Harnessing Digital – The Digital Ireland Framework*. Dublin: Government of Ireland. Available at: <https://www.gov.ie/en/department-of-the-taoiseach/publications/harnessing-digital-the-digital-ireland-framework/>

²⁹ Department of Business, Enterprise and Innovation. (2019) *Ireland's Industry 4.0 Strategy 2020–2025: supporting the digital transformation of the manufacturing sector and its supply chain*. Dublin: Government of Ireland. Available at: <https://enterprise.gov.ie/en/publications/publication-files/irelands-industry-4-strategy-2020-2025.pdf>

³⁰ Department of Enterprise, Trade and Employment. (2021) *AI – Here for Good: National Artificial Intelligence Strategy for Ireland*. Dublin: Government of Ireland. Available at: <https://enterprise.gov.ie/en/publications/national-ai-strategy.html>

international digital infrastructure, such as data centres, and that this supports Ireland's international ICT position and wider economic synergies, including regional clustering effects.

- It is forecast in the economic assessment prepared in support of the planning application that the proposed project will deliver the following economic contributions to the local and Midlands regional economy:
- Construction investment in excess of €1 billion over the five-year development period;
- Construction-related employment of 320 annualised FTEs over ten years; 440 direct operational jobs across a range of occupations; 1,094 indirect and induced jobs in the local/regional service economy and supply chain;
- Almost €80 million in additional annual wage circulation; and
- Annual GVA of €118 million to the economy.

The revised NPF also supports the proposed development in the context of NSO 8 – *Transition to a Carbon Neutral and Climate Resilient Society*. This outcome reflects the commitments of the Climate Action and Low Carbon Development (Amendment) Act 2021, including a legally binding target to reduce greenhouse gas emissions by 51% by 2030, increase the share of electricity generated from renewable sources to 80% by 2030, and achieve net-zero emissions no later than 2050. The revised NPF states that new energy systems and transmission grids will be necessary for a more distributed, more renewables-focused generation system, and highlights the importance of accelerating renewable electricity generation, reinforcing grid infrastructure, and co-locating renewable generation and grid connections where appropriate.

The revised NPF also recognises the strain on the electricity sector, and that the outcome promotes *diversifying supply, strengthening interconnection and developing district-heating networks*, alongside technologies that can provide balancing and flexibility services. NSO 8 stresses place-based adaptation measures and the protection (and restoration) of natural capital so that growth, infrastructure delivery and biodiversity goals are mutually supportive.

The NPF supports the proposed project under the following NPOs:

- *NPO 32 Enhance the competitiveness of rural areas by supporting innovation in rural economic development and enterprise through the diversification of the rural economy into new sectors and services, including ICT-based industries and those addressing climate change and sustainability.*

- *NPO 62 In co-operation with relevant Departments in Northern Ireland, develop a stable, innovative and secure digital communications and services infrastructure on an all-island basis.*
- *NPO 66 The planning system will be responsive to our national environmental challenges and ensure that development occurs within environmental limits, having regard to the medium and longer-term requirements of all relevant environmental and climate legislation and the sustainable management of our natural capital.*
- *NPO 69 Reduce our carbon footprint by integrating climate action into the planning system in support of national targets for climate policy mitigation and adaptation objectives, as well as targets for greenhouse gas emissions reductions as expressed in the most recently adopted carbon budgets*
- *NPO 70 Promote renewable energy use and generation at appropriate locations within the built and natural environment to meet national objectives towards achieving a climate neutral economy by 2050*
- *NPO 71 Support the development and upgrading of the national electricity grid infrastructure, including supporting the delivery of renewable electricity generating development*
- *NPO 73 Support the co-location of renewable technologies with other supporting technologies and complementary land uses, including agriculture, amenity, forestry and opportunities to enhance biodiversity and promote heritage assets, at appropriate locations which are determined based upon the best available scientific evidence in line with EU and national legislative frameworks.*

In this context, the proposed development which incorporates its own zero-carbon generation and storage technologies together with flexible low-carbon, hydrogen-ready power infrastructure, is consistent with the direction of the revised NPF. It reflects the Framework's support for new energy systems, stronger grid infrastructure, renewable integration, digital and data innovation, and regionally distributed economic development. As such, the proposal can be understood as an example of how the revised NPF's economic, digital and climate objectives may be delivered on the ground in County Westmeath

4.3.2 NATIONAL ENERGY AND CLIMATE PLAN 2021-2030

Under the new 2030 Climate and Energy Framework, which is also part of the Clean Energy for all Europeans Package, EU countries are required to draft 10-year National Climate and Energy Plans (NECPs) for 2021-2030, outlining how they will meet the new 2030 targets for renewable energy and for energy efficiency. In June 2019, the government agreed to

support the adoption of a net zero target by 2050 at EU level, and to pursue a trajectory of emissions reduction nationally which is in line with reaching net zero in Ireland by 2050.

The national plan released in 2019 centres around the five dimensions of the Energy Union:

1. Decarbonisation – GHG Emissions and Removals & Renewable Energy
2. Energy Efficiency
3. Energy Security
4. Internal Energy Market
5. Research, Innovation & Competitiveness

These plans are designed to ensure that the EU remains on track to meet its long-term energy and climate goals, including the transition to a low-carbon economy and the fulfilment of commitments under the Paris Agreement. Each NECP also includes specific policies, measures, and trajectories for achieving these targets, reflecting national circumstances and priorities.

Ireland's updated National Energy and Climate Plan (NECP) 2021–2030 forms part of the current national policy framework and consolidates the State's climate and energy policies for the period to 2030. The NECP is relevant to the proposed development in relation to decarbonisation, electricity system resilience, energy efficiency, energy security and competitiveness

4.3.3 GOVERNMENT STATEMENT ON THE ROLE OF DATA CENTRES IN IRELAND'S ENTERPRISE STRATEGY (2022)

Ireland's *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. These principles now sit alongside more recent national and EU policy development discussed in this EIAR Addendum including the Revised NPF, LEAP, CAP 2025, the updated NECP, and the EU data-centre reporting framework.

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). Use of renewable capacity was heavily considered. 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 decision³¹. The project presents a *credible pathway to net-zero operations*, addresses embodied carbon, efficient cooling, low water usage, waste-heat recovery, CO₂ recovery and zero-carbon standby generation; This aligns with Article 12 of the Energy Efficiency Directive (EU) 2023/1791. Finally, the project will provide tangible benefits to the local and wider communities along with indigenous small- and medium-sized enterprises (SMEs); examples of tangible socio-economic benefits from a data-centre development include employment (direct and indirect), upskilling of workers, local procurement and SME enablement, wage circulation effect, development contributions, donations to charitable organisations, local authority rates, community benefit funds and social investment. Please refer to Economic Assessment Report provided in Appendix 5.1.

4.3.4 CLIMATE ACTION PLAN 2025

Climate Action Plan (CAP) 2025 is the current national climate action roadmap. It refines the measures and actions required to deliver the legally binding climate objective, carbon budgets and sectoral emissions ceilings, and should be read in conjunction with Climate Action Plan 2024 where relevant. While CAP24 and CAP23 set the strategic direction, CAP 25 updates this by building on the progress made under previous plans by delivering policies, measures and actions that will support the achievement of our carbon budgets, sectoral emissions ceilings, and 2030 and 2050 climate targets. To achieve Ireland's targets under the Plan, a detailed sectoral roadmap setting out a range of measures and actions for each sector of the economy is included.

For the electricity sector, CAP25 retains the 80% renewable-share target for 2030, adds an interim 50% milestone for 2025, and confirms a build-out of at least 6GW on-shore wind, up to 5GW solar and 2GW of new flexible, hydrogen-ready gas generation. It restates the need for "*rapid delivery of flexible gas generation*" and in a timeframe that

³¹ Commission for Regulation of Utilities (CRU) (2025) *Large Energy Users Connection Policy – Proposed Decision*, CRU/202504

replaces emissions from coal and oil generation as soon as possible to reduce impacts on the carbon budgets. The proposed high efficiency fuel cell technology is aligned with taxonomy regulations and CAP25 aligns with taxonomy transition rules.

Chapter 7 of CAP25 extends Just-Transition supports for the Midlands, presenting the region as Ireland's test-bed for clean-energy clusters. Taken together, these measures create a clear enabling framework for the proposed DC facility and collocated DER in county Westmeath supporting regional economic renewal.

4.3.5 LARGE ENERGY USER ACTION PLAN (2026)

The Large Energy Users Action Plan (LEAP) recognises that available grid capacity will constrain data-centre growth in the short to medium term and advances a plan-led approach to regional, energy-intensive development, including co-location opportunities with renewable generation, storage and enabling infrastructure. In this respect, the proposed development aligns and is consistent with the direction of national policy as expressed in LEAP.

4.3.6 NATIONAL HYDROGEN STRATEGY 2023

Published in July 2023, the Strategy sets three drivers: decarbonisation, energy security and industrial opportunity. It singles out *renewable* ("green") hydrogen as Ireland's focus and envisages its use as a zero-emission store of renewable energy and as flexible power for hard-to-abate sectors. The strategy provides a sequenced policy, governance and market blueprint that stretches into the 2030s

4.3.7 NATIONAL BIOMETHANE STRATEGY 2024

The strategy was jointly prepared by the Department of Agriculture, Food and the Marine (DAFM) and the Department of the Environment, Climate and Communications (DECC). The Strategy is Ireland's first major policy statement on biomethane and is an important milestone in the development of an indigenous sector. The primary objective of the National Biomethane Strategy is the delivery of the ambitious Government target of producing 5.7 TWh³² of indigenous biomethane by 2030 and that Ireland will have developed a sustainable biomethane industry (anaerobic digestion) of scale.

Biomethane is already firmly established and available on the European market, with circa. 37 TWh produced in 2022. The Strategy identifies the sectors in which biomethane could bring the most benefit in terms of decarbonisation, and it will be critical that biomethane

³² This figure has increased substantially from an original Climate Action Plan 2019 target of 1.6 TWh by 2030.

resources are principally used in those sectors where no alternative decarbonisation options exist. It is acknowledged that it is likely that biomethane will be injected into the grid and a percentage of that renewable gas could contribute to the decarbonisation various sectors.

In 2024 Gas Networks Ireland (GNI) published *Pathway to a Net-Zero Carbon Network*³³, resetting its earlier "Vision 2050" and committing to run the network on 100 % renewable gases by 2045. Subsequent corporate plans and independent analyses (including KPMG's 2024 Turning Down the Gas paper³⁴) provide milestones, economics and regulatory asks needed to deliver the vision.

4.4 REGIONAL

4.4.1 EASTERN & MIDLAND RSES (2019-2031)

The *Eastern & Midlands Regional Assembly Regional Spatial & Economic Strategy (RSES) 2019-2031*³⁵ provides a high-level development framework for the region, which supports the implementation of the National Planning Framework (NPF) and economic policies and objectives of Government. It provides a 12-year strategy with a vision to 2040 and it provides a solid foundation to deliver transformational change that is necessary to achieve the objectives of the NPF. It provides a framework for investment to better manage regional planning and economic development throughout the Region.

The RSES recognises that one of the key challenges facing the region is the transition to a low carbon society. To expedite this transition, the RSES sets out 16 Regional Strategic Outcomes which are broken down into Economic Opportunity, Healthy Placemaking and Climate Action. There are six Strategic Outcomes specific to Climate action which can be summarised as follows:

1. Integrated Transport & Land Use - Promote best use of Transport Infrastructure, existing and planned, and promote sustainable and active modes of travel to ensure the proper integration of transportation and land use planning.
2. Sustainable Management of Water, Waste & other Environmental Resources - Conserve and enhance our water resources to ensure clean water supply, adequate wastewater treatment and greater resource efficiency to realise the benefits of the circular economy.

³³ Gas Networks Ireland. (2024) *Pathway to a Net-Zero Carbon Network*

³⁴ Smyth, R. (2024) *Turning down the gas: how Ireland can make biomethane work*. Dublin: KPMG Ireland.

³⁵ The RSES remains the operative regional strategy; however, it must now be read and applied in the context of the NPF First Revision (April 2025), which will inform subsequent regional and local plan reviews.

3. Build Climate Resilience - Ensure the long-term management of flood risk and build resilience to increased risks of extreme weather events, changes in sea level and patterns of coastal erosion to protect property, critical infrastructure and food security in the Region.
4. Support the Transition to Low Carbon and Clean Energy - Pursue climate mitigation in line with global and national targets and harness the potential for a more distributed renewables-focussed energy system to support the transition to a low carbon economy by 2050.
5. Enhanced Green Infrastructure - Identify, protect and enhance Green Infrastructure and ecosystem services in the Region and promote the sustainable management of strategic natural assets such as our coastlines, farmlands, peatlands, uplands woodlands and wetlands.
6. Biodiversity and Natural Heritage - Promote co-ordinated spatial planning to conserve and enhance the biodiversity of our protected habitats and species including landscape and heritage protection.

The RSES frames digital infrastructure as an engine of *balanced* growth and places climate action at the heart of its investment framework. Section 8 (Connectivity) of the RSES recognises fast, resilient digital connectivity as "*an essential utility for economic competitiveness and social cohesion*". Regional Policy Objective 8.25 states that local authorities shall:

- Support the National Broadband Plan.
- Facilitate enhanced international fibre links.
- Promote a high-quality ICT network throughout the Region in order to achieve balanced social and economic development, whilst protecting the amenities of urban and rural areas.
- Support the national objective to promote Ireland as a sustainable international destination for ICT infrastructures such as data centres and associated economic activities at appropriate locations.
- Support the national objective to promote Ireland as a sustainable international destination for ICT infrastructures such as data centres and associated economic activities at appropriate locations.

RPO 8.25 ties local decision-making directly to national enterprise policy. The policy is supportive of data-centre development, where it can be shown to enhance the Region's connectivity, protect local character and crucially occupy a site that is "*appropriate*"; in terms of grid capacity, renewable-energy availability, connectivity and environmental fit.

Chapter 6 (Economy and Employment) deals with the type of jobs the Region wants to attract. One of its "Guiding Principles for Investment Prioritisation in Placemaking for Enterprise Development" states: *"Align to national strategy and approach for data centres – right location for use and energy demand."*

The proposed regionally based project data centre facility and DER has been integrated to be compatible with the receiving environment. The DER is proximate to the existing Castlelost Flexgen Flexgen Plant and GIS substation which is an unconstrained node on the grid. It is well served in terms of fibre and public transport corridors, and the location is sufficiently distanced from sensitive receptors.

The proposed regionally based DC facility and DER have been designed to seamlessly integrate with the receiving environment. The DC facility has been designed as a campus and the DER is located proximate to the existing Castlelost Flexgen Plant and GIS substation (which is an unconstrained node on the grid. Additionally, the site is well-supported by dark fibre connectivity (along M6 corridor and along the gas pipeline within the site) and public transport corridors, while sufficiently safe distanced from sensitive receptors.

It is submitted that the subject site is an appropriate location for the development of a new ICT infrastructure development having regard to its strategic and accessible location in close proximity to the key attributes as described in Section 3 (Need for the Development Rationale).

4.4.2 WESTMEATH COUNTY DEVELOPMENT PLAN 2021-2027

The Westmeath County Development Plan (CDP) 2021-2027 sets out the Council's proposed policies (CPO's) and objectives for the development of the County over the Plan period. In this regard the CPO's listed in the Plan constitute the policies and objectives of the Plan. The Development Plan seeks to develop and improve, in a sustainable manner, the social, economic, environmental and cultural assets of the County.

Chapter 10 (Transport, Infrastructure and Energy) mirrors the position as stated in the RSES. It is a policy objective (CPO 10.178) of Westmeath County Council to *"Support the national objective to promote Ireland as a sustainable international destination for ICT infrastructures such as data centres and associated economic activities at appropriate locations."* The plan simultaneously requires:

- enhanced international fibre links;
- a county-wide high-quality ICT network; and
- facilitation of renewable-energy generation.

The plan states that new energy systems and transmission grids will be necessary for a more distributed, renewables-focused energy generation system, harnessing both the considerable onshore and offshore potential from energy sources and connecting the richest sources of that energy to the major sources of demand. In terms of energy and renewable energy policy, the CDP outlines the following:

- CPO 10.139 Support local, regional, national and international initiatives for limiting emissions of greenhouse gases through energy efficiency and the development of renewable energy sources which make use of the natural resources in an environmentally acceptable manner and having particular regard to the requirements of the Habitats Directive.
- CPO 10.140 Facilitate measures which seek to reduce emissions of greenhouse gases and support the implementation of actions identified in the Westmeath County Council Climate Change Adaptation Strategy 2019-2024 and any future amendments.
- CPO 10.141 Promote and support the use of renewable forms of energy as a contribution to the energy demand of all new buildings where it is consistent with the proper planning and sustainable development of an area.

The CDP acknowledges the importance of the existence of the 220kV grid and the natural gas pipelines which passes through the southern part of the County. The plan states that key investments are planned by Eirgrid for the upgrading of the transmission network and new circuit build /reinforcement, to cater for continued demand. The upgrading of the transmission network at Castlelost (adjoining the site) facilitates power flows from both renewable and conventional sources and maximises the use of the existing power corridor.

The CDP states that the Council will continue to encourage solar energy in commercial and residential developments, subject to design and other environmental considerations

- CPO 10.149 Support Ireland's renewable energy commitments outlined in national policy by facilitating solar power where such development does not have a negative impact on the surrounding environment, landscape, historic buildings or local amenities
- CPO 10.150 Encourage and support the development of solar energy infrastructure, including solar PV, solar thermal and seasonal storage facilities.
- CPO 10.151 Ensure that proposals for solar farms consider the following criteria:
 - The Landscape Character of the County.
 - Visual impact particularly on raised/elevated sites

- Zone of visual influence and visual impact of the structures.
- Glint and glare report and potential impact on adjoining road networks and dwellings.
- Road access and impact on road network serving the site during the construction phase (A pre and post construction impact report may be required)
- Archaeological Impact.
- Incorporation of security measures – use of CCTV/surveillance cameras and security fencing.
- The suitability/strength of the grid and accessibility to it.
- The suitability of the site, having regard to other land use policies, including the need to protect areas of important built and natural heritage.
- Decommissioning of obsolete infrastructure and after-use.

The electricity and gas policy objectives prescribed in the CDP are presented below:

- CPO 10.169 Support and promote the sustainable improvement and expansion of the electricity transmission and distribution network that supply the County, subject to landscape, residential, amenity and environmental considerations.
- CPO 10.170 Support the provision of electricity and gas transmission networks to Athlone and Mullingar to provide for the medium to long-term future needs of these towns, subject to landscape, residential, amenity and environmental considerations.
- CPO 10.171 Support and promote the improvement and extension of gas infrastructure to serve the County,
- CPO 10.172 Co-operate and liaise with statutory and other energy providers in relation to power generation, in order to ensure adequate power capacity for the existing and future needs of the County.
- CPO 10.173 Support the implementation of EirGrid's Grid 25 Investment Programme, subject to landscape, residential, amenity and environmental considerations
- CPO 10.174 Support and facilitate the development of enhanced electricity and gas supplies, which do not negatively impact on environmental quality, landscape, wildlife, habitats or residential amenity and which are critical to the economic development of the County.
- CPO 10.175 Support roll-out of the Smart Grids and Smart Cities Action Plan enabling new connections, grid balancing, energy management and micro grid development.

- CPO 10.176 Support and facilitate the development of enhanced electricity and gas supplies, and associated networks, to serve the existing and future needs of the Region and facilitate new transmission infrastructure projects that might be brought forward in the lifetime of this Strategy including the delivery of the necessary integration of transmission network requirements to facilitate linkages of renewable energy proposals to the electricity and gas transmission grid in a sustainable and timely manner subject to appropriate environmental assessment and the planning process.

Chapter 11 of the CDP sets out details with regard to Climate Action. The aim is *"to transition to a low carbon and climate resilient County, with an emphasis on reduction in energy demand and greenhouse gas emissions, through a combination of effective mitigation and adaptation responses to climate change"*. The recently published *Westmeath County Council Climate Action Plan (2024-2029)* builds on the Council's *Climate Change Adaptation Strategy 2019-2024*.

4.4.3 WESTMEATH COUNTY COUNCIL CLIMATE ACTION PLAN (2024-2029)

The Plan (2024-2029) establishes a county-level framework for emissions reduction, energy efficiency, climate resilience and local climate governance, aligned with the national objective of reducing greenhouse gas emissions by 51% by 2030 and achieving climate neutrality by 2050. The Plan emphasises mitigation and adaptation across the Council's own functions and infrastructure, while also advancing broader countywide action through evidence-based measures and the designation of Mullingar as a Decarbonising Zone. At local policy level, the Westmeath County Development Plan 2021–2027 reinforces these aims by promoting reduced energy demand and emissions, compact and sustainable settlement patterns, renewable energy development, climate adaptation, flood management, and green infrastructure, thereby supporting a coordinated transition to a more climate-resilient and low-carbon county

4.4.4 PLANNING HISTORY AT THE SITE

A review of other projects /development in the general area of the site was undertaken using the Westmeath Planning Search Portal³⁶. The recent valid planning permission consents in the immediate vicinity of the site (1 km radius) relate to the following

³⁶

<https://westmeathcoco.maps.arcgis.com/apps/webappviewer/index.html?id=f114217b26f348ea95660cad27e42ef6>

Project Name	PI Ref	Details	Status
Castlelost Flexgen	21/515	Application to Westmeath County Council for development comprises 275MWe reserve gas-fired generator to boost and back up the power system and will include the following elements (a) 5no. open cycle gas turbine (OCGT) modules (each module being c 1042sqm) and complete with lube oil coolers, generators, air intake vents, continuous emissions monitoring (CEMS) technology, selective catalytic reduction (SCR) units and c.30m high stacks, (b) 1no two-storey administration building (32.615m long x 13m wide x 9.33m high) which contains a control room, offices, storage meeting room workshop and double height warehouse (c) 2no. 2,400m3 capacity bunded secondary fuel storage tanks (each with a diameter of 17.6m and height of 10m), (d) a fenced above ground installation (AGI) compound containing gas pipework , a regulator house enclosure, instrument kiosk, boiler house enclosure and analyzer kiosk, (e) 1no. fuel pump and filter unit, (f) 1no. containerised water treatment module (12.192m long x 2.438m wide x 2.896m high), (g) 1no. 10m3 purified water storage tank (2.75mm high and 2.27m diameter), (h) 2no. containerised black start diesel generators (2.438m x 12.192m long x 2.896m high) with integrated stacks(4.755m high), (i) 1 no 50m3 ammonia storage tank (9.360m high and 3.16m diameter), (j) fire pump skid building (9.23m long x 6.98m wide x 4.6m high), (k) 1 no. 500m3 capacity water tank (7.597m high x 10m diameter), (l) 1 no. single storey IPP building (20m long x 10m wide and 6.853m high), (m) 1 no. low voltage (LV) bunded house transformer (1.914m high), (n) 5 no. medium voltage (MV) bunded step-up transformers (6.287 m high) 1no. high voltage (HV) customer compound containing 2no. bunded transformers (9m high) connected to electrical equipment, (o) 1no air compressor building (8.33m long x 4.73m wide x 4.517m high) and (p) all ancillary development including new access road, internal roads, 2.65m high fencing and gates securing the main reserve generator site, and associated engineering works to provide for the connection of site services and for the treatment and disposal of foul wastewater and surface water. The development includes for construction of a new entrance to the site from the R446 with associated signage and an access road from the new entrance to the reserve gas-fired generator. The development also includes for the demolition and removal of a farm shed, farm workshop, feed silo and a silage clamp	Granted with conditions Altered by 23/60042 & 24/60053
Castlelost GIS	312783	Application to An Bord Pleanála for a 220kV Gas Insulated Switchgear (GIS) Electrical substation and two 220kV underground transmission cables,	Granted with conditions

		interface compounds and pylons and associated works	
Castlelost ESS	21/532	Application to Westmeath County Council for development of an Energy Storage System (ESS) development comprising (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 x 2.438m wide x 3.332m high), associated bundled transformers and electrical plant, (iv) high voltage (HV) customer compound containing 1no. bundled transformers (9m high) and electrical plant to provide for connection to the electricity transmission system, and (v) all ancillary development, including lightning 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. The development includes for construction of a new entrance and access road to the facility from the R446 with associated signage from the new entrance to the ESS facility.	Granted with conditions RECEIVED: 23/03/2026

Other historic nearby planning applications predominantly relate to once off residential development and agricultural sheds. The projects are mainly positioned along public roads (R446 and L51251) in the vicinity of the site and are deemed to be not significant in terms of cumulative impacts with the proposed projects. It was also noted that some projects which were consented were not subsequently constructed (e.g., PL001590 which relates to a house which was granted planning permission in 2001).

4.4.5 PLANNING AND POLICY SUMMARY - MARCH 2026

In planning and policy terms, the revised data centre campus layout (developed in response to FI request issued by Westmeath County Council, dated 01 September 2025) represents a targeted design-led refinement of the proposed development. The increased setback from the R446, wider landscape buffer, lower road-facing parapets, enhanced façade treatment and stronger campus composition materially improve the manner in which the development addresses the public road corridor and the surrounding rural landscape. The revised arrangement also improves the relationship of the development with nearby residential receptors by increasing separation distances and strengthening visual screening. Accordingly, the amended scheme should be assessed as providing a

higher quality design response, with improved landscape integration and a reduced visual profile, while continuing to support the strategic policy basis for the proposed development.

RECEIVED: 23/03/2026

5 POPULATION & HUMAN HEALTH

5.1 INTRODUCTION

There are no changes or updates to this Section of the EIAR.

5.2 ASSESSMENT METHODOLOGY & SIGNIFICANCE CRITERIA

5.2.1 METHODOLOGY

There are no changes or updates to this Section of the EIAR.

5.2.1.1 Study Area

There are no changes or updates to this Section of the EIAR.

5.2.1.2 Field Work

There are no changes or updates to this Section of the EIAR.

5.2.2 DETERMINATION OF SENSITIVE RECEPTORS

There are no changes or updates to this Section of the EIAR.

5.2.2.1 Employment

There are no changes or updates to this Section of the EIAR.

5.2.2.2 Severance

There is no change or update to this Section of the EIAR.

5.2.2.3 Landuse Change

There are no changes or updates to this Section of the EIAR.

5.2.2.4 Health and Safety

There are no changes or updates to this Section of the EIAR.

5.2.3 SIGNIFICANCE CRITERIA

There are no changes or updates to this Section of the EIAR.

RECEIVED: 23/03/2026

5.3 DESCRIPTION OF RECEIVING ENVIRONMENT

5.3.1 POPULATION AND SETTLEMENT PATTERNS

There are no changes or updates to this Section of the EIAR.

5.4 ASSESSMENT OF POTENTIAL ENVIRONMENTAL EFFECTS

5.4.1 DO NOTHING SCENARIO

There are no changes or updates to this Section of the EIAR.

5.4.2 POPULATION AND SETTLEMENT PATTERNS

There are no changes or updates to this Section of the EIAR.

5.4.3 SEVERENCE

There are no changes or updates to this Section of the EIAR.

5.4.4 HEALTH AND SAFETY

There are no changes or updates to this Section of the EIAR.

5.5 MITIGATION MEASURES

In order to control potential negative impacts during construction, an updated Construction Environmental Management Plan (CEMP) is prepared for the development and provided in Appendix 2.6. Due to layout changes within the DC campus area of the proposed development a Revised Lighting Study and Design Package is provided in Appendix 5.3.

In addition, and in response to the FI request issued by Westmeath County Council dated 01 September 2025, a Community Benefit Framework Report is provided in Appendix 5.4. 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.

5.6 RESIDUAL IMPACTS OF THE DEVELOPMENT

There are no changes or updates to this Section of the EIAR.

5.7 CUMULATIVE EFFECTS

There are no changes or updates to this Section of the EIAR.

6 BIODIVERSITY

6.1 INTRODUCTION

This chapter has been updated and provides an assessment of the impacts of the proposed development on the ecological environment, i.e. biodiversity, flora and fauna. It has been compiled in compliance with European Communities Legal requirements and follows EPA Guidelines on Information to be contained in an EIAR (EPA, 2022) and on Transport Infrastructure Ireland TII policy and guidance outlined in Section 6.2.

This chapter was compiled by Ger O'Donohoe M.Sc. of Moore Group providing information on habitats in the study area. Ger is the principal ecologist with Moore Group and has over 30 years' experience in ecological impact assessment. He graduated from ATU Galway in 1993 with a B.Sc. in Applied Freshwater & Marine Biology and subsequently worked in environmental consultancy while completing an M.Sc. in Environmental Sciences, graduating from Trinity College, Dublin in 1999. (He also has over 15 years' experience of carrying out bat surveys and has completed the Bat Conservation Ireland, Bat Detector Workshop which is the standard training for the carrying out of bat surveys in Ireland and follows the Bat Conservation Ireland 'Bat Survey Guidelines' - Aughney *et al.*, 2008'. In addition, Ger is an active member of the Galway Bat Group and Bat Conservation Ireland, which monitors bat populations in Ireland, and facilitates the education of bat communities to the public.

Éire Ecology was commissioned to carry out preliminary Bat and Bird Surveys. The work was undertaken by John Curtin of Éire Ecology. John Curtin B.Sc. is the principal ecologist with Éire Ecology and has over 10 years of experience in ecological impact assessment having conducted plant, habitats, birds, bats and mammal surveys since 2010 including at windfarm and solar sites. John conducted bird, bat and badger surveys. Shane O'Neill is an experienced ornithologist (Co-author Hen Harrier Survey, NPWS 2015) with a broad knowledge of breeding birds, waders and all aspects of ornithology. Shane has previously conducted I-WeBS surveys and taken part in the Shannon estuary wintering wader surveys. Laura Hynes has a degree in Wildlife Biology from MTU Kerry and has worked as an ecologist since 2022. Laura has worked as a Curlew officer for the NPWS.

6.2 METHODOLOGY

This chapter of the EIA Report concentrates on ecological features within the development area of particular significance, primarily designated habitats and species. This includes

habitats/species listed in Annex I, II and IV of the EU Habitats Directive, rare plants listed in the Flora Protection Order and other semi-natural habitats of conservation value.

A Report for the purposes of Appropriate Assessment Screening was undertaken by Moore Group for the proposed development which is presented as Appendix 5.1 to this chapter.

In order to screen out a project, it must be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site.

6.2.1 POLICY AND GUIDANCE

6.2.1.1 EU Habitats Directive

The "Habitats Directive" (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna) is the main legislative instrument for the protection and conservation of biodiversity within the European Union and lists certain habitats and species that must be protected within wildlife conservation areas, considered to be important at a European as well as at a national level. A "Special Conservation Area" or SAC is a designation under the Habitats Directive. The Habitats Directive sets out the protocol for the protection and management of SACs.

The Directive sets out key elements of the system of protection including the requirement for "Appropriate Assessment" of plans and projects.

Both the Habitats Directive and the Birds Directive have been transposed into Irish law by one set of regulations (i.e. The European Communities (Birds and Natural Habitats) Regulations 2011 to 2015 (S.I. No. 477/2011 as amended by S.I. No. 355 of 2015)).

6.2.1.2 EU Birds Directive

The "Birds Directive" (Council Directive 2009/147/EC on the Conservation of Wild Birds) provides for a network of sites in all member states to protect birds at their breeding, feeding, roosting and wintering areas. This directive identifies species that are rare, in danger of extinction or vulnerable to changes in habitat and which need protection (Annex I species). Appendix 1 indicates Annex I bird species as listed on the Birds Directive. A "Special Protection Area" or SPA, is a designation under The Birds Directive.

Special Areas of Conservation and Special Protection Areas form a pan-European network of protected sites known as Natura 2000 sites and European sites.

6.2.1.3 Wildlife Acts (1976 - 2021³⁷)

The primary domestic legislation providing for the protection of wildlife in general, and wild birds in particular, and the control of some activities adversely impacting upon wildlife is the Wildlife Act of 1976, as amended. The aims of the Wildlife Act, according to the National Parks and Wildlife Service (NPWS) are "... to provide for the protection and conservation of wild fauna and flora, to conserve a representative sample of important ecosystems, to provide for the development and protection of game resources and to regulate their exploitation, and to provide the services necessary to accomplish such aims." All wild bird species are protected under the Act. The European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) made significant amendments to the Wildlife Acts to ensure consistency with the Habitats and Birds Directives.

6.2.2 HABITAT SURVEY

The Biodiversity survey was carried out in three stages, firstly through desktop research to determine existing records in relation to habitats and species present in the study area. This included research on the National Parks and Wildlife Service (NPWS) metadata website, the National Biodiversity Data Centre (NBDC) database and a literature review of published information on flora and fauna occurring in the proposed development area.

Sources of information that were used to collate data on biodiversity in the potential Zone of Influence are listed below:

- The following mapping and Geographical Information Systems (GIS) data sources, as required:
 - National Parks & Wildlife (NPWS) protected site boundary data;
 - Ordnance Survey of Ireland (OSI) mapping and aerial photography;
 - OSI/ Environmental Protection Agency (EPA) rivers and streams, and catchments;
 - Open Street Maps;
 - Digital Elevation Model over Europe (EU-DEM);
 - Google Earth and Bing aerial photography 1995-2025;
- Online data available on Natura 2000 sites as held by the National Parks and Wildlife Service (NPWS) from www.npws.ie including:
 - Natura 2000 - Standard Data Form;
 - Conservation Objectives;
 - Site Synopses;

³⁷ Wildlife Act 1976, as amended. Administrative consolidation of the Wildlife Act 1976, Law Reform Commission (2021)

- National Biodiversity Data Centre records;
 - Online database of rare, threatened and protected species;
 - Publicly accessible biodiversity datasets.
- Status of EU Protected Habitats in Ireland. (National Parks & Wildlife Service, 2019); and
- Relevant Development Plans in neighbouring areas:
 - Westmeath County Development Plan 2021-2027

Other environmental information for the area was reviewed, e.g. in relation to soils, geology, hydrogeology and hydrology. Interactions in terms of the chapters on these topics presented in this EIA Report were important in the determination of source vector pathways and links with potentially hydrologically connected areas outside the proposed development site.

The second phase of the survey involved site visits on the following dates to establish the existing environment in the footprint of the proposed development area.

- 20/08/24 Habitats, Badgers and Otters Surveys
- 31/10/24 Habitats and Badgers Surveys
- 01/04/25 Spring Habitats, Badgers and Otters Surveys
- 07/05/25 Habitats and Badger Surveys

Areas which were highlighted during desktop assessment were investigated in closer detail according to the Heritage Council Best Practice Guidance for Habitat Survey and Mapping (Smith *et al.*, 2011). Habitats in the proposed development area were classified according to the Heritage Council publication "A Guide to Habitats in Ireland" (Fossitt, 2000). This publication sets out a standard scheme for identifying, describing and classifying wildlife habitats in Ireland. This form of classification uses codes to classify different habitats based on the plant species present. Species recorded in this report are given in both their Latin and English names. Latin names for plant species follow the nomenclature of "An Irish Flora" (Parnell & Curtis, 2012).

6.2.3 BADGER SURVEY METHODOLOGY

The following methodology used during fieldwork and site surveying was adopted from Scottish Nature and included information provided in Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes by Transport Infrastructure Ireland formerly NRA (2006).

6.2.4 INITIAL FIELD SURVEYS

Badger surveys should be undertaken within an area of search extending 1km from the periphery of the proposed development area. Within this area of search all fence lines, woodland and scrub habitats should be systematically surveyed for evidence of badgers in the form of:

- Faeces: badgers usually deposit faeces in characteristic excavated pits, concentrations of which (latrine sites) are typically found at home range boundaries.
- Setts, comprising either single isolated holes or a series of holes, likely to be interconnected underground.
- Paths between setts or leading to feeding areas.
- Scratching posts at the base of tree trunks.
- Snuffle holes (small scrapes where badgers have searched for insects, earthworms and plant tubers).
- Day nests (bundles of grass and other vegetation where badgers may sleep above ground).
- Hair traces.
- Footprints
- When found, activity levels at setts should be scored using the following criteria:
- Number of well used holes (with one or more of the features : well worn entrance; freshly excavated soil; bedding material)
- Number of partially used holes (leaves or twigs in entrance and/or mosses and other plants growing in or around entrance)
- Number of disused holes (partially or completely blocked, with considerable amount of excavation required for reoccupation).

Setts should also be classified using the conventions shown in the following criteria.

Sett Type	Definition
Main	Several holes with large spoil heaps and obvious paths emanating from and between sett entrances
Annexe	Normally less than 150m from main sett, comprising several holes. May not be in use all the time, even if main sett is very active.
Subsidiary	Usually at least 50m from main sett with no obvious paths connecting to other setts. May only be used intermittently
Outlier	Little spoil outside holes. No obvious paths connecting to other setts and only used sporadically. May be used by foxes and rabbits.

6.2.5 OTTER SURVEY METHODOLOGY

The following methodology used during fieldwork and site surveying was adopted from Guidelines for the treatment of otters prior to the construction of national road schemes by Transport Infrastructure Ireland formerly NRA (2006).

A walkover otter survey was undertaken on watercourses within the vicinity of the proposed development on. The survey area comprised 1.3km of linear riverine habitat (inclusive of both banks where accessible) on the Castlejordan River and 1.5km of drainage ditches leading to the Kiltonan Stream and 1.1km of the Kiltonan Stream.

The survey was completed during optimal conditions (dry, mild, bright and settled) which ensured that a good representation of habitat marked by otter could be recorded in the field, including territorial marking or marking of feeding areas. The survey also deliberately coincided with a prolonged dry period to minimise rain washout of otter signs (spraint, smears etc.). Water levels were low (at base flows) during the survey period.

Any otter sign is logged by type, location (GPS), condition and approximate age for later interpretation to distinguish differences in habitat use and activity. Spraints were subjectively assessed as either fresh (very recent), mixed-age (recent & older spraints, typically indicative of a regular marking site) or old (spraint degrading and not recently deposited). Furthermore, indicative counts of spraint (i.e. number of individual spraints) and the number of sprainting sites (often separate clusters in one area) are noted. This helps indicate the frequency of otter marking that can clarify preferential use of habitat over time. High marking frequency often demarcates important territory.

Bat Surveys were undertaken by Éire Ecology and the methodology for those surveys is presented in the Bat Report which is included as Appendix 6.2.

Bird Surveys were undertaken by Éire Ecology and the methodology for those surveys is presented in the Bird Report which is included as Appendix 6.3.

The final part of the assessment involves an evaluation of the study area and determination of the potential impacts on the habitats of the study area. This part of the assessment forms the basis for Impact Assessment and is based on the following guidelines and publications:

- Guidelines for Ecological Impact Assessment in the UK And Ireland Terrestrial, Freshwater, Coastal and Marine Version 1.3 - Updated September 2024 (CIEEM, 2024);
- EPA Guidelines on Information to be contained in an EIAR (EPA, 2022);

- Best Practice Guidance for Habitat Survey and Mapping (Heritage Council, 2011);
- Ecological Surveying Techniques for Protected Flora & Fauna (NRA, 2008);
- Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009);
- Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DEHLG, December 2009, Rev 2010);
- Guidance document on Article 6(4) of the Habitats Directive 92/43/EEC (EC, 2007).

While prepared for linear projects the TII Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009) are still relevant and outlines the methodology for evaluating ecological impacts of the project in the present report. According to the TII Guidelines, the Ecological Study should address:

- Designated conservation areas and sites proposed for designation within the zone(s) of influence of any of the Project options,
- All the main inland surface waters (e.g. rivers, streams, canals, lakes and tanks) that are intersected by any of the route corridor options, including their fisheries value and any relevant designations,
- Aquifers and dependent systems and turloughs and their subterranean water systems,
- Any known or potentially important sites for rare or protected flora or fauna that occur along or within the zone(s) of influence of any of the route options,
- Any other sites of ecological value, that are not designated, along or in close proximity to any of the route corridor options,
- Any other relevant conservation designations or programmes (e.g. catchment management schemes, habitat restoration or creation projects, community conservation projects, etc.),
- Any other features of particular ecological or conservation significance along any of the route options.

The TII Guidelines set out a method of evaluating the importance of sites identified and in turn the evaluation of the significance of impacts.

Impact Assessment is then based on CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland, 2019.

6.2.6 DESCRIPTION OF THE PROPOSED DEVELOPMENT

Red Admiral DC Limited propose to develop a DC facility and DER on lands in the townlands of Gneevebane, Oldtown, Farthingstown, Castlelost and Kiltotan and Collinstown in the south of County Westmeath. The project includes two main elements, namely:

- 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 39ha 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.
- Decentralised Energy Resource (DER), which will be constructed across approximately 200ha 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 farm (nominal 180MWp), and
 - 220kV IPP GIS Grid connection to the 220kV Castlelost GIS substation which adjoins the proposed development site.

A full description of the proposed development is provided in Chapter 2.

6.3 DESCRIPTION OF EXISTING ENVIRONMENT

6.3.1 GENERAL

The site comprises a mosaic of open farmland fields (GA1) which are either mown for silage or under Arable Crops (BC1).

The fields are bordered by low gappy sections of Hedgerows with semi-mature or outgrown mature trees.

The following is a description of the flora and fauna of the existing environment in the study area.

6.3.2 DESIGNATED CONSERVATION AREAS

The Zone of Influence may be determined by connectivity to the Proposed Development in terms of:

- Nature, scale, timing and duration of works and possible impacts, nature and size of excavations, storage of materials, flat/sloping sites;
- Distance and nature of pathways (dilution and dispersion; intervening 'buffer' lands, roads etc.); and
- Sensitivity and location of ecological features.

The potential for source pathway receptor connectivity is firstly identified through GIS interrogation and detailed information is then provided on sites with connectivity. European sites that are located within a potential Zone of Influence of the Proposed Development are listed in Table 6.1 and presented in Figure 6.1 below. Spatial boundary data on the Natura 2000 network was extracted from the NPWS website (www.npws.ie) on 4 June 2025. This data was interrogated using GIS analysis to provide mapping, distances, locations and pathways to all sites of conservation concern including pNHAs, NHA and European sites.

Table 6.1 European Sites located within a potential Zone of Influence³⁸ of the Proposed Development

Site Code	Site name	Distance (km) ³⁹
000582	Raheenmore Bog SAC	5.12
000685	Lough Ennell SAC	5.62
001831	Split Hills And Long Hill Esker SAC	6.47
004044	Lough Ennell SPA	6.30
002299	River Boyne and River Blackwater SAC	31.5
004232	River Boyne and River Blackwater SPA	31.5

The nearest European site to the Proposed Development is the Raheenmore Bog SAC (Site Code 000582), which is located just over 5.12km to the south. It is designated for raised bog habitats and with no mobile species indicated as conservation objectives and no hydrological connectivity to the proposed development it can be excluded from the assessment at this preliminary stage.

³⁸ All European sites potentially connected irrespective of the nature or scale of the Proposed Development.

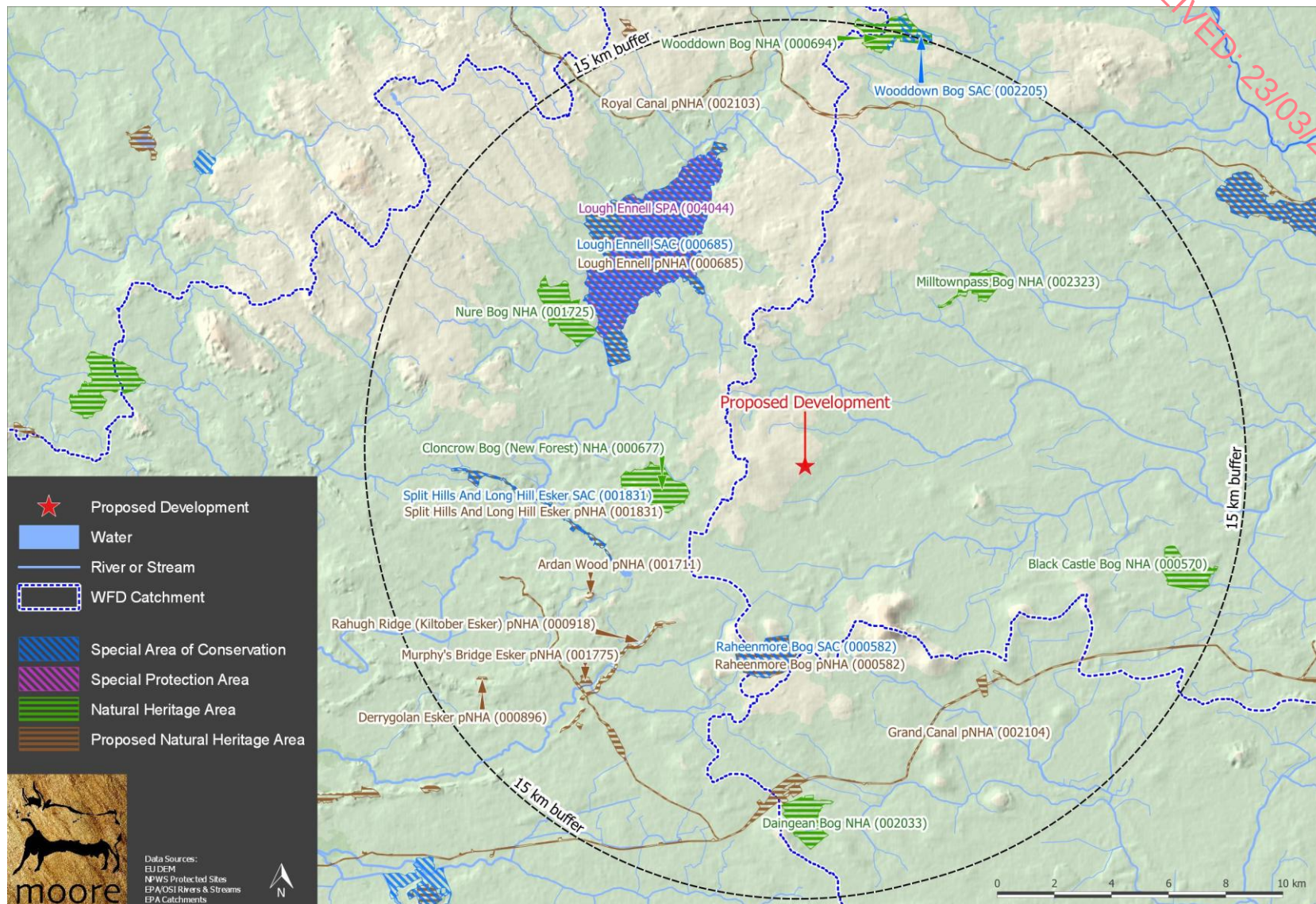
³⁹ Distances indicated are the closest geographical distance between the Proposed Development and the European site boundary, as made available by the NPWS.

Wooddown Bog SAC is located c.13.5km to the north and designated for degraded raised bog habitats and with no mobile species indicated as conservation objectives and no hydrological connectivity to the proposed development it can be excluded from the assessment at this preliminary stage.

The Proposed Development is located in a separate catchment to Lough Ennell, and with no hydrological connectivity and no mobile species, the Lough Ennell SAC is excluded from the assessment at this preliminary stage.

There is no hydrological connectivity to the Lough Ennell SPA and there are no supporting habitats for two of the three Special Conservation Interest Annexed Bird species (Pochard and Tufted Duck) and limited supporting habitats for Coot at the Proposed Development site. There is no potential for significant ex situ effects, the Lough Ennell SPA is excluded from the assessment at this preliminary stage.

The Proposed Development is located within the hydrological catchment of the Castlejordan and Yellow River which flow northeast to 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 just over 18km directly but c.31.5 river km downstream of the Proposed Development.

Figure 6.1 Showing European Sites & NHAs/pNHAs within the wider Potential Zone of Influence

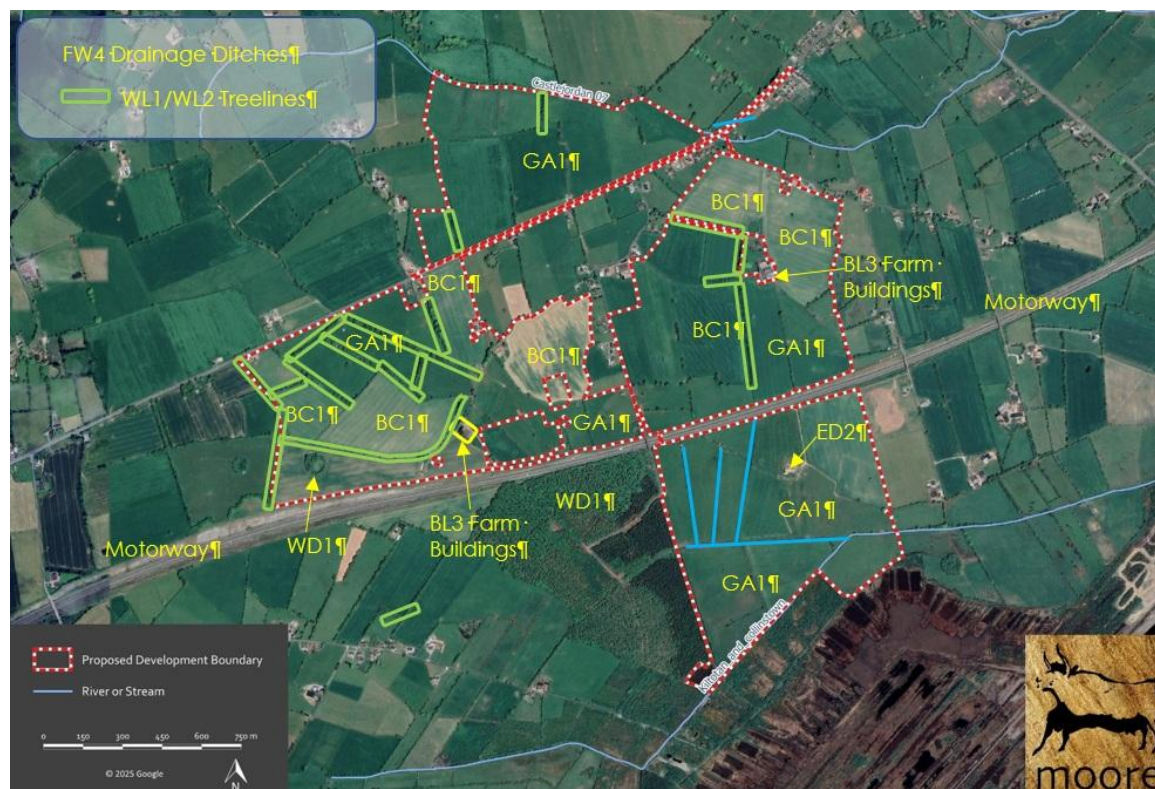
6.3.3 NON-DESIGNATED HABITATS

The proposed development area is improved farmland with open fields which are either heavily grazed or under Arable Crops. There are internal hedgerows and associated short shallow drainage ditches and surrounding outgrown hedgerows. The main habitats are presented on the recent aerial photography in Figure 6.2. A list of habitats recorded, and their corresponding Fossitt codes is presented in Table 6.2.

Table 6.2 Details of Habitats Recorded and their Corresponding Fossitt Codes

Habitat	Habitat Category	Habitat Type
(F) Freshwater	(FW) Watercourses	((FW4) Drainage ditches
(G) Grassland	(GA) Improved grassland	(GA1) Improved agricultural grassland
(W) Woodland and Scrub	(WD) Scrub and transitional woodland	(WD1) Mixed broadleaved woodland
	(WL) Linear woodland	(WL1) Hedgerows
		(WL2) Treelines
(B) Cultivated and Built land	(BC) Cultivated land	(BC1) Arable crops
(B) Cultivated and Built land	(BL) Built land	(BL3) Buildings and artificial surfaces
(ED) Exposed rock and disturbed ground	(ED) Disturbed ground	(ED2) Spoil and bare ground

Figure 6.2 Showing habitats recorded at the proposed development site.



6.3.3.1 (FW1) Eroding upland rivers

This habitat classification applies to the Castlejordan stream running along the northern boundary and the Kiltotan and Collinstown stream along the southern boundary.

6.3.3.1.1 Castlejordan Stream

The Castlejordan Stream runs along the northern boundary of the site, and has been significantly modified, with steep uniform sides. A line of mature Beech (*Fagus sylvatica*) trees lines the northern bank, with Bramble (*Rubus fruticosus*), False Oat-Grass (*Arrhenatherum elatius*) and Great Willowherb (*Epilobium hirsutum*) along the southern bank. Poached areas where animals access to drink supported Brooklime and Lesser Spearwort. Species present in the sluggish watercourse include abundant Fool's Water Cress (*Apium nodiflorum*) and Water Cress (*Nasturtium officinale*), with some Floating Sweet Grass (*Glyceria fluitans*). The stream has a muddy base and little flow and does not appear to have any fisheries value. No signs of otter were observed along the stream.

6.3.3.1.2 Kiltotan and Collinstown Stream

The Kiltotan and Collinstown Stream flows along the southern boundary of the site, and through a small section of the southeastern part of the site. The stream has been artificially straightened and deepened and presents a typical uniform profile, with steep sides. The watercourse is heavily overgrown in parts, with Grey Willow (*Salix cinerea*), Downy Birch (*Betula pubescens*) and Bramble invading from the cutover bog to the south. Instream vegetation includes large areas of Common Duckweed and Fool's Water Cress. The stream displayed no obvious flow, and has a soft peaty substrate, with no obvious fisheries value. No signs of otter were observed along the stream.

6.3.3.2 (FW4) Stream/Drainage ditches

This habitat classification applies to drainage ditches within and bounding the site, and the unnamed channelised minor stream entering the southern site from the west.

These ditches are of depths from 1 to 3m, with steep sides, and generally with little flow. Species present include Fool's Water Cress (*Apium nodiflorum*), Water Cress (*Nasturtium officinale*), Angelica (*Angelica sylvestris*), Branched Bur-reed (*Sparganium erectum*), Iris (*Iris pseudacorus*) and Reed Canary Grass (*Phalaris arundinacea*). Occasional poached muddy margins where animals drink also support Brooklime (*Veronica beccabunga*) and Lesser Spearwort (*Ranunculus flammula*).

6.3.3.3 (GA1) Improved agricultural grassland

This habitat refers to those grassland areas which comprise the fields managed for silage or grazed by livestock on the site. Species present include abundant Perennial Rye Grass (*Lolium perenne*), Meadow grass (*Poa* spp.), Ribwort plantain (*Plantago lanceolata*), Meadow Buttercup (*Ranunculus acris*), Cocks foot (*Dactylis glomerata*), Yorkshire Fog (*Holcus lanatus*), Creeping Thistle (*Cirsium arvense*), and Nettle (*Urtica dioica*). Some of the southern fields have more impeded drainage, and Soft Rush (*Juncus effusus*) and Creeping Buttercup (*Ranunculus repens*) are more prominent.

6.3.3.4 (WL1) Hedgerows & WL2 Treelines

This habitat refers to the various field boundaries within and surrounding the site, a mix of tightly managed and outgrown hedgerows, as well as significant treelines bordering fields and avenues.

Many field boundary hedgerows have been so degraded that they are remnants along fencelines, with some better managed hedgerows particularly in the western section, and occasional fine outgrown hedgerows which include mature specimen trees. Species composition is typical of such farmland, with 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 (*Hedera hibernica*) is abundant throughout, as are Bramble (*Rubus fruticosus*) and Honeysuckle (*Lonicera periclymenum*). Ground flora is similar to that of the adjacent grassland, with occasional woodland edge plants such as Wood Avens (*Geum urbanum*) and Ground Ivy (*Glechoma hederacea*).

The avenue to Farthingstown House and farm comprises a double row of Copper Beech (*Fagus sylvatica* var *purpurea*) and Ash, while the western aspect of the farm is defined by a row of large specimen Beech trees. As is the case throughout Ireland, much of the Ash in hedgerows and treelines is exhibiting various symptoms of Ash Dieback.

6.3.3.5 (WD1) Mixed Broadleaved Woodland

This habitat was recorded in the ringfort, located in the western section of the site. The ringfort comprises a double earthen embankment, with Ash, Sycamore, Hawthorn and Grey Willow, as well as scrubby Elder. Hogweed (*Heracleum sphondylium*) and Ivy are frequent in the understorey, as is Bramble.

6.3.3.6 (BC1) Arable crops

Several large fields throughout the site are managed for crops, with barley being the most widespread, as well as some Rapeseed. Typical arable weeds observed on the margins of these fields included Giant Brome (*Anisantha diandra*), Common Field Speedwell (*Veronica persica*), Scarlet Pimpernel (*Anagallis arvensis*) and Shepherd's Purse (*Capsella bursa pastoris*).

6.3.3.7 (BL3) Buildings and artificial surfaces

This habitat refers to a variety of farm buildings within the site, with little to no vegetation.

6.3.3.8 (ED2) Spoil and bare ground

This habitat classification refers to the area within the southern section of the site used to store piles of unconsolidated spoil and stone and baled silage. A rough track leading to this area is included in the classification. Some ruderal colonisation has occurred, with species recorded including Oxeye Daisy (*Leucanthemum vulgare*), Broad-leaved Willowherb (*Epilobium montanum*), Docks (*Rumex* sp.) and scrubby Grey Willow.

6.3.4 INVASIVE SPECIES

Small patches of Japanese Knotweed were record during preliminary site visits in May 2019 and again observed in April 2025. 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. The site will be monitored by an Invasive Species Specialist and an Invasive Species Management Plan will inform the requirement for further treatment.

6.3.5 FAUNA

6.3.5.1 Badgers

The National Biodiversity Centre Database was consulted on 27 February 2026 for records of badgers in the zone of influence of the Proposed Development. There are several records from the Bord na Mona site at Derrygreenagh to the southeast of the M6 Motorway outside and to the southeast of the portion of the site proposed for solar farm development. There are no records in the intensively managed farmland fields to the north of the M6. The site boundaries were surveyed and no setts were recorded.

6.3.5.2 Otters

The National Biodiversity Centre Database was consulted on 27 February 2026 for records of otters on all water courses in the zone of influence of the Proposed Development. There is one historical record (1982) for signs of otters ('2 Count of Droppings') on the Rochfortbridge Stream which flows from the north hinterland to join the Castlejordan Stream to the south and east of Rochfortbridge. A later record from the Rochfortbridge Stream at the Bridge North of Rochfortbridge recorded '*two spraints on a grass tuft by cattle drinking access 25m u/s from bridge*' on 16/09/2005. There are no records on the Castlejordan Stream upstream or with 150m downstream of the that section of the site proposed for solar farm development.

There is one historical record (1982) for otter signs ('2 droppings') on the Kiltonan Stream at NGR N467386, where it leaves the Proposed Development site upstream of the Bord na Mona lands at Derrygreenagh. A Bord na Mona 'Commission Survey' from 23/03/2015 recorded a Spraint a further 2.6km downstream at the bridge on the R400 corresponding to the county boundary. The surveys conducted during fieldwork on the water courses including drainage ditches, the Castlejordan Stream and the Kiltonan Stream did not reveal any signs of otter usage. No resting places, slides, spraints or latrines were recorded.

6.3.5.3 No Volant Mammals

There are anecdotal references to deer, pine marten, and hares in third party submissions lodged on the initial application. There were no specific signs of these species recorded during habitat surveys.

Pine martens are more likely to occur in densely forested habitats and on scrubby peatland which does not occur on site. They have been recorded in peatland and fringing woodland far outside the subject site.

Hares and foxes are frequent inhabitants of hedgerows and while no hares were observed, they may be present foraging on open fields. Fox scats were observed and typical scent markings were recorded. However, this species is not protected.

There are no records of red deer from the surrounding area. Any anecdotal records may refer to fallow deer, an invasive species, which have been recorded in Bord na Mona woodland to the far south and east.

6.3.5.4 Bats

6.3.5.4.1 Tree Surveys

In total 420 trees were surveyed from ground level for their potential to host individual bats or a maternity roost. Two veteran ash trees in Section 1 and two Beech trees in Section 3 were flagged as having the potential to host a maternity roost (PRF-M). Both pairs of trees were subjected to nighttime emergence surveys as a second survey after an at-height inspection. Results are summarized below

At-height surveys were carried out by John Curtin and Rik Pannett where Rik climbed trees and used a Ridgid CA-350. This was connected to the ecologist's phone via wi-fi thus the ecologist inspected all cavities. Surveys were conducted on the 02 and 08 April 2025. A number of Veteran trees onsite were noted to be of key importance in maintaining the continuity of connectivity through the site during and post construction. It is advised as many of these trees be kept as Monolith features to assist in the establishing of the Compensatory woodland that will be planted on the west of the site.

No bats were found to be roosting in trees onsite, though bats were observed utilising treelines for feeding purposes during nighttime surveys. *Structure Surveys*

A search was conducted of sheds and dwellings of highest potential that were within or close to the site. In situations where access was not possible the surveyor conducted nighttime surveys from the road examining bats and attempting to locate commuting routes and roosts.

During the daylight search no evidence of bats was noted from any of the structures listed in Table 3-4 of the Bat Report. Night-time surveys did reveal the presence of bat roost within five of these structures.

6.3.5.4.2 Night-time Surveys

Nighttime surveys were conducted on the 23rd April, 01st of May and 9th May 2025. These surveys consisted of multiple surveyors recording activity levels at various points throughout the site at various structures identified during desktop surveys. The purpose of surveys was to examine for roosting bats that could be impacted by the development, observe bat interactions such as commuting routes, feeding areas, and examine if there are current impediments to bats within and surrounding the site.

Two emergence surveys were conducted on the 1st May 2025 of structures 1, 2 and 3 by multiple surveyors working with NVA's and Ultrasonic detectors. Six Pipistrelle bats were observed emerging from Structure 3 (most likely 5 Common Pipistrelle and 1 Soprano

Pipistrelle), from various exit points in the walls and gable end of the building. Only a single bat was observed leaving Structure 2.

Multiple emergence surveys were conducted on the 9th of May on Structure 4, an occupied house with tile roof and Structure 5, a semi-detached derelict shed and dwelling. No bats were found to be emerging from either building. Structure 4 is an occupied dwelling and shed, with a modern slate roof. The shed is small but showed better potential for a small number of roosting bats than the dwelling. Additionally, a derelict dwelling with semi-detached sheds, both with slate roofs in disrepair, were also surveyed. Facia was in disrepair on these structures, but many areas had collapsed roofs, making the interior brighter and thus less suitable for bats.

6.3.5.4.3 Static Detector Surveys

Eight Song Meter Mini full spectrum bat recorders were deployed within areas suitable for bats for 12 nights from August to early September during the bat active season, and again in May 2025. Detector 3, located in Section 3 showed the highest levels of Soprano Pipistrelle, Natterer's Bat and Leisler's Bat on site and had the highest activity level overall.

Several Pipistrelle calls were recorded with a peak frequency of around 40kHz. These calls are lower than expected for Common Pipistrelle but higher than the typical for Nathusius. In these cases, the calls are classified to genus level (Unidentified Pipistrelle 40kHz).

Table 3-1 below provides a summary of data with full data tables provided in Appendix A. Results show number of registrations and Bat passes per hour (Bp/Hr) and divides results per species and detector. An overall average of 46.9 Bp/Hr was recorded from the August-September period.

Activity across the site was very high in edge habitat and much lower in open habitat, with the highest areas of bat activity being at Detector 3 and Detector 2 which show Bp/Hr of 241.1 and 131.6 respectively. The most common species recorded was Common Pipistrelle with 27,060 registrations (48%) followed by Soprano Pipistrelle with 14,829 recordings (27%). Leisler's bat represents 2.3% of total calls with other species recorded at low levels comparatively.

Activity in Spring showed reduced activity when compared to the first survey period. Detector 3 showed the largest drop-in activity of any location, activity dropped from 241.1 Bp/Hr (15,803 recordings), to just 18.5 Bp/Hr, with all species dropping in the same proportions. The majority of the calls on this site are still recorded at Detector 2, where Common Pipistrelle is the most abundant call recorded (89% of D-2 Bat calls are Common Pipistrelle).

It should be noted that a single bat continuously circling a small stand of trees will produce numerous recordings, thus the number of registrations cannot quantify abundance, rather activity.

6.3.5.4.4 Summary

Seven of the nine resident Irish bat species were found within the site; Leisler's Bat, Common Pipistrelle, Soprano Pipistrelle, Nathusius' Pipistrelle, Brown Long-eared, Natterer's Bat and Daubenton's bat.

62,880 registrations were recorded over the course of 22 nights from 8 static bat detectors placed in key locations throughout the site. Detectors 2, 3, 5, 7 are set in Edge Habitat which shows much higher activity on this site and these detectors make up 97% of all bat calls. Locations with high density of bat commuting traffic are Detector 2 and Detector 3 (D3 particularly in late summer when Young are present).

Lowest Levels of activity are consistently seen in open habitats onsite, with Detector 1, 4, 6 and 8 showing drastically lower levels of activity. Detector 5 is the only detector placed adjacent to a watercourse, a small stream along the northern border of Section 3. It also showed the highest levels of Myotis Species on site though few Myotis bats were recorded.

A Breeding pair of Barn owls were observed nesting onsite near Detector 3. Literature suggests that Barn Owls can influence the suitability of an area for bats, potentially driving bats out of a roost. Roulin (2013) concludes that while Barn Owls can predate on insectivore bat species, bats typically make up a small portion of their diet (usually <0.2%) and predation is mostly opportunistic on the part of the Barn Owl.

No tree roosting bats were recorded during any survey. Bat roosts were noted from buildings to the west of the site (two roost structures) however these buildings will not be altered by the proposed development.

6.3.5.5 Birds

The NBDC was accessed on the 14 August 2024 and again on the 21 May 2025 for previous records within the 3 x 2km squares the site resides in N43U, N43P and N44K. In total there were sixteen bird species recorded within the records examined. The following rare and / or threatened birds have been recorded in Table 6.3.

Table 6.3 Designated species recorded within the 2km squares; N43U, N43P and N44K.

Name	Latin Name
Mallard	<i>Anas platyrhynchos</i>

Name	Latin Name
Eurasian Teal	<i>Anas crecca</i>
Eurasian Wigeon	<i>Anas penelope</i>
Tufted Duck	<i>Aythya fuligula</i>
Common Snipe	<i>Gallinago gallinago</i>
Eurasian Woodcock	<i>Scolopax rusticola</i>
Eurasian Curlew	<i>Numenius arquata</i>
Northern Lapwing	<i>Vanellus vanellus</i>
Barn Swallow	<i>Hirundo rustica</i>
Common Starling	<i>Sturnus vulgaris</i>
House Martin	<i>Delichon urbicum</i>
House Sparrow	<i>Passer domesticus</i>
Lesser Black-backed Gull	<i>Larus fuscus</i>
Mute Swan	<i>Cygnus olor</i>
Sky Lark	<i>Alauda arvensis</i>
Yellowhammer	<i>Emberiza citrinella</i>

RECEIVED: 23/03/2026

The proposed site lies in close proximity to the Yellow River windfarm project where numerous bird surveys have previously been carried out. The Kilmurray's sand and gravel quarry (lying 1.4km from the subject site) is a component of this windfarm and contains a breeding population of Lapwing as well as numerous wintering birds including Golden Plover and Whooper Swans.

6.3.5.5.1 Field Survey

During Vantage point surveys, species of interest noted using the site included Golden Plover, Lapwing, Snipe and Woodcock. Buzzard, Golden Plover and Kestrel were seen most frequently making use of the site, with moderately sized flocks of Meadow Pipit, Mallard and Redwing also present. A large flock of Golden Plover observed far to the South of the Site numbering ~375 individuals were noted, and the largest recorded flock was 262 individuals strong.

Three vantage point surveys were conducted each month between September 2024 and March 2025. The presence of the Target species and their flightlines were recorded. Table 6.4 provides a summary of species of interest including number of times the species was observed and if the species interacted with the site (perched within, hunting or roosting compared to flying over).

Table 6.4 Summary of Vantage Points 'Species of Interest' Results

Species	No of Obs.	Max Obs.	Recorded within site	Interacting with Site	BoCCI4	Season for BOCCI4 designation
Black-headed Gull	2	2	In	No	Amber	Breeding/Wintering
Buzzard	63	7	In	Yes	Green	-
Golden Plover	42	375	In	Yes	Red	Breeding/Wintering
Great Cormorant	2	1	In	No	Green	-
Hen Harrier	1	1	In	Yes	Amber	Breeding
Herring Gull	1	1	In	No	Green	-
Kestrel	21	92	In	Yes	Red	Breeding
Lapwing	2	3	In	Yes	Green	-
Lesser Black-backed Gull	1	5	In	No	Amber	Breeding/Wintering
Meadow Pipit	3	22	Out	Yes	Red	Breeding
Peregrine Falcon	1	1	Out	Yes	Green	-
Raven	1	2	In	Yes	Green	-
Redwing	2	35	In	Yes	Red	Wintering
Sky Lark	1	1	In	Yes	Green	-
Snipe	4	2	In	Yes	Red	Breeding/Wintering
Sparrowhawk	3	1	In	Yes	Green	-
Whooper Swan	7	10	In	No	Amber	Breeding/Wintering
Wigeon	1	4	In	No	Amber	Breeding/Wintering
Woodcock	1	2	In	Yes	Red	Breeding
Yellowhammer	29	3	In	Yes	Red	Breeding

Table 6.5 Summary of Vantage Point Non-Target Results

Species	No of Obs.	Max Obs.	BoCCI4	Season for BOCCI4 designation
Blackbird	16	6	Green	-
Barn Swallow	3	10	Amber	Breeding
Blackbird	3	1	Green	-
Blue Tit	12	4	Green	-
Bullfinch	1	4	Green	-
Chaffinch	16	10	Green	-
Coal Tit	1	1	Green	-
Collared Dove	2	6	Green	-
Dunnock	14	2	Green	-
Fieldfare	9	150	Green	-
Goldcrest	2	2	Amber	Breeding
Goldfinch	6	25	Green	-
Great Tit	6	2	Green	-
Greenfinch	4	30	Amber	Breeding
Grey Heron	1	1	Green	-
Hooded Crow	20	40	Green	-
House Martin	1	6	Amber	Breeding
House Sparrow	2	7	Amber	Breeding

Species	No of Obs.	Max Obs.	BoCCI4	Season for BoCCI4 designation
Jackdaw	13	80	Green	-
Jay	5	3	Green	-
Lesser Redpoll	2	5	Green	-
Linnet	4	4	Amber	Breeding
Long-tailed Tit	5	9	Green	-
Magpie	3	2	Green	-
Meadow Pipit	12	10	Red	Breeding
Mistle Thrush	4	7	Green	-
Pheasant	1	1	Green	-
Pied Wagtail	13	4	Green	-
Raven	4	3	Green	-
Redwing	6	50	Red	Wintering
Reed Bunting	2	18	Green	-
Robin	24	20	Green	-
Rook	18	100	Green	-
Sky Lark	3	2	Green	-
Song Thrush	9	3	Green	-
Starling	21	500	Amber	Breeding
Stonechat	5	2	Green	-
Tree Sparrow	1	4	Amber	Breeding
Winter Wren	16	8	Green	-
Wood Pigeon	26	150	Green	-
Yellow Wagtail	1	2	Green	-

6.3.5.5.2 Winter Season Surveys

To determine which species are breeding within the site, combined surveys were conducted, including preliminary barn owl assessment, a nighttime thermal survey and several breeding walkover surveys (O' Brien and Smith). Summaries are provided below with full results in Appendix 6.2.

Three wintering transect surveys were conducted in December and two in January; these surveys are of benefit to discover species not obvious during VP surveys. Table 6.6 below provides a summary of birds found during these transect surveys, including the number of times the species was observed and the largest flock observed at once. All Transect Points were recorded within the site outline.

Table 6.6 Summary of Vantage 'Species of interest' Results

Species	No. of observations	Max no. observed	BoCCI4	Season for BOCCI4 designation
Buzzard	16	2	Green	N/A
Golden Plover	5	262	Red	Breeding/Wintering
Little Grebe	1	1	Green	N/A
Meadow Pipit	29	16	Red	Breeding
Mute Swan	3	2	Amber	Breeding/Wintering
Northern Pintail	1	2	Green	N/A
Redwing	8	22	Red	Wintering

Species	No. of observations	Max no. observed	BoCCI4	Season for BOCCI4 designation
Snipe	14	42	Red	Breeding/Wintering
Yellowhammer	33	8	Red	Breeding

Table 6.7 Summary of Vantage Non-Target Transect Results

Species	No. of observations	Max no. observed	BoCCI4	Season for BOCCI4 designation
Blackbird	142	5	Green	N/A
Blue Tit	21	2	Green	N/A
Bullfinch	3	2	Green	N/A
Chaffinch	80	9	Green	N/A
Dunnock	30	5	Green	N/A
Fieldfare	17	100	Green	N/A
Goldfinch	3	3	Green	N/A
Great Tit	7	6	Green	N/A
Hooded Crow	3	1	Green	N/A
Jackdaw	10	4	Green	N/A
Jay	17	18	Green	N/A
Lesser Redpoll	3	2	Green	N/A
Long-tailed Tit	1	2	Green	N/A
Magpie	1	1	Green	N/A
Mistle Thrush	5	7	Green	N/A
Pheasant	5	3	Green	N/A
Pied Wagtail	25	7	Green	N/A
Robin	3	4	Green	N/A
Rook	18	3	Green	N/A
Sky Lark	2	3	Green	N/A
Starling	51	2	Amber	Breeding
Stonechat	14	71	Green	N/A
Tree Sparrow	3	1	Amber	Breeding
Winter Wren	1	4	Green	N/A
Wood Pigeon	1	1	Green	N/A

6.3.5.5.3 Breeding Season Surveys

To determine which species are breeding within the site, combined surveys were conducted, including preliminary barn owl assessment, a nighttime thermal survey and several breeding walkover surveys (O'Brien and Smith).

Table 6.8 Summary of Breeding Season Species of Interest Results

Species	No. of observations	Max no. observed	BoCCI4	Season for BOCCI4 designation	Confirmed Breeding?
Barn owl	1	2	Red	Breeding	Yes
Buzzard	8	1	Green	N/A	No

Goldcrest	11	1	Amber	Breeding	No
Golden Plover	1	1	Red	Breeding/Wintering	No
Great Black-backed Gull	1	1	Green	N/A	No
House Martin	5	6	Amber	Breeding	No
Little Grebe	2	3	Green	N/A	No
Mallard	1	2	Amber	Breeding/Wintering	No
Meadow Pipit	65	11	Red	Breeding	Yes
Mute Swan	2	2	Amber	Breeding/Wintering	No
Northern Lapwing	2	1	Green	N/A	No
Snipe	1	1	Red	Breeding/Wintering	No
Teal	2	2	Amber	Breeding/Wintering	No
Willow Warbler	16	1	Amber	Breeding	No
Yellowhammer	64	3	Red	Breeding	No

Table 6.9 Summary of Breeding Season Non-Target Results

Species	No. of observations	Max no. observed	BoCCI4	Season for BOCCI4 designation	Confirmed Breeding?
Blackbird	218	4	0	0	Yes
Blackcap	87	2	0	0	No
Blue Tit	30	2	0	0	No
Bullfinch	1	1	0	0	No
Chaffinch	248	3	0	0	Yes
Chiffchaff	15	1	0	0	No
Dunnock	43	2	0	0	Yes
Goldfinch	34	8	0	0	No
Great Tit	15	2	0	0	Yes
Greenfinch	10	2	Amber	Breeding	No
Hooded Crow	3	2	0	0	No
Jackdaw	11	7	0	0	No
Linnet	33	7	Amber	Breeding	Yes
Long-tailed Tit	3	2	0	0	No
Magpie	3	2	0	0	Yes
Mistle Thrush	17	2	0	0	No
Moorhen	1	1	0	0	No
Pheasant	2	1	0	0	No
Pied Wagtail	8	2	0	0	No
Raven	11	4	0	0	No
Reed Bunting	2	1	0	0	No
Robin	128	2	0	0	Yes
Rook	5	6	0	0	No
Sky Lark	20	2	0	0	No
Song Thrush	56	2	0	0	
Starling	28	12	Amber	Breeding	Yes
Tree Sparrow	25	4	Amber	Breeding	Yes

Species	No. of observations	Max no. observed	BoCCI4	Season for BOCCI4 designation	Confirmed Breeding?
Winter Wren	205	1	0	0	No
Wood Pigeon	42	7	0	0	No

6.3.5.5.4 Nighttime Thermal Surveys

Thermal Surveys were conducted in order to assess the use of the site by wintering wader species, particularly Golden Plover. Most commonly found species during these surveys was snipe, with 39 Observations of Snipe during nighttime surveys, mostly in Section 4 of the site to the North.

Table 6.10 Summary of Thermal Survey Results

Species	No. of observations	Max no. observed	BoCCI4	Season for BOCCI4 designation
Golden Plover	3	2	Red	Breeding/Wintering
Meadow Pipit	1	5	Red	Breeding
Snipe	39	16	Red	Breeding/Wintering
Song Thrush	1	3	Green	N/A
Woodcock	3	2	Red	Breeding

6.3.5.5.5 Hinterland Surveys

Hinterland surveys were conducted monthly, in order to examine the connectivity of the subject site to the surrounding lands. Areas of high ornithological value were established through a desktop study followed by ground truthing. February's hinterland survey consisted of the assessment of Golden Plover Habitat with a 5km area based on the results of this desktop study. Surveys were conducted in lands thought to have high potential for species of interest, Golden Plover, Whooper Swan, Snipe and Woodcock. During the surveys, Golden Plover, Whooper Swan, Curlew, Northern Lapwing and Tufted Duck were found to be using lands to the south of the site.

The majority of Hinterland activity surrounding the site was located in the wetlands to the south of site, where multiple water bird species were observed interacting with these lands, including Tufted Duck, Mallard, Whooper Swan and Mute Swan.

Lapwing were discovered adjacent to these lands, with observations of birds using the quarry lake, located just to the Southwest of the site. Territorial Behaviour was indicative of a breeding pair of Lapwing. Larger flocks of Lapwing were observed further South of the quarry, reaching a maximum size of 235 individuals.

An Area to the East of Section 1, the westernmost section of the site, is labelled as "Construction Area" below in Figure 6.5, this is the location of the construction works being

conducted ancillary to the construction of the main substation for this site and is no longer suitable habitat for species of interest in this site and was disregarded in the transect surveys conducted.

Please refer to Appendix 6.2 for Bird Survey Report.

6.3.6 HABITAT EVALUATION

The ecological value of the site was assessed following the guidelines set out in the Institute of Ecology and Environmental Management's Guidelines for Ecological Impact Assessment (2019) and according to the Natura Scheme for evaluating ecological sites (after Nairn & Fossitt, 2004). Additionally, the TII Guidelines (formerly NRA) for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009) outlines the methodology for evaluating ecological impacts. Judgements on the evaluation were made using geographic frames of reference, e.g. European, National, Regional or Local, see Table 6.11 below.

Due cognisance of features of the landscape which are of major importance for wild flora and fauna, such as those with a "stepping stone" and ecological corridors function, as referenced in Article 10 of the Habitats Directive were considered in this assessment.

Table 6.11 Details of TII Guidelines (formerly NRA) for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009)

Ecological valuation: Examples	County Importance:
International Importance: - European Site including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation. - Proposed Special Protection Area (pSPA). - Site that fulfills the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended). - Features essential to maintaining the coherence of the Natura 2000 Network.⁴ - Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive. - Resident or regularly occurring populations (assessed to be important at the national level)⁷ of the following: - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive. - Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971). - World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972). - Biosphere Reserve (UNESCO Man & The Biosphere Programme). - Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979). - Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979). - Biogenetic Reserve under the Council of Europe. - European Diploma Site under the Council of Europe. - Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).⁶ National Importance: - Site designated or proposed as a Natural Heritage Area (NHA). - Statutory Nature Reserve. - Refuge for Fauna and Flora protected under the Wildlife Acts. - National Park. - Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park. - Resident or regularly occurring populations (assessed to be important at the national level)⁷ of the following: - Species protected under the Wildlife Acts; and/or - Species listed on the relevant Red Data list. - Site containing 'viable areas'⁸ of the habitat types listed in Annex I of the Habitats Directive.	- Area of Special Amenity.⁹ - Area subject to a Tree Preservation Order. - Area of High Amenity, or equivalent, designated under the County Development Plan. - Resident or regularly occurring populations (assessed to be important at the County level)¹⁰ of the following: - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; - Species protected under the Wildlife Acts; and/or - Species listed on the relevant Red Data list. - Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance. - County important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or Local BAP;¹¹ if this has been prepared. - Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county. - Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level. Local Importance (higher value): - Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared; - Resident or regularly occurring populations (assessed to be important at the Local level)¹² of the following: - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; - Species protected under the Wildlife Acts; and/or - Species listed on the relevant Red Data list. - Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality; - Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value. Local Importance (lower value): - Sites containing small areas of semi-natural habitat that are of some local importance for wildlife; - Sites or features containing non-native species that are of some importance in maintaining habitat links.

There will be earth movement and construction work associated with the Data Centre aspect of the Proposed Development. However, these works will be confined to the central western portion of the site where surface water goes to ground.

There will be earth movement during site preparation for the Solar Panels, however, there will be no discharge of silt laden or contaminated surface water to the Kiltotan Stream or Castlejordan River downstream.

There are only two main crossings (Bridge 1 and 2) and these are clear span, with no interaction with the water course below, i.e. the Kiltotan-Collinstown stream.

Other proposed crossings of minor field drains will be served by placement of short sections of round precast concrete culvert with minimal intervention in the field drain.

The possibility of contaminated surface water reaching the River Boyne is extremely low given the design of the solar panels to be set back from all water courses, the very large distance downstream over 30 river km and the high degree of dilution in that distance.

To this end, the River Boyne and two associated European sites are considered to be outside the Zone of Influence of the Proposed Development.

Additionally, the proposed development design includes SuDS features to attenuate surface water. Thus, the potential for downstream impacts is considered highly unlikely.

Given the above analysis, it is considered that there will be no potential for significant effects on any European sites considered and therefore potential effects on European sites can be excluded at the screening stage.

The open field habitats are considered of low biodiversity value at a local level as are the internal hedgerows.

There are no rare or protected habitats recorded in the study areas. Overall, the proposed development areas are of Low Local Ecological Value with Treelines of higher local value.

6.4 POTENTIAL EFFECTS ON BIODIVERSITY

6.4.1 POTENTIAL DIRECT EFFECTS

6.4.1.1 Terrestrial Habitats

The open field habitats are considered of low biodiversity value at a local level as are the internal hedgerows. The central dividing Hawthorn hedgerow is maintained at a very low height and there would be a loss of c. 250m of this hedgerow which is not significant.

There are no rare or protected habitats recorded in the study areas. Overall, the proposed development area is of Low Local Ecological Value with outgrown Hedgerows and Treelines being of High Local Ecological Value.

6.4.1.2 Aquatic Habitats

Water courses were assessed for fisheries value in terms of potential foraging and food sources for otters. Fisheries value determination is based on a broad appraisal/overview of the upstream and downstream habitat at each site. This was undertaken to evaluate the wider contribution to salmonid and lamprey spawning and general fisheries habitat. River habitat surveys and fisheries assessments were also carried out utilising elements of the approaches in the River Habitat Survey Methodology (Environment Agency, 2003⁴⁰) and Fishery Assessment Methodology (O'Grady, 2006⁴¹) to broadly characterise the stream sites (*i.e.* channel profiles, substrata *etc.*).

The Castlejordan Stream is a relatively small water course, more of a farmland stream rather than a river. It has a mud/clay substrate for much of its course and its banks are heavily vegetated in sections with adjacent Hawthorn and Bramble. It has no fisheries value and limited value for otter usage. It joins the Rochfortbridge Stream downstream and east of Rochfortbridge and flows on to the Yellow River flowing through large areas of former Bord na Mona peatland and on to the River Boyne not reaching the River Boyne European sites until east of the Royal Canal over 30km downstream.

The most recent EPA water quality data (2024) for the Castlejordan Stream are recorded upstream of that section of the solar farm at Mongagh Bridge to the west as Q3 'Poor' and similarly downstream of Rochfortbridge again as Poor. This status indicates 'Slight pollution' and is 'Unsatisfactory'. The Q value increases marginally to Q3-4 'Moderate'

⁴⁰ Environment Agency (2003) River Habitat Survey in Britain and Ireland. Field Survey Guidance Manual: 2003 Version (2022 Reprint).

⁴¹ O'Grady, M.F. (2006). Channels and challenges: enhancing Salmonid rivers. Irish Fresh- water Fisheries Ecology and Management Series: Number 4. Central Fisheries Board, Dublin.

downstream of the peatland areas at Baltinoran Bridge, most likely due to dilution factors. This status indicates 'Moderate pollution' and is 'Unsatisfactory'.

The Kiltonan stream is largely channelised in the portion of the site where the solar farm is proposed and has a mud/peaty substrate. It has no fisheries value and no value for otter usage. The Kiltonan Stream is not monitored by the EPA. It joins the Castlejordan and the above record at Baltinoran Bridge is the nearest and most recent indication of water quality.

The drainage ditches recorded have a predominantly mud/clay substrate. They have no fisheries value and no value for otter usage.

There are only two main crossings proposed (Bridge 1 and 2) and these are clear span, with no interaction with the water course below, i.e. the Kiltotan stream.

Other proposed crossings of minor field drains will be served by placement of short sections of round precast concrete culvert with minimal intervention in the field drain.

There is a very tentative pathway from the Solar Farm aspect of the Proposed Development via the Castlejordan and Yellow River which flows northeast to the River Boyne albeit at a very large distance downstream, over 30 river km.

The main lamprey populations in the River Boyne are currently protected within the existing SAC boundary area⁴².

Salmon spawn in clean gravels. There is restricted habitat for salmon in the Boyne and the water courses located adjacent to the Proposed Development do not support spawning habitat.

6.4.1.3 Otters

The water courses located adjacent to the Proposed Development do not support suitable foraging habitat for Otters.

There will be no direct or indirect impact on otters.

6.4.1.4 Badgers

There will be no direct or indirect impact on badgers.

⁴² O'Connor W. (2006) A survey of juvenile lamprey populations in the Boyne Catchment. Irish Wildlife Manuals, No. 24 National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

6.4.1.5 Non-Volant Mammals

There will be no direct or indirect impact on mammals such as deer, pine marten, hares or foxes.

6.4.1.6 Birds

Potential direct effects on breeding birds through loss of internal hedgerow can be avoided by appropriate timing.

Potential direct effects on Birds are considered in terms of (a) Displacement and barrier effect and (b) Direct Habitat Loss.

The majority of impact determinations for bird species recorded were low or very low with the exception two species outlined in Table 6.12 below.

Table 6.12 Impacts on bird species of interest

Species	Potential Impacts		Duration and Magnitude of potential impact	Frequency and reversibility	Magnitude and Significance of effect
Barn Owl	Direct Habitat Loss	Barn owl were found to roost within the site. Barn owl are not strongly territorial, with home ranges regularly overlapping. Barn owl nest sites have been recorded less than 350m apart. See mitigation section below for further details. Few studies have been conducted on the impacts of solar arrays on barn owls. The Barn owl trust UK state; Ground mounted solar arrays <i>"present a negligible collision risk and do not electrocute, dazzle or burn Barn Owls. In fact, solar PV 'farms' have the potential to be of great benefit to Barn Owls as the array frameworks are typically at a height from which Barn Owls can perch-hunt."</i> (Trust, 2025).	Permanent, neutral	Occurs once, irreversible	The magnitude of the impact is assessed as Very Low. moderate sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted
	Displacement and barrier effect	A breeding site was found during nighttime surveys. (Goodship, 2022) states Barn owl have a low sensitivity to disturbance and suggests a 50 to 100m buffer zone during the breeding season. (Shawyer, 2011) suggests a disturbance risk of 175m for heavy construction works . The breeding site lies within the site boundary thus disturbance from the development may impact this species. With the creation of breeding season buffer disturbance impacts can be avoided - see mitigation	Temporary and of negligible magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of the impact is assessed as Very Low. Moderate sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted
Buzzard	Direct Habitat Loss	The development footprint is dominated by improved grassland and tillage with associated hedgerows and treelines, providing suitable breeding and foraging habitat for the species. While breeding surveys did not confirm breeding, it is likely this species will breed within the site at some stage. Due to mitigation by design the majority of treelines and hedgerows will be retained thus no net loss of breeding habitat is anticipated. The placement of solar panels on grassland will result in a change of land use of hunting habitat for the species. Given passerines are likely to remain unaffected by the presence of solar panels no net loss of prey species is anticipated.	Permanent, slight negative	Occurs once, irreversible	The magnitude of impact is assessed as Low. Low sensitivity species + Low Impact = Very Low effect significance. No likely significant effects at a local level are predicted

Species	Potential Impacts		Duration and Magnitude of potential impact	Frequency and reversibility	Magnitude and Significance of effect
	Displacement and barrier effect	There is the potential of disturbance to breeding Buzzard through construction phase solar panel arrays, or because the construction activities will disturb the birds and displace them from the area. Foraging and commuting birds may temporarily avoid construction areas owing to the noise and increased activity. Construction of solar farms does not require heavy construction activities with solar stands bored into soil. Based on continued bird surveys through the construction phase it is proposed to identify breeding sites and create a 150m buffer surrounding the zone (Goodship, 2022). Construction will be avoided here until fledging has occurred.	Temporary and of low magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of impact is assessed as Low. Low sensitivity species + Low Impact = Very Low effect significance. No likely significant effects at a local level are predicted
Golden Plover	Direct Habitat Loss	30 sightings from within site (max of 262 birds interacting with site); Higher numbers observed in the surrounds. Within the overall site section 1 had most sightings. This species favours stubble and grassland with a very short sward. In total it is predicted that 35.34 Ha of Habitat will be lost during the implementation of the current proposed development. This Corresponds to a habitat reduction of 1.5% within the 5km surrounding area of the site. Overall, the site was used by smaller flock numbers in comparison to those found in the hinterland, although hinterland figures are not of national importance.	Permanent and of high magnitude and will result in long-term effect.	Occurs once, long term	The magnitude of the impact is assessed as low. High sensitivity species + low Impact = low effect significance. The low number of Golden plover using section 2 are likely to be effected however there is more favourable habitats in the area.
	Displacement and barrier effect	The IECS Toolkit ²⁶ Invalid source specified. suggests that golden plover is of moderate sensitivity to disturbance. There is the potential of disturbance to wintering Golden Plover located onsite through construction phase activities. Golden Plover showed the highest level of activity in the Western portion of the site. Based on wintering surveys, tillage in this section will be retained to ensure access to suitable habitat for this species. Construction activity in this zone will be limited to time when the species is not present.	Temporary and of low to negligible magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of impact is assessed as Low. High sensitivity species + Low Impact = Low effect significance. No likely significant effects at a local level are predicted

Species	Potential Impacts		Duration and Magnitude of potential impact	Frequency and reversibility	Magnitude and Significance of effect
Kestrel	Direct Habitat Loss	The development footprint is dominated by improved grassland and tillage with associated hedgerows and treelines, providing suitable foraging habitat for the species. 21 observations of Kestrel were noted during surveys, 14 of which were determined to be interacting with the site. Kestrel can nest in a variety of substrates such as rock ledges, old corvid stick nests, bird boxes, buildings etc. Due to mitigation by design only minor impacts will occur on treelines and hedgerows thus no net loss of breeding habitat is anticipated. The placement of solar panels on grassland will result in a change of land use of hunting habitat for the species. Given passerines are likely to remain unaffected by the presence of solar panels no net loss of prey species is anticipated. No evidence of breeding kestrel was found.	Permanent, slight negative	Occurs once, irreversible	The magnitude of impact is assessed as Low. Medium sensitivity species + Low Impact = Low effect significance. No likely significant effects at a local level are predicted
	Displacement and barrier effect	There is the potential of disturbance to breeding Kestrel through construction phase solar panel arrays, or because the construction activities will disturb the birds and displace them from the area. Foraging and commuting birds may temporarily avoid construction areas owing to the noise and increased activity. Construction of solar farms does not require heavy construction activities with solar stands bored into soil. Construction phase breeding bird surveys will identify if breeding kestrel and create a 200m buffer (NatureScot 2022) where construction will be delayed until after fledging.	Temporary and of low magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of impact is assessed as Low. Medium sensitivity species + Low Impact = Low effect significance. No likely significant effects at a local level are predicted
Meadow Pipit	Direct Habitat Loss	The development footprint is dominated by improved grass and tillage, which provides some suitable nesting, roosting and foraging habitat for the species. Meadow pipit was observed 3 times during VP's, interacting with the site only twice. This species was noted in much higher numbers during breeding bird surveys and was observed 66 times (A single confirmed breeding onsite and 58 contacts with Possible or Probable Breeding). The majority of the site will still be used as grassland post construction thus this species ability to occupy the site will remain.	Permanent and of medium magnitude	Occurs once, irreversible	The magnitude of the impact is assessed as Low. Medium sensitivity species + Low to medium Impact = Low effect significance. No likely significant effects at a local level are predicted

Species	Potential Impacts		Duration and Magnitude of potential impact	Frequency and reversibility	Magnitude and Significance of effect
	Displacement and barrier effect	There is the potential of disturbance to breeding meadow Pipit because the construction activities will disturb birds and displace them from the area. Based on continued bird surveys through the construction phase it is proposed to identify breeding sites and create a 50m buffer surrounding the zone (50m buffer is based on IECS Toolkit26). Works will avoid key breeding periods with works continuing after fledging.	Temporary and of negligible magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of the impact is assessed as very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted
Snipe	Direct Habitat Loss	The development footprint is dominated by improved grassland, which provides some suitable nesting, roosting and foraging habitat for the species particularly close to patches of wet grassland in section 4. Dedicated breeding wader surveys show the site was not used as a breeding site for this species. Post construction, the hydrological regime of the site will remain the same thus little long-term impacts are expected.	Long term slight Negative	Occurs once, irreversible	The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted
	Displacement and barrier effect	Some displacement may occur. Pierce-Higgins et al (2012) note that snipe densities declined to the order of ca. 50% within 500 metres of turbines at wind farms during construction. Construction activities will be limited to the development footprint so direct disturbance effects will not extend beyond the works areas. There is potential for indirect disturbance to roosting (and potentially breeding) snipe from noise and visual stimuli associated with construction activities. Construction phase breeding surveys will re-survey lands and should breeding snipe be found a disturbance zone of 400m (BES, 2020) will be put in place until fledging has occurred.	Temporary and of low to negligible magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of impact is assessed as Medium. Medium sensitivity species + Low Impact = Low effect significance. No likely significant effects at a local level are predicted

Species	Potential Impacts		Duration and Magnitude of potential impact	Frequency and reversibility	Magnitude and Significance of effect
Yellowhammer	Direct Habitat Loss	The development footprint in section 1 is dominated by tillage with associated treelines and hedgerows, which provides some suitable nesting, roosting and foraging habitat for the species. The proposed development will maintain existing hedges and trees thus no loss of nesting habitat will occur for this species. The proposal will result in a large reduction of tillage created within the site as grassland will replace tillage underneath solar panels. Given the potential impacts of habitat loss, a mitigation strategy has been put in place to create significant areas of bird crop cover (11.16Ha) within sections 1 and 2. This crop will not be harvested so all grain will remain available for passerines. These areas will be resown every year for the lifespan of the development thus ensuring a food source within the site. The addition of bird crop cover in section 2 will allow for the expansion of Yellowhammers range into these fields. Monitoring of Yellowhammer numbers will continue for three years post construction. The monitoring program will identify if impacts are low or medium within the site. Should numbers of breeding Yellowhammer fall post construction other strategies will be employed to aid Yellowhammer in the locality. One such measure being the long term leasing of improved grassland adjacent to the site and converting to tillage.	Permanent and of medium magnitude	Occurs once, irreversible	The magnitude of the impact is assessed as Medium. Medium sensitivity species + high to medium Impact = medium to Low effect significance within the site. Low effect for Yellowhammer within the locality.
	Displacement and barrier effect	There is the potential of disturbance to breeding Yellowhammer because the construction activities will disturb birds and displace them from the area. Based on continued bird surveys through the construction phase it is proposed to identify breeding sites and create a 50m buffer surrounding the zone. Works will avoid key breeding periods with works continuing after fledging.	Temporary and of negligible magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted

6.4.2 POTENTIAL INDIRECT EFFECTS

There are only two main crossings (Bridge 1 and 2) and these are clear span, with no interaction with the water course below, i.e. the Kiltotan Stream.

Other proposed crossings of minor field drains will be served by placement of short sections of round precast concrete culvert with minimal intervention in the field drain.

The possibility of contaminated surface water reaching the River Boyne is extremely low given the design of the solar panels to be set back from all water courses, the very large distance downstream over 30 river km and the high degree of dilution in that distance.

To this end, the River Boyne and two associated European sites are considered to be outside the Zone of Influence of the Proposed Development.

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.

There are only three Special Conservation Interest Annexed Bird species listed for European sites in the zone of influence. Given, there are no supporting habitats for two of (Pochard and Tufted Duck) and limited supporting habitats for Coot at the Proposed Development site and the above listed design features, there are no predicted negative effects on these birds.

Guidance on lighting has been based on the Bats & Lighting document: (BCI, 2018) and the Bats and artificial lighting in the UK Guidance Note 08/18 (BC T, 2018) and Guidelines for consideration of bats in lighting projects. EUROBATS Publication Series No. 8 (Voigt, 2018). Lighting can alter the behaviour of bats and the insects they prey on.

6.5 MITIGATION MEASURES

6.5.1 MITIGATION MEASURES FOR BIRDS

Potential impacts on birds will be avoided by cutting of vegetation outside the bird nesting season March 1st to August 31st. If this cannot be enforced then the site will be surveyed for the presence of nesting birds and/or nests prior to cutting and if none are recorded the vegetation may be removed within 48 hours.

The following measures are taken from the Bird Report:

- An Ornithologist ECoW will be employed during the construction phase to micromanage construction locations to avoid disturbance on key species.
- Whilst halting the construction to times outside the wintering period was considered the scale of works was not considered impactful enough to negatively impact wintering birds both within the site and in the surrounds. Rather an ECoW will be involved in the construction and limit construction in areas based on when they are of value to birds. The monitoring section above outlines how bird surveys will continue during the construction phase and based on these results micro exclusion zones can be put in place. Table 4-3 goes through potential buffer zones and timings when works may need to be halted here. This method based on co-operation between overseeing ornithologist, site manager and NPWS / Local Authority representative will allow works to continue throughout the year whilst also avoiding disturbances to key species at vulnerable times.
- Minimum 5m buffer for drain ditches, hedgerows and tree lines.
- The proposed development aims to retain as much tree lines and hedgerows as possible. In order to allow access, there will be 4.5m of guaranteed internal hedgerow loss within the red line boundary. Mature hedgerow will be maintained onsite and hedgerow will be planned in proportion to the Hedgerow removed during the construction phase of the project
- The proposed development will result in significant loss of tillage. This tillage was not utilised by breeding waders. Wintering snipe and Possible Breeding Snipe utilised grassland and wet grassland thus should not be impacted in this respect. The only species significantly impacted from this transformation will be Yellowhammer. As mitigation for the loss of feeding habitat for yellowhammer

several areas totaling 11.16Ha have been designated for wild bird cover planting. A section of land in section 1 and a plot of land in section 3 will be maintained for these crops. While the overall loss of tillage is greater, these wild bird cover areas benefit from not being harvested thus are of significantly higher benefit to passerines. The addition of grains to section 2 will allow for the expansion of Yellowhammer's range into this area.

The bird crop planted areas (see figure 6.11 below) will follow the below regime;

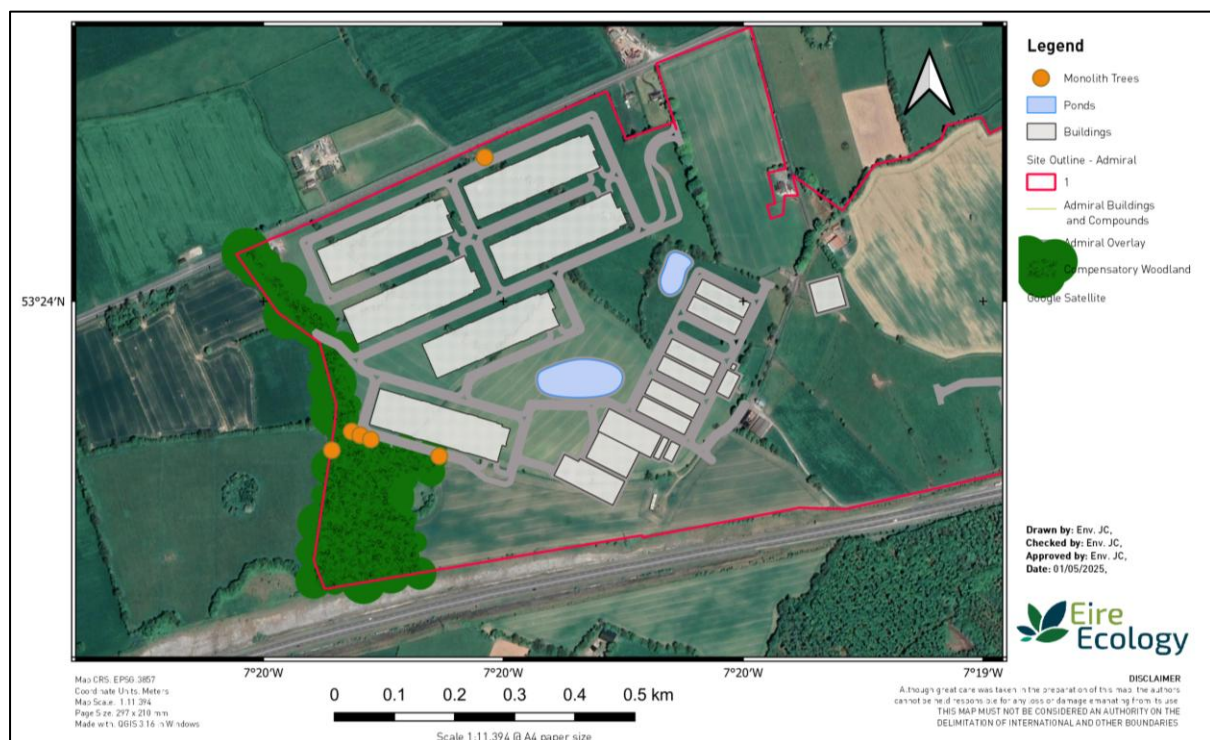
- Yellowhammer require large cereal grains thus wild bird cover will consist primarily of oats, barley (65%) and a smaller portion of linseed (10%) and cornflower annuals (10%) (mayweed, cornflower, corncockle). The remaining 2Ha (15%) should be a native Irish provenance annual wildflower (15% or 2Ha). Heritage grains are recommended.
- These margins and designated areas will be planted each year by the 31st of May.
- No pesticides will be used.
- Crops will not be harvested
- Before replanting, livestock can clear areas from the 15th until the 30th of March. Livestock should not enter these areas at any other time of year.
- The wildflower component should be 25 to 50cm of width along field margins sown with perennial wildflower (this area is not to be plowed as they plants persist once sown correctly). This mix should correspond to Design By Nature's WF03 seed mix (<https://www.wildflowers.ie/mixes/wf/wf03.htm>)
- A Yellowhammer monitoring program will be implemented for years 1 to 3 post construction. If a significant decline of breeding Yellowhammer is found additional measures will be implemented to prevent a decline in population. One such measure is to rent out lands adjacent to Section 1 and plant this area with tillage, transformed from improved grassland.
- A construction exclusion zone of 100 m will be implemented where breeding barn owl where observed nesting. Construction should not occur during breeding season at this location.

6.5.2 MITIGATION MEASURES FOR BATS

In order to minimise the extent of light spill onto perimeter habitats, all lights that are pole mounted will be directional and/or cowled to ensure that light is directed downward and inwards. Lights will be programmed or otherwise to be off unless required. The following measures are taken from the Bat Report:

- Tree-felling should ideally be undertaken in the period September to late October/early November, however, can also be conducted from late January until the end of February. Outside of these times an EcOW will need to first verify if impacts will occur. All trees recorded as potential roost features (PRF) will require an additional at height survey prior to felling.
- To compensate for the loss of PRF features, veteranisation of remaining trees will create new features suitable for roosting bats. Six trees have been marked to be retained as monolith features to assist in the development of the compensatory woodland. The tree to the north will be retained if possible. This tree is an ash with significant dieback and is at the edge of the proposed road. This tree would have its crown removed and additional PRF cut in. The canopy of these trees will be cut and roost features will be cut into the trunks thus providing PRF features in trees without any. Retaining these veteran trees will expedite the effectiveness of the mitigation measures by providing potential satellite roost locations and maintaining important continuity in the connectivity of treelines onsite.

Figure 6.3 DC facility layout with retained monolith trees



- New woodland will be created which will compensate for the loss of feeding grounds in section 1. See Section 6.5.3 below.
- While a bat roost was not found in building 1, the attic of this building will be converted to make it more suitable for roosting bats. Three bat slates will be installed in the roof. In the attic, baffles will be created and 3 x 1FF Schwegler (or equivalent) bat boxes installed.

- Where lighting is unavoidable during construction, low-intensity lighting and motion sensors will be used to limit illumination. Exterior lighting, during construction, will be designed to minimize light spillage, thus reducing the effect on areas outside the proposed development, and consequently on bats i.e. Lighting will be directed away from mature trees/treelines around the periphery of the site boundary and woodland areas to minimize disturbance to bats. Directional accessories will be used to direct light away from these features, e.g. through the use of light shields (Stone, 2013). The luminaries will be of the type that prevent upward spillage of light and minimize horizontal spillage away from the intended lands.
- The aim of the lighting plan is to create three lighting zones in section 1; a dark zone (not impacted by lights), a low lux zone and a standard lit area. Figure 6.4 shows these areas.

6.5.2.1 Dark zone

- The western boundary of the site (by building 1) showed highest bat activity during surveys. This entrance and the proposed woodland strip will remain unlit. The proposed road here is a secondary emergency road and does not require lighting. The new woodland and ponds will also remain unlit.

6.5.2.2 Low light zone

- This area covers some sections of road where connectivity between the ponds and the woodland is desirable. Along these roads 6m high lights are proposed with a colour of 4000k thus not attractive to invertebrates. These lights will have motion sensors installed so will only operate when required. For much of the night, these areas will remain unlit.

6.5.2.3 Standard areas

- The main buildings are considered standard areas where lighting is required. These areas are not of high value to bats.

Figure 6.4 Lighting Zones

- Some research suggests solar panels are a new source of polarized light pollution and can be attractive to insects, thus also insect feeding bat species. 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. As such, all panels will be fitted with a non-polarising white grid partitioning.
- Retention of all hedgerows and treelines in sections 2, 3 4 and 5.

6.5.3 MITIGATION MEASURES FOR BADGERS

Pre-construction checks will be undertaken in accordance with best practice, and appropriate buffers applied should any setts be identified.

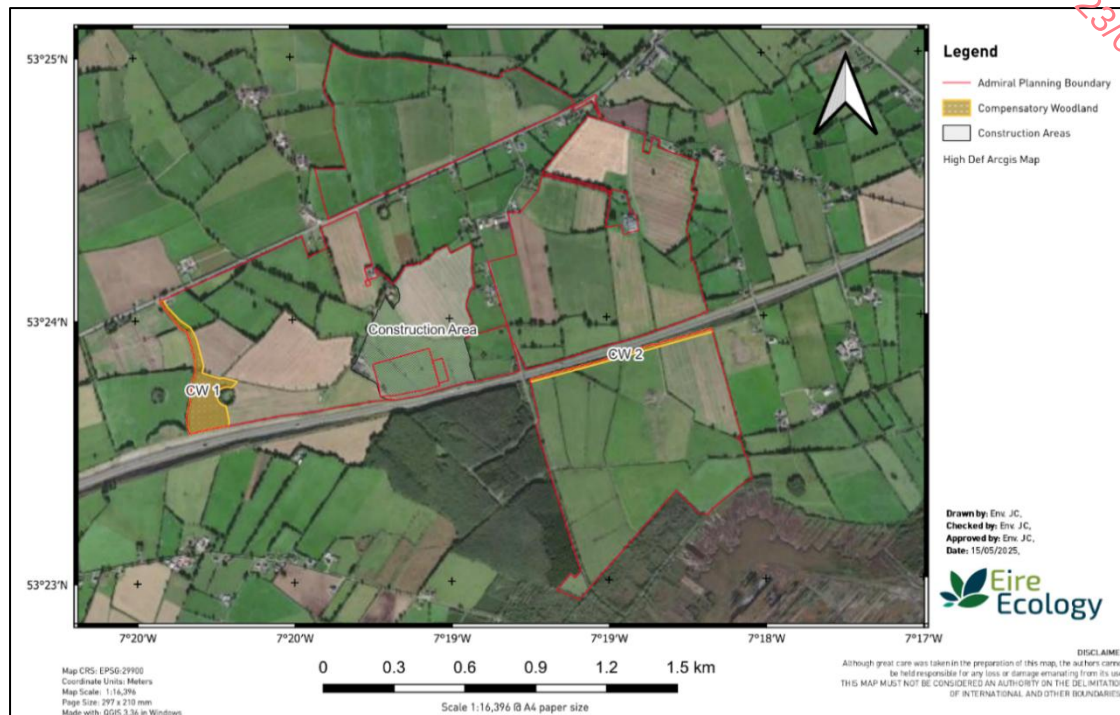
Security fencing will include mammal gates or a gap of at least 10cm at the bottom to allow free movement of badgers and other mammals through the site.

6.5.4 MITIGATION MEASURES FOR HABITATS

Compensatory woodland will be planted in Section 1 and 4 to mitigate the loss of linear features onsite during the construction phase. Two areas (CW1 and CW2) are detailed below including a plot located adjacent to the ring fort feature in the western section of the data centre site and an additional strip of woodland along the southern boundary of the motorway is also proposed in order to facilitate woodcock and Snipe in the Southern

section of the site. The total area of proposed compensatory woodland planting is 5.34 ha, as illustrated in Figure 6.2 of the Bat Survey Report.

Figure 6.5 Proposed Compensatory Woodland



6.6 RESIDUAL IMPACTS

Specific local mitigation measures include the avoidance of cutting of vegetation during the bird nesting season with regard to the construction phase. The remaining hedgerow habitat to be conserved in site. There will be a loss of relatively low value local habitats including short sections of low value gappy hedgerow, scrub, grassland and overgrown drainage ditches. The overall effect is considered neutral, imperceptible, in the short term and will gradually increase in terms of biodiversity nett gain in the long term as new habitats establish over time.

No significant indirect impacts on the habitats associated with rare and protected birds found utilising the site in the wintering and breeding seasons as long as best practice measures such as those outlined in Mitigation and Enhancement are implemented fully. As such residual Impacts on bird species will be low.

With the employment of appropriate mitigation measures with regard to local biodiversity, the Proposed Development will have a positive and long term effect on biodiversity.

6.7 CUMULATIVE EFFECTS

Cumulative effects are described by the EPA as the addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects. In combination effects are considered in the appropriate assessment process as an assessment of the potential adverse effects of a plan or project in combination with other plans or projects. The underlying intention of the in-combination provision is to take account of cumulative effects.

A review of the National Planning Application Database was undertaken. The database was then queried for developments granted planning permission within 1000m of the Proposed Development within the last three years, these are presented in Table 6.13 below

Table 6.13 Planning applications granted permission in the vicinity of the Proposed Development.

Planning Ref.	Description of development	Comments
22247	development and construction of a logistics warehouse at the site of the former site compound for the M6 Motorway project, a site of 2.99 Hectares. The development which will consist of the construction of a logistics warehouse (956.20 sqm) with a maximum ridge height of 9.80 m for the supply and distribution of parts for large plant and machinery and two storey office within the building, covered parts storage area, associated trade counter, car parking, external loading and unloading area, and all associated site works and services including the construction of a realigned site entrance, site services and all associated site works above and below ground to accommodate the proposed works including new treatment system and percolation area	No potential for in-combination effects given the Proposed Development will have no significant effects on Biodiversity.
2360032	retention of existing extension to the front and rear to include on ground floor, kitchen, dining, living area, utility, hot press, boiler, bathroom, bedroom with wardrobe and stairs and on the first floor two bedrooms, bathroom, landing and storage area with 4 velux windows and two chimneys with all ancillary site works	No potential for in-combination effects given the Proposed Development will have no significant effects on Biodiversity.
2360151	development which will consist of the restoration and renovation of the existing Glebe House, its courtyard, stables, hayshed, walled garden and ancillary outbuildings and the reinstatement of the original avenue and entrance, landscaping and all associated site works and services	No potential for in-combination effects given the Proposed Development will have no significant effects on Biodiversity.
2360204	installation of flood lighting to our two, new playing pitches (currently under	No potential for in-combination effects given the Proposed Development will

Planning Ref.	Description of development	Comments
	construction). Permission is also sought to extend our exercise/walkway track to the perimeter of our new pitches complete with exercise stations, lighting and all associated site works	have no significant effects on Biodiversity.
2360253	development which will consist of the: demolition of the existing two-storey school building and its extensions including demolition of two-storey Block 2 (c. 1,894.7 sq.m), single-storey Block 3 (c. 760.4 sq.m), two-storey Block 4 (c. 531.0 sq.m), two-storey Block 5 (c. 1,187.4 sq.m), and two-storey Block 6 (c. 440.6 sq.m) within south-eastern corner of site; removal of all temporary classroom accommodation (c. 720.0 sq.m); partial demolition (c. 1,206.4 sq.m) and refurbishment (c. 550.6 sq.m) of two-storey Block 1 at junction of Castlelost Road and Main Street; extension of Block 1 to provide a new sports facility (c. 891.0 sq.m) (single-storey foyer and double height hall); demolition of 1 no. single-storey extension and 2 no. single-storey outbuildings (totalling c. 128.8 sq.m) to rear of the former Convent of Mercy (a protected structure); refurbishment of the one to three-storey former Convent of Mercy (c. 924.7 sq.m) (a protected structure), including construction of a two-storey (c. 33.0 sq.m) extension to the rear to provide a vertical circulation core for universal access to upper floors; refurbishment of the two-storey former Convent of Mercy House (145.2 sq.m), including construction of a single-storey (c. 14.6 sq.m) extension to the rear to provide universal access; construction of a three-storey school building (c. 9,068 sq.m); relocation of grotto; upgrades to the existing vehicular and pedestrian entrance to the site off Castlelost Road and provision of new school gates; provision of a car park containing 90 no. car parking spaces; provision of 100 no. sheltered bicycle spaces; implementation of traffic management measures including a new pedestrian crossing across Castlelost Road; provision of external play and amenity areas; provision of a garden and reflection area adjacent to the Convent Graveyard (a protected structure); provision of site landscaping, boundary treatment and site lighting; provision of a covered work area, bin stores, storage shelters, and associated drainage, attenuation and other site services; and all related site development works	No potential for in-combination effects given the Proposed Development will have no significant effects on Biodiversity.
2360316	construction of a single storey dwelling and a new domestic entrance onto the public roadway. Permission is also sought to	No potential for in-combination effects given the Proposed Development will

Planning Ref.	Description of development	Comments
	connect to the existing foul sewer mains and all associated site works at the above address	have no significant effects on Biodiversity.
2360317	demolition of the bedroom section and chimneys to the existing dwelling house, the derelict stone storage and turf shed buildings including the dog run area and to construct in its place a new single storey pitched roof extension to the front, side and rear with a flat roof link corridor, including internal and external renovations/alterations as shown all to the existing dwelling house, the decommissioning of the existing septic tank which is to be replaced with a new treatment plant and soil polishing filter, new boundary treatments and all ancillary site works and services. Retention permission is also sought for the as built detached lean-to garage/storage with open carport roof structure	No potential for in-combination effects given the Proposed Development will have no significant effects on Biodiversity.
2360442	development which will consist of (i) the construction of a new Administration/Control Building at a new location within the site in lieu of the IPP Building granted under planning Ref. No. 21/515, (ii) the construction of a new Workshop Building at a new location within the site in lieu of the Administration/Workshop Building granted under Planning Ref. No. 21/515, and (iii) associated minor changes to internal roads, civil engineering, drainage, landscaping, lighting, car parking, and site works. The development alterations are with respect to Planning Ref No. 21/515, which is a development that is for the purpose of an activity requiring an Industrial Emissions Licence from the Environmental Protection Agency (EPA)	No potential for in-combination effects given the Proposed Development will have no significant effects on Biodiversity.
2460053	development which will consist of alterations to the development consented under Westmeath Planning Case Ref. 21/515 (parent permission) and are as follows: (i) reconfiguration of structures and pipework within the above ground installation (AGI) compound, (ii) increase the size of gas oil (secondary fuel) storage tanks and bund and realignment of tanks within the bund, (iii) remove one consented emergency diesel generator from the development layout and reposition of the second consented emergency diesel generator alongside an LV switchroom, (iv) reposition palisade fence associated with ancillary equipment compound approximately 15m to the west, (v) reconfigure and reposition fuel pumps (polishing and forwarding), MCC equipment,	No potential for in-combination effects given the Proposed Development will have no significant effects on Biodiversity.

Planning Ref.	Description of development	Comments
	fire water pump, fire water tank and air compressor adjacent to the southern side of the secondary fuel storage bund, (vi) remove water treatment module and ammonia storage tank from the development layout, (vii) remove two distribution transformers from the development layout and reposition the remaining three consented distribution transformers to the ancillary equipment compound to the west, (viii) remove five gas turbine selective catalytic reduction (SCR) units and associated ancillary components (fans), (ix) reposition of two high voltage (HV) transformers within the HV transformer compound and installation of a third HV transformer in lieu of the HV transformer consented under Planning Permission Ref. 21/532, and (x) associated minor changes to internal roads, civil engineering, drainage, landscaping, lighting, car parking, and site works. The development alterations relate to Westmeath Planning Case Ref. 21/515, which is a development that is for an activity requiring an Industrial Emissions Licence from the Environmental Protection Agency (EPA)	RECEIVED: 23/03/2026
2460131	the upgrade and extension of existing dwelling and to upgrade existing entrance to public road , to replace existing septic tank and soak hole with new septic tank and percolation area, and all associated site works	No potential for in-combination effects given the Proposed Development will have no significant effects on Biodiversity.
2460218	change of use of building from beauty Salon to After school service to include an after school room 1, entrance lobby, kitchen, two w.c.s with lobby, boiler, hot press with play area, bike rack & car parking with all ancillary site works	No potential for in-combination effects given the Proposed Development will have no significant effects on Biodiversity.
2460238	construction of a first floor extension, containing bedroom and bathroom and all associated site works at our family home	No potential for in-combination effects given the Proposed Development will have no significant effects on Biodiversity.

In addition to these listed proposed developments other Projects in the zone of influence considered include:

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

These developments were tested at either AA Screening or Stage 2 AA and significant effects excluded. The Proposed Development will not have a significant effect on local

Biodiversity or on any European site and therefore in-combination effects with these developments can be excluded.

6.8 MONITORING AND FURTHER WORKS

An Ornithologist ECoW will be employed during the construction phase to micromanage construction locations to avoid disturbance on key species.

A Yellowhammer monitoring program will be implemented for years 1 to 3 post construction. If a significant decline of breeding Yellowhammer is found additional measures will be implemented to prevent a decline in population. One such measure is to rent out lands adjacent to Section 1 and plant this area with tillage, transformed from improved grassland.

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.

6.9 SUMMARY OF SIGNIFICANT EFFECTS

There will be no significant effects on designated sites in the potential Zone of Influence of the proposed development.

There will be no significant effects on local biodiversity.

6.10 REFERENCES

- Guidelines for Ecological Impact Assessment in the UK And Ireland Terrestrial, Freshwater, Coastal and Marine Version 1.3 - Updated September 2024 (CIEEM, 2024).
- Department of the Environment, Heritage and Local Government (2010) Guidance on Appropriate Assessment of Plans and Projects in Ireland (as amended February 2010).
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- EC (2018) Managing Natura 2000 sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC.

- EC (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(2) and (4) of the Habitats Directive 92/43/EEC. European Commission, Brussels.
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7 SOILS & GEOLOGY

7.1 INTRODUCTION

There are no changes or updates to this Section of the EIAR.

7.2 METHODOLOGY & SIGNIFICANCE CRITERIA

7.2.1 ASSESSMENT METHODOLOGY

There are no changes or updates to this Section of the EIAR.

7.2.2 ASSESSMENT CRITERIA AND IMPACT ASSESSMENT METHODOLOGY

There are no changes or updates to this Section of the EIAR.

7.2.3 DETERMINING VALUE OF RECEPTOR THROUGH BASELINE STUDIES

There are no changes or updates to this Section of the EIAR.

7.2.3.1 Magnitude of Impacts

There are no changes or updates to this Section of the EIAR.

7.2.3.2 Impact Significance

There are no changes or updates to this Section of the EIAR.

7.2.3.3 Impact Mitigation Measures

There are no changes or updates to this Section of the EIAR.

7.3 DESCRIPTION OF THE DEVELOPMENT

There are no changes or updates to this Section of the EIAR.

7.4 DESCRIPTION OF THE RECEIVING ENVIRONMENT

There are no changes or updates to this Section of the EIAR.

7.4.1 HISTORICAL LAND USE

There are no changes or updates to this Section of the EIAR.

7.4.2 SOILS AND GEOLOGY

7.4.2.1 Desktop Study

There are no changes or updates to this Section of the EIAR.

7.4.3 FIELD WORK

There are no changes or updates to this Section of the EIAR.

7.4.3.1 Boreholes

There are no changes or updates to this Section of the EIAR.

7.4.3.2 Karst

There are no changes or updates to this Section of the EIAR.

7.4.3.3 Geological Heritage

There are no changes or updates to this Section of the EIAR.

7.5 ASSESSMENT OF POTENTIAL ENVIRONMENTAL EFFECTS

There are no changes or updates to this Section of the EIAR.

7.5.1 RECEPTOR SENSITIVITY

There are no changes or updates to this Section of the EIAR.

7.5.2 CONSTRUCTION PHASE

There are no changes or updates to this Section of the EIAR.

7.5.3 OPERATIONAL PHASE

There are no changes or updates to this Section of the EIAR.

7.6 MITIGATION MEASURES

7.6.1 CONSTRUCTION PHASE

There are no changes or updates to this Section of the EIAR.

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7.6.2 DECOMMISSIONING

There are no changes or updates to this Section of the EIAR.

7.7 POSITIVE IMPACTS OF THE DEVELOPMENT

There are no changes or updates to this Section of the EIAR.

7.8 RESIDUAL IMPACTS OF THE DEVELOPMENT

There are no changes or updates to this Section of the EIAR.

7.9 CUMULATIVE EFFECTS

There are no changes or updates to this Section of the EIAR.

7.10 MONITORING AND FURTHER WORKS

There are no changes or updates to this Section of the EIAR.

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8 WATER ENVIRONMENT

8.1 INTRODUCTION

This chapter of the EIAR is updated to reflect changes arising from the response to further information request from Westmeath County Council dated 01 September 2025.

A Revised Stage 3 Flood Risk Assessment (FRA) has been prepared and is provided in Appendix 8.2 to the EIAR.

An additional technical report supporting the findings of the FRA is provided in Appendix 8.3 to the EIAR. This was prepared to satisfy the requirements of Westmeath County Council in response to a request for further information issued on 01 September 2025.

A Water Framework Directive Assessment has been prepared and is provided in Appendix 8.4 to the EIAR.

8.2 METHODOLOGY & SIGNIFICANCE CRITERIA

8.2.1 ASSESSMENT METHODOLOGY

There are no changes or updates to this Section of the EIAR.

8.2.2 ASSESSMENT CRITERIA AND IMPACT ASSESSMENT METHODOLOGY

There are no changes or updates to this Section of the EIAR.

8.2.3 DETERMINING THE VALUE AND SENSITIVITY OF THE RECEPTOR THROUGH BASELINE STUDIES

There are no changes or updates to this Section of the EIAR.

8.2.3.1 Magnitude of Impacts

There are no changes or updates to this Section of the EIAR.

8.2.3.2 Impact Significance

There are no changes or updates to this Section of the EIAR.

8.2.3.3 Impact Mitigation Measures

There are no changes or updates to this Section of the EIAR.

8.3 DESCRIPTION OF PROPOSED DEVELOPMENT

There are no changes or updates to this Section of the EIAR.

8.4 DESCRIPTION OF RECEIVING ENVIRONMENT

There are no changes or updates to this Section of the EIAR.

8.4.1 HISTORICAL LAND USE

There are no changes or updates to this Section of the EIAR.

8.4.2 TOPOGRAPHY

There are no changes or updates to this Section of the EIAR.

8.4.3 HYDROGEOLOGICAL SETTING

8.4.3.1 Groundwater Body

There are no changes or updates to this Section of the EIAR.

8.4.3.2 Bedrock Aquifer

There are no changes or updates to this Section of the EIAR.

8.4.3.3 Aquifer Vulnerability

The Geological Society Ireland (GSI) defines groundwater vulnerability as the natural characteristics of the ground that determine the ease with which groundwater may be contaminated by human activities. In practice, the classification is based on how easily infiltrating water and any contaminants can move downward through soil, subsoil and bedrock to the water table or aquifer. Where the pathway is short, permeable or highly connected, groundwater is more vulnerable; where the pathway is thicker, less permeable and slower, groundwater is less vulnerable.

A moderate vulnerability (M) rating indicates that groundwater has a reasonable degree of natural protection, but contamination can still occur if pollutants are persistently or significantly introduced at the ground surface. Under GSI examples, moderate vulnerability commonly occurs where there is a greater than 10m thickness of moderately permeable till (boulder clay) above the groundwater body. In these settings, the subsoil can slow down percolation and provide some attenuation of contaminants, reducing but not eliminating the risk. As a result, pollutants from poorly maintained septic systems,

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agricultural activities, leaking tanks or other diffuse and point sources may still reach groundwater over time, particularly where local permeability is higher or where preferential flow paths are present.

A low vulnerability (L) rating means that groundwater is well protected by natural geological conditions and that the downward movement of water and contaminants is strongly restricted. GSI examples show this class in areas with around 10 m of low permeability till (boulder clay) overlying the groundwater body. Such low-permeability overburden acts as an effective barrier, limiting recharge rates and significantly reducing the likelihood that contaminants introduced at the surface will penetrate to groundwater. Even so, low vulnerability does not mean zero risk. Contamination may still arise where the protective cover is disturbed, where excavations or poorly constructed boreholes create direct pathways, or where local fractures and sand /gravel lenses increase permeability.

8.4.3.4 Groundwater Flow

There are no changes or updates to this Section of the EIAR.

8.4.3.5 Groundwater Wells and springs

There are no changes or updates to this Section of the EIAR.

8.4.3.6 Groundwater recharge

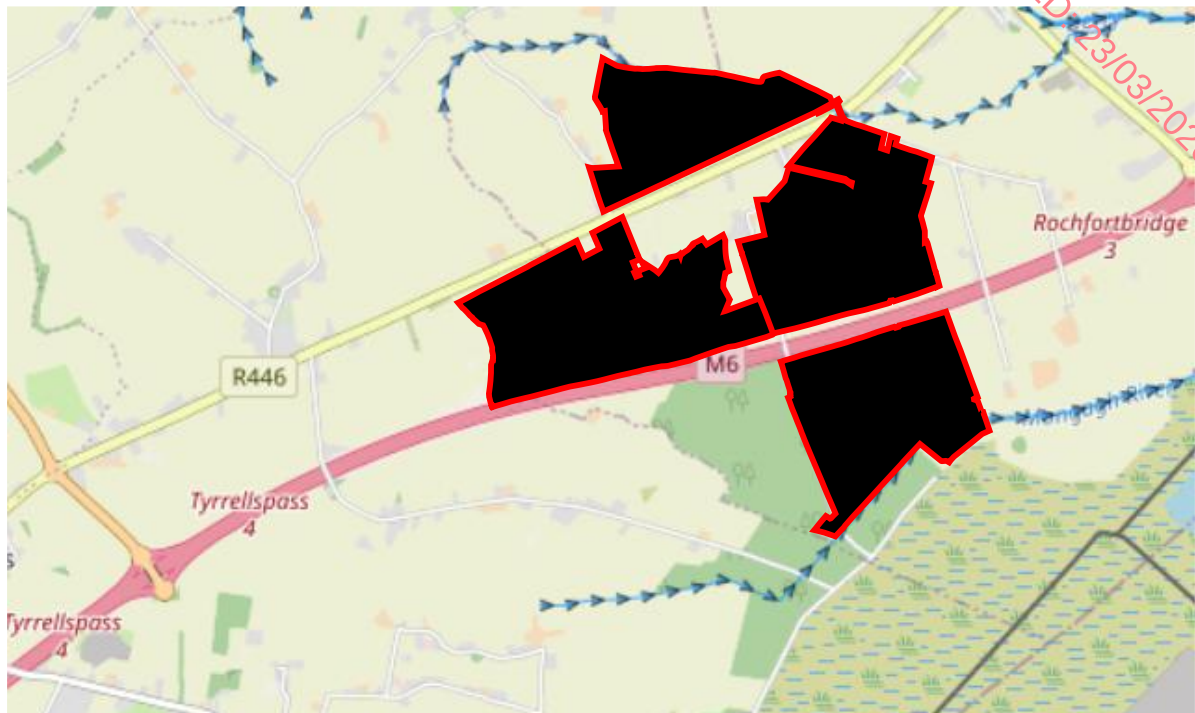
There are no changes or updates to this Section of the EIAR.

8.4.3.7 Flood Risk

A revised flood risk assessment (FRA) was prepared and is provided in Appendix 8.2 to the EIAR.

Figure 8.20 has also be revised to rectify a typographical error illustrating the northern boundary of the solar farm development site.

Figure 8.1 Site location map showing local surface water features. Drainage across the development area flows towards the River Monagh to the southwest.



8.4.3.8 Water Regions /Catchment Identification

There are no changes or updates to this Section of the EIAR.

8.4.3.9 Soil absorption

There are no changes or updates to this Section of the EIAR.

8.5 ASSESSMENT OF POTENTIAL ENVIRONMENTAL EFFECTS

There are no changes or updates to this Section of the EIAR.

8.5.1 RECEPTOR SENSITIVITY

There are no changes or updates to this Section of the EIAR.

8.5.2 CONSTRUCTION PHASE

There are no changes or updates to this Section of the EIAR.

8.5.3 OPERATIONAL PHASE

There are no changes or updates to this Section of the EIAR.

8.6 MITIGATION MEASURES

8.6.1 CONSTRUCTION PHASE

There are no changes or updates to this Section of the EIAR.

8.6.2 OPERATIONAL PHASE

There are no changes or updates to this Section of the EIAR.

8.6.3 DECOMMISSIONING

There are no changes or updates to this Section of the EIAR.

8.7 POSITIVE IMPACTS OF THE DEVELOPMENT

There are no changes or updates to this Section of the EIAR.

8.8 RESIDUAL IMPACTS OF THE DEVELOPMENT

There are no changes or updates to this Section of the EIAR.

8.9 CUMULATIVE EFFECTS

There are no changes or updates to this Section of the EIAR.

8.10 MONITORING AND FURTHER WORKS

There are no changes or updates to this Section of the EIAR.

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9 MATERIAL ASSETS

9.1 INTRODUCTION

There are no changes or updates to this Section of the EIAR.

9.2 ASSESSMENT METHODOLOGY & SIGNIFICANCE CRITERIA

9.2.1 METHODOLOGY

There are no changes or updates to this Section of the EIAR.

9.2.1.1 Desktop Study

There are no changes or updates to this Section of the EIAR.

9.2.1.2 Field Work

There are no changes or updates to this Section of the EIAR.

9.2.2 SIGNIFICANCE CRITERIA

There are no changes or updates to this Section of the EIAR.

9.3 DESCRIPTION OF RECEIVING ENVIRONMENT

There are no changes or updates to this Section of the EIAR.

9.3.1 OWNERSHIP AND ACCESS

There are no changes or updates to this Section of the EIAR.

9.3.2 LANDUSE

There are no changes or updates to this Section of the EIAR.

9.3.3 SERVICES

9.3.3.1 Water and Wastewater

The existing on farm residence and farm activity is served by a groundwater well on site. Similarly foul wastewater from the existing residence is management and treatment by an on-site wastewater treatment system.

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It is proposed to drill three groundwater wells across the site to serve the water requirements of the development proposals which are very low ($<40\text{m}^3$ per day across the DC facility and DER, equivalent to $\sim 0.46\text{l/sec}$)⁴³. Modular water-treatment units will be placed close to each groundwater abstraction point. The unit will house conventional plant, pumps, filtration, disinfection, monitoring and control equipment.

Since submission of the EIAR, Uisce Éireann has issued a Confirmation of Feasibility (CoF) confirming that 10m^3 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 $\leq 40\text{m}^3$ day envelope assessed in the EIAR. The maximum groundwater abstraction will therefore not exceed approximately 30m^3 per day and is anticipated to be approximately 26m^3 per day based on current operational demand calculations. This remains within, and below, the abstraction envelope assessed in the EIAR.

Each data-centre building will have its own local foul network that conveys flows by gravity to a centrally aligned sewer. This then discharges to a pumping station positioned adjacent to the security building near the campus entrance. The duty/standby submersible pumps in the pumping station are sized to limit the off-site discharge to 13.3l/s . Flow is lifted by rising main that tracks towards the main entrance of the project and then east towards Rochfortbridge along the public road (R446). The private network will terminate in a new stand-off manhole from which gravity flow enters the existing Uisce Éireann public foul sewer. All works within the public domain will be carried out under a Road Opening Licence and to Uisce Éireann Standard Details IW-CDS-5030-01.

Foul wastewater generated from IPP Buildings spread across the DER will be discharged to individual sealed holding tanks (each 32m^3) collocated with associated IPP buildings. (proposed due to low occupancy of the plant when operational). The list of locations where foul holding tanks are located across the project's lands are as follows:

- Fuel Cell IPP
- BESS IPP
- Solar IPP
- 220kV IPP
- 33kV IPP

⁴³ Note all abstractions $\geq 25\text{m}^3$ per day but $< 2\,000\text{m}^3$ per day are shall be registered with the EPA; any need for a licence is decided afterwards through the EPA's significance test rather than by a fixed intermediate threshold. (<https://www.epa.ie/our-services/licensing/freshwater--marine/water-abstraction/>)

The holding tanks are proposed due to the low occupancy nature of the IPP buildings (essentially substations). 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. The foul drainage proposals will cater for the wastewater generated by the toilet and wash hand basin provided in each of the IPP buildings. The IPP building will be unmanned save for infrequent inspections and routine maintenance resulting in low rates of foul flow. The holding tanks will be fully watertight with no inlet settlement chamber, no biological treatment and crucially no discharge to ground or water. The system includes a single inlet pipe from the building's gravity drain and are fitted with an air vent and high-level alarm as standard. The alarm will connect back to a control centre in each IPP. Effluent from the tanks will be emptied biannually by a licensed wastewater contractor and taken to a municipal treatment plant.

In accordance with best practice, stormwater arising from development of impermeable surfaces (e.g., roof of buildings, roadways) stormwater will be collected and infiltrated to or attenuated before being discharged at greenfield run-off rates to a nearby watercourse traversing the site.

(Please also refer to Planning Statement for further information related to water and wastewater details provided in response to the further information request issued by Westmeath County Council, dated 01 September 2025.

9.3.3.2 Electricity

There are no changes or updates to this Section of the EIAR.

9.3.3.3 Gas

There are no changes or updates to this Section of the EIAR.

9.3.4 DEMOLITION WORKS

There are no changes or updates to this Section of the EIAR.

9.3.5 SETTLEMENTS

There are no changes or updates to this Section of the EIAR.

9.4 ASSESSMENT OF POTENTIAL ENVIRONMENTAL EFFECTS

9.4.1 DO NOTHING SCENARIO

There are no changes or updates to this Section of the EIAR.

9.4.2 PROPOSED PROJECT

There are no changes or updates to this Section of the EIAR.

9.5 MITIGATION MEASURES

There are no changes or updates to this Section of the EIAR.

9.6 RESIDUAL IMPACTS OF THE DEVELOPMENT

There are no changes or updates to this Section of the EIAR.

9.7 CUMULATIVE EFFECTS

There are no changes or updates to this Section of the EIAR.

9.8 SUMMARY OF SIGNIFICANT EFFECTS

There are no changes or updates to this Section of the EIAR.

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10 AIR QUALITY

10.1 INTRODUCTION

There are no changes or updates to this Section of the EIAR.

10.2 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

There are no changes or updates to this Section of the EIAR.

10.3 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

10.3.1 STUDY AREA

There are no changes or updates to this Section of the EIAR.

10.3.2 IMPACT ASSESSMENT METHODOLOGY

10.3.2.1 Air Quality Assessment Methodology

There are no changes or updates to this Section of the EIAR.

10.3.2.2 Methodology for Assessing Impacts due to Aspergillus

There are no changes or updates to this Section of the EIAR.

10.3.2.3 Methodology for assessing Operation Phase Impacts

There are no changes or updates to this Section of the EIAR.

10.3.2.4 Methodology for Assessing Cumulative Impacts

There are no changes or updates to this Section of the EIAR.

10.3.3 AIR QUALITY STANDARDS

There are no changes or updates to this Section of the EIAR.

10.4 RECEIVING ENVIRONMENT

10.4.1 METEOROLOGICAL CONDITIONS

There are no changes or updates to this Section of the EIAR.

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10.4.2 INFLUENCES ON AMBIENT AIR QUALITY

There are no changes or updates to this Section of the EIAR.

10.4.3 EXISTING AMBIENT AIR QUALITY

There are no changes or updates to this Section of the EIAR.

10.4.4 SITE SPECIFIC AMBIENT AIR QUALITY MONITORING

There are no changes or updates to this Section of the EIAR.

10.5 IDENTIFICATION OF LIKELY SIGNIFICANT IMPACTS

10.5.1 INTRODUCTION

There are no changes or updates to this Section of the EIAR.

10.5.2 CONSTRUCTION PHASE IMPACTS

There are no changes or updates to this Section of the EIAR.

10.5.3 OPERATIONAL PHASE IMPACTS

There are no changes or updates to this Section of the EIAR.

10.5.4 TRAFFIC IMPACTS

There are no changes or updates to this Section of the EIAR.

10.5.5 DO NOTHING IMPACT

There are no changes or updates to this Section of the EIAR.

10.6 AIR QUALITY IMPACT ASSESSMENT

10.6.1 CONSTRUCTION PHASE IMPACTS

There are no changes or updates to this Section of the EIAR.

10.6.1.1 Dust

There are no changes or updates to this Section of the EIAR.

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10.6.1.2 Transport

There are no changes or updates to this Section of the EIAR.

10.6.1.3 Aspergillus

There are no changes or updates to this Section of the EIAR.

10.6.2 OPERATIONAL PHASE IMPACTS

There are no changes or updates to this Section of the EIAR.

10.6.3 IMPACT OF EMISSIONS ON ECOSYSTEMS

There are no changes or updates to this Section of the EIAR.

10.6.4 IMPACT OF NITROGEN DEPOSITION FROM THE PROPOSED FACILITY ON ECOSYSTEMS

There are no changes or updates to this Section of the EIAR.

10.7 DO NOTHING SCENARIO

There are no changes or updates to this Section of the EIAR.

10.8 POTENTIAL CUMULATIVE IMPACTS

There are no changes or updates to this Section of the EIAR.

10.9 MITIGATION MEASURES

There are no changes or updates to this Section of the EIAR.

10.10 RESIDUAL IMPACTS

There are no changes or updates to this Section of the EIAR.

10.11 INTERACTIONS ARISING

There are no changes or updates to this Section of the EIAR.

10.12 HUMAN HEALTH

There are no changes or updates to this Section of the EIAR.

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10.13 MONITORING

There are no changes or updates to this Section of the EIAR.

10.14 DIFFICULTIES ENCOUNTERED

There were no specific difficulties encountered when carrying out this assessment.

10.15 ACCIDENTS OR UNPLANNED EVENTS

There are no changes or updates to this Section of the EIAR.

10.16 REFERENCES

There are no changes or updates to this Section of the EIAR.

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11 NOISE & VIBRATION

11.1 INTRODUCTION

This chapter identifies and assesses the potential noise and vibration impacts and related effects arising from both the construction and long-term operational phases of the proposed data centre campus and collocated flexible decentralised energy resource (DER) at Castlelost, Co. Westmeath.

As part of the response to the further information requested issued by Westmeath County Council dated 01 September 2025, specific clarifications to the Noise Assessment are responded to in the Planning Statement.

11.2 ASSESSMENT METHODOLOGY & SIGNIFICANCE CRITERIA

11.2.1 CHARACTERISATION OF THE RECEIVING ENVIRONMENT

There are no changes or updates to this Section of the EIAR.

11.2.1.1 Equipment

There are no changes or updates to this Section of the EIAR.

11.2.2 DESK-BASED STUDY

There are no changes or updates to this Section of the EIAR.

11.2.3 IMPACT ASSESSMENT

There are no changes or updates to this Section of the EIAR.

11.2.3.1 Short-term Construction Phase:

There are no changes or updates to this Section of the EIAR.

11.2.3.2 Long-Term Operational Phase:

There are no changes or updates to this Section of the EIAR.

11.2.3.3 Noise Model

There are no changes or updates to this Section of the EIAR.

11.2.4 DEFINITIONS

There are no changes or updates to this Section of the EIAR.

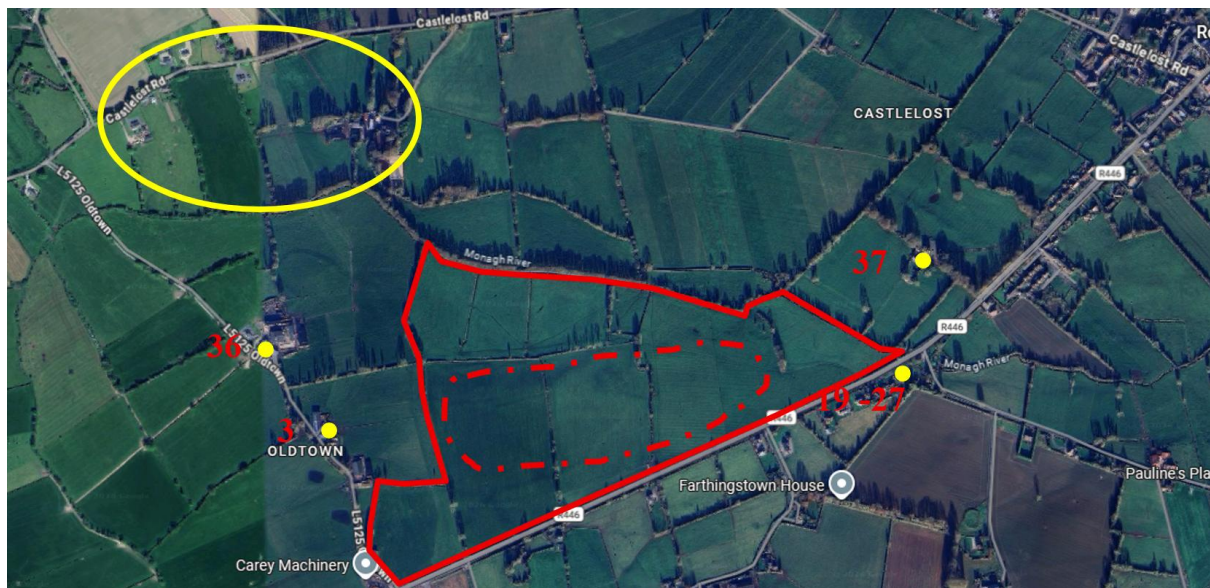
11.3 DESCRIPTION OF RECEIVING ENVIRONMENT

11.3.1 SITE CONTEXT

There are no changes or updates to this Section of the EIAR.

Responses to Item 11(i) to 11(iv) of the FI Request issued by Westmeath County Council dated 01 September 2025 and contained in the Halston Planning Statement (dated March 2026) should be read in conjunction with this. The amendments to the site layout submitted as part of this FI response have been considered.

In addition, Noise Sensitive Receptor (NSR36) has been added to the noise model along with NSRs further north of NSR3 and NSR36. There is one NSR to the northeast of the R446 close to the solar farm which has been numbered NSR37 - The village of Rochfortbridge lies further northeast.



Note. Red-Line boundary indicative only. Location of proposed solar inverters in dashed area.

Yellow circle represents NSRs further north

11.3.2 AMBIENT SOUND SURVEY SUMMARY RESULTS

There are no changes or updates to this Section of the EIAR.

11.3.3 DESK-BASED STUDY

There are no changes or updates to this Section of the EIAR.

11.3.4 VIBRATION

There are no changes or updates to this Section of the EIAR.

11.4 ASSESSMENT OF POTENTIAL ENVIRONMENTAL EFFECTS

There are no changes or updates to this Section of the EIAR.

11.4.1 SHORT TERM SITE DEVELOPMENT & CONSTRUCTION PHASE

There are no changes or updates to this Section of the EIAR.

11.4.1.1 Noise

There are no changes or updates to this Section of the EIAR.

11.4.1.2 Vibration

There are no changes or updates to this Section of the EIAR.

11.4.2 LONG TERM OPERATIONAL PHASE

11.4.2.1 Noise

The following should be read in conjunction with the information submitted in the EIAR. The worst-case scenario has been assessed in the EIAR submitted in support of the planning application through the Noise Sensitive Receptors (NSRs) chosen.

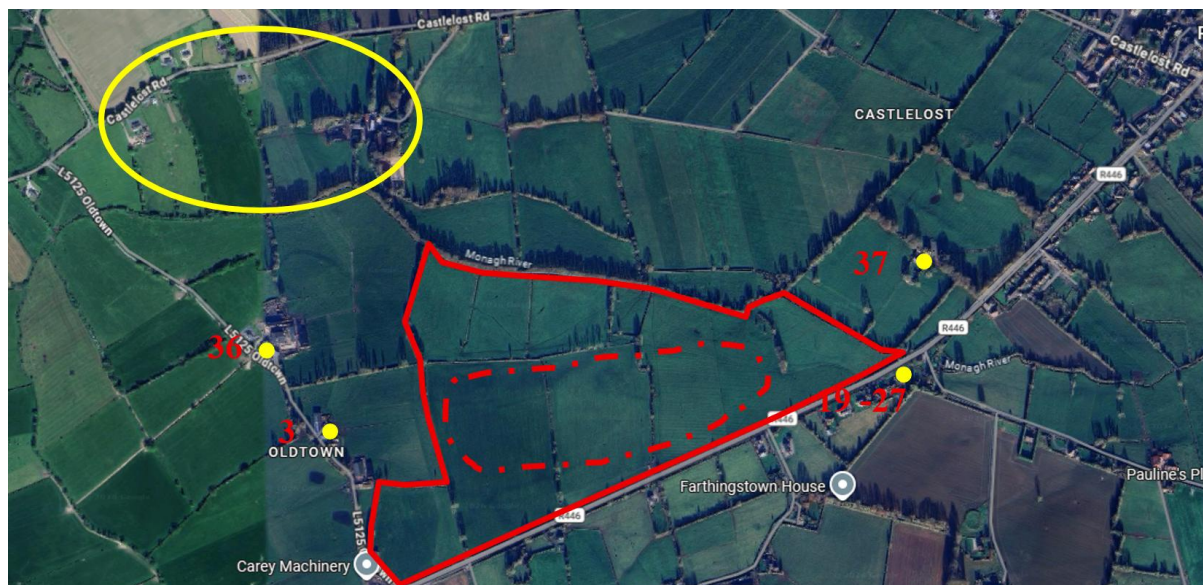
NSR3 is located to the north of the R446. The breakdown of predicted noise levels from the grouped sources including the cumulative total predicted noise level with the permitted Flexgen development at NSR3 is set out in the Table below:

Table 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

Source	R3_Southern Façade dB(A)	R3_Eastern Façade dB(A)
Total Project Admiral	36	36
Total Project Admiral without Solar	35	34
Total Cumulative with Flexgen	36	36

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



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 the Table below.

Table 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 from the Tables 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.

11.4.3 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 14 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.

11.4.3.1 Vibration

There are no changes or updates to this Section of the EIAR.

11.5 MITIGATION MEASURES

11.5.1 SITE DEVELOPMENT AND CONSTRUCTION PHASES

There are no changes or updates to this Section of the EIAR.

11.5.2 OPERATIONAL PHASE

In addition to the information provided within the EIAR, the following 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.

11.6 Residual Impacts of the Development

There are no changes or updates to this Section of the EIAR.

11.7 CUMULATIVE EFFECTS

11.7.1 CONSTRUCTION PHASE

There are no changes or updates to this Section of the EIAR.

11.7.2 OPERATIONAL PHASE

In addition to the information provided within the EIAR, the following table of results for the cumulative impact at NSRs 1-35 plus the additional NSR36 has been prepared. 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 11.24(a) 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 11.24(a) 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
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.

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 Castlelost Flexgen unit will not operate continuously and responds to system (grid) demand. 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 discussed above in relation to the proposed development.

11.8 MONITORING AND FURTHER WORKS

There are no changes or updates to this Section of the EIAR.

11.9 SUMMARY OF SIGNIFICANT EFFECTS

11.9.1 SHORT-TERM CONSTRUCTION PHASE

There are no changes or updates to this Section of the EIAR.

11.9.2 LONG-TERM OPERATIONAL PHASE

There are no changes or updates to this Section of the EIAR.

11.10 REFERENCES

There are no changes or updates to this Section of the EIAR.

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12 LANDSCAPE & VISUAL

12.1 INTRODUCTION

This chapter of the EIAR should be read in conjunction with the Landscape Architect FI Response Statement provided in Appendix 12.6 to this EIAR Addendum.

Due to layout changes and in response to the FI request from Westmeath County Council dated 01 September 2026, the following have information and updated information is provided as Appendices to the EIAR.

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

12.1.1 APPROACH

There are no changes or updates to this Section of the EIAR.

12.1.2 DESCRIPTION OF THE PROPOSED DEVELOPMENT

There are no changes or updates to this Section of the EIAR.

12.2 ASSESSMENT METHODOLOGY & SIGNIFICANCE CRITERIA

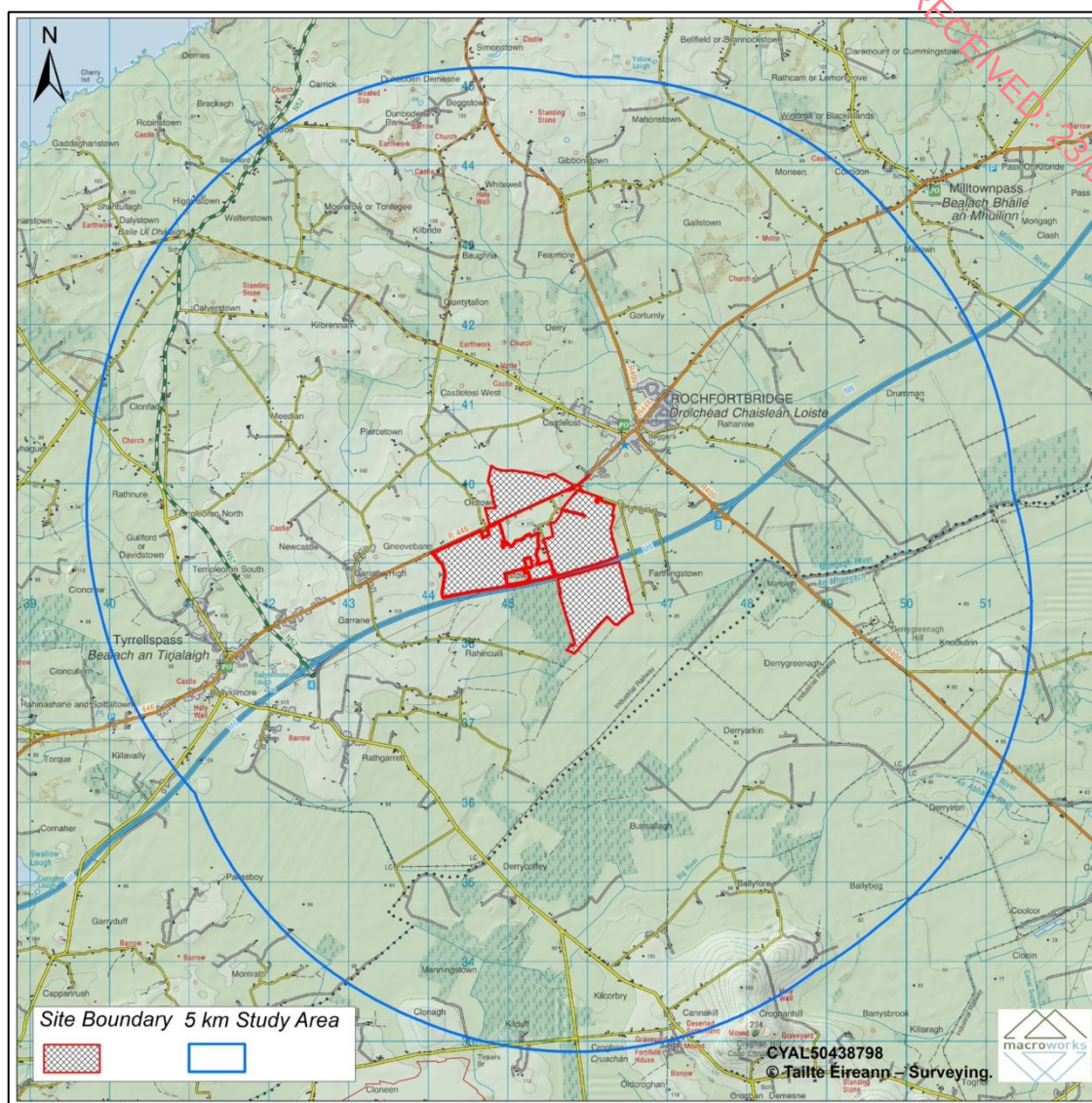
There are no changes or updates to this Section of the EIAR.

12.2.1 SCOPE OF THE ASSESSMENT

There are no changes or updates to this Section of the EIAR.

12.2.2 STUDY AREA

From similar studies, it is anticipated that the proposed development is likely to be difficult to discern beyond approximately 5km and is not likely to give rise to significant landscape or visual impacts beyond approximately 2km. In the interests of a comprehensive appraisal, a 5km radius study area is used in this instance. However, there will be a particular focus on receptors contained within 1-2km, except where iconic or designated scenic viewpoints exist at greater distances out to 5km (refer to Figure 12.1).

Figure 12.1 5km Extent of the Study Area**12.2.3 LANDSCAPE IMPACT ASSESSMENT CRITERIA**

There are no changes or updates to this Section of the EIAR.

12.2.3.1 Landscape Sensitivity

There are no changes or updates to this Section of the EIAR.

12.2.4 MAGNITUDE OF CHANGE – LANDSCAPE

There are no changes or updates to this Section of the EIAR.

12.2.5 VISUAL IMPACT ASSESSMENT CRITERIA

There are no changes or updates to this Section of the EIAR.

12.2.5.1 Sensitivity of Visual Receptors

There are no changes or updates to this Section of the EIAR.

12.2.5.2 Susceptibility of Visual Receptors to Change

There are no changes or updates to this Section of the EIAR.

12.2.5.3 Values attached to views

There are no changes or updates to this Section of the EIAR.

12.2.6 MAGNITUDE OF CHANGE – VISUAL

There are no changes or updates to this Section of the EIAR.

12.2.7 SIGNIFICANCE OF EFFECT

There are no changes or updates to this Section of the EIAR.

12.2.8 QUALITY AND DURATION OF EFFECTS

There are no changes or updates to this Section of the EIAR.

12.3 DESCRIPTION OF RECEIVING ENVIRONMENT**12.3.1 WESTMEATH COUNTY DEVELOPMENT PLAN 2021-2027**

There are no changes or updates to this Section of the EIAR.

12.3.2 OFFALY COUNTY DEVELOPMENT PLAN 2021-2027

There are no changes or updates to this Section of the EIAR.

12.3.3 VIEWS OF RECOGNISED SCENIC VALUE – WESTMEATH COUNTY DEVELOPMENT PLAN 2021-2027

There are no changes or updates to this Section of the EIAR.

12.3.3.1 Westmeath County Development Plan 2021-2027

There are no changes or updates to this Section of the EIAR.

12.3.3.2 Offaly County Development Plan 2021-2027

There are no changes or updates to this Section of the EIAR.

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12.4 EXISTING ENVIRONMENT

12.4.1 LANDSCAPE BASELINE

There are no changes or updates to this Section of the EIAR.

12.4.1.1 Landform and Drainage

There are no changes or updates to this Section of the EIAR.

12.4.1.2 Vegetation and Land use

There are no changes or updates to this Section of the EIAR.

12.4.1.3 Centres of Population and Housing

There are no changes or updates to this Section of the EIAR.

12.4.1.4 Transport Routes

There are no changes or updates to this Section of the EIAR.

12.4.1.5 Tourism, Heritage and Public Amenities

There are no changes or updates to this Section of the EIAR.

12.4.2 VISUAL BASELINE

12.4.2.1 Analysis of ZTV (Zone of Theoretic Visibility) Mapping

The original section of the EIAR should be read in conjunction with the additional information set out in the appendices to this EIAR Addendum, which were prepared in response to the Further Information request issued by Westmeath County Council on 01 September 2025.

12.4.2.2 Identification of Viewshed Reference Points as a Basis for Assessment

The original section of the EIAR should be read in conjunction with the additional information set out in the appendices to this EIAR Addendum, which were prepared in response to the Further Information request issued by Westmeath County Council on 01 September 2025.

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12.5 IMPACT ASSESSMENT

12.5.1 DO-NOTHING SCENARIO

There are no changes or updates to this Section of the EIAR.

12.5.2 ASSESSMENT OF RECEPTOR SENSITIVITY – LANDSCAPE

The original section of the EIAR should be read in conjunction with the additional information set out in the appendices to this EIAR Addendum, which were prepared in response to the Further Information request issued by Westmeath County Council on 01 September 2025.

12.5.3 ASSESSMENT OF RECEPTOR SENSITIVITY – VISUAL

The original section of the EIAR should be read in conjunction with the additional information set out in the appendices to this EIAR Addendum, which were prepared in response to the Further Information request issued by Westmeath County Council on 01 September 2025.

12.5.4 MAGNITUDE OF LANDSCAPE EFFECTS – CONSTRUCTION STAGE

The original section of the EIAR should be read in conjunction with the additional information set out in the appendices to this EIAR Addendum, which were prepared in response to the Further Information request issued by Westmeath County Council on 01 September 2025.

12.5.5 MAGNITUDE OF VISUAL EFFECTS – CONSTRUCTION STAGE

The original section of the EIAR should be read in conjunction with the additional information set out in the appendices to this EIAR Addendum, which were prepared in response to the Further Information request issued by Westmeath County Council on 01 September 2025.

12.5.6 MAGNITUDE OF LANDSCAPE EFFECTS – OPERATIONAL STAGE

The original section of the EIAR should be read in conjunction with the additional information set out in the appendices to this EIAR Addendum, which were prepared in response to the Further Information request issued by Westmeath County Council on 01 September 2025.

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12.5.7 MAGNITUDE OF VISUAL EFFECTS – OPERATIONAL STAGE

The original section of the EIAR should be read in conjunction with the additional information set out in the appendices to this EIAR Addendum, which were prepared in response to the Further Information request issued by Westmeath County Council on 01 September 2025.

12.5.8 CUMULATIVE IMPACT ASSESSMENT

The original section of the EIAR should be read in conjunction with the additional information set out in the appendices to this EIAR Addendum, which were prepared in response to the Further Information request issued by Westmeath County Council on 01 September 2025.

12.5.9 MONITORING

12.5.9.1 Construction Phase

The original section of the EIAR should be read in conjunction with the additional information set out in the appendices to this EIAR Addendum, which were prepared in response to the Further Information request issued by Westmeath County Council on 01 September 2025.

12.5.9.2 Operational Phase

The original section of the EIAR should be read in conjunction with the additional information set out in the appendices to this EIAR Addendum, which were prepared in response to the Further Information request issued by Westmeath County Council on 01 September 2025.

12.6 CONCLUSIONS

The original section of the EIAR should be read in conjunction with the additional information set out in the appendices to this EIAR Addendum, which were prepared in response to the Further Information request issued by Westmeath County Council on 01 September 2025.

12.6.1 OVERALL SIGNIFICANCE OF EFFECT

The original section of the EIAR should be read in conjunction with the additional information set out in the appendices to this EIAR Addendum, which were prepared in

response to the Further Information request issued by Westmeath County Council on 01 September 2025.

12.7 REFERENCES

There are no changes or updates to this Section of the EIAR.

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13 TRAFFIC & TRANSPORT

13.1 INTRODUCTION

There are no changes or updates to this Section of the EIAR.

13.1.1 OVERVIEW OF DEVELOPMENT PROPOSALS

There are no changes or updates to this Section of the EIAR.

13.2 ASSESSMENT METHODOLOGY & SIGNIFICANCE CRITERIA

There are no changes or updates to this Section of the EIAR.

13.2.1 LEGISLATION AND GUIDANCE

There are no changes or updates to this Section of the EIAR.

13.2.2 APPROACH TO ASSESSMENT

There are no changes or updates to this Section of the EIAR.

13.2.3 CONSULTATIONS

There are no changes or updates to this Section of the EIAR.

13.2.4 SIGNIFICANCE CRITERIA

There are no changes or updates to this Section of the EIAR.

13.3 DESCRIPTION OF RECEIVING ENVIRONMENT

13.3.1 SITE LOCATION

There are no changes or updates to this Section of the EIAR.

13.3.2 EXISTING SITE TRAFFIC CHARACTERISTICS

There are no changes or updates to this Section of the EIAR.

13.3.3 CURRENT TRAFFIC VOLUMES

There are no changes or updates to this Section of the EIAR.

13.3.4 PROPOSED TRAFFIC SCHEMES

There are no changes or updates to this Section of the EIAR.

13.3.5 COMMITTED DEVELOPMENT

There are no changes or updates to this Section of the EIAR.

13.4 ASSESSMENT OF POTENTIAL ENVIRONMENTAL EFFECTS

An Outline Construction Traffic Management Plan as been prepared and is provided in Appendix 13.7 of this EIAR Addendum.

13.4.1 TRAFFIC CAPACITY EFFECTS

There are no changes or updates to this Section of the EIAR.

13.4.2 TRIP GENERATION

There are no changes or updates to this Section of the EIAR.

13.4.3 TRIP DISTRIBUTION AND ASSIGNMENT

There are no changes or updates to this Section of the EIAR.

13.4.4 TRAFFIC MODELLING APPROACH

There are no changes or updates to this Section of the EIAR.

13.4.5 ROAD STRUCTURE EFFECTS

There are no changes or updates to this Section of the EIAR.

13.4.6 ROAD SAFETY EFFECTS

There are no changes or updates to this Section of the EIAR.

13.5 MITIGATION MEASURES

There are no changes or updates to this Section of the EIAR.

13.5.1 ROAD STRUCTURE MITIGATION

There are no changes or updates to this Section of the EIAR.

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13.5.2 ROAD SAFETY MITIGATION

There are no changes or updates to this Section of the EIAR.

13.6 RESIDUAL TRAFFIC EFFECTS

There are no changes or updates to this Section of the EIAR.

13.7 DO NOTHING' SCENARIO

There are no changes or updates to this Section of the EIAR.

13.8 CUMULATIVE EFFECTS

There are no changes or updates to this Section of the EIAR.

13.9 TRANS-BORDER /INTERNATIONAL EFFECTS

There are no changes or updates to this Section of the EIAR.

13.10 DIFFICULTIES ENCOUNTERED IN COMPILING INFORMATION

There are no changes or updates to this Section of the EIAR.

13.11 REFERENCES

There are no changes or updates to this Section of the EIAR.

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14 ARCHAEOLOGICAL AND CULTURAL HERITAGE

There are no changes or updates to this Section of the EIAR.

14.1 INTRODUCTION

There are no changes or updates to this Section of the EIAR.

14.2 ASSESSMENT METHODOLOGY & SIGNIFICANCE CRITERIA

14.2.1 DESKTOP STUDY

There are no changes or updates to this Section of the EIAR.

14.2.2 RMP AND SMR

There are no changes or updates to this Section of the EIAR.

14.2.3 NATIONAL MONUMENTS

There are no changes or updates to this Section of the EIAR.

14.2.4 PROTECTED STRUCTURES & NIAH SITES

There are no changes or updates to this Section of the EIAR.

14.2.5 THE TOPOGRAPHICAL FILES OF THE NATIONAL MUSEUM OF IRELAND

There are no changes or updates to this Section of the EIAR.

14.2.6 CARTOGRAPHIC SOURCES AND AERIAL IMAGERY

There are no changes or updates to this Section of the EIAR.

14.2.7 EXCAVATIONS DATABASE

There are no changes or updates to this Section of the EIAR.

14.2.8 ARCHAEOLOGICAL REPORTS

There are no changes or updates to this Section of the EIAR.

14.2.8.1 Geophysical Survey

There are no changes or updates to this Section of the EIAR.

14.2.8.2 Archaeological Test Trenching

There are no changes or updates to this Section of the EIAR.

14.2.8.3 Archaeological Excavation

There are no changes or updates to this Section of the EIAR.

14.2.8.4 Archaeological Monitoring

There are no changes or updates to this Section of the EIAR.

14.2.9 DOCUMENTARY RESEARCH

There are no changes or updates to this Section of the EIAR.

14.2.10 STANDARDS AND GUIDELINES

There are no changes or updates to this Section of the EIAR.

14.2.11 SIGNIFICANCE CRITERIA

There are no changes or updates to this Section of the EIAR.

14.3 DESCRIPTION OF RECEIVING ENVIRONMENT

14.3.1 INTRODUCTION

There are no changes or updates to this Section of the EIAR.

14.3.2 HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

There are no changes or updates to this Section of the EIAR.

14.3.2.1 Ringforts

There are no changes or updates to this Section of the EIAR.

14.3.2.2 Field systems

There are no changes or updates to this Section of the EIAR.

14.3.2.3 Souterrains

There are no changes or updates to this Section of the EIAR.

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14.3.3 RECORDED ARCHAEOLOGICAL MONUMENTS (RMP/SMR SITES)

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 Rockfortbridge. 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 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.

14.3.4 NATIONAL MONUMENTS

There are no changes or updates to this Section of the EIAR.

14.3.5 PREVIOUSLY UNRECORDED SITES

There are no changes or updates to this Section of the EIAR.

14.3.6 PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

There are no changes or updates to this Section of the EIAR.

14.3.6.1 The Castlelost Flexgen Project – Flexgen, ESS and GIS (central portion of the current site)

There are no changes or updates to this Section of the EIAR.

14.3.6.2 Pre-planning (the western portion of the current site)

There are no changes or updates to this Section of the EIAR.

14.3.6.3 Kiltotan Pipeline

There are no changes or updates to this Section of the EIAR.

14.3.6.4 M6 Motorway Investigations

There are no changes or updates to this Section of the EIAR.

14.3.6.5 Test Trenching

There are no changes or updates to this Section of the EIAR.

14.3.7 RPS AND NIAH

There are no changes or updates to this Section of the EIAR.

14.3.8 CARTOGRAPHIC SOURCES AND AERIAL IMAGERY

There are no changes or updates to this Section of the EIAR.

14.3.9 TOPOGRAPHICAL FILES

There are no changes or updates to this Section of the EIAR.

14.3.10 FIELD INSPECTION

There are no changes or updates to this Section of the EIAR.

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14.4 ASSESSMENT OF POTENTIAL ENVIRONMENTAL EFFECTS

14.4.1 ARCHAEOLOGICAL HERITAGE

There are no changes or updates to this Section of the EIAR.

14.4.2 ARCHITECTURAL AND CULTURAL HERITAGE

There are no changes or updates to this Section of the EIAR.

14.4.3 INDIRECT EFFECTS

There are no changes or updates to this Section of the EIAR.

14.5 MITIGATION MEASURES

14.5.1 ARCHAEOLOGICAL HERITAGE

Regarding Boyhan's Forge (RPS 033-001) 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.

There are no other changes or updates to this Section of the EIAR.

14.5.2 ARCHITECTURAL AND CULTURAL HERITAGE

There are no changes or updates to this Section of the EIAR.

14.6 RESIDUAL IMPACTS OF THE DEVELOPMENT

There are no changes or updates to this Section of the EIAR.

14.7 CUMULATIVE EFFECTS

There are no changes or updates to this Section of the EIAR.

14.8 MONITORING AND FURTHER WORKS

There are no changes or updates to this Section of the EIAR.

14.9 SUMMARY OF SIGNIFICANT EFFECTS

There are no changes or updates to this Section of the EIAR.

14.10 REFERENCES

There are no changes or updates to this Section of the EIAR.

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15 CLIMATE

15.1 INTRODUCTION

This section provides an update of Chapter 15 of the Environmental Impact Assessment Report (EIAR) which considers the likely significant effects from the proposed development on climate as well as the likely significant effects of climate change on the proposed development. This addendum report is in response to the Further Information request Point No. 5 Carbon Footprint and Climate Impact Assessment from the Planning Authority of Westmeath County Council (Reference Number 25/60344) and considers the updated and additional information presented in the updated Bitpower Energy Report entitled Carbon Impact Statement & Alignment with National Large Energy User Policies (Bitpower report) and the Project Carbon Management Plan (PCMP) prepared by Halston, both of which are submitted with this planning application.

The PCMP provides a comprehensive breakdown of the embodied carbon emissions for the entire Project and presents assumptions and associated calculations to support the embodied carbon emission estimates arrived at. The GHG assessment presented in this report considers the data provided in the PCMP and expands on the previous assessment to include the data centre campus and all elements of the Decentralised Energy Resource (DER).

Accordingly, this addendum chapter should be read in conjunction with the updated Bitpower report and the PCMP. This addendum chapter does not replace the EIAR climate chapter, it is an updated assessment of the potential climate impacts of the proposed development that considers the additional and updated climate-relevant information that has been provided as part of this planning application.

15.2 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

There are no changes or updates to this section of the EIAR.

15.3 ASSESSMENT METHODOLOGY

15.3.1 STUDY AREA

There are no changes or updates to this section of the EIAR.

15.3.2 INTERNATIONAL GUIDANCE

The assessment methodology has been derived with reference to the most appropriate international guidance documents:

- IEMA Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance (2022)
- Institute of Environmental Management and Assessment (IEMA) guide to climate change resilience and adaptation (2020)
- Royal Institution of Chartered Surveyors (RICS). Whole Life Carbon Assessment for the Built Environment, Version 3. (2024);
- Institution of Civil Engineers (ICE). PAS 2080:2023 Carbon Management in Buildings and Infrastructure (2023);
- The Institution of Structural Engineers (IStructE). How to Calculate Embodied Carbon. 3rd Edition, Version 1.1 (2025);
- Sustainable Energy Authority of Ireland (SEAI, 2025) provides methodology for life-cycle global warming potential (GWP) calculations.
- Sustainable Energy Authority of Ireland (SEAI, 2022) provide energy conversion and emissions factors for Irish-based calculations. These factors have been used in the calculation of GHG emissions associated with the electricity and natural gas demand of the Proposed Development

15.3.3 GREENHOUSE GAS ASSESSMENT

15.3.3.1 Construction Phase

The main sources of GHG emissions during the construction phase will consist of the carbon embodied within the materials used for the construction works, the transport of the materials from the supplier to the construction site, the construction activities themselves, the excavated materials and the transportation and disposal of excavated materials as required.

Embodied carbon is carbon dioxide emitted during the manufacture, transport and construction of building materials, together with site activities. Total carbon emissions are calculated, in units of tonnes of carbon dioxide equivalent (tCO₂e), which is a metric for expressing the impact of all greenhouse gases on a carbon dioxide basis, by multiplying the emission factor by the quantity of the material that will be used over the entire construction phase.

The PCMP included as part of this planning application presents detailed calculations for the embodied carbon emissions associated with the construction phase of the entire

project including the data centre campus and all elements of the DER and these have been considered in this assessment.

The PCMP follows the methodology of the Institute of Structural Engineers guidance document How to Calculate Embodied Carbon (2025) and also the Sustainable Energy Authority of Ireland (SEAI) methodology for life-cycle global warming potential (GWP) calculations (2025).

The PCMP was prepared in accordance with PAS 2080:2023 Carbon Management in Buildings and Infrastructure which is a global standard for the whole-life carbon management of buildings and infrastructure and is focussed on reducing carbon emissions across all lifecycle stages. Life cycle stages and information modules are defined in EN 15978:2011 (sustainability of construction works – assessment of environmental performance of buildings – calculation method) and EN 17472:2022 (sustainability of construction works sustainability assessment of civil engineering works – calculation method).

Best practice is to report whole-life embodied carbon in accordance with the life cycle stages and modules as defined in the above Standards and the PCMP follows this methodology. The life cycles stages and associated modules applied in the PCMP are as follows:

- Pre-Construction Stage (Module A0): These carbon impacts arise from studies, surveys, design activities, stakeholder engagement, land acquisition (where material) and can generally be screened out of larger projects as they can be considered insignificant in the overall project context.
- Product (cradle-to-gate) Stage (Module A1 to A3): The carbon emissions generated at this stage arise from extracting the raw materials from the ground, their transport to a point of manufacture and then the primary energy used (and the associated carbon impacts that arise) from transforming the raw materials into construction products.
- Construction Stage (Module A4 to A5): These carbon impacts arise from transporting the construction products to site, and their subsequent processing and assembly into the building including on-site energy use, welfare facilities and site waste.
- In-Use (embodied) Stage (Module B1 to B5): This covers a wide range of sources from the embodied carbon emissions associated with the operation of the building, including the materials used during maintenance, replacement and refurbishment. These are considered separately in the Bitpower report.

- In-Use (operational) Stage (Module B6 to B7): These carbon impacts arise from operational emissions associated with energy and water use. These are considered separately in the Bitpower report.
- End of Life Stage (Module C1 to C4): The embodied carbon emissions associated with the deconstruction and/or demolition, transport, waste processing, and disposal of the existing building at the end of its life is considered at this stage.
- Beyond System Boundary Stage Module (D): Considers the potential carbon benefit from the reuse, recovery and recycling potential of a building or a building product.

The PCMP follows a module-based whole life carbon approach to quantify the emissions where embodied carbon for each asset element is calculated as the sum of the relevant modules (A0 to A5, B1 to B5, C1 to C4), with Module D reported separately. The carbon benefits of the module D results are reported in the Tables in the PCMP but they have not been used to offset any of the other module results. Embodied carbon emissions for each module are calculated by multiplying the material or product weight by the module-specific carbon factor to give a total embodied carbon emission as kg or tonne/CO₂e for each individual module.

Embodied carbon emissions for the construction phase of the project are calculated by summing all the modules A1 to A5 to include: (A1 to A3) embodied carbon in construction materials and equipment, (A4) transport of materials to site, and (A5) on-site construction activities, temporary power, site waste and off-site disposal of excavated material where applicable.

The whole-life carbon assessment for the entire project including the data centre campus and all elements of the DER have been categorised into asset elements in order to facilitate a progressive assurance approach where assumptions are documented, data quality is tracked and calculations can be updated at defined project gateways (concept, developed design, technical design, construction, as-built, and operational review). The asset elements of the Project are categorised as follows:

- Data centre campus
- Solar PV farm
- Battery Energy Storage System (BESS)
- Solid Oxide Fuel Cell (SOFC) Power System
- Grid connection (including 220kV GIS) and ancillary DER connection works

The carbon emissions associated with the transport of the materials from the supplier to the site have been calculated separately by applying 2025 GHG emission factors published by the UK Government (Greenhouse Gas Reporting: Conversion Factors 2025) to the HGV

movements and personnel vehicle movements during the construction of the Project based on the traffic and transport data as is provided in Appendix 13.2 of the EIAR.

15.3.3.2 Operational Phase

This section of the previously submitted EIAR detailed the operational phase greenhouse gas assessment and was based on the Energy Report prepared by Bitpower Energy Solutions for the proposed development. The Bitpower report has been updated as part of the response to the further information request and therefore the operational phase greenhouse gas assessment has also been updated to account for the additional data and information that has been provided in the updated Bitpower report.

Total GHG emissions associated with the energy consumption for the project is based on the maximum demand of 250MW required to run the six data centre buildings at full capacity which represents an extreme and untypical setup. Typical annualised data centre loads would range from 50 to 60% of total capacity, with higher power demand levels only experienced on the warmest days when more cooling is required for the buildings. The updated Bitpower report provides a conservative emissions estimate by assuming the data centres would run at 66% of maximum capacity for 24 hours a day, 365 days a year, resulting in the total Project power consumption of 1,445,400 MWh per year. This is considered an absolute worst-case scenario in terms of annual power consumption.

The annual contribution of the SOFC, solar PV farm and the grid energy resources were modelled to show the annual energy requirements for the Project operating at a constant 66% energy demand throughout the entire year. The updated models assume a 15-year lifespan for the Data Centre. On review of other consented data centres in Ireland, the typical operational lifetime of such operations is between 15 and 20 years. As such, the total lifetime emissions of the project have been assessed on the basis of a 15-year lifespan.

The updated Bitpower report also uses the modelling results to predict the likely future GHG emissions associated with the operation of the DER system. Total annual emissions resultant from the energy demand of the data centre campus for the worst case of maximum energy demand for 365 days per year were estimated and have been used to inform the updated operational phase impact assessment.

15.3.3.3 Construction and Operational Phase Significance Criteria

There are no changes or updates to this section of the EIAR.

15.3.4 VULNERABILITY TO CLIMATE CHANGE

There are no changes or updates to this section of the EIAR.

15.4 LEGISLATION AND POLICY

The details provided in the following paragraph were not published at the time of the EIAR submission and are included here to update this section of the EIAR.

The Joint Committee on Climate, Environment and Energy published their report on the proposed Carbon Budgets for Ireland in October 2025. In accordance with the Climate Action and Low Carbon Development (Amendment) Act 2021, the Climate Change Advisory Council proposed a carbon budget for the period 2031-2035 (CB3) and a provisional budget for the period 2036-2040 (CB4). The carbon budget figures for Ireland are provided for under four time periods as follows:

- CB1 (2021 to 2025) with a carbon budget of 295 Mt CO₂e
- CB2 (2026 to 2030) with a carbon budget of 200 Mt CO₂e
- CB3 (2031 to 2035) with a carbon budget of 160 Mt CO₂e
- CB4 (2036 to 2040) with a provisional carbon budget of 120 Mt CO₂e

15.5 RECEIVING ENVIRONMENT

There are no changes or updates to this section of the EIAR.

15.6 IDENTIFICATION OF LIKELY SIGNIFICANT IMPACTS

15.6.1 CONSTRUCTION PHASE

15.6.1.1 Do Nothing Scenario

There are no changes or updates to this section of the EIAR.

15.6.1.2 Impacts as a Result of Climate Change (Climate Vulnerability)

There are no changes or updates to this section of the EIAR.

15.6.1.3 Impacts on Climate Change (Greenhouse Gases)

The updated construction phase impact assessment considers the embodied carbon emissions associated with all asset elements of the Project including the data centre campus, the Solar PV farm, the BESS, the SOFC, the grid connection including the 220kV

GIS and ancillary DER connection works. The construction stage transport carbon emissions have also been considered and are included in the assessment.

The PCMP contains the detailed calculations and associated methodology for each asset element as discussed in Section 15.3.3.1 of this report to arrive at the embodied carbon emission estimates for each element of the construction phase. Table 5-8 of the PCMP presents the updated construction phase embodied carbon estimates for each of the project elements and this table is reproduced below as Table 15.1.

Table 15.1 Updated Construction Phase Embodied Carbon Emissions

Project Element	Lifecycle Stage	Module(s)	Embodied Carbon Estimate (tCO _{2e})
Data centre campus (baseline)	Construction	A1–A5	47,628
Data centre campus (low-carbon option)	Construction	A1–A5	37,380
Solar PV farm (180 MWp)	Construction	A1–A5	83,603
BESS (250 MW x 2hr)	Construction	A1–A5	84,189
SOFC (160MW)	Construction	A1–A5	20,413
Grid connection (including 220kV GIS) and ancillary DER connection works	Construction	A1–A5	6,856
Construction transport	Construction	A4–A5	5,425
Total Project	Construction	A1–A5	237,866

Note – Table 15.1 is reproduced from the PCMP Report

The modelled baseline embodied carbon intensity figure for the construction of the data centre campus was estimated to result in 47,628 tCO_{2e} of GHG emissions. When the modelling was updated to account for a low-carbon upgrade to the building materials, the baseline embodied carbon intensity figure for the construction of one data centre and all associated infrastructure was revised down which would result in overall GHG emissions

of 37,380 tCO₂e for the construction phase of the entire data centre campus. The low-carbon upgrading resulted in a 21.5% saving in GHG emissions for the data centre campus. The updated construction phase embodied carbon emissions have been estimated at 237,866 tCO₂e for the entire construction project.

The carbon emissions associated with the construction of the entire project has been assessed in the context of Ireland's Carbon Budgets for assessment purposes. The construction of the project is anticipated to be completed over a 62-month period with 65% of the total works completed prior to 2031 and the remainder completed in 2031 and 2032. The GHG impacts presented in Table 15.2 represent an estimate of the carbon budget expenditures that will occur as a result of the Project's construction. The construction phase embodied carbon emissions have been proportionally divided across the relevant carbon budget periods, namely 65% to CB2 and 35% to CB3 which corresponds to the likely indicative timeline for the construction works programme.

Table 15.2 Updated GHG Impact Assessment (assessed against Irelands Carbon Budgets)

Time Period	2026 – 2030 (CB2)	2031 – 2035 (CB3)	Total
Irelands Carbon Budget (tCO ₂ e)	200,000,000	160,000,000	360,000,000
GHG Emissions (tCO ₂ e)	154,613	83,253	237,866
Project GHG emissions as a % of Carbon Budget	0.077	0.052	0.066

The nature and significance of effect can be characterised by assessing the Project's construction stage GHG impacts within Ireland's carbon budget, and with its compliance with Ireland's net zero trajectory, local and national climate-related policy, legislation and guidance.

The carbon budget periods relevant during the construction phase of the Project are the 2026 to 2030 CB2 period which has a carbon budget of 200 MtCO₂e and the 2031 to 2035 CB3 period which has a carbon budget of 160 MtCO₂e. The updated GHG emissions for the construction phase of the entire project following mitigation are estimated to be 237,866 tCO₂e which accounts for 0.066% of the total carbon budget. The construction phase estimates show that the proposed project would potentially account for 0.077% of the overall CB2 budget and 0.052% of the overall CB3 budget. It is therefore considered that

carbon emissions associated with the construction of the Project comprise a negligible proportion of Ireland's Carbon Budgets CB2 and CB3.

The Applicant's approach to low carbon material and product procurement, and efficient construction methods are in keeping with good practice emissions reduction measures, and current and emerging national policy regarding the transition towards net zero. In particular this approach will contribute to demand for low carbon materials and support the key target to decrease embodied carbon in construction materials, as detailed within the CAP25 and Ireland's Long-term Strategy on Greenhouse Gas Emissions Reduction.

It should be noted that the potential impacts associated with the construction phase of the proposed Project are short-term in nature. When the mitigation measures detailed in the mitigation section of the EIAR chapter are implemented, direct GHG emissions from the site will not be significant.

As such, the proposed development aligns with Ireland's national legislation and policy, and net zero trajectory. In accordance with the significance criteria (as detailed in Section 15.3.3.3 of the EIAR) the impact of the construction phase GHG emissions is considered to result in a **minor adverse** effect on climate which is considered a **not significant** impact.

This updated assessment remains consistent with the conclusions reached in Chapter 15 of the EIAR (Section 15.8.1).

15.6.2 OPERATION PHASE

15.6.2.1 Do Nothing Scenario

There are no changes or updates to this section of the EIAR.

15.6.2.2 Impacts as a Result of Climate Change (Climate Vulnerability)

There are no changes or updates to this section of the EIAR.

15.6.3 IMPACTS ON CLIMATE CHANGE (GREENHOUSE GASES)

Section 15.6.3 of the EIAR Climate chapter detailed the operational phase greenhouse gas assessment. That assessment was based on the Energy Report prepared by Bitpower Energy Solutions for the proposed development and the Bitpower report has been updated as part of this application and consequently the operational phase greenhouse gas assessment has also been updated to account for the additional data and information that has been provided in the updated Bitpower report.

The operation of the Project post-construction will result in GHG emissions due to the use of electricity to operate the facilities and services within the buildings. The operational energy demand for the Project will be provided by the DER system as detailed in section 15.3.3.2 of the EIAR.

Total GHG emissions associated with the energy consumption for the project is based on the maximum demand of 250MW required to run the six data centre buildings at full capacity which represents an extreme and untypical setup. Typical annualised data centre loads would range from 50 to 60% of total capacity, with higher power demand levels only experienced on the warmest days when more cooling is required for the buildings. The updated Bitpower report provides a conservative emissions estimate by assuming the data centres would run at 66% of maximum capacity for 24 hours a day, 365 days a year, resulting in the total Project power consumption of 1,445,400 MWh per year. This is considered an absolute worst-case scenario in terms of annual power consumption.

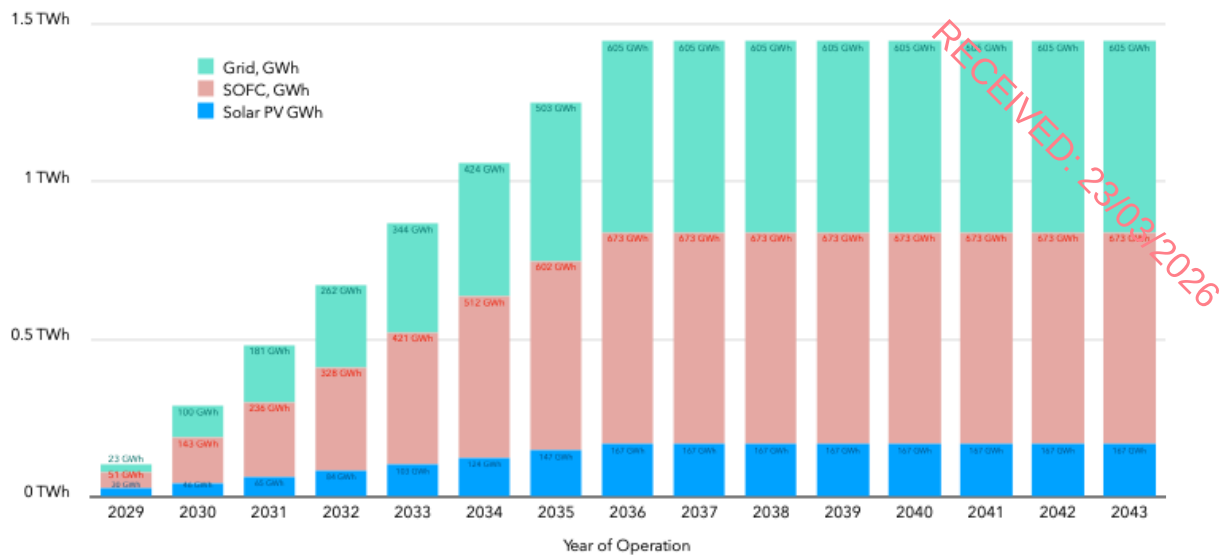
The energy and carbon performance of the proposed DER system versus the performance of the national grid has been modelled and assessed and the findings are presented in the original Bitpower report and summarised in the updated report. The energy and carbon modelling was completed in order to demonstrate the positive benefits of using the DER as the power source for the data centre.

The annual contribution of the SOFC, solar PV and grid energy resources were modelled to show the annual energy requirements for the Project operating at a constant 66% energy demand throughout the entire year. The updated models assume a 15-year lifespan for the data centre. On review of other consented data centres in Ireland, the typical operational lifetime of such operations is between 15 and 20 years. As such, the total lifetime emissions of the project have been assessed on the basis of a 15-year lifespan.

The carbon intensity models assume a start year of 2029 for the project and the data centre energy requirements will ramp up from Year 1 to Year 8 at which point the data centres will be operating at the maximum capacity of a continuous 66% for the entire year until the end year for the Project which is set at 2043.

Figure 15.1 is reproduced from the updated Bitpower report and shows the annual energy contribution figures for the three DER energy resources modelled. The model assumes continuous operation for 24 hours per day, 365 days at 66% capacity.

Figure 15.1 Project power demand and energy sources for Project lifetime



Note – Figure 15.1 is reproduced from the updated Bitpower report

The updated Bitpower report also uses the modelling results to predict the likely future GHG emissions associated with the operation of the DER system. Total annual emissions resultant from the energy demand of the data centre campus for the worst case of maximum energy demand for 365 days per year were estimated and are presented in Table 15.3 below.

Table 15.3 Updated Summary of Operational Phase GHG Emissions – Worst-Case Scenario

Year	GHG Emissions / tCO ₂ e			
	Solar PV	SOFC	Grid	DER Total
2029	0	5,552	4,420	9,972
2030	0	31,630	19,290	50,920
2031	0	57,740	34,810	92,550
2032	0	83,840	50,410	135,250
2033	0	110,110	66,120	176,230
2034	0	135,740	81,480	217,220
2035	0	161,210	96,770	257,980
2036	0	185,920	117,830	303,750
2037	0	185,920	117,830	303,750
2038	0	185,920	117,830	303,750

Year	GHG Emissions / tCO ₂ e			
	Solar PV	SOFC	Grid	DER Total
2039	0	185,920	117,830	303,750
2040	0	185,920	117,830	303,750
2041	0	185,920	117,830	303,750
2042	0	185,920	117,830	303,750
2043	0	185,920	117,830	303,750
Total	0	2,073,182	1,295,940	3,369,122

Annual operational phase emissions resultant from the energy demand of the Project were estimated to ramp up from 9,972 tCO₂e per annum for the opening year of the Project (2029) to a maximum of 303,750 tCO₂e per annum for Year 8 of the Project (2036) when the entire facility is operating at maximum capacity. This figure represents the maximum annual operational carbon intensity for the Project. Total operational phase emissions resultant from the energy demand of the entire Project were estimated to be 3,369,122 tCO₂e over the Project's 15-year lifetime.

The figures presented in Table 15.3 above are considered very conservative and present an absolute worst-case in terms of potential carbon emissions associated with the operational phase of the Project. The updated Bitpower report looks at quantifying the additional carbon reductions that will be achieved over the lifetime of the Project. In order to present a more robust and realistic assessment of the emissions associated with the Project, some of the available paths to decarbonisation for the Project have been assessed and these are discussed below. The potential carbon savings that will be derived from the decarbonisation modes presented in the report are still considered conservative when compared to the possible savings that are predicted with current government policy but are considered to be more realistic figures in terms of the actual likely outcomes of the proposed Project.

The carbon savings that will be provided by the Battery Energy Storage System (BESS) have not been factored into the modelling predictions as it is difficult to precisely quantify the savings that will be made. The BESS will work in tandem with the solar array to ensure that the power demand for the data centre will be reliably met with 100% renewable power throughout daylight hours. While at night-time the BESS can be recharged using renewable

electricity procured via virtual or physical power purchase agreements (PPAs). In effect the carbon savings will mostly be accrued by the grid in enabling the penetration of more renewable electricity. The updated Bitpower report conservatively estimates that the BESS will enable a 10% improvement in overall emissions.

The operational GHG figure per annum is based on the 2023 Irish Grid carbon intensity figures, and the figures presented in Table 15.3 above do not account for planned decarbonisation of the grid in line with policy and legislation as Ireland moves towards its net zero 2050 target. The updated Bitpower report modelled future scenarios of continuous improvement in grid carbon intensity of 20% and 40% to predict a conservative future scenario for the carbon intensity of the national grid. Reductions in carbon intensity of this magnitude are well within the ambitions of the Climate Action Plan and will readily be enabled by the deployment of offshore and onshore wind and solar.

It is considered likely that absorption chilling using waste heat from the SOFC will be implemented at the site in the near future as more concentrated cooling will be required and consequently absorption chilling will be more widely adopted. This has been conservatively modelled as a carbon saving of 12.5%.

When the likely carbon savings offered by the BESS, the grid decarbonisation and the adoption of absorption chilling are considered in the modelling the annual greenhouse gas emissions for the Project will reduce from an absolute worst-case figure of 303,750 tCO_{2e} per annum to a more likely conservative figure of 192,071 tCO_{2e} per annum. This is a reduction of 37% in annual carbon emissions for the operational phase of the Project.

The carbon emissions associated with the operation of the data centre campus have been assessed in the context of Ireland's Carbon Budgets. The updated GHG impact assessment presented in Table 15.4 represent carbon budget expenditures that will occur as a result of the Project's operation.

Table 15.4 Updated GHG Impact Assessment (assessed against Ireland's Carbon Budgets)

Time Period	2026 – 2030 (CB2)	2031 – 2035 (CB3)	2036 – 2040 (CB4)	Total
Ireland's Carbon Budget	200,000,000	160,000,000	120,000,000	480,000,000
Worst-case Operational GHG Emissions (tCO _{2e})	60,892	879,230	1,518,750	2,458,872

Time Period	2026 – 2030 (CB2)	2031 – 2035 (CB3)	2036 – 2040 (CB4)	Total
Project GHG emissions as a % of Carbon Budget	0.03	0.55	1.26	0.51
Conservative-case Operational GHG Emissions (tCO ₂ e)	60,892	879,230	960,350	1,900,472
Project GHG emissions as a % of Carbon Budget	0.03	0.55	0.80	0.39

The carbon budget figures for Ireland are provided for the 2026-2030, 2031-2035 and 2036-2040 time periods. The 2036-2040 carbon budget is a provisional figure but is included here for comparison purposes.

The worst-case operational-stage Project emissions for the 2026 to 2030 (CB2) time period comprise 0.03% of the equivalent carbon budget for Ireland while this figure is increased to 0.55% for the 2031 to 2035 (CB3) time period and to 1.26% for the provisional 2036-2040 (CB4) time period. The worst-case operational-stage carbon emissions for the project lifetime of 15-years comprises 0.51% of the total carbon budget over this time interval.

The conservative-case operational-stage Project emissions for the 2026 to 2030 (CB2) time period comprise 0.03% of the equivalent carbon budget for Ireland while this figure is increased to 0.55% for the 2031 to 2035 (CB3) time period and to 0.8% for the provisional 2036-2040 (CB4) time period. The conservative-case operational-stage carbon emissions for the project lifetime of 15-years comprises 0.39% of the total carbon budget over this time interval.

The figures provided in Table 15.4 above are based on the modelled scenarios provided in the updated Bitpower report. It is important to note that the modelling did not account for a significant number of other decarbonisation pathways that will apply to the proposed project such as the gas network decarbonisation, carbon capture and sequestration and Corporate Power Purchase Agreements (CPPAs).

The operational GHG figure per annum is based on the 2023 natural gas conversion factors, and the figures presented in Table 15.3 above do not account for planned decarbonisation of the gas network in line with policy and legislation as Ireland moves towards its net zero 2050 target. The national gas network is evolving to include biomethane and hydrogen and opportunities for using increased levels of carbon neutral gases will become available over the lifetime of the project.

The SOFC emissions are comprised of concentrated carbon and present a viable option for carbon capture and storage. It is considered likely that a small-scale carbon capture plant will be developed at the site to provide commercially viable carbon dioxide for downstream use resulting in further reducing the carbon intensity of the operation of the Project. Imported electricity related emissions (Scope 2) will be mitigated through CPPA agreements.

While accounting for the extent of the embedded design measures in the project (refer to Section 15.3.3.2 of Chapter 15 of the EIAR for the design and mitigation measures) that act to significantly reduce operational emissions, in addition to considering the decarbonisation of the gas network leading to further operational emissions reductions and future net zero emissions in the operation of the DER, the impact of GHG emissions associated with the operation of the project is consistent with Ireland's national legislation and policy, and net zero targets. In accordance with the significance criteria (as detailed in Section 15.3.3.3 of the EIAR) the impact of the operational phase GHG emissions are considered to result in Minor Adverse effects and are considered Not Significant in an overall context.

This updated assessment remains consistent with the conclusions reached in Chapter 15 of the EIAR (Section 15.8.2).

15.7 MITIGATION MEASURES

15.7.1 CONSTRUCTION PHASE

There are no changes or updates to this section of the EIAR.

15.7.2 OPERATION PHASE

There are no changes or updates to this section of the EIAR.

15.8 WHOLE LIFE CARBON IMPACT ASSESSMENT

The updated assessments detailed above in Section 15.6.1.3 and Section 15.6.3 in addition to the non-construction phase modules covered in the PCMP are considered in this section to form a whole-life carbon impact assessment for the project.

Embodied carbon emissions for the construction phase of the project are calculated by summing all the lifecycle stage modules A1 to A5 however the other lifecycle stages and associated modules need to be considered as part of a whole-life carbon assessment for the project. The In-Use (embodied) Stage (Module B1 to B5) and the In-Use (operational) Stage (Module B6 to B7) have been assessed separately in the updated Bitpower report and are included in Section 15.6.3 above. The End-of-Life Stage (Module C1 to C4) and the Beyond System Boundary Stage (Module D) should also be included as part of the whole life assessment.

Table 15.5 presents the combined data from the PCMP report and the updated Bitpower report to provide an estimate of the whole-life carbon emissions for the entire project over an assumed 62-month construction period and a 15-year operational period.

Table 15.5 Whole Lifetime Carbon Emissions Summary

Project Element	Lifecycle Stage	Module(s)	Embodied Carbon Estimate (tCO ₂ e)
Total Project	Construction	A1 to A5	237,866
Total Project	Operation (worst-case)	B1 to B7	2,458,872
Total Project	Operation (conservative-case)	B1 to B7	1,900,472
Total Project	End-of-Life	C1 to C4	Not estimated
Total Project	Reuse / Recovery	D	-34,699
Total Project Conservative Case	All Stages	A1-A5, B1-B7, C1-C4 and D	2,138,338

The conservative-case whole-life carbon assessment for the project estimates that 2,138,338 tCO₂e of carbon emissions will be generated over the lifetime of the entire project. The estimate presented in Table 15.5 has conservatively assumed that the module D emission gains will exceed the end-of-life C1 to C4 emissions and therefore these two lifecycle stages have cancelled each other out in terms of carbon emissions. Similarly, the

conservative figure for the operational stage embodied carbon emissions has been used in the overall calculation.

The carbon emissions associated with the entire project over its lifetime has been assessed in the context of Ireland's Carbon Budgets for assessment purposes and is presented in Table 15.6.

Table 15.6 Whole Lifetime GHG Impact Assessment (assessed against Irelands Carbon Budgets)

Time Period	2026 – 2030 (CB2)	2031 – 2035 (CB3)	2036 – 2040 (CB4)	Total
Irelands Carbon Budget	200,000,000	160,000,000	120,000,000	480,000,000
Project Lifetime GHG Emissions (tCO ₂ e)	215,505	962,483	960,350	2,138,338
Project Lifetime GHG emissions as a % of Carbon Budget	0.11	0.60	0.80	0.45

The whole lifetime GHG emissions for the entire project following mitigation are estimated to be 2,138,338 tCO₂e which accounts for 0.45% of the total carbon budget. The whole lifetime carbon estimates show that the proposed project would potentially account for 0.11% of the overall CB2 budget, 0.6% of the overall CB3 budget and 0.8% of the provisional CB4 budget. It is clear therefore that the carbon emissions associated with the whole lifetime of the Project comprise a negligible proportion of Ireland's Carbon Budgets.

As detailed throughout the EIAR and the Bitpower reports, the Applicant is committed to reducing the lifetime emissions associated with the Project, incorporating mitigation measures within the design of the Project that enable the emissions reductions detailed.

When account is taken of the magnitude of the lifetime carbon emissions within the context of Irelands Carbon Budgets and the extent of mitigation measures designed to reduce the lifetime emissions arising from the project, the Project aligns with Ireland's national legislation and policy and net zero targets.

In accordance with the significance criteria (as detailed in Section 15.3.3.3 of the EIAR) the whole life effects of GHG emissions resultant from the Project are considered to result in **Minor Adverse** effects and are considered **Not Significant** in an overall context.

This updated impact assessment remains consistent with the conclusions reached in Chapter 15 of the EIAR (Section 15.8.2).

15.9 RESIDUAL IMPACTS

There are no changes or updates to this section of the EIAR.

15.10 CUMULATIVE IMPACT ASSESSMENT

There are no changes or updates to this section of the EIAR.

15.11 INTERACTIONS ARISING

There are no changes or updates to this section of the EIAR.

15.12 MONITORING

There are no changes or updates to this section of the EIAR.

15.13 COMPLIANCE WITH PRINCIPLES FOR SUSTAINABLE DATA CENTRE DEVELOPMENT

There are no changes or updates to this section of the EIAR.

16 INTERACTIONS AND CUMULATIVE EFFECTS

16.1 INTRODUCTION

This chapter updates the previously prepared Interactions chapter so that it now expressly addresses Cumulative Effects as well as Interactions between environmental factors. The purpose of this chapter is to (i) identify how one environmental factor may interact with another during construction, operation and decommissioning / reinstatement; and (ii) to identify where the proposed development may give rise to cumulative effects when considered alongside other existing, permitted, under-construction or reasonably identifiable projects in the receiving environment.

The interaction of environmental factors was identified and carefully considered from the outset of the project. Interactions during construction, operational and decommissioning stages of the project are considered.

Table 16.1 presents a matrix of interactions likely to occur from the proposed development (highlighted in green). The level of interaction between the various media will vary greatly but the table allows the interactions to be identified and detailed where necessary. If the development does not have the potential to impact or affect the interaction, then that interaction is not highlighted in green. The interaction matrix is based on the potential interrelationships of the environmental media both during the construction, operation and decommissioning phases of the proposed development.

The assessment addresses the potential for cumulative effects to occur where there is temporal overlap between construction activities, additional demands on shared infrastructure (in particular the local and national road networks), and combined nuisance effects at sensitive receptors, and also considers the interaction of environmental factors in line with the EPA EIAR Guidelines (2022).

16.2 APPROACH

Interactions are considered where a change in one environmental factor has the potential to influence another environmental factor, either directly or indirectly. Cumulative effects are considered where the effects of the proposed development may combine with those of other plans or projects so as to create a greater overall effect than would arise from the project in isolation. For the purposes of this update, the original interaction matrix is retained as the core framework. It has been supplemented by a cumulative effects assessment.

The most material cumulative relationship is with the adjoining Castlelost energy projects, and in particular the Castlelost FlexGen 275MWe development, because of adjacency, the shared receiving landscape, and the potential for overlapping effects in relation to traffic, noise, air and climate, visual character and material assets. However, it should be noted that Project Admiral, Castlelost FlexGen and the permitted Castlelost ESS are independent technically and commercially and are not electrically connected. Accordingly, cumulative assessment is required because of shared environmental context rather than because the developments form a single undisclosed project.

Table 16.1 Interactions between Environmental Factors

	Population & Human Health	Air & Climate	Noise & Vibration	Landscape & Visual	Biodiversity	Waters	Soils and Geology	Material Assets	Traffic & Transport	Archaeology & Cultural Heritage
Population & Human Health		C/D, O	C/D, O	C/D, O			C/D		C/D,	
Air & Climate	C/D, O				C/D, O		C/D	C/D, O	C/D	
Noise & Vibration	C/D, O				C/D				C/D	
Landscape & Visual	C/D, O				C/D, O					C/D, O
Biodiversity		C/D, O	C/D	C/D, O		C/D, O	C/D	C/D, O	C/D	
Waters					C/D, O		C/D, O			
Soils and Geology	C/D	C/D			C/D	C/D				
Material Assets		C/D, O				C/D, O			C/D	
Traffic & Transport	C/D	C/D	C/D		C/D			C/D		C/D
Archaeology & Cultural Heritage				C/D, O					C/D	

C/D= Construction /Decommissioning

O = Operation

Table 16.2 Summary of Interactions

Interaction of Environmental Factors	Description
Air quality, climate, population and human health, biodiversity and traffic & transport	Construction traffic, earthworks and material handling interact through dust, combustion emissions, nuisance and road-safety effects. During operation, the DER configuration, solar PV, SOFC, BESS and carbon-management framework reduce higher-carbon reliance and strengthen the interaction between climate mitigation, infrastructure design and operational resource use. Similar controls remain relevant during decommissioning.
Noise and vibration, population and human health, biodiversity, traffic / transport and archaeology /cultural heritage	Noise and vibration interactions arise principally during construction and decommissioning from plant, HGV movement and certain earthworks. The proposed mitigation measures will reduce these impacts and the potential for indirect effects on ecological receptors and assist protection of sensitive heritage features during excavation and other ground disturbance.
Landscape and visual, biodiversity, population and human health, material assets and archaeology /cultural heritage	The landscape and visual impacts have potential interactions with impacts resulting from other environmental statement topics. The interactions of these impacts are usually highly complex in practice and this section serves to act as a brief overview to these issues. In addition, the proposed development will create varying impacts during the construction phase and the operation phase. No designated scenic views will be affected by the proposed development. Landscape mitigation also performs ecological, amenity and heritage functions. Increased setbacks, planted buffers, earthen berms, reinforced hedgerows, native woodland planting, visually permeable fencing and slender security infrastructure reduce visual prominence while supporting biodiversity connectivity, screening residential receptors and softening the relationship between the scheme and nearby heritage features.
Biodiversity, waters, soils and geology, landscape and lighting	Habitat protection, soil handling, drainage management and the lighting strategy are strongly interdependent. Retention of hedgerows and treelines, 5m stand-offs to ditches and boundaries, compensatory woodland, ponds, wild bird cover and dark / low-lux lighting zones all operate together to avoid or reduce effects on bats, birds and wider habitats. Construction timing controls, pre-clearance surveys, micro-exclusion zones and ecological supervision depend on how vegetation, drainage edges, compounds and temporary lighting are managed on the ground.

Interaction of Environmental Factors	Description
Waters, soils and geology, biodiversity, material assets and population / human health	The most pronounced construction interaction remains between soil disturbance, runoff generation, drainage infrastructure, aquatic receptors and downstream water quality. The disturbance of soil during construction has the potential to impact on water quality. Construction activities which disturb or expose the soil, including realignment of the stream, have the potential to elevate suspended solids in runoff from the site which could impact on local drains. Mitigation measures during the construction process will prevent sediment run-off and construction discharges. A preliminary CEMP has been prepared and shall be further development and implemented for the construction phase. This provides 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. There will be no direct process to soils or surface water bodies during the operational phase of the developments (in isolation or in combination). Stormwater generated on the site will be managed in accordance with sustainable best practice proposals as presented in the application documentation.
Traffic and transport, population and human health, air quality, climate, noise and vibration, and material assets	Traffic is a cross-cutting interaction factor. Construction-routing, road-condition surveys, logistics management, emergency access protection, pedestrian and cyclist measures, communication protocols, complaint logging and speed restrictions are relevant to population and human health, dust, emissions, vibration and road-asset protection.
Climate, material assets, waters and operational resource use	The project adopts a whole-life carbon approach with PAS 2080-aligned governance, carbon gateways, embodied-carbon accounting, procurement controls and a carbon data room. This interacts with material choice, waste reduction, logistics, energy infrastructure design and operational water use.
Archaeology and cultural heritage, landscape, construction traffic	Archaeological and built-heritage effects remain closely linked to layout, screening, road works and construction methods. Measures such as exclusion zones, fencing, geophysical survey, test trenching, townland-boundary recording, etc. shall be carried out and these are designed to mitigate impact.

Interaction of Environmental Factors	Description
and ground disturbance	Developments can sometimes infringe upon the amenity use and visual setting of a cultural heritage feature and as a result lead to unacceptable impacts. The proposed development will introduce a new type of development within the local area. The introduction of the proposed development will not however impact upon any inter-relationships between monuments located within the local landscape.

The proposed development of the individual and collectively development has the potential to impact on various environmental aspects, and there are interactions and inter-relationships between these aspects, as presented in Table 16.1 and 16.2.

16.3 CUMULATIVE EFFECTS

In environmental terms, cumulative assessment is concerned with the possibility that effects from Project Admiral may combine with the effects of other existing, permitted or reasonably foreseeable projects in the same receiving environment.

The adjoining Castlelost energy projects are the most relevant cumulative context because they share the same broad landscape setting and surrounding road environment. The most significant of these is Castlelost FlexGen (Westmeath Ref. 21/515), including its later alterations, with the permitted Castlelost ESS (Ref. 21/532) also relevant. These projects are independent technically and commercially and are not electrically connected to Project Admiral; nevertheless, their proximity means they remain relevant to cumulative assessment. In addition, the EIAR and AA Screening Report identify local permissions in the vicinity, together with the gas pigging station, the underground gas transmission connection and Yellow River Wind Farm, as projects considered in the wider cumulative receiving environment. These are presented in Table 16.3.

Table 16.3 Cumulative Effects

Other project / plan	Status	Principal pathways for cumulative interaction	Cumulative effects summary
Adjoining Castlelost FlexGen 275MWe project (Ref. 21/515) and related alterations	Construction nearing completion /operation end of Q1 2026	Landscape and visual, air and climate, noise, traffic, material assets, industrial character	This is the most material cumulative relationship because of adjacency and shared receptors. Although the projects are independent and not electrically connected, cumulative effects may arise from the combined presence of major energy and data infrastructure in the same landscape and from overlapping traffic, noise and emissions pathways. With the embedded design, setbacks, planting, traffic controls and carbon-management commitments, the revised documentation indicates that residual cumulative effects are not likely to exceed those already identified in the topic chapters.
Permitted Castlelost ESS (Ref. 21/532)	Permitted /not yet constructed	Landscape and visual, material assets, cumulative land take, traffic during any overlapping works	Potential cumulative effects relate mainly to the combined presence of energy infrastructure and any overlap in construction or maintenance activity. No evidence in the reviewed documentation indicates undisclosed operational dependence between the projects.
Gas pigging station and underground gas transmission connection	Operational / part of wider infrastructure context	Material assets, traffic, temporary construction disturbance, industrial infrastructure character	These projects contribute to the existing utility and energy-infrastructure context. Cumulative effects are principally contextual and infrastructural rather than indicative of a single combined project.
Yellow River Wind Farm	Operational	Landscape and visual, climate and energy context	Cumulative interaction is mainly in the wider energy-landscape context. The reviewed documentation does not indicate significant cumulative ecological or water-quality effects arising with Project Admiral.
Other local permissions identified in the EIAR / AA Screening Report within c.1000 m and the wider vicinity	Existing /permitted	Local traffic, temporary amenity effects, background land-use change	These projects are generally smaller in scale. Their principal cumulative relevance is to local traffic movement and incremental change in the receiving environment; they do not materially alter the overall cumulative conclusion.

In cumulative terms, the principal pathways remain traffic and transport; noise and vibration; air quality and climate; landscape and visual effects; and the shared demand placed on material assets and utility infrastructure. During construction, the greatest potential for cumulative effects would arise if construction or abnormal-load activities associated with nearby projects were to overlap on the same road network or within the same broad receptor area. The updated CTMP, routing strategy, road-condition surveys, emergency-access arrangements, communication measures and monitoring provisions materially reduce that risk.

During operation, the most notable cumulative issue is the combined presence of Project Admiral and adjoining energy infrastructure within the Castlelost area. That combined presence has potential to influence visual character, perceptions of industrialisation, local traffic activity associated with operation and maintenance, and the cumulative climate profile of the area. The development proposal includes substantial embedded mitigation and design responses, including strengthened landscape proposals, reduced visual clutter, on-site renewables and storage, SOFC-based lower-carbon generation, and PAS 2080-aligned carbon governance across the project life cycle.

In relation to biodiversity, waters and European sites, the AA Screening Report concludes that the proposed development is not likely, either alone or in combination with other plans or projects, to have significant effects on any European site. The in-combination review considered local permissions and other identified projects, and no significant in-combination effects were predicted having regard to the lack of meaningful source-pathway-receptor connectivity, the nature of the receiving environment and the project design and mitigation measures.

For decommissioning /reinstatement, cumulative effects could in principle arise where future decommissioning activities for Project Admiral coincide with works at adjoining energy infrastructure or other road-generating development. However, the decommissioning framework provides for a separate traffic management approach, phased dismantling, waste segregation, drainage inspection, contamination controls and reinstatement, such that any future cumulative effects would be temporary, managed and not expected to give rise to significant adverse residual effects.

When cumulative effects are considered, the most important relationship is with the adjoining Castlelost energy projects because they share the same receiving environment. The cumulative effects that could arise are principally related to traffic, noise, air and climate, landscape /visual character and material assets.

Having regard to the mitigation, monitoring and management measures incorporated into the proposed development and set out in this EIAR, it is concluded that, following implementation of those measures, the proposed development will not give rise to any likely significant adverse residual interactive or cumulative effects, other than those identified and assessed in the relevant topic chapters.

17 MAJOR ACCIDENTS AND DISASTERS

17.1 INTRODUCTION

This chapter has been prepared for inclusion in the Environmental Impact Assessment Report (EIAR) to provide a dedicated assessment of the vulnerability of the Proposed Development (Project Admiral) 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).

A full description of Project Admiral can be found in Chapter 2 of the EIAR (Proposed Development) and updated in this Addendum to the EIAR in Response to the Further Information Request.

17.2 BACKGROUND AND PURPOSE

The EIA Directive requires that EIARs consider the likely significant effects of the project on the environment, including effects deriving from the vulnerability of the project to risks of major accidents and /or disasters that are relevant to it. In this context, the term "*major accident*" includes low-likelihood, high-consequence events such as fires, explosions, loss of containment and associated secondary effects (for example, contaminated firewater/runoff), whilst "*disasters*" may include natural hazards (for example, extreme rainfall events) and other external events.

This chapter focuses on those accident /disaster scenarios that are credible for Project Admiral and that could give rise to environmental effects beyond normal operational emissions and discharges.

17.3 GUIDANCE AND LEGISLATION

The methodology has been prepared having regard to the following principal sources:

- Directive 2011/92/EU as amended by Directive 2014/52/EU, particularly the requirement to assess the vulnerability of projects to major accidents and / or disasters relevant to the project concerned;
- EPA Guidelines on the Information to be Contained in EIARs (2022);
- Environmental Impact Assessment of Projects - Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);

- EPA Guidance on Assessing and Costing Environmental Liabilities (2014);
- A Framework for Major Emergency Management Guidance Document 1 - A Guide to Risk Assessment in Major Emergency Management (Government of Ireland, 2010);
- Land Use Planning Assessment for a Proposed Flexgen Peaker Generation Plant at Castlelost, Co. Westmeath, Report Ref 237501.0404RR0124, 24 July 2023;
- Available information for Project Admiral.

17.4 SCOPE AND METHODOLOGY

Major accidents and /or disasters are hazards that have the potential to affect and be affected by the proposed development. These include accidents during construction, operation and decommissioning caused by operational failure and /or natural hazards.

The scope of this assessment is centred on the understanding that the proposed development will be designed, built and maintained in line with best current practice and in compliance with the relevant health and safety standards. As such, major accidents resulting from the proposed development are considered very unlikely.

Notwithstanding that baseline assumption, a risk analysis-based methodology covering identification, likelihood, consequence and risk evaluation has been used for this assessment.

The EPA EIAR Guidelines (2022) recognise that EIARs may draw upon established risk assessment work undertaken for other regulatory regimes, where relevant, while ensuring that the EIAR clearly identifies the potential environmental effects and the mitigation that avoids or reduces significant adverse effects. The assessment in this chapter therefore:

- identifies major accident and disaster hazards relevant to the proposed development;
- considers credible source-pathway-receptor linkages for environmental effects;
- summarises likelihood /risk context in a proportionate manner, drawing on available quantitative and semi-quantitative assessments;
- identifies mitigation (embedded design measures and additional measures where required) and provides a conclusion on residual effects.

17.5 CATEGORISATION OF THE BASELINE ENVIRONMENT

A desk-based review of the baseline receiving environment has been undertaken because the local and regional context influences both the likelihood and the potential consequences of a major accident or disaster. For Project Admiral, the most relevant baseline characteristics are the site drainage network and downstream connectivity to the River Monagh catchment, the groundwater and soils context, the low baseline flood risk identified in the EIAR, and the presence of the adjoining Castlelost Flexgen facility.

The Castlelost FlexGen is classified as a Lower Tier Seveso site and is subject to the provisions of the Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations, 2015 (COMAH Regulations 2015).

17.6 IMPACT ASSESSMENT METHODOLOGY

The site-specific risk assessment focuses on unplanned but plausible incidents during construction, operation and decommissioning. The process adopted for this assessment comprises: (i) identification of potential risks, (ii) risk classification through likelihood and consequence assessment, and (iii) risk evaluation by reference to a risk matrix.

17.6.1 IDENTIFICATION OF POTENTIAL RISKS

Potential risks were identified in respect of both the vulnerability of the Project Admiral to major accidents /disasters and the potential for the Project Admiral to cause such events. The screening focused on non-standard but plausible incidents capable of giving rise to non-trivial environmental effects. Off-site events were also considered where they could have consequential effects on Project Admiral.

17.6.2 RISK CLASSIFICATION - LIKELIHOOD

Likelihood has been classified using a five-point scale aligned to the approach reflected in the comparator EIAR chapter and the Government of Ireland major emergency management guidance. The approach assumes the likelihood category is met where one or more aspects of the description are satisfied.

Table 17.1 Risk Classification - Likelihood

Ranking	Likelihood	Description
1	Extremely unlikely	May occur only in exceptional circumstances; of the order of once in 500 years or more.
2	Very unlikely	Not expected to occur; little recorded evidence or opportunity to occur; of the order of once in 100-500 years.
3	Unlikely	May occur at some time; limited evidence and some opportunity for occurrence; of the order of once in 10-100 years.
4	Likely	May occur with some regularity; supported by recorded incidents or strong anecdotal evidence; of the order of once in 1-10 years.
5	Very likely	Expected to occur frequently or repeatedly; may occur more than once per year.

17.6.3 RISK CLASSIFICATION - CONSEQUENCE

The consequence rating assumes, on a conservative EIAR basis, that the relevant mitigation measures and safety procedures have failed to prevent an environmental effect. The classification used in this document is set out below.

Table 17.2 Risk Classification - Consequence

Ranking	Consequence	Description
1	Minor	No contamination or only very localised effects; minor local disruption; no fatalities.
2	Limited	Simple contamination with localised, short-duration effects that could be remediated; limited disruption.
3	Serious	Potential for wider or more persistent environmental contamination, multiple serious injuries and partial community disruption.
4	Very serious	Heavy contamination, localised severe effects or extended duration; major injuries / evacuation and poor community functioning.
5	Catastrophic	Very heavy and widespread contamination of extended duration; large-scale impact, prolonged service loss and severe community disruption.

17.6.4 RISK EVALUATION

Once classified, likelihood and consequence have been multiplied to establish a risk score and to place each scenario within a colour-coded risk matrix. For the purposes of this assessment, green denotes low risk, amber denotes medium risk and red denotes high risk. Events falling within the amber or red zones would require further consideration as potentially significant EIAR risks.

Table 17.3 Risk Evaluation

Likelihood /Consequence	1 Minor	2 Limited	3 Serious	4 Very Serious	5 Catastrophic
5 Very likely	5	10	15	20	25
4 Likely	4	8	12	16	20
3 Unlikely	3	6	9	12	15
2 Very unlikely	2	4	6	8	10
1 Extremely unlikely	1	2	3	4	5

17.7 RECEIVING ENVIRONMENT AND ENVIRONMENTAL RECEPTORS

The principal surface water receptor is the River Monagh catchment. Existing drainage ditches within and around the site connect, directly or indirectly, to the wider catchment. As a result, any uncontrolled spill, firewater release or sediment-laden runoff could affect surface water if containment and drainage controls failed.

Groundwater, soils and subsoils also represent relevant receptors. The EIAR records that the site is at low flood risk, but climate-related extreme rainfall remains relevant because it could affect the performance of containment and drainage systems if not appropriately designed and maintained.

The presence of the adjoining Castlelost Flexgen lower-tier COMAH facility is a further relevant feature of the receiving environment because it creates a credible external accident source requiring consideration of cross-boundary effects and coordinated emergency response.

17.8 IDENTIFICATION OF RELEVANT MAJOR ACCIDENT AND DISASTER SCENARIOS

Table 17.4 identifies the principal scenarios carried forward for the Admiral assessment. The screening focuses on scenarios with a credible environmental source-pathway-receptor linkage rather than matters confined solely to occupational safety.

Table 17.4 Principal Scenarios

Scenario group	Representative event	Primary environmental pathway	Key receptors	Screening outcome
Construction	Fuel, chemical, concrete washout or sediment release	Runoff to drains / ditches or infiltration to soil / groundwater	Soils, groundwater, surface water	Credible; assessed qualitatively with standard construction controls.
Construction	Construction fire with contaminated runoff	Firewater / runoff to drainage or overland flow	Soils, drainage, surface water, local air	Credible but low-likelihood; assessed qualitatively.
Fuel / oil systems	Loss of containment from oil-containing equipment or tanker unloading	Overland flow, infiltration, drainage entry	Soils, groundwater, River Monagh catchment	Credible; consequence depends on containment performance.
Fire and firefighting	Fire within the DC, fuel-cell or transformer areas	Contaminated firewater routed through drainage / retention systems	Surface water, soils, groundwater, local air	Credible; controlled primarily by retention and isolation infrastructure.
Natural gas systems	Gas leak / rupture with ignition or explosion	Smoke, debris and contaminated runoff	Local environment, soils, surface water	Credible but environmental effects are mainly secondary.
BESS	Thermal runaway / enclosure fire / propagation	Smoke and evolved gases; contaminated runoff	Local air quality, soils, surface water	Credible but unlikely; mitigation integral to design.
Electrical infrastructure	Transformer or switchgear fire (incl. insulating fluids)	Local spill and runoff to drainage if not contained	Soils; surface waters	Localised; managed via containment and drainage controls
External accident source	Major accident at adjoining Castlelost Flexgen	Heat, smoke, debris, emergency access or coordinated response effects	Adjoining lands, local environment, emergency management interface	Relevant external hazard; considered using available LUP information.
External / natural hazards	Extreme rainfall /flooding, lightning, external fire /wildfire	Containment overtopping, bypass or fire initiation	Surface water, soils, local air	Relevant to resilience of containment and drainage systems.

17.9 RISK ASSESSMENT

The following tables apply the likelihood-consequence matrix to the Admiral scenarios. Likelihood ratings reflect the design and management measures described in the EIAR and supporting information. Consequence ratings conservatively assume that an event occurs and leads to an environmental effect.

Table 17.5 Construction Phase

Risk ID	Potential risk	Principal environmental effect	Likelihood (1-5)	Consequence (1-5)	Risk score / category	Basis of rating
C1	Construction spill, sediment release or concrete washout	Localised contamination of soils, groundwater, drains or nearby waters	2	2	4 Low	Very unlikely in view of CEMP controls, bunded storage, designated refuelling /washout areas and spill response procedures. If it occurred, the likely effect would be simple, localised contamination of short duration.
C2	Construction fire or fuel incident with contaminated runoff	Local smoke, contaminated runoff and possible soil /drainage pollution	1	3	3 Low	Extremely unlikely because flammable inventories during construction are limited and subject to hot-works, storage and emergency controls. Consequence is serious on a conservative basis because contaminated runoff and smoke could require active incident management.

Table 17.6 Operational Phase

Risk ID	Potential risk	Principal environmental effect	Likelihood (1-5)	Consequence (1-5)	Risk score / category	Basis of rating
O1	Loss of containment from secondary containment	Pollution of soils, groundwater or drainage with potential downstream pathway	2	3	6 Low	Very unlikely given bunding, separators, containment and operational procedures. Consequence is serious because, if controls failed, an uncontrolled release could affect the River Monagh catchment.
O2	Fire within the DC, fuel-cell or associated plant areas with contaminated firewater	Contaminated firewater, local smoke and deposition	2	3	6 Low	Very unlikely because of passive / active fire protection and dedicated firewater infrastructure. Consequence is serious because an uncontrolled firewater release could affect multiple environmental media.

Risk ID	Potential risk	Principal environmental effect	Likelihood (1-5)	Consequence (1-5)	Risk score /category	Basis of rating
O3	Natural gas leak /rupture with ignition or explosion at AGI or associated infrastructure	Smoke, debris, emergency runoff and localised pollution	2	3	6 Low	Very unlikely due to gas detection, isolation and shutdown systems and the absence of bulk gas storage onsite. Environmental effects would be mainly secondary but potentially serious in the immediate vicinity.
O4	BESS thermal runaway /enclosure fire /propagation	Smoke, evolved gases and contaminated runoff	2	3	6 Low	Very unlikely in light of UL9540A-tested enclosures, NFPA 855 spacing, fire-water provision and firewater retention. Consequence is conservatively taken as serious because a large enclosure fire would require intensive management.
O5	Transformer or switchgear fire / insulating oil release	Local spill and runoff to drainage if containment failed	2	2	4 Low	Very unlikely because transformers are banded and drainage controls are provided. Consequences would normally be localised and remediable.
O6	Major accident at adjoining Castlelost Flexgen lower-tier Seveso facility	Cross-boundary heat, smoke, debris or coordinated emergency response effects	2	3	6 Low	Very unlikely in light of the Seveso control regime and the available LUP findings, which do not indicate extensive off-site impact zones affecting occupied off-site buildings. Consequence is serious on a precautionary basis because cross-boundary effects remain possible at the shared interface.
O7	Extreme rainfall /flooding affecting containment and drainage performance	Overtopping /bypass of containment and mobilisation of contaminants	2	2	4 Low	Very unlikely because the site is identified as low flood risk and the drainage design includes attenuation, retention and penstock isolation. If it occurred, the likely environmental effect would be localised and remediable.
O8	Lightning strike or external fire / wildfire affecting site compounds	Fire initiation, local smoke and contaminated runoff	1	3	3 Low	Extremely unlikely but relevant as an external hazard. Consequence is serious on a conservative basis because a fire

Risk ID	Potential risk	Principal environmental effect	Likelihood (1-5)	Consequence (1-5)	Risk score /category	Basis of rating
						event could affect local air quality and require retention of contaminated runoff.

For ease of reference, Table 17.7 places the identified Admiral risk IDs within the applied risk matrix. All identified events fall in the green classification.

Table 17.7 Risk Summary

Risk ID	1 Minor	2 Limited	3 Serious	4 Very serious	5 Catastrophic
5 Very likely					
4 Likely					
3 Unlikely					
2 Very unlikely		C1, O5, O7, D1	O1, O2, O3, O4, O6		
1 Extremely unlikely			C2, O8, D2		

No amber or red events have been identified for Admiral on the basis of the EIAR design assumptions and the embedded containment, firewater and emergency-response measures described for the project.

17.10 RESIDUAL EFFECTS AND CONCLUSION

Project Admiral includes infrastructure and activities that are relevant to major accidents and /or disasters, notably oil-containing equipment, natural gas systems, BESS plant, transformers, firewater / drainage systems, and construction and decommissioning activities.

The most sensitive environmental receptors are the site drainage network, the River Monagh catchment, soils and groundwater. In the absence of design controls, some accidental scenarios, particularly uncontrolled spill or contaminated firewater release, could have the potential to cause significant adverse environmental effects.

However, the project as described in the EIAR and EIAR Addendum incorporates a substantial suite of embedded measures intended specifically to interrupt source-pathway-receptor linkages. The updated risk matrix assessment confirms that the identified Admiral scenarios all fall within the low-risk zone.

Accordingly, subject to detailed design confirmation and implementation of the identified mitigation measures and management procedures, significant adverse effects on the environment arising from the vulnerability of Project Admiral to risks of major accidents and /or disasters are not likely to be significant.

18 SCHEDULE OF MITIGATION

18.1 INTRODUCTION

This consolidated schedule 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.

For the purposes of this schedule, "*mitigation*" includes: (i) measures embedded in the project design and layout (mitigation by avoidance and reduction) and (ii) management, procedural and monitoring measures to be implemented during construction, operation, decommissioning and reinstatement (as applicable).

All mitigation and management measures shall be incorporated into the Contractor's final Construction Environmental Management Plan (CEMP), together with any planning conditions and any additional method statements required to implement the controls described herein. The CEMP is a live document and will be reviewed and updated as required.

18.2 STRATEGY AND IMPLEMENTATION

Mitigation measures are incorporated at various stages of the proposed development. The preferred hierarchy of mitigation applied is:

- Prevention: at design stage – avoid, relocate or modify the design and/or do not proceed with the development.
- Reduction: introduce design modification or additional structures (e.g. screens), reduce size and scale of development, etc.
- Compensation or remediation: provide like-for-like replacement for any lost environmental elements, where feasible.

During construction, environmental protection measures will be implemented through the CEMP and associated plans and method statements (including, as relevant, a Construction Traffic Management Plan and Dust Management Plan). Operational controls will be implemented through applicable standards and management systems, including licensing requirements where relevant. Decommissioning and reinstatement will be implemented through a site closure /decommissioning plan and, in the case of the temporary construction access road, a decommissioning and reinstatement method statement.

18.3 SCHEDULE OF MEASURES BY ENVIRONMENTAL FACTOR

The measures below are grouped by environmental factor and include mitigation by design, construction management measures, monitoring provisions and reinstatement commitments, as relevant to the proposed development (as amended). Measures apply to construction, operation and decommissioning/reinstatement phases as applicable.

18.3.1 POPULATION AND HUMAN HEALTH

Phase	Measures / features
Design / Embedded features	The project is to be implemented with the site access strategy, construction compounds, welfare facilities and internal arrangements set out in the Preliminary CEMP so that construction activities can be managed in an orderly and safe manner. During decommissioning, access is to be via the established main access route from the R446, with separate decommissioning compounds for the DC facility and DER.
Construction management measures	The CEMP is to be developed by the appointed contractor before works commence, submitted for written approval, communicated to all personnel and reviewed monthly and after any accident or emergency. Environmental awareness training is to be provided through induction, toolbox talks and briefing sessions and is to address the CEMP, emergency response, spill control, waste management, water pollution prevention, dust, noise and vibration, wildlife protection, material storage and refuelling, complaints handling and environmental incident reporting. The Project Manager / SHEQ Adviser is to receive, document and respond to third-party communications. Complaints from the public are to be logged and recorded on the complaint register. Site compounds are to provide statutory welfare facilities, potable water, toilets, washing/changing facilities, first aid, rest areas, lighting and ventilation, with wastewater collected and removed from site.
Operational measures	The EIAR identifies operational effects on population and human health as neutral, subject to implementation of the project mitigation framework.
Monitoring provisions	Training records, communication logs, complaint records, inspections, audits and management reviews are to be maintained in accordance with the contractor's management system. Monthly contract review meetings are to address legal compliance, incidents / non-conformances and close-out of audit corrective actions.
Decommissioning /reinstatement commitments	Within 12 months of any proposed cessation of activities, the site owner is to engage with the local authority regarding closure and decommissioning options. A project Health and Safety Plan is to be implemented for decommissioning, and a Traffic Management Plan is to be developed at least 6 months in advance of decommissioning and agreed with the local authority.

	Decommissioning is to proceed in a planned, phased and well-resourced manner, with heavy activities avoided outside agreed working hours.
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18.3.2 BIODIVERSITY

Phase	Measures / features
Design / Embedded features	Compensatory woodland is to be planted as per the plans and particulars of the application, including a 4.34 ha plot adjacent to the ring fort and a woodland strip along the southern motorway boundary to facilitate woodcock and snipe. All hedgerows and treelines in the Solar Farm Development area are to be retained; as much tree line and hedgerow as possible is to be retained elsewhere, with mature hedgerow replanted in proportion to that removed. Where possible certain trees are to be retained as monolith features through veteranisation. Some ash in the northern area of the site is to be retained if possible with the crown removed and additional potential roost features cut into it. New woodland is to be provided to compensate for loss of bat feeding habitat, and the attic in Building 1 is to be adapted for bats with three bat slates, internal baffles and three 1FF Schwegler (or equivalent) bat boxes. The lighting strategy is to provide dark, low-lux and standard lighting zones. The western boundary by DC Building 1, the emergency road, the new woodland and ponds are to remain unlit. Any unavoidable lighting is to be directional / cowled, directed downward and inward, shielded against upward and horizontal spill, and operated only when required. Low-light zones are to use 6m high 4000k fittings with motion sensors. Solar panels are to incorporate non-polarising white grid partitioning to reduce polarised light effects. Ponds are to be created / enhanced within the DC facility, screened from view and maintained as dark features at night for duck and wader species. A minimum 5m buffer is to be maintained to drain ditches, hedgerows and tree lines. A total of 11.16 ha is to be designated for wild bird cover planting to mitigate Yellowhammer habitat loss
Construction management measures	Tree felling should ideally be undertaken from September to late October / early November or from late January / end February. Outside those periods, an Ecological Clerk of Works is to verify that impacts will not arise before works proceed.

	All trees with potential roost features are to be subject to additional at-height survey before felling. Vegetation clearance is to take place outside the nesting bird season (1 March to 31 August). Where this is not possible, a nesting bird survey is to be completed and vegetation removed within 48 hours only where no nests or nesting birds are recorded. An Ornithologist / Ecological Clerk of Works is to be present during construction to micromanage working areas, maintain micro-exclusion zones where required and avoid disturbance to key bird species. Construction may be limited in particular areas at times when they are of value to birds, with buffer zones and timings determined through co-operation between the overseeing ornithologist, site manager and NPWS / Local Authority representatives. A 100m construction exclusion zone is to be maintained where breeding barn owl nesting has been identified, with no construction in the breeding season at that location. Where construction lighting is unavoidable, it is to be low-intensity, sensor-based and directed away from mature trees, treelines and woodland. All staff are to be briefed on biodiversity controls; unexpected wildlife discoveries are to be referred immediately to the SHEQ Adviser; tree protection zones are to be set up where trees are close to works; and any invasive plants encountered are to be managed by specialist contractors
Operational measures	Wild bird cover planting is to comprise primarily oats / barley (65%), together with linseed (10%), cornflower annuals (10%) and native provenance annual wildflower / heritage grain elements (15% / 2 ha). These areas are to be planted annually by 31 May, are not to be harvested, and are not to receive pesticides. Livestock may clear areas only between 15 and 30 March. Perennial wildflower margins are to be provided at 25–50 cm width using the specified WF03-type mix.
Monitoring provisions	Yellowhammer monitoring is to be undertaken for Years 1 to 3 post-construction. If significant decline is recorded, additional measures are to be implemented to prevent decline, which may include securing adjacent lands and planting tillage. Post-construction bat monitoring is to be undertaken at Years 1, 3 and 5 following commencement of development, focusing on activity levels, habitat usage and the effectiveness of mitigation measures.
Decommissioning /reinstatement commitments	Prior to and during decommissioning, environmental surveys are to assess soil, water and biodiversity conditions, including the presence of protected or invasive species. Final ground grading, contouring, seeding and revegetation are to restore the site to a condition consistent with pre-construction

	land use, typically grassland, unless otherwise agreed with the local authority.
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18.3.3 SOILS AND GEOLOGY

Phase	Measures / features
Design / Embedded features	Construction layouts are to minimise impermeable area and limit heavy machinery access through sensitive soils using designated routes and low-compaction equipment. Operational infiltration, containment and protection measures are to include grading to infiltration areas, shallow basins / trenches, permeable pavements, bioswales, detention / retention areas, native deep-rooted planting, double-walled tanks, bunded containment, leak detection, shut-off valves and spill containment walls. Where waste heat or vibration could affect soils or bedrock, design responses are to include heat capture / reuse, insulation, vegetation buffers, vibration isolation pads, dampers and flexible connections.
Construction management measures	Topsoil is to be stripped carefully, stored in designated protected areas and retained for reuse during restoration. Silt fences, sediment traps, vegetation buffers, erosion control blankets and drainage controls are to be used where required to protect soil and prevent contamination. Fuel, oils and chemicals are to be stored on impervious bases within secure bunded areas with 110% capacity, at least 10m from watercourses. Mobile refuelling is to occur on impermeable surfaces away from drains, with spill kits and drip trays available. Personnel are to be trained in chemical handling, storage and emergency spill response, and all incidents are to be reported, recorded and investigated.
Operational measures	Inspection and emergency response arrangements are to be maintained for chemical storage and transfer areas, including routing any spills away from groundwater recharge zones. Continuous soil temperature and moisture monitoring is to be used where waste heat may affect soils.
Monitoring provisions	At decommissioning, the independent closure audit / assessment is to consider whether any soil or groundwater contamination remains that could affect human or environmental receptors.
Decommissioning /reinstatement commitments	Foundations are to be removed (or reduced) to approximately 1m below grade, with roads / culverts and surplus material removed as appropriate, followed by regrading and revegetation. Soils stored on site are to be reused for restoration where suitable; if insufficient, imported topsoil /subsoil is to be from a source acceptable to the local authority.

	Any spill-impacted soils identified during decommissioning are to be removed from site and disposed of at an appropriate facility.
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18.3.4 WATER ENVIRONMENT

Phase	Measures / features
Design / Embedded features	Operational water management measures are to include slow-flow grading, shallow basins / trenches, permeable paving, bioswales, detention / retention ponds, native planting, rainwater storage and engineered infiltration / treatment features. Spill protection is to include double-walled tanks, secondary containment, chemically resistant liners, leak detection, automatic shut-off valves, early warning alarms and spill containment walls with safe drainage. The drainage design is to maintain separation and isolation of contaminated surface water from uncontaminated surface water, with risk areas discharged to separate systems and dirty waters treated before infiltration / discharge. Surface water generated on hardstanding will pass through multiple ponds, and dirty-water drainage areas are to include hydrocarbon interceptors. Flood-resilient design measures are to include maintaining open drains, watercourses and culvert /bridge inlets, watertight underground cabling and ducting, SuDS for roof and hardstanding runoff, and allowing areas that currently flood to continue to flood. Solar panels are to be mounted above existing ground level without significantly altering the existing topographical profile, with the lowest part of the panel approximately 800mm above ground.
Construction management measures	Silt fences, temporary basins, sediment traps, check dams and erosion controls are to be used where required to prevent sediment-laden runoff. Buffer zones, silt traps and settlement ponds are to be used to avoid sediment reaching drains and watercourses. Construction materials are to be stored in covered areas with secondary containment. Construction compounds are to be located at least 30m from on-site drains, with hardstanding delivery areas set a minimum of 10m from drainage ditches. All refuelling areas are to be on hardstanding, in agreed designated locations, with supervised deliveries, level checks before delivery, bunded storage and spill kits at refuelling points and within working areas. Fuel, oil and chemicals are to be stored on impervious bases within secure bunded areas with 110% capacity and kept at least 10m from watercourses. A spill response / incident response procedure is to be maintained. In the event of a spill, the source is to be stopped, vulnerable

	areas such as drains or watercourses protected, absorbent and spill control materials used, and relevant stakeholders notified where required. Wet concrete controls are to include use of ready-mix /pre-cast elements where possible, no batching of wet cement on site, no wash-out of plant on site, minimum-water chute cleaning only, and no discharge of cement-contaminated waters to the drainage system or to any drain / watercourse. For bridge and in-stream works, the method statement is to be made available to Westmeath County Council, NPWS and IFI before works commence. Works involving the Kil1 channel are to commence from the downstream end, with a cofferdam placed 100m downstream of each construction area and straw bales used at intervals to trap sediment.
Operational measures	The operational drainage, containment and treatment measures identified in EIAR and the WFD assessment are to be maintained for the lifetime of the development. Settlement ponds are to be operated to clarify surface waters from hardstanding prior to entry to surface watercourses; particulate matter captured in settlement ponds is to be transferred to landscaped perimeter bunds. Hydrocarbon interceptors are to be maintained and oils removed regularly by an appropriately licensed contractor. Water-efficient techniques are to be used at source where possible to maximise reuse, and water is to be recycled within the process from which it issues.
Monitoring provisions	Water quality monitoring is to include periodic inspection of the downstream watercourse to the south during construction for visible signs of deterioration. Frequent inspection and maintenance of erosion, sediment and runoff controls are required during construction, including inspection of silt fences as part of the daily inspection regime and removal of trapped silt at regular intervals and before predicted flood events. Regular visual monitoring of settlement ponds is required to confirm that no visible oil or fuel contamination is present; groundwater and surface water monitoring is to continue as per the proposed regime. During decommissioning, drainage systems are to be inspected and cleaned, and any sludges /oils are to be contained and removed off site.
Decommissioning /reinstatement commitments	Where feasible, dismantling is to be undertaken indoors away from clean surface water collection points. Loading / unloading is to occur in designated tanker delivery areas isolated from clean surface water inlets.

	Waste oils and greases removed during decommissioning are to be stored in suitable containers on hardstanding within bunded or otherwise contained areas; additional spill kits are to be provided; and established accident prevention and emergency response procedures are to be followed. The independent closure audit / assessment is to verify that no residual impacts to surface water or groundwater remain. Following completion of bridge /channel works, sediment captured by downstream controls is to be removed periodically over the first number of weeks following completion of the construction phase.
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18.3.5 MATERIAL ASSETS

Phase	Measures / features
Design / Embedded features	Soils arising from earthworks are to be retained on site and used to form boundary berms where suitable. Construction compounds are to be laid out with geotextile base, silt fencing, secure storage, welfare facilities, waste storage areas and parking to support phased delivery of the works. The development will be a grid-connected campus with on-site solar PV, SOFC generation and BESS configured to optimise use of energy sources for cost, carbon intensity, reliability and matching of demand. The BESS is to function as a behind-the-meter energy buffer /peak-shaving asset to support local consumption, load balancing and power quality on site rather than as an export-led grid trading asset.
Construction management measures	A site-specific Construction and Demolition Resource / Waste Management Plan is to be implemented as a live document through the construction phase. Materials are to be stored so they are protected from damage by traffic, personnel movement and weather. Plant, equipment and materials are to be stored at least 10m from drains. Waste is to be segregated and managed in accordance with the waste hierarchy and relevant permits / duty of care requirements.
Operational measures	Proper management of the site's infrastructure and services. DER to be connected and operated in accordance with grid statutory bodies.
Monitoring provisions	Records of inspections, waste transfers and material management are to be maintained in accordance with the contractor's management system.

Decommissioning /reinstatement commitments	Residual materials at decommissioning are to be managed through reuse, return to supplier, recycling / recovery or disposal, as appropriate. Plant, equipment, battery modules, fuel cell components, inverters, cabling, pipework and associated infrastructure are to be dismantled, removed and recycled / disposed of appropriately. Internal roads and hardstanding may be broken up and recycled as infill material where not retained for future use. All transfers of products, materials and waste off site are to be recorded and retained to support closure certification.
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18.3.6 AIR QUALITY

Phase	Measures / features
Design / Embedded features	The site layout and construction programme are to be planned with dust management in mind, and activities with potential for significant emissions are to be located as far as possible from residential and commercial receptors. Vehicle routes are to be hard surfaced or formed in compressed ground, the construction compound is to include hardstanding, and material storage bays are to be oriented away from the dominant wind direction.
Construction management measures	A Dust Management Plan is to be developed and implemented as part of the CEMP, with a designated Site Agent responsible for dust management. An effective training programme for site personnel is to operate throughout the works and a communication strategy is to be maintained with the local community. Dust minimisation and control measures are to be implemented and regularly reviewed, including fixed and mobile water sprays for stockpiles and road / yard surfaces during dry or windy weather. Additional controls are to include on-site speed limits and signage, engines switched off when not in use, servicing of smoking plant, no burning on site, avoidance of vehicle queuing at the entrance and provision of wheel wash facilities with appropriate containment. The National Guidelines for effective management of Aspergillus risks are to be followed.
Operational measures	No separate operational air quality mitigation measure is identified beyond implementation of the design and construction controls identified in the EIAR.
Monitoring provisions	A daily inspection programme is to verify the effective operation of dust controls.

	Dust deposition monitoring is to be undertaken at site boundary locations during construction using Bergerhoff gauges, with laboratory analysis and comparison against the TA Luft limit of 350 mg/m²/day average over 30 days. Where monitoring indicates exceedance, the source is to be identified and corrective measures implemented. During decommissioning, a noise and dust management plan is to be integrated into the overall decommissioning plan, and dust monitoring is to be undertaken at four boundary locations, with emissions complying with recognised limit / guide values.
Decommissioning /reinstatement commitments	At the conclusion of decommissioning, all equipment and machinery used for decommissioning are to be removed from the site.

18.3.7 NOISE AND VIBRATION

Phase	Measures / features
Design / Embedded features	Acoustic louvres are to be installed along the long sides of the data centre buildings to reduce breakout noise from internal plant rooms. Operational equipment is to be selected, serviced and maintained so as to avoid increases in noise and to avoid clearly audible tonal or impulsive noise at sensitive receptors.
Construction management measures	A Site Representative is to be appointed for noise and vibration matters and complaints are to be investigated, recorded and closed out. Temporary acoustic screening / hoarding is to be installed where works take place near sensitive receptors and where there is no existing screening, with the aim of breaking line of sight to lower windows. Certain equipment operations are to be controlled through monitoring and timing of use. Low-noise plant and enclosures are to be used, and all outdoor equipment is to comply with Directive 2000/14/EC as amended. As a precautionary measure, vibration monitoring is to be undertaken where rollers or similar equipment operate close to NSRs 1 and 2.
Operational measures	Operational plant and equipment are to be maintained so that noise emissions do not increase over time.
Monitoring provisions	Real-time construction noise monitoring, capable of on-site and remote review, is to be undertaken at boundary positions representative of the nearest noise sensitive receptors.

	If threshold values are met or exceeded, the relevant works are to cease immediately and additional mitigation measures implemented. During decommissioning, a noise and dust management plan is to apply and noise monitoring is to be undertaken at four boundary locations, with emissions complying with recognised limit / guide values.
Decommissioning /reinstatement commitments	Decommissioning working hours are to be agreed with the planning authority, with heavy activities avoided outside the normal working hours set out in the Decommissioning Plan.

18.3.8 LANDSCAPE AND VISUAL

Phase	Measures / features
Design / Embedded features	Landscape tender drawings and specifications are to be prepared so landscape works are implemented in accordance with best practice, including soil handling, tree works, planting and maintenance. The four data centre buildings closest to the R446 are reconfigured so their setback from the road corridor increases from approximately 49m to approximately 75m, while maintaining compliant internal circulation, fire access and emergency response arrangements. The landscape buffer along the R446 and adjoining residential boundaries is increased with approximately 25m of additional landscaped separation and a total setback of approximately 75m from the R446. The expanded buffer is to be planted predominantly with native tree and shrub species and shaped with soft, undulating earth mounds so that it develops into a woodland-like screening landscape over time. The parapet height of the data centre buildings fronting the R446 has been reduced from 18m to 16m, with the parapet profile stepped back toward the roof centre to conceal roof plant and reduce the perceived building edge. A steel mesh architectural veil with natural steel finish will be applied to prominent facades to soften visual solidity, introduce depth and shadow variation, and provide cohesion across the campus. The office elements are to provide contrasting architectural treatment and a campus-style focal point, with centralised office arrangement and hard / soft landscaping used to break linear repetition and humanise the development. Earthen berms are to be provided along the northern, western and north-eastern boundaries of the data hall area and planted with

	native woodland species to enhance screening and assist visual integration. New and enhanced native hedgerows and native woodland planting are to be established and maintained at approximately 3–4 m height to screen and soften views from nearby dwellings and the R446. The solar layout is to provide a minimum setback of 40m from the nearest residential boundaries. Solar array fencing is to comprise visually permeable post-and-wire stockproof fencing with a maximum height of approximately 2.45 m, screened by boundary vegetation and new hedgerow /woodland on the public-facing side. CCTV poles within the solar development are to be slender structures of approximately 4.5m maximum height.
Construction management measures	All tree protection measures are to be installed at the commencement of the works (following arborist assessment) and removed on a phased basis as development stages are completed. Planting is to be carried out in the next available planting season following completion of the main civil engineering and building works, and the contract works are to be supervised by a suitably qualified landscape architect. The contractor is to keep the site clean, tidy and safe, prevent materials / waste / dust from blowing around and phase works to reduce unnecessary visual clutter. Construction compounds and site boundaries are to include fencing / hoarding and lighting positioned to avoid nuisance to neighbouring properties.
Operational measures	Operational landscape maintenance is to include weed control, replacement planting, pruning and related establishment works for the first three years from planting. Boundary planting, berm planting and plaza planting are to be maintained so that screening effectiveness is secured as the landscape mitigation matures.
Monitoring provisions	Landscape works are to be monitored on an ongoing basis to ensure quality is maintained. Cross-sections and photomontages prepared as part of the further information response are to be used as reference documents for the implementation and maturation of screening proposals.
Decommissioning /reinstatement commitments	Following decommissioning of the built development, land is to be regraded and revegetated and returned, in consultation with the local authority, to previous or otherwise agreed condition.

18.3.9 TRAFFIC AND TRANSPORT

Phase	Measures / features
Design / Embedded features	The Road Safety Audit recommendations for the site access junctions onto the R446, L51251 and L11272 are to be implemented. Site access junctions are to be designed to accommodate the largest expected vehicle types, with gates set back from the public road so vehicles can pull fully off the carriageway if the gate is closed. Mobile wheel-wash facilities are to be provided in the vicinity of site accesses to maintain public road cleanliness.
Construction management measures	The baseline condition of impacted roads is to be agreed with Westmeath County Council before construction, reviewed annually during construction and again on completion, with any defects caused by the works made good within an agreed timeframe. The final Construction Stage Traffic Management Plan is to be agreed with Westmeath County Council before implementation and is to address, at a minimum, site access and egress, traffic routing, staff parking and deliveries, pedestrian and cyclist safety, public transport considerations, temporary traffic control, emergency access, traffic-related noise /dust /vibration controls, monitoring and review, communication / public notification, speed limits, working hours and enforcement. Construction traffic is to be directed as far as practicable along the planned HGV haul route via M6 Junction 4, the N52 and the R446 so that heavy vehicles do not travel through Rochfortbridge or Tyrrellspass. Clear signage is to be installed and a Construction Vehicle Routing Plan prepared before works commence. Construction deliveries are to be coordinated through a designated logistics manager, with loading and unloading within the site boundary to avoid obstruction of public roads. Measures to protect pedestrians and cyclists near site accesses are to include warning signage, reduced speed zones and clear lane markings. Drivers are to be briefed on cyclist safety, and mirrors or sensors may be used on larger vehicles. Construction drivers are to afford priority to public transport where bus routes share parts of the haul route. Temporary traffic management measures affecting public roads are to be submitted to Westmeath County Council for approval in advance and may include flagmen, traffic lights, barriers and suitably managed signage by a qualified traffic management contractor. Uninterrupted access for emergency services is to be maintained throughout construction. Prior to commencement, the contractor is to consult with An Garda Síochána, the Fire Service and the

	National Ambulance Service on access arrangements and communication protocols. A site-specific Emergency Response Plan is to be developed before works commence and is to cover incidents including fire, chemical spill, serious injury, structural collapse and traffic collision involving construction vehicles. Traffic-related nuisance controls are to include restricting heavy vehicle movements to designated hours where required, covering loads, turning off engines when stationary for extended periods, and considering acoustic barriers, dust suppression or vibration monitoring where sensitive receptors or road conditions warrant it.
Operational measures	No specific operational mitigation is separately identified beyond implementation of the Road Safety Audit recommendations and operation via the approved access arrangements.
Monitoring provisions	Road condition review is required before commencement, annually during construction and upon completion of construction. The Principal Contractor is to appoint a Traffic Coordinator or Site Manager to oversee compliance, maintain traffic logs and report incidents or deviations. Records are to include delivery schedules, inspection reports and public complaints. The Construction Stage Traffic Management Plan is to be reviewed and updated as necessary, particularly if the construction programme changes or if issues are raised by the public or local authority. A site notice board is to be erected at the entrance showing contact details, working hours and emergency numbers; letters or leaflets may be issued in advance of high-impact works.
Decommissioning /reinstatement commitments	A Traffic Management Plan for decommissioning is to be developed 6 months in advance, agreed with the local authority and designed to minimise nuisance and avoid impacts on the road network. Decommissioning access is to use the established main access route from the R446 and existing site roads suitable for HGVs and other decommissioning vehicles.

18.3.10 ARCHAEOLOGICAL AND CULTURAL HERITAGE

Phase	Measures / features
Design / Embedded features	Recorded monuments, the previously unknown monument and associated anomalies are to be excluded from development and fenced off for the duration of construction, with buffer zones established before groundworks. Mitigation for preservation by record and /or preservation in situ, together with exclusion and buffer arrangements, is to be incorporated into the Construction Management Plan and updated

	following archaeological assessment and any change to the development footprint. Boyhan's Forge (RPS 033-001) is to be protected in situ during nearby cable works along the L-11272, with no direct impact to the structure permitted.
Construction management measures	A geophysical survey is to be undertaken in the northern and eastern portions of the site not previously surveyed, under licence and by an experienced archaeologist, before any ground disturbance. Archaeological test trenching is to be undertaken in the western, northern and eastern parts of the site before groundworks, targeting geophysical anomalies and providing general testing within the footprint of the development and associated infrastructure. Where archaeological features or deposits are exposed, they are to be sectioned and assessed and may require further mitigation including preservation in situ, excavation /preservation by record and / or archaeological monitoring of topsoil stripping. A townland boundary survey is to be completed before groundworks in affected areas, with a full written and illustrated record and hand-cleaned /measured survey of machine-cut sections where required. Any upstanding structures associated with the linear settlement proposed for demolition are to be subject to visual and photographic survey by an archaeologist with built-heritage experience before demolition. Adequate time and resources are to be provided for archaeological resolution, post-excavation work and specialist analysis, and reports of archaeological work are to be submitted to the relevant authorities. Prior to works near Boyhan's Forge, temporary barriers are to be installed along the road edge in front of the structure, warning signage erected and the construction crew briefed by toolbox talk on the sensitivity of the site. Works in the road beside Boyhan's Forge are to proceed by open excavation, machinery operators are to exercise extreme caution, vibration is to be kept to a minimum and all excavations along that road section are to be monitored by a licensed archaeologist.
Operational measures	No monitoring is required during the operation phase
Monitoring provisions	Archaeological monitoring during construction is to be implemented where required following test trenching and in accordance with National Monuments Service advice. The requirement for further monitoring is to be reviewed as part of the Contract CEMP works.

	Archaeological monitoring is also required for the excavations along the L-11272 adjoining Boyhan's Forge.
Decommissioning /reinstatement commitments	No separate decommissioning or reinstatement commitment is identified in the attached supporting documents for this factor.

18.3.11 CLIMATE

Phase	Measures / features
Design / Embedded features	The low carbon optimisation measures identified in the Life Cycle Assessment are to be implemented, including embodied carbon review at detailed design stage, lower-carbon procurement where available, passive solar design, efficient building fabric, high-efficiency HVAC and electrical systems, low-energy lighting and design flexibility for future beneficial technologies including liquid cooling. Buildings are to be designed and constructed to achieve LEED certification, with the LEED Campus Approach and LEED Gold identified at planning stage as the intended pathway subject to detailed analysis. The Project Carbon Management Plan (PCMP) is to apply a whole-life carbon approach across the project, using the module-based assessment of A0 to A5, B1 to B5 and C1 to C4 with Module D reported separately. Carbon management is to be progressed through defined project gateways, including concept, developed design, technical design, construction, as-built and operational review. Carbon reduction is to follow the PAS 2080 hierarchy of avoid, reduce, replace and offset / neutralise only as a last resort for residual emissions. Incorporation of the DER supports the project's decarbonisation-by-design strategy, with energy supply optimised on an hourly basis using demand data, DER availability and grid carbon intensity.
Construction management measures	A site-specific Resource and Construction Waste Management Plan is to be implemented to maximise reuse and recycling and minimise unsegregated waste. Where practicable, materials are to be sourced locally, idling of plant is to be prevented and plant /machinery are to be maintained and operated efficiently. Construction embodied carbon calculations are to include materials, transport to site, on-site construction activities, temporary power, welfare facilities, site waste and disposal of excavated material where applicable, in accordance with the PCMP.

	Carbon requirements are to be embedded in procurement and decision-making, with designers, contractors and suppliers contributing low-carbon options, product data and as-built carbon information in accordance with the PAS 2080 governance structure.
Operational measures	Operational carbon mitigation is embedded in the project design and energy strategy. In-use embodied carbon associated with maintenance, replacement and refurbishment is to be managed through the whole-life carbon approach adopted for the project. Operational performance is to be reviewed using metered energy and water data post-occupancy so operational carbon performance can be updated against project targets and assumptions.
Monitoring provisions	Whole-life carbon calculations are to be capable of progressive update at defined project gateways so that assumptions are documented, data quality is tracked and calculations can be updated through design, construction and operation. Project-specific carbon targets and KPIs are to be established once the baseline is benchmarked, including upfront carbon (A0–A5), whole-life embodied carbon (A–C), operational carbon (B6/B7) and relevant intensity metrics for the data centre. Reporting outputs are to include a carbon baseline and option comparison, a carbon register of reduction opportunities and decisions, embodied carbon reports by element and module, monthly construction emissions and logistics reporting, an as-built whole-life carbon assessment and a post-occupancy operational performance review. A project carbon data room is to be maintained for quantities, emission factors, EPDs, transport assumptions, site fuel and electricity data and calculation models, with version control to preserve a clear audit trail.
Decommissioning /reinstatement commitments	During decommissioning, materials and equipment are to be reused, returned to supplier, recycled / recovered or disposed of as appropriate. All reasonable efforts are to be made to minimise waste generation, and useful materials may be sold with value offset against decommissioning costs.