S. 37

File With _____

CORRESPONDENCE FORM

Appeal No: ABP 318180-23

M _____

Please treat correspondence received on 06/11/2023 **as follows:**

1. Update database with new agent for Applicant/Appellant _____	
2. Acknowledge with BP 20	**1. RETURN TO SENDER with BP** _____
3. Keep copy of Board's Letter ☐	2. Keep Envelope: ☐
	3. Keep Copy of Board's letter ☐

Amendments/Comments Applicant response to x 5 appeals
17/10/23 : 13/11/23 ✓

4. Attach to file	**RETURN TO EO** ☐
(a) R/S ☑	(d) Screening ☐
(b) GIS Processing ☐	(e) Inspectorate ☐
(c) Processing ☐	

	Plans Date Stamped ☐
	Date Stamped Filled in ☐
EO: Patricia	**AA:** Anthony McNally
Date: 07/11/2023	**Date:** 08/11/2023

S. 37

File With _____

SECTION 131 FORM

Appeal NO: ABP 318180-23 **Defer Re O/H** ☑

Having considered the contents of the submission dated/received 06/11/2023 from Applicant I recommend that section 131 of the Planning and Development Act, 2000 be ~~not be invoked~~ at this stage for the following reason(s):. in the interest of justice

E.O.: Pat B **Date:** 13/05/2024

For further consideration by SEO/SAO

Section 131 not to be invoked at this stage. ☐

Section 131 to be invoked – allow 2/4 weeks for reply. ☐

S.E.O.: _____ **Date:** _____

S.A.O: _____ **Date:** _____

M _____

Please prepare BP 70 **- Section 131 notice enclosing a copy of the attached submission**

to: appellants/PA/observers (x10) **Task No:** 384033-24

Allow 2/3/4weeks – BP 70

EO: Pat B **Date:** 13/05/2024

AA: Anthony McNally **Date:** 14/05/2024

JSA John Spain Associates
Planning & Development Consultants
Chartered Town Planners & Chartered Surveyors

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Dublin 2
D02 ND61

www.jsaplanning.ie

Tel 01 662 5803
info@johnspainassociates.com

The Secretary,
An Bord Pleanála,
64 Marlborough Street,
Dublin 1.

Date: 6th November 2023

Dear Sir/ Madam,

RE: RESPONSE TO THIRD PARTY APPEALS OF THE NOTIFICATION OF DECISION OF FINGAL COUNTY COUNCIL TO GRANT PERMISSION FOR A DEVELOPMENT COMPRISING THE CONSTRUCTION OF THREE NEW DATA CENTRE BUILDINGS (BUILDINGS E, F, AND G) AND ASSOCIATED WORKS ON LANDS AT CRUISERATH ROAD, DUBLIN 15

FINGAL COUNTY COUNCIL REG. REF.: FW22A/0308

AN BORD PLEANÁLA REF.: PL06F.318180

1.0 INTRODUCTION

1.1 On behalf of the applicant, Universal Developers LLC, which has its registered office at 251 Little Falls Drive, Wilmington, New Castle County, Delaware, 19808, USA, we, John Spain Associates, 39 Fitzwilliam Place, Dublin 2, hereby submit a response to the third party appeals of the notification of decision of Fingal County Council dated the 18th of September 2023 under Reg. Ref.: FW22A/0308 to grant planning permission for development on a site at Cruiserath Road, Dublin 15.

1.2 The application site is located to the north of the data centre permitted / constructed under An Bord Pleanála Reg. Ref.: PL06F.248544 / Fingal County Council Reg. Ref.: FW17A/0025, to the west of the two data centres permitted under Fingal County Council Reg. Ref.: FW19A/0087, and to the north and west of the 220kV Gas Insulated Switchgear substation permitted under An Bord Pleanála Reg. Ref.: 306834-20. The site is within an overall landholding bound to the south by the R121 / Cruiserath Road, to the west by the R121 / Church Road and to the north by undeveloped land and Cruiserath Drive.

1.3 This appeal response is submitted in reply to correspondence received from An Bord Pleanála dated **9th of October 2023**, enclosing a copy of the third-party appeal submitted by the following third party:

- BKC Solicitors on behalf of John Conway and Louth Environmental Group, 91 St. Nicholas Avenue, Dundalk, Co. Louth.

1.4 Further correspondence was received from the Board dated the **17th of October 2023** enclosing copies of a further four appeals from the following bodies/individuals. These appeals are also responded to in full within this appeal response. The four further appeals were made by the following third parties:

- Mr Colin Doyle, 12 Cottage Gardens, Ennis, Co. Clare.
- Jerry Mac Evilly on behalf of Friends of the Earth, 9 Mount Street, Dublin 2.
- Sarah Zimmermann on behalf of Fingal One Future, C/O 28 Moylaragh Crescent, Balbriggan, Co. Dublin.
- Mannix Coyne, Bracetown, Clonee, Co. Meath.

1.5 Copies of these letters from the Board are included as Appendix 1 to this response document.

1.6 This response includes the following appendices:

1) Copy of Correspondence from An Bord Pleanála Enclosing the Appeals
2) Copy of the Decision of Fingal County Council to Grant Permission
3) Response document on Climate and Air Quality Impact prepared by AWN Consulting
4) Response on Construction Carbon Assessment prepared by Henry J Lyons Architects
5) AWS In Ireland (Economics and Employment Report, 2023)

1.7 This document provides a coordinated response to all points raised within the third party appeals, which was submitted by the five named appellants listed above. This document includes direct input from AWN Consulting (AWN), Henry J Lyons Architects (HJL), and from the Applicant. The overall response has been co-authored and coordinated by John Spain Associates.

1.8 The Proposed Development was described as follows in the public notices submitted with the application:

- *"Construction of three data centre buildings (Data Centre E, Data Centre F, and Data Centre G), with a gross floor area (GFA) of c. 1,425 sq.m, c. 20,582 sq.m, and c. 20,582 sq.m respectively, each over two levels (with Data Centre F and G each including two mezzanine levels);*
- *Data Centre F and G will be located in the north-western portion of the overall landholding, with a primary parapet height of c. 19.8 metres and each will accommodate data halls, associated electrical and mechanical plant rooms, a loading bay, maintenance and storage space, office administration areas, with plant and solar panels at roof level;*
- *Data Centre E (which will be ancillary to Data Centre F and G) will be located within the south-western portion of the overall landholding, with a primary parapet height of c. 13.1 metres and will accommodate data halls, associated electrical and mechanical plant rooms, a loading bay, maintenance and storage space, office administration areas, with plant at roof level;*
- *Emergency generators and associated flues will be provided within compounds adjoining each of the three data centre buildings (1 no. for Data Centre E, 19 no. for Data Centre F, and 19 no. for Data Centre G);*
- *The development includes one diesel tank and two filling areas to serve the proposed emergency generators;*
- *Provision of ancillary structures including two MV buildings, water storage tanks and three bin stores;*
- *Construction of access arrangements and internal road network and circulation areas, footpaths, provision of car parking (105 no. spaces), motorcycle parking*

(12 no. spaces) and bicycle parking (56 no. spaces), hard and soft landscaping and planting (including alteration to a landscaped berm to the north of proposed Data Centre E), lighting, boundary treatments, and all associated and ancillary works including underground foul and storm water drainage network, and utility cables."

1.9 The planning application was accompanied by an Environmental Impact Assessment Report (EIAR).

1.10 Based on the responses to the grounds set out in the third-party appeal submitted, it is respectfully requested that An Bord Pleanála issues an Order to grant planning permission for the Proposed Development.

1.11 The background to the Proposed Development and the Operator of the Proposed Development is briefly summarised in Section 2. Section 3 provides a summary of the Fingal County Council decision to grant permission, while Section 4 introduces the third-party appeals submitted on the current application and provides a robust and evidence-based response to the third party appeals on a thematic basis. The response seeks to break the appeals into their constituent parts and key points, with each being rebutted comprehensively under the relevant heading.

1.12 For a detailed justification of the Proposed Development in planning policy terms please refer to the documentation submitted with the planning application, notably Section 5.0, 6.0, and 7.0 of the Planning Report prepared by John Spain Associates and submitted with the application, and the Further Information Response cover letter prepared by John Spain Associates. This response document makes specific reference to the documentation submitted with the application (including the EIAR) and the documentation submitted as part of the Further Information response to Fingal County Council where relevant.

2.0 OPERATOR OF THE PROPOSED DEVELOPMENT

2.1 The following section has been prepared by the applicant.

2.2 As set out in the Planning Report (Section 1.7-1.9) which accompanied the application to Fingal County Council, the existing campus is owned and operated by Amazon Data Services Ireland Limited (ADSIL), the Irish entity of Amazon Web Services (AWS) which is part of the Amazon.com, Inc group of companies. The Proposed Development is to support AWS's customers in Ireland.

2.3 AWS offers customers access to more than 200 fully featured services from its data centres. This means that organisations of all sizes and in all industries – from the fastest-growing startups to the largest enterprises, government bodies, educational institutions or healthcare providers – can use cloud computing to lower costs and innovate faster. This allows government bodies, large enterprises, start-ups, education institutions, healthcare providers and individuals to leverage the cloud to lower costs and innovate faster. AWS's Ireland Region was established in 2007, and since this time the company has invested significantly in the country. An Economic Impact Study of AWS's investments in Ireland, undertaken by Indecon International Economic Consultants, established that since 2012 AWS investment in Ireland has increased economic output by over €11.4 billion. This level of investment generated growth in economic output of €2.4 billion per year in 2022 alone. This study showed that AWS support more than 10,000 jobs, including over 4,200 direct AWS employees, 3000 people working for AWS suppliers and sub-contractors and 2,900 other roles elsewhere in the workforce attributable to AWS investment. AWS enables 500 Irish supplier and contractor companies, creating increased business and export opportunities. Irish contractors who work with AWS, now export services to 28

different countries across the globe. The newly opened 630,000 square foot fulfilment centre, in Dublin's Baldonnell Business Park, has created 500 new jobs and will help provide faster delivery for customers across the country seven days a week, including one-day delivery on hundreds of thousands of items.

2.4 AWS is resolutely committed to sustainability. In 2019, Amazon co-founded The Climate Pledge, a commitment to reach net-zero carbon emissions by 2040—10 years ahead of the Paris Agreement. As part of this, Amazon is on a path to powering its global operations with 100% renewable energy by 2025 – five years ahead of its original target of 2030, and before the proposed Data Centres F & G are due to come into operation. Amazon is the largest corporate purchaser of renewable energy in the world, and and has announced over 400 renewable energy projects across 22 countries globally, representing more than 20 gigawatts (GW) of renewable energy capacity. Once fully operational, Amazon's global renewable energy portfolio will generate more than 56,000 gigawatt hours (GWh) of clean energy, which is the equivalent amount of electricity needed to power 13.4 million European homes each year. Amazon was the first company in Ireland to deliver unsubsidised Corporate Power Purchase Agreements (CPPAs). This means Amazon is helping to add renewable energy to the grid without direct government support, thus reducing subsidy costs on other local energy users. In Ireland alone, Amazon has committed to offtake 100% of the power from renewable wind projects in Cork, Donegal, and Galway. Amazon does not own these projects, but their commitment to purchasing the power and environmental attributes from these projects enable them to be built. In total, these three wind projects are projected to add 229 megawatts of renewable energy to the Irish grid, reducing carbon emissions by 366,000 tonnes of CO2 each year, and producing enough renewable energy to power 185,000 Irish homes, per annum. These three wind projects will make Amazon the largest single corporate buyer of renewable energy in the country.

2.5 AWS's renewable strategy and climate focus – which is consistent with government's own climate goals of achieving 80% renewable energy usage by 2030 – is very much evident in its investment in Irish infrastructure. AWS has already announced three onshore wind projects here, one of which is now operational and is delivering clean energy to the country's electricity grid. It is also supporting the new district heating scheme in Tallaght, South Dublin, by providing heat from a nearby data centre. The system will initially heat 47,000 m^2 of public sector buildings – an area three times the size of the city's Croke Park stadium pitch – as well as 3,000m^2 of commercial space and 135 affordable rental apartments. This is projected to save 1,500 tonnes of carbon per annum during the first phase, the equivalent of a 60 per cent reduction in carbon emissions. These renewable wind and district heating projects have been achieved through collaboration and partnerships with government, renewable energy developers, and local utilities. They reflect the company's continued commitment to sustainability, both in Ireland and internationally.

3.0 NOTIFICATION OF FINGAL COUNTY COUNCIL TO GRANT PERMISSION

3.1 On the 18th of September 2023, the Planning Authority, Fingal County Council, issued a decision to grant permission for the Proposed Development. The decision to grant permission was subject to 24 conditions in total.

3.2 Prior to the decision to grant permission, the Planning Authority had previously requested Further Information (the request for which was issued on the 17th of February 2023), which the applicant provided a response to on the 3rd of August 2023.

3.3 The applicant welcomes the decision of Fingal County Council to grant planning permission for the Proposed Development, which accords with the planning policy

context and which will deliver a data centre development representing significant investment and new employment creation for the area, on lands within their wider landholding which comprises an existing and permitted data centre campus, including a high voltage transmission substation developed to serve the campus.

4.0 RESPONSE TO GROUNDS OF APPEAL

4.1 The following sets out a response to the grounds of the third party appeals of the decision to grant permission issued by the Planning Authority. As noted previously, the response has been set out under a series of headings, corresponding with the main themes of the appeals submitted in order to avoid undue repetition.

4.2 The headings under which the response has been formulated are as follows:

- Request for Oral Hearing
- Alleged Deficiency in Fingal County Council Decision
- Corporate Power Purchase Agreement and Renewable Additionality
- Corporate Power Purchase Agreement as Mitigation
- Corporate Power Purchase Agreement and Assessment of Renewable Projects(s)
- Overconcentration of Data Centre Development
- Cumulative Assessment of other Data Centre Projects
- Accuracy of Climate Assessment, Conclusions on Climate Impact, and Consideration of Reasonable Worst Case
- The EU ETS and National Carbon Targets / Sectoral Emissions Ceilings
- Consistency with section 15 of the Climate Action and Low Carbon Development Act 2015, as amended.
- Consistency with the Climate Action Plan 2023 Statement on Large Energy Users and Just Transition
- Consistency with the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy (2022)
- Compliance with the Fingal County Development Plan
- Carbon Emissions During Construction
- Impact of Diesel Generators and Operating Hours of Generators
- Use of Renewable Diesel
- Other Miscellaneous Points

Request for an Oral Hearing

4.3 The appeal submitted by Jerry Mac Evilly on behalf of Friends of the Earth ('the Friends of the Earth appeal') includes a request that the Board convene an Oral Hearing in respect of the Proposed Development.

4.4 In this regard, while it is a matter for the Board to determine the need for an Oral Hearing at their discretion, it is considered that the documents submitted to the Planning Authority and the current response has provided the necessary information for the appeals to be determined by reference to this response and the information on the planning file. It is therefore submitted that an Oral Hearing is likely not required in this case.

4.5 Additionally, it is noted that the Board may request the submission of additional information and documentation at its discretion under section 132 of the Planning and Development Act 2000, as amended. In this regard, it is acknowledged that the application to Fingal County Council, the Further Information response to Fingal County Council, and the current appeal response contain a significant volume of

technical information. Additionally, there are significant quantities of information and detailed responses provided pertaining to specific points and grounds of appeal.

4.6 Therefore, should the Board require any additional information or clarification of the information already submitted, the Applicant would welcome a request to provide same under section 132 of the Act, in order to ensure that a robust and reasoned decision can be arrived at on the current application.

Alleged Deficiency in Fingal County Council Decision

4.7 The appeal submitted by Mr. Colin Doyle ('the Colin Doyle appeal') argues (at Page 1) that the decision of the Planning Authority to grant permission for the Proposed Development was flawed, because it represented an *"ad hoc allocation"* of a portion of the limited remaining national carbon budget, which Fingal County Council has neither the expertise nor legal authority to undertake.

4.8 The corollary of this particular argument put forward by the appellant is that no Planning Authority could grant permission for any development which might take up part of the national carbon budget. Such a suggestion does not reflect the reality of the planning system, and is clearly not correct.

4.9 The appeal further argues that Fingal County Council endorsed the AWN assessment of climate impact and Greenhouse Gas (GHG) mitigation by granting permission for the Proposed Development, without properly considering the submissions of the appellant on the planning file.

4.10 With regard to the first of the above points, it is noted that the Planning Authority, Fingal County Council, made its decision in accordance with the relevant planning policy and guidance, and was the appropriate authority with jurisdiction to make a decision to grant permission for the Proposed Development (with the Board now the appropriate authority to determine the appeals of the Planning Authority decision). The Planning Authority afforded the application detailed consideration prior to reaching their decision to grant permission.

4.11 The Chief Executive's Order / Planner's Report prepared by Fingal County Council, which informed the decision on the application, included an Environmental Impact Assessment (EIA) undertaken by the Planning Authority. It is noted that the Board will undertake their own EIA of the Proposed Development, taking account of the appeals submitted and this response to the third party appeals.

4.12 The Planning Authority requested Further Information from the applicant, including in relation to compliance with the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy (2022) (the 'Government Statement'). A detailed Further Information response was submitted as mentioned in Section 3 above, and the Chief Executive's Order reflects the in depth analysis undertaken by the Planning Authority of the Further Information response. The following conclusion was recorded in the Chief Executive's Order:

"It is considered that, subject to compliance with the conditions set out below, the Proposed Development of three data centres would be consistent with European and Government policy concerning the development of digital infrastructure and subject to compliance with conditions, would accord with the policies and objectives pertaining to such development (including Objectives DMSO92, DMSO5, CAP13, CSO14 and Objective EEO4); and to the High Technology zoning objective for the application site as set out in the Fingal Development Plan 2023-2029. The design and layout of the Proposed Development is considered acceptable and the materials

and finishes provide for a high architectural design and the proposal is acceptable within the wider context of the overall site layout."

4.13 The Chief Executive's Order includes an updated EIA section following receipt of the Further Information response, and also reflects the adoption of the new Fingal Development Plan 2023-2029 in the intervening period between the Further Information request and the decision to grant permission. The conclusion in relation to the Environmental Impact Assessment undertaken by the Planning Authority:

"The likely significant environmental effects arising as a consequence of the Proposed Development have therefore been satisfactorily identified, described and assessed. Subject to the implementation of the mitigation measures proposed as set out in the environmental impact assessment report, addendum to the environmental impact assessment report and conditions attached to any grant of permission, the effects on the environment of the Proposed Development by itself and in combination with other development in the vicinity would be acceptable. This conclusion is up to date at the time of writing."

4.14 The Planning Authority also issued their decision to grant permission on the basis of a seven year duration of permission, as requested by the applicant and justified within the Planning Report submitted with the application to the Planning Authority. The Planning Authority noted that this was based on a number of considerations, including "*based on a number of considerations - the scale and complexity of the proposed development; power availability to support the proposed development and to ensure that all works can be carried out within the lifetime of the permission. This is considered reasonable.*"

4.15 We refer the Board to the original Planning Report for further justification of the requested seven year permission duration.

4.16 With regard to the contention of the appellant that the Planning Authority did not give sufficient consideration to the appellant's previous submissions, in fact the Planning Authority clearly indicated in their assessment that all submissions had been taken into account, including those made by Mr. Colin Doyle. In fact, the Planning Authority accepted and took into account submissions made by third parties (including the appellant) following receipt of the Further Information response, even though the response was not deemed significant and re-advertisement was not required.

4.17 In any event this is a moot point, as the appeal process will see the Board consider the entire development proposal *de novo*, including all of the grounds of submission previously raised by the Mr. Colin Doyle (and others) and the grounds of appeal now raised.

Corporate Power Purchase Agreements and Renewable Additionality

4.18 The appeals submitted by John Conway and Louth Environmental Group (appeal ground (b) of that appeal), Mr. Colin Doyle (pages 1-9 of the appeal), and Friends of the Earth (pages 2-3 of the appeal) argue that imposing a condition of the nature of Condition 13 applied by Fingal County Council would not in fact deliver 'additionality' of renewable capacity.

4.19 The wording of Condition 13 applied by the Planning Authority 13 is as follows:

"Prior to the commencement of development, the applicant shall submit for the written agreement of the Planning Authority details of a Corporate Purchase Power Agreement that the developer has entered into which demonstrates that the energy consumed by the development on site is matched by new renewable energy

generation in line with the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy. The Agreement shall comply with the following:

a) The new renewable energy projects shall not be supported by government, consumer or other public subsidies;
b) The new renewable energy projects shall be located in Ireland and full details of these including consent details shall be provided;
c) The new renewable energy projects shall be provided by the applicant's group, that is Amazon.com, Inc.
d) The new renewable energy generation shall relate to energy that is not being generated at the date of grant of this permission.
e) The amount of electricity generated by the new renewable energy projects shall be equal to or greater than the electricity requirements of the data centres in operation at any given time.
f) The new renewable energy projects shall be fully operational prior to the commencement of operation of the data centres having regard to the phased nature of the proposed development

REASON: In the interests of sustainable development."

4.20 This condition wording reflected the condition suggested by the applicant in the Further Information response to Fingal County Council, with several additions (shown in green above).

4.21 An Taisce, the National Trust for Ireland have taken a keen interest in Data Centre development over the past several years, appealing several developments to the Board. An Taisce previously appealed the decision to grant permission for a separate application relating to the Huntstown Power Company Limited data centre development which was subject to a decision to grant permission under Fingal County Council Reg. Ref.: FW21A/0151 (the appeal is under ABP Reg. Ref: PL06F.313583). In their appeal grounds, An Taisce request the following items are added to Condition 3 which had been applied by Fingal County Council:

"That the amount of electricity generated by the new renewable energy projects is equal to or greater than the electricity requirements of the data centre; and

That the new renewable energy projects are fully operational prior to the commencement of operation of the data centre."

4.22 The additional items suggested by An Taisce closely reflect the additional wording adopted by Fingal County Council in their condition on the current application. Thus, the condition applied by Fingal County Council closely reflects the suggestions of An Taisce on a separate planning process.

4.23 The applicant welcomes inclusion of Condition 13 as applied by Fingal County Council in their notification of decision to grant permission.

4.24 The appeals argue that, rather than ensuring "additionality" and offsetting the energy used by the development, a CPPA as described in the Fingal County Council condition would merely result in the purchase of a renewable project which is already in the planning process, thereby the CPPA is not going to add renewables.

4.25 These arguments are reflected and expanded on in the Mr. Colin Doyle appeal, which in summary, argues the following:

I. The appellant claims that in the absence of renewable energy keeping pace with new data centre demand, or realistically reaching 80% by 2030, the

contention that CPPAs will offset demand growth from data centres is incorrect. They argue that, were data centres to require the quantities of energy predicted in EirGrid analysis, they may require an additional 891MW of power in the median forecast scenario or 1,395MW in the high forecast scenario. It is argued that this level of growth could effectively nullify most if not all of Ireland's planned new onshore wind energy over the same period. The appellant claims that due to the timelines involved in offshore wind delivery, it cannot be relied on to be achieved by 2030, and in any event has been factored in to meet the CAP 2023 targets.

II. The appellant claims that while CPPAs may speed up the delivery of certain renewable projects, they do not automatically result in "additionality". The appellant claims that "additionality" only occurs where a renewables project would not have happened in the absence of the CPPA.

III. The appellant claims that the Renewable Electricity Corporate Power Purchase Agreements Roadmap (2022) (the 'CPPA Roadmap') and the Government Statement outline the need for CPPAs to deliver "additionality" of renewables, however no evidence has been provided to prove that the applicant would engage in a CPPA which would deliver "additionality".

IV. The appellant claims that there is 1,800MW of wind generating capacity in the development pipeline at present, that there is 4,400MW currently operating, and a goal of 6,000MW for 2025 (per the 2023 CAP). They argue that therefore, all projects currently in the pipeline are required to be operational by then. They argue that a further 2,800MW is needed to enter the pipeline in the short term to meet the 2030 target of 9,000MW. The appellant claims that on this basis, all projects currently in the pipeline will come forward at some point, even in the absence of CPPAs, and therefore the agreement of a CPPA in respect of any of them would not represent "additionality". The appeal sets out that each of the requirements of the condition on CPPAs (Condition 13) applied by Fingal County Council could be achieved, without achieving "additionality" (on the basis that a project within the existing development pipeline would be targeted for a CPPA). The appellant claims that if the Board accept that a CPPA can offset the energy use of the Proposed Development, it could result in a 'planning free-for-all', with all new renewables projects claimed to offset the energy requirements of large industrial users.

4.26 Each of the above are dealt with in turn below. The following sections have been prepared with direct input from the applicant.

I. The appellant claims that in the absence of renewable energy keeping pace with new data centre demand, or realistically reaching 80% by 2030, the contention that CPPAs will offset demand growth from data centres is incorrect. They argue were data centres to require the quantities of energy predicted in EirGrid analysis, they may require an additional 891MW of power in the median forecast scenario or 1,395MW in the high forecast scenario. It is argued that this level of growth could effectively nullify most if not all of Ireland's planned new onshore wind energy over the same period. The appellant claims that due to the timelines involved in offshore wind delivery, it cannot be relied on to be achieved by 2030, and in any event has been factored in to meet the CAP 2023 targets.

4.27 Condition 13 of the Fingal County Council decision to grant permission requires that the applicant's group enter into a CPPA for the energy use of the Proposed Development, thereby ensuring that the development's energy use will be met with new renewable generation, ensuring that the new load added to the system is supported by new renewable energy so that achieving the goal of the Climate Action

Plan requirement for 80% renewable electricity by 2030 is not made more challenging by this new demand. As further detailed below, the Proposed Development's delivery of CPPA(s) will ensure that the new load added to the system is supported by new renewable energy so that achieving the goal of the Climate Action Plan requirement for 80% renewable electricity by 2030 is not made more challenging by this proposed development along with the objectives of any relevant update in the annual CAP review in CAP24.

4.28 The Government's 'Summary of Analysis to Support Preparation of the Sectoral Emissions Ceilings[1]' (2022) provides details of the "*analysis and research that informed the preparation of the Sectoral Emissions Ceilings.*" With respect to the Electricity Sector, demand growth was assumed in line with the median growth scenario projected by the EirGrid Generation Capacity Statement 2020-2029 – the median scenario was used as the "proposed scenario" to establish the Electricity Sectoral Emissions Ceiling. That demand growth forecasted in the 'Summary of Analysis to Support Preparation of the Sectoral Emissions Ceilings' (2022) is influenced by several factors including contracted data centre capacity (i.e. the Proposed Development), the electrification of the transport sector and home heating.

4.29 The EirGrid Generation Capacity Statement for 2020-2029 set out a median overall demand in 2029 of 1,250MVA for Data Centre and Large Industrial User Demand by 2029 (Table 5[2]). The current version of the EirGrid Generation Capacity Statement 2022-2032 shows an increase of 241MVA for Data Centre and Large Industrial User Demand by 2032 (Table 2.2[3]) – giving a median overall demand in 2031 of 1,491MVA.

4.30 While marginally lower demand (241MVA) than current EirGrid projections, the "proposed scenario" taken into account in developing the Sectoral Emissions Ceilings includes the growth of data centres with contracted demand such as the Proposed Development.

4.31 The Climate Action Plan 2023 (CAP23) *"sets out the roadmap to deliver on Ireland's climate ambition.* ***It aligns with the legally binding economy-wide carbon budgets and sectoral ceilings*** *that were agreed by Government in July 2022.* ***This will enable Ireland to meet 2030 targets*** *and be well placed to meet mid-century decarbonisation objectives which will also help deliver cleaner air, warmer homes and a better quality of life for Irish citizens."* [Emphasis added]

4.32 Specific to the Electricity Sector, CAP23 sets out that *"[a]mong the most important measures in* ***the plan is to increase the proportion of renewable electricity to up to 80% by 2030*** *and a target of 9 GW from onshore wind, 8 GW from solar, and at least 5 GW of offshore wind energy by 2030."* The 80% renewable electricity share of demand is worked back from the Carbon Budget, the associated Sectoral Emissions Ceilings and ultimately the demand projections that have been established for all Sectors. As set out above, those demand projections include the Proposed Development. [Emphasis added]

4.33 As the Proposed Development will be bringing forward renewables for contracted data centre demand which is already accounted for within CAP23, it is clear that the commitment to deliver a CPPA in line with Condition 13 will adhere to and enhance the same efforts established under CAP23. The applicant shares the Government

[1] https://assets.gov.ie/236057/3ddf7b83-8ee8-4d62-b35e-d3dea38fa433.pdf
[2] https://www.eirgridgroup.com/site-files/library/EirGrid/All-Island-Generation-Capacity-Statement-2020-2029.pdf
[3] https://www.soni.ltd.uk/media/documents/EirGrid_SONI_2022_Generation_Capacity_Statement_2022-2031.pdf

vision and has a strong record in delivering on its climate and sustainability commitments. The applicant's commitment is detailed in the submitted Planning Report, Further Information Response & this appeal response, and demonstrates that the Proposed Development complies with National, Regional and Local planning policy and is aligned with the Government Statement.

4.34 The judgment of the High Court in *Coyne v An Bord Pleanála*[4] (at Paragraph 210 (i)(iv) states the following:

"On the other hand, it is impossible in development consent after EIA of a Data Centre or other large electricity consumer from the National Grid, to condition its operation on a particular National Fuel Mix or like criterion as to the proportion of renewable generation supply to the National Grid. So, in this respect and in appreciable degree, an EIA represents a prediction at a fixed point in time which may prove, with time, to have been more or less accurate in hindsight."

4.35 The judgment of the High Court in *Coyne v An Bord Pleanála*[5] (at Paragraph 125-127 goes on to state the following:

> *"125 As to "Assessing Significant Effects" the 2013 Guidance [2013 Guidance on Climate Change] states that many assessment approaches used in EIA have the capacity to address climate change. "There are, however, three fundamental issues that you should consider when addressing climate change and biodiversity: the long-term and cumulative nature of effects, complexity of the issues and cause-effect relationships and uncertainty of projections." There follows a consideration of all three issues, the premise of which is that EIA should address them. I would add that this premise must itself be premised on climate change having been scoped into the EIA as a likely significant effect.*
>
> *126 The 2013 Guidance states that EIA, to properly address climate change, should take into account its complexity (including of causal relationships) and long-term direct and indirect impacts and consequences. EIA should describe the sources of, and characterise the nature of, uncertainty. Judging an impact's magnitude and significance must be context-specific. The contribution of an individual project to GHGs may be insignificant on the global scale but may be significant on the local/regional scale, in terms of its contribution to set GHG-reduction targets.*
>
> *127 Finally, it is worth noting some of the "bullet points" tabulated in 2013 Guidance as "Critical challenges for addressing climate change ... in EIA":*
>
> - *Manage complexity. Consider the complex nature of climate change and biodiversity and the potential of projects to cause cumulative effects.*
> - *Be comfortable with uncertainty, because you can never be sure of the future. Use tools such as scenarios (for example, worst-case and best-case scenarios) to help handle the uncertainty inherent in complex systems and imperfect data. Think about risks when it is too difficult to predict impact.*

[4] [2023] IEHC 412
[5] [2023] IEHC 412

- *Base your recommendations on the precautionary principle and acknowledge assumptions and the limitations of current knowledge.*
- *Be practical and use your common sense!*

The guidance also states that "considering a range of possible uncertain futures and understanding the uncertainties is part of good EIA practice and permits better and more flexible decisions.

In other words, it is no error to acknowledge and assess uncertainty and risk as best you reasonably can. Error may well lie in ignoring them."

4.36 As set out above, the CPPA will ensure that the new load added to the system is supported by new renewable energy so that achieving the goal of the Climate Action Plan requirement for 80% renewable electricity by 2030 is not made more challenging by this new demand, and the predictions contained within the EIAR and the accompanying AWN response document in relation to the proportion of renewable generation supply are robust, albeit representing '*a prediction at a fixed point in time*'.

II. The appellant claims that while CPPAs may speed up the delivery of certain renewable projects, they do not automatically result in "additionality". The appellant claims that "additionality" only occurs where a renewables project would not have happened in the absence of the CPPA.

4.37 Under Amazon's publicly available Renewable Energy Methodology[6] , Amazon works with energy companies around the globe to develop **new** renewable projects dedicated to serving their load, which is aligned with the CPPA Roadmap which states: "*Additionality and Avoiding Greenwashing: If CPPAs simply purchase certificates from projects that would have existed anyway, especially those that have already been funded under schemes supported by the PSO levy (REFIT schemes or the RESS), they may not contribute to additional decarbonisation, which would not achieve the benefits of such contracts for all electricity users and harm public trust. CPPAs for **new** non-subsidised or repowered projects should be prioritised.*" [Emphasis added]

4.38 The CPPA Roadmap itself notes that "*keeping RESS and CPPAs separate leads to clearer additionality for CPPAs*". The stipulation that any CPPA related to the Proposed Development would not be subject to any direct government financial subsidy, consumer, or public subsidy ensures that any renewable development subject to such a CPPA will not benefit from receipt of subsidy under the Renewable Electricity Support Scheme (RESS), in line with the CPPA Roadmap. Condition 13(a) of the Fingal County Council decision captures the requirements set out in the CPPA Roadmap, requiring that:

"The new renewable energy projects shall not be supported by government, consumer or other public subsidies"

4.39 See further submissions in relation to the above in the response to Part IV below.

[6] https://sustainability.aboutamazon.com/renewable-energy-methodology.pdf

III. The appellant claims that the Renewable Electricity Corporate Power Purchase Agreements Roadmap (2022) (the 'CPPA Roadmap') and the Government Statement outline the need for CPPAs to deliver "additionality" of renewables, however no evidence has been provided to prove that the applicant would engage in a CPPA which would deliver "additionality".

4.40 Respectfully, the appellant appears to have disregarded large swathes of the original Planning Report and Further Information Response when making these claims. The following sections prepared by AWS are taken from Further Information Response 3(B):

"Amazon has a strong record of enabling new renewable energy projects through investments, otherwise called additionality. We have ambitious global targets and commitments. We are the largest purchaser of renewable energy in Europe, and in the world, for the third year running. We were the first company to enter into unsubsidised Corporate Power Purchase Agreements (CPPAs) in Ireland; and we consistently advocate for conditions that enable development of large-scale renewable projects. [...]

As set out in the submitted Planning Report, Amazon entered into the first unsubsidised CPPA in Ireland. Our first CPPA in Cork is now operational and forms part of the cohort of operational renewable projects which are reported against our global Climate Pledge goal. Meanwhile our project in Galway is due to come into operation later this year with our project in Donegal to come into operation in early 2024, once those projects become operational they will form part of the cohort of operational renewable projects reported against our global Climate Pledge goal. [...]

With respect to the Proposed Development, the Government Statement requires Applicants to demonstrate "renewable energy delivery in Ireland". Amazon is committed to meeting this new requirement. In Q1 2023, AWS issued a Request for Proposal to the market, requesting renewable energy developers to present their Proposed Development pipeline and terms to align with AWS's future requirements – this process saw submissions from several projects, totalling approximately 1GW of power. AWS is currently progressing opportunities with the details commercially confidential at this time. [...]"

4.41 The applicant has already delivered[7] new CPPA's in Ireland which have not been directly subsidised by the Government. In the Further Information Response, they set out that they are actively searching for suitable renewable projects and welcomed a pre-commencement planning condition requiring a CPPA to be provisioned for the Proposed Development (taking into account it's phased nature). Such a planning condition has been applied to the Proposed Development in the Fingal County Council decision to grant permission. Respectfully there is ample evidence the applicant will deliver on their commitment and meet the requirements of this condition once projects have been identified and secured.

IV. The appellant claims that there is 1,800MW of wind generating capacity in the development pipeline at present, that there is 4,400MW currently operating, and a goal of 6,000MW for 2025 (per the 2023 CAP). They argue that therefore, all projects currently in the pipeline are required to be operational by then. They argue that a further 2,800MW is needed to enter the pipeline in the short term to meet the 2030 target of 9,000MW. The appellant claims that on this basis, all projects currently

[7] https://www.aboutamazon.com/news/sustainability/amazon-wind-farm-renewable-energy-project-connemara-ireland

in the pipeline will come forward at some point, even in the absence of CPPAs, and therefore the agreement of a CPPA in respect of any of them would not represent "additionality". The appeal sets out that each of the requirements of the condition on CPPAs (Condition 13) applied by Fingal County Council could be achieved, without achieving "additionality" (on the basis that a project within the existing development pipeline would be targeted for a CPPA). The appellant claims that if the Board accept that a CPPA can offset the energy use of the Proposed Development, it could result in a 'planning free-for-all', with all new renewables projects claimed to offset the energy requirements of large industrial users.

4.42 Firstly, the 'existing development pipeline' referred to by Mr Colin Doyle is not a static category. As written, the appellant fails to consider early stage projects not yet in the planning process, and in addition fails to take account of those projects with consent but unable to proceed due to lack of grid connection or available route to market at this time. The number of renewable energy projects in the "pipeline" (which is a category put forward by the appellant, which is not referred to in either the CPPA Roadmap or the Government Statement on Data Centres) is clearly subject to change, and there is nothing in either policy document that suggests that projects in the pipeline are guaranteed to become operational. The applicant works with energy companies to develop new renewable projects dedicated to serving its load. Due to the upfront capitally intensive nature of renewable energy projects, energy companies require a financial commitment to secure financing to build a project. RESS and CPPAs provide a mechanism to de-risk investing in such projects by providing certainty of revenues for a defined period thereby enabling the project to achieve financial close and progress to construction. The applicant's procurement of renewable energy, via a CPPA, provides the energy company with such a financial commitment.

4.43 Further, the appellant's argument is in conflict with the government's policies. The appellant argues that any project within the 'development pipeline', or even that which is already being considered in any capacity must be discounted from the potential range of projects for a CPPA, based on this argument the provisions and policy intent of the CPPA Roadmap and the Government Statement would be negated. It is submitted that the interpretation of "additionality" put forward by the appellant is inconsistent with Government policy (See also Section Part I above).

4.44 It is patently incorrect to say that *"all projects currently in the pipeline will come forward at some point, even in the absence of CPPAs".* As noted above, renewable energy projects require a confirmed route to market in order to be developed and the reality is that not all renewable projects can (or will) be successful in RESS – which is a competitive auction by design (i.e. with winners and losers). CPPAs play an important role in this context by offering a complementary alternative to RESS, for developers that wish to diversify the route to market strategy for their renewable energy portfolio.

4.45 With regard to the argument that if the Board accept that a CPPA can offset the energy use of the Proposed Development, it could result in a 'planning free-for-all', with all new renewable projects claimed for the energy requirements of large industrial users, there is no basis for this statement. The engagement of the applicant's group in a CPPA for the development's energy use would, in fact, be entirely in accordance with the terms of the Government Statement, which specifically promotes engagement in CPPAs of this nature. Thus, inclusion of a condition for engagement in a CPPA by the Board as part of any Order to grant permission would in fact represent an approach which is fully aligned with Government policy for this particular type of development.

4.46 In addition points I-IV above, the Colin Doyle appeal also argues that the Further Information Response to Fingal County Council was not adequately fulsome with regard to details of renewables projects that Amazon has engaged in CPPAs on. The appeal lists three projects which were concluded to be the projects referred to. The appellant states that "*To claim that these wind farms offset emissions from the Proposed Development it would need to be demonstrated that these wind farms would not operate without the CPPAs negotiated with the applicant. The planning history for these wind farms indicates that they had all progressed through the planning system prior to any CPPA".* For the avoidance of doubt, the Applicant has not made the *"claim that these wind farms offset emissions from the Proposed Development"* and in any case as set out above, "additionality" is not predicated on the receipt of consent.

4.47 In addition, Friends of the Earth appeal also argues that the provision of a CPPA for the Proposed Development as a method of mitigation would be of concern, as such CPPAs could 'crowd out' renewables which "*would otherwise be used to decarbonise the Irish electricity system*". The appeal also quotes research emanating from UCC (funded by Friends of the Irish Environment) which states that "*If significant growth in future renewable electricity generation is ultimately required mainly to serve strong data centre demand growth, this will further limit the potential for transport, buildings and industry sectors to meet their decarbonisation commitments.*" Our view is that the research does not specifically relate to CPPAs, and nor does it actually take account of their role in the roll out of renewables, by raising the rate of renewable capacity being delivered and effectively balancing out the additional electricity demand of large energy users via additional renewables.

4.48 CPPAs provide a long-term commitment from a project buyer which enables the project developer to secure financing. For the project to be bankable, these purchase contracts need to be with a credit-worthy buyer and long-term (10-20 years). Few renewable energy projects are able to reach commercial operation without long-term purchase commitments. Therefore, CPPAs enable new renewable projects to be built. Condition 13 is aligned to the CPPA roadmap published by the Government in that it provides for new renewable capacity which is not in receipt of a direct Government subsidy and clearly reduces Ireland's GHG emissions and contributes to Ireland's 2030 climate and renewable energy targets. Under Amazon's publicly available Renewable Energy Methodology[8], Amazon works with energy companies around the globe to develop new renewable projects dedicated to serving our load.

4.49 In conclusion the nature of CPPA envisaged by the applicant and stipulated by Condition 13 represent exactly the form of CPPA encouraged and required by the Government Statement and the adoption by the Board of a condition requiring a CPPA would not result in a 'planning free for all' as claimed by the appellant.

Corporate Power Purchase Agreement as Mitigation

4.50 The John Conway and Louth Environmental Group (ground (b) of the appeal), Colin Doyle (pages 2 and 13 of the appeal), and Friends of the Earth (pages 2-3 of the appeal) appeals argue that, in circumstances where any CPPA in respect of the Proposed Development is not proven to deliver renewable additionality, such a CPPA cannot be appropriately considered as mitigation for the purposes of Environmental Impact Assessment.

[8] https://sustainability.aboutamazon.com/renewable-energy-methodology.pdf

4.51 The Colin Doyle appeal states that "*as there is no proven additionality of the proposed CPPAs, there is no further mitigation possible to change the assessed impact to "Minor Adverse"*", in the context of the climate assessment within the EIAR.

4.52 The John Conway and Louth Environmental Group appeal concurs with the contents of a previous submission on the application by Colin Doyle (Doyle's second submission following the FI response, dated the 23rd of August 2023), and states that the applicant has failed to demonstrate that the CPPA envisaged in respect of the project would represent mitigation in terms of the development's energy requirements and carbon emissions. It is argued that, in order to represent mitigation, it would be required to prove that "*the renewables project would not have happened without the CPPA*".

4.53 However, contrary to the arguments put forward by the appellants, it has been set out in detail above that the form of CPPA committed to by the applicant would in fact provide for renewable additionality.

4.54 The accompanying response document on environmental matters prepared by AWN Consulting (Appendix 3 to this appeal response) sets out in detail that the consideration of a CPPA as mitigation in relation to the Proposed Development is entirely appropriate and is supported by the IEMA Guidance document *Pathways to Net Zero - Using the IEMA GHG Management Hierarchy* (Nov 2020), which in turn is referenced in *IEMA Assessing Greenhouse Gas Emissions and Evaluating their Significance 2nd Edition* (IEMA, Feb 2022).

We refer to the AWN document (Response Item A1) for further details and for a more detailed analysis of the relevant guidance.

Corporate Power Purchase Agreement and Assessment of Renewable Projects(s)

4.55 The Mannix Coyne appeal argues (at pages 3-4 of the appeal) that Condition 13 applied by Fingal County Council in their decision to grant permission (which requires the applicant's group to enter into a CPPA in respect of the Proposed Development) represents a "*significant secondary project that would likely not arise but for the principal project and could be described as integral to the project in how the condition is to be discharged*". The appeal argues that the EIAR has not adequately assessed this 'integral' project. A similar argument is put forward by the John Conway and Louth Environmental Group appeal.

4.56 As detailed within the Further Information Response and the submitted Planning Report:

"In 2019, Amazon co-founded The Climate Pledge, a commitment to reach net zero carbon emissions by 2040, 10 years ahead of the Paris Agreement. As part of that commitment, the company is on a path to powering its operations by 100% renewable energy by 2025, five years ahead of its original 2030 target. Sustainability and environmental commitments, made as part of the Climate Pledge are made by the whole Amazon business, of which AWS is a part."

It should be noted that the commitment (The Climate Pledge9) from the applicant's group does not generally involve the linking of renewable projects to individual sites / developments, however Condition 13 applied by Fingal County Council would require the linking of a renewables project (or projects) to the Proposed Development.

[9] https://www.theclimatepledge.com/us/en

4.57 The applicant has not currently identified the project(s) which will be ultimately identified in a CPPA relating to the Proposed Development, which would entail a separate commercial agreement to be undertaken separately to the planning process and subsequent to any grant of permission for the Proposed Development.

4.58 Therefore, while the renewable energy (RE) project (or projects) have not been identified by the applicant at time of writing, in the event that the Board do wish to consider the likely impact of any such renewable energy project, the accompanying AWN response document includes an appraisal, in as far as practically possible, of the likely effects of any RE project that would likely be the subject of any future CPPA related to the Proposed Development. We refer to the AWN response document (Response Item A2) for further details. The AWN response document provides the following conclusion in this regard:

"All new and future RE project(s) to be enabled by the applicant via CPPAs will be subject to planning conditions and obliged to comply with environmental and planning legislation. All new and future RE project(s) will almost certainly be located a significant distance away from the site of the Proposed Development and thus there is no likely significant cumulative impacts between the Proposed Development and the future RE project(s). In relation to climate impact, where geographical location is not relevant in terms of GHG emissions, the impact of the proposed RE project(s) is likely to be beneficial and contribute to the cumulative impact in a beneficial manner."

Alleged Overconcentration of Data Centre Development

4.59 The John Conway and Louth Environmental Group appeal (within ground (a) of the appeal document) argues that additional energy intensive data centre development should not be enabled due to a disproportionate number of data centres permitted or operational in the state. The Mannix Coyne appeal also argues (at page 5) that Ireland's energy system was not designed to meet global demands for data centres, and that this should form a basis for refusing permission for the Proposed Development.

4.60 It is submitted that these grounds of appeal fail to recognise that the Proposed Development represents the logical next phase of an established data centre campus on the wider landholding, which has been subject to a consistent phasing approach since the first application on the lands in 2017, and which is provided for under an existing connection agreement with the transmission system operator. The development is in keeping with national and regional planning policies pertaining to data centre development (as set out in further detail below) and the Government Statement, which recognises the challenges posed by the growth of the data centre sector, whilst ensuring policy support for data centre developments which align with the principles of the Government Statement (which the Proposed Development does).

4.61 The Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy (2022) sets out the strategic importance of data centres to Ireland's overarching enterprise policy and their role in attracting employment and investment to Ireland within the technology sector. It notes that: "*This Statement signals the Government's clear preference for data centre developments that are associated with strong economic activity and employment; make efficient use of our electricity grid, deliver renewable energy in Ireland.*"

4.62 The introduction to the IDA Ireland's 2021 – 2024 strategy 'Driving Recovery and Sustainable Growth' notes particular areas identified for growth including cloud

computing and big data (which are enabled by data centres such as the Proposed Development). The strategy states that "*Specific areas of opportunity include cloud computing, artificial intelligence (AI), 5G, big data, disruptive service platforms, advanced manufacturing, cell and gene therapy, connected health, industrial automation and renewable energy.*"

4.63 It is submitted that in planning terms, it is not a question of a 'disproportionate' number of data centres in Ireland relative to other places, as planning policy at national, regional, and local level supports the delivery of data centre developments in Ireland (subject to certain criteria), and at locations such as the Proposed Development site.

4.64 Furthermore, it is noted that the National Planning Framework (the NPF) under National Strategic Outcome 6, has identified Ireland as "*a sustainable international destination for ICT infrastructures such as data centres and associated economic activities*". This objective recognises the fact that Ireland is a sustainable destination for development of this nature, which is not an optional form of development having regard to the important role which data centres and ICT play in the global economy.

4.65 The NPF at 'National Strategic Outcome 6' goes on to state that:

"Ireland is very attractive in terms of international digital connectivity, climatic factors and current and future renewable energy sources for the development of international digital infrastructures, such as data centres. This sector underpins Ireland's international position as a location for ICT and creates added benefits in relation to establishing a threshold of demand for sustained development of renewable energy sources."

4.66 Similarly, the regional planning policy context (as set out in section 6 of the Planning Report submitted with the current application) provides unequivocal support for the delivery of ICT infrastructure and data centres in Ireland.

4.67 The Regional Spatial and Economic Strategy for the Eastern and Midlands Regional Assembly (RSES for the EMRA) set out several objectives which are directly relevant to and supportive of the Proposed Development. The consistency of the Proposed Development with these policy documents is set out within Section 5 of the Planning Report submitted with the application to the Planning Authority.

4.68 Regional Policy Objective (RPO) of the RSES for the EMRA states the following:

"Local Authorities shall:

- *Support and facilitate delivery of the National Broadband Plan.*
- *Facilitate enhanced international fibre communications links, including full interconnection between the fibre networks in Northern Ireland and the Republic of Ireland.*
- *Promote and facilitate the sustainable development of 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.*
- *Promote Dublin as a demonstrator of 5G information and communication technology."*

4.69 The argument that Ireland accommodates too many data centres is one which has been previously put forward in several previous appeals to the Board.

4.70 The Board have previously recognised the fact that data centres are not an optional form of development, for example in the consideration of the Apple data centre development at Athenry, Co. Galway (ABP Reg. Ref.: PL07.245518). In that case, the Board's Inspector stated at paragraph 12.6.3 that *"it is clear to me that the facility proposed by Apple is not an optional form of development in the modern world, at least in an international context."* The Inspector went on, in the same paragraph, to state the following:

> *"In short, it is my opinion that data centres are a form of development* [which] *has to locate somewhere and, at an international level there is a strong case that locations such as Ireland and Denmark where Apple are proposing to develop their European facilities are the most appropriate given the temperate climate will reduce the overall energy requirement to run them.*

4.71 The various data centre development proposals which have been subject to planning applications to date in Ireland, have been considered under statutory development plans that, while specific to each planning authority area, contain similar mixes and profiles of planning policies and objectives as frameworks against which each proposed data centre development (including the current Proposed Development) is assessed.

4.72 The Regional Spatial Strategy for the EMRA and the National Planning Framework have been the subject of prior environmental assessment at a strategic level (SEA). The relevant planning policy context supports the delivery of development of the nature proposed at appropriate locations such as the subject site (as outlined within the Planning Report submitted with the application to the Planning Authority).

4.73 In addition, various data centre development proposals have been authorised by An Bord Pleanála on appeal. To date the Board, across a range of specific proposals that have differed in terms of site, scale and design, has brought to its assessment of each, its understanding of the role and operation of data centres in Ireland, as set out in planning policy at a national, regional, and local level as outlined above, including the strong policy support provided in the National Planning Framework.

4.74 While the appellants may disagree with the policy context as it currently stands, an appeal or challenge to a particular development proposal is not an appropriate avenue to instigate a collateral attack on policies (which strongly support the delivery of the Proposed Development at national, regional, and local levels as set out previously in this Appeal Response, the Further Information Response and the submitted Planning Report).

4.75 The original High Court judgment in the Kilkenny Cheese case[10] held that attacking policy through attacking a development is not "*legally appropriate*". Paragraph 44 of the original judgment states that:

> "*Confronted with unchallenged policy documents and the highly regulated procedure for an individual planning consent, the applicant is trying to use the latter process to indirectly challenge the former. While that is forensically understandable as a tactic for "pushing the boat out", the reason that it isn't legally appropriate is that general, programmatic policies are not capable of being subjected to the same sort of site-specific regulation as planning applications.*"

[10] [2021] IEHC 254

4.76 Paragraph 47 of the original judgment also states that "*many of the obligations of planning law relate only to individual projects. The high standards of scrutiny of particular development consents don't apply to more general issues arising from overall programmes that are not site-specific in the same way.*"

4.77 In the judgment for leave to appeal, the High Court (Humphreys J) noted that *"because the legal grounds for challenging any government policy document are relatively scanty compared to those available to challenge an individual planning decision, the applicant is taking advantage of the latter grounds in order to make a point that in effect amounts to contesting the outcomes envisaged by the underlying policy... Worth trying once from an applicant's point of view, but ultimately not a legally valid approach".* [11] The judgment clearly states that it is not a *"legally valid"* approach to take advantage of the grounds for challenging an individual planning decision *"in order to make a point that in effect amounts to contesting the outcomes envisaged by the underlying policy".*[12]

4.78 The policy issues raised in the *Kilkenny Cheese* case and the grounds raised within the appellants appeals against the subject application are directly analogous. In *Kilkenny Cheese*, the Court considered that An Taisce was really concerned with challenging the Government's policy to increase the national dairy herd, noting that "*the applicant's focus is on the increase in the dairy herd, which is specifically envisaged as a matter of government policy*"[13], rather than raising a specific issue with the development of the cheese factory the subject of the permission. Thus, the decision in *Kilkenny Cheese* confirms that an objection / challenge to a Proposed Development is not an appropriate vehicle to target planning policy and accordingly the Board should not have regard to those arguments.

4.79 In conclusion it is submitted that the appellant's contention that Ireland accommodates an overconcentration of data centre development (which is not accepted) is not based in evidence, is incorrect, and has no bearing on the decision to grant permission for the Proposed Development. As set out above, in the submitted Planning Report and Further Information response, the Proposed Development is strongly supported by the existing planning policy to which the Board must have regard.

Cumulative Assessment of other Data Centre Projects

4.80 The Colin Doyle (pages 14 and 15 of the appeal), Friends of the Earth (page 6 of the appeal), and Mannix Coyne (page 5 of the appeal) appeals each raise grounds of appeal relating to the assessment of cumulative effects associated with the development in combination with other data centre developments.

4.81 The Colin Doyle appeal argues that *"ideally, all new developments should be assessed at central government level by a state body to determine their potential impact on the emissions ceilings in their sectors, and projects either refused, or only limited emissions assigned to ensure that the ceilings are not breached".*

4.82 While the appellant does go on to recognise that no such arrangement exists (nor is there any basis for it), he goes on to opine that the situation whereby Planning Authorities are left to assess cumulative impacts, is not satisfactory. The appeal argues that "*this is clearly an unsatisfactory situation, as the EIAR considers only an individual project, and lacks overview of the cumulative effects of other similar Proposed Developments or planned future developments in the state, which may be*

[11] Para 24, [2021] IEHC 422
[12] Para 24, [2021] IEHC 422
[13] Para 24, [2021] IEHC 422

unknown to the professional environmental assessor". It is argued that this can lead to multiple projects being permitted without addressing their overall environmental impact.

4.83 The appeal goes on to state that the current application considered only indirect cumulative impacts arising from the activities carried out within the physical boundary of the site in question. It is further stated that, while "*it is not a requirement of an EIAR that an assessor include the impact of their full portfolio of completed similar projects*", the appellant has compiled details of other data centre projects for which AWN Consulting prepared EIARs. The appellant argues that the combined impacts of these projects would be profound.

4.84 The Mannix Coyne appeal puts forward a similar argument, stating that the cumulative impacts of all data centre developments combined have not adequately been taken account of.

4.85 The Friends of the Earth appeal states that the argument that GHG emissions have cumulative effects at a global level undermines the legitimacy of the assessment undertaken. It is contended that "*this leads to the outlandish conclusion that only an assessment of all projects at the same time can only* (sic) *be assessed*".

4.86 We note the Board's decision in regard to ABP Reg. Ref. 310729-21 in which An Taisce and Friends of the Irish Environment appeals argued that permission for data centres are being granted on a case by case basis in Ireland, without addressing wider cumulative impacts in terms of water and energy use. These appeals focused in particular on the cumulative assessment of secondary effects arising from energy usage and demand precipitated by data storage facilities (data centres). In their conclusion the Inspector stated that: "*It is considered that, subject to compliance with the conditions set out below, the Proposed Development would accord with national, regional and local planning, it would not have a significant impact on climate or legally binding national emissions targets in relation to GHG…*".

4.87 With regard to the consideration of environmental effects arising from energy usage, the same Inspectors report stated the following:

"There is evidently an EU-wide strategy in place to ensure that GHG emissions targets are met, including from large energy users such as the proposed development and, in this context, I do not consider the proposed development is inconsistent with national climate and environmental policy objectives."

4.88 In a further case in which similar arguments were raised with regard to the assessment of secondary cumulative impacts, the Inspector's Report for ABP Reg. Ref.: 307546-20 stated the following:

"The concerns raised by several parties (incl. An Taisce & Friends of the Irish Environment) in relation to the consideration and assessment of cumulative impacts on a national and regional scale with respect to a number of issues (incl. climate change mitigation targets, energy consumption, water resources & data centres) are noted. However, I would not concur with this view and I am satisfied that the assessment of cumulative impacts in-combination with other plans and projects in the surrounding area is appropriate. The proposed development, as amended by the omission of the energy centre would not give rise to any significant adverse local or cumulative impacts in-combination with other developments in the surrounding area."

4.89 As part of the response to this appeal the Applicant set out that planning policy supports the delivery of data centres in Ireland and at locations such as the Proposed

Development site. Proposals for data centre developments are assessed at a site level and also in relation to extended regions and environments and under the same broad planning context, allowing for local variations. The supporting planning policy framework (including the NPF and the RSES for the EMRA) has itself been subject to environmental assessment at a strategic level. In assessing a range of similar development proposals, the Board has applied its understanding of the role and operation of data centres in Ireland, based on national, regional and local planning policies.

4.90 In the case of the Proposed Development, and other data centre developments, these proposals are assessed against information in relation to the specific sites in question and, also, in relation to extended regions and environments (as a result of environmental assessments and screenings).

4.91 An issue analogous to that raised by the appellants above was considered by the High Court in *Coyne v An Bord Pleanála* [14] (Mr Coyne is also an appellant on the current application), with the following noted:

"Electricity is as much an input to the productive capacity of the Data Centre as was the milk an input to cheese production in the Kilkenny Cheese case. Insofar as that analogy stretches – I think it partially does – it suggests that the rationale of the Kilkenny Cheese case should apply to limit the extent of consideration in EIA of the Data Centre of the CO2 emissions in question in this case. The element of that rationale which remains relevant, despite the identification of the CO2 emissions of electricity generation as an indirect effect of the Data Centre for EIA purposes, is that the proper scope of the EIA Directive should not be artificially expanded and conscripted into the general fight against climate change by being made to do the work of other legislative measures. As I have said, I agree also with Humphreys J. that wider indirect environmental consequences must be assessed at a programmatic level." (Para. 210 (c))

4.92 The same judgement went on to state the following at Paragraphs 211 to 214:

"211. I referred earlier to the description of the ETS in Milieudefensie. In an analysis of some present relevance, the Hague District Court also observed in that case that "The indemnifying effect of the ETS system means that – insofar as it concerns the reduction target of the ETS system – RDS does not have an additional obligation with respect to Scope 1 and 2 emissions in the EU that fall under the system." The Hague District Court also observed that "the ETS system only covers a small part of the Shell group's emissions. Only for these emissions, RDS does not have to adjust its policy due to the indemnifying effect of the ETS system." The court's ultimate reasoning was more complex (as to shortfalls between what reductions ETS would achieve and overarching reduction targets it imposed on RDS).

212. However the only GHG emissions in issue in the present case – the Scope 2 emissions of electricity generation to power the Data Centre - are all covered by the ETS. In that light Milieudefensie can be seen to have adopted the reasoning urged in opposition to the Coynes in this case as to the significance of the ETS – which is described in Milieudefensie as the cornerstone of EU climate policy and as an important tool to cost-effectively limit CO2 emissions. Paraphrasing the Hague District Court, one would say that the indemnifying effect of the ETS system means that – insofar as it concerns the GHG cap of the ETS system – EngineNode does not have an additional obligation with respect to Scope 2 emissions of the Data Centre that fall under the system. For these emissions, EngineNode does not have to adjust its policy due to the indemnifying effect of the ETS system. It is not apparent

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to me that this observation is any the less valid because we are concerned with a prospect of development rather than with an existing enterprise.

213. These observations seem to me to illustrate that, while EIA of a project must consider "energy demand and energy used", "climate", "climate change", "climate (including GHG emissions)" and "the impact of the project on climate (including the nature and magnitude of GHG emissions), it suffices in EIA of a particular project, in which its indirect and cumulative effects by way of electricity generation of CO2 emissions are at issue, to do as was done here. Namely to identify and quantify energy demand and energy used, to identify and quantify the nature and magnitude of nature and magnitude of GHG emissions likely to result from that energy use (recognised in the papers as up to 180mw and 1,577 GWh annually) and to examine and analyse their contribution to national GHG emissions of the electricity generation sector in the context of the ETS and national policy to transition towards renewable electricity generation.

214. It does not appear to me that it is necessary, or even possible, to go further by way of an attempt to discern the cumulative effect of the project on future substantive climate change events, much less effect on a small number of individuals who, irrelevantly for this particular purpose as the effects will be caused elsewhere and occur on a global scale, happen to live beside the Data Centre. I confess to imagining that such an exercise, as to the effects by way of electricity generation of CO2 emissions due to this project (which, in EIA is always the issue – even as to cumulative effect) would be speculative to the point of uselessness."

4.93 With regard to the argument that the current application should have considered all other permitted and proposed data centres in Ireland, or even a subset of these which the current application consultants had been involved in, it is submitted that assessment of that nature is not appropriately addressed at the level of an individual application, but rather falls to be addressed at the level of programmatic measures. For further responses in relation to the grounds of appeal relating to the assessment of the development against programmatic measures (and in particular the European Emissions Trading Scheme and the national sectoral emissions ceilings), we refer to the following sections of this appeal response.

4.94 The Colin Doyle appeal itself acknowledges that there is no obligation for the individual applicant to assess all known developments of a similar nature in the state (stating that "*it would be unreasonable to expect the environmental assessor to have knowledge of all proposed current and future developments in the state*"). The consideration of the overall impact of an entire class of development is indeed more appropriate at a programmatic rather than a project level. In fact, the Government did undertake to address the continued development of data centres at a national level within their publication of the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy (2022), which sets out six principles for sustainable data centre development (with which the Proposed Development is fully aligned). In addition, the EIAR submitted with the application provided a robust assessment of cumulative impacts, and there is no requirement for the undertaking of an assessment of all other data centres, or even a subset of them.

4.95 The Proposed Development itself is consistent with the policies of the NPF and the RSES which strongly support development of this nature, and is in keeping with the principles for sustainable data centre development set out within the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy (2022). The application was accompanied by an EIAR which includes an assessment of cumulative impact as relevant to the Proposed Development, and it is not for the individual application to present an assessment of the broader impact of data centre

development on electricity demand or GHG emissions. These matters are appropriately dealt with at the level of programmatic measures as set out above.

4.96 With regard to the trade-off implied between the permitting / proposing of a range of other data centre developments referred to in the Colin Doyle appeal, and the achievement of the sectoral and national emissions targets, the judgement in *Coyne v An Bord Pleanála*[15], noted that "*It is emphatically for the Government and the Oireachtas to decide what those trade-offs ought to be. That is not to suggest that a particular choice is right or wrong - as to which there can be directly conflicting yet reasonable views. It is to emphasise that the balance between, and resolution of, those desiderata* [sic] *of development of data centres and reduction of GHG emissions is an issue of policy to be decided by the executive and legislature rather than by the courts.*"

4.97 In addition to the above, the accompanying AWN response document (Appendix 3) sets out in detail how the method of assessing cumulative climate impact arising on foot of the Proposed Development has been carried out in accordance with the latest IEMA guidance on "*Assessing Greenhouse Gas Emissions and Evaluating their Significance*" (IEMA, 2022). The AWN response states the following:

"From a climate perspective, the Institute of Environmental Management and Assessment (IEMA) guidance note on "Assessing Greenhouse Gas Emissions and Evaluating their Significance" (IEMA, 2022) has noted, on Page 21, that:

"The atmospheric concentration of GHGs and resulting effect on climate change is affected by all sources and sinks globally, anthropogenic and otherwise. As GHG emission impacts and resulting effects are global rather than affecting one localised area, the approach to cumulative effects assessment for GHGs differs from that for many EIA topics where only projects within a geographically bounded study area of, for example, 10km would be included."

The guidance states, on Page 21, that when considering the cumulative assessment,

"All global cumulative GHG sources are relevant to the effect on climate change, and this should be taken into account in defining the receptor (the atmospheric concentration of GHGs) as being of "high" sensitivity to further emissions.

Effects of GHG emissions from specific cumulative projects therefore in general should not be individually assessed, as there is no basis for selecting any particular (or more than one) cumulative project that has GHG emissions for assessment over any other."

The guidance furthermore states, on Page 21 of IEMA 2022, in terms of contextualization of the GHG emissions:

"The contextualisation of GHG emissions ..... should incorporate by its nature the cumulative contributions of other GHG sources which make up that context. Where the contextualisation is geographically – or sector-bounded (e.g. involves contextualising emissions within a local authority scale carbon budget, or a sector level net zero carbon roadmap), then the consideration of cumulative contributions to that context will be within that boundary."

Thus, the assessment of the Proposed Development evaluated direct operational climate impacts from the backup generators for the Proposed Development scenario

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and the masterplan of the Overall Project including a potential future phase of development. In addition, for the Proposed Development scenario and the masterplan of the Overall Project including a potential future phase of development, the indirect GHG emissions from the electricity supplied to the site was also evaluated.

In line with the contextualization of the GHG emissions outlined in IEMA 2022, the assessment outlined in the Addendum to Chapter 9 of the EIAR also considered the cumulative direct and indirect emissions both on an EU wide basis (as a percentage of the EU ETS) and in terms of the most relevant national target (as a percentage of the electricity Sectoral Emission Ceiling) for the baseline scenario, Proposed Development scenario and the masterplan of the Overall Project."

4.98 Having regard to the foregoing, the approach adopted in assessing cumulative impact was clearly robust and in accordance with the relevant guidance, and it is clear that any higher level assessment of the cumulative effect of a large number of similar projects (or even an entire class of development nationally) is not an exercise which the Board is required to engage in at a project level, but rather is a matter which is appropriately dealt with by the relevant authorities at a programmatic level.

Accuracy of Climate Assessment, Conclusions on Climate Impact, and Consideration of Reasonable Worst Case

4.99 The John Conway and Louth Environmental Group (by reference to the second Colin Doyle submission to Fingal County Council following the submission of the Further Information Response), Colin Doyle (pages 11-14 of the appeal and appeal appendix), and Mannix Coyne (page 1 of the appeal) appeals argue that (apart from the use of CPPAs as mitigation, as dealt with above), the climate assessment included within the EIAR, as supplemented at Further Information stage, mischaracterised and underestimated the impact of the Proposed Development.

4.100 In summary, the following key grounds are raised in this regard:

- The appellants argue, the EIAR didn't take account of impact on the ceiling for Ireland's Electricity Sector. The appellants argue that as the development would result in additional emissions, the impact should be characterised as significant adverse rather than moderate adverse, as the IEMA guidance dictates this for developments which would not be aligned with the pathway to net zero.
- The appellants argue that the assessment should have addressed a reasonable worst case scenario, whereby all additional demand would have been met by way of additional conventional generation.
- The appellants argue that the Proposed Development would, immediately on operation, give rise to a new demand for 73MW of electricity which will be supplied through additional conventional (fossil fuel derived) generation.
- The appellants argue that as if the assessment were based on the assumption that conventional generation would be used, the resulting impact would be even more significant.
- The appellants argue that Table 1.10 of the AWN FI response incorrectly stated data as prior to mitigation, even though they reflect an assumed 80% renewable generation.
- The appellants argue that the predicted impact both before and after mitigation is understated, and that the predicted impact should not have assumed that 80% renewables penetration would be achieved.
- The appellants argue that if the scenario of the development being powered by conventional fossil fuel derived generation was calculated, the impact

would be 8.8% for the project, and 26% for the overall site. While the assessment indicates the impact reducing to 'minor adverse' after mitigation, the same mitigation is heavily reliant on CPPAs, which it is argued will not in fact provide for additionality. The appellants argue that therefore the impact should stay at moderate under the best case scenario, and major for the worst case (conventional generation) scenario.

4.101 The AWN response document (Appendix 3, under Response Item A4) provides a point-by-point response to the foregoing grounds of appeal. While we refer the Board to the AWN document for the detail of this response, the key points can be summarised as follows:

- The proposed development will not result in new unforeseen demand as there is an existing connection agreement since 2017 and with that demand with that demand built into all forecasts, as such it will not affect sectoral ceilings or the predicted quantity of conventional (fossil fuel) generation.
- In addition to this, a CPPA for the power demand for the proposed project has been welcomed and conditioned under the Planning Authority's decision to grant permission (while a similar approach and condition by the Board would be welcomed).
- The categorisation of the predicted impact of the Proposed Development accords with the IEMA 2022 guidance, and the development's impact was correctly charecterised as minor adverse post mitigation.
- The assessment in the EIAR Addendum submitted with the FI response was based on a reasonable worst case scenario in relation to greenhouse gas (GHG) emissions based on the following:
    - The climate assessment assumed 100% operation of the Proposed Development from 2025, at 100% load, whereas in reality the development will become operational on a phased basis over a period of c. 2.5 years,. Thus the predicted GHG emissions presented in the EIAR addendum were worst case figures. The AWN response document predicts the more likely scenario based on the ramping of operations, which demonstrates a considerable reduction in GHG emissions (prior to any mitigation).
    - The assessment also assumed a continuous 100% operational load for the data centre development, however annual average load is likely to be closer to 80% (as outlined in the recent DECC publication "*Summary of Analysis to Support Preparation of the Sectoral Emissions Ceilings*" (DECC, 2022),
    - GHG emission factor for electricity was based on current reported levels (2021), decreasing linearly to 100 gCO2/kWh by 2030 in line with government policy, however latest SEAI estimates confirmed that the estimation for 2030 is currently 92.9 gCO2/kWh, meaning that the figures used were conservative.
    - It was assumed the electricity grid would reach net zero emissions by 2050, however the ESB have recently committed to achieving this by 2040.
- The appellant's suggestion that 100% conventional generation should be assumed to the energy source for the development for the purposes of assessment defies reality; totally ignores a plethora of Government policy and related initiates and Plans; ignores the extensive investment in renewable energy generation and power supply both within Ireland and within the power grids that Ireland is connected to; and does not consider the applicant's own renewable investments and record in recent years.

Suggesting 100% conventional generation as a basis for assessment is entirely incorrect and is not in line with a reasonable worst case scenario.

- The assumption of 80% renewable generation by 2030 is in fact a conservative assumption on a reasonable worst case based on the data available and the interpretation of the relevant climate guidance (IEMA 2020, 2022). .
- The response sets out how the summarised conservative approach adopted aligns with the relevant guidance, and how the categorisation of predicted impact (both prior to and post mitigation) within the EIAR Addendum submitted as part of the FI response to the Planning Authority was entirely appropriate.

4.102 We refer to the AWN response document (Appendix 3) for further details.

The EU ETS and National Carbon Targets / Sectoral Emissions Ceilings

4.103 The appeal submitted by Friends of the Earth (page 5 of the appeal) argues that the application placed undue weight on the inclusion of the indirect emissions from the Proposed Development within the EU Emissions Trading Scheme (ETS). It is contended that the application sought to overlook national climate targets and emissions ceilings by arguing that the 2021 and 2023 Climate Action Plans state that the emissions associated with the development would be subject to EU-wide rather than national targets. The appeal claims that Pages 44 and 45 of the AWN Further Information Response incorrectly state that the indirect electricity emissions and direct emissions on site will be compliant with section 13.3.5 of the 2023 Climate Action Plan (CAP 2023) by virtue of their requirement for GHG permits under the ETS. The appeal highlights that the EU ETS does not replace or take primacy over the national carbon budget.

4.104 The judgement of the High Court in *Coyne v An Bord Pleanála*[16] deals in detail with the relevance of the ETS, and the "*significant advantages over EIA of individual projects*" which the ETS possesses for "*controlling the indirect and cumulative effects of all the projects drawing electricity from the National Grid*" (Para. 210 (i)). The judgement also states the following:

> *"Electricity is as much an input to the productive capacity of the Data Centre as was the milk an input to cheese production in the Kilkenny Cheese case. Insofar as that analogy stretches – I think it partially does – it suggests that the rationale of the Kilkenny Cheese case should apply to limit the extent of consideration in EIA of the Data Centre of the CO2 emissions in question in this case. The element of that rationale which remains relevant, despite the identification of the CO2 emissions of electricity generation as an indirect effect of the Data Centre for EIA purposes, is that the proper scope of the EIA Directive should not be artificially expanded and conscripted into the general fight against climate change by being made to do the work of other legislative measures. As I have said, I agree also with Humphreys J. that wider indirect environmental consequences must be assessed at a programmatic level. The legislative measure Hogan J had in mind was the Climate Act 2021 but the same reasoning seems to me to apply to the ETS Directive."* (Para. 210 (c))

4.105 The judgement goes on to further state:

> *"Beyond general and alarming predictions of dire climactic and weather events (which predictions may well be justified) no attempt was made, and I strongly imagine none is possible, to discern a reliable causative link between the CO2*

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emissions specifically of the electricity to power the Data Centre and any of those events. ETS avoids the need for such speculations.

...

The ETS, as the "hard place" described above, inevitably has a quite direct effect on the formulation of national targets for transition to renewable electricity generation sources. These targets are now expressed as Government policy "commitments". While perhaps not legally binding commitments justiciable by a private person, (that was not argued) they are at least expressions of Government policy in notably strong terms. Not merely is the Board obliged by statute to have regard to those policies as informed by ETS, it is entirely unsurprising and proper that the Board should attribute appreciable weight to them as, via the Inspector, it has done. Of course, it may be that litigants and others are sceptical, even rightly sceptical, of the policy, its commitments, the firmness of those commitments, whether they are achievable and whether they will be achieved. But, at least ordinarily, those are political – not legal – concerns." (Para. 210 (i))

4.106 The judgement states the following at Paragraph 213 (as quoted previously above):

"it suffices in EIA of a particular project, in which its indirect and cumulative effects by way of electricity generation of CO2 emissions are at issue, to do as was done here. Namely to identify and quantify energy demand and energy used, to identify and quantify the nature and magnitude of nature and magnitude of GHG emissions likely to result from that energy use (recognised in the papers as up to 180mw and 1,577 GWh annually) and to examine and analyse their contribution to national GHG emissions of the electricity generation sector ***in the context of the ETS and national policy*** *to transition towards renewable electricity generation"* (emphasis added)

4.107 In concluding on the grounds relating to indirect climate impact and the ETS, the judgement states:

- *"There are no direct CO2 emissions by the Data Centre (or at least none said to be significant for purposes of these proceedings).*
- *The Scope 2 CO2 emissions of the Data Centre are to be considered as indirect effects in EIA.*
- *The Scope 2 CO2 emissions of the Data Centre are described and assessed in the EIA in the manner required by the EIA Directive.*
- *Their assessment in EIA in light of their status as ETS emissions and in the context of the transition to renewable energy generation was in accordance with law.*
- *The significance of cumulative effect was adequately considered as a proportion of the national emissions of CO2 by electricity generation.*
- *The determination that the quantum of any effect would not be significant was impugnable only for irrationality and was not so impugned. But I may as well say that any such challenge would have failed.*
- *The consequential effects of those CO2 emissions of the Data Centre on global warming and climate change or on specific individuals are not to be considered as indirect or cumulative effects in EIA as they are remote, elusive, contingent, speculative and incapable of measurement.*
- *Any effects consisting of or consequential on those CO2 emissions are in any event, and clearly better, managed via programmatic measures – notably the ETS."* (Para. 215)

4.108 Having regard to the judgement in Coyne v An Bord Pleanála[17], it is clear that it is entirely appropriate to review the predicted impact of the Proposed Development in the context of the EU ETS. However, contrary to the arguments made in the appeals submitted, the current application has not sought to discount national targets in favour of focusing solely on EU ETS targets. On the contrary, as set out in the AWN Consulting response document on climate, the Proposed Development and its predicted impact has been considered specifically in the context of sectoral emissions ceilings which are set at a national level.

4.109 As set out within the AWN response document (Response Item A5), both the national and EU level legislative provisions relevant to indirect GHG emissions have been afforded due consideration and weight in the application. The AWN response summarises the relevant provisions of this legislation, and notes that "*both EU and national legislation are relevant and there is likely to be continual legislative overlap between both EU and national legislations as both parties move forward with the same goal of net zero / carbon neutrality by 2050*".

4.110 We refer to the AWN response document for further details, noting the conclusion of the document on this matter as follows:

"All relevant national and EU legislation has been reviewed at length in the. EIAR and in the Addendum to Chapter 9 of the EIAR, The assessment approach was based on considering both EU and national legislations and determining which target was more onerous in terms of impact of the Proposed Development. In this case, the Sectoral Emission Ceiling was a more onerous target, and the impact of the assessment was based on both the pre- and post-mitigation impact of the Proposed Development relative to the Electricity Emission Ceiling. Additionally, a CPPA for renewable energy located in Ireland is proposed for the project and hence will not be relying solely on ETS/GHG permits as mitigation."

4.111 Thus, having regard to the above and accompanying responses, while the EU ETS remains a valid and relevant consideration in respect of the indirect impact of the Proposed Development, the national sectoral emissions ceiling for the Electricity Sector has also been fully considered in the application.

Consistency with section 15 of the Climate Action and Low Carbon Development Act 2015, as amended

4.112 The John Conway and Louth Environmental Group (ground (a) of the appeal), Friends of the Earth (pages 1-2 of the appeal), and Mannix Coyne (pages 2-3 of the appeal) appeals each refer to section 15 of the Climate Action and Low Carbon Development Act 2015, as amended.

4.113 Section 15 of the Climate Action and Low Carbon Development Act 2015, as amended states the following:

"(1) A relevant body shall, in so far as practicable, perform its functions in a manner consistent with—

(a) the most recent approved climate action plan,
(b) the most recent approved national long term climate action strategy,
(c) the most recent approved national adaptation framework and approved sectoral adaptation plans,
(d) the furtherance of the national climate objective, and

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(e) the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State."

4.114 The appellants contend that the Proposed Development would not be in keeping with this section of the Act, and that on that basis, permission should be refused.

4.115 Contrary to the submissions by the appellants, it is submitted that the Proposed Development is consistent with section 15 of the Act, as set out in detail within the accompanying response document prepared by AWN. We refer to the AWN response document (and in particular Response Item A6) for further details.

Consistency with the Climate Action Plan 2023 Statement on Large Energy Users and Just Transition

4.116 The John Conway and Louth Environmental Group (ground (a) of the appeal), Friends of the Earth (page 5 of the appeal), and Mannix Coyne (page 2 of the appeal) appeals each highlight the following provision of the 2023 Climate Action Plan:

*In the short- and medium-term, **new demand** growth from large energy users, such as data centres, will have to be moderated to protect security of supply and ensure consistency with the carbon budget programme." **[emphasis added]***

4.117 Each of these appeals argue that the Proposed Development is inconsistent with the foregoing provision of the Climate Action Plan, or that this provision has not been adequately addressed.

4.118 A footnote in the Climate Action Plan at the end of the above quote provides a link to the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy (2022) (page 139 of the Climate Action Plan refers). The implication is that the Government Statement and the guiding principles it contains for sustainable data centre development will achieve the aim of moderating new demand growth to protect security of supply and ensure consistency with the carbon budget programme.

4.119 The compliance of the Proposed Development with that Statement, and each of the principles contained therein, has been set out in detail within the application Planning Report (Section 7 refers) and supplemented in the Further Information Response to Fingal County Council. Additional response to arguments pertaining to the compliance of the development with the Government Statement is addressed below.

4.120 The Proposed Development is in line with the foregoing extract from the 2023 Climate Action Plan, and additionally the Proposed Development does not represent "new demand growth" as the energy requirements of the Proposed Development, in their entirety, are provided for under an existing connection agreement dating originally from 2017, which remains valid. This means that the development's projected electricity usage has already been accounted for by the Transmission System Operator (EirGrid) and does not constitute additional unplanned demand or 'new demand growth'.

4.121 As set out in Further Information Response 3(b) states:

"The Government Statement (page 10, paragraph 3) fully acknowledges that transmission infrastructure has been established to accommodate data centres. It states *that 'in the Greater Dublin region, the transmission system has been extended to cater for additional demand, in particular from data centres, with new substations and associated transmission circuits built. However, Dublin's transmission system has been pushed to its limit, with EirGrid advising the region will not be able to*

*accommodate **new** requests for power from data centres until significant reinforcement of the transmission network is delivered, through the Power Up Dublin Plan.'* (emphasis added)

The Proposed Development does not entail a new request for power, because it as an existing connection agreement. The Proposed Development will be supplied by the existing transmission system which has been extended via a contestable development to cater for the additional demand foreseen in the connection agreement signed in 2017. In addition, the energy provided under the connection agreement forms part of the established EirGrid Generation Capacity Statement.

4.122 Additionally, it should be noted that the Climate Action Plan refers to 'moderation of new demand growth', and not to a complete moratorium on data centre development. The Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy (2022) effectively seeks to 'moderate' growth in demand from DCs, by narrowing the type of projects which will gain permission and be accommodated, via the principles contained therein. The Proposed Development meets each and every one of those principles as noted above.

4.123 On the 29th of September 2021, in response to a Private Members Motion seeking a moratorium on data centre development, Minister Eamon Ryan states that "*Calls for a moratorium on data centre connections would be a blunt policy response. We are better served to enable the transition to a zero-carbon electricity system through policy and regulation".*

4.124 The Proposed Development represents data centre development which fully aligns with the Government policies published since the foregoing statement by the Minister, including the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy (2022) (discussed in further detail below), and the 2023 Climate Action Plan.

4.125 The Colin Doyle appeal also argues (at pages 16 and 17) that the level of employment provided by the Proposed Development would be low, and that the level of carbon emissions associated with the Proposed Development, when divided by the number of jobs, would represent a high level of carbon emissions per job. It is argued that this would be contrary to the principle of a just transition embedded in CAP23.

4.126 However, this ground of appeal is firstly based on the assumption that the CPPA to be entered for the energy use of the Proposed Development would not represent 'renewable additionality' and secondly on the assumption that the only employment arising on foot of the Proposed Development would relate to directly employed operatives during the operational stage of the development.

4.127 With regard to the first of these assumptions, this appeal response has clearly set out that the applicant intends to enter into a CPPA which will in fact provide for additionality of renewable generation, contrary to the claims of the appellant. Furthermore, as discussed in the next section of this report, the economic and employment impacts of AWS' operations are not limited to those employed directly within each data centre building, but rather encompass a very significant level of direct, indirect and induced employment associated with both the construction and operational stages of data centres and the services provided by AWS via this important infrastructure.

Consistency with the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy (2022)

4.128 The appeal submitted by Colin Doyle (pages 17-19 of the appeal) argues that contrary to the statements set out within the planning application and Further Information Response to Fingal County Council, the Proposed Development is not compliant with the principles for sustainable data centre development set out within the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy (2022).

4.129 The appeal sets out these arguments under each of the individual principles. While these arguments are considered to be incorrect, and it is submitted that compliance with the principles was fully demonstrated in Section 7 of the permitted Planning Report submitted to the Planning Authority, and within the Further Information Response, it is nonetheless considered appropriate to respond to the appellant's contentions under each of the relevant principles in turn, and to provide a summary of the development's compliance with the principles. The following sections have been prepared with input from the applicant.

Economic Impact

4.130 The first principle for Sustainable Data Centre Development relates to economic impact. It is as follows:

> ***"The Government has a preference for data centre developments associated with strong economic activity and employment.*** *In particular, it favours developments in regional locations, aligned with the NPF and Regional Spatial and Economic Strategies, which will embed the technology sector in locations and communities that can benefit from this investment, employment and spillover effects. In assessing economic impact, the totality of the Irish-based economic impact should be considered and factors such as associated total corporate employment, exports, wage levels, Irish materials/services purchased taken into account. The availability of digital infrastructure should serve our national digitalisation objectives, drive innovation, productivity and skills across our economy aligned to the National Digital Strategy."*

4.131 The appellant argues, in the context of the grounds of appeal relating to 'just transition', that the level of employment arising from the development would be c. 100 jobs, that there would be no clear wider economic stimulus for Ireland on foot of the project, and that the development will primarily lead to economic growth elsewhere in the world. It is also argued that tax contributions by Amazon operations in Ireland 'appear to be miniscule'.

4.132 The interpretation of this principle of the Government Statement put forward by the appellant is clearly incorrect. The appellant seeks to characterise the employment generated by the Proposed Development as inconsequential, and also ignores the direct requirement under this principle that "*the totality of the Irish-based economic impact should be considered and factors such as associated total corporate employment, exports, wage levels, Irish materials/services purchased taken into account".* Additionally, the appellant appears to have overlooked much of the information provided within the original application that clearly established full alignment with this principle.

4.133 With regard to the direct and indirect economic and employment benefits associated with the Proposed Development, Section 7 of the submitted Planning Report provided a detailed review of the impact that AWS' operations in Ireland have in terms of direct investment, economic growth, job creation, and positive impact on

domestic suppliers and service providers. The figures provided within the submitted Planning Report originated from analysis undertaken by Indecon which covered a period up to 2020.

4.134 In the intervening period since the submission of the application to Fingal County Council (and indeed since the submission of the third party appeals), AWS have published a new detailed economic impact and employment report which was also prepared by Indecon (and which was published on the 26th of October 2023). A copy of the report is appended to this response document for reference (Appendix 5 refers).

4.135 This report provides an updated appraisal of the significant and far-reaching economic and employment benefits which AWS' presence in Ireland and continued investment in digital infrastructure has engendered.

4.136 The report outlines the following *inter alia*, underlining the clear compliance of the current development proposal with the first principle of the strategy:

- AWS now support more than 10,000 jobs in Ireland, including over 4,200 direct AWS employees, 3,000 employees working for AWS suppliers and sub-contractors, and 2,900 jobs linked to their Irish investments.
- Direct employment at AWS has grown at an average annual rate of 38% over the past decade.
- AWS investment has increased economic output by over €11.4 billion since 2012.
- AWS investment supported €2.4 billion in economic output during 2022 alone, a ten-fold increase on the equivalent figure for 2012.
- AWS capital investment in a typical data centre campus leads to an additional €604 million each year during construction, supporting an average of 2,250 jobs annually.
- Following construction, an AWS data centre campus supports over 250 full time roles on an annual basis, with a total economic output of €381 million annually.

4.137 This up to date economic and employment data clearly contradicts and disproves the arguments put forward by the appellant in this regard.

4.138 With regard to the stated objective under this principle to "*embed the technology sector in locations and communities that can benefit from this investment, employment and spillover effects*", it is noted that, whilst the Proposed Development relates to the orderly and logical next phase of an established data centre campus, the positive impacts of the development and ongoing AWS investment in the Fingal and Blanchardstown area should nonetheless be highlighted. These positive impacts have been set out in detail within the submitted Planning Report, while further details in relation to positive impacts on the local community are set out under the final principle of the Government Statement below.

4.139 With regard to the argument put forward by the appellant relating to tax contributions, this point is irrelevant to the consideration by the Board of the Proposed Development.

Grid Capacity and Efficiency

4.140 The second Principle set out within the Statement relates to grid capacity and efficiency. This principle is set out as follows:

"The Government has a preference for data centre developments that make efficient use of our electricity grid, using available capacity and alleviating constraints.

Data centres should engage collaboratively with the respective system operators to understand capacity availability and required grid services across geographic locations, and where connection can be facilitated, provide grid services such as to best utilise available infrastructure to the benefit all electricity customers. This is in line with the CRU Direction to the System Operators related to Data Centre grid connection processing (CRU/21/124)."

4.141 With regard to this principle, the appellant contends that, while electricity infrastructure funded by the developer is in place, with capacity to serve the Proposed Development, there is no evidence that the proposals will alleviate potential future national grid constraints. It is argued that the development will represent an additional load on the grid of 73MW, and that the applicant has not set out proposals to provide demand flexibility to alleviate constraints on a regular or prolonged basis. The appellant argues that backup generators on site could not be used to alleviate grid constraints, based on the impact that prolonged run times would have on residential receptors' air quality, and the conditions applied by Fingal County Council.

4.142 In response to the foregoing, we refer the Board to the Planning Report submitted with the application, and in particular the Further Information Response 1(a) submitted to the Planning Authority, which provided a significant level of detail, in relation to this and each of the other principles. It is submitted that, on the basis of the information provided, the appellant is clearly incorrect in claiming that alignment with this principle has not been achieved.

4.143 With regard to this principle, the documentation previously submitted has set out the following in summary:

- A connection agreement for the development, inclusive of the Proposed Development has been in place since 2017 and remains valid. This means that the development's projected electricity usage has already been accounted for by the Transmission System Operator and does not constitute additional unplanned demand.
- The CRU Direction (CRU/21/124) does not apply to the Proposed Development, as the relevant connection agreement predates the Direction.
- The Proposed Development will be supplied from the existing Cruiserath 220kV Substation which is located on the overall AWS landholding. The Cruiserath 220kV Substation was developed by AWS, as a contestable development under Planning Register Reference ABP Reference: VA 06F.306834.
- To enable more effective planning by Eirgrid and more efficient use of the grid, AWS sought a revision to the original connection agreement. The original connection agreement required all the power to be made available once the Cruiserath 220kV substation entered into operation (i.e. 2022). The revised connection agreement sought incremental provision of power to ensure that power was only requested when required. The revised connection agreement provides for eight incremental ramps (increases) in power supply to the site, commencing in 2022 and completing in 2029 – with an incremental ramp occurring on 1 January of each year.
- The change to incremental provision of power ensures that power is only requested and reserved when required – this is clear evidence of AWS'

engagement with EirGrid to ensure efficient use of the grid and to alleviate constraints that may otherwise have occurred.

4.144 The Colin Doyle appeal incorrectly claims that the Proposed Development will represent an "*immediate increased power demand of 73MW*". This assumption is fundamentally incorrect. As set out in the Further Information Response, the following is the case:

"As set out in Section 1.14 of the Planning Report, to enable more effective planning by Eirgrid and more efficient use of the grid, AWS sought a revision to the original connection agreement. The original connection agreement required all the power to be made available once the Cruiserath 220kV substation entered into operation (i.e. 2022). The revised connection agreement sought incremental provision of power to ensure that power was only requested when required. The revised connection agreement provides for eight incremental ramps (increases) in power supply to the site, commencing in 2022 and completing in 2029 – with an incremental ramp occurring on 1 January of each year."

4.145 The connection agreement confirms that power for Building E is available immediately while power for Building F will be made available in 2026 and power for Building G will be made available in 2027.

4.146 Once that power becomes available, the reality is that the demand for power from the Proposed Development will ramp incrementally, rather than arising at once. As set out in the EIAR, and the AWN Consulting response (Chapter 2 of the EIAR and Response Item A4 of the AWN response document), the Proposed development is to be constructed on a phased basis commencing following any grant of permission for the development, and as set out within the AWN response document, the Proposed Development will be constructed on a phased basis with Building E being constructed first, followed by Building F, and finally Building G. Construction works on one building will be nearing completion prior to works beginning on the next building. In addition, it's worth noting that the Proposed Development is designed for today's computing needs but also takes account of future needs. Once operational the IT equipment within the Data Centre(s) may not utilise all power available (at each phase of the fitout), instead the power draw from the facility will ramp up over time with advances in IT equipment and compute power (Moore's Law).

4.147 The Colin Doyle appeal also contends that the conditions (11 and 12) applied by Fingal County Council restrict the operation of the generators on site (and the applicable air quality standards), and mean that the generators cannot be used to "*provide a regular service to alleviate strain on the Irish Grid*". The appellant is incorrect, Fingal County Council have not applied a planning condition which restricts the use of the backup generators based on an instruction or request from the Utility. To apply such a condition would negate the primary purpose of backup generators: to provide temporary power in the event of utility supply (including related infrastructure) being unavailable. Condition 11 as applied by Fingal County Council requires the details of the selected generators to be submitted in line with Best Available Techniques. Condition 11 read in full:

11. To minimise the impact on air quality, health and climate, prior to the determination of the number and type of emergency generators on site, prior to commencement of development, the developer shall submit details for the written agreement of the Planning Authority which demonstrate that the lowest possible numbers of generators with the lowest possible nitrogen oxide emissions have been selected for the site while achieving the required power for the site.

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4.148 Furthermore, Condition 12 applied by Fingal County Council restricts the testing sequencing of generators, and requires the use of HVO as fuel subject to availability (as was proposed by the Applicant to the Planning Authority). It does not place a restriction on the backup operation of the generators.

4.149 Based on the foregoing, it is submitted that the proposal clearly aligns with this principle, and the arguments put forward by the appellant are without merit.

Renewable Additionality

4.150 The third Principle set out relates to additional renewables associated with data centre operations. This principle is as follows:

"The Government has a preference for data centre developments that can demonstrate the additionality of their renewable energy use in Ireland. *Developments should provide clear additionality in renewable energy delivery in Ireland, whether through new generation, repowering or otherwise increasing in-country renewable energy capacity – proportionate to the impact of their energy demand."*

4.151 The appeal refers to the arguments set out in relation to the additionality of any CPPA to be provided in respect of the Proposed Development. These arguments have been responded to in detail above, and it has been established that the development will provide for additionality in line with the Government Statement, contrary to the views of the appellants.

4.152 On this basis, clear alignment with this principle is established. Further details are contained within Section 7 of the Planning Report submitted with the application and within the Further Information response submitted to Fingal County Council.

Co-Location or Proximity with Future-Proof Energy Supply

4.153 The fourth Principle set out within the Statement is as follows:

"The Government has a preference for data centre developments in locations where there is the potential to co-locate a renewable generation facility or advanced storage with the data centre, supported by a CPPA, private wire or other arrangement.

Where the combination of technologies at a generation facility is built to match the demand capacity factor (e.g. endeavouring to match the maximum import capacity with export capacity), the same infrastructure may be able to assist both demand customers and generation facilities (wind/solar/battery farm). This would make efficient use of grid investments, reduce curtailment and potentially enable significant decarbonisation of the data centre. The Government also encourages the co-location of downstream value-adding activities that can make use of carbon, excess heat and other outputs from the data centre activity, such as for horticultural activities or district heating schemes."

4.154 The appeal argues that this principle cannot be complied with in respect of the Proposed Development, as the site is suburban with limited space. It is stated that the district heating proposals which are set out in compliance with this principle "*can be dismissed as greenwashing*" as "*housing density in the vicinity of the site is quite low, and there are no significant local heat loads*". The appeal states that the installation of district heating systems to supply local homes would be costly, that the

level of carbon emissions savings could be more readily achieved via thermal upgrades to houses, and that the use of such a scheme would tie the heat system to a commercial use with a limited lifespan. The appeal also refers to the plans for heat offtake from the Poolbeg waste to energy plant, which have not been realised.

4.155 Section 7 of the submitted Planning Report sets out in detail the alignment of the Proposed Development with this principle. In summary, the following is noted:

- While the site and its context does not allow for large scale renewable generation, AWS will fully comply with the foregoing principle whereby the energy use for the Proposed Development will be met with a CPPA for new renewable energy generation.
- The development incorporated the maximum possible area of solar PV panels at roof level of the buildings.
- The development incorporates design provisions to facilitate district heating including heat distribution pipework up to the site boundary.

4.156 It is notable that the appellant focuses in particular on the references to proposals for district heating. The appellant claims with certainty that district heating is simply not feasible and that it would prove too costly. The appellant is incorrect in this regard.

4.157 To date, AWS's data centre in Tallaght is the first and only data centre in Ireland to supply recycled heat to a District Heating Scheme. The Tallaght District Heating Scheme (T-DHS) was developed by South Dublin County Council (SDCC) in collaboration with Codema – Dublin's Energy Agency. To support the T-DHS, AWS installed heat-collection systems in their Data Centre and are providing recycled heat to the T-DHS free of charge which, when combined with additional heat pump technology operated by Heatworks (an SDCC not-for-project Utility), is sold to end users at low cost. The T-DHS was officially opened by the Minister for the Environment, Climate & Communications and Transport, Eamon Ryan TD on April 6th this year.

4.158 The T-DHS will initially provide heat to 32,800m^2 of public buildings. Customers include SDCC and Technological University Dublin (TU Dublin). Buildings heated by the T-DHS include County Hall, Tallaght County Library, the SDCC Innovation Centre-Work IQ, and 133 affordable apartments, which will connect in early 2025. The university buildings include the main building, the sports-science, health & recreation building, followed by the new catering college (CAET), to be completed in 2024.

4.159 Specific to the Proposed Development, as stated in the submitted Planning Report (section 7.27 – 7.33), AWS has been actively supporting Codema with the aim of developing district heating proposals to use the Proposed Developments' waste heat. At the time of submission the feasibility report was in its early stages however AWS committed to ensuring that *"the design of the Proposed Development is future proofed to include heat distribution pipework to the site boundary and the spatial requirements to allow heat recovery equipment be installed at a later date – thus allowing AWS to provide recycled heat free of charge should a DHN be implemented in the area."*

4.160 Significant progress has now been made in this respect. In February 2023, an Outline Business Case for the Blanchardstown District Heating Scheme (B-DHS) was prepared by Codema on behalf of Fingal County Council (FCC). A comprehensive 82 page document, the Outline Business Case notes that:

Fingal County Council (FCC) is proposing to implement the Blanchardstown District Heating Scheme (BDHS). The proposed system seeks to utilise a low temperature waste heat source from a nearby data centre through a large-scale heat pump to supply space heating and hot water to a university campus, public hospital, and a national sports facilities campus in its first delivery phase. The system will also have the capacity to supply other nearby interested customers in the public and private sector in the following phases.

The results of this analysis show the proposed district heating scheme is the preferred option as it provides more technical and socio-economic benefits than a 'Business as Usual' (BAU) approach and aligns with national and local level objectives.

The carbon emissions of the existing gas-fired heat supply are reduced by 54% (6,400 tonnes of CO2 per annum) and will continue to reduce as more renewable electricity is available from the grid to power the heat pump.

The Amazon data centre is the preferred waste heat source as it can meet the heat demand of both Phase 1 and 2 of the BDHS. The energy centre will be located at the Amazon site, and will hold the heat pumps, back-up boilers, and thermal storage units. (subject to a separate consents process).

4.161 AWS remain resolutely committed to supporting the B-DHS and are awaiting next steps from which include signature of a memorandum of understanding (MOU) to support the B-DHS move to the next phase of execution.

4.162 With regard to the reference to private wire in the above principle, it is noted that there is currently no statutory or policy provision for private wire arrangements in Ireland. A public consultation in relation to private wire concluded on the 27th of October 2023, with the aim of a private wires policy being launched by Government in 2024[18]. The applicant would consider utilising private wire arrangements in future, however currently it is not possible to do so.

4.163 Based on the above, clear alignment with this principle has been demonstrated, and the appellant's unsubstantiated claims that district heating would not be feasible at this site are disproven.

Decarbonised Data Centres by Design

4.164 The fifth Principle set out within the Statement is as follows:

"The Government has a preference for data centres developments that can demonstrate a clear pathway to decarbonise and ultimately provide net zero data services.

It is expected that data centres will align with the EU Climate Neutral Data Centre Pact energy efficiency and water use targets and set themselves targets to achieve zero carbon electricity use at all hours. System operators will work with large energy users to facilitate accurate hourly emissions reporting, grid carbon-intensity transparency, and allow data centre to optimise computing loads to maximise use of renewables and minimise carbon emissions (as per Action 99 of Climate Action Plan 2021)."

[18] https://www.gov.ie/en/consultation/63e1c-private-wires-consultation/#:~:text=The%20aim%20of%20this%20consultation,a%20policy%20change%20may%20present.

4.165 The appeal argues that the proposal will rely on the grid for power, and that "*it is most likely that the additional base load will need to be supplied by fossil fuel power plants*". It is further argued that "*there is no prospect of the Proposed Development providing net zero data services in the timeframe to 2030*".

4.166 As set out in detail within Response Item A4 of the AWN response document (Appendix 3 to this appeal response), the contention that the demand arising from the Proposed Development will be supplied by fossil fuel power plants is incorrect and no basis has been provided for the assertion that it would be a "m*ore honest and transparent approach to assume that such developments are supplied by fossil fuel power stations.*"

4.167 As with each of the other principles, Section 7 of the submitted Planning Report included a detailed response to this principle, while further details are also provided in the Further Information response submitted to Fingal County Council. The Planning Report and Further Information outline, *inter alia*, the following:

- AWS is committed to building a sustainable business for its customers and the planet. In 2019, Amazon co-founded The Climate Pledge, a commitment to reach net zero carbon emissions by 2040, 10 years ahead of the Paris Agreement. As part of that commitment, the company is on a path to powering its operations by 100% renewable energy by 2025, five years ahead of its original 2030 target.
- AWS has committed to being water positive by 2030, and is innovating to lower water use across facilities by using cloud technologies to continually improve water efficiency and investing in projects that deliver water back to communities. AWS will report annually on new innovations in water efficiency, community reuse, water replenishment projects, and other activities on its path to achieving its water+ commitment.
- AWS is a founding member and signatory of the Climate Neutral Data Centre Pact.
- The Proposed Development fully complies with the Climate Neutral Data Centre Pact. To reduce both the energy and water use in their Irish data centres, AWS use direct evaporative cooling systems, which predominately utilizes outside air to cool the servers.
- The Proposed Development has been designed to the highest energy efficiency standards. Building Energy Rating BER - A3 or higher is targeted with the utilization of high efficiency VRF Air Conditioning. Available roof space has been utilised for roof mounted PV Panels to generate on site renewable electricity. The Proposed Development includes 2.5 times more Photovoltaic Solar Panels that would be required for a "Nearly Zero – Energy Buildings" requirements.
- AWS has signed an agreement for Hydrogenated Vegetable Oil (HVO) to fuel the generators on site. This is discussed in further detail below in the context of grounds of appeal relating to the use of this fuel source.
- The Further Information response outlines that the Proposed Development has an annual PUE (Power Usage Effectiveness) of 1.12 as compared to the 1.30 set under the Climate Neutral Data Centre Pact. In addition, the Proposed Development has a design Water Usage Effectiveness (WUE) of 0.075 L/kWh as compared to the 0.4 L/kWh set under the Climate Neutral Data Centre Pact.
- Irish AWS operations are compliant with Article 8 of the EU Energy Efficiency Directive (EED) which requires large enterprises to be subject to energy audits. In anticipation of future requirements, AWS is currently implementing an ISO 50001 certified Energy Management System for continual energy efficiency improvements in the AWS's Irish operations.

- AWS designed processors will be used in the data centres which use significantly less energy than comparable processors, while server racks will be subject to demanufacturing, with components reused wherever possible.

4.168 The applicant has clearly demonstrated a pathway to decarbonise and ultimately provide zero carbon data services, in line with this principle.

SME Access and Community Benefits

4.169 The final Principle set out within the Statement relates to SME access and community benefits arising from data centre development. This Principle states:

"The Government has a preference for data centre developments that provide opportunities for community engagement and assist SMEs, both at the construction phase and throughout the data centre lifecycle.

Data centres should provide benefits for regional locations and their surrounding areas through place-making, community engagement and collaboration with local and regional stakeholders to ensure they offer value to the communities in which they locate. Data centres are also construction projects, built environment and physical investments of scale. By necessity, they have an impact on the geography and communities in their vicinity. Data centre developers should make every effort to minimise the disruption of their construction on these communities."

4.170 In relation to this principle, the appeal acknowledges that the Planning Report submitted with the application outlined a range of community initiatives. The appeal states that further detail ought to have been provided in this regard, including indications of the budget provided for (it is stated that community benefit schemes for wind farms publish funding for local projects).

4.171 Section 7 of the submitted Planning Report details the range of community benefits and benefits to SMEs associated with the Proposed Development. While we refer the Board to the Planning Report for details, it should be noted that the comments of the appellant appear to indicate a failure to review the information provided in the application.

4.172 Contrary to the appellant's claims that the information provided was lacking in detail or indications of budget, Section 7 of the Planning Report, for example described a €150,000 fund, which will be managed and administered by non-profit organisation ChangeX, and is expected to support over 30 community projects in the Fingal area. Applicants can apply for funding up to €10,000 to launch a new idea or to expand an existing local project that supports an area of science, technology, engineering, arts, and mathematics education (STEAM), sustainability, or health and wellbeing.

4.173 A recent report by Indecon, referenced earlier in this response, found that AWS investment in community initiatives is complemented by the significant volunteer work undertaken by its staff. AWS employees undertook over 5,700 hours of voluntary work over the last five years. In 2022 alone, AWS staff gave up 3,200 hours of their own time to support local causes and communities. This includes supporting projects in local schools, hospitals, and community services. The value of this volunteering is assessed at over €200,000 by Indecon. Indecon also estimates that between initiatives funded by the AWS InCommunities programme (€3.5 million) and the value of volunteering provided by AWS staff (€200,000), AWS has invested nearly €3.7 million in community engagement since 2018.

4.174 Further details are also provided within the Planning Report in relation to measures to foster environmental stewardship and employee engagement in the community.

The significant benefits associated with AWS developments in Fingal for SMEs is also set out.

4.175 In addition to the extensive response to this principle provided in the submitted Planning Report, AWS have provided the following details for activities that have occurred since the original planning submission.

4.176 In 2023 AWS InCommunities launched the mobile Think Big Space programme. The mobile Think Big Space visits schools across the Fingal area to provide free access to STEM education workshops for students and teachers including coding through Lego robotics. Schools that have already benefited from free workshops include Rathdara Community College, St. Patricks Senior School, St. Brigid's National School, St. Luke's National school, St. Francis Xavier Senior School. Since April 2023 over 700 students and 35 teachers in the Fingal area have received the free educational workshops. In 2024 through further investment and increasing availability of school visits, the mobile Think Big Space programme will reach approximately 4,000 students in the Fingal area with 75% of those within the DEIS schools programme.

4.177 The AWS InCommunities Fingal Fund supports initiatives in the Fingal area that can make a positive impact across education, the environment, health and wellbeing. The €150,000 fund, which is managed by non-profit organisation ChangeX, has supported 36 separate projects in Fingal and the surrounding areas, like the Stepping Stones Ponds, Foróige Sound Cabin, and The Big Idea. More than 2,250 people have participated directly in these projects with a further 8, 600 people across Fingal benefitting from the projects so far.

4.178 Fingal Fund case studies:

Using Funding awarded by the AWS InCommunities Fingal Fund, Foróige Youth Officer Kevin Lacey is leading a project to turn a previously unused cabin into a state-of-the-art music studio for young people in the area. The funding has enabled Foróige to purchase instruments and audio production technology that service users wouldn't otherwise have been able to access. This includes a modular synth which is very useful for young people with ADHD (attention deficit hyperactivity disorder) and Autism, as they can find it more difficult to work for long periods at a computer when making electronic music.

A companion project of the Stepping Stone Forests, Stepping Stone Ponds are designed to complement the mini forests that AWS volunteers have been planting in schools across Dublin. The goal of installing the ponds and forests is to combat the twin threat of climate change and biodiversity loss, all while giving children from urban areas exposure to nature that they may not normally have access to. As a result of funding received from the AWS InCommunities Fingal Fund, all equipment needed to complete projects at local schools including native Irish trees, diggers and materials are covered by AWS.

4.179 Having regard to the foregoing and the details previously provided in the submitted Planning Report, the development is also fully aligned with this final principle.

Compliance with the Fingal County Development Plan

4.180 The Friends of the Earth appeal argues (at page 7 of the appeal) that the application contained insufficient information to ascertain that the Proposed Development would not give rise to significant impacts on biodiversity and ecology.

4.181 It is alleged that the Proposed Development would materially contravene Objectives NH27, GI22, NH20, CH05, and CH06 of the Fingal Development Plan 2017-2023.

4.182 Firstly it should be noted that the appeal refers to a County Development Plan which has now been superseded, and which is therefore no longer the relevant Plan for the determination of the appeals by the Board. The Board must make its decision under the provisions of the operative Development Plan, which is the 2023-2029 Fingal County Development Plan.

4.183 The overall compliance of the Proposed Development with the 2023-2029 Plan was set out within the Further Information Response submitted to the Planning Authority (as the new Plan had come into effect after the lodgement of the application and after the initial decision of the Planning Authority to request Further Information). The Planning Authority issued a decision to grant permission having reviewed the compliance of the Proposed Development with the new 2023-2029 Plan.

4.184 Notwithstanding the foregoing, the current Development Plan does include objectives which are similar (but not identical) to those referred to by the appellant.

4.185 Contrary to the appellant's contention, the Proposed Development would not have materially contravened (and in fact complied with) the objectives of the previous Plan referred to, and complies with the equivalent provisions of the current, operative Plan.

4.186 The equivalent objectives of the operative Development Plan are addressed below.

4.187 Policy GINHP21 of the 2023-2029 Development Plan (which includes similar wording to Objective NH27 of the previous plan) states the following:

"Protect existing woodlands, trees and hedgerows which are of amenity or biodiversity value and/ or contribute to landscape character and ensure that proper provision is made for their protection and management in line with the adopted Forest of Fingal-A Tree Strategy for Fingal."

4.188 A full arboricultural impact assessment report and tree survey and protection plan were included as part of the original application. The report states the following:

"There are no trees required to be removed to facilitate the development. All retained trees can be successfully protected during the Proposed Development works by using robust fencing measures which comply with the recommendations outlined within BS 5837:2012. Please refer to the Tree Survey and Protection Plan at Appendix B for details.

The proposal includes significant new woodland planting that will enhance the existing tree cover on the site and have a positive impact on the local canopy cover and the landscape character of the surrounding area.

A 20-year Woodland Management Plan has been produced to ensure that a high standard of management is carried out post-construction to establish and maintain the existing and proposed woodland areas. This will improve the biodiversity and landscape character of the site and local area in the short and long term."

4.189 Based on the foregoing, not only does the Proposed Development clearly comply with Policy GINHP21, but it is also clear that the appellant did not have regard to the detailed documentation submitted with the application when claiming that the proposals would contravene an equivalent objective from the previous Development Plan.

4.190 Objective GI22 of the previous Development Plan required the submission of a green infrastructure plan for certain types of development. A similar requirement is included under the current Plan under Objective DMSO124, which states the following:

"Require the submission of an Integrated Green Infrastructure Plan as part of planning applications for residential developments over 50 units and all commercial developments over 2000 sqm."

4.191 A Green Infrastructure Plan (Drawing no. 102) was prepared by the project landscape architect and was submitted with the application. The Proposed Development fully complies with the foregoing objective.

4.192 Objective NH20 of the previous Development Plan relates to the requirement for protection of 'Nature Development Areas'. An identical objective is contained in the current Development Plan (Objective GINH037) which states the following:

"Maintain and/or enhance the biodiversity of the Nature Development Areas indicated on the Green Infrastructure maps."

4.193 The subject site is not located within or adjacent to any Nature Development Area identified on the Green Infrastructure maps of the current Development Plan. This was also the case in respect of the previous Development Plan.

4.194 Objective CH05 of the previous Plan relates to the preservation of archaeological heritage, and Objective HCA07 of the current Plan reflects the same wording which is as follows:

"Ensure archaeological remains are identified and fully considered at the very earliest stages of the development process, that schemes are designed to avoid impacting on the archaeological heritage."

4.195 The EIAR submitted with the application includes a detailed assessment of Archaeological, Architectural and Cultural Heritage impact, which included analysis of extensive archaeological investigations undertaken on site and across the wider landholding in 2019, including geophysical survey and test trenching. As confirmed in Chapter 12 of the EIAR, *"previous archaeological investigations on site did not identify any significant archaeological features. Therefore, the effect is **neutral** and **imperceptible**."*

4.196 Thus, consideration of archaeology has been integrated into the earliest stage of the development process, and a neutral and imperceptible impact is predicted during construction, with no impact predicted during the operational phase of the development. Therefore, the proposals also clearly comply with Objective HCA07 of the operative Development Plan.

4.197 Objective CH06 of the previous Plan relates to the need for archaeological impact assessment for larger proposals. Objective HCAO8 of the current Plan contains the same wording which is as follows:

"Require that proposals for linear development over one kilometre in length; proposals for development involving ground clearance of more than half a hectare; or developments in proximity to areas with a density of known archaeological monuments and history of discovery; to include an Archaeological Impact Assessment and refer such applications to the relevant Prescribed Bodies."

4.198 In accordance with this objective, the application included a detailed archaeological impact assessment within Chapter 12 of the submitted EIAR. The assessment reflects the results of investigations and testing undertaken under licence from the National Monuments Service.

4.199 Having regard to the foregoing, it is clear that the appellant's claim that the development contravenes the above mentioned objectives (or their equivalent in the correct, operative Development Plan) is clearly incorrect. It would appear that the objectives referenced were not interrogated by the appellant, and were referred to in the appeal without any regard to the actual content of the planning application.

Carbon Emissions During Construction

4.200 The John Conway and Louth Environmental Group appeal concurred with, and appended a copy of, the submission made by Colin Doyle on the Further Information response to Fingal County Council. The previous submission by Colin Doyle argued that the Carbon Assessment report prepared by HJL Architects and submitted as part of the Further Information response assessed items A4 and A5 of the assessment methodology only (relating to Transport and Construction), but that it ought to have assessed items A1 to A3 (relating to raw materials). On this basis, it is contended that the assessment underestimated the carbon associated with the development.

4.201 The submission further states the following:

"Based on the quantities of concrete and steel listed in the report, and using typical factors for associated emissions, I calculate emissions of over 27,000 tonnes, which would be 664kgCO/m2, when added to the approx. 100/m2 for A4 and AS gives a total of 764 kg/m2. This is more than seven times the estimate by Henry J Lyons."

4.202 The accompanying AWN response (at Response Item A7) sets out that a comprehensive qualitative assessment of the climate impact at construction stage was provided in the submitted EIAR and the Further Information response to Fingal County Council, along with a quantitative assessment of stages A4 and A5 submitted with the Further Information response (as specifically requested by the Planning Authority).

4.203 It is noted that the Planning Authority confirmed their requirement for an assessment of items A4 and A5 at Further Information stage. However, in response to the foregoing claim in relation to the concrete and steel utilised within the development, this appeal response is now accompanied by an updated Carbon Assessment report prepared by HJL Architects which includes items A1 to A3. Please refer to Appendix 4 for the report. In fact, based on the measures taken to use low carbon construction materials, the carbon impact will be significantly less than the estimates put forward by the appellant of 'over 27,000 tonnes'.

4.204 The results from this additional quantitative assessment are analysed in the accompanying AWN response document, and it is set out that the construction phase impact of the Proposed Development is insignificant in the context of Ireland's GHG emissions over the period 2023-2027.

4.205 Please refer to the accompanying report in Appendix 4, and Response Item A7 of the AWN response document (Appendix 3 to this appeal response) for further details.

Impact of On Site Generators and Operating Hours of Generators

4.206 The appellants, primarily the Friends of the Earth appeal raises several grounds of appeal with respect to the backup generators proposed on site. The following arguments are raised in this regard:

I. The appeal states that, with regard to the claim in the FI response to Fingal County Council that there is no code or regulatory requirement regarding run time for generators for data centres, it is noted that the CRU are currently examining this issue, and the Board are urged to avoid pre-empting the CRU decision on this matter.
II. It is argued that insufficient information has been provided to guarantee that the generators are for emergency use only. The appellants argue that EirGrid may require data centres to use on site generation during periods of grid constraint, and this could result in significantly higher usage levels than 72 hours. The appellant also argues that no information is provided to support the applicants claim that they expect to run the generators for less than 18 hours per year. The appeal contends that there is no guarantee that the IED licence for the wider site will be amended, to restrict the operation of generators to 72 hours or for monitoring of run hours.
III. The appellant argues that the application is not clear whether the 72 hours operation quoted for the generators relates to all generators across the wider site, or if it relates to different generator units running at different times, amounting to 72 hours in total.
IV. The appellants argues that the assessment of impact from the diesel generators on site and permitted (in particular in respect of NO2) is insufficient. The appellants argue that the mitigation to ensure air quality standards are met has not been set out with sufficient clarity.

Each of the above are dealt with in turn below (and the following sections reflect input from AWS):

I. The appeal states that, with regard to the claim in the FI response to Fingal County Council that there is no code or regulatory requirement regarding run time for generators for data centres, it is noted that the CRU are currently examining this issue, and the Board are urged to avoid pre-empting the CRU decision on this matter.

4.207 With regard to the first argument above that any decision should be deferred until following a decision by the Commission for Regulation of Utilities (CRU), it is firstly noted that the absence of policy is not a valid consideration and the Board must determine an appeal based on the extant policy context. Furthermore, in any event CRU/202357 has no relevance to the Proposed Development and therefore would not impact on the Board's consideration of the Proposed Development.

4.208 Referring to the Commission for Regulation of Utilities (CRU) 'Review of Large Energy Users Connection Policy Call for Evidence Paper' (CRU/202357), the appellant's state that they *"strongly oppose any granting of planning permission which pre-empts the CRU's decision and/or actively undermines a future CRU direction on the subject"*. It is respectfully submitted that the Board is obliged to consider an application for planning permission in the context of existing law, policy and guidelines, and not proposals for potential changes of policy. In the case Element Power Ireland Ltd v An Bord Pleanála [2017], the Board took a lack of policy into account in refusing permission and that approach was found by the High Court to be invalid. The Court held that the Board was obliged to consider an application for planning permission in the context of existing law, policy and guidelines, and not proposals for potential change. At paragraph 49, the Court noted that:

"The Board must operate within the four corners of the statutory framework established under European law and the relevant domestic legislation, particularly

the 2000 Act and planning regulations, existing statutory guidelines, and local policy as set out in existing county development plans. The court may look at what might be said to be required or excluded, by implication, by virtue of the subject of matter, scope and purpose of this framework. The Board cannot take decisions based on considerations that fall outside this framework, or based on documents that are preliminary, scoping, proposed, consultative, or otherwise lack the status of statutory guidelines that the Board is obliged to consider."

4.209 Additionally, at paragraph 51, the Court stated "*nothing…in s.143 [of the Planning and Development Act 2000], authorises the Board to take into account drafts, or the prospect of new or modified government or local authority policy or objectives. I do not discern any provision in the 2000 Act which would entitle the Board to base a decision to refuse permission on the absence of national or local strategy or policy."*

Notwithstanding the above, CRU/202357 has no relevance to the Proposed Development. As set out in the original Planning Report (Section 1.14) "*In 2017, AWS entered into a connection agreement with the Transmission System Operator (TSO), EirGrid for the provision of power to the subject site. A revision to the connection agreement signed in 2019 provides for 8 incremental ramps (increases) in power supply to the site, commencing in 2022 and completing in 2029 – with an incremental ramp occurring on 1 January of each year."*

4.210 In other words, a connection agreement has been in place for the Proposed Development since 2017. The CRU's call for evidence (CRU/202357) is to facilitate a *"review of the connection policy for **New Demand Connections**"* (emphasis added) and as such does not apply to the Proposed Development.

II. It is argued that insufficient information has been provided to guarantee that the generators are for emergency use only. The appellants argue that EirGrid may require data centres to use on site generation during periods of grid constraint, and this could result in significantly higher usage levels than 72 hours. The appellant also argues that no information is provided to support the applicants claim that they expect to run the generators for less than 18 hours per year. The appeal contends that there is no guarantee that the IED licence for the wider site will be amended, to restrict the operation of generators to 72 hours or for monitoring of run hours.

Basis for Assumption of Generator Use:

4.211 The following section summarises the more detailed response to this part of the foregoing appeal ground provided within the AWN response document (Appendix 3), as set out within Response Item A8 of that document.

4.212 As set out in the AWN Consulting Further Information Response 1(c):

"the back-up emergency generators for the proposed development are to safeguard the continued provision of key online services which companies and individuals in Ireland access and rely on daily. In the event of a loss of power supply (e.g. temporary grid blackout) the emergency back-up generators will be utilised to maintain power supply. These generators are designed to activate and provide power to the data centre pending restoration of mains power. To ensure the emergency generators are ready in the event of grid power failure, the generators are tested periodically at a frequency set out in the submitted EIAR in Section 9.2.3.1."

4.213 The AWN response sets out (in summary) the following response to the above ground of appeal:

- As with all other mission critical facilities (e.g. airports, hospitals, centers for fire, police and public administration services), backup generators are designed to operate in response to power losses due to unplanned events and planned events.
- An unplanned event relates to unusual or unforeseeable events such as grid outages, failure etc., and events within AWS' control such as maintenance and repair works. Planned events comprise planned maintenance and repair works and equipment replacement, along with routine testing of generators.
- As set out in the Further Information response, 72 hours operation of generators yearly is an internal design standard set by AWS, unless local code, utility or regulators require, or where there is other localised data recommending a higher or lower number of hours. 72 hours represents a conservative worst case scenario.
- The AWN response summarises the measures being taken to address security of supply concerns, and notes that in periods of grid pressure, large energy users such as AWS can be required to utilize onsite back-up generators to ensure the grid remains stable and functioning. Such events have been factored into the assumption of generator use utilised in the EIAR.
- While the existence of a short term security supply issue, it is reiterated that the 72 hours backup generator availability modelled is a conservative worst case scenario given historic occurrence of events and an assessment of future risks.
- The assessment undertaken in the Addendum to Chapter 9 of the EIAR submitted with the Further Information response to Fingal County Council was based on a reasonable worst case assessment, reflecting the extensive experience of AWS in operating data centres across a range of geographic regions, including in Ireland.

4.214 On this basis, the AWN response document confirms that, contrary to the claims made by the appellants, the climate assessment within the EIAR and the EIAR Addendum submitted with the Further Information response was not based on overly optimistic assumptions, but in fact represented a conservative approach to modelling and assessing the likely backup generator operating scenarios.

IED

4.215 The AWN response document sets out the following points.

4.216 The appellants claim that EU[19] (IED Directive) and UK[20] guidance should be referenced which the "applicant discounts". Respectfully, this is wholly inaccurate. As set out in the EIAR, Further Information Response and this Appeal Response, under Section 9.2.3.1 of the EIAR the air modelling is outlined which confirms that the assessment has been undertaken in line with the appropriate guidance from the EPA (Air Dispersion Modelling from Industrial Installations Guidance Note (AG4)" (EPA, 2020)) and using the appropriate air dispersion model (USEPA approved AERMOD model). In addition, as expanded on further at Section 4.13-4.14 below an EPA-Industrial Emissions Directive (IE) licence will be applied for to facilitate the operation of the proposed development. Finally, the generators (Cummins G5) modelled in the EIAR for the Proposed Development are certified as compliant with the 2g TA LUFT (Technische Anleitung zur Reinhaltung der Luft) emissions standards (~2,000 mg/m3 of NOx at 5% oxygen and reference condition). Germany's TA LUFT standard is commonly referenced across Europe, including the UK

[19] https://environment.ec.europa.eu/topics/industrial-emissions-and-safety/industrial-emissions-directive_en
[20] https://www.gov.uk/guidance/industrial-emissions-standards-and-best-available-techniques

Environment Agency's 'Data Centre FAQ Headline Approach' to the permitting and regulatory aspects for Data Centre within the context of the Industrial Emissions Directive (IED). This EA guidance document considers 2g-compliant generator units to be BAT or Best Available Technology for back-up power generation units.

4.217 Since the submission of this planning application, an IED license has been approved and now governs the permissible operation of back-up generators at the permitted developments, Buildings A, B and C, within the wider landholding of the Proposed Development Site. Specifically, regarding the operation of generators outside of standard generator testing/maintenance, Condition A.1.1 of the IED License (EPA Ref: P1182-01) states *"Generators shall not be operated for more than 72 hours annually. Generators shall not be operated at more than 90% load".*

4.218 With regard to the appellant's claim that there is no guarantee that IED licence will be amended to include the current development proposal it is noted that the applicant is committed to applying for an amendment to the existing licence to include the proposed development. The public notices for the application stated the following statutory wording:

"An EPA-Industrial Emissions Directive (IE) licence will be applied for to facilitate the operation of the proposed development."

4.219 Furthermore, in order to provide an additional degree of certainty, the applicant would be willing to accept a condition attached to any grant of permission by the Board to state the following:

*"Prior to the **operation** of the development, the Industrial Emissions Licence for the wider landholding shall be amended to include this development"*

4.220 As set out in Chapter 1.0 of the EIAR, the Proposed Development will require an EPA Greenhouse Gas (GHG) Emissions permit in accordance with the EPA Act 1992, as amended. A GHG Permit is in place for the backup generators at Building A (Permit Register Number: IE-GHG197-10524-1). This permit has been amended to include additional back-up generators at Buildings B and C. Subject to grant of planning permission for the Proposed Development, it is intended that the permit will also be amended to include the additional back-up generators from the Proposed Development (Refer to Chapter 9 Air Quality and Climate). A GHG Permit requires annual reporting to address the appellants concern on monitoring of use.

III. The appellant argues that the application is not clear whether the 72 hours operation quoted for the generators relates to all generators across the wider site, or if it relates to different generator units running at different times, amounting to 72 hours in total.

4.221 With regard to the appellant's claim that there was a lack of clarity as to whether the 72 hours modelled related to all generators on the wider landholding, or to staggered operation totalling 72 hours, the accompanying response document prepared by AWN Consulting notes the following:

4.222 The worst-case scenario for the operation of the backup generators is as outlined in Section 3.0 Item 1 (B) of the Further Information response. In addition, the weekly testing of the generators and the maintenance testing, four times per year, of all generators has been assessed in Chapter 9 of the EIAR.

4.223 Thus, as outlined, the assessment is based on the operation of the project's backup generators for the Proposed and Permitted Development for 72 hours each per year as well as scheduled weekly testing and quarterly maintenance testing of all back-

up generators from the permitted Buildings A, B and C and proposed Buildings E, F and G.

4.224 Thus, the modelling provided for the backup generators running simultaneously (across the entire campus, including the proposed development and a potential future phase of development) for 72 hours annually, which is considered to represent a reasonable worst case on the basis of the type of event which would precipitate such an occurrence.

IV. The appellants argues that the assessment of impact from the diesel generators on site and permitted (in particular in respect of NO2) is insufficient. The appellants argue that the mitigation to ensure air quality standards are met has not been set out with sufficient clarity.

4.225 With regard to the argument in the Friends of the Earth appeal that potential impacts on human health arising from the operation of generators on site had not been undertaken, the accompanying AWN response document sets out clearly that this argument is without any basis. The AWN response document states the following:

"Chapter 9 of the EIAR outlines in comprehensive detail the assessment of air quality from the Proposed Development. Under Section 9.2.3.1 of the EIAR the air modelling is outlined which confirms that the assessment has been undertaken in line with the appropriate guidance from the EPA (Air Dispersion Modelling from Industrial Installations Guidance Note (AG4)" (EPA, 2020)) and using the appropriate air dispersion model (USEPA approved AERMOD model).

The modelling results were discussed in detail in Section 9.7.2.1 for the Do Nothing and Proposed Development scenarios with the Cumulative scenario discussed in Section 9.8.2 of the EIAR.

In relation to the Proposed Scenario Section 9.7.2.1 stated that:

"The NO_2 modelling results at the maximum location at and beyond the site boundary are detailed in Table 9.9 based on the operation of 97 of the 107 no. back-up diesel generations for 72 hours per year using the USEPA methodology outlined within the guidance document titled 'Additional Clarification Regarding Application of Appendix W Modelling Guidance for the 1-Hour National Ambient Air Quality Standard' (USEPA, 2011) as well as considering scheduled weekly testing and quarterly load-banking of all back-up generators from the permitted Buildings A, B and C and proposed Buildings E, F and G in addition to a house generator in Buildings B, C, F and G. The Proposed Development Scenario also included emissions from eight existing emission points at the neighbouring BMS and Alexion facilities.

The results indicate that the ambient ground level concentrations are within the relevant air quality standards for NO_2. For the maximum year modelled, emissions from the site lead to an ambient NO_2 concentration (including background) which is 62% of the maximum ambient 1-hour limit value (measured as a 99.8th percentile) and 82% of the annual limit value at the maximum off-site receptor."

In Section 9.7.2.2 the air quality impact assessment concluded that:

*"The modelling assessment has found that ambient NO_2 concentrations as a result of the Do Nothing Scenario, the Proposed Development Scenario and the Cumulative Impact Scenario (see Section 9.8.2) are in compliance with the relevant ambient air quality limit values at all locations at or beyond the site boundary. The impacts to air quality from operation of the Proposed Development are therefore deemed **long-term** and **slight** in terms of significance and **negative** in terms of quality."*

As noted on the previous page, the use of 72 hours for air emission modelling is highly conservative and proposed a worst-case event with a very low probability of occurring, given the stability of the Irish transmission grid."

4.226 In fact, as summarised within the accompanying AWN response, the EIAR included a comprehensive assessment of air quality in accordance with the relevant EPA guidance. The detailed modelling, which adopted a precautionary approach, predicted that the impact was predicted to be long term, slight, and negative. Thus no significant impacts were predicted based on the robust modelling undertaken. We refer to the AWN document for further details.

Use of Renewable Diesel

4.227 The Friends of the Earth appeal argues (at pages 8 and 9 of the appeal) that the use of Hydrated Vegetable Oil (HVO) for the backup generators on site is considered to be insignificant in terms of mitigation, while the Friends of the Earth appeal contends that the use of renewable diesel may not in fact represent a renewable fuel source, and notes that it was only committed to subject to availability. The appeal goes on to claim that environmental costs due to landuse change for renewable diesel are high, while also raising concerns regarding traceability control, and the potential for use of raw palm oil or soy oil in such fuels, the production of which is damaging to the environment. The appellants also claim that HVO is not a carbon neutral fuel, and that it will not be treated as a green fuel to meet the EU's 2030 renewable targets, subject to some exceptions.

4.228 As set out in the at Section 7.43 of the submitted Planning Report, the air quality and climate assessment of the backup generators within the EIAR was based on the use of fossil fuel (diesel) as a worst-case, it did not consider the lower emissions associated the use of HVO.

4.229 The following sections have been prepared by AWS.

4.230 At set out at Section 7.44 of the submitted Planning Report, renewable diesel has significantly lower emissions following the Greenhouse Gas Protocol[21] (GHG Protocol). The GHG Protocol is an internationally recognised body who have recognised global frameworks to measure and manage greenhouse gas (GHG) emissions from private and public sector operations.

4.231 In March 2023, AWS signed a supply agreement[22] with Certa to provide renewable HVO to their Dublin operations including the Proposed Development. AWS's supply agreement with Certa means that the backup generators for the Proposed Development will be supplied with HVO from the date of commissioning along with any subsequent refills due to backup generator use. Given the volumes of HVO available under their supply agreement, it is highly unlikely that AWS would need to

[21] https://ghgprotocol.org/corporate-standard
[22] https://www.aboutamazon.eu/news/sustainability/harnessing-the-power-of-plants-to-decarbonise-our-data-centres

utilise diesel for the Proposed Development. In fact, all refills of AWS's existing backup generators in Dublin have been with HVO since October 2022.

4.232 AWS recognise there are legitimate concerns with some mixes of renewable diesel, that's why AWS is helping to develop a global supply chain, working with local organisations like Certa in Ireland, and is investing in the procurement of HVO that only comes from renewable sources, with raw materials that are traceable to their origins and not derived from sources that would impact highly biodiverse areas.

4.233 AWS's purchase of HVO excludes the use of Palm or Soy Oil, AWS have confirmed that Certa's material safety data sheet excludes such materials. The Certa supplied HVO is sold under the HD+HVO label and a comprehensive document setting out its properties is available online[23]. All shipments are receipted against that standard. The Certa supplied HVO is sold under the HD+HVO label.

4.234 As set out in the accompanying AWN response, the European Environment Agency (EEA) has studied the environmental impact of HVO and has found that HVO has the advantage of lifecycle GHG emission reductions of greater than 75%[24] compared to fossil-fuel derived diesel and as such the use of this fuel will contribute to Ireland achieving net zero GHG emissions by 2050 in line with Irish and EU targets.

4.235 The AWN response also details that the use of HVO to replace conventional diesel will lead to substantially lower GHG and SO^2 emissions and lower NO_X and PM emissions.

4.236 On the basis of the foregoing, while the air quality assessment undertaken did not in fact rely on the use of HVO, the use of renewable HVO will result in significantly reduced GHG and SO2 emissions and lower NOX and PM emissions. The appellant's bare assertions that the HVO used on site would represent an environmentally damaging fuel source are incorrect, and the grounds of appeal relating to the use of HVO are without any merit.

4.237 We refer to the Awn response document (Response Item A9) for further details.

Other Miscellaneous Points

4.238 This section of the document responds to several other miscellaneous grounds of appeal. A response to each of these is provided under the subheadings below.

Condition on Development Above Roof Level

4.239 The Friends of the Earth appeal (at page 4 of the appeal) refers to Condition 19 of the Fingal County Council decision to grant permission for the Proposed Development, which states the following:

"No additional development shall take place above roof parapet level, including air handling equipment, storage tanks, ducts or other external plant, telecommunication aerials, antennas or equipment, unless authorised by a further grant of planning permission."

4.240 The appeal makes the case that this condition may have the "perverse effect" of restricting the addition of further solar PV to the roofs of the proposed buildings.

[23] https://certaireland.ie/wp-content/uploads/2023/08/Certa-GD-HVO-Ebook-2023.pdf
[24] ETC CM Report 2022/02 – Greenhouse gas intensities of transport fuels in the EU in 2020, Monitoring under the Fuel Quality Directive

4.241 In this regard it should be noted that in fact the proposed buildings each include the maximum possible coverage with rooftop solar PV panels. The applicant sought the maximisation of PV panels during the design phase of the project, with panels introduced on the roof areas which are not required to be kept clear due to air outlets or plant requirements.

4.242 Therefore, while the Board may (or may not) consider a condition similar to condition 19 of the Planning Authority's decision appropriate, the inclusion of a similar condition would not result in any unintended curtailing of solar panel provision on the proposed buildings.

Relevance of the Amazon Climate Pledge

4.243 The Friends of the Earth appeal (at page 6 of the appeal) states that the references to the climate commitments of the applicant's group within the application and Further Information response are not relevant considerations, as a breakdown has not been provided to establish the figures in the company's publications as they relate to Ireland.

4.244 The appeal by Colin Doyle and the appellant's previous submission following the Further Information response (page 2 of the submission) also argue that *"There are repetitive references in the Further Information to the commitment of the applicant's parent company to powering its worldwide operations from renewable energy. This is not relevant in the Irish planning context and just serves to confuse and evade provision of specific relevant information sought by Fingal County Council in the Irish context."*

4.245 In response to this ground of appeal, it should be noted that while the applicant has provided details of the strong commitments made by its parent company, these have not been relied on specifically in respect of the project itself, they are nonetheless clearly of relevance given the global nature of the climate challenge.

4.246 The Climate Pledge demonstrate the company's global strategy, as set out in the Further Information Response. *"Sustainability and environmental commitments, made as part of the Climate Pledge are made by the whole Amazon business, of which AWS is a part."*

4.247 The actions and commitments of Amazon.com, Inc group (of which AWS/ADSIL is a part) demonstrate a strong track record of delivering on objectives to power their operations using renewable energy and pursue a swift decarbonisation of their global operations.

EU Directives

The Friends of the Earth appeal (at page 8 of the appeal) refers to the EU Energy Efficiency Directive, and the EU Corporate Sustainability Due Diligence and Reporting Directives, which it is claimed the application should have addressed.

4.248 Firstly, it is noted that the application has in fact addressed the Energy Efficiency Directive (which the appellant appears to have overlooked). In this regard, we refer to the response prepared by the applicant under Further Information item 3(c), contained within the JSA Further Information response cover letter. The response stated:

"The Irish operations of AWS are compliant with Article 8 of the EU Energy Efficiency Directive (EED) which requires large enterprises to be subject to energy audits. In anticipation of future requirements, AWS is currently implementing an ISO 50001 certified Energy Management System for continual energy efficiency improvements in the AWS's Irish operations."

4.249 The submitted Energy Statement set out the range of measures to enhance energy efficiency within the proposed development.

4.250 With regard to the Corporate Sustainability Reporting Directive (CSRD), it is noted that this Directive has not yet been transposed into Irish law and does not currently impose obligations on any company (including the applicant). Similarly, the proposal for a Corporate Sustainability Reporting Directive (CSDDD) is currently under consideration by the EU legislators and as it is not yet in force it does not impose obligations on any company (including the applicant). Neither CSRD nor the proposed CSDDD have any bearing on the current application.

Potential Future Phase of Development

4.251 The Mannix Coyne appeal (at page 5 of the appeal) states the following:

"When an application for planning permission for further phases of a masterplan is made, a full EIA is required which in turn will both assess cumulative impacts with all existing or approved developments and potential environmental impacts of future phases of a masterplan as to avoid a situation where project splitting of the application arises."

4.252 The foregoing ground of appeal demonstrates the absence of any detailed review of the planning application documentation by the appellant. The EIAR submitted with the application (and the additional environmental inputs submitted in response to the Further Information request) in fact addresses the predicted impact of a further potential future data centre building on the wider landholding within the relevant sections dealing with cumulative impact. The potential future phase of development is addressed in as far as practicably possible, which is the requisite standard established by *Fitzpatrick v An Bord Pleanála*[25] in respect of a directly equivalent argument relating to potential future phases of data centre development on a wider landholding at Athenry in Co. Galway.

4.253 For further details in relation to the cumulative assessment of the potential future data centre building on the wider landholding, we refer the Board to the following sections of the EIAR and Further Information Response:

- Section 2.2.5 of the EIAR;
- Chapter 16 of the EIAR, which comprises an assessment of predicted cumulative impacts, including the impact of a potential future additional data centre building on the northernmost portion of the landholding;
- Section 9.8 of the EIAR, which addresses the Air Quality and Climate cumulative impacts, including for the potential future data centre building;
- Section 5.0 of the AWN Further Information response document submitted to Fingal County Council, which included a cumulative assessment of the climate impact of the 'overall project', which includes the potential future data centre building.

4.254 Thus, contrary to the assertions within the Mannix Coyne appeal, the application clearly and robustly deals with and addresses the potential future phase of development. For further details in this regard we refer to the above referenced AWN Consulting documentation and the accompanying AWN Consulting appeal response document on climate.

[25] [2019] IESC 23

Guarantees of Origin

4.255 The appeal submitted by Colin Doyle (page 8 of the appeal) contends that the applicant's commitment to the purchase of energy with Guarantees of Origin (GOs) in respect of previous phases of development. The submission by Doyle on the Further Information submitted to Fingal County Council also states that *"GOs are simply a market support mechanism to enable customers to express a preference for renewable supplies, and do not imply any measures of GHG offset for the purchaser. For the existing development (FW17A/0025/ABP PL06F.248544 and FW19A0087), the only mitigation measures volunteered and required were in the form of Guarantees of Origin (GOs). As explained above these GOs do not represent a GHG offset which could validly be claimed by the purchaser."*

4.256 Firstly, it should be noted that the application under consideration is not for the already permitted phases of development, but rather for the three buildings now proposed. Therefore the reference to Guarantees of Origin in respect of previous applications is a moot point. These applications were made and decided on long before the publication of the current Government Statement on Data Centres and the references to CPPAs contained therein.

4.257 The Government Statement, published 27-Jul-2022, is a forward-looking document. The document establishes the six principles as a *"set of national principles that should inform and guide decisions **on future** data centre development"* (emphasis added). Under planning legislation it is the current government policy that must be considered and that was considered for prior planning permissions for the Applicant's existing operations, the Government Statement does not apply retrospectively to developments which were permitted and made operational before its publication. Its provisions are instead applicable to post 27-Jul-2022 data centre projects, such as the Proposed Development.

4.258 The main mitigation proposed in relation to energy use and climate is the engaging in a CPPA in respect of the Proposed Development, which will provide for additionality as set out in detail within this appeal response.

5.0 CONCLUSION

5.1. This response to third party appeals is submitted on behalf of the applicant, Universal Developers LLC, in relation to the decision of the Planning Authority, Fingal County Council, to grant permission for the Proposed Development comprising an additional phase of data centre development within an established data centre campus at Cruiserath Road, Dublin 15.

5.2. The Proposed Development is subject to an existing connection agreement with EirGrid in respect of the full power requirements for the development, while the site itself is served by existing high voltage transmission infrastructure developed by the applicant in consultation with EirGrid. Additionally, the application has demonstrated the compliance of the proposal with national, regional, and local planning policy, and with relevant Government policy including the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy 2022.

5.3. We trust the Board will afford the responses set out herein due consideration in determining these appeals. Should you have any queries or require any further information please do not hesitate to contact the undersigned.

Yours faithfully,

John Spain Associates
39 Fitzwilliam Place
Dublin 2
D02 ND61

APPENDIX 1 – COPY OF CORRESPONDENCE FROM AN BORD PLEANÁLA ENCLOSING THE APPEALS

Our Case Number: ABP-318180-23

Planning Authority Reference Number: FW22A/0308

Your Reference: Universal Developers LLC

An Bord Pleanála

John Spain Associates
39 Fitzwilliam Place
Dublin 2
D02 ND61

RECEIVED
10 OCT 2023

Date: 09 October 2023

Re: Construction of data centre and associated site works. An Environmental Impact Assessment Report (EIAR) has been submitted to the planning authority with the planning application.
Cruiserath Road, Dublin 15.

Dear Sir / Madam,

Enclosed is a copy of an appeal under the Planning and Development Act, 2000, (as amended).

As a party to the appeal under section 129 of the Planning and Development Act, 2000, (as amended), you may make submissions or observations in writing to the Board within **a period of 4 weeks** beginning on the date of this letter.

Any submissions or observations received by the Board outside of that period shall not be considered and where none have been validly received, the Board may determine the appeal without further notice to you.

Please quote the above appeal reference number in any further correspondence.

Yours faithfully,

A. Mc Nally

Anthony McNally
Administrative Assistant

BP05

Teil	**Tel**	(01) 858 8100
Glao Áitiúil	**LoCall**	1800 275 175
Facs	**Fax**	(01) 872 2684
Láithreán Gréasáin	**Website**	www.pleanala.ie
Ríomhphost	**Email**	bord@pleanala.ie

64 Sráid Maoilbhríde
Baile Átha Cliath 1
D01 V902

64 Marlborough Street
Dublin 1
D01 V902

Our Case Number: ABP-318180-23

Planning Authority Reference Number: FW22A/0308

Your Reference: Universal Developers LLC

An Bord Pleanála

John Spain Associates
39 Fitzwilliam Place
Dublin 2
D02 ND61

RECEIVED
18 OCT 2023

Date: 17 October 2023

Re: Construction of data centre and associated site works. An Environmental Impact Assessment Report (EIAR) has been submitted to the planning authority with the planning application.
Cruiserath Road, Dublin 15.

Dear Sir / Madam,

Enclosed are copies of further appeals under the Planning and Development Act, 2000, (as amended).

As you are aware, the planning authority's decision in the matter is already the subject of an appeal to the Board. Under section 129 of the Planning and Development Act, 2000, (as amended), as a party to the appeal you may make submissions or observations in relation to the enclosed appeals in writing to the Board within 4 weeks beginning on the date of this letter.

Any submissions or observations received by the Board outside of that period shall not be considered and where none have been validly received, the Board may determine the appeal without further notice to you.

Please quote the above appeal reference number in any further correspondence.

Yours faithfully,

A. McNally

Anthony McNally
Administrative Assistant

BP06

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APPENDIX 2 – COPY OF THE DECISION OF FINGAL COUNTY COUNCIL TO GRANT PERMISSION FOR THE PROPOSED DEVELOPMENT

Comhairle Contae Fhine Gall
Fingal County Council

An Roinn um Pleanáil agus Infrastruchtúr Straiteiseach
Planning and Strategic Infrastructure Department

John Spain Associates
39 Fitzwilliam Place,
Dublin 2
D02 ND61

RECEIVED
20 SEP 2023

NOTIFICATION OF DECISION TO GRANT PERMISSION

PLANNING & DEVELOPMENT ACT 2000, AS AMENDED

Decision Order No. PF/2130/23	Decision Date 18 September, 2023
Register Ref. FW22A/0308	Registered 3 August, 2023

Area: Blanchardstown Mulhuddart

Applicant: Universal Developers LLC

Development: Universal Developers LLC, intend to apply for a seven year planning permission for development on a site at Cruiserath Road, Dublin 15. The application site is located to the north of the data centre permitted / constructed under An Bord Pleanála Reg. Ref.: PL06F.248544 / Fingal County Council Reg. Ref.: FW17A/0025, to the west of the two data centres permitted under Fingal County Council Reg. Ref.: FW19A/0087, and to the north and west of the 220kV Gas Insulated Switchgear substation permitted under An Bord Pleanála Reg. Ref.: 306834-20. The site is within an overall landholding bound to the south by the R121 / Cruiserath Road, to the west by the R121 / Church Road and to the north by undeveloped land and Cruiserath Drive.
The proposed development consists of the following:

- Construction of three data centre buildings (Data Centre E, Data Centre F, and Data Centre G), with a gross floor area (GFA) of c. 1, 425 sq.m, c. 20, 582 sq.m, and c. 20, 582 sq.m respectively, each over two levels (with Data Centre F and G each including two mezzanine levels);
- Data Centre F and G will be located in the north-western portion of the overall landholding, with a primary parapet height of c. 19.8 metres and each will accommodate data halls, associated electrical and mechanical plant rooms, a loading bay, maintenance and storage space, office administration areas, with plant and solar panels at roof level;
- Data Centre E (which will be ancillary to Data Centre F and G) will be located within the south-western portion of the overall landholding, with a primary parapet height of c. 13.1 metres and will accommodate data halls, associated electrical and mechanical plant rooms, a loading bay, maintenance and storage space, office administration areas, with plant at roof level;
- Emergency generators and associated flues will be provided within compounds adjoining each of the three data centre buildings (1 no. for Data Centre E, 19 no. for Data Centre F, and 19 no. for Data Centre G);
- The development includes one diesel tank and two filling areas to serve the proposed emergency generators;
- Provision of ancillary structures including two MV buildings, water storage tanks and three bin stores;
- Construction of access arrangements and internal road network and circulation areas, footpaths, provision of car parking (105 no. spaces), motorcycle parking (12 no. spaces) and bicycle parking (56 no. spaces), hard and soft landscaping and planting (including alteration to a landscaped berm to the north of proposed Data Centre E), lighting, boundary treatments, and all associated and ancillary works including underground foul and storm water drainage network, and utility cables.

An EPA-Industrial Emissions Directive (IE) licence will be applied for to facilitate the operation of the proposed development. An Environmental Impact Assessment Report (EIAR) will be submitted to the Planning Authority with the planning application and the EIAR will be available for inspection or purchase at a fee not exceeding the reasonable cost of making a copy at the offices of the Planning Authority.

AI received 03/08/23

Location: Cruiserath Road, Dublin 15.

Floor Area: 43011 Sq Metres

Time extension(s) up to and including **15 November, 2023**

Additional Information Requested / **Received** 17-Feb-2023 / **03-Aug-2023**

In pursuance of its functions under the above mentioned Act, as Planning Authority, the County Council for the County of Fingal did by Order dated as above make a decision to **GRANT PERMISSION** in respect of the above proposal.

Subject to the **(24)** conditions on the attached Pages.

Conditions and Reasons

1. The development shall be carried out in its entirety in accordance with the plans, particulars and specifications lodged with the application and Additional information received on 3rd August 2023, save as may be required by the other conditions attached hereto.

   REASON: To ensure that the development shall be in accordance with the permission, and that effective control be maintained.

2. a) The use of the development shall be strictly adhered to, as indicated on the submitted plans, drawings and documentation (data halls). The offices shall remain ancillary to the data hall use permitted.
   b) Any change of use, subdivision or amalgamation, in particular additional mezzanine areas, whether or not such change or subdivision would otherwise constitute exempted development, under the Planning and Development Regulations 2001(as amended) shall not be undertaken without a prior grant of permission.#

   REASON: To avoid any misunderstanding as to the proper construction of this permission and to regulate the use of the development and to ensure proper planning control is maintained.

3. The duration of this permission shall be for a period of seven years from the date of grant of permission.

   REASON: In the interests of clarity.

4. Prior to the commencement of development the applicant/developer shall submit for the written agreement of the Planning Authority sample details of the proposed finishes, design and colours of all elements of the proposed development. Trade brochures shall be submitted, and sample panels shall be erected on the site.

   REASON: In the interests of visual amenity.

5. The recommendations set out in the Inward Noise Impact Assessment shall be carried out in full.

   REASON: In the interests of public health.

6. The following shall be complied with:
   a) No surface water / rainwater shall discharge into the foul water system under any circumstances.
   b) The surface water drainage shall be in compliance with the 'Greater Dublin Regional Code of Practice for Drainage Works, Version 6.0, FCC, April 2006.

REASON: In the interests of public health and in order to ensure adequate drainage provision.

7. Where the Developer proposes to connect to a public water/waste water network operated by Uisce Eireann, the Developer shall sign a connection agreement with Uisce Eireann, prior to the commencement of the development.

   REASON: In the interest of proper planning and the sustainable development of the area.

8. The following shall be complied with in full:
   a) Prior to the commencement of development the developer shall submit for the written agreement of the Planning Authority a Detailed Construction Traffic Management Plan prepared by the main contractor.
   b) A revised Mobility Management Plan shall be submitted for the written agreement of the Planning Authority, one year from first occupancy of the proposed development. The Plan shall identify measures to be implemented by the development to promote sustainable travel and reduce the need for reliance on the private car.

   REASON: In the interest of the proper planning and sustainable development of the area.

9. a) To ensure the protection of trees to be retained within the site, the developer shall implement all the recommendations pertaining to tree retention and management as outlined within the submitted tree report and 'Tree Survey and Protection Plan', Drawing no. 220721-P10 by Charles McCorkell.
   b) A tree bond of €50, 000 shall be lodged with the Planning Authority prior to the commencement of development in order to ensure that the trees are protected and maintained in good condition throughout the course of development. This bond will be held by Fingal County Council for a period of one year post construction which may be extended in the event of possible construction related defects. Prior to the release of this bond, certification from the appointed arboricultural consultant shall be provided to the Planning Authority in relation to tree protection and woodland planting in accordance with the agreed plans.

   REASON: To ensure the provision of amenity afforded by appropriate landscape design.

10. Prior to the commencement of development, the developer shall submit a detailed landscape plan for the written agreement of the Planning Authority and shall comply with the following:
    a) All hard and soft landscape proposals shall ensure that there is no conflict between proposed tree planting and underground services including SuDS. No tree planting shall take place within 7 metres of proposed lamp standards.
    b) All planting comprised in the development shall be carried out in the first planting season following the completion of the development.
    c) Any planting failures shall be replaced by the developer until such time that the planting is established.

d) The project Landscape Architect shall be retained by the developer for the duration of the project to supervise the implementation of the landscape plans from start to finish and to sign off upon full completion, providing the Planning Authority with the required Certificate of Effective Completion.

REASON: To ensure the provision of amenity afforded by appropriate landscape design.

11. To minimise the impact on air quality, health and climate, prior to the determination of the number and type of emergency generators on site, prior to commencement of development, the developer shall submit details for the written agreement of the Planning Authority which demonstrate that the lowest possible numbers of generators with the lowest possible nitrogen oxide emissions have been selected for the site while achieving the required power for the site.

REASON: In the interests of sustainable development.

12. a) Testing of generators across the full site shall take place in sequence. At no stage shall testing of generators occur concurrently.
b) Subject to availability, the fuel for use by the generators shall be renewable diesel.

REASON: In the interests of sustainable development.

13. Prior to the commencement of development, the applicant shall submit for the written agreement of the Planning Authority details of a Corporate Purchase Power Agreement that the developer has entered into which demonstrates that the energy consumed by the development on site is matched by new renewable energy generation in line with the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy. The Agreement shall comply with the following:
a) The new renewable energy projects shall not be supported by government, consumer or other public subsidies;
b) The new renewable energy projects shall be located In Ireland and full details of these including consent details shall be provided;
c) The new renewable energy projects shall be provided by the applicant's group, that is Amazon.com, Inc.
d) The new renewable energy generation shall relate to energy that is not being generated at the date of grant of this permission.
e) The amount of electricity generated by the new renewable energy projects shall be equal to or greater than the electricity requirements of the data centres in operation at any given time.
f) The new renewable energy projects shall be fully operational prior to the commencement of operation of the data centres having regard to the phased nature of the proposed development.

REASON: In the interests of sustainable development.

14. All of the avoidance, remedial, mitigation and monitoring measures set out in the Environmental Impact Assessment Report including the Addendum Environmental Impact Assessment Report and other particulars accompanying the application shall be implemented by the Developer in conjunction with the timelines set out therein, except as may otherwise be required in order to comply with the conditions of this permission.

REASON: In the interest of clarity and the protection of the environment during the construction and operation phases of the development.

15. Prior to commencement of development, a final Construction Environmental Management Plan (CEMP) shall be submitted for the written agreement of the Planning Authority. The CEMP shall include all of the mitigation measures set out in the EIAR, using the nomenclature of the EIAR, other planning documentation as required and as specified in the other conditions set out in this decision. The CEMP shall be accompanied by a Mitigation Implementation Schedule. The Schedule shall contain a numbered list of all the definitive construction and operation-related mitigation measures to be implemented, the company / person(s) responsible for implementation of each measure and the timing / duration of each mitigation measure. The CEMP / Mitigation Implementation Schedule shall be supported as appropriate, by mapping outlining the location of the mitigation measures.

REASON: In order to ensure protection of the local environment.

16. Prior to the commencement of development, the developer shall submit for the written agreement of the Planning Authority, a Construction and Demolition Resource Waste Management Plan (RWMP) as set out in the Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for C&D Projects (2021). The RWMP shall include details of the various waste streams and expected tonnages which will be generated during site clearance, demolition and construction phases and any proposed exportation or importation of soil and stone material including destination/source locations, quantities and if any material will be assessed under By-Product notification. The RWMP shall also include specific proposals as to how the RWMP will be measured and monitored for effectiveness. All records (including for waste and all resources) pursuant to the agreed RWMP shall be made available for inspection at the site office at all times.

REASON: In the interests of sustainable waste management.

17. A strategy in relation to the use of cranes during construction shall be agreed in writing with the Irish Aviation Authority (IAA) and the Dublin Airport Authority (DAA) prior to the commencement of any development on site.

REASON: In the interest of aviation safety and public safety.

18. a) Noise abatement measures shall comply with the recommendations of B.S.5228: 2009+A1:2014 'Code of Practice for noise and vibration control on construction and open sites. Noise levels attributed to the construction work when assessed at the nearest noise sensitive location shall comply with the threshold limit values at

the nearest noise sensitive receptor. The appropriate threshold value (category A, B, or C) shall be determined based on an assessment of the background noise level in the area. The threshold values apply to the sum of both the ambient and construction noise levels.

b) The acoustic mitigation measures addressed in the outline construction environmental management plan shall be adhered to in full. The air quality mitigation measures addressed in the outline construction management plan shall be adhered to in full. The construction environmental management plan shall be made available on request to Fingal County Council. The CEMP shall include a record of daily environmental checks.

c) The cumulative noise emissions from the development shall not exceed the background noise level by more than 5dB(A) during the day, evening, and night periods. Clearly audible and impulsive tones shall be avoided irrespective of the noise level.

d) Generator testing shall be carried out during daytime periods (i.e., between 08:00 to 19:00hrs) Monday to Friday and shall not exceed a free field level of 55dB LAeq, 1hr at nearby residential noise sensitive locations. No more than one generator shall be tested at a time.

REASON: In the interest of proper planning and sustainable development of the area.

19. No additional development shall take place above roof parapet level, including air handling equipment, storage tanks, ducts or other external plant, telecommunication aerials, antennas or equipment, unless authorised by a further grant of planning permission.

REASON: To protect the visual amenities of the area.

20. The following requirements shall be complied with in full:
(a) The hours of operation on all construction sites shall be restricted to between 0800 hours to 1900 hours Monday to Friday, and between 0800 hours to 1400 hours on Saturdays.
(b) No activities shall take place on site on Sundays or Bank Holidays.
(c) Deviation from these times will only be allowed in exceptional circumstances where prior written approval has been received from Fingal County Council. Such approval may be given subject to conditions pertaining to the particular circumstances being set by Fingal County Council.

REASON: In the interest of public health and in the interest of residential amenity.

21. All service cables associated with the proposed development (such as electrical, communal television, telephone and public lighting cables) shall be run underground within the site.

REASON: In the interest of orderly development and the visual amenities of the area.

22. Prior to commencement of development revised plans, drawings and specifications shall be submitted to, and agreed in writing with, the Planning Authority that demonstrate that the permitted development has the potential and infrastructure provisions and design to recycle heat generated into a district heating scheme in the event of such a scheme being implemented for the wider area.

REASON: In the interest of sustainability.

23. All necessary measures shall be taken by the applicant/developer to prevent the spillage or deposit of any materials including clay rubble or other debris on adjoining roads during the course of development. In the event of any such spillage or deposit, immediate steps shall be taken to remove the material from the road surface at the applicant/developers own expense.

The applicant/developer shall be responsible for the full cost of repair in respect of any damage caused to the adjoining public road arising from the construction work and shall either make good any damage to the satisfaction of Fingal County Council or pay the Council the cost of making good any such damage upon issue of such a requirement by the Council.

REASON: To protect the amenities of the area.

24. Prior to Commencement of development the developer shall pay the sum of €2, 087, 247.75 (updated at date of commencement of development, in accordance with changes in the Tender Price Index) to the Planning Authority as a contribution towards expenditure that was and/or that is proposed to be incurred by the planning authority in respect of public infrastructure and facilities benefiting development in the area of the Authority, as provided for in the Contribution Scheme for Fingal County made by the Council. The phasing of payments shall be agreed in writing with the planning authority prior to the commencement of development.

REASON: It is considered reasonable that the payment of a contribution be required in respect of the public infrastructure and facilities benefiting development in the area of the Planning Authority and which is provided, or which is intended to be provided by, or on behalf of the Local Authority.

Note on above Condition:
Please note that with effect from 1st January 2014, Uisce Éireann are now the Statutory Body responsible for both water and waste water services (excluding surface water). Accordingly, the contribution payable has been reduced by the amount of the contribution associated with these services. A separate charge will be levied by Uisce Éireann in relation to the provision of water and/or wastewater treatment infrastructure and connections to same. Further details are available on

the Uisce Éireann website www.water.ie , Tel. (01) 6021000.

Signed on behalf of the Fingal County Council

19 September, 2023

for Senior Executive Officer

NOTES:

A number of the conditions attached to the planning permission may need compliance submissions to be lodged and agreed prior to commencement of development. Failure to comply with a condition of the planning permission is an offence under Section 151 of the Planning and Development Act 2000. Copies of each compliance submission should be made in triplicate.

The applicant is required to remove Site Notice on receipt of Notification from Planning Authority of decision.

Please note all observations/submissions have been taken into consideration when making this decision.

Please also note that consent under the above Planning legislation does not imply consent under the Building Control Regulations. The onus is on all practitioners to ensure full compliance with the Building Control Regulations (In certain circumstances design changes may require planning permission).

It should be further noted that planning permission is required in respect of changes to a Protected Structure or the exterior of a building in an Architectural Conservation Area which materially affects the character of the building/ structure.

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Information Note - Public Water and Wastewater Networks

Connections

On the 1st of January 2014 Uisce Éireann became the statutory body with the responsibility for all water services, both water and wastewater. The provision of a water services connection will be carried out by Uisce Éireann in partnership with each Local Authority.

Any persons seeking a connection to any of Uisce Éireann's networks should make an application in the first instance to their Local Authority who will act on behalf of Uisce Éireann in processing the application.

A Connection Agreement between Uisce Éireann and the applicant will be required, prior to any connection being agreed, and will set out the conditions and charges to be applied to the connection. Details, including availability of application forms, are to be found on each Local Authority website.

It should be noted that Planning Authorities can no longer levy water and wastewater development charges and that these will now be incurred as part of the connection charge, if applicable.

Under the provisions of Section 55(1)(a) of the Water Services Act 2007 (the Act) it is an offence for a person to cause or permit the connection of a premises to the public water supply network , either directly or indirectly, or to otherwise take a water supply without the agreement of Uisce Éireann.

Similarly, under the provisions of Section 61(1) (a) of the Act, it is an offence for a person to cause or permit the connection of a premises to the public wastewater collection network, either directly or indirectly, without the agreement of Uisce Éireann.

INFORMATION for the purposes of Building Control;-

- **IMPORTANT NOTE NOW THAT YOU HAVE RECEIVED PLANNING PERMISSION or ARE INTENDING TO CARRY OUT BUILDING WORKS.**

BEFORE ANY BUILDING WORKS TAKES PLACE ON YOUR SITE YOU WILL NEED TO CHECK THE FOLLOWING Pre-Development Planning Conditions, Commencement Notice, Construction Products Regulations (CPR) (Regulation (EU) No. 305/2011)) .

- **IF SOME OR ANY OF THESE ARE OMITTED YOUR BUILDING MAY BE AN UNAUTHORISED BUILDING AND YOU MAY BE GUILTY OF AN OFFENCE AND/OR YOU MAY BE SUBJECT TO PENALTIES.**
- **YOU SHOULD ALSO BE AWARE THAT IF YOU OMIT TO SUBMIT A VALID COMMENCEMENT NOTICE TO YOUR LOCAL AUTHORITY YOU MAY BE UNABLE TO GET A COMPLETION CERTIFICATE AND THIS MAY HAVE SERIOUS LONG TERM CONSEQUENCES.**

(The information is for guidance purposes only and does not purport to be a legal interpretation or constitute legal or professional advice.)

1. Pre-Development Planning Conditions;

1. If there are any Pre-Development conditions on the schedule of conditions attached to your planning permission you should give your immediate attention to them prior to the commencement of your development.

Note: All conditions must be complied with in full as failure to do so will render your permission invalid and may result in the initiation of enforcement proceedings for compliance with same

2. Commencement Notice; www.localgov.ie

In accordance with the Building Control Regulations you are obliged to submit a Commencement Notice prior to commencement of the development and it must be received by the BCA not less than 14 days and not more than 28 days before you wish to commence. Commencement Notice forms may be downloaded from www.localgov.ie, @ **BCMS.** Please complete same and submit on-line to BCMS.

(a) A completed copy of the commencement notice which must be signed by the owner of the works and must (refer to section 9 S.I. No 9 of 2014) be to be accompanied by the following;

a. General Arrangement Drawings
b. A schedule of design documents as are currently prepared or to be prepared
c. An online- assessment via the Building Control Management System of the proposed approach to compliance with the requirements of the Building Regulations 1997 to 2014;
d. The preliminary inspection plan
e. A Certificate of Compliance (Design)
f. Notices of Assignment in respect of the Builder who will carry out the works and of the Assigned Certifier who will inspect and certify the works, and
g. Certificates of Compliance signed by the Builder and the Assigned Certifier undertaking to carry-out their roles in accordance with the requirements of the Building Regulations.

With regard to the above, please note that:

1. The Designer and the Assigned Certifier must be a **Chartered Engineer**, or **Registered Architect** or **Registered Surveyor**

2. A Competent Builder must execute the work

3. Your drawings must show details of how your Building will comply with the Building Regulations - drawings submitted for planning permission purposes are not typically building control compliance drawings.

4. The commencement notice and accompanying documentation must be filed electronically via the online Building Control Management System. Where notices and documentation are submitted in written format, the building control authority will arrange for scanning and uploading of same for which an administrative charge will apply and statutory deadlines relating to such notices may be delayed by up to seven days.

(**Note**: Statutory approvals relating to fire safety and disabled access continue to apply where relevant and are not affected by the above changes).

For more information; http://www.environ.ie/en/DevelopmentHousing/BuildingStandards/

3. Construction Products Regulations (CPR) (Regulation (EU) No. 305/2011)

CE MARKING of construction products covered by harmonised European Standards is mandatory, when the construction product is placed on the market.

You need to ensure that you appoint competent professionals.

Whilst the CPR concerns itself with the conditions which apply when placing a construction product on the market, clients, specifiers, designers and builders etc. should be aware of the following when incorporating construction products into building works:

1. When drawing up specifications, refer to the harmonized technical specifications and specifically to the performance requirements of individual characteristics when necessary,
2. When choosing the products most suitable for their intended use in construction works, review the manufacturer's Declaration of Performance,
3. Check National Annexes or Standard Recommendations which give guidance on appropriate minimum performance levels for specific intended uses of the product in Ireland. NSAI host this information at www.nsai.ie, and

NOTE; All works should be carried out using "proper materials...which are fit for the use for which they are intended and for the conditions in which they are to be used" to ensure compliance with the Building Regulations. For further information on the Building Regulations see http://www.environ.ie/en/DevelopmentHousing/BuildingStandards/

Construction Products Regulation

The Department of Housing, Planning & Local Government has in relation to the Construction Industry and Brexit produced two documents to raise awareness among specifiers, designers and builders of the need to look for CE marking on construction products and the accompanying Declarations of Performance.

The following is a link to an Information Leaflet: Brexit - Construction Products Regulations:

https://www.housing.gov.ie/corporate/brexit/brexit-construction-products-regulation

The following is a link to Construction Industry – Be Prepared FAQ document :

https://www.housing.gov.ie/sites/default/files/publications/files/construction_industry_-_be_prepared_for_no_deal_brexit_-_frequently_asked_questions.pdf

NOTES

(A) REFUND OF FEES SUBMITTED WITH A PLANNING APPLICATION

Provision is made for a partial refund of fees in the case of certain repeat applications submitted within a period of twelve months where the full standard fee was paid in respect of the first application and where both applications relate to developments of the same character or description and to the same site. An application for a refund must be made in writing to the Planning Authority and received by them within a period of eight weeks beginning on the date of Planning Authority's **decision** on the second application. For full details of fees, refunds and exemptions the Planning & Development Regulations, 2001 should be consulted.

(B) APPEALS

1. An appeal against the decision may be made to An Bord Pleanála by the applicant or ANY OTHER PERSON who made submissions or observations in writing to the Planning Authority in relation to this planning application within four weeks beginning on the date of this decision. (N.B. Not the date on which the decision is sent or received). A person who has an interest in land adjoining land in respect of which permission has been granted may within the appropriate period and on payment of the appropriate fee apply to the Board for Leave to Appeal against that decision.

1. Every appeal must be made in writing and must state the subject matter and full grounds of appeal. It must be fully complete from the start. Appeals should be sent to:
The Secretary, An Bord Pleanála, 64 Malborough Street, Dublin 1.

2. An appeal lodged by an applicant or his agent or by a third party with An Bord Pleanála will be invalid unless accompanied by the prescribed fee. A schedule of fees is at 7 below. In the case of third party appeals, a copy of the acknowledgement of valid submission issued by P.C.C. must be enclosed with the appeal.

3. A party to an appeal making a request to An Bord Pleanála for an oral Hearing of an appeal must, in addition to the prescribed fee, pay to An Bord Pleanála a further fee (see 7 (f) below).

4. Where an appeal has already been made, another person can become an "observer" and make submissions or observations on the appeal. A copy of the appeal can be seen at the Planning Authority's office.

5. If the Council makes a decision to *grant permission, retention, outline, permission consequent on the grant of outline* and there is no appeal to An Bord Pleanála against this decision, a final grant will be made by the Council as soon as may be after the expiration of the period for the taking of such an appeal. If every appeal made in accordance with the Acts has been withdrawn, the Council will issue the final grant as soon as may be after the withdrawal.

6. Fees payable to An Bord Pleanála from 5th September 2011 are as follows:

Case Type	
Planning Acts	
(a) Appeals against decisions of Planning Authorities	
Appeal	
(i) 1st party appeal relating to commercial development where the application included the retention of development	€4,500 or €9,000 if an EIS or NIS involved
(ii) 1st party appeal relating to commercial development (no retention element in application	€1,500 or €3,000 in EIS or NIS involved
(iii) 1st party appeal non-commercial development where the application included the retention of development.	€660
(iv) 1st party appeal solely against contribution condition(s) – 2000 Act Section 48 or 49	€220
(v) Appeal following grant of leave to appeal (An application for leave to appeal is also €110)	€110
(vi) An appeal other than referred to in (i) to (v) above.	€220
(b) Referral	€220
(c) Reduced fee for appeal or referral (applies to certain specified bodies)	€110
(d) Application for leave to appeal (section 37(6)(a) of 2000 Act	€110
(e) Making submission or observation (specified bodies exempt).	€50
(f) Request for oral hearing under Section 134 of 2000 Act	€50

NOTE: the above fee levels for planning appeals and referrals remain unchanged from those already in force since 2007 (but note the addition of NIS in (i) and (ii) above).

Fees apply to: All third party appeals at 7(a)(iv) above except where the appeal follows a grant of leave to appeal; First party (section 37 appeals) planning appeals not involving commercial or retention development, an EIS or NIS. All other (non section 37) first party appeals.

These bodies at 7(c) above are specified in the Board's order which determined fees. They include planning authorities and certain other public bodies e.g. National Roads Authority, Irish Aviation Authority.

NB. This guide does not purport to be a legal interpretation of the fees payable to the Board. A copy of the Board's order determining fee under the Planning Act is obtainable from the Board. Further information about fees under other legislation may be found in the appropriate legislation and is also available from the Board.

If in doubt regarding any of the above appeal matters, you should contact An Bord Pleanála for clarification at **(01) 8588 100**.

APPENDIX 3 – AWN ENVIRONMENTAL RESPONSE

awnconsulting
A Trinity Consultants Company

Appendix 3 - Technical Response to Third Party Appeals

TECHNICAL RESPONSE IN RELATION TO A PROPOSED DATA CENTRE DEVELOPMENT AT CRUISERATH ROAD – FCC Reg. Ref.: FW22A/0308 & ABP Ref.: PL06F.318180

Prepared by: AWN Consulting

November 2023

TABLE OF CONTENTS

INTRODUCTION

This appendix is a technical and environmental response to the third party appeals of the notification of decision of Fingal County Council (FCC) dated the 18th of September 2023 under Reg. Ref.: FW22A/0308 for development on a site at Cruiserath Road, Dublin 15. A planning application for the Proposed Development was registered with FCC on the 16th of December 2022. The technical response has been set out under a series of headings, corresponding with the main technical / environmental arguments outlined in the appeals. Arguments concerning planning and policy are addressed in the John Spain Associates response cover letter of this Appeal response (of which this document forms an appendix).

The headings under which the response has been formulated are as follows:

A1. Corporate Power Purchase Agreement as Mitigation
A2. Corporate Power Purchase Agreement and Assessment of Renewable Projects(s)
A3. Cumulative Assessment of other Data Centre Projects
A4. Accuracy of Climate Assessment, Conclusions on Climate Impact, and Consideration of Reasonable Worst Case
A5. The EU ETS and National Carbon Budget / Sectoral Emission Ceilings
A6. Consistency with Section 15 of the Climate Action and Low Carbon Development Act 2015, as amended.
A7. Carbon Emissions During Construction
A8. Impact of Generators and Operating Hours of Generators
A9. Use of Renewable Diesel

As set out in the Planning Report (Section 1.7-1.9) which accompanied the application to Fingal County Council (FCC), the existing campus is owned and operated by Amazon Data Services Ireland Limited (ADSIL), the Irish entity of Amazon Web Services (AWS) which is part of the Amazon.com, Inc group of companies. The Proposed Development is to support AWS's customers in Ireland.

GENERAL SUMMARY OF RESPONSE TO CLIMATE ISSUES

Chapter 9 of the Environmental Impact Assessment (EIAR) undertook a detailed assessment of the predicted climatic impact of the Proposed Development and of the Overall Project (i.e. the Proposed Development and existing / permitted / potential future development on the wider landholding) in the context of the EU ETS (Emission Trading System). The Addendum to Chapter 9 submitted as part of the further information response built on Chapter 9 of the EIAR and was updated to incorporate the new IEMA Guidance - *Assessing Greenhouse Gas Emissions and Evaluating their Significance 2nd Edition* (IEMA, 2022). The Addendum also framed the impact of the Proposed Development and Overall Project in the context of the recently published Sectoral Emission Ceilings.

The assessment has been undertaken with due regard to the EIAR Guidelines (EPA, 2022), However, as the EIAR Guidelines makes clear, in the absence of specific detailed guidance in the EIAR Guidelines (EPA, 2022) and Advice Notes (EPA, 2003), other applicable guidance should be used:

"*When more specific definitions exist within a specialised factor or topic, …., these should be used in preference to these generalised definitions*". (EPA, 2022)

Thus, the IEMA Guidelines (IEMA, 2022) are recognised throughout Ireland and the UK as the authoritative guidance body on greenhouse gas (GHG) and climate impact assessment. As IEMA, and in particular IEMA (2022), offers a much more specific and robust assessment of current climate impacts, this guidance document has been used in the current assessment.

The climate assessment of the Proposed Development in the Addendum to Chapter 9

of the EIAR (submitted as part of the Further Information response to Fingal County Council) is based on a number of inherently conservative and precautionary assumptions as outlined below:

- a range of design measures will be employed which will reduce Greenhouse Gas (GHG) emissions and are in line with "*best practice*" as outlined in the IEMA guidance (IEMA, 2022) including the installation of 285 Photovoltaic (PV) panels, rainwater harvesting, ensuring an annualized design power usage effectiveness (PUE) of 1.12, use of internal and external lightning using highly efficient low energy Light Emitting Diode (LED) luminaires, and the Proposed Development incorporates design provisions to facilitate district heating including heat distribution pipework up to the site boundary.

- a GHG emission rate of 100 gCO_2/kWh has been assumed for the national grid in 2030 which is higher than the SEAI[1] predicted 92.9 gCO_2/kWh for 2030,

- a net zero national grid is assumed to occur in 2050, whereas recent data from the ESB and UCC/MaREI suggests that this is likely to be achieved by 2040,

- the assessment assumed 100% operation of the entire Proposed Development in 2025. In reality, there will be a ramp-up period with 100% operation not occurring until mid-2027,

- the assessment assumed a continuous 100% operational load for the data centre development, however annual average load is likely to be closer to 80% (as outlined in the recent Department of Environment, Climate and Communications [DECC] publication "*Summary of Analysis to Support Preparation of the Sectoral Emissions Ceilings*" (DECC, 2022b)),

- the Proposed Development will replace existing and future computing and IT activities which have a higher GHG profile, with savings of up to 80%. Data Centre facilities such as the Proposed Development represent a significantly more efficient means of data storage when compared to the historic distributed model of on-site data storage by individuals and companies (or 'enterprise sites'). The GHG savings associated with this have conservatively not been quantified and are not included in the assessment.

- the committed mitigation (Corporate Power Purchase Agreement (CPPA) for new renewable energy) will mitigate any residual GHG emissions.

As outlined in the response to Item A1 below, CPPAs will be used as the appropriate mitigation measure to address residual GHG emissions on the path to net zero which is likely to be achieved by 2040 as outlined in the response to Item A4.

The precautionary approach of utilising CPPAs as a mitigation measure should also be noted. Given that the national grid will be likely to achieve net zero significantly

[1] Private communication from SEAI- dated 12th October 2023

From: [redacted]@seai.ie>
Sent: Thursday, October 12, 2023 11:45 AM
To: Avril [redacted] <[redacted]@awnconsulting.com>
Subject: RE: Future Carbon Intensity for Grid Electricity

Dear Avril,

Thank you for your email. Please find attached spreadsheet with a projection of electricity carbon intensity out to 2050.

This projections is based on the WAM-CAP23 scenario from our latest set of projections. This broadly assumes that the targets set in the latest 2023 Climate Action Plan will be achieved. Because the current focus of government policy is on the period to 2030, there is less detail on policies and measures that will be adopted from 2030 to 2050. This is reflected in the scenario shown, where there are still emissions from electricity generation out to 2050. In reality we expect further policies and measures to be developed later in the decade that will provide a pathway to a zero carbon electricity system by 2050.

Regards,
Mary

before 2050; it can be argued that even in the absence of CPPAs the pre-mitigation scenario could, in actual fact, be characterised as minor adverse, as the trajectory of GHGs emissions will align with the 1.5°C compliant trajectory and achieve net zero in advance of 2050 with the national grid predicted to obtain net zero by 2040 (ESB Networks, 2023).

However, taking a conservative and precautionary approach as summarised above, this led to an assessment of the predicted pre-mitigation impact (in the absence of any mitigation) of being ***moderately adverse, significant impact***. However, when the commitment to CPPAs is taken into account, it is clear that post-mitigation the impact of the Proposed Development will be ahead of the 1.5°C compliant trajectory as shown in Figure 7 of Item A4 below. Thus, contrary to the claims of the appellants, and in particular the appeal by Colin Doyle, the appropriate description of the post-mitigation impact of the Proposed Development is a ***minor adverse, non-significant impact*** as outlined in Section 8.0 of the Addendum to Chapter 9 of the EIAR

1.0 Item A1 - Corporate Power Purchase Agreement as Mitigation

1.1 Overview

This section addresses the arguments raised in various appeals in regard to the proposed Corporate Power Purchase Agreements (CPPA) which will be entered into for the energy use of the Proposed Development and whether the CPPA would constitute mitigation.

1.2 Summary of Key Appellant Points - Item A1

The appellants claim that any CPPA in respect of the Proposed Development is not proven to deliver renewable *"additionality"* and as such a CPPA cannot be appropriately considered as mitigation for the purposes of Environmental Impact Assessment.

1.3 Applicant Response To Item A1

Based on commitments made by the Applicant, FCC imposed a planning condition requiring a CPPA. The condition reads in full:

Prior to the commencement of development, the applicant shall submit for the written agreement of the Planning Authority details of a Corporate Purchase Power Agreement that the developer has entered into which demonstrates that the energy consumed by the development on site is matched by new renewable energy generation in line with the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy. The Agreement shall comply with the following:

a) The new renewable energy projects shall not be supported by government, consumer or other public subsidies;
b) The new renewable energy projects shall be located In Ireland and full details of these including consent details shall be provided;
c) The new renewable energy projects shall be provided by the applicant's group, that is Amazon.com, Inc.
d) The new renewable energy generation shall relate to energy that is not being generated at the date of grant of this permission.
e) The amount of electricity generated by the new renewable energy projects shall be equal to or greater than the electricity requirements of the data centres in operation at any given time.
f) The new renewable energy projects shall be fully operational prior to the commencement of operation of the data centres having regard to the phased nature of the Proposed Development."

As set out in the JSA response document under Amazon's publicly available Renewable Energy Methodology[2], Amazon works with energy companies around the globe to develop **new** renewable projects dedicated to serving their load, which is aligned with the CPPA Roadmap which states: "*Additionality and Avoiding Greenwashing: If CPPAs simply purchase certificates from projects that would have existed anyway, especially those that have already been funded under schemes supported by the PSO levy (REFIT schemes or the RESS), they may not contribute to additional decarbonisation, which would not achieve the benefits of such contracts for all electricity users and harm public trust. CPPAs for **new** non-subsidised or repowered projects should be prioritised.*" [Emphasis added]

The CPPA Roadmap itself notes that "*keeping RESS and CPPAs separate leads to clearer additionality for CPPAs*". The stipulation that any CPPA related to the Proposed Development would not be subject to any direct government financial subsidy, consumer, or public subsidy ensures that any renewable development subject to such a CPPA does not benefit from receipt of subsidy under the Renewable Electricity

[2] https://sustainability.aboutamazon.com/renewable-energy-methodology.pdf

Support Scheme (RESS), in line with the CPPA Roadmap. Condition 13(a) of the Fingal County Council decision captures the requirements set out in the CPPA Roadmap, requiring that:

"The new renewable energy projects shall not be supported by government, consumer or other public subsidies"

The Institute of Environmental Management and Assessment (IEMA) guidance document - *Pathways to Net Zero - Using the IEMA GHG Management Hierarchy* (Nov 2020) revised the IEMA GHG Management Hierarchy as shown in Figure 1 below to include CPPAs under the category of "substitution" within the Hierarchy:

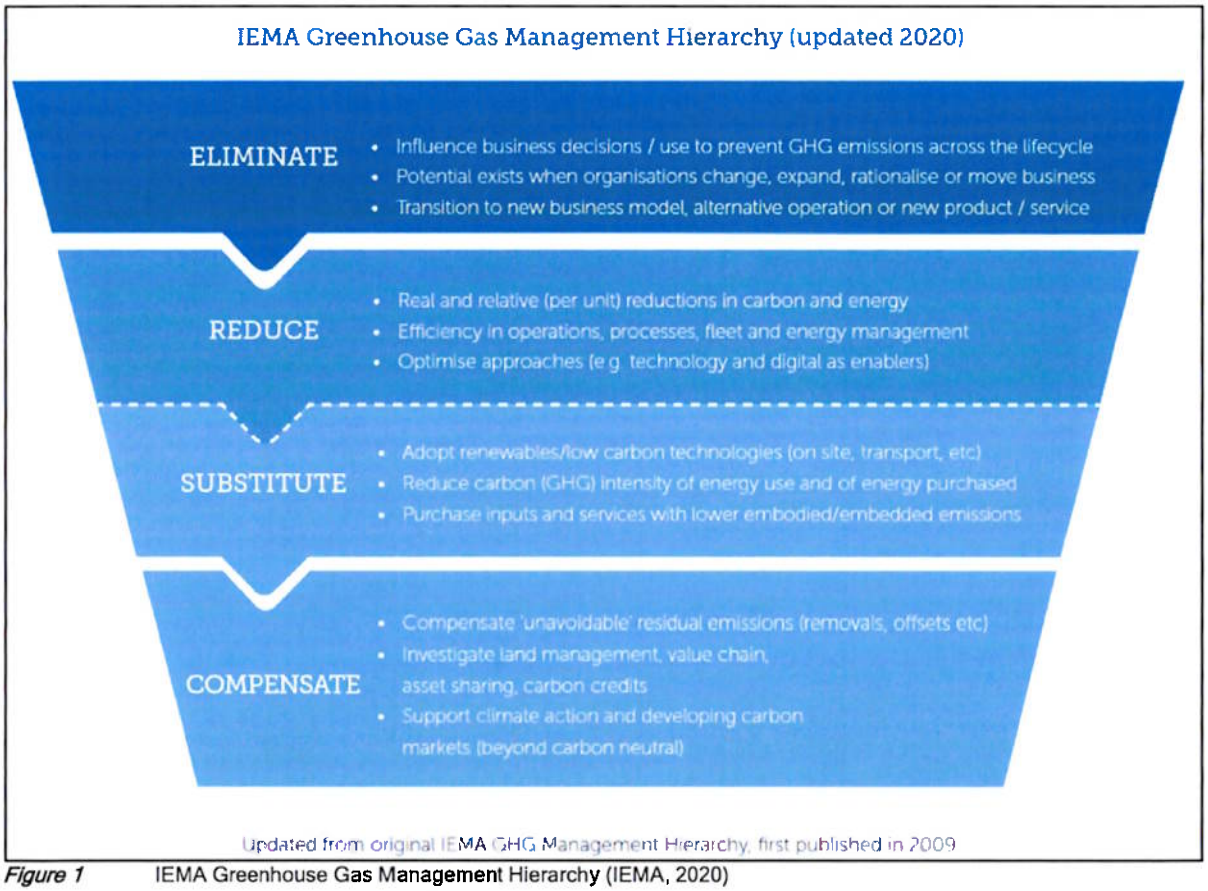

Figure 1 IEMA Greenhouse Gas Management Hierarchy (IEMA, 2020)

In relation to the use of CPPAs, the IEMA 2020 guidance states, on Page 5, the following (bold added):

"Purchased green electricity tariffs (also green gas) are increasingly being considered within net-zero approaches. In earlier versions of the Hierarchy these tariffs only appeared within COMPENSATE. This is still the case for market-based approaches that use certificates where additionality or quality thresholds are poor, or hard to substantiate. The hierarchy does now allow for higher quality energy tariff purchases within the SUBSTITUTE line, reflecting developing practice and some improved purchasing arrangements (e.g. ***higher quality procurement or quasi-investments via power purchase agreements****)."*

Thus, CPPAs are now recommended by IEMA (IEMA, 2020) as an appropriate project-specific "*Substitution*" mitigation measure alongside measures such as adopting renewable technologies and reducing the carbon intensity of energy used.

For further clarity on the position of IEMA regarding CPPAs and mitigation, the *IEMA Assessing Greenhouse Gas Emissions and Evaluating their Significance 2nd Edition*

(IEMA, Feb 2022) has recently stated, on Page 9, that:

"GHG mitigation is best achieved by taking a planned and focused approach following the IEMA GHG management hierarchy principles."

1.4 Concluding Statement In Regard To Applicant Response To Item A1

In summary, CPPAs are fully in line with both National and EU Policy. In addition, the relevant IEMA guidance documents (IEMA, 2020, 2022) have specifically stated that CPPAs are an appropriate GHG mitigation which falls under the mitigation category of "*Substitution*" in the GHG Management Hierarchy, and the applicant has undertaken to provide such a CPPA for the Proposed Development. Thus, in line with the appropriate Environmental Impact Assessment (EIA) terminology, the impact of the Proposed Development, post-mitigation is a ***minor adverse, non-significant impact***.

2.0 Item A2 - Corporate Power Purchase Agreement (CPPA) and Assessment of Renewable Projects(s)

2.1 Overview

The EIAR and AA Screening Report have considered cumulative impact for projects within the zone of influence of the Proposed Development. Condition 13 which requires the applicant's group to enter into CPPA will result in new and future renewable energy (RE) project(s) being operational prior to commencement of operation of the Proposed Development (having regard to the phased delivery and operation of the Proposed Development). The location of the specific RE project or projects are unknown now and were also unknown at the time of the EIA undertaken by FCC. The potential cumulative impact of new and future RE project(s) is addressed below in as far as practicably possible, which is the requisite standard established by *Fitzpatrick v An Bord Pleanála*[3] in respect of a similar argument relating to potential future phases of data centre development on a wider landholding at Athenry in Co. Galway.

2.2 Summary of key appellant points

The Mannix Coyne appeal argues that Condition 13 applied by Fingal County Council in their decision to grant permission (which requires the applicant's group to enter into a CPPA in respect of the Proposed Development) represents a "*significant secondary project that would likely not arise but for the principal project and could be described as integral to the project in how the condition is to be discharged*". The appeal argues that the EIAR has not adequately assessed this 'integral' project. A similar argument is put forward by the John Conway and Louth Environmental Group appeal.

2.3 Applicants Response

Any new and future RE project will require a suite of assessments and permissions/consents prior to construction and subsequent operation. These will include but are not limited to EIA / EIA Screening at the time the application for the RE project is made. As the assessment of environmental impact for a project of this nature is site specific to the receiving environment in which the RE project is located, it is not feasible to undertake a detailed assessment of cumulative impact at this time. However, it is feasible to consider the likely cumulative impact based on considering typical construction and operation effects from other RE developments assessments. While there are many types of RE projects (wind and solar being the main two of potential relevance, with wind being the most relevant), the primary residual effects of an RE project after mitigation are typically:

- Construction: short-term nuisance due to construction traffic, construction impacts on land stability and water run-off quality, construction noise and dust and climate emissions, impact on cultural heritage, biodiversity and landscape.
- Operational Phase effects: noise emissions, landscape / visual impact, and land use effects.

Apart from potential climate effect (almost certain to be positive in the long term), all of the potential environmental impacts are generally local to the area in which the RE project(s) will be located. Mitigation will be required at a local level for effects identified during the planning application stage.

As outlined in Section 8.0 of the Addendum to Chapter 9 (Climate) of the EIAR, the predicted impact of the Proposed Development and the Overall Project (i.e. development on the wider landholding) is ***indirect, long-term, negative*** and ***minor adverse*** and in terms of climate, both the construction phase and operational phase of the Proposed Development and Overall Project will be not significant.

Based on the nature of the RE project(s), the climate impact of the proposed RE project

[3] [2019] IESC 23

is likely to be beneficial and contribute to the cumulative impact in a beneficial manner.

The RE project(s) related to the CPPA will not be local to the Proposed Development, which is located in an existing built-up area. As a result, there is no likely significant cumulative impacts between the Proposed Development and the future RE project(s) due to the high likelihood of a significant degree of geographical separation distance. The development of the RE project(s) will be subject to planning conditions by the relevant competent authority and will be obliged to comply with all applicable environmental and planning legislation.

2.4 Concluding Statement In Regard To Applicant Response To Item A2

All new and future RE project(s) to be enabled by the applicant via CPPAs will be subject to planning conditions and obliged to comply with environmental and planning legislation. All new and future RE project(s) will almost certainly be located a significant distance away from the site of the Proposed Development and thus there is no likely significant cumulative impacts between the Proposed Development and the future RE project(s). In relation to climate impact, where geographical location is not relevant in terms of GHG emissions, the impact of the proposed RE project(s) is likely to be beneficial and contribute to the cumulative impact in a beneficial manner.

3.0 Item A3 - Cumulative Assessment of other Data Centre Projects

3.1 Overview

This section addresses the arguments raised in various appeals in regard to the cumulative impact of the Proposed Development in combination with other Data Centre Projects.

3.2 Summary of Key Appellant Points - Item A3

The argument raised in the various appeals relates to the assessment of the cumulative effects associated with the development in combination with other data centre developments. The argument is raised that GHG emissions have cumulative effects at a global level which undermines the legitimacy of the assessment undertaken.

3.3 Applicant Response To Item A3

From a climate perspective, the Institute of Environmental Management and Assessment (IEMA) guidance note on "*Assessing Greenhouse Gas Emissions and Evaluating their Significance*" (IEMA, 2022) has noted, on Page 21, that:

"The atmospheric concentration of GHGs and resulting effect on climate change is affected by all sources and sinks globally, anthropogenic and otherwise. As GHG emission impacts and resulting effects are global rather than affecting one localised area, the approach to cumulative effects assessment for GHGs differs from that for many EIA topics where only projects within a geographically bounded study area of, for example, 10km would be included."

The guidance states, on Page 21, that when considering the cumulative assessment,

"All global cumulative GHG sources are relevant to the effect on climate change, and this should be taken into account in defining the receptor (the atmospheric concentration of GHGs) as being of "high" sensitivity to further emissions.

Effects of GHG emissions from specific cumulative projects therefore in general should not be individually assessed, as there is no basis for selecting any particular (or more than one) cumulative project that has GHG emissions for assessment over any other."

The guidance furthermore states, on Page 21 of IEMA 2022, in terms of contextualization of the GHG emissions:

"The contextualisation of GHG emissions ..... should incorporate by its nature the cumulative contributions of other GHG sources which make up that context. Where the contextualisation is geographically - or sector-bounded (e.g. involves contextualising emissions within a local authority scale carbon budget, or a sector level net zero carbon roadmap), then the consideration of cumulative contributions to that context will be within that boundary."

Thus, the assessment of the Proposed Development evaluated direct operational climate impacts from the backup generators for the Proposed Development scenario and the masterplan of the Overall Project including a potential future phase of development. In addition, for the Proposed Development scenario and the masterplan of the Overall Project including a potential future phase of development, the indirect GHG emissions from the electricity supplied to the site was also evaluated.

In line with the contextualization of the GHG emissions outlined in IEMA 2022, the assessment outlined in the Addendum to Chapter 9 of the EIAR also considered the cumulative direct and indirect emissions both on an EU wide basis (as a percentage of the EU ETS) and in terms of the most relevant national target (as a percentage of the electricity Sectoral Emission Ceiling) for the baseline scenario, Proposed Development

scenario and the masterplan of the Overall Project.

Referring to the High Court's judgment in *Coyne* in relation to the indemnification provided by the ETS system in respect of particular types of GHG emissions:

211. *"I referred earlier to the description of the ETS in Milieudefensie. In an analysis of some present relevance, the Hague District Court also observed in that case that "The indemnifying effect of the ETS system means that - insofar as it concerns the reduction target of the ETS system - RDS[397] does not have an additional obligation with respect to Scope 1 and 2 emissions in the EU that fall under the system." The Hague District Court also observed that "the ETS system only covers a small part of the Shell group's emissions. Only for these emissions, RDS does not have to adjust its policy due to the indemnifying effect of the ETS system." The court's ultimate reasoning was more complex (as to shortfalls between what reductions ETS would achieve and overarching reduction targets it imposed on RDS).*

212. *However the only GHG emissions in issue in the present case - the Scope 2 emissions of electricity generation to power the Data Centre - are all covered by the ETS. In that light Milieudefensie can be seen to have adopted the reasoning urged in opposition to the Coynes in this case as to the significance of the ETS - which is described in Milieudefensie as the cornerstone of EU climate policy and as an important tool to cost-effectively limit CO2 emissions. Paraphrasing the Hague District Court, one would say that the indemnifying effect of the ETS system means that - insofar as it concerns the GHG cap of the ETS system - EngineNode does not have an additional obligation with respect to Scope 2 emissions of the Data Centre that fall under the system. For these emissions, EngineNode does not have to adjust its policy due to the indemnifying effect of the ETS system. It is not apparent to me that this observation is any the less valid because we are concerned with a prospect of development rather than with an existing enterprise.*

213. [...] *it suffices in EIA of a particular project, in which its indirect and cumulative effects by way of electricity generation of CO2 emissions are at issue, to do as was done here. Namely to identify and quantify energy demand and energy used, to identify and quantify the nature and magnitude of nature and magnitude of GHG emissions likely to result from that energy use (recognised in the papers as up to 180mw and 1,577 GWh annually) and to examine and analyse their contribution to national GHG emissions of the electricity generation sector in the context of the ETS and national policy to transition towards renewable electricity generation.*[...]

214. *It does not appear to me that it is necessary, or even possible, to go further by way of an attempt to discern the cumulative effect of the project on future substantive climate change events, much less effect on a small number of individuals who, irrelevantly for this particular purpose as the effects will be caused elsewhere and occur on a global scale, happen to live beside the Data Centre. I confess to imagining that such an exercise, as to the effects by way of electricity generation of CO2 emissions due to this project (which, in EIA is always the issue - even as to cumulative effect) would be speculative to the point of uselessness. "*

Thus, the applicant has undertaken the cumulative impact assessment of the Proposed Development in a manner consistent with the appropriate guidance (IEMA, 2022), and there is no requirement for the assessment to focus in particular on (or assess the cumulative impact of) all other developments of a similar nature in the state (or a subset of those developments).

3.4 Concluding Statement In Regard To Applicant Response To Item A3

In conclusion, the assessment of the Proposed Development has been undertaken using the correct methodology as outlined in the most appropriate guidance document (IEMA, 2022) with the predicted impact being correctly contextualized in terms of the EU ETS and the electricity Emission Ceiling.

4.0 Item A4 - Accuracy of Climate Assessment, Conclusions on Climate Impact, and Consideration of Reasonable Worst Case

4.1 Overview

This section summarises the submitted EIAR and Further Information response in relation to climate impact assessment and provides recent additional data supporting the approach taken for the assessment demonstrating that the climate impact assessment for the Proposed Development and the overall project in the submitted EIAR and the Addendum to Chapter 9 of the EIAR (submitted with the Further Information response) was carried out in line with the relevant guidance and is based on the IEMA 2022 guidance titled "*Assessing Greenhouse Gas Emissions and Evaluating their Significance*".

As outlined in Section 2.0 of the Addendum to Chapter 9 of the EIAR, the assessment is based on a reasonable worst-case assessment, in line with the approach outlined in the IEMA Guidance - *Assessing Greenhouse Gas Emissions and Evaluating their Significance 2nd Edition* (IEMA, 2022). It is clear that the impact of the Proposed Development is correctly assessed and, post-mitigation, classified as minor adverse.

4.2 Summary of Key Appellant Points - Item A4

The appellants have raised the following points in relation to the climate impact assessment. Various appeals argue that (apart from the use of CPPAs as mitigation, as dealt with above), the climate assessment included within the EIAR, as supplemented at Further Information stage, mischaracterised, and underestimated the impact of the Proposed Development. In summary, the following arguments are raised by the appellants in this regard:

A4.1 The appellants argue, the EIAR didn't take account of impact on the ceiling for Ireland's Electricity Sector. The appellants argue that as the development would result in additional emissions, the impact should be characterised as significant adverse rather than moderate adverse, as the IEMA guidance dictates this for developments which would not be aligned with the pathway to net zero.

A4.2 The appellants argue that the assessment should have addressed a reasonable worst case scenario, whereby all additional demand would have been met by way of additional conventional generation.

A4.3 The appellants argue that the Proposed Development would, immediately on operation, give rise to a new demand for 73MW of electricity which will be supplied through additional conventional (fossil fuel derived) generation.

A4.4 The appellants argue that as if the assessment were based on the assumption that conventional generation would be used, the resulting impact would be even more significant.

A4.5 The appellants argue that Table 1.10 of the AWN FI response incorrectly stated data as prior to mitigation, even though they reflect an assumed 80% renewable generation.

A4.6 The appellants argue that the predicted impact both before and after mitigation is understated, and that the predicted impact should not have assumed that 80% renewables penetration would be achieved.

A4.7 The appellants argue that if the scenario of the development being powered by conventional fossil fuel derived generation was calculated, the impact would be 8.8% for the project, and 26% for the overall site. While the assessment indicates the impact reducing to 'minor adverse' after mitigation, the same mitigation is heavily reliant on CPPAs, which it is argued will not in fact provide for "*additionality*". The appellants argue that therefore the impact should stay at moderate under the best case scenario, and major for the worst case (conventional generation) scenario.

4.3 Applicant Response To Item A4

The response to each of these items has been grouped as appropriate and addressed in turn below:

Points Raised - A4.1 - A4.4

Appeal item A4.1
The appellants argue that as set out in previous submission, the EIAR didn't take account of impact on the ceiling for Ireland's Electricity Sector. The appellants argue that as the development would result in additional emissions, the impact should be characterised as significant adverse rather than moderate adverse, as the IEMA guidance dictates this for developments which would not be aligned with the pathway to net zero.

Appeal item A4.2
The appellants argue that the assessment should have addressed a reasonable worst case scenario, whereby all additional demand would have been met by way of additional conventional generation.

Appeal item A4.3
The appellants argue that the Proposed Development would, immediately on operation, give rise to a new demand for 73MW of electricity which will be supplied through additional conventional (fossil fuel derived) generation.

Appeal item A4.4
The appellants argue that as if the assessment were based on the assumption that conventional generation would be used, the resulting impact would be even more significant.

Response To Points A4.1 - A4.4

The above items focus on the following argument from the appellants:

- that the Proposed Development will result in new unforeseen demand on the electricity grid,
- that the EIAR should have taken account of the impact it will have on the electricity sectoral ceilings,
- that the power for the Proposed Development will need to be provided by additional conventional generation and that the climate impact assessment should have been based on conventional fossil fuel generation.

As part of this response, it is demonstrated below that the Proposed Development:

- will not result in new unforeseen demand as there is an existing connection agreement in place since 2017 with that demand built into all forecasts, as such it will not affect sectoral ceilings or the predicted quantity of conventional (fossil fuel) generation.
- In addition to this, a CPPA for the power demand for the proposed project has been welcomed and conditioned under the Planning Authority's decision to grant permission (A similar approach and condition by the Board would be welcomed).
- The climate impact assessment for the Proposed Development and the overall project in the submitted EIAR and the Addendum to Chapter 9 of the EIAR was carried out in line with the relevant guidance and is based on the IEMA 2022 guidance titled "*Assessing Greenhouse Gas Emissions and Evaluating their Significance*". As outlined in Section 2.0 of the Addendum to Chapter 9 of the EIAR, the assessment is based on a reasonable worst-case assessment, in line with the approach outlined in the IEMA 2022 guidance and it is clear that the impact of the Proposed Development is correctly, post-mitigation, classified as *minor adverse.*

The Government's '*Summary of Analysis to Support Preparation of the Sectoral Emissions Ceilings*[4]' (2022) provides details of the "*analysis and research that informed the preparation of the Sectoral Emissions Ceilings.*" With respect to the Electricity Sector, demand growth was assumed in line with the median growth scenario projected by the EirGrid Generation Capacity Statement 2020-2029 - the median scenario was used as the "proposed scenario" to establish the Electricity Sectoral Emissions Ceiling. That demand growth forecasted in the 'Summary of Analysis to Support Preparation of the Sectoral Emissions Ceilings' (2022) is influenced by several factors including contracted data centre capacity (i.e. including the Proposed Development), the electrification of the transport sector and home heating.

The EirGrid Generation Capacity Statement for 2020-2029 set out a median overall demand of 1,250MVA for Data Centre and Large Industrial User Demand by 2029 (Table 5[5]). The current version of the EirGrid Generation Capacity Statement 2022-2032 shows an increase of 241MVA for Data Centre and Large Industrial User Demand by 2032 (Table 2.2[6]) - giving an median overall demand in 2031 of 1,491MVA.

While reflecting marginally lower demand (241MVA) than current EirGrid projections, the "proposed scenario" taken into account in developing the Sectoral Emissions Ceilings includes the growth of data centres with contracted demand such as the Proposed Development factored in.

The Climate Action Plan 2023 (CAP23) *"sets out the roadmap to deliver on Ireland's climate ambition. **It aligns with the legally binding economy-wide carbon budgets and sectoral ceilings** that were agreed by Government in July 2022. **This will enable Ireland to meet 2030 targets** and be well placed to meet mid-century decarbonisation objectives which will also help deliver cleaner air, warmer homes and a better quality of life for Irish citizens."* [Emphasis added]

Specific to the Electricity Sector, CAP23 sets out that *"[a]mong the most important measures in **the plan is to increase the proportion of renewable electricity to up to 80% by 2030** and a target of 9 GW from onshore wind, 8 GW from solar, and at least 5 GW of offshore wind energy by 2030."* The 80% renewable electricity share of demand is worked back from the Carbon Budget, the associated Sectoral Emissions Ceilings and ultimately the demand projections that have been established for all Sectors. As set out above, those demand projections include the Proposed Development. [Emphasis added]

As the Proposed Development will be bringing forward renewables for contracted demand which is already accounted for within CAP23 it is clear that the commitment to deliver a CPPA in line with Condition 13 will adhere to and enhance the same efforts established under CAP23.

In addition, there is no current evidence that there will be an exceedance of the Sectoral Emission Ceiling. The recent DECC publication "*Summary of Analysis to Support Preparation of the Sectoral Emissions Ceilings*" (DECC, 2022) outlines the assumptions which have been used to derive the Sectoral Emission Ceilings. The "proposed scenario" (Figure 2) adopted by DECC takes into account the EirGrid Generation Capacity Statement for 2020-2029 which set out a median overall demand in 2029 of 1,250MVA for Data Centre and Large Industrial User Demand by 2029 (Table 5[7]).

[4] https://assets.gov.ie/236057/3ddf7b83-8ee8-4d62-b35e-d3dea38fa433.pdf
[5] https://www.eirgridgroup.com/site-files/library/EirGrid/All-Island-Generation-Capacity-Statement-2020-2029.pdf
[6] https://www.soni.ltd.uk/media/documents/EirGrid_SONI_2022_Generation_Capacity_Statement_2022-2031.pdf
[7] https://www.eirgridgroup.com/site-files/library/EirGrid/All-Island-Generation-Capacity-Statement-2020-2029.pdf

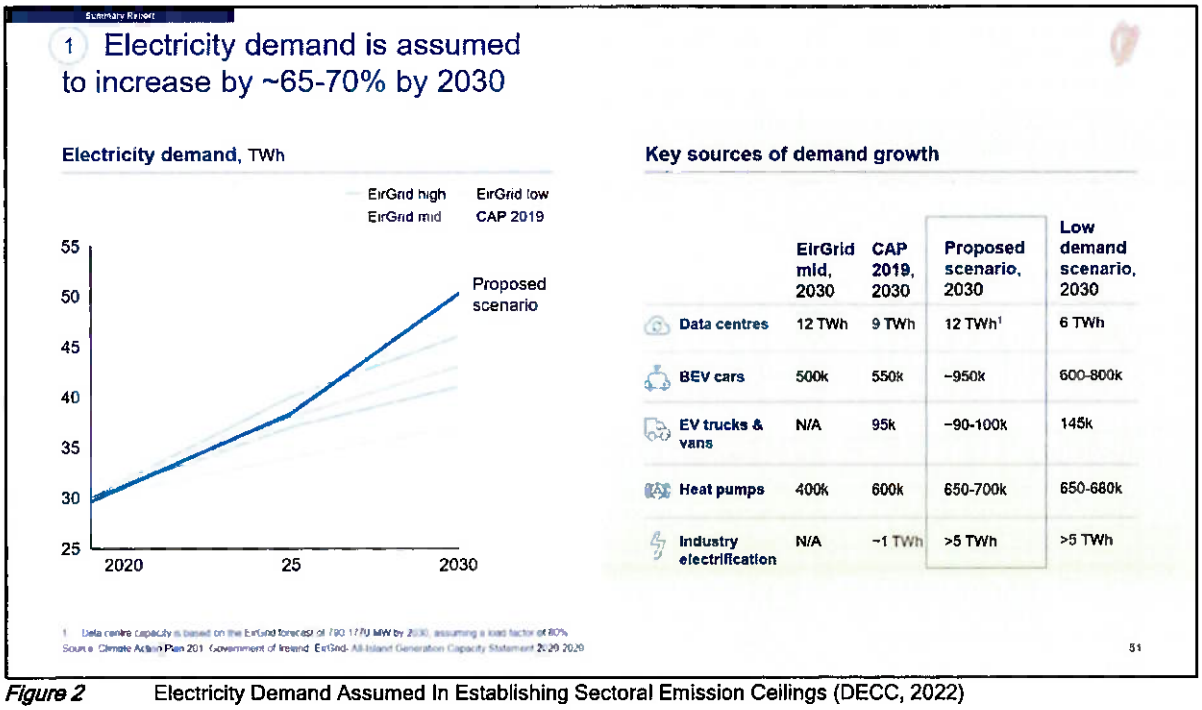

Figure 2 Electricity Demand Assumed In Establishing Sectoral Emission Ceilings (DECC, 2022)

With a growth rate of 65-70% in electricity demand by 2030 inherent in the DECC analysis (which includes the Proposed Development), the assessment undertaken for the Sectoral Emission Ceilings has concluded that the 2030 target of 3 Mtonnes of CO_2eq is attainable as shown in Figure 3 below.

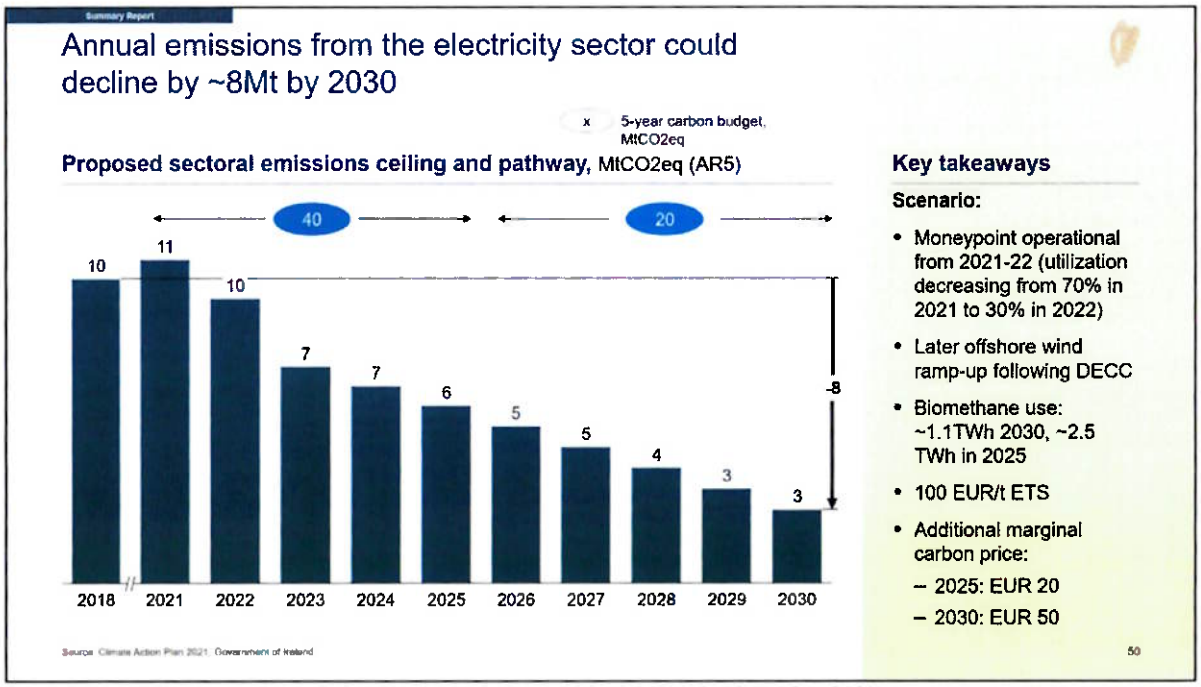

Figure 3 Proposed sectoral emissions ceiling and pathway 2018 to 2030 (DECC, 2022)

The EPA has recently reported that the 2022 energy industries GHG emissions have decreased from 10.26 Mtonnes in 2021 to 10.08 Mtonnes in 2022[8]. Comparing the 2022 reported data to the projected data undertaken for the Sectoral Emission Ceiling in Figure 3 indicates that the actual emissions are similar to the target value in 2022.

[8] https://www.epa.ie/our-services/monitoring--assessment/climate-change/ghg/latest-emissions-data/#

Thus, in the context of the Sectoral Emission Ceilings, and where the Proposed Development is included under existing electricity demand forecasts there is no evidence that the Proposed Development would contribute to an exceedance of the Emission Ceiling.

In relation to Appeal Item A4.2, shown below, a detailed rebuttal has been outlined in the paragraphs below:

> *Appeal item A4.2*
> *The appellants argue that the assessment should have addressed a reasonable worst case scenario, whereby all additional demand would have been met by way of additional conventional generation.*

The climate impact assessment undertaken in the Addendum to Chapter 9 of the EIAR was carried out in line with the IEMA Guidance - *Assessing Greenhouse Gas Emissions and Evaluating their Significance 2nd Edition* (IEMA, 2022). It has been summarised below to demonstrate that the assessment is based on a reasonable worst-case assessment, in line with the approach outlined in the IEMA 2022 guidance and it is clear that the impact of the Proposed Development is correctly, post-mitigation, classified as minor adverse.

The assessment methodology undertaken, in line with IEMA recommendations, is as follows:

1. The scope and boundary of the GHG assessment was determined by reviewing the overall project scope and relevant guidance as listed above,
2. A detailed baseline review of GHG emissions for both the construction and operational stage was carried out,
3. The emissions calculation methodologies were determined for both the construction stage and the operational stage,
4. Data collection; Predictive calculations and impact assessments relating to the likely Construction and Operational Phase climatic impacts of the Proposed Development have been undertaken; During the assessment, IEMA recommend the use of a reasonable worst-case scenario rather than an absolute worst-case scenario,
5. Calculate/determine the GHG emissions inventory,
6. Consider mitigation opportunities and repeat steps 4 & 5. A schedule of mitigation measures has been incorporated, as outlined in Section 6.1, where required to reduce, where necessary, the identified potential climatic impacts associated with the Proposed Development,
7. define the significance criteria for the Construction and Operational Phases of the Proposed Development and the Overall Project.

1. Set the scope and boundaries of the GHG assessment

The scope and boundary of the GHG assessment for the operational phase of the Proposed Development will also include the permitted development and the Overall Project. The GHG assessment is based on the use of electricity to power the facility in addition to the back-up power supply/operation and testing/maintenance of the backup generators for 72 hours per year. In the event of a loss or removal of power supply, the back-up generators will be utilised to maintain power supply. The operational phase is proposed to commence in mid-2025 and ramp up operations and power usage until mid-2027. Given that the power supply for operations is from the electricity grid, the worst case scenario for GHG emissions is prior to grid decarbonization with the impact reducing as grid decarbonization progresses further. The GHG assessment is made prior to net zero carbon in the grid which is predicted conservatively to occur at 2050.

2. Develop the baseline

For 2021, baseline GHG emissions in Ireland are estimated to be 61.528 Mt CO2eq as shown in Table 1 below (reproduced from Table 1.5 of the Addendum to Chapter 9 of

the EIAR). The sector with the highest emissions is agriculture at 37.5% of the total, followed by transport at 17.7% and energy industries at 16.7%. In relation to energy the total emissions amount to 10,272 kilotonnes of CO2eq in 2021.

Category	Kilotonnes (kt) CO2eq	% of Total GHG Emissions
Waste	937	1.5%
Energy Industries	10,272	16.7%
Residential	7,040	11.4%
Manufacturing Combustion	4,593	7.5%
Commercial Services	817	1.3%
Public Services	663	1.1%
Transport	10,912	17.7%
Industrial Processes	2,460	4.0%
F-gases	738	1.2%
Agriculture	23,097	37.5%
Total	61,528	100%

Table 1 GHG Emissions in Ireland 2021 (EPA, 2022b)

3. Emission Calculation Methodology & 4. Data Collection

The recent *Coyne v An Bord Pleanála*[9] high court judgment addressed the existence of uncertainty and how account should be taken of that uncertainty with the relevant quotes from Paragraphs 125 - 127 shown below:

"125 As to "Assessing Significant Effects" the 2013 Guidance [2013 Guidance on Climate Change] states that many assessment approaches used in EIA have the capacity to address climate change. "There are, however, three fundamental issues that you should consider when addressing climate change and biodiversity: the long-term and cumulative nature of effects, complexity of the issues and cause-effect relationships and uncertainty of projections." There follows a consideration of all three issues, the premise of which is that EIA should address them. I would add that this premise must itself be premised on climate change having been scoped into the EIA as a likely significant effect.

126 The 2013 Guidance states that EIA, to properly address climate change, should take into account its complexity (including of causal relationships) and long-term direct and indirect impacts and consequences. EIA should describe the sources of, and characterise the nature of, uncertainty. Judging an impact's magnitude and significance must be context-specific. The contribution of an individual project to GHGs may be insignificant on the global scale but may be significant on the local/regional scale, in terms of its contribution to set GHG-reduction targets.

127 Finally, it is worth noting some of the "bullet points" tabulated in 2013 Guidance as "Critical challenges for addressing climate change ... in EIA":

- *Manage complexity. Consider the complex nature of climate change and biodiversity and the potential of projects to cause cumulative effects.*
- *Be comfortable with uncertainty, because you can never be sure of the future. Use tools such as scenarios (for example, worst-case and best-case scenarios) to help handle the uncertainty inherent in complex systems and imperfect data. Think about risks when it is too difficult to predict impact.*
- *Base your recommendations on the precautionary principle and acknowledge assumptions and the limitations of current knowledge.*
- *Be practical and use your common sense!*

[9] [2023] IEHC 412

The guidance also states that "considering a range of possible uncertain futures and understanding the uncertainties is part of good EIA practice and permits better and more flexible decisions.

In other words, it is no error to acknowledge and assess uncertainty and risk as best you reasonably can. Error may well lie in ignoring them."

A Reasonable Worst Case assessment has been made in line with IEMA guidance as follows:

Operational Phase Year 2025: Conservatively the assessment assumed that in Year 2025 the facility will operate at 100% of the power demand while in reality, the operation (and associated energy demand) of the facility will ramp up over a period of 2.5 years and thus will only reach full capacity in mid-2027.

The assessment assumed a continuous 100% operational load for the data centre development, however annual average load is likely to be closer to 80% (as outlined in the recent DECC publication "*Summary of Analysis to Support Preparation of the Sectoral Emissions Ceilings*" (DECC, 2022),

The GHG emission factor of electricity is based on current reported levels (Year 2021) with the assumption that the GHG emission factor will decrease in a linear fashion to reach 100 gCO2/kWh by 2030 in line with government policy as shown in Table 2 below (reproduced from Table 1.5 of the Addendum to Chapter 9 of the EIAR).

Year	Electricity[Note 1] (g CO_2 / kWh)
2025	237
2026	209
2027	182
2028	155
2029	127
2030	100

Note 1 Based on a carbon intensity of 348 g CO_2 / kWh in 2021 and assuming linear interpolation to 100 g CO_2 / kWh by 2030.

Table 2 *Carbon Intensity of Electricity From 2025 - 2030*

This is confirmed as a reasonable worst case value as the latest communication from the SEAI[10] has confirmed that the estimation for 2030 is currently 92.9 gCO2/kWh, as outlined in Table 3, and thus the emission factors used in the Addendum to Chapter 9 of the EIAR are conservative.

[10] Private communication from SEAI- dated 12th October 2023

From: [redacted]@seai.ie>
Sent: Thursday, October 12, 2023 11 45 AM
To: Avril [redacted] <[redacted]@awnconsulting.com>
Subject: RE. Future Carbon Intensity for Grid Electricity

Dear Avril,

Thank you for your email. Please find attached spreadsheet with a projection of electricity carbon intensity out to 2050

This projections is based on the WAM-CAP23 scenario from our latest set of projections. This broadly assumes that the targets set in the latest 2023 Climate Action Plan will be achieved. Because the current focus of government policy is on the period to 2030, there is less detail on policies and measures that will be adopted from 2030 to 2050. This is reflected in the scenario shown, where there are still emissions from electricity generation out to 2050. In reality we expect further policies and measures to be developed later in the decade that will provide a pathway to a zero carbon electricity system by 2050

Regards,
Mary

2022 National Energy Projections (NEP) electricity factors										
Scenario	Property	Unit	2022	2023	2024	2025	2026	2027	2028	2029	2030
High WAM v3, CAP23	Emission intensity	gCO2/kWh	338.5	319.0	281.7	226.3	216.3	190.5	164.4	122.5	92.9

Table 3 GHG Emission Intensity 2022 - 2030 (SEAI, 2023)

Further conservative approaches in the reasonable worst case assessment are as follows:

- the power generation mix in 2030 is forecast by EirGrid to be 83% renewable rather than the assumed 80% renewable generation,
- It is assumed that net zero electricity would not be achieved until 2050, whereas recent data from the ESB and UCC/MaREI suggests that this is likely to be achieved by 2040 at the latest as outlined in "*Networks For Net Zero - Delivering the Electricity Network for Ireland's Clean Electric Future*" (ESB Networks, 2023).
- UCC / MaREI have also separately published the report "*Our Climate Neutral Future - Zero by 50*" (UCC / MaREI, 2021) which details how the energy system can achieve net zero by 2050 by using technologies, concepts and interventions will already exist today. As shown in Figure 5, the report predicts that the energy system will be dominated by renewable energy in 2050.
- Although the pathway may vary somewhat depending on future policy decisions, it is likely that net zero electricity (shown in green below in Figure 4) will be achieved by 2040 compared to the conservative assumption in the Addendum to Chapter 9 of the EIAR that net zero electricity would not be achieved until 2050. Thus, the GHG emissions in the Addendum to Chapter 9 of the EIAR should be viewed as a reasonable worst-case assessment in line with the IEMA guidance (IEMA, 2022).

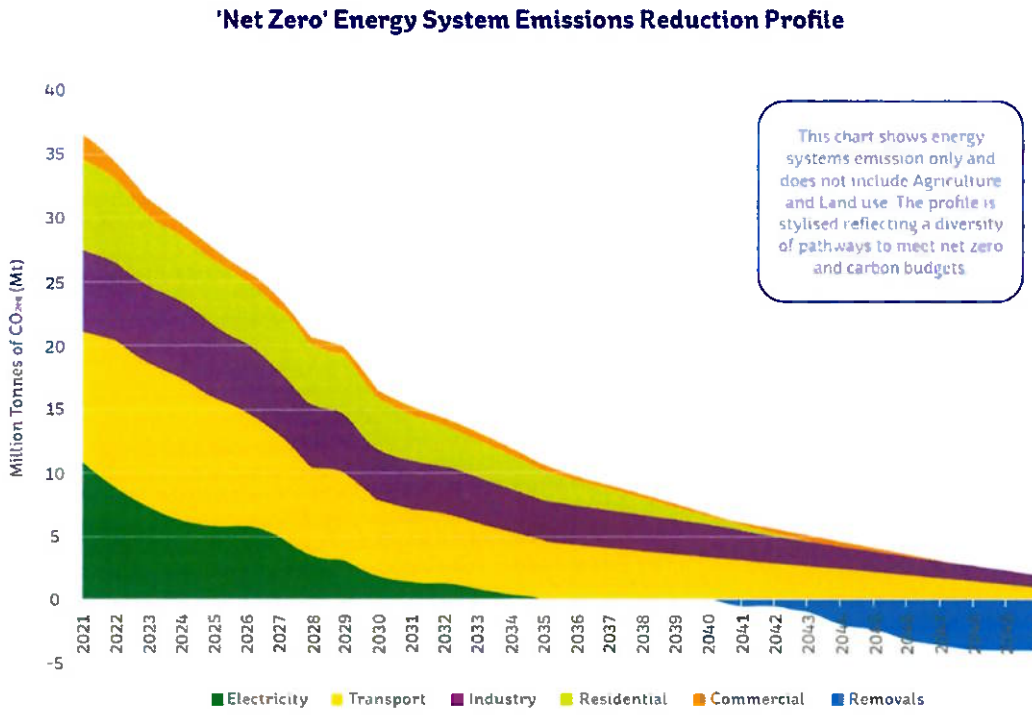

Figure 4 Net Zero Energy System Emissions Reduction Profile (UCC / MaREI) (ESB Networks, 2023)

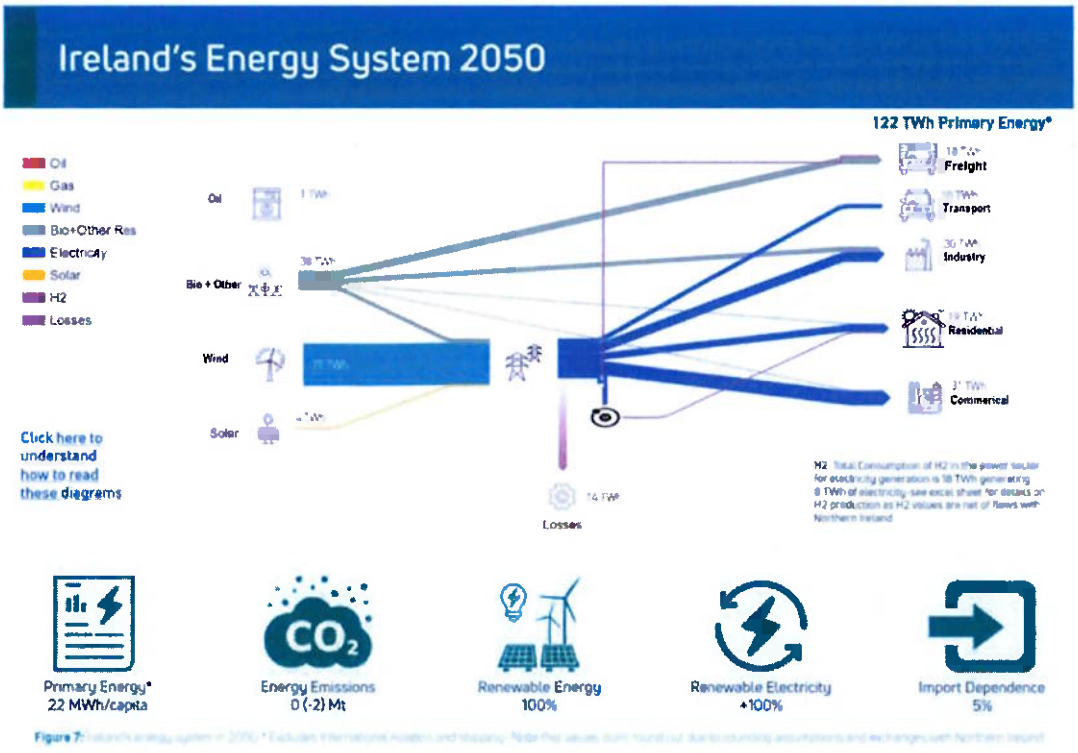

Figure 5 Ireland's Energy System 2050 (UCC / MaREI, 2021)

The assessment undertaken in the Addendum to Chapter 9 of the EIAR has been based on a reasonable worst-case assessment in line with the both the *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment* (EU, 2013) and *Assessing Greenhouse Gas Emissions and Evaluating their Significance, 2nd Edition* (IEMA, 2022). The reasoning for this conclusion is outlined below.

Firstly, the GHG emission factor of electricity is based on current reported levels (Year 2021) with the assumption that the GHG emission factor will decrease in a linear fashion to reach 100 gCO_2/kWh by 2030 in line with government policy. However, the latest communication from the SEAI has confirmed that the estimation for 2030 is currently 92.9 gCO_2/kWh, as outlined in Table 3, and thus the emission factor used in the Addendum to Chapter 9 of the EIAR is conservative.

A second assumption which is likely to be conservative is that it has been assumed in the Addendum to Chapter 9 of the EIAR that the electricity grid achieves net zero GHG emissions in 2050 in line with government policy. However, modelling by UCC/MaREI has recently outlined a net zero GHG emissions pathway for the National Grid which is achievable by 2040 (as outlined in "*Networks For Net Zero - Delivering the Electricity Network for Ireland's Clean Electric Future*" (ESB Networks, 2023)).

Therefore, contrary to the claims made in the third party appeals, the climate assessment within the EIAR and the EIAR Addendum submitted with the Further Information response was not based on overly optimistic assumptions, but in fact represented a conservative approach in line with the precautionary principle.

5. Calculate the GHG Emissions Inventory

The GHG associated with the operational stage of the Proposed Development was calculated by multiplying the power usage by the grid CO2eq values from Table 2 and is set out in Table 4 below. This table is as presented in the further information response submission but now includes an additional column with calculated GHG emissions based on the phased operational ramp up period from 2025 to 2027 and includes an

additional row for the year 2035.

Year	Proposed Development (73.1MW) - Addendum To Chapter 9 of the EIAR	Proposed Development (73.1MW) - Based on phased operational ramp-up period 2025-2027	Electricity[Note 1] (g CO2 / kWh)
2025	151,920	22,916	237
2026	134,561	77,161	209
2027	117,202	107,435	182
2028	99,843	99,843	155
2029	82,483	82,483	127
2030	65,124	65,124	100
2035	49,247	49,247	75

Note 1 Based on a carbon intensity of 348 g CO_2 / kWh in 2021 and assuming linear interpolation to 100 g CO_2 / kWh by 2030.

Table 4 *GHG Emissions For Proposed Development Scenario (Tonnes CO_2eq)*

GHG emissions, assuming a conservative CO_2eq emission rate of 100 gCO_2/kWh by 2030 and a net zero year of 2050, rapidly decreases over the period 2027 - 2035 leading to 49,247 tonnes CO_2eq in 2035 as shown in Table 4.

Furthermore in reality, the proposed facility will ramp up over a period of 2.5 years and thus will only reach full capacity in mid-2027. In addition, the assessment has been based on 100% operation at all times where in reality the long-term average for these facilities will be 80% of capacity (as shown in Figure 2 where EirGrid has assumed an 80% load factor for data centres).

The above demonstrates that a reasonable worst case approach has been taken in the climate impact assessment.

With respect to Appeal item A4.4 set out above, as noted previously the development in fact would not give rise to an immediate demand of 73MW, but rather the operation and demand associated with that operation from the development would ramp up over a period of c. 2.5 years.

Additionally, the unsubstantiated assertion that 100% conventional (oil, gas, coal) generation should be used to determine the GHG emissions from the facility will not reflect reality either in 2025 when operations will commence, 2027 when the GHG emissions from the Proposed Development peak, or in 2030 which is the target date for the first Electricity Emission Ceiling. Additionally, the assertion that the electricity supplied to the Proposed Development should be assumed to be 100% conventional (oil, gas, coal) generation is simply without merit and goes against all Government policies and follow-on Actions Plans. By 2030, the grid, based on the EirGrid analysis will be 83% renewables and thus the power supplied to the Proposed Development will be overwhelmingly renewable.

For the Permitted Development, the facility will use electricity from the National Grid. Thus, based on electricity from the National Grid for 8,688 hours per year and assuming backup generators usage for 72 hours per year and generator-testing, will consume 110.6MW of power. This equates to 970 GWh annually. This translates to approximately 229,855 tonnes of CO2eq per year (including generator testing) based on the likely 2025 electricity mix and approximately 98,533 tonnes of CO2eq per year (including generator testing) based on the likely 2030 electricity mix as outlined in Table 5 (as outlined in Table 1.7 of the Addendum to Chapter 9 of the EIAR).

Year	Permitted Development (Tonnes CO2eq)
2025	229,855
2026	203,590
2027	177,326
2028	151,061
2029	124,797
2030	98,533

Table 5 *GHG Emissions (CO2eq) For Existing Permitted Scenario (Tonnes CO2eq)*

6. Cumulative Impact assessment GHG Emissions and Cumulative Impact assessment with CPPA as mitigation

Mitigation measures will be implemented in line with "best practice" as outlined in IEMA (IEMA, 2022) as outlined below in Figure 6.

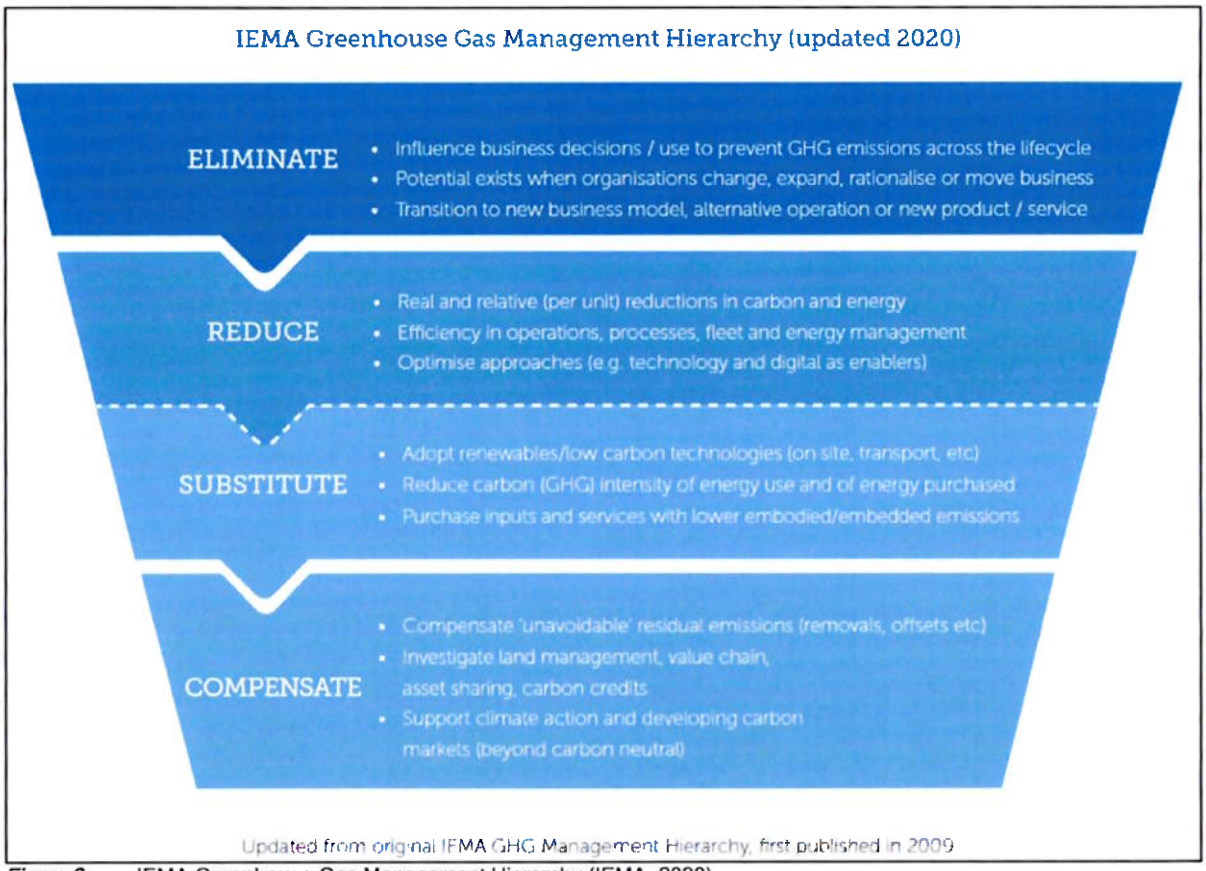

Figure 6 IEMA Greenhouse Gas Management Hierarchy (IEMA, 2020)

The objective of the mitigation measures outlined below is to ensure that GHG emissions are eliminated, reduced and substituted wherever possible during the operational phase of the Proposed Development and the Overall Project. The key mitigation measures which are relevant to GHG emission reductions are outlined below. These will mitigate GHG emissions to better than the 1.5deg C compliant trajectory and will in future years also contribute to reducing greenhouse gas emissions when it is accompanied by progressive decarbonization of the grid.

Condition 13 of the FCC planning decision requires a CPPA to be in operation prior to commencing operation as a substitute mitigation to GHG emissions and as directly related to the power demand for the Proposed Development has been quantitively assessed.

The following mitigations have been qualitatively assessed as mitigations to GHG emissions:

- The Proposed Development is designed to fully comply with the Climate Neutral Data Centre Pact. The Proposed Development has an annualised design Power Usage Effectiveness (PUE) of 1.12 and has a design water usage effectiveness (WUE) of 0.075 L/kWh as compared to the 0.4 L/kWh set under the Climate Neutral Data Centre Pact. PUE is the most commonly used metric to determine the energy efficiency of a data centre. Data centres need a range of auxiliary services, including cooling, to support the main 'work' of the IT systems, PUE measures the size of this 'overhead' energy used as a ratio to the energy used to power the computing equipment. Since PUE is a ratio, the closer the number is to 1.0, the more energy efficient the data centre. A survey of European data centres by 451 Research found "*European enterprises cited on average a PUE of 2.1*"[11] as compared to a PUE of 1.3 set by the Climate Neutral Data Centre Pact and an annualised design PUE of 1.12 for the Proposed Development.
- The Operator has recently signed a supply agreement for renewable diesel (also referred to as hydrotreated vegetable oil or HVO) to their Irish Data Centers. As set out in this Appeal Response, it is expected that fuel for the Proposed Development will be renewable diesel.
- A PV array is proposed on each building E and F will consist of 285 PV modules, each of 300Wp, yielding a total peak power generated of 85.5kWp to match the lighting and IT electrical power requirements during the peak summer months for the administration & office of each building.
- A rainwater harvesting system will be used to ensure non-potable process water for cooling needs for the operational development are met with no reliance on the public water mains. The proposed buildings are designed to harvest rainwater for up to 100% of the annual process water requirements and includes 2170m3 of onsite water storage designed to maximise the storage and utilisation of rainwater, significantly reducing the annual water demand from the local supply.
- Facilitating district heating to a local user for heat or a future heat network - The Proposed Development incorporates design provisions to facilitate district heating including heat distribution pipework up to the site boundary. Please refer to Section 4 subsection *Co-Location or Proximity with Future-Proof Energy Supply* of the John Spain Associates response cover letter of this Appeal Response for further detail.
- Internal lighting shall be provided by highly efficient, low energy LED luminaires combined with presence detection controls or local switching where appropriate.
- The external lighting will make use of high efficiency, low energy LED luminaires. The lighting design has been optimized to reduce glare, spillage or other light nuisance to adjacent sites and/or public road.
- The data storage rooms are supplied with fresh air which is sufficient to cool the space for the majority of the annual running hours. For a small number of hours during the peak cooling season, adiabatic cooling is required. The system utilises fans to supply air directly from outside to the data storage rooms. The air is warmed as it passes across the IT servers located in the data storage rooms, and subject to external ambient conditions, the air is either recirculated or returned to atmosphere.
- The mechanical system has various modes of operation to provide efficient and reliable cooling to the data processing area. The mechanical system is monitored and controlled by an electronic building management system (BMS). The system monitors conditions and responds to reduce fan speeds and pump speed to maintain the operating point at the minimum necessary to meet the data storage room environmental conditions.
- All air supply and extract systems serving the data storage rooms are provided

[11] 451 Research - Improving datacenter efficiency in Europe - the role of PUE

with high efficiency direct drive fans. The EC direct drive fan is the most efficient fan solution available to facilitate demand control.

ASSESSMENT OF SIGNIFICANCE

When assessing significance, the 2010 IEMA Principles Series on Climate Change Mitigation & EIA (IEMA, 2010) defines three overarching principles:

- The GHG emissions from all projects will contribute to climate change, the largest interrelated cumulative environmental effect;
- The consequences of a changing climate have the potential to lead to significant environmental effects on all topics in the EIA Directive (e.g. human health, biodiversity, water, land use, air quality); and
- GHG emissions have a combined environmental effect that is approaching a scientifically defined environmental limit; as such any GHG emissions or reductions from a project might be considered to be significant. The environmental limit is the global GHG emission budget that defines a level of dangerous climate change, and any GHG emission that contributes to exceedance of that budget or threatens efforts to stay within it can be considered as significant.

The 2020 Guidance (IEMA, 2022) document builds on those principles with three points:

- When evaluating significance, all new GHG emissions contribute to a negative environmental impact; however, some projects will replace existing development or baseline activity that has a higher GHG profile. The significance of a project's emissions should therefore be based on its net impact over its lifetime, which may be positive, negative or negligible;
- Where GHG emissions cannot be avoided, the goal of the EIA process should be to reduce the project's residual emissions at all stages; and
- Where GHG emissions remain significant, but cannot be further reduced, approaches to compensate the project's remaining emissions should be considered.

The criteria for determining the significance of effects is a two-stage process that involves defining the magnitude of the impacts and the sensitivity of the receptors. In relation to climate, the earth as a whole is a highly sensitive environment whilst the magnitude of impact is outlined below with the project being assessed against the recommended IEMA (IEMA, 2022) significance determination. This takes account of any embedded or committed mitigation measures that form part of the design which should be considered:

- Major or moderate adverse impact (significant): A project that follows a 'business-as-usual' or 'do minimum' approach and is not compatible with the net zero1 trajectory by 2050 or sectoral based transition to net zero targets, results in a significant adverse effect. It is down to the consultant completing the assessment to differentiate between the 'level' of significant adverse effects e.g. 'moderate' or 'major' adverse effects. A project's impact can shift from significant adverse to nonsignificant effects by incorporating mitigation measures that substantially improve on business-as-usual and meet or exceed the science-based emissions trajectory of ongoing but declining emissions towards net zero. Meeting the minimum standards set through existing policy or regulation cannot necessarily be taken as evidence of avoiding a significant adverse effect. This is particularly true where policy lags behind the necessary levels of GHG emission reductions for a science based 1.5°C compatible trajectory towards net zero.
- Minor adverse impact (not significant): A project that is compatible with the budgeted, science based 1.5°C trajectory (in terms of rate of emissions reduction) and which complies with up-to-date policy and 'good practice' reduction measures to achieve that has a minor adverse effect that is not

significant. The project may have residual impacts but is doing enough to align with and contribute to the relevant transition scenario. A 'minor adverse' or 'negligible' non-significant effect conclusion does not necessarily refer to the magnitude of GHG emissions being carbon neutral but refers to the likelihood of avoiding severe climate change and achieving net zero by 2050. A 'minor adverse' effect or better is a high bar and indicates exemplary performance where a project meets or exceeds measures to achieve net zero earlier than 2050.

- Negligible Impact (not significant): A project that achieves emissions mitigation that goes substantially beyond the reduction trajectory, or substantially beyond existing and emerging policy compatible with that trajectory, and has minimal residual emissions, is assessed as having a negligible effect that is not significant.
- Beneficial Impact (significant): A project that causes GHG emissions to be avoided or removed from the atmosphere has a beneficial effect that is significant. Only projects that actively reverse (rather than only reduce) the risk of severe climate change can be judged as having a beneficial effect.

The impact of the operational phase of the Proposed Development on climate was determined by an assessment of the direct (due to (worst-case) conventional diesel usage for the testing of back-up generators and in the event of a power failure) and indirect (associated with utility-supplied electricity) CO2 emissions over the period 2025 to 2030. The details and results of the assessment are provided in Section 7.2.2 of the Addendum to Chapter 9 of the EIAR. The change in the renewable fraction of electricity from the national grid with time has also been considered.

With a reduction in residual emissions through best practice and the implementation of a series of adaptive design measures, the net impact of the Proposed Development and the Overall Project is not significant. Given that the use of electricity to power the facility will achieve net zero by 2050 and the commitment to meet all interim fossil fuel derived GHG emissions associated with the Proposed Development by the purchase of Corporate Power Purchase Agreements (CPPAs) the predicted impact to climate is deemed to be ***indirect, long-term, negative and minor adverse***. The impact of the Overall Project, in line with the IEMA methodology (IEMA, 2022), is reduced to a ***minor adverse, non-significant*** impact.

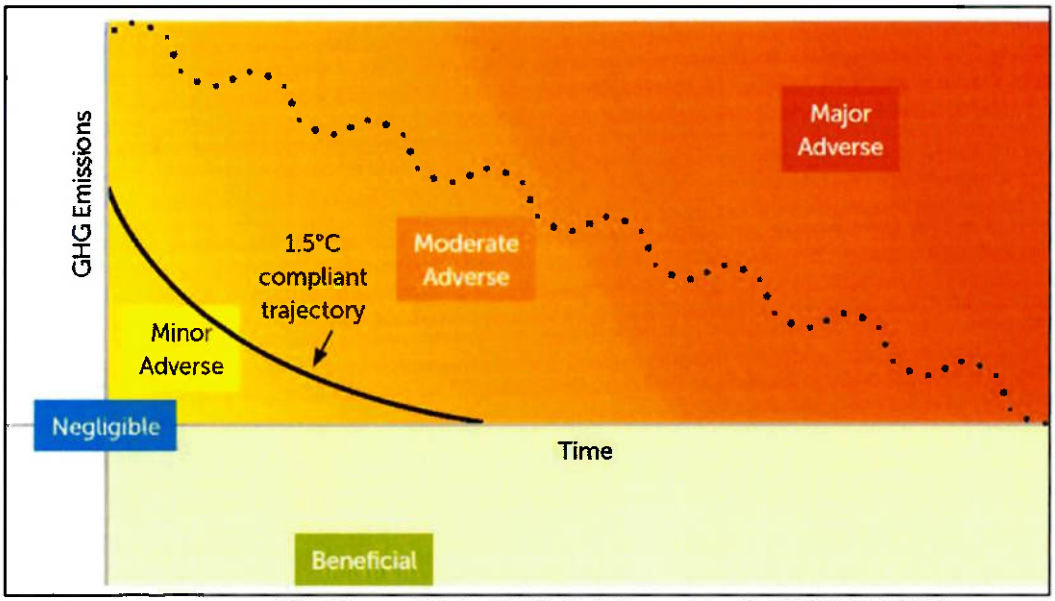

Figure 7 Diagram of Significance Criteria - GHGs Emissions vs Time To 2050 (IEMA, 2022)

Taking a conservative approach, when the CPPAs are taken into account, it is clear that post-mitigation the impact of the Proposed Development will be better than the 1.5°C compliant trajectory as shown in Figure 7 and thus the appropriate description of the

post-mitigation impact of the Proposed Development is a ***minor adverse, non-significant*** impact as outlined in Section 8.0 of the Addendum to Chapter 9 of the EIAR.

Appeal item A4.5
The appellants argue that Table 1.10 of the AWN FI response incorrectly stated data as prior to mitigation, even though they reflect an assumed 80% renewable generation.
&
Appeal item A4.6
The appellants argue that the predicted impact both before and after mitigation is understated, and that the predicted impact should not have assumed that 80% renewables penetration would be achieved.

Table 6 below (reproduced from Table 1.10 of the Addendum to Chapter 9 as submitted with the further information response) includes details of the Proposed Development and the Overall Project in the context of both the EU ETS and the electricity Sectoral Emission Ceiling.

Scenarios	% Of 2030 ETS Total[Note 1]	% Of Electricity Emission 2030 Ceiling[Note 2]	Significance (Prior to mitigation)	Significance (After mitigation)
Proposed Development	0.009%	2.2%	Moderate Adverse	Minor Adverse
Overall Project	0.028%	6.5%	Moderate Adverse	Minor Adverse

Note 1 ETS 2030 Total = 690.91 Million Tonnes CO_2eq
Note 2 Based on 5-year average 2026 - 2030
Table 6 GHG Emissions Associated With Each Scenario Compared To Sectoral Emission Ceiling & ETS

Table 6 shows the significance of the Proposed Development when compared to the Electricity 2030 Sectoral Emission Ceiling based on the approach set out in IEMA guidance (IEMA, 2022). The assessment is presented both prior to and post mitigation. As shown in Table 6, the impact of the Proposed Development prior to mitigation would be deemed to be a moderate, adverse impact. As outlined in Addendum to Chapter 9 of the EIAR, although the Proposed Development prior to mitigation is better than the "do-nothing" scenario of enterprise data centres, the impact would still be significant in the absence of appropriate mitigation. Also presented in Table 6 is the Proposed Development impact prior to and post mitigation.

As shown in Figure 8 below the power generation mix in 2030 will be likely 83% renewable rather than the assumed 80% renewable generation. The DECC publication "*Summary of Analysis to Support Preparation of the Sectoral Emissions Ceilings*" (DECC, 2022b) outlines the likely generation mix in 2025 and 2030 which has been used to derive the Sectoral Emission Ceilings. As shown in Figure 8 below, the power capacity mix will be dominated by renewables in 2030 accounting for 80-85% of the generation mix.

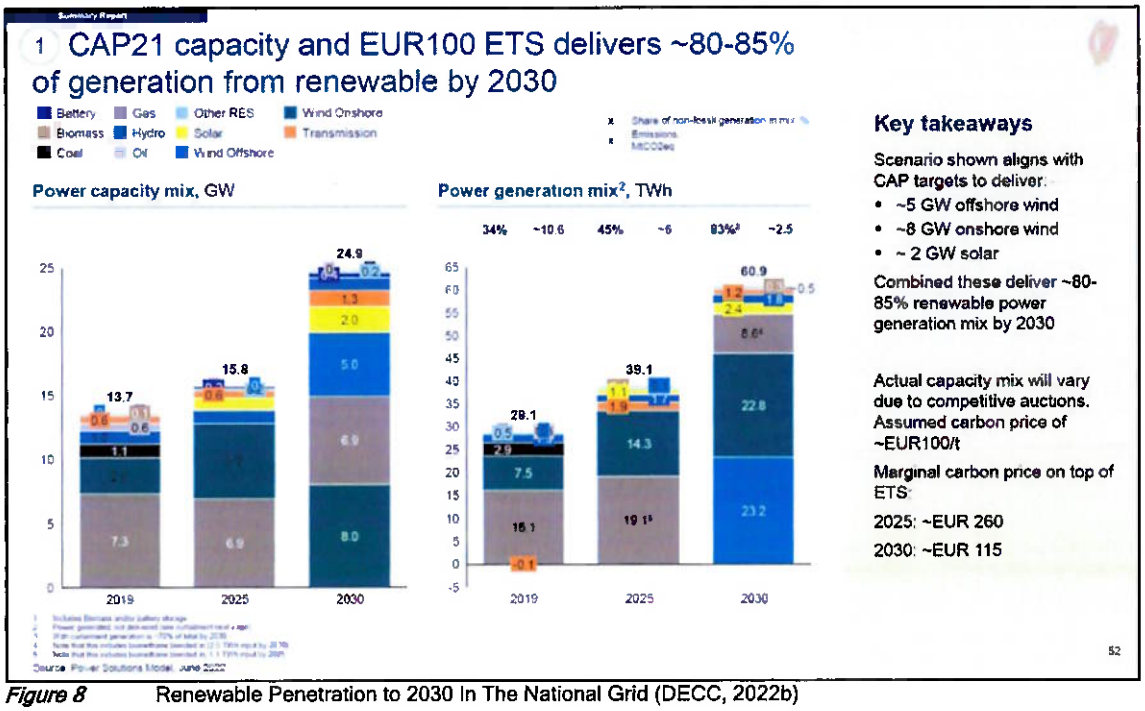

Figure 8 Renewable Penetration to 2030 In The National Grid (DECC, 2022b)

Probing deeper into the data in Figure 8 it should be noted that gas generation capacity will remain broadly similar between 2025 and 2030. However, by 2030 the amount of biomethane blended into natural gas will increase to 2.5TWh from 1.1TWh in 2025. Secondly, although the capacity of natural gas will remain largely unchanged, the utilisation of the gas generation stations will decrease significantly from 19.1 TWh to 8.6 TWh. In addition, the renewable fraction of the generation mix will increase from 45% in 2025 to 83% in 2030.

The percentage of renewables in the grid assumed for the purposes of the assessment is thus a conservative assumption on a reasonable worst case based on the data available and the interpretation of the relevant climate guidance (IEMA, 2020, 2022).

> *Appeal item A4.7*
> *The appellants argue that if the scenario of the development being powered by conventional fossil fuel derived generation was calculated, the impact would be 8.8% for the project, and 26% for the overall site. While the assessment indicates the impact reducing to 'minor adverse' after mitigation, the same mitigation is heavily reliant on CPPAs, which it is argued will not in fact provide for additionality. The appellants argue that therefore the impact should stay at moderate under the best case scenario, and major for the worst case (conventional generation) scenario.*

As outlined above the climate impact assessment was carried out on the basis of a reasonable worst case assumption which included for the appropriate percentage of renewables in the grid for each year of operation. As shown in Figure 8 above, the power generation mix in 2030 is forecast by DECC to be 83% renewable rather than the assumed 80% renewable generation confirming the approach of the climate impact assessment is appropriate. Using 100% conventional (oil, gas, coal) generation defies reality and totally ignores a plethora of Government policy and related initiates and Plans; ignores the extensive investment in renewable energy generation and power supply both within Ireland and within the power grids that Ireland is connected to; and does not consider the applicant's own renewable investments and record in recent years. Asking for 100% conventional (oil, gas, coal) generation as a basis for assessment is entirely incorrect and is not in line with a reasonable worst case scenario.

Condition 13 of the FCC decision to grant permission requires that the applicant's group enter into a CPPA for the energy use of the Proposed Development, thereby ensuring that

the development's energy use will be met with new renewable generation, ensuring that the new load added to the system is supported by new renewable energy so that achieving the goal of the Climate Action Plan requirement for 80% renewable electricity by 2030 is not made more challenging by this proposed development. In terms of the assertion that CPPAs do not provide "*additionality*", as outlined in detail in the Response to Item A1 and the wider Appeal Response, CPPAs are fully in line with both developing National and EU Policy. In addition, the appropriate IEMA guidance documents (IEMA, 2020, 2022) have specifically stated that CPPAs are an appropriate GHG mitigation which falls under the mitigation category of "*Substitution*" in the GHG management hierarchy.

Concerning the suggestion that the impact of the Proposed Development "*should stay at moderate under the best case scenario, and major for the worst case* (conventional generation) *scenario*", a review of the approach outlined in the Addendum to Chapter 9 of the EIAR clearly set out how the pre-mitigation impact of "moderate" and post-mitigation impact of "minor adverse" has been determined and is appropriate.

In line with EIAR Guidelines (EPA, 2022), "*When more specific definitions exist within a specialised factor or topic, ..., these should be used in preference to these generalised definitions*". Thus, the IEMA Guidelines (IEMA, 2022) offer a much more specific and robust assessment of current climate impacts and thus has been used in the current assessment.

As outlined in Section 1.2.1 and Section 2.0 of the Addendum to Chapter 9 of the EIAR, the key consideration when assessing the impact of the project in terms of GHG emissions is:

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

As these conservative assumptions are integral to the climate impact assessment which was documented in the Addendum to Chapter 9 of the EIAR and is summarised earlier in this section, the assertion that the "*predicted impact both before and after mitigation is understated*" is clearly mistaken and incorrect.

When assessing significance, the 2022 Guidance (IEMA, 2022) furthermore makes the following points, as outlined in Section 2.2 of the Addendum to Chapter 9 of the EIAR:

- Principle 1 - When evaluating significance, all new GHG emissions contribute to a negative environmental impact; however, some projects will replace existing development or baseline activity that has a higher GHG profile. The significance of a project's emissions should therefore be based on its net impact over its lifetime, which may be positive, negative or negligible;
- Principle 2 - Where GHG emissions cannot be avoided, the goal of the EIA process should be to reduce the project's residual emissions at all stages; and
- Principle 3 - Where GHG emissions remain significant, but cannot be further reduced, approaches to compensate the project's remaining emissions should be considered.

As outlined earlier in this section and as outlined in Section 7.2.4 of the Addendum to Chapter 9 of the EIAR, in reference to Principle 3 of IEMA Guidance (IEMA, 2022), it is the intention of the Operator that further measures to reduce GHG emissions will be implemented in line with "best practice" as outlined in the IEMA guidance (IEMA, 2022). Condition 13 of the FCC decision to grant permission requires that the applicant's group enter into a CPPA for the energy use of the Proposed Development, thereby ensuring that the development's energy use will be met with new renewable generation, which will ensure that the new load added to the system is supported by new renewable energy so that achieving the goal of the Climate Action Plan requirement for 80% renewable electricity by 2030 is not made more challenging by this proposed development As further detailed below, the Proposed Development's delivery of a CPPA(s) will ensure that the

new load added to the system is supported by new renewable energy so that achieving the goal of the Climate Action Plan requirement for 80% renewable electricity by 2030 is not made more challenging by the proposed development and any relevant update in the annual CAP review in CAP24.

IEMA (2022) states in regards to significance that:

"A project's impact can shift from significant adverse to non-significant effects by incorporating mitigation measures that substantially improve on business-as-usual and meet or exceed the science based emissions trajectory of ongoing but declining emissions towards net zero." (IEMA, 2022)

In addition, IEMA (2022) states that (bold added);

"*Where embedded/committed mitigation is relied upon in the assessment of effects, the practitioner must form a clear judgement that this mitigation is:*

1. *Evidenced in the design for the project*
2. *A committed goal that is secured, e.g. forming part of the description of development, **a specific planning condition/requirement**, or a legal agreement*
3. *Realistic and achievable to deliver."* (IEMA, 2022)

Thus, the Applicant has received a specific planning condition/requirement (Condition 13) in regard to the proposed CPPA to ensure any residual GHG emissions are mitigated, and a similar planning condition would be accepted if applied by the Board.

Figure 8 above, taken from IEMA (2022), shows the significance criteria (major adverse, moderate adverse, minor adverse, negligible, beneficial) in the context of relative GHG emissions and timescale (out to 2050) with the bold line showing the 1.5°C compliant trajectory.

The unmitigated GHG emissions will peak in 2027 as outlined in Table 4 although, as the facility is dependent on the national grid, there will be a rapid decrease in GHG emissions as the renewables penetration the grid reaching 83% by 2030 as predicted by DECC in Figure 8.

However, as outlined in the response to Item A1, CPPAs will be used as the appropriate mitigation measure to address residual GHG emissions on the path to net zero which is likely to be achieved by 2040 as outlined in the response to Item A4.

It should also be noted the inherent conservative nature of this approach. Given that the national grid will be likely to achieve net zero significantly before 2050, it can be argued that even in the absence of CPPAs the pre-mitigation scenario is, in actual fact, minor adverse as the trajectory of GHGs emissions will align with the 1.5°C compliant trajectory and achieve net zero in advance of 2050.

However, taking a conservative approach, when the CPPAs are taken into account, it is clear that post-mitigation the impact of the Proposed Development will be ahead of the 1.5°C compliant trajectory as shown in Figure 7 and thus the appropriate description of the post-mitigation impact of the Proposed Development is a ***minor adverse, non-significant impact*** as outlined in Section 8.0 of the Addendum to Chapter 9 of the EIAR.

4.4 Concluding Statement In Regard To Applicant Response To Item A4

In response to the arguments outlined in A4.1 - A4.4, the response above has confirmed that the Proposed Development:

- will not result in new unforeseen demand as there is an existing connection agreement since 2017 and with that demand with that demand built into all forecasts, as such it will not affect sectoral ceilings or the predicted quantity of conventional (fossil fuel) generation.

- In addition to this, a CPPA for the power demand for the proposed project has been welcomed and conditioned under the Planning Authority's decision to grant permission (while a similar approach and condition by the Board would be welcomed).
- The climate impact assessment for the Proposed Development and the overall project in the submitted EIAR and the Addendum to Chapter 9 of the EIAR was carried out in line with the relevant guidance is based on the IEMA 2022 guidance titled "*Assessing Greenhouse Gas Emissions and Evaluating their Significance*". As outlined in Section 2.0 of the Addendum to Chapter 9 of the EIAR, the assessment is based on a reasonable worst-case assessment, in line with the approach outlined in the IEMA 2022 guidance and it is clear that the impact of the Proposed Development is correctly, post-mitigation, classified as minor adverse.

In response to the arguments outlined in A4.5 - A4.6, the response above has confirmed that the Proposed Development with regard to the approach to the % of renewables in the national grid was conservative. By 2030 the renewable fraction of the generation mix will increase from 45% in 2025 to 83% in 2030 based on the latest research (DECC, 2022b). Thus, the percentage renewables in the grid is thus a conservative assumption on a reasonable worst case based on the data available and the interpretation of the relevant climate guidance (IEMA, 2020, 2022).

In response to the arguments outlined in A4.7, the response above has confirmed that the climate impact assessment was carried out on the basis of a reasonable worst case assumption which included for the appropriate percentage of renewables in the grid for each year of operation. Using 100% conventional generation defies reality; totally ignores a plethora of Government policy and related initiates and Plans; ignores the extensive investment in renewable energy generation and power supply both within Ireland and within the power grids that Ireland is connected to; and does not consider the applicant's own renewable investments and record in recent years. Suggesting 100% conventional generation as a basis for assessment is entirely incorrect and is not in line with a reasonable worst case scenario.

5.0 Item A5 - The EU ETS and National Carbon Budget / Sectoral Emission Ceilings

5.1 Overview

This section addresses the arguments raised in various appeals in regard to the comparison of the impact of the Proposed Development with the EU Emissions Trading System (ETS) and with the National Carbon Budget / Sectoral Emission Ceilings.

5.2 Summary of Key Appellant Points - Item A5

The argument put forward by the appellants is that the application placed undue weight on the inclusion of the indirect emissions from the Proposed Development within the EU Emissions Trading System (ETS). It is contended that the application sought to overlook national climate targets and emissions ceilings by arguing that the 2021 and 2023 Climate Action Plans state that the emissions associated with the development would be subject to EU-wide rather than national targets. The Friends of the Earth appeal claims that Pages 44 and 45 of the AWN Further Information response incorrectly state that the indirect electricity emissions and direct emissions on site will be compliant with section 13.3.5 of the CAP23 by virtue of their requirement for GHG permits under the ETS. The appeal highlights that the EU ETS does not replace or take primacy over the national carbon budget.

5.3 Applicant Response To Item A5

Both national and EU legislations are relevant when assessing direct and indirect GHG emissions associated with the operation of the Proposed Development. In terms of their ultimate goals, both national and EU legislation have the same goal of net-zero / climate neutral GHG emissions by 2050. Not only are both national and EU legislation relevant but due weight was placed on both systems in the planning application and the assessment of climate impact.

In regards to the relevance of the EU ETS system, the *Coyne v An Bord Pleanála* [12] High Court judgment stated at Para. 213:

> "*it suffices in EIA of a particular project, in which its indirect and cumulative effects by way of electricity generation of CO2 emissions are at issue, to do as was done here. Namely to identify and quantify energy demand and energy used, to identify and quantify the nature and magnitude of nature and magnitude of GHG emissions likely to result from that energy use (recognised in the papers as up to 180mw and 1,577 GWh annually) and to examine and analyse their contribution to national GHG emissions of the electricity generation sector* ***in the context of the ETS and national policy*** *to transition towards renewable electricity generation*" (emphasis added)

The national climate objective is set out in Section 3 of the Climate Action and Low Carbon Development Act 2015, as amended by the Climate Action and Low Carbon Development (Amendment) Act 2021 and is defined, under Paragraph 5(3)[1] as:

"The State shall, so as to reduce the extent of further global warming, pursue and achieve, by no later than the end of the year 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy (in this Act referred to as the 'national climate objective')."

At EU level the goal is set in the *Regulation (EU) 2021/1119 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law'), under Article 2 "Climate-neutrality objective":*

[12] [2023] IEHC 412

"Union-wide greenhouse gas emissions and removals regulated in Union law shall be balanced within the Union at the latest by 2050, thus reducing emissions to net zero by that date, and the Union shall aim to achieve negative emissions thereafter".

From an EU perspective, the most relevant policy which will have relevance to the indirect GHG emissions from electricity is the EU Emissions Trading System (ETS) which has been in continuous operation in the EU since 2005 and is currently in its fourth trading phase (2021-2030). The European Commission has stated that:

"The EU ETS is a cornerstone of the EU's policy to combat climate change and its key tool for reducing greenhouse gas emissions cost-effectively. It is the world's first major carbon market and remains the biggest one."[13]

As outlined in the Addendum to Chapter 9 of the EIAR, the EU publication "*The EU Emissions Trading System in 2020: trends and projections*" (EU, 2020), notes that the European Union's energy system is decarbonising rapidly. The report states:

"*Total ETS emissions from stationary installations declined by 9.1% between 2018 and 2019, the largest drop in a decade, driven by a strong decrease in coal use for power production*" (EU, 2020)

Figure 1.1 of the Addendum to Chapter 9 of the EIAR is the most recent verified emissions from the ETS covering 2005 - 2021 confirming this trend is continuing. The European Topic Centre on Climate report entitled "*Trends and projections in the EU ETS in 2020*" (ETC, 2020) indicates that the reduction in GHG emissions is predicted to continue up to at least 2030 due to current policies in place. As shown in Figure 1.2 of the Addendum to Chapter 9 of the EIAR, both the energy industries and "other industries" are predicted to decrease significantly by 2030.

Thus, in relation to the Proposed Development, the key GHG emissions will be indirect emissions from electricity suppliers and these electricity suppliers are obliged to operate within the EU ETS and remain within the carbon allowance which has been allocated to them or purchase additional allowances under the cap and trade system.

The EU, in May 2023, published *Directive (EU) 2023/959 Amending Directive 2003/87/EC Establishing A System For Greenhouse Gas Emission Allowance Trading Within The Union And Decision (EU) 2015/1814 Concerning The Establishment And Operation Of A Market Stability Reserve For The Union Greenhouse Gas Emission Trading System.* As part of this Directive, the cap on emissions has been tightened again to reduce emissions covered by the EU ETS by 62% by 2030 compared to 2005.

Nationally, the key legislative measures which are relevant, as outlined in Section 9.5.2.2 of the EIAR are the Carbon Budget programme and the Sectoral Emission Ceilings. The Carbon Budgets were proposed by the Climate Change Advisory Council, approved by Government and adopted by both Houses of the Oireachtas and comprise three successive 5-year carbon budgets. The total emissions allowed under each budget were set out in Table 9.5 of the EIAR, as well as the average annual reduction for each 5-year period.

As outlined in Section 9.5.2.2 of the EIAR, the CAP 2021 provided that the economy-wide carbon budgets would be supplemented by sectoral emissions ceilings, setting the maximum amount of GHG emissions that are permitted in a given sector of the economy during each five-year carbon budget. The sectorial Emission Ceilings for 2030 were published in July 2022 and are shown in Table 9.6 of the EIAR. Electricity has a 75% reduction requirement by 2030 and an Emissions Ceiling of 3 $MtCO_2e$ in 2030.

The 2023 Climate Action Plan, under Section 13.3.5 EU Emission Trading System, states:

[13] https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets_en

"The EU ETS is an important measure for reducing industry GHG emissions. The Fit for 55 proposals for the reformed EU ETS will increase emissions reductions in this sector from the current 43% to 61%, in the period 2005 to 2030. Changes include a steeper annual reduction in the emissions ceiling and reductions in free allowances, alongside the corresponding introductionof a carbon border adjustment mechanism." (CAP23, page 155).

The 2021 Climate Act also refers to EU law under Paragraph 9(6D):

"Revision of carbon budgets

6D. (1) The Minister may revise a carbon budget in the circumstances set out in subsection (2), (4) or (5).

(2) The Minister may revise a carbon budget where–

(a) new obligations are imposed on the State under the law of the European Union or any international agreement referred to in section 2, or

(b) there are significant developments in scientific knowledge in relation to climate change."

Thus, both EU and national legislation are relevant and there is likely to be continual legislative overlap between both EU and national legislations as both parties move forward with the same goal of net zero / carbon neutrality by 2050.

The assertion that national legislation has been ignored at the expense of EU legislation is clearly incorrect. In both Chapter 9 of the EIAR and the Addendum to Chapter 9 of the EIAR, both relevant national and EU legislation has been reviewed. Furthermore, as outlined in Section 7.2.4 of the Addendum to Chapter 9 of the EIAR, both the Proposed Development and the Overall Project have been assessed in the context of both the 2030 ETS Allocation and in terms of the 2030 Electricity Sectoral Emission Ceiling. Thus, the assessment approach was based on considering both EU and national legislations and determining which target was more onerous in terms of impact of the Proposed Development. In this case, the Sectoral Emission Ceiling was a more onerous target, and the impact of the assessment was based on both the pre- and post-mitigation impact of the Proposed Development relative to the Electricity Emission Ceiling. Additionally, a CPPA for renewable energy located in Ireland is proposed for the project and hence will not be relying solely on ETS/GHG permits as mitigation.

5.4 Concluding Statement In Regard To Applicant Response To Item A5

All relevant national and EU legislation has been reviewed at length in the. EIAR and in the Addendum to Chapter 9 of the EIAR, The assessment approach was based on considering both EU and national legislations and determining which target was more onerous in terms of impact of the Proposed Development. In this case, the Sectoral Emission Ceiling was a more onerous target, and the impact of the assessment was based on both the pre- and post-mitigation impact of the Proposed Development relative to the Electricity Emission Ceiling. Additionally, a CPPA for renewable energy located in Ireland is proposed for the project and hence will not be relying solely on ETS/GHG permits as mitigation.

6.0 Item A6 - Consistency with section 15 of the Climate Action and Low Carbon Development Act 2015, as amended

6.1 Overview

This section addresses the concerns raised in various appeals that the Proposed Development would not be in keeping with section 15 of the Climate Action and Low Carbon Development Act 2015.

6.2 Summary of Key Appellant Points - Item A6

The argument put forward in the appeals is that the Proposed Development would not be in keeping with section 15 of the Climate Action and Low Carbon Development Act 2015, as amended and should be refused.

Section 15 of the Climate Action and Low Carbon Development Act 2015, as amended states the following:

"*(1) A relevant body shall, in so far as practicable, perform its functions in a manner consistent with–*

(a) the most recent approved climate action plan,
(b) the most recent approved national long term climate action strategy,
(c) the most recent approved national adaptation framework and approved sectoral adaptation plans,
(d) the furtherance of the national climate objective, and
(e) the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State."

6.3 Applicant Response To Item A6

In contrast with the contention from the appellant that the Proposed Development is not in keeping with Section 15 of the 2015 Climate Act, as amended, the sections below set out in detail the reasoning as to why the Proposed Development is aligned with this section of the Act.

A6.1 the most recent approved climate action plan,

The 2023 Climate Action Plan (CAP) (Government of Ireland, 2022) provides a detailed plan for taking decisive action to achieve a 51% reduction in overall greenhouse gas emissions by 2030 and setting us on a path to reach net-zero emissions by no later than 2050, as committed to in the Programme for Government and set out in the Climate Act 2021. The plan outlines the current status across key sectors including Electricity, Transport, Built Environment, Industry and Agriculture and outlined the various broadscale measures required for each sector to achieve ambitious decarbonisation targets. CAP23 also detailed the required governance arrangements for implementation including carbon-proofing of policies and establishment of Sectoral Emission Ceilings and carbon budgets.

CAP23 has outlined the path towards the electricity target by 2030 of a 75% reduction in GHG emissions compared to 2018. The core measures are:

- Increasing the share of renewable electricity to 80%,
- Indicative Onshore Wind Capacity of up to 9GW,
- Indicative Offshore Wind Capacity of at least 5GW,
- Indicative Solar PV Capacity of 8GW.

CAP23 also outlines a suite of market incentives which will be developed to meet electricity demand with renewable energy generation including:

- "*Develop policies that support extra-large energy users to achieve carbon-free demand in Ireland so that electricity decarbonisation, demand efficiency and*

flexibility, and enterprise growth can go hand in hand. To include connection agreements; hybrid connections; non-firm connections where appropriate; onsite dispatchable generation; onsite storage; emissions reporting; and renewable PPAs in particular within the scope of this work;

- *In line with the Roadmap on Corporate Power Purchase Agreements, the SEAI, the CRU, and the System Operators, will work with Large Energy Users (LEUs) and enterprise development agencies to increase the demand flexibility of LEUs through enhanced reporting and matching of demand with usage of lower carbon energy sources, including increased transparency of emissions data, and regulatory incentives and disincentives".*

The CAP23 also refers to data centres in the context of the *Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy (2022)*. The CAP23 states, as outlined in Section 1.2.1 of the Addendum to Chapter 9 of the EIAR:

"In the short- to medium-term, new demand growth from large energy users, such as data centres, will have to be moderated to protect security of supply and ensure consistency with the carbon budget programme[30].

[30] https://enterprise.gov.ie/en/publications/government-statement-on-role-of-data-centres-in-enterprise-strategy.html"

The CAP23 refers to *'moderation of demand growth'*, and not to a complete moratorium on data centre development. In the context of the CAP23 and *Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy (2022)*, this proposal can be characterized as 'existing' demand rather than new unforeseen demand growth, given that there is an existing connection agreement to serve the development, which has been factored into EirGrid's energy projections and modelling since the connection agreement was signed in 2017.

The Government Statement effectively seeks to 'moderate' growth in demand from Data Centres, by narrowing the type of projects which will gain permission and be accommodated, via the principles contained therein. The Proposed Development meets each of those principles as outlined in Paragraphs 4.128 - 4.179 of the JSA cover letter to the Appeal Response.

In addition, as outlined in Section 10 of the Addendum to Chapter 9 of the EIAR, under Section 13.3.5 Emission Trading System, the CAP23 states:

"The EU ETS is an important measure for reducing industry GHG emissions. The Fit for 55 proposals for the reformed EU ETS will increase emissions reductions in this sector from the current 43% to 61%, in the period 2005 to 2030. Changes include a steeper annual reduction in the emissions ceiling and reductions in free allowances, alongside the corresponding introduction of a carbon border adjustment mechanism." (CAP23, page 155).

Thus, the indirect electricity emissions and the direct emissions from backup generators will both require greenhouse gas permits under the ETS in order to operateand thus the GHG emissions associated with the Proposed Development will be in line with Section 13.3.5 of the CAP23 which stresses the importance of the EU ETS in reducing industry GHG emissions.

Having regard to the foregoing, the proposal is in accordance with the provisions of CAP23.

A6.2 the most recent approved national long term climate action strategy,

In relation to 15.1(b) of the Act, as outlined in Section 10 of the Addendum to Chapter 9 of the EIAR, the Long-term Climate Action Strategy was published on the 28th April 2023. In relation to electricity, the Government has committed to the full decarbonisation of the

electricity system by 2050.

The Long-term Climate Action Strategy outlined the importance of (i) completing the actions in the Climate Action Plan, (ii) greater demand side management, (iii) better annual forecasting for the electricity and gas systems and (iv) security of gas supply infrastructure, particularly in the context of electricity generation.

The indicative pathway outlined in the Strategy for electricity includes:

- Build-out of renewable generation capacity, including onshore wind, offshore wind, and solar PV,
- Deployment of zero emissions gas to manage inter-seasonal variability,
- Upgrade of transmission and distribution networks to support significantly increased electricity demand in 2050.

In terms of electricity, the Long-term Climate Action Strategy states:

> *"Ireland will continue its efforts to decarbonise the electricity sector by taking advantage of its significant renewable energy resources in a way that is competitive, cost-effective and ensures the security of our electricity supply. By doing this, we will also decrease our dependence on imported fossil fuels. As Ireland decarbonises its energy system, demand for electricity will increase and total demand for natural gas will decrease. Ireland must ensure that its decarbonisation efforts are underpinned by security, and affordability, in how we access and use our energy resources"* (DECC, 2023).

In relation to the EU ETS, the Long-term Climate ActionStrategy states that:

> *"A strong price signal, as part of a reformed EU ETS, including progressively more restrictive rules on how many allowances will be available within the EU ETS, is expected to drive decarbonisation over the coming decade by increasing the cost to firms in the EU ETS of doing nothing to reduce their emissions"* (DECC, 2023).

In relation to data centres, the Long-term Climate Action Strategy states that:

> *"Energy demand, including data centres, will be expected to operate within Sectoral Emission Ceilings and further signals will be required to locate demand where existing or future electricity grid is available and close to renewable energy generation. Research and development in energy storage and flexibility (such as a science challenge to industry)Wbe required to put Ireland on a pathway to net zero-carbon data centres"* (DECC,2023).

The Proposed Development is in line with this strategy as the electricity associated with the project, due to commitments in the CAP23, will reduce in line with national policy and in line with EU policy as outlined in the EU Climate Law (EU, 2021) which has outlined a legally binding target to obtain net zero GHG emissions by 2050. Furthermore, the development is located to avail of the existing electricity grid (including infrastructure delivered on site by the applicant), and is subject to an existing connection agreement.

In summary, the Proposed Development is in keeping with the Long-term Climate Action Strategy as the electricity will reduce in line with both national and EU policy to reach net zero by 2050.

A6.3 the most recent approved national adaptation framework and approved sectoral adaptation plans,

The National Adaptation Framework (NAF) (DOCCE, 2018) has outlined several actions to help ensure a targeted approach to achieving climate resilience into the future. These include:

- Putting in place revised governance and reporting arrangements,
- Formalising the status of existing guidelines,
- Formalising long term operational support for key sectors,
- Facilitating the establishment of regional local authority climate action offices,
- Increasing awareness around climate adaptation and resilience,
- Integrating climate adaptation into key national plans and policies.

The NAF further states that in terms of specific actions:

> *"These actions will need to be underpinned by supporting objectives for the Framework including, assessing key risks and vulnerabilities, developing indicators, better coordination of national research priorities, ongoing reporting at National, EU and international level, increased alignment with strategic emergency planning, and further analysis of the implications of climate change and adaptation for the private sector."* (DOCCE, 2018)

The NAF (DOCCE, 2018) defines climate proofing as:

> *"Climate proofing is concerned with protecting development investments and outcomes from the impacts of climate change. It reduces the vulnerability of projects by: Analysing the risk that climate change poses and taking steps to counteract then." (Page 98)*

The Electricity & Gas Networks Sector Climate Change Adaptation Plan (DOCCE, 2022) identified the key climate impacts for the energy sector as:

- Flooding / changes in precipitation / extreme events,
- Temperature rise,
- Sea level rise,
- Changes in wind energy content.

As outlined in Section 2.3 of the Addendum to Chapter 9 of the EIAR, climate proofing of the project was undertaken using the approaches outlined in the *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment* (EC, 2013) and *IEMA EIA Guide to Climate Change Resilience and Adaptation* (IEMA, 2020). Both documents outline a methodology for undertaking a risk assessment where there is a potentially significant impact on the project receptors due to climate change. The approach to the assessment is based on the following steps:

- Identify potential climate change risks to a project;
- Assess these risks (potentially prioritising to identify the most severe); and
- Formulate mitigation actions to reduce the impact of the identified risks.

Tables 1.1, 1.2 and 1.3 of the Addendum to Chapter 9 of the EIAR outlined the Likelihood Categories, Measure of Consequence and Significance Matrix respectively based on this approach.

Under Section 5.2.1 "*Impact of Climate Change on the Operational Phase*" of the Addendum to Chapter 9 of the EIAR, it was noted that climate change has the potential to alter weather patterns and increase the frequency of rainfall in future years. Changes in climate may lead to a variety of impacts including:

- Increased average temperatures will lead to a greater requirement for cooling of the data centre leading to greater energy use and associated GHG emissions;
- Increase rainfall will lead to a greater risk of flooding;
- Periods of drought may lead to reduction in water availability.

Section 5.2.1 of the Addendum to Chapter 9 of the EIAR noted that there is:

> *"the potential for flooding related impacts on site in future years due to climate*

changes as outlined in Section 3.1 in the absence of mitigation. Chapter 7 (Hydrology) of the EIAR has investigated the likelihood of flooding and has found that there is no current or predicted flood risk (either fluvial, pluvial or coastal) for the site. As outlined in Chapter 7 of the EIAR, the facility will be attenuated with a flow control device, sized to contain a 1-in-100-year storm event and increased by 20% for predicted climate change to limit the surface water discharge from the site during extreme rainfall events.

Thus, in line with the methodology outlined in Table 1.1, Table 1.2 and Table 1.3 of Section 2.3 above, the impacts arising from extreme weather and flooding was assessedto be of low likelihood and with a moderate adverse effect leading to a finding of low risk and thus a non-significant impact."

Thus, the assessment of the Proposed Development has taken into account the relevant national and sectoral adaptation plans and is aligned with them.

A6.4 the furtherance of the national climate objective,

As outlined in Section 10 of the Addendum to Chapter 9 of the EIAR, in relation to 15.1(d) the national climate objective, the CAP23 has stated that:

"Under the Climate Action and Low Carbon Development (Amendment) Act 2021, Ireland's national climate objective requires the State to pursue and achieve, by no later than the end of the year 2050, the transition to a climate-resilient, biodiversity-rich, environmentally sustainable and climate-neutral economy. The Act also provides for a reduction of 51% in GHG emissions by 2030, compared to 2018 levels.

Our statutory national climate objective and 2030 targets are aligned with Ireland's obligations under the Paris Agreement and with the European Union's objective to reduce GHG emissions by at least 55% by 2030, compared to 1990 levels and to achieve climate neutrality in the European Union by 2050." (CAP23, page 30)

The Proposed Development will address residual GHG emissions by way of CPPAs prior to the achievement of net zero electricity by the national grid. As noted by the IEMA 2022 Guidance, in relation to the use of CPPAs the IEMA 2022 guidance states the following (bold added):

"Purchased green electricity tariffs (also green gas) ***are increasingly being considered within net-zero approaches.*** *In earlier versions of the Hierarchy these tariffs only appeared within COMPENSATE. This is still the case for market-based approaches that use certificates where additionality or quality thresholds are poor, or hard to substantiate. The hierarchy does now allow for higher quality energy tariff purchases within the SUBSTITUTE line, reflecting developing practice and some improved purchasing arrangements (e.g. higher quality procurement or quasi-investments via power purchase agreements)*." (IEMA, 2022)

Thus, the IEMA guidelines have highlighted the usefulness of CPPAs as an appropriate net-zero approach in line with the furtherance of the national climate objective.

The Proposed Development furthers the national climate objective as the Proposed Development and Overall Project will operate within the EU ETS which is the cornerstone of the EU's objective to reduce EU-wide GHG emissions by at least 55% by 2030 (compared to 1990) and to achieve climate neutrality by 2050. As outlined in the EU Climate Law (EU, 2021) under the Item (13): "*The EU ETS is a cornerstone of the Union's climate policy and constitutes its key tool for reducing greenhouse gas emissions in a cost-effective way."*

A6.5 the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State."

As outlined in Section 10 of the Addendum to Chapter 9 of the EIAR, in regards to section 15.1(e) the objective of mitigating greenhouse gas emissions, the Proposed Development

has the following benefits which will help to mitigate greenhouse gas emissions:

I. The Proposed Development will replace activities which have a higher GHG profile. Data centre facilities represent a significantly more efficient means of data storage when compared to a distributed model of enterprise data storage by individuals and companies (or 'enterprise sites'). A study published in 2020 by Science Magazine, found that while cloud computing productivity has grown globally by 550% between 2010 and 2018, energy consumption rose in tandem during the same period by just 6%, demonstrating the energy efficiency improvements of the industry, most notably by hyperscale data centres.

II. Customers are able to support their own goals to become sustainable by moving to the cloud. The results of a recent study of US enterprise data centres by 451 Research[14] found the Operator's data storage facilities to be 3.6 times more energy efficient than the traditional alternative and achieved an 88% reduction in carbon footprint for workloads that moved from on-premises data storage to the Operator's, helping the Operator's customers to become greener in the cloud.

III. As outlined in Section 10 of the Addendum to Chapter 9 of the EIAR, a report from the international Energy Agency (IEA) entitled "*Data Centres & Data Transmission Networks*" (IEA, 2021)[15] found that while global internet traffic surged by more than 40% in 2020, this strong growth in demandfor data centre services continues to be mostly matched by ongoing efficiency improvements for data centre infrastructure as shown in Figure 9.

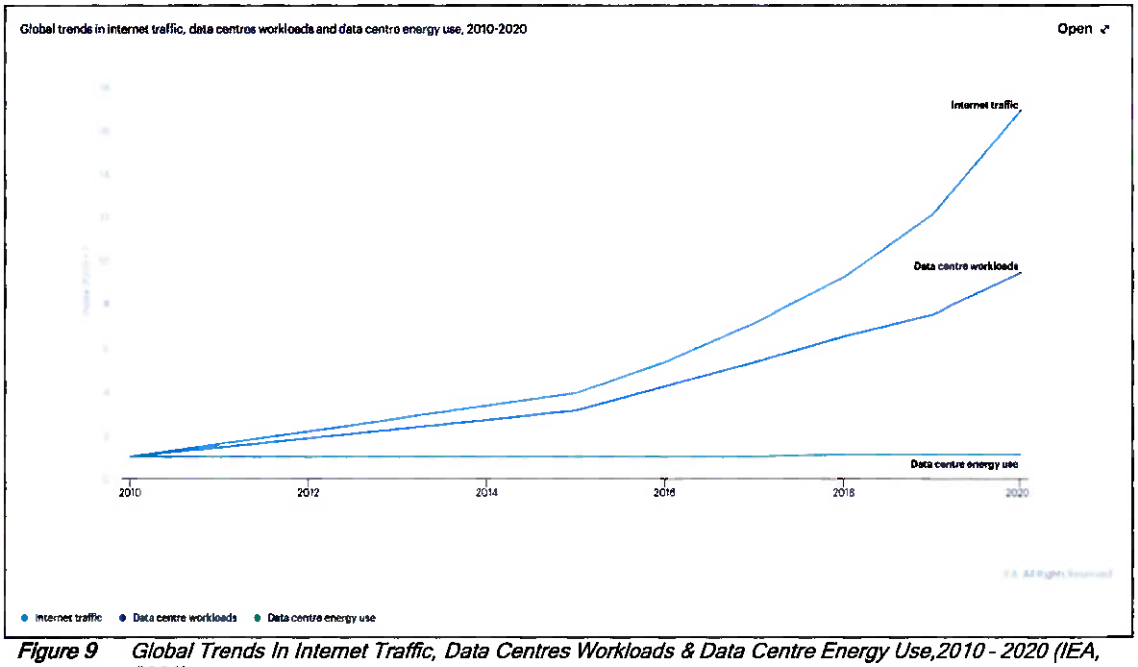

Figure 9 *Global Trends In Internet Traffic, Data Centres Workloads & Data Centre Energy Use,2010 - 2020 (IEA, 2021)*

IV. A range of design mitigation measures will be employed which is in line with "*best practice*" as outlined in IEMA (IEMA, 2022) including the following as previously outlined in the Addendum to Chapter 9 of the EIAR:

- A PV array proposed on each building E and F will consist of 285 PV modules, eachof 300Wp, yielding a total peak power generated of 85.5kWp.
- A rainwater harvesting system will be used to ensure non-potable process water for cooling needs for the operational development are met with no reliance on the public water mains.
- The Proposed Development is designed to fully comply with the Climate Neutral Data Centre Pact. The Proposed Development has an annualised design PUE of 1.12 as compared to the 1.30 set under the Climate Neutral

[14] https://assets.aboutamazon.com/b0/3e/b0fc6b8a4a85b38ac65a3fbc584c/11061-aws-451research-advisory-bw-cloudefficiency-eu-2021-r5-final-corrected-data.pdf
[15] https://www.iea.org/data-and-statistics/charts/global-trends-in-internet-traffic-data-centres-workloads-and-data-centre-energy-use-2010-2020

Data Centre Pact. In addition, the Proposed Development has a design WUE of 0.075 L/kWh as compared to the 0.4 L/kWh set under the Climate Neutral Data Centre Pact.

- Internal lighting shall be provided by highly efficient, low energy LED luminaires combined with presence detection controls or local switching where appropriate.
- The Operator has recently signed a supply agreement for renewable diesel (also referred to as hydrotreated vegetable oil or HVO) to their Irish Data Centers. Subject to commercial availability, it is expected that fuel for the Proposed Development will be renewable diesel.
- The Proposed Development incorporates design provisions to facilitate district heating including heat distribution pipework up to the site boundary. Please refer to Section 4 *Co-Location or Proximity with Future-Proof Energy Supply* of the John Spain Associates response cover letter of this Appeal Response for further detail.

V. Mitigation Measures will be implemented in line with "*best practice*" as outlined in IEMA (IEMA, 2022) as outlined below:

- A Corporate Purchase Power Agreement(s) will be entered into which demonstrates that the energy consumed by the development on site is met by new renewable energy generation in line with the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy (2022).
- Amazon is committed to building a sustainable business for its customers and the planet. In 2019, Amazon co-founded The Climate Pledge, a commitment to reach net zero carbon emissions by 2040, 10 years ahead of the Paris Agreement. As part of that commitment, the company is on a path to powering its operations by 100% renewable energy by 2025, five years ahead of its original 2030 target.
- Amazon reached 90% renewable energy in 2022. This includes AWS data centres. As of January 2023, Amazon has announced over 400 renewable energy projects representing 20 gigawatts (GW) of clean energy capacity.
- In 2022, the electricity consumed in 19 AWS cloud computing regions, including their cloud region in Ireland, was attributable to 100% renewable energy.

In terms of "*adapting to the effects of climate change in the State*", this has been addressed under *"(c) the most recent approved national adaptation framework and approved sectoral adaptation plans".*

6.4 Concluding Statement In Regard To Applicant Response To Item A6

The Proposed Development is aligned with Section 15 of the 2015 Climate Act, as amended as detailed above.

Firstly, the indirect electricity emissions and the direct emissions from backup generators will both require greenhouse gas permits under the ETS in order to operate and thus the GHG emissions associated with the Proposed Development will be in line with Section 13.3.5 of the CAP23 which stresses the importance of the EU ETS in reducing industry GHG emissions.

Secondly, the electricity associated with the project, due to commitments in the CAP23, will reduce in line with national policy and in line with EU policy as outlined in the EU Climate Law (EU, 2021) which has outlined a legally binding target to obtain net zero GHG emissions by 2050.

Thirdly, the assessment of the Proposed Development has taken into account the relevant national and sectoral adaptation plans and the environmental assessment process has ensured that the Proposed Development is climate proofed.

Finally, a range of mitigation measures will be employed which will ensure that direct and

indirect GHG emissions associated with the Proposed Development are minimised with residual GHG emissions fully mitigated through a CPPA.

7.0 Item A7 - Carbon Emissions During Construction

7.1 Overview

This section documents the approach to the climate impact assessment for the construction phase.

7.2 Summary of Key Appellant Points - Item A7

The argument is put forward that the Carbon Assessment report prepared by HJL Architects and submitted as part of the Further Information response assessed items A4 and A5 of the assessment methodology only (relating to Transport and Construction), but that it ought to have assessed items A1 to A3 (relating to raw materials). On this basis, it is contended that the assessment underestimated the carbon associated with the development.

7.3 Applicant Response To Item A7

Construction Stage GHG assessment Scope and Boundaries

As outlined in section 5 of this document the climate impact assessment for the Proposed Development and the overall project in the submitted EIAR and the Addendum to Chapter 9 of the EIAR was carried out in line with the relevant guidance is based on the IEMA 2022 guidance titled Assessing Greenhouse Gas Emissions and Evaluating their Significance and has correctly concluded an impact of short-term, negative and not significant for the construction stage of the project. Cumulatively, the overall project will have a ***short-term, negative*** and ***not significant*** cumulative impact on climate as outlined in Chapter 9 of the EIAR.

The assessment of the construction phase of the Permitted Development, the Proposed Development and the Overall Project's impact on climate was determined by a qualitative assessment of the nature and scale of greenhouse gas generating construction activities as documented in the EIAR and the Further Information response.

In determining the scope and boundary of the GHG assessment for the construction stage it is considered that at this preliminary stage of design, in line with IEMA guidance, a qualitive assessment would be most appropriate for the Construction phase given that the project is at a preliminary stage of design and detailed material quantities and specifications are not available. The qualitative assessment is in line with IEMA guidance which states that *'The challenge at the scoping stage is that there is often limited project information available from the design team at this early stage, resulting in a qualitative-based decision and professional judgement from the practitioner'.*

Baseline

In 2022, the total emissions of GHG emissions in Ireland was 60,760,000 tonnes across all sectors[16]. Given that the various activities will fall under both the EU ETS (such as cement manufacture, electricity, natural gas) whilst other activities will fall outside of this scope such as transport, import of materials etc. and will encompass several of the Sectoral Emission Ceilings, the relevant comparison should be the total GHG emissions in Ireland in any one year.

Emission Calculation Methodology & Data Collection

For the purpose of the qualitative climate assessment of the construction phase, it has been assumed conservatively that the construction of all buildings associated with the Proposed Development will occur at the same time - i.e. concurrently. This is a conservative assessment as the construction phase for the entire development is

[16] https://www.epa.ie/our-services/monitoring--assessment/climate-change/ghg/latest-emissions-data/#

estimated to take 3 years approximately (see Chapter 2 of the EIAR for further detail) and the Proposed Development will be constructed on a phased basis with Building E being constructed first, followed by Building F, and finally Building G. Construction works on one building will be nearing completion prior to works beginning on the next building.

GHG Emissions Inventory

The impact of the construction phase of the Permitted Development, the Proposed Development and the Overall Project on climate was determined by a qualitative assessment of the nature and scale of greenhouse gas generating construction activities.

As outlined in Section 9.5.1.2 of the EIAR, construction traffic would be expected to be the dominant direct source of greenhouse gas emissions as a result of the construction of the Proposed Development. Construction vehicles and machinery will give rise to CO_2 and N_2O emissions during construction of the Proposed Development. The Institute of Air Quality Management (IAQM) document '*Guidance on the Assessment of Dust from Demolition and Construction*' (IAQM, 2014) states that site traffic and plant is unlikely to make a significant impact on climate.

Other climate impacts at construction stage were identified as:

- Soil will be generated as part of the site preparation works and during excavation for installation of foundations, drainage services and ancillary infrastructure;
- Embodied carbon associated with the raw materials used in the construction of the Proposed Development including cement and steel will lead to indirect GHG emissions at the point of manufacture;
- Following completion of the building shell, commissioning of the mechanical and electrical equipment fitted within the building is undertaken;
- Infilling and landscaping will be undertaken. Spoil generated during site preparation will be re-used where possible;
- Temporary storage of construction materials and fuels; and
- Construction traffic accessing the site will emit air pollutants and greenhouse gases during transport.

As outlined in Section 4.1 of the Addendum to Chapter 9 of the EIAR, an assessment was undertaken of the likely carbon to be generated during the construction phase (entitled "1(e) A4 and A5 Carbon Assessment" by Henry J Lyons (HJL) which has been prepared as part of the further information submission). The assessment was carried out using OneclickLCA software in compliance with EN 15978 and Level(s) indicator 1.2, according to current best practice, conservative assumptions in combination with plausibility considerations and expert judgement.

Thus, based on the foregoing, a comprehensive qualitative assessment of the climate impact at construction stage was provided in the submitted EIAR and the Further Information response to Fingal County Council, along with a quantitative assessment of stages A4 and A5 submitted with the Further Information response (as specifically requested by the Planning Authority).

However, the Colin Doyle appeal states:

"Based on the quantities of concrete and steel listed in the report, and using typical factors for associated emissions, I calculate emissions of over 27,000 tonnes, which would be 664kgCO/m2, when added to the approx. 100/m2 for A4 and AS gives a total of 764 kg/m2. This is more than seven times the estimate by Henry J Lyons."

In direct response to the above appeal point, the GHG has been calculated for the building shell materials and construction phase and is contained in HJL report included in the appeal response (Appendix 4) and summarised below. The likely carbon to be generated during the construction phase of the building shell including materials (entitled "1(e) A1 to A3 Carbon Assessment" by HJL) has been prepared as part of the Response To Appeal submission with the summary results shown in Tables 2a and 2b.

Indicator	Unit	Product Stage (A1-A3)
GWP +20%	$kgCO_2e/m^2$	621.2
CGWP	$kgCO_2e/m^2$	517.7
GWP -20%	$kgCO_2e/m^2$	414.2
Notes	Impacts refer to the GWP of 1m 2 of GIA of the Shell & fitout of proposed data centre development at Cruiserath Road, Dublin 15 and ancillary buildings for module A1-A3 only.	

Table 2a. Results summary of baseline scenario

Indicator	Unit	Product Stage (A1-A3)
GWP +20%	kgCO2 e /m2	295.4
GWP	kgCO2 e /m2	246.2
GWP -20%	kgCO2 e /m2	197
Notes	Impacts refer to the GWP of 1m 2 of GIA of the Shell & fitout of proposed data centre development at Cruiserath Road, Dublin 15 and ancillary buildings for module A1-A3 only.	

Table 2b. Results summary of mitigation scenario

The floor area of the Proposed Development will be approximately 43,011 m^2. Thus, for the mitigated scenario with a GHG emission rate of 246.2 $kgCO2eq/m^2$ for the A1-A3 carbon assessment, the total GHG emissions will be approximately 10,589 tonnes CO2eq during the A1-A3 construction phase. As outlined in Chapter 2 of the EIAR, the construction phase will be approximately three years and thus the total emissions from construction should be spread over this time period. Thus, on an annual basis, the total GHG emissions during construction (A1-A5) for the shell and fit out will be approximately 3,530 tonnes CO2eq.

GHG Emissions Impact assessment and Mitigation Measures

Mitigation measures will be implemented in line with "best practice" as outlined in IEMA (IEMA, 2022) including Eliminate, Reduce, Substitute. The objective of the mitigation measures outlined below is to ensure that GHG emissions are minimized wherever possible during the construction phase of the Proposed Development and the Overall Project by eliminating, reducing and substituting. As part of The Climate Pledge, Amazon and Amazon Web Services (AWS) are focused on increasing energy efficiency, expanding the use of renewable energy, and reducing the embodied carbon[17] of their infrastructure to reach net-zero carbon by 2040.

The mitigation measures which will be employed with regards to reducing embodied carbon emissions on the construction of the Proposed Development is outlined below:

- Low carbon products and manufacturers were specified where possible to reduce A1-A3 emissions.
- The upfront embodied carbon of concrete was reduced from baseline scenario by specifying concrete with 40% GGBS content in mitigation scenario.
- The embodied carbon of steel was reduced in the mitigation scenario in comparison to the baseline by specifying green steel with a high recycled content sourced from steel mills using electric arc furnace production processes. Unlike conventional steel produced from primary materials, coal, and gas, its suppliers are using up to 100% recycled content and are powered by electricity only, reducing embodied carbon up to 70%. The steel reinforcement bars of the mitigation scenario contain 97% recycled content for steel reinforcement bars, and steel is specified from low carbon manufacturers.

[17] https://www.aboutamazon.com/news/sustainability/aws-decarbonizing-construction-data-centers

- Replacing high carbon materials with lower upfront embodied carbon (A1-A3) material reduces the carbon generated through the materials wastage on site, resulting in less carbon generation during the construction stage (A5).
- Reducing on site material waste by 50% from the baseline scenario. The baseline material waste figure is as recommended by OneClickLCA for each material. The wastage values are set based on typical wastages and will vary based on construction processes, building and design.
- Reducing site operations and waste handling emissions by 50% by reducing on site fuel and electricity consumption by 50% from baseline scenario. This target is in accordance with published decarbonisation roadmaps by a tier one building contractor.
- Outlined actions to achieve a 50% reduction include use of low carbon renewable diesel instead of conventional diesel, elimination of combustion engine cars, and the implementation of energy efficiency innovations and management on site.
- All vehicles will be required to switch off engines when stationary (no idling);
- All vehicles will be serviced and maintained to ensure emissions are minimised;
- Where practicable, building materials will be sourced locally (within 20-25km) to reduce the embodied emissions associated with transport.

As a result of these mitigation measures, the GHG emissions will be reduced by over 52% in the A1-A3 product stage and over 45% during the A3-A4 construction phase compared to the baseline scenario.

As outlined in Section 4.1 of the Addendum to Chapter 9 of the EIAR, an assessment was undertaken of the likely carbon to be generated during the construction phase for A4-A5. The assessment found that for the mitigated scenario there was an associated GHG emission rate of 53.5 kgCO2eq/m^2 for the A4-A5 carbon assessment. Thus, based on the floor area for the Proposed Development of approximately 43,011 m^2, the mitigated scenario (with a GHG emission rate of 53.5 kgCO2eq/m^2 for the A4-A5 carbon assessment) leads to a total GHG emissions of approximately 2,301 tonnes CO2eq during the A4-A5 construction phase.

Combining the assessment for the construction phase of A1-3 with the construction phase for A4-A5 lead to a mitigated scenario for GHG emission rate of 299.7 kgCO2eq/m^2 for the A1-A5 carbon assessment. Thus, based on the floor area for the Proposed Development of approximately 43,011 m^2, the mitigated scenario (with a GHG emission rate of 299.7 kgCO2eq/m^2 for the A1-A5 carbon assessment) leads to a total GHG emissions of approximately 12,890 tonnes CO2eq during the A1-A5 construction phase.

As outlined in Chapter 2 of the EIAR, the construction phase will be approximately three years and thus the total emissions from construction should be spread over this time period. Thus, on an annual basis, the total GHG emissions during construction (A1-A5) will be approximately 4,297 tonnes CO2eq.

To put these emissions in context, it is necessary to compare the project emissions with the total GHG emissions in Ireland with the most recent year available, 2022.

In 2022, the total emissions of GHG emissions in Ireland was 60,760,000 tonnes across all sectors[18]. Given that the various activities will fall under both the EU ETS (such as cement manufacture, electricity, natural gas) whilst other activities will fall outside of this scope such as transport, import of materials etc and will encompass several of the Sectoral Emission Ceilings, the relevant comparison should be the total GHG emissions in Ireland in any one year. Thus, the total GHG emissions from each year of the construction phase will be equivalent to 0.0071% of total GHG emissions in Ireland.

Relative to the operational phase, each of the three years of the construction phase will be approximately 2.8% of the Year 2025 GHG emissions outlined in the Addendum to Chapter 9 of the EIAR. However, in contrast to the operational phase, most GHG emissions during the construction phase will not count towards the Electricity Sectoral Emission Ceiling but

[18] https://www.epa.ie/our-services/monitoring--assessment/climate-change/ghg/latest-emissions-data/#

will, as discussed above, relate to a range of emission sectors and also include GHGs arising from abroad.

7.4 Concluding Statement In Regard To Applicant Response To Item A7

In summary, the submitted EIAR and the Further Information provided a qualitative assessment of the climate impact of the construction stage in accordance with the relevant guidance. This was supplemented by a quantitative assessment (Stages A4 and A5) of the construction stage GHG emissions.

The current appeal response, in direct response to the grounds of appeal raised by Colin Doyle, includes an additional quantitative assessment of construction carbon impacts (A1-A3). Overall, for stages A1-A5, the construction phase impact of the Proposed Development is insignificant in the context of Ireland's GHG emissions over the period 2023-2027.

8.0 Item A8 - Impact of the Operating Hours of Generators and Impact On Air Quality

8.1 Overview

This section addresses the concerns raised in various appeals in relation to backup generators both in terms of the hours of operation and in terms of their potential impact in terms of human health.

8.2 Summary of Key Appellant Points - Item A8

The following arguments are raised in this regard of relevance to air quality & climate:

A8.1 The appellant argues that insufficient information has been provided to guarantee that the generators are for emergency use only. The appellants argue that EirGrid may require data centres to use on site generation during periods of grid constraint, and this could result in significantly higher usage levels than 72 hours. The appellant also argues that no information is provided to support the applicants claim that they expect to run the generators for less than 18 hours per year. The appeal contends that there is no guarantee that the IED licence for the wider site will be amended, to restrict the operation of generators to 72 hours or for monitoring of run hours.

A8.2 The appellant argues that the application is not clear whether the 72 hours operation quoted for the generators relates to all generators across the wider site, or if it relates to different generator units running at different times, amounting to 72 hours in total.

A8.3 The appellant argues that the assessment of impact from the backup generators on site (in particular in respect of NO_2) is insufficient. It is argued that the mitigation to ensure air quality standards are met has not been set out with sufficient clarity.

8.3 Applicant Response To Item A8

The relevant queries have been responded to in turn below.

*A8.1 **The appellant argues that insufficient information has been provided to guarantee that the generators are for emergency use only. The appellants argue that EirGrid may require data centres to use on site generation during periods of grid constraint, and this could result in significantly higher usage levels than 72 hours. The appellant also argues that no information is provided to support the applicants claim that they expect to run the generators for less than 18 hours per year. The appeal contends that there is no guarantee that the IED licence for the wider site will be amended, to restrict the operation of generators to 72 hours or for monitoring of run hours.***

Response To A8.1

<u>Basis for Assumption of Generator Use:</u>

The following section has been prepared with inputs from the Applicant.

As set out in the AWN Consulting Further Information Response 1(c):

"the back-up emergency generators for the proposed development are to safeguard the continued provision of key online services which companies and individuals in Ireland access and rely on daily. In the event of a loss of power supply (e.g. temporary grid blackout) the emergency back-up generators will be utilised to maintain power supply. These generators are designed to activate and provide power to the data centre pending restoration of mains power. To ensure the emergency generators are ready in the event of grid power failure, the generators are tested periodically at

a frequency set out in the submitted EIAR in Section 9.2.3.1."

As with other mission critical facilities (such as airports, hospitals, centers for fire, police and public administration services), backup generators are designed to operate in response to power losses caused by **unplanned events** and **planned events**.

AWS serve developers and enterprises (Customers) of all sizes, including start-ups, government agencies, and academic institutions, through AWS, which offers a broad set of on-demand technology services, including compute, storage, database, analytics, and machine learning, and other services. Customers of AWS have corporate and regulatory obligations regarding information security and availability, and these obligations are subject to annual audits and reporting. AWS System and Organization Controls (SOC) Reports[19] are independent third-party examination reports that demonstrate how AWS achieves key compliance controls and objectives. The purpose of these reports is to help Customers and their auditors understand the AWS controls established to support operations and compliance. AWS Control Activity (CA) 5.10 ensures that "*Amazon-owned data centers have generators to provide backup power in case of electrical failure.*" An example of how these control objectives are used by Customers is to demonstrate assurance of security, availability, confidentiality, and privacy set forth in the Trust Services Criteria Section 100, "2017 Trust Services Criteria for Security, Availability, Processing Integrity, Confidentiality, and Privacy. The Trust Services Criteria control criteria utilized to evaluate and report on the suitability of the design and operating effectiveness of controls relevant to the Security, Availability, Processing Integrity, Confidentiality, or Privacy of an organization's information and systems. The Trust Services Criteria established by the Assurance Services Executive Committee (ASEC) of the American Institute of Certified Public Accountants (AICPA).

As set out above, backup generator usage can be required for a number of events:

Unplanned events: these can be caused by natural or human-caused hazards such as storms, floods, train derailments, operator/human-errors, general accidents and vandalism. The events include unusual and/or unforeseeable events that are outside of AWS' control (such as grid power outage, failure, overload, instability, load reduction requests, and load shedding event). They also include events that are within AWS' control such as essential maintenance and/or repair of critical equipment and infrastructure that forms part of the Data Centre's power distribution system (such as Medium Voltage breaker repair). These type of events can result in the operation of some or all of the back-up generators to maintain normal operational service.

Planned events: this includes planned maintenance and repair of infrastructure, planned infrastructure and equipment upgrades and component replacement (such as end-of-life replacement). It also includes routine testing of the back-up generators to ensure operational readiness in accordance with the applicable AWS testing regime that is in place from time to time. These type of events can result in the operation of some or all of the back-up generators to maintain normal operational service.

Example of unplanned events include, but are not limited to:

- Utility shuts down power to do emergency repairs on the utility's equipment. Power goes down without notice or with very short notice to AWS.
- Utility directs/requests AWS to come off grid supply because system conditions are such that area reliability would be compromised by maintaining service. Power goes down without notice or with very short notice to AWS.
- Storm/earthquake/other unforeseen disaster takes down power and AWS runs backup generators to provide power.
- AWS-owned/operated breaker ceases functioning properly and must be repaired. AWS must disconnect breaker from utility power and go on backup generators to provide power to data center while breaker is being repaired.

[19] https://aws.amazon.com/compliance/soc-faqs/

- Utility provides advance notice that it needs to do load checks along power lines and will turn off power to the substation. AWS runs generators during the time that utility turned off power to the substation.
- Electrical Line Up Element (e.g. Busbar, Unit sub transformer, LV breaker) Repair: Electrical system ceases functioning properly and must be repaired. Site must disconnect from utility power in order to repair it. Uses back-up generators to provide power to data centre while being repaired/replaced.

The frequency/occurrence of unplanned events ranges from events of low frequency (or return period) (such as every year) to very low frequency (every 20+ years). Unplanned events can take one to several hours to resolve, there is no guarantee that two similar unplanned events (e.g. repair of LV breaker) will take the same period of time, or that if an event (e.g. repair of LV breaker) occurs that it will not reoccur again within a specified timeframe. As set out in the Further Information Response, with numerous facilities across Europe and other locations, AWS sets internal design standards for their data centres. 72 hours / 3 days of generator use across a year is the internal standard modelled for generator use, unless local code, utility or regulators require, or where there is other localised data recommending a higher or lower number of hours - refer to below regarding the assessment of localised grid data for the Proposed Development. In Europe, AWS seek to apply this 72-hours across as many facilities to best-standardize our internal operational procedures and practices and those of our utility providers, plant and equipment maintenance vendors, and other processes needed to address the various situations where utility power is no longer available to our facility. With respect to the Proposed Development, 72-hours backup generator availability is a conservative worst case scenario considering the historic occurrence of events and an assessment of a future risks.

To demonstrate that this assessment is reasonable, it's comparable with industry standards. By way of example, American National Standards Institute (ANSI) and Telecommunications Industry Association (TIA) 942-A standard which requires 72 hours for Rated 3 Accreditation. Additionally, the regulatory requirement in Frankfurt, Germany require 96 hours of backup generator availability which is not dissimilar. The UK Environment Agency's draft guidance document '*Data Centre FAQ Headline Approach*' (version dated November 2022) references 72 hours as default assumption to be considered when modelling.

Regarding the appellants assertion on grid stability, the Commission for Regulation of Utilities (CRU) is Ireland's independent energy and water regulator The CRU's "*role in energy is to maintain security of supply, ensure efficient network delivery and promote competition and innovation in the generation and supply of electricity and supply of natural gas.*" On 29 September 2021, the Commission for Regulation of Utilities (CRU) published a programme of work to increase generation capacity to provide additional stability and resilience to the Irish energy system over the following years. The *"programme of work was in response to EirGrid's identification of a potential capacity shortfall, if no action was taken, from 2021 to 2026*[20]*."*

The February 2023 update (footnote 19) from the CRU provides a detailed update on the programme of actions that are being undertaken to address security of supply concerns. In its update on capacity market auctions (where new generation supply contracts are awarded) the report details that a total of 1,471 MW of new generation capacity was awarded in the T-3 auction (January 2022) and that this new generation capacity will come online in October 2024. A further 381 MW of new generation capacity was awarded in the T-4 auction (March 2022) and this new generation capacity will come online in October 2025. Additionally, details are provided on the updated DSO Load Shedding Plan[21], which introduced a new provision to reduce demand from classes of large energy users (LEUs) (such as Data Centre operators) in the event of a System Emergency. The DSO Load Shedding Plan sets out a protocol for large energy users to utilise their onsite back-up generators - at the explicit request of ESBN/EirGrid - in order to reduce demand

[20] https://cruie-live-96ca64acab2247eca8a850a7e54b-5b34f62.divio-media.com/documents/CRU202317_Electricity_Security_of_Supply_Programme_of_Work_Update_February_2023.pdf
[21] https://www.esbnetworks.ie/docs/default-source/publications/approved-dso-load-shedding-plan-01.10.2022.pdf

from the electricity grid. This frees up power, at times when the grid is under pressure, to meet demand elsewhere on the system. If AWS receive direction/requests from the Utility, we will be obligated to follow them in line with our connection agreement while observing all other relevant consents.

AWS, and some other large energy users, already provide such assistance, some AWS sites reduce power consumption and rely on backup generators for brief periods, when asked to do so by EirGrid. AWS are happy to facilitate such requests as part of EirGrid's efforts to maintain a stable and functioning electricity grid, as set out above, such requests are factored into the assumption of backup generator use modelled in the EIAR. As set out in the Further Information Response at 1(c), there no locally set standard for the number of hours generator use to be modelled, thus internal standards are used for modelling which include an assumption for unplanned events which impact the Proposed Development but are outside of AWS's control (such as grid power outage, failure, overload, instability, reduction, and load shedding event). The assumption for the durations of such events, to the extent possible, takes into account publications including EirGrid's Winter Outlook 2023/24[22] which states:

"The Expected Unserved Energy (EUE) figure would suggest that, on average, electricity consumers could potentially be without supply for up to 2 hours over the winter period. However, emergency protocols are in place with large energy users that would mitigate the impact on homes and businesses, where sufficient notice of an event can be provided (minimum of 1 hour). LOLE [Loss of Load Expectation] *and EUE are metrics used to measure the risk or likelihood of such an event happening. This does not necessarily mean that electricity consumers will be without supply for any period during the winter. In last year's Winter Outlook, the EUE figure suggested that consumers could be without power for 4 hours, yet consumers experienced no loss of power during the winter due to capacity issues. Based on information at the time of the data freeze, mid-December is expected to be the most onerous period from a capacity margin perspective."*

As set out above, the Winter Outlook 2022/23 had LOLE and EUE assumptions over twice that predicted for this Winter (2023/24). As set out in the EirGrid's Winter Outlook 2023/24, there are a number of assumptions which go in to creating such forecasts and that *"other conditions would have to be present or multiple and significant failures occur to cause a system-wide blackout"*. As such, these unforeseen system emergency conditions do not form part of AWS's generator use assumption for the Proposed Development. At the Permitted Developments within the wider landholding (i.e. Building A, B & C), AWS have not exceeded 18 hours operation in line with the EPA guidance for the Operation of emergency generation plant by large energy users[23] since those buildings came into use Q3, 2020. Finally, it is understood (as set out in Electricity Security of Supply Programme of Work Update February 2023) that the risk of electricity generation gaps are short-term (2021-2026) in nature and in this regard we note that as set out in the above, the assessment assumed 100% operation of the entire Proposed Development in 2025. In reality, there will be a ramp-up period with 100% operation not occurring until mid-2027, which puts the operation of a large portion of Proposed Development beyond the reported security of supply concerns. While it is acknowledged that there is a *"potential capacity shortfall"* in the short term, the information above confirms that 72-hours backup generator availability for the Proposed Development is a conservative worst case scenario considering the historic occurrence of events and an assessment of a future risks.

The recent *Coyne v An Bord Pleanála*[24] High Court judgment addressed the existence of uncertainty and how account should be taken of that uncertainty with the relevant quotes from Paragraphs 125 - 127 shown below:

> *"125 As to "Assessing Significant Effects" the 2013 Guidance [2013 Guidance on Climate Change] states that many assessment approaches used in EIA have the capacity to address climate change. "There are, however, three*

[22] https://www.eirgridgroup.com/site-files/library/EirGrid/ROI-Winter-Outlook-Report_2023.pdf
[23] https://www.epa.ie/publications/licensing--permitting/industrial/ied/Advice-Note-on-large-scale-EG-operation-21122021.pdf
[24] [2023] IEHC 412

fundamental issues that you should consider when addressing climate change and biodiversity: the long-term and cumulative nature of effects, complexity of the issues and cause-effect relationships and uncertainty of projections." There follows a consideration of all three issues, the premise of which is that EIA should address them. I would add that this premise must itself be premised on climate change having been scoped into the EIA as a likely significant effect.

126 *The 2013 Guidance states that EIA, to properly address climate change, should take into account its complexity (including of causal relationships) and long-term direct and indirect impacts and consequences. EIA should describe the sources of, and characterise the nature of, uncertainty. Judging an impact's magnitude and significance must be context-specific. The contribution of an individual project to GHGs may be insignificant on the global scale but may be significant on the local/regional scale, in terms of its contribution to set GHG-reduction targets.*

127 *Finally, it is worth noting some of the "bullet points" tabulated in 2013 Guidance as "Critical challenges for addressing climate change ... in EIA":*

- *Manage complexity. Consider the complex nature of climate change and biodiversity and the potential of projects to cause cumulative effects.*
- *Be comfortable with uncertainty, because you can never be sure of the future. Use tools such as scenarios (for example, worst-case and best-case scenarios) to help handle the uncertainty inherent in complex systems and imperfect data. Think about risks when it is too difficult to predict impact.*
- *Base your recommendations on the precautionary principle and acknowledge assumptions and the limitations of current knowledge.*
- *Be practical and use your common sense!*

The guidance also states that "considering a range of possible uncertain futures and understanding the uncertainties is part of good EIA practice and permits better and more flexible decisions.

In other words, it is no error to acknowledge and assess uncertainty and risk as best you reasonably can. Error may well lie in ignoring them."

Concluding Statement In Regard To Applicant Response To Item A8.1

The assessment undertaken in the Addendum to Chapter 9 of the EIAR has been based on a reasonable worst-case assessment in line with both the Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (EU, 2013) and Assessing Greenhouse Gas Emissions and Evaluating their Significance, 2nd Edition (IEMA, 2022). The reasoning for this conclusion is outlined below.

Firstly, the operation of backup generators is predicated on a number of different scenario types, broadly speaking planned and unplanned. In developing a modelling scenario for the Proposed Development, the Operator (AWS) has utilised their experience in operating data centres across multiple geographic regions, considering several different scenarios (events which require the temporary use of backup generators) which occur with varying levels of frequency (return periods) irrespective of location and those scenarios which are specific to local conditions/location.

Therefore, contrary to the claims made by the appellants, the climate assessment within the EIAR and the EIAR Addendum submitted with the Further Information response was not based on overly optimistic assumptions, but in fact represented a conservative approach to modelling and assessing the likely back-up generator operating scenarios.

IED

The appellants claim that EU[25] (IED Directive) and UK[26] guidance should be referenced which the "applicant discounts". Respectfully, this is wholly inaccurate. As set out in the EIAR, Further Information Response and this Appeal Response, under Section 9.2.3.1 of the EIAR the air modelling is outlined which confirms that the assessment has been undertaken in line with the appropriate guidance from the EPA (Air Dispersion Modelling from Industrial Installations Guidance Note (AG4)" (EPA, 2020)) and using the appropriate air dispersion model (USEPA approved AERMOD model). In addition, as expanded on further at Section 4.13-4.14 below an EPA-Industrial Emissions Directive (IE) licence will be applied for to facilitate the operation of the proposed development. Finally, the generators (Cummins G5) modelled in the EIAR for the Proposed Development are certified as compliant with the 2g TA LUFT (Technische Anleitung zur Reinhaltung der Luft) emissions standards (~2,000 mg/m3 of NOx at 5% oxygen and reference condition). Germany's TA LUFT standard is commonly referenced across Europe, including the UK Environment Agency's draft guidance document '*Data Centre FAQ Headline Approach*' (November 2022 version) to the permitting and regulatory aspects for Data Centre within the context of the Industrial Emissions Directive (IED). This EA guidance document considers 2g-compliant generator units to be BAT or Best Available Technology for emergency back-up power generation units.

Since the submission of this planning application, an IED license has been approved and now governs the permissible operation of back-up generators at the permitted developments, Buildings A, B and C, within the wider landholding of the Proposed Development Site. Specifically, regarding the operation of generators outside of standard generator testing/maintenance, Condition A.1.1 of the IED License (EPA Ref: P1182-01) states *"Generators shall not be operated for more than 72 hours annually. Generators shall not be operated at more than 90% load".*

With regard to the appellant's claim that there is no guarantee that IED licence will be amended to include the current development proposal it is noted that the applicant is committed to applying for an amendment to the existing licence to include the proposed development. The public notices for the application stated the following statutory wording:

"An EPA-Industrial Emissions Directive (IE) licence will be applied for to facilitate the operation of the proposed development."

Furthermore, in order to provide an additional degree of certainty, the applicant would be willing to accept a condition attached to any grant of permission by the Board to state the following:

"Prior to the operation of the development, the Industrial Emissions Licence for the wider landholding shall be amended to include this development"

As set out in Chapter 1.0 of the EIAR, the Proposed Development will require an EPA Greenhouse Gas (GHG) Emissions permit in accordance with the EPA Act 1992, as amended. A GHG Permit is in place for the back-up generators at Building A (Permit Register Number: IE-GHG197-10524-1). This permit has been amended to include additional back-up generators at Buildings B and C. Subject to grant of planning permission for the Proposed Development, it is intended that the permit will also be amended to include the additional back-up generators from the Proposed Development (Refer to Chapter 9 Air Quality and Climate). A GHG Permit requires annual reporting to address the appellants concern on monitoring of use.

[25] https://environment.ec.europa.eu/topics/industrial-emissions-and-safety/industrial-emissions-directive_en
[26] https://www.gov.uk/guidance/industrial-emissions-standards-and-best-available-techniques

A8.2 ***The appellant argues that the application is not clear whether the 72 hours operation quoted for the generators relates to all generators across the wider site, or if it relates to different generators.***

Response To A8.2

The worst-case scenario for the operation of the backup generators is as outlined in Section 3.0 Item 1 (B) of the Further Information response on page 6. In addition, the weekly testing of the generators and the maintenance testing, four times per year, of all generators has been assessed in Chapter 9 of the EIAR.

Thus, as outlined, the assessment is based on the operation of the project's backup generators for the Proposed and Permitted Development for 72 hours each per year as well as scheduled weekly testing and quarterly maintenance testing of all back-up generators from the permitted Buildings A, B and C and proposed Buildings E, F and G.

A8.3 **The appellant argues that the assessment of impact from the backup generators on site (in particular in respect of NO_2) is insufficient. It is argued that the mitigation to ensure air quality standards are met has not been set out with sufficient clarity. The appellant also argues there is insufficient consideration of impact of 'renewable diesel' on local populations in terms of health, including more vulnerable travelling community.**

Response To A8.3

Chapter 9 of the EIAR outlines in comprehensive detail the assessment of air quality from the Proposed Development. Under Section 9.2.3.1 of the EIAR the air modelling is outlined which confirms that the assessment has been undertaken in line with the appropriate guidance from the EPA (*Air Dispersion Modelling from Industrial Installations Guidance Note (AG4)*' (EPA, 2020)) and using the appropriate air dispersion model (USEPA approved AERMOD model).

The modelling results were discussed in detail in Section 9.7.2.1 for the Do Nothing and Proposed Development scenarios with the Cumulative scenario discussed in Section 9.8.2 of the EIAR.

In relation to the Proposed Scenario Section 9.7.2.1 stated that:

> *"The NO_2 modelling results at the maximum location at and beyond the site boundary are detailed in Table 9.9 based on the operation of 97 of the 107 no. back-up diesel generations for 72 hours per year using the USEPA methodology outlined within the guidance document titled 'Additional Clarification Regarding Application of Appendix W Modelling Guidance for the 1-Hour National Ambient Air Quality Standard' (USEPA, 2011) as well as considering scheduled weekly testing and quarterly load-banking of all back-up generators from the permitted Buildings A, B and C and proposed Buildings E, F and G in addition to a house generator in Buildings B, C, F and G. The Proposed Development Scenario also included emissions from eight existing emission points at the neighbouring BMS and Alexion facilities.*
>
> *The results indicate that the ambient ground level concentrations are within the relevant air quality standards for NO_2. For the maximum year modelled, emissions from the site lead to an ambient NO_2 concentration (including background) which is 62% of the maximum ambient 1-hour limit value (measured as a 99.8th percentile) and 82% of the annual limit value at the maximum off-site receptor."*

In Section 9.7.2.2 the air quality impact assessment concluded that:

"The modelling assessment has found that ambient NO_2 concentrations as a result of the Do Nothing Scenario, the Proposed Development Scenario and the Cumulative Impact Scenario (see Section 9.8.2) are in compliance with the relevant ambient air quality limit values at all locations at or beyond the site boundary. The impacts to air quality from operation of the Proposed Development are therefore deemed ***long-term*** *and* ***slight*** *in terms of significance and* ***negative*** *in terms of quality."*

As noted on the previous page, the use of 72 hours for air emission modelling is highly conservative and proposed a worst-case event with a very low probability of occurring, given the stability of the Irish transmission grid.

8.4 Concluding Statement In Regard To Applicant Response To Item A8.2 & A8.3

In summary, the air modelling assessment is based on the operation of the backup generators for the Proposed and Permitted Development for 72 hours each per year as well as scheduled weekly testing and quarterly maintenance testing of all back-up generators from the permitted Buildings A, B and C and proposed Buildings E, F and G and future development. Even under this very conservative assessment, ambient levels of NO_2 remain in compliance with the ambient air quality standards at all times.

9.0 Item A9 - Use of Renewable Diesel

9.1 Overview

This section addresses the concerns raised in various appeals in relation to the use of renewable diesel and whether it has associated GHG emission savings. The appellant also argues there is insufficient consideration of impact of 'renewable diesel' on local populations in terms of health, including more vulnerable travelling community.

9.2 Summary of Key Appellant Points - Item A9

The technical argument is put forward that the use of HVO for the generators on site is considered to be insignificant in terms of mitigation. It is also argued that the use of renewable diesel may not in fact represent a renewable fuel source, and notes that it was only committed to subject to availability.

The argument is also put forward that HVO is not a carbon neutral fuel, and that it will not be treated as a green fuel to meet the EU's 2030 renewable targets, subject to some exceptions.

9.3 Applicant Response To Item A9

Use of HVO in the Proposed Development

The air quality and climate assessment of the backup generators in the EIAR was based on conventional diesel as the backup fuel as a worst-case modelling scenario but stated that HVO would be used, subject to availability. Since the planning submission, AWS signed a supply agreement[27] in March 2023 with Certa to supply renewable HVO to their Dublin operations including the existing permitted development and the Proposed Development. AWS's supply agreement with Certa means that the backup generators for the Proposed Development will be supplied with HVO from the date of commissioning along with any subsequent refills due to generator use. In fact, all refills of AWS's existing generators in Dublin have been with HVO since October 2022

AWS recognise there are legitimate concerns with some mixes of renewable diesel, that's why AWS is helping to develop a global supply chain, working with local organisations like Certa in Ireland, and is investing in the procurement of HVO that only comes from renewable sources, with raw materials that are traceable to their origins and not derived from sources that would impact highly biodiverse areas. AWS's purchase criteria for HVO excludes the use of Palm or Soy Oil, AWS have confirmed that Certa's material safety data sheet excludes such materials. The Certa supplied HVO is sold under the HD+HVO label and a comprehensive document setting out its properties is available online[28]. All shipments are receipted against that standard.

This is supported by the data provided by Certa on the renewable diesel currently being procured by AWS. Unlike first generation biofuels, which are made from crops such as rapeseed and soy, Hydrotreated Vegetable Oil (HVO) is a second-generation biofuel which means it is made from pre-existing bio-waste products, primarily used cooking and vegetable oil from food industry waste. Manufactured from 100% renewable and sustainable waste, HVO is a paraffinic drop-in fuel designed as a direct replacement for conventional diesel. It meets the international fuel standard BS EN 15940, the specification for paraffinic diesel, and the Fuel Quality Directive 2009/30/EC Annex II.

Mitigation benefits of HVO

The European Environment Agency (EEA) has studied the environmental impact of HVO and has found that HVO has the advantage of lifecycle GHG emission reductions of

[27] https://www.aboutamazon.eu/news/sustainability/harnessing-the-power-of-plants-to-decarbonise-our-data-centres
[28] https://certaireland.ie/wp-content/uploads/2023/08/Certa-GD-HVO-Ebook-2023.pdf

greater than 75%[29] compared to fossil-fuel derived conventional diesel. The use of this fuel will contribute to Ireland achieving net zero GHG emissions by 2050 in line with Irish and EU targets. In fact the Certa HVO datasheet offers up to 90% reduced net CO_2 emissions and states that direct emissions from burning HVO are considered to be zero - or 'carbon neutral'.

In relation to human health, the emissions of NO_X from HVO have been compared to conventional diesel, based on studies from Cummins Power Systems. Cummins Power Systems have investigated the use of HVO in their C3000D5e (QSK78-G16) generators in order, *inter alia*, to determine their NO_X emissions in comparison to conventional diesel. The study, undertaken in 2020 and 2021, compared the use of 100% HVO at 25%, 50%, 75% and 100% loads with the results for 100% diesel at the same loads for a range of emissions including NO_X. The results of this study, for NO_X, are shown below in Table 7:

Parameter	Units	HVO Run - 2021				HVO Run - 2020				Conventional Diesel Run - 2020			
	% Load	25%	50%	75%	100%	25%	50%	75%	100%	25%	50%	75%	100%
NO_X	mg/Nm^3	1569	1721	1912	2294	1737	1839	1964	2194	1744	1897	2048	2348

Table 7 Cummins C3000D5e HVO vs Conventional Diesel Test 2020 - 2021.

The results are summarised in Table 8 which shows that at every load HVO is approximately 2.3 - 4.1% lower in NO_X emissions, at loads between 50% and 100%, when compared to conventional diesel:

Parameter	Units	Maximum HVO Result (2020 - 2021)				Diesel Run - 2020				HVO NO_X Concentration Compared To Diesel (%)			
NO_X	mg/Nm^3	1737	1839	1964	2294	1744	1897	2048	2348	99.6%	96.9%	95.9%	97.7%

Table 8 Percentage NO_X Relative Difference Between Cummins C3000D5e HVO and Conventional Diesel - Testing In 2020 / 2021.

In relation to SO_2, HVO has essentially zero sulphur and thus will have significantly lower emissions of SO_2 when compared to conventional diesel. Studies by Caterpillar on equivalent backup generators have found lower levels of particulate matter / smoke emissions[30] when using HVO.

The above improvements are backed up in the Certa datasheet, extracts of which are below :

(NOx and PM difference % change: Diesel = 100%)

Diesel		HVO	
NOX	PM	NOX	PM
100	100	91	N/A

[29] ETC CM Report 2022/02 - Greenhouse gas intensities of transport fuels in the EU in 2020, Monitoring under the Fuel Quality Directive.
[30] Caterpillar - CAT175-20 50Hz Genset Hydrotreated Vegetable Oil 5/5/2022

Fuel	Gd+ HVO	DIESEL
Carbon-Neutral	YES	NO
Identical Energy Output (Variable & Fixed-Speed Engines)	YES	YES
Winter-Grade	YES	NO
Suitable for Diesel Engines	YES	YES
Renewable	YES	NO
Odourless	YES	NO
International Sustainability and Carbon Certification (ISCC) Scheme Approved	YES	NO
Meets international fuel standard BS EN 15940	YES	NO
Zero Direct Emissions	YES	NO
Reduced Need for Regular Testing	YES	NO

Fuel	Gd+ HVO	DIESEL
Shelf-Life (Years)	Up to 10	Up to 2
Cetane Number	70-90	50-60
Energy Output (GJ/Tonne)	44.00	42.79
Gel Point	-34°C	-8.1°C
Sulphur Content	<1	<10
C02 Emissions (gCO2e/MJ)	9.78	88.04
NOx Emissions (mg/km)	30.1	43.0
Stability from Oxidation	Excellent	Average

9.4 Concluding Statement In Regard To Applicant Response To Item A9

In summary, AWS has established a supply chain for HVO for their existing operations in Dublin that will be extended for the Proposed Development. The HVO sourced will be sustainable and will exclude the use of Palm or Soy Oil. The use of HVO to replace conventional diesel will lead to substantially lower GHG and SO_2 emissions and lower NO_X and PM emissions. On this basis, the arguments raised in the appeals in this regard are without merit.

APPENDIX 4 - RESPONSE ON CONSTRUCTION CARBON ASSESSMENT PREPARED BY HENRY J LYONS ARCHITECTS

03 November 2023

A1 – A3 Carbon Assessment

Project Name: Data Centre Development
Address: Cruiserath Road, Dublin 15
FCC Reg. Ref.: FW22A/0308 & ABP Ref.: PL06F.318180
Assessor: Henry J Lyons
Client: Universal Developers LLC

Contents

1. Overview

This report is issued on behalf of the client, Universal Developers LLC in response to third party appeals of the notification of decision of Fingal County Council dated the 18th of September 2023 under Reg. Ref.: FW22A/0308 to grant planning permission for development on a site at Cruiserath Road, Dublin 15

The John Conway and Louth Environmental Group appeal concurred with, and appended a copy of, the submission made by Colin Doyle on the Further Information response to Fingal County Council. The previous submission by Colin Doyle argued that the Carbon Assessment report prepared by HJL Architects and submitted as part of the Further Information response assessed items A4 and A5 of the assessment methodology only (relating to Transport and Construction), but that it ought to have assessed items A1 to A3 (the product stage, relating to raw materials). On this basis, it is contended that the assessment underestimated the carbon associated with the development.

The appeal submission further states the following:
"Based on the quantities of concrete and steel listed in the report, and using typical factors for associated emissions, I calculate emissions of over 27,000 tonnes, which would be 664kgCO/m2, when added to the approx. 100/m2 for A4 and AS gives a total of 764 kg/m2. This is more than seven times the estimate by Henry J Lyons."

The Planning Authority confirmed their requirement for an assessment of items A4 and A5 as was submitted. However, in response to the foregoing appeal this report has now been prepared to assess items A1 to A3 also. The report compares a baseline and a mitigation scenario for the shell construction and fitout of the proposed works including A1-A3. The material type and quantities modelled are based on information taken from the drawings and bill of quantities (BoQ).

The assessment was carried out using OneclickLCA software in compliance with EN 15978 and Level(s) indicator 1.2, according to current best practice. Where project specific information was not available, information from existing data sources for similar projects were used as a guide followed by national industry averages based on OneClickLCA software recommendations for the region.[1]

Project Details:

	Description
Building Type	Data centre
Gross internal floor area	GIA of proposed new buildings 43,011m²
Project stage	Early design
Construction Year	2024-2028
System Boundary	A1 – A3
Assessment Scope	The proposed data centre development at Cruiserath Road, Dublin 15, including data centre buildings F, G and E and the following ancillary structures: MV buildings, Bike shelters, Bin storage, Water tank storage, Diesel tank storage.

Table 1. Project details

[1] https://www.oneclicklca.com/support/faq-and-guidance/documentation/database/

2. Results Summary

The **estimated** Global Warming Potential (GWP) results are summarised in Table 2 below. Detailed results are provided in Section 5. As this is an early-stage analysis carried out at planning appeal stage a tolerance of ± 20% of the overall result has been applied as seen in Table 2.

The mitigation scenario is likely to generate over 52% less carbon during the product stage (A1-A3) than the baseline scenario. See section 6 for details.

Indicator	Unit	Product Stage (A1-A3)
GWP +20%	$kgCO_2e$ /m^2	621.2
CGWP	$kgCO_2e$ /m^2	517.7
GWP -20%	$kgCO_2e$ /m^2	414.2
Notes	Impacts refer to the GWP of 1m 2 of GIA of the Shell & fitout of proposed data centre development at Cruiserath Road, Dublin 15 and ancillary buildings for module A1-A3 only.	

Table 2a. Results summary of baseline scenario

Indicator	Unit	Product Stage (A1-A3)
GWP +20%	kgCO2 e /m2	295.4
GWP	kgCO2 e /m2	246.2
GWP -20%	kgCO2 e /m2	197
Notes	Impacts refer to the GWP of 1m 2 of GIA of the Shell & fitout of proposed data centre development at Cruiserath Road, Dublin 15 and ancillary buildings for module A1-A3 only.	

Table 2b. Results summary of mitigation scenario

Details of the materials, material quantities, and associated Environmental Product Declarations [EPDs] used to carry out this study are provided in Appendix C.

3. Assessment scope and system boundaries

3.1 System boundaries

The assessment measures and reports the GWP of the product stage, consisting of life cycle stages **A1 (Raw material supply), A2 (Transport)** and **A3 (manufacturing)** with particular care to account for materials of significant GWP, **within the context of the knowledge and information available at time of assessment.** The boundaries of the assessment are illustrated in Figure 1 below. A description of the life cycle stages is provided in **Appendix A.**

Figure 1. Boundaries of carbon assessment

3.2 Assessment scope

The assessment refers to both the BoQ and drawings to estimate material quantities of the proposed constructions. See Appendix C for a list of all inputs and related EPDs where available. The assessment accounts for the following building elements

Elements			Inclusion
1. Shell (substructure & superstructure)			
1.1	Foundations (substructure)	Piles	Y
		Basements	Y
		Retaining walls	N
1.2	Load bearing structural frame	Frame (beams, columns & slabs)	Y
		Upper floors	Y
		External walls	Y
		Balconies	N
1.3	Non-load bearing elements	Ground floor slab	Y
		Internal walls, partitions & doors	Y
		Stairs & ramps	Y
1.4	Facades	External wall systems, cladding & shading devices	Y
		Façade openings (including windows & external doors)	Y
		External paints, coatings & renders	N
1.5	Roof	Structure	Y
		Weatherproofing	N
1.6	Parking facilities	Above ground & underground	N

Elements			Inclusion
2. Core			
2.1	Fittings & furnishings	Sanitary fittings	N
		Cupboards, wardrobes & worktops	N
		Ceilings	N
		Wall & ceiling finishes	N
		Floor coverings & finishes	N
2.2	In-built lighting system	Light fittings	N
		Control systems & sensors	N
2.3	Energy system	Heating plant & distribution	N
		Cooling plant & distribution	N
		Electricity generation & distribution	N
2.4	Ventilation system	Air handling units	N
		Ductwork & distribution	N
2.5	Sanitary systems	Cold water distribution	N
		Hot water distribution	N
		Water treatment systems	N
		Drainage system	N
2.6	Other systems	Lifts & escalators	N
		Fire fighting installations	N
		Communication & security installations	N
		Telecoms & data installations	N

Elements			Inclusion
3. External works			
3.1	Utilities	Connections & diversions	N
		Substations & equipment	N
3.2	Landscaping	Paving & other hard surfacing	N
		Fencing, railings & walls	N
		Drainage system	N

Table 3: Scope of carbon assessment

Note:

- Materials, products and systems related to the architectural elements of the project have been selected based on educated assumptions and past experience and are subject to change as the detail design of the building develops at later project stages.
- MEP is excluded from the study
- Fluid based finishes including paint, resins and sealants are not accounted for in this study

4. Assessment software

The calculations were performed with OneClickLCA calculation tool. The software is fully compliant with EN 15978 standard. One Click LCA has been third party verified by ITB for compliance with the following LCA standards: EN 15978, ISO 21931–1 and ISO 21929, and data requirements of ISO 14040 and EN 15804. The official letters of compliance can be found at the following link:
https://www.oneclicklca.com/wp-content/uploads/2016/11/360optimi-verification-ITB-Certificate-scanned-1.pdf

ITB is a certification organisation and a Notified Body (EC registration nr. 1488) to the European Commission designated for construction product certification. Polish Accreditation Board assures the independence and impartiality of ITB services (Accreditation Certificates are: AB 023, AC 020, AC 072, AP 113). ITB activities are conducted in accordance to the requirements of the following assurance standards: ISO 9001, ISO/IEC 27001, ISO/IEC 17025, EN 45011, and ISO/IEC 17021.[2]

5. Detailed Results

Results for Global warming potential (GWP), $kgCO_2e$ /m^2 baseline scenario.

Life Cycle stage	Structure	TCO_2 e	TCO_2 e	$kgCO_2$ e/m^2
Product stage (A1 – A3)	Datacentre F	10,447.7		
	Datacentre G	10,447.7		
	Datacentre E	864.2		
	Ancillary structures	505.6	22,265.2	517.7
Total embodied carbon likely to be generated per GIA m2 during the product stage (A1 - A3)				**517.7 $kgCO_2$ e/m^2**
Notes	Impacts refer to the GWP of 1m^2 of GIA of the Shell & fitout of proposed data centre development at Cruiserath Road, Dublin 15 and ancillary buildings for module A1 - A5 only. Tolerance of ± 20% should be allowed on all figures			

Table 4: GWP breakdown of baseline scenario product phase (A1-A3)

[2]https://www.oneclicklca.com/fi/iso-en-compliant-lca-software/

6. Mitigation scenario

The following mitigation scenario is proposed for adoption in order to limit the upfront carbon emissions likely to be generated during the product stage (A1-A3) of the proposed development from the baseline scenario.

The **mitigation scenario is estImated to generate 52% less carbon** during the product stage **(A1 – A3)** then baseline scenario.

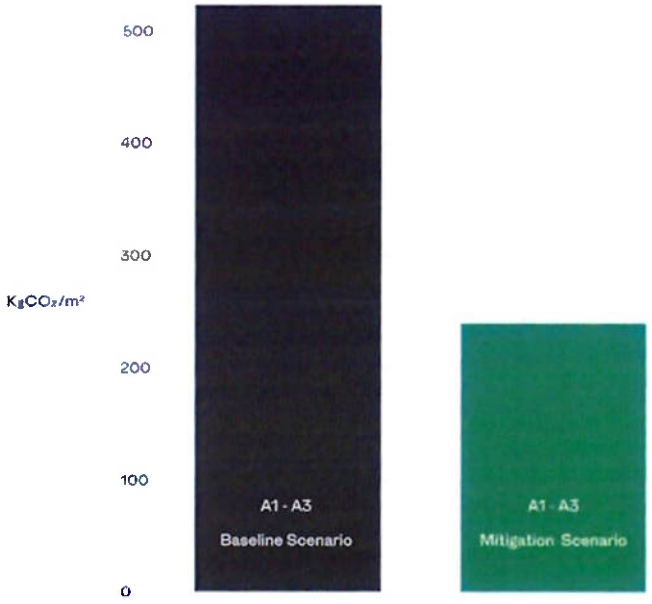

Figure 2. Estimated carbon reduction of mitigation scenario to baseline scenario for shell & fitout A1-A3.

Baseline Scenario					Mitigation Scenario		
Life Cycle stage	**Structure**	**TCO_2 e**		**$kgCO_2$ e /m²**	**$kgCO_2$ e**		**$kgCO_2$ e /m²**
Product stage (A1 – A3)	Datacentre F	10,447.7			4,893.7		
	Datacentre G	10,447.7			4,893.7		
	Datacentre E	864.2			440.1		
	Ancillary structures	505.6	22,265.2	517.7	360.6	10,588.1	246.2
Total embodied carbon likely to be generated per GIA m2 during the product stage (A1 - A3)				**517.7**			**246.2**
Notes:	Impacts refer to the GWP of 1m² of GIA of the shell & fitout of proposed data centre development at Cruiserath Road, Dublin 15 and ancillary buildings for module A1 – A3 only. Tolerance of ± 20% should be allowed on all figures						

Table 4. Results for GWP of baseline and mitigation scenario

The mitigation scenario includes the following actions:

- Low carbon products and manufacturers were specified where possible to reduce A1-A3 emissions. Lower Carbon metal sandwich panels are used in place of the higher carbon metal sandwich panels of the baseline scenario.

- The upfront embodied carbon of concrete was reduced from baseline scenario by specifying concrete with 40% GGBS content in mitigation scenario.

- The embodied carbon of steel was reduced in the mitigation scenario in comparison to the baseline by specifying steel with a high recycled content. The steel reinforcement bars of the mitigation scenario contain 97% recycled content for steel reinforcement bars, and steel is specified from low carbon manufacturers.

Appendix A - Building life cycle stages and modules[3]

Life Cycle Stage	Modules	Description
Production Stage	A1 Raw material supply	Includes emissions generated when raw materials are taken from nature, transported to industrial units for processing and processed. Loss of raw material and energy are also taken into account.
	A2 Transport	Include exhaust emissions resulting from the transport of all raw materials from suppliers to the manufacturer's production plant as well as impacts of production of fuels.
	A3 Manufacturing	Covers the manufacturing of the production materials and fuels used by machines, as well as handling of waste formed in the production processes at the manufacturer's production plants until end-of-waste state.
	A4 Transport to site	Includes exhaust emissions resulting from the transport of building products from manufacturer's production plant to building site as well as the environmental impacts of production of the used fuel.
	A5 Construction	Covers the exhaust emissions resulting from using energy during the site operations, the environmental impacts of production processes of fuel and energy and water as well as handling of waste until the end-of-waste state.
Use Stage	B1-5 Maintenance and material replacement	The environmental impacts of maintenance and material replacements (B1-B5) include environmental impacts from replacing building products after they reach the end of their service life. The emissions cover impacts from raw material supply, transportation and production of the replacing new material as well as the impacts from manufacturing the replacing material as well as handling of waste until the end-of-waste state.
	B6 Energy use	Includes exhaust emissions from any building level energy production as well as the environmental impacts of production processes of fuel and externally produced energy. Energy transmission losses are also taken into account
	B7 Water use	Includes all water used and its treatment (pre- and post-use) during the normal operation of the building (excluding during maintenance, repair, replacement and refurbishment).
End of Life Stage	C1- C4 Deconstruction	Includes impacts for processing recyclable construction waste flows for recycling (C3) until the end-of-waste stage or the impacts of pre-processing and landfilling for waste streams that cannot be recycled (C4) based on type of material. Additionally deconstruction impacts include emissions caused by waste energy recovery.
Benefits and loads beyond the system boundary	D	The external benefits include emission benefits from recycling building waste. Benefits for reused or recycled material types include positive impact of replacing virgin based material with recycled material and benefits for materials that can be recovered for energy cover positive impact for replacing other energy streams based on average impacts of energy production.

Table 6. Building life cycle stages described

[3]Table based on EN level(s) indicator 1.2 https://susproc.jrc.ec.europa.eu/product-bureau/sites/default/files/2020-10/20201013%20New%20Level(s)%20documentation_Indicator%201.2_Publication%20v1.0.pdf and onelclickLCA reporting template https://oneclicklca.zendesk.com/hc/en-us/article_attachments/360013784259/One_Click_LCA_reporting_template_for_LCA_EN15978.docx

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Appendix B - Data sources and assumptions

A1-A3 Product

The carbon emissions likely to be generated during the construction of the proposed development was calculated using OneClickLCA software. The assessment refers to both BoQ and architectural drawings to estimate material quantities of the proposed constructions.

The data sourcing of the environmental impact of materials followed an information hierarchy, where project and manufacturer specific EPDs were not available, national industry averages followed by generic data points based on OneClickLCAs database and recommendations were utilised.

A4 Transport to site

The default transport scenarios for construction material as defined by RICS "Whole life carbon assessment for the built environment, 1st Ed., Nov.2017" (see Table 7 below) were used as the values for emissions associated with transportation of construction materials and products to the site.

Transport scenario	Km by road	Km by sea
Locally manufactured. E.g. concrete, aggregate, earth	50	-
Nationally manufactured. E.g. plasterboard, blockwork, insulation	300	-
European manufactured. E.g. CLT, facade modules, carpet	1,500	-
Globally manufactured. E.g. specialist stone cladding	200	10,000

Table 7. RICs default transport distances

A5 Construction

Site construction operations are calculated using the average site impacts based on OneClickLCA software recommendations of climate zone average impacts, which assumes on site electricity use at a rate of 37 kWh/m2 (GFA) and total use of diesel 4.5 l/m2 (GFA).

B1 - B5 Maintenance & material replacement

Outside the scope of this assessment.

B6 Energy Use

Outside the scope of this assessment.

B7 Water Use

Outside the scope of this assessment.

Appendix C - Material Input of Carbon Calculation

BASELINE SCENARIO - Data Centre F and G

Item Description	Quantity		Further Description / Assumptions	EPD mapping
concrete c12/15	1270	m3	accounts for: generator exhaust generator compound generator plinth substructure raft slab substructure blinding substructure preprufe ground floor	Ready-mix concrete, low-strength, generic, C12/15 (1700/2200 PSI), 0% recycled binders in cement (220 kg/m3 / 13.73 lbs/ft3)
concrete c30/37	12052	m3	accounts for: ancillary buildings, generator yard, generator compound,generator plinth, foundations ground floor, stair core, stair landing, floors	Ready-mix concrete, generic (consultation), C30/37, 0% recycled content in cement
concrete c35/45	1650	m3	structural cores	Ready-mix concrete, normal strength, generic, C35/45 (5000/6500 PSI) with CEM I, 0% recycled binders (340 kg/m3; 21.2 lbs/ft3 total cement)
hot rolled steel coil	3368000	kg	assumed as the elements of the main structural frame (columns and beams including roof support frame)	Hot rolled steel coil, average for Ireland (consultation)
cold rolled steel coil	295840	kg	secondary support steel for building envelope (purlins)	*Steel purlins and framing, 7850 kg/m3 (Voestalpine Metsec plc)*
reinforcement bars	1728000	kg		Reinforcement steel (rebar), generic, 0% recycled content (only virgin materials), A615
metal steel deck	432000	kg		Galvanized profiled steel decking, for composite floor slabs/decks, 1 mm sheet thickness, 11.62 kg/m2, ComFlor® 60 1.0mm (Tata Steel Europe, Tata Steel International (2021))
aluminium	49186	kg	secondary framing elements for the cladding and roofing system	Steel purlins and framing, 7850 kg/m3 (Voestalpine Metsec plc)

metal sandwich panels 100mm	4182	m2	metal sandwich panels	Sandwich panel with insulation foam core and double steel siding, U = 0.18 W/m2K, Core thickness = 100 mm, 11.788 kg/m2, 117.88 kg/m3, KS 1000 Trapezoidal Quadcore RW Panel (Kingspan (2020))
metal sandwich panels 40mm	10450	m2		Sandwich panel with insulation foam core and double steel siding, U = 0.18 W/m2K, Core thickness = 100 mm, 11.788 kg/m2, 117.88 kg/m3, KS 1000 Trapezoidal Quadcore RW Panel (Kingspan (2020))
metal sandwich panels 150mm	3684	m2		Steel faced fire proof sandwich panels with stone wool core, 28.2 kg/m2, 150 mm, AST E, AST F, AST F+ (Paroc)
plaster boards	1574344	kg	19mm gyproc manufactured in Ireland	Gypsum plasterboard, fire resistant, moisture resistant, 19 mm, 16.13 kg/m2, 849 kg/m3, fire resistance class A2-s1, d0, CoreBoard (Saint-Gobain Gyproc, Kingscourt plant)
steel studs	121766	kg		*Structural steel profiles, generic, 0% recycled content (only virgin materials), I, H, U, L, and T sections, S235, S275 and S355*
PIR	96392	kg		*PIR insulation boards, low emissivity foil faced, 66 mm, L = 0.022 W/mK, R = 3 m2K/W, 2.05 kg/m2, 31 kg/m3, TP10, TF70, Therma Duct, TW50, TW55 (Kingspan (2021))*
rockwool	12684	kg		*Rock wool insulation, unfaced, R = 1 m2K/W, Lambda = 0.044 W/mK, 44 mm, 22 kg/m3 (Rockwool)*
steel doors	40880	kg		Security door, R=3.7 W/m2K, 75.86 kg/unit, AASD Fire Door (ASSA ABLOY)
glass	20488	kg		Fire rated safety glass, 5-17 mm, avg. weight 20.6 kg/m2, KERALITE® (Vetrotech)

BASELINE SCENARIO - Data Centre E

Item Description	Quantity	Further Description / Assumptions	EPD mapping
concrete c12/15	44 m3	ready-mix concrete, m10 (c10) (acc limited) to ready-mix concrete, low-strength, generic, c12/15 (1700/2200 psi), 30% recycled binders in cement (220 kg/m3 / 13.73 lbs/ft3)	Ready-mix concrete, low-strength, generic, C12/15 (1700/2200 PSI), 0% recycled binders in cement (220 kg/m3 / 13.73 lbs/ft3)
concrete c30/37	416 m3		Ready-mix concrete, generic (consultation), C30/37, 0% recycled content in cement
concrete c35/45	60 m3	Accounts for: structural cores	Ready-mix concrete, normal strength, generic, C35/45 (5000/6500 PSI) with CEM I, 0% recycled binders (340 kg/m3; 21.2 lbs/ft3 total cement)
hot rolled steel coil	122932 kg	elements of the main structural frame (columns and beams including roof support frame)	Hot rolled steel coil, average for Ireland (consultation)
cold rolled steel coil	33202 kg	secondary support steel for building envelope (purlins)	*Steel purlins and framing, 7850 kg/m3 (Voestalpine Metsec plc)*
reinforcement bars	63072 kg		Reinforcement steel (rebar), generic, 0% recycled content (only virgin materials), A615
metal steel deck	14963 kg	metal deck	Galvanised profiled steel decking, for composite floor slabs/decks, 1 mm sheet thickness, 11.62 kg/m2, ComFlor® 60 1.0mm (Tata Steel Europe, Tata Steel International (2021))
aluminium	3397 kg	secondary framing elements for the cladding and roofing system	Steel purlins and framing, 7850 kg/m3 (Voestalpine Metsec plc)
metal sandwich panels 100mm	427 m2	metal sandwich panels	Sandwich panel with insulation foam core and double steel siding, U = 0.18 W/m2K, Core thickness = 100 mm, 11.788 kg/m2, 117.88 kg/m3, KS 1000 Trapezoidal Quadcore RW Panel (Kingspan (2020))
metal sandwich panels 40mm	1215 m2	metal sandwich panels	Sandwich panel with insulation foam core and double steel siding, U = 0.18 W/m2K, Core thickness = 100 mm, 11.788 kg/m2, 117.88 kg/m3, KS 1000 Trapezoidal Quadcore RW Panel (Kingspan (2020))

metal sandwich panels 150mm	413 m2		Steel faced fire proof sandwich panels with stone wool core, 28.2 kg/m2, 150 mm, AST E, AST F, AST F+ (Paroc)
plaster boards	54435 kg	plaster board	Gypsum plasterboard, fire resistant, moisture resistant, 19 mm, 16.13 kg/m2, 849 kg/m3, fire resistance class A2-s1, d0, CoreBoard (Saint-Gobain Gyproc, Kingscourt plant)
steel studs	4275 kg		*Structural steel profiles, generic, 0% recycled content (only virgin materials), I, H, U, L, and T sections, S235, S275 and S355*
PIR	3278 kg		*PIR insulation boards, low emissivity foil faced, 66 mm, L = 0.022 W/mK, R = 3 m2K/W, 2.05 kg/m2, 31 kg/m3, TP10, TF70, Therma Duct, TW50, TW55 (Kingspan (2021))*
rockwool	428 kg		*Rock wool insulation, unfaced, R = 1 m2K/W, Lambda = 0.044 W/mK, 44 mm, 22 kg/m3 (Rockwool)*
steel doors	1411 kg		Security door, R=3.7 W/m2K, 75.86 kg/unit, AASD Fire Door (ASSA ABLOY)
glass	713 kg		Fire rated safety glass, 5-17 mm, avg. weight 20.6 kg/m2, KERALITE® (Vetrotech)

BASELINE SCENARIO - Ancillary Buildings

Item Description	Quantity		Further Description / Assumptions	EPD mapping
MV Building (2)				
concrete c35/45	367	m3	roof and floor slab	Ready-mix concrete, normal strength, generic, C35/45 (5000/6500 PSI) with CEM I, 0% recycled binders (340 kg/m3; 21.2 lbs/ft3 total cement)
			+ internal wall	
			+ foundations	
concrete block	180	m3	external wall	Lightweight concrete block, 13N, 0.35 W/mK, 1183.93 kg/m3, Thermal Liteblock (Roadstone)
metal sandwich panels 40mm	840	m2	cladding	Sandwich panel with insulation foam core and double steel siding, U = 0.18 W/m2K, Core thickness = 100 mm, 11.788 kg/m2, 117.88 kg/m3, KS 1000 Trapezoidal Quadcore RW Panel (Kingspan (2020))
steel doors	10	units	double doors	Security door, R=3.7 W/m2K, 75.86 kg/unit, AASD Fire Door (ASSA ABLOY)
steel doors	2	units	single	
Bins (3) + Bike shelter (2)				
steel perforated panel system	0.2	m3		*Galvanised steel value, average for Ireland (consultation)*
concrete c35/45	2	m3	ground slab	*Ready-mix concrete, normal strength, generic, C35/45 (5000/6500 PSI) with CEM I, 0% recycled binders (340 kg/m3; 21.2 lbs/ft3 total cement)*
steel perforated panel system	0.4	m3		*Galvanised steel value, average for Ireland (consultation)*
concrete c35/45	8	m3	ground slab	*Ready-mix concrete, normal strength, generic, C35/45 (5000/6500 PSI) with CEM I, 0% recycled binders (340 kg/m3; 21.2 lbs/ft3 total cement)*
galvanised steel shelter	4	units		*Galvanised steel bicycle shelters, 76.7 kg/unit, DONNEE PAR DEFAUT (DED)*

Water (2) + Diesel Tank (1)				
green screen frame	2	m3	calculations tab under estimated green screen frame	*Steel purlins and framing, 7850 kg/m3 (Voestalpine Metsec plc)*
concrete c35/45	565	m3	rising wall	*Ready-mix concrete, normal strength, generic, C35/45 (5000/6500 PSI) with CEM I, 0% recycled binders (340 kg/m3; 21.2 lbs/ft3 total cement)*
			foundations	
			floor slabs	
			basement walls	
concrete c35/45	68	m3		*Ready-mix concrete, normal strength, generic, C35/45 (5000/6500 PSI) with CEM I, 0% recycled binders (340 kg/m3; 21.2 lbs/ft3 total cement)*
steel perforated panel system	0.5	m3		*Galvanised steel value, average for Ireland (consultation)*

APPENDIX 5 – AWS IMPACT IN IRELAND REPORT

aws

aws

Investing.
Growing.
Partnering.

AWS Impact in Ireland

Gusta Gaoithe Wind Farm, Co. Galway

Contents

Executive summary

Amazon Web Services (AWS) is one of Ireland's biggest private sector investors and employers. With cutting-edge cloud infrastructure, and a highly-skilled technology-focused workforce, the company sits at the heart of the country's thriving digital economy. This report, based on research undertaken by Indecon International Economic Consultants (Indecon), now describes in detail the positive impact AWS' investment has had in Ireland over the last decade (2012-2022).

Indecon's analysis of AWS' operations in Ireland indicate that the benefits of the company's investment here extend across four principal areas:

1 Powering Employment

Sustaining more than

10,000 jobs

across the country.

Over

4,200 *direct employees with AWS.*

3,000 people

working for AWS suppliers & sub-contractors.

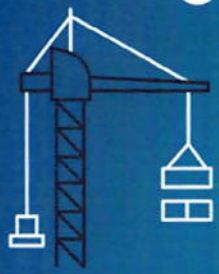
2,900 *other roles elsewhere in the workforce attributable to AWS investment.*

2 Driving economic growth

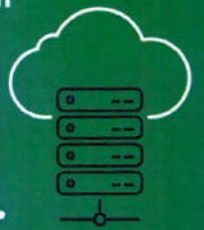
AWS investment has increased economic output in Ireland by over

€11.4 billion *since 2012.*

In 2022 alone, AWS investment supported **€2.4 billion** *in additional economic output – a ten-fold increase on the corresponding figure for 2012.*



3 Fostering a world-leading cloud infrastructure ecosystem and creating valuable export opportunities for domestic contractors



AWS investment has enabled over **500** *domestic suppliers* **to expand and grow.**

Irish contractors, who work with AWS, now export services to

28 different countries

across the globe.

4 Creating economic opportunities for Ireland through new data centre infrastructure

AWS capital investment in a typical data centre campus leads to an additional

€604 million

in economic output in each year of the three-year construction phase,

A TOTAL OF OVER €1.8 BILLION.

AWS expenditure on a typical campus fuels employment growth, with the construction phase of development supporting **2,250 jobs** *annually.*

Even when construction is complete, an AWS data centre campus supports over **250** *full time roles on an annual basis.*

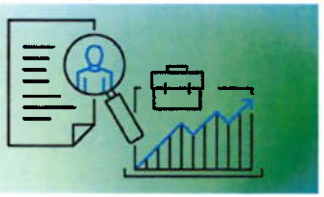
Key findings

AWS investments and operations in Ireland are creating high-quality jobs across the country

AWS first launched an infrastructure region in Ireland in 2007. Today, over 17 years later, it now supports over 10,000 jobs in different parts of the economy.

AWS directly employs more than 4,200 people at its Irish sites. Such direct AWS employment has grown at an average rate of 38% per year over the last decade.

AWS employment has grown at an average rate of 38% per year over the last decade.



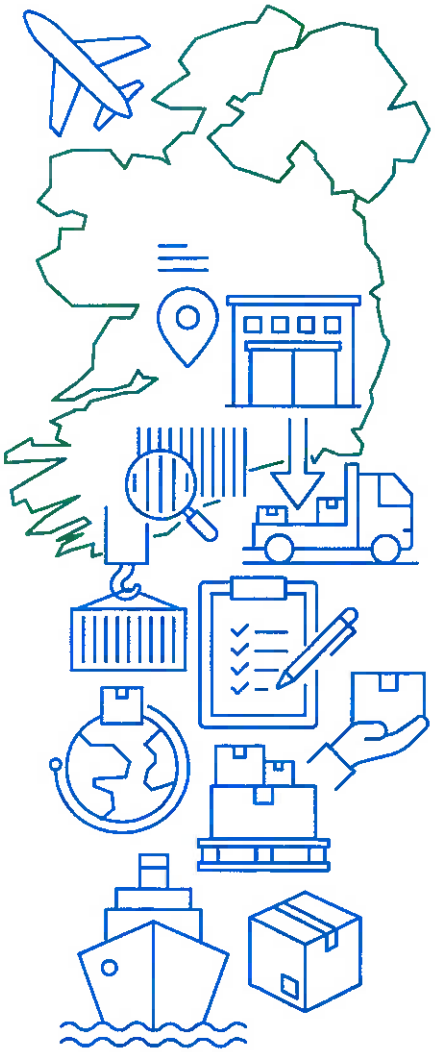
The positive impact of AWS on job creation extends far beyond roles created within the company itself. More than 3,000 other jobs have been generated in the firm's suppliers and contractors, all of which are directly supported by contracts with AWS. Given these same suppliers and contractors employ a total of 9,000 people, it means that AWS is, on average, directly responsible for one-third of their total employment.

Another 2,900 jobs in Ireland – according to Indecon's analysis – are attributable to the induced effect and other indirect effects of direct AWS employment in the country. This underlines the positive employment multiplier effect of AWS-related job creation.

"Data Centres are now core enabling infrastructure that help companies across all sectors of the global economy to run their businesses today. Ireland's technology sector has been building for the last 60 years but cloud computing has been a huge contributor to the phenomenal growth that we've seen in the last 20 years. Investments in digital infrastructure enable so much more across the economy, and today's report by Indecon for AWS shows just that. Not only has AWS' cloud investments in Ireland resulted in complementary FDI in software, FinTech and in IT services, but they have also led to substantially increased knowledge, employment and export capacity in the Irish economy."

Michael Lohan,
CEO, IDA Ireland

IDA Ireland



The depth and breadth of AWS investment is fueling economic growth

The scale of AWS expenditure in Ireland has served as an engine of economic growth. Since 2012, its investments in the country have increased economic output by over €11.4 billion. This has made a material contribution to the strong performance of the wider Irish economy over that same period.

In 2022 alone, AWS' investment in the Irish economy – including direct, indirect and induced impacts – produced approximately €2.4 billion in additional economic output. Every million euro spent by AWS in that calendar year increased economic output in Ireland by nearly €500,000. AWS' positive macroeconomic impact is tracking too on a remarkable upward curve, with the 2022 figures representing a ten-fold increase on 2012.

Ibec

"We know that Ireland's future economy will be technology driven. Companies such as AWS and its cloud infrastructure in Ireland will be an even more important part of our lives in the coming years."

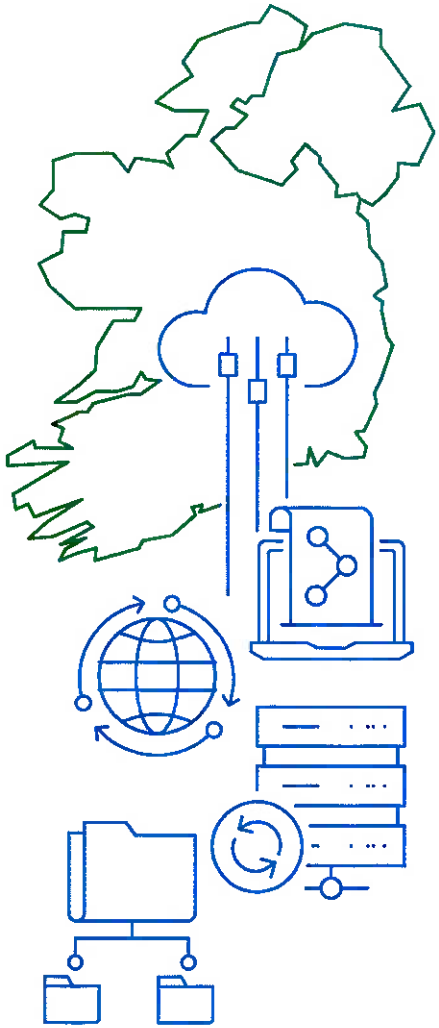
Danny McCoy,
CEO, Ibec

AWS has helped create a vibrant cloud infrastructure ecosystem in Ireland and generated export opportunities abroad for domestic firms

A successful ecosystem of Irish cloud infrastructure firms has steadily developed alongside AWS over the last decade. Many of those same companies, such as STS Group and Standard Control Systems, are now recognised as world-leaders in their fields and are increasingly exporting their services abroad. Due to their success, Ireland has earned an enviable global reputation as a centre of excellence for cloud infrastructure services.

AWS investment has had a major role to play in this. Its expenditure on the development of its infrastructure in the country has enabled the expansion and growth of over 500 suppliers.

As noted, many of those contractors are now active exporters to 28 different countries around the world. In 2023, contracts won by AWS supplier firms to provide services for the development of data centres overseas rose to an estimated €240 million, an exponential increase on the equivalent figure for 2013 (€2.8 million). This figure is expected to increase steadily in the years ahead.



Data centre infrastructure can create significant economic benefits for localities

It's sometimes perceived that data centre investment brings little in the way of economic benefits. Indecon's analysis comprehensively illustrates that that is not the case for AWS cloud infrastructure. AWS data centres, in fact, can generate transformative economic benefits for the localities in which they are located.

Indecon undertook analysis of the economic impact of a typical AWS data centre campus, which is comprised of three separate data halls and would require a construction phase of three years in total. On that basis, its findings are that AWS capital investment in such a campus leads to an additional €604 million in economic output in each of the three years of the construction phase. Cumulatively, over the entirety of the construction period, AWS investment is therefore estimated to support €1.8 billion in wider economic output.

While the construction costs of a typical data centre campus are responsible for a larger percentage of the economic impact, there are still significant economic benefits once construction is complete and the campus enters its operational phase. Indecon's findings are that a typical data centre campus results in an increase in total economic output of €381 million annually based purely on the expenditures to operate and maintain the facilities.

There are also strong employment benefits. The three-year construction phase of the campus is estimated to support a total of 6,700 full-time roles between direct, indirect and induced impacts. This works out at an average of 2,250 jobs annually. While the jobs supported by the operational phase are lower in number, they are still significant. Indecon determined that a typical data centre campus supports over 250 full-time roles in the local economy on an annual basis through direct, indirect and induced effects.

Adam Gabarov, Data Centre Technician

I work as a data centre technician, where I service and repair the hardware at our infrastructure sites. I'm part of great team and every day there is a new problem for us to solve.

As for my background, I had to flee my home in Chechnya in 2004 and a job I loved with the United Nations. I subsequently became a security guard at an AWS data centre in Tallaght. This is where I first encountered our data centre technicians and I quickly became fascinated with their work.

After consulting with a few colleagues and friends I applied for the AWS-sponsored Data Centre Technician Programme. This allowed me to re-train for a highly-skilled role. I'm now a full-time technician in the very same data centre that I originally worked at as a security guard.

Indecon's approach

The information contained in this report is taken from an evidence-based analysis undertaken by Indecon, a leading firm of independent research economists.

Drawing on well-established economic modelling, Indecon calculated the estimated direct, indirect and induced effects of AWS investments in Ireland.

Direct effects

This includes the economic output generated by AWS itself, through its purchases of goods and services (including labour) from the Irish economy. For example, the wages paid by AWS to Irish employees is a direct impact, as well as spending by AWS on other Irish suppliers of services and products.

Indirect effects

The indirect impacts arise through AWS' purchase of goods and services from other businesses and sectors in the economy to support its activities in Ireland. These purchases generate income for the supplying enterprises/ industries, which they, in turn, spend on their own purchases from suppliers. For example, AWS' expenditure on services provided by Irish construction firms will lead to an increase in output from the suppliers to these same companies.

Induced effects

As a result of the direct and indirect effects the level of household income throughout the economy will increase as a result of increased employment. A proportion of this increased income will be re-spent on final products.

Indecon's empirical evidence has examined data from a wide range of sources to present the most accurate representation of the effects of AWS investments in the Irish economy. These included:

- Central Statistics Office data
- Detailed analysis of AWS internal data on investments, operating expenditures, and employment; and
- Results of an Indecon-administered survey of major suppliers and sub-suppliers.

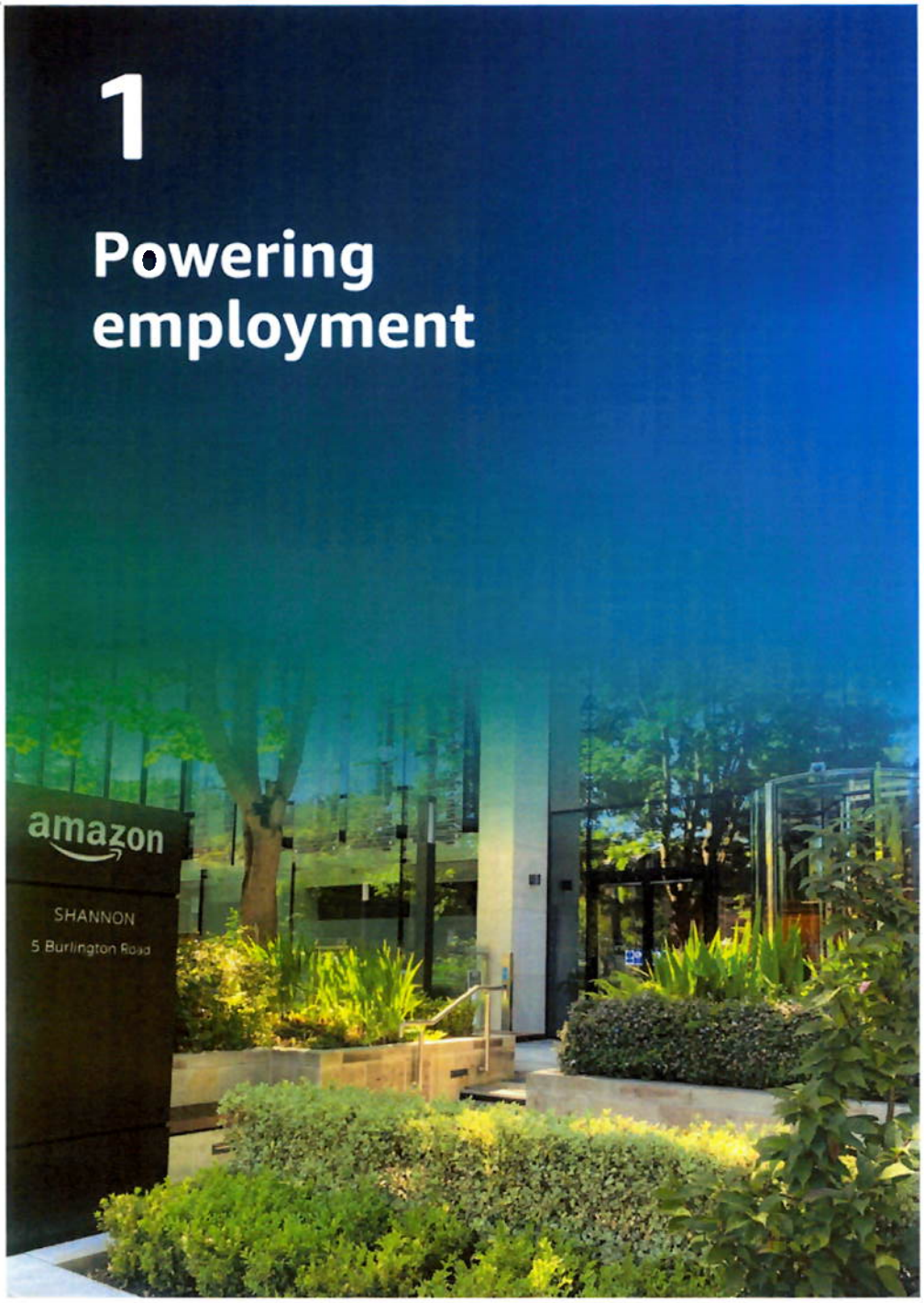
About AWS

Amazon Web Services (AWS) is the world's largest cloud platform. AWS allows users to access IT services, such as computing power, storage and AI, on a pay-as-you-go basis, instead of having to own and maintain their own data centres and servers. Millions of customers – including giant multinationals, tiny start-ups, public sector bodies, and international organisations – now harness the power and capabilities of the AWS cloud daily.

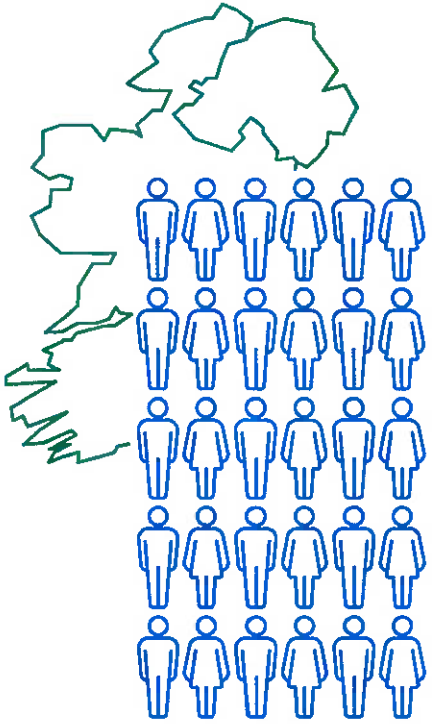
AWS provides cloud services to thousands of Irish entities. This includes large firms like Ryanair, Bank of Ireland and Stripe and more emerging businesses like Intercom and Swerve. The Irish public sector – including bodies such as the HSE and Ordnance Survey Ireland – is also increasingly utilising the AWS Cloud.

1

Powering employment



AWS is powering employment creation across Ireland



To assess the job creation impact of AWS' operations in Ireland, Indecon used both macroeconomic modelling and an input-output analysis to calculate total employment-related direct, indirect and induced effects.

Sustaining more than
10,000 jobs
across the country.

Over
4,200 *direct employees with AWS.*

3,000 people
working for AWS suppliers & sub-contractors.

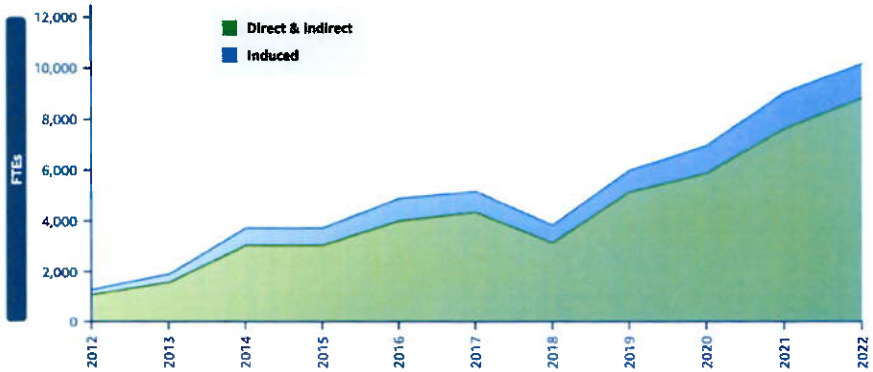
2,900 *other roles*
elsewhere in the workforce attributable to AWS investment.

These figures make AWS one of the largest private sector employers in the country. According to IDA Ireland, AWS has been amongst the ten biggest job creators from the Agency's client base every year over the last decade (2012-2022).

"The experience that our teams have developed working on these projects with AWS has allowed us to expand our business internationally, creating jobs and developing further expertise and talent here in Ireland."

Liam Linehan,
Business Development Director, STS Group

Impact of AWS' investment and expenditure on employment in Ireland



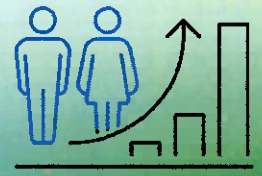
Source: Indecon

Roles in AWS in Ireland are across a variety of areas. They include: software development; DevOps; engineering; cloud architecture; cybersecurity; sales; marketing; solution architecture; construction; and HR. This direct employment has grown at an average rate of 38% over the last decade.

The positive impact of AWS on job creation is not consigned to AWS itself. More than 3,000 other jobs have been generated in the firm's suppliers and contractors, all of which can be attributed to contracts with AWS. As these same suppliers and contractors employ a total of 9,000 people, it means that AWS is, on average, directly responsible for one-third of their total employment.

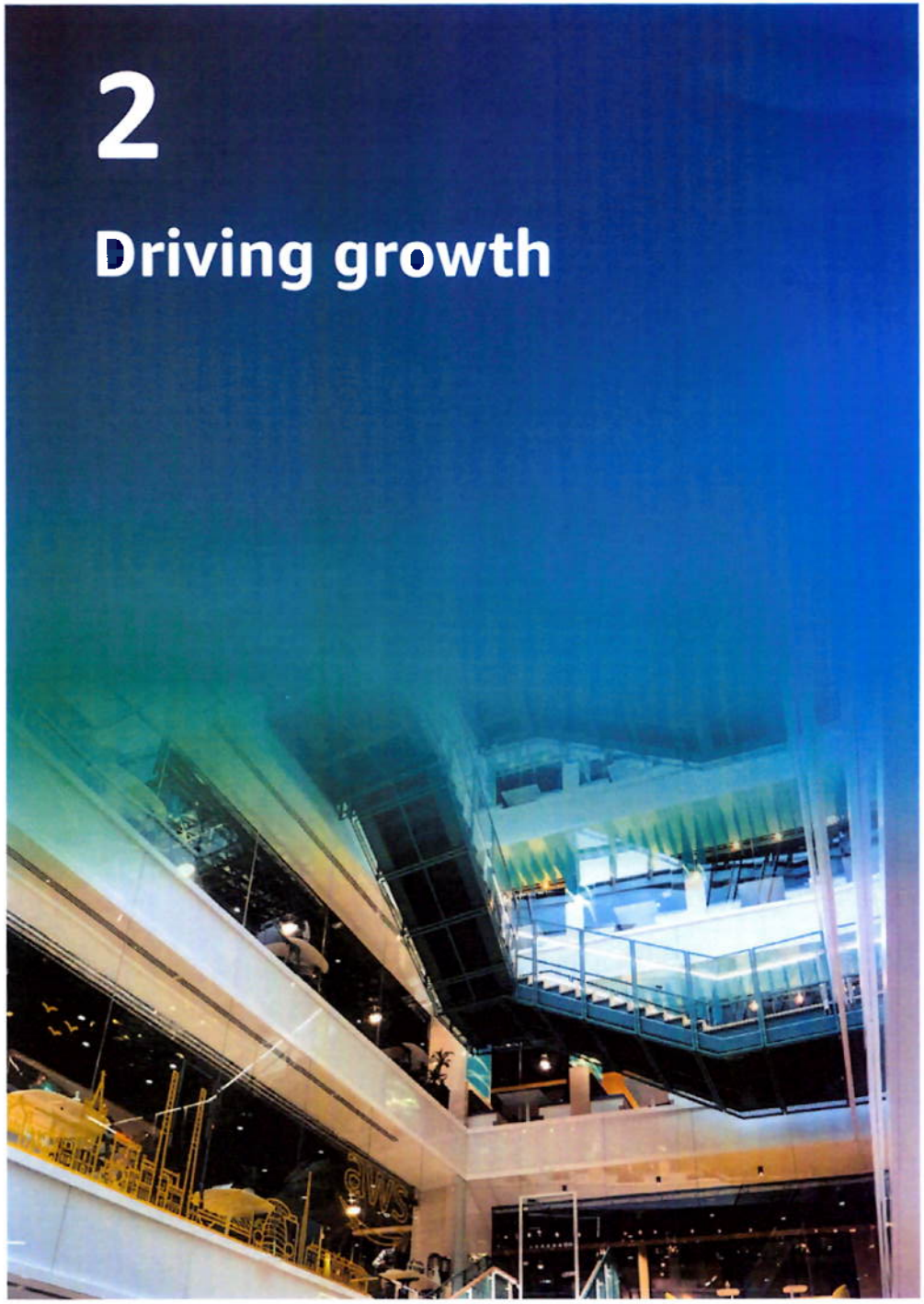
Another 2,900 jobs in Ireland – according to Indecon's analysis – are attributable to the induced effect and other indirect effects of direct AWS employment in the country. This underlines the positive employment multiplier effect of AWS-related job creation.

Direct employment at AWS has grown at an average rate of 38% over the last decade.



2

Driving growth

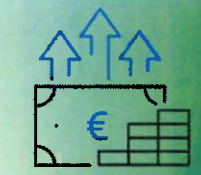


AWS is driving wider economic growth

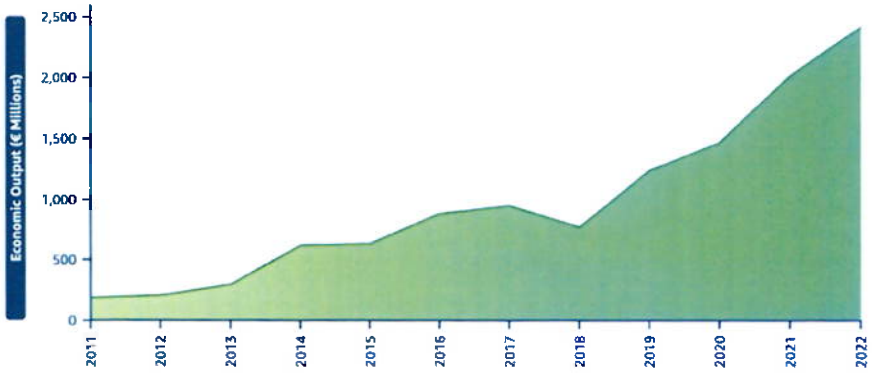
AWS does more than just create jobs in Ireland – its investments also help fuel the wider Irish economy, generating new opportunities for businesses and communities. This spillover effect of AWS expenditure is a classic example of how capital-intensive foreign direct investment (FDI) can bring much wider benefits to Ireland.

The figures are telling. AWS investment has increased economic output in the country by over €11.4 billion since 2012. In 2022 alone, AWS' total investment in the Irish economy – which incorporates direct, indirect and induced impacts – produced approximately €2.4 billion in additional economic output. AWS' positive macroeconomic impact is following a marked upward curve, with the 2022 figures representing a ten-fold increase on 2012.

AWS investment has increased economic output in Ireland by over €11.4 billion since 2012.



Impact of AWS Investment and Expenditure on Economic Output in Ireland - 2012-2022 - €m



Source: Indecon

3

Supporting a thriving Irish cloud infrastructure system

AWS investment has helped give rise to a successful Irish cloud infrastructure ecosystem

An important benefit of AWS operations and investment in Ireland has been its role in developing a vibrant domestic cloud infrastructure ecosystem – comprised of local companies – over the last decade. Indecon's analysis found that AWS expenditure on its infrastructure here has enabled the expansion and growth of over 500 such firms in sectors such as engineering, manufacturing, construction, energy and logistics. As these companies are located all over Ireland, it has ensured the advantages of AWS investment are enjoyed across a wider geographical area. A Limerick-based contractor to AWS, for example, would both employ staff from Munster and buy goods and services in the region, reflecting the multiplier effect of AWS expenditure.

What's more, many of those companies – such as Davenham Switchgear and Danann Air – have become world-leaders in their respective fields. Ireland has, as a result, earned a global reputation as a centre of excellence for cloud infrastructure services.

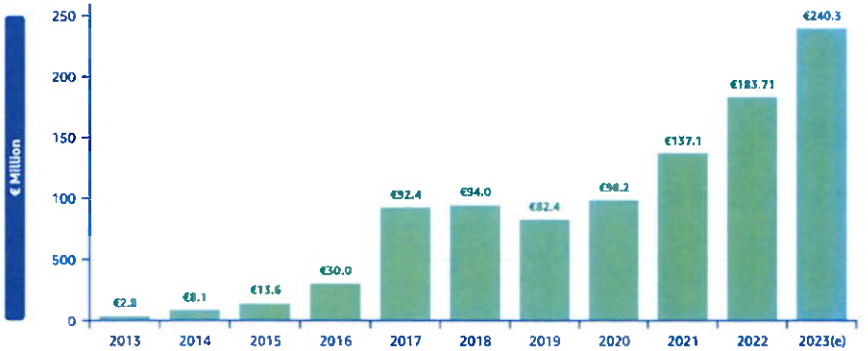
"Since opening its operations in Ireland, AWS has provided business opportunities for Irish companies to start, grow and scale in international markets. The partnership and co-operation that exists between Irish businesses and global companies invested here has a hugely positive impact on the Irish economy. AWS continues to expand its support to a range of businesses, including start-ups and scale-ups and plays a significant role in nurturing innovation and growth within the overall enterprise eco-system."

Leo Clancy,
CEO, Enterprise Ireland

Enterprise Ireland

The effects of that ever-burgeoning reputation can be seen in the growth of exports by Irish cloud infrastructure firms. In 2023, contracts won by suppliers and subcontractors to AWS, for the development of cloud infrastructure overseas, increased to an estimated €240 million. That figure is forecasted to rise further over the remainder of the decade. A total of 28 different countries are now recipients of exports from Irish companies in this space. This includes both the largest European States – such as France, Germany and Italy – and major markets further afield, including China, Japan and India.

Export Value of Construction Contracts by Suppliers to AWS in Ireland – 2013-2023 (€m)



Source: Indecon Survey of Amazon Web Services Construction Companies and Sub-suppliers

Source: Indecon Survey of Amazon Web Services Construction Companies and Sub-suppliers

The connection with AWS has been key to these Irish businesses. The extent and depth of AWS expenditure on contracts with those firms has provided opportunities to scale and deepen technical expertise. It has also had a positive clustering effect, encouraging healthy competition and innovation within the sector here.

Surveys of these companies, conducted by Indecon, underscore the importance of their business relationships with AWS. 82% of sub-suppliers to AWS, for example, agreed that their supply of services to AWS had a very significant effect on their own market reputation. Similarly, over 82% of those firms identified AWS infrastructure as having a very significant effect in facilitating sub-suppliers to expand their respective footprints in Ireland.

"AWS makes it incredibly easy to scale up what we do, particularly when looking at new markets abroad – they provide strong market knowledge, existing relationships and an open and supportive culture as we expand."

David McKay,
Managing Director of Danann Air

The Hanley Story

Hanley Energy are global innovators in critical power and energy management solutions, with a stable of world-class engineers shared between European headquarters in Ireland (Meath) and North America (Virginia). In 2009, Hanley Energy had three employees in Ireland and today the business employs over 700 people globally, with offices across North America, Australia and South Africa.

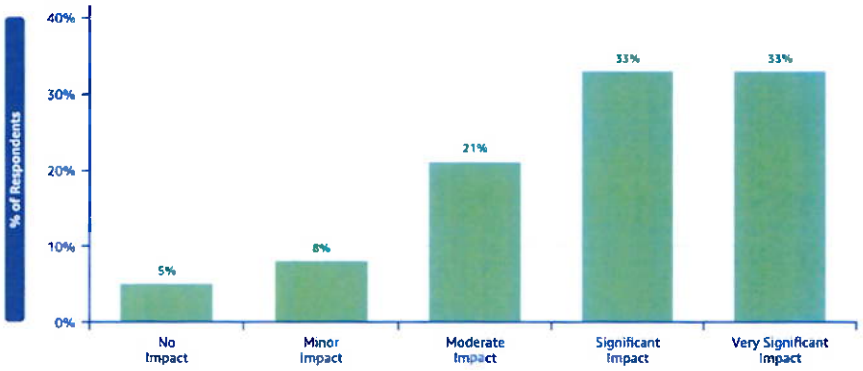
Hanley Energy initially worked with AWS to develop a prototype which was subsequently adopted at AWS facilities across the globe. The Hanley-AWS relationship has gone from strength-to-strength ever since.

At the end of 2022, Hanley Energy announced over 225 new jobs in a significant expansion of its operations in Ireland, including a new manufacturing facility in Monaghan and large development of its existing site in Dundalk.

"Our work with AWS is the perfect example of two businesses complementing each other's skills and driving each other forward. AWS' relentless focus on innovation, and customer obsession, ensures that for our employees there's a constant flow of new challenges, and new skills."

Dennis Nordon,
Managing Director, Hanley Energy

Impact of AWS Data Centres in Facilitating Suppliers' Revenue Growth



Source: Indecon Survey of Amazon Web Services Construction Companies and Sub-suppliers

4

How future AWS cloud infrastructure can deliver economic benefits

New AWS data centre infrastructure can generate extensive economic advantages for Irish localities

The economic impact of data centres can often be misunderstood. Analysis carried out by Indecon demonstrates unequivocally that, when it comes to a typical AWS data centre campus, there are major economic gains – driven both by the initial capital investment to construct the facility and the operational expenditure to operate and maintain it.

With respect to the capital expenditure benefits, Indecon's findings reveal that AWS' capital investment in a typical campus is responsible for an estimated additional €604 million in economic output in each year of the construction phase. Cumulatively, over the full duration of the three-year construction phase, AWS' investment is estimated to support €1.8 billion in wider economic output.

Although the operational expenditure needed to run and maintain a typical data centre is less than the up-front construction costs, it still delivers significant economic impact. Indecon determined that a typical AWS data centre campus will result in increased total economic output of €381 million annually.

The extent of the capital and operational expenditure figures should not obscure the employment benefits. The construction phase, in particular, of a typical AWS data centre campus is a source of major job creation. Indecon estimate that 6,700 full time jobs – driven by direct, indirect and induced impacts – are supported across that three-year timeframe. That equates to an average of 2,250 jobs annually.

An AWS data centre campus supports over 250 full time roles.

AWS' capital investment in a typical campus:

€604 million

(in economic output in each year of the construction phase)

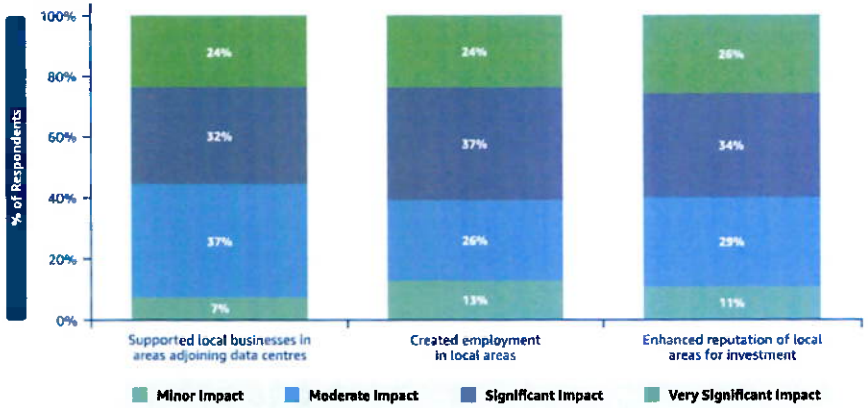
"We are so proud AWS chose South Dublin County to locate. They are a great addition to our business and wider community. Through many interventions including district heating, staff volunteering, developing third level courses, resourcing many of our community groups not to mention the obvious in providing employment, paying local taxes and supporting local businesses directly and indirectly, you could not ask for more."

Peter Byrne,
CEO, South Dublin Chamber

Even when the major capital expenditure associated with the construction of such a campus is complete, there are still strong employment upsides. Indecon's findings are that, once a campus enters its operational phase, it supports over 250 full time roles in the local economy annually through direct, indirect and induced effects.

The findings of Indecon's economic modelling are supported by evidence of Indecon's separate survey of AWS suppliers. Respondents to that survey were typically very positive about the impact that AWS infrastructural investment has had on employment and SMEs in the local areas in which it is situated. Respondents also underscored how AWS investment in data centres can improve the reputation of the area in terms of securing future other investment.

Impact of AWS Investment on the Local Area



Source: Indecon Survey of Amazon Web Services Construction Companies and Sub-suppliers

"AWS has made a demonstrable contribution to economic activity and employment in South Dublin, delivering two new workplaces of significance which have, respectively, particularly generated growth and local regeneration. Additionally, their partnership in local district heating and community initiatives have brought marked additionality through innovation, collaboration and social gain."

Colm Ward,
Chief Executive, South Dublin County Council

Fiona Forde, Business Manager for EMEA Construction

After time working abroad, I was delighted to take up a role with AWS in Dublin as a construction manager in 2021. In February 2022 I transitioned into a Business Manager Role within the construction team, which effectively manages the operational efficiency of the organisation both within Ireland and EMEA wide. I'm proud to work with AWS and support the construction of cutting-edge cloud infrastructure.

I enjoy working with our many local and EMEA wide vendors, contractors and suppliers, who have become world-leaders in their own right when it comes to cloud infrastructure. The variety of my work is one of the things I enjoy most – no day is the same.

There is a strong team culture at AWS too and I find the collaborative spirit here both inspiring and motivating. I am involved in ID&E initiatives in EMEA. I'm also involved in AWS' GetIT programme, which aims to inspire younger secondary school students – and particularly girls – to consider a future in STEM (Science, Technology, Engineering, Mathematics).

5

Community impact

AWS partners closely with local Irish communities

Ever since it first established a presence in Ireland, AWS has worked hard to support the local Irish communities in which its infrastructure and offices are based. This reflects the company's dedication to being a good neighbour and ensuring that the benefits of its investment in Ireland are also felt at grassroots levels.

The AWS InCommunities Fingal Fund embodies its approach to local community engagement within Ireland. Launched in 2022, it supports initiatives in the Fingal area that can make a positive impact across education, the environment, health and wellbeing. Resources from the fund, which is managed by ChangeX, a non-profit organisation, have already been allocated to 36 separate projects in Fingal and surrounding areas. More than 2,250 people have participated in these projects, with a further 8,600 benefitting from them. Similarly, a separate InCommunities Fund has supported 38 local projects in the Drogheda area to date, benefitting a further 5,500 people.

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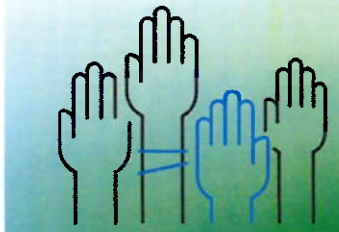


Foróige Sound Cabin

Kevin Lacey is the Youth Officer in the computer club at the Blanchardstown branch of youth organisation Foróige in Fingal. He's leading a project funded by the AWS InCommunities Fingal Fund to turn a previously unused cabin into a state-of-the-art musical creation space for young people in the area.

Kevin said:

"Foróige is Ireland's leading youth organisation, and the sound cabin we've created with the funding from AWS is both a melting pot of musical creativity and a safe space for young people to meet and socialise. The funding from AWS InCommunities Fingal Fund has gone exclusively into buying instruments and audio production technology that our service users wouldn't normally have access to.

One thing it's helped us purchase is our modular synth. We work with a lot of young people with ADHD (attention deficit hyperactivity disorder) and Autism, and they can become agitated or lose interest if we ask them to look at a computer for too long when making electronic music. The modular synth is really tactile, so we've had a lot of success with our young people who can't sit at a computer for very long or struggle with traditional instruments like the guitar, a bass or piano."

Strengthening education and skills has been a particular focus for AWS' community work in Ireland. For the past six years, AWS has partnered with the Tallaght Campus of Technological University Dublin (TU Dublin) on their Data Centre Technician Programme. AWS has also supported the development of similar courses with TU Dublin Blanchardstown and the Drogheda Institute of Further Education. These programmes offer participants the opportunity to re-train with annual bursaries and the possibility of a paid work placement with AWS.

Every year, 55 scholarships are offered to members of the local community so that they can develop the skills required to build a successful career in the cloud industry. Nearby AWS data centre infrastructure allows participants to gain hands-on experience with the most advanced technology.

On average, across the programmes, students have a 79% success rate of subsequently securing full-time employment in the IT sector following completion of their studies.

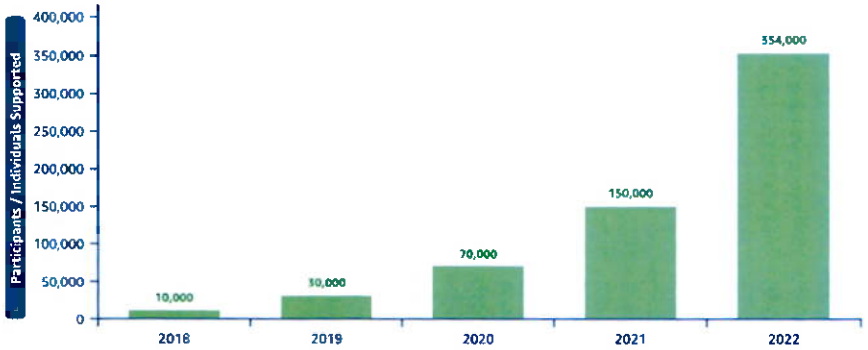
AWS runs a number of other educational programmes in Ireland. This includes: "GetIT", which develops the digital skills of secondary school students; "Educate", that helps integrate cloud skills into school curriculums; and "re/Start", a scheme that provides AWS cloud skills to participants from disadvantaged backgrounds.

AWS investment in these various initiatives is complemented by the significant volunteer work

undertaken by its staff. AWS employees undertook over 5,700 hours of voluntary work over the last five years. In 2022 alone, AWS staff gave up 3,200 hours of their own time to support local causes and communities. This includes supporting projects in local schools, hospitals, and community services. The value of this volunteering is assessed at over €200,000 by Indecon.

Indecon estimates that between initiatives funded by the AWS InCommunities programme (€3.5 million) and the value of volunteering provided by AWS staff (€200,000), AWS has invested nearly €3.7 million in community engagement since 2018.

Participants / Individuals Supported by InCommunities programmes



Source: Indecon analysis of AWS data

Joanne Reynolds, Community Engagement Manager

I lead AWS Community Engagement in Ireland. My work, which I love, involves engaging with the local communities in which AWS is located to support various social impact and educational programmes. The AWS philosophy is that when we commit investment to infrastructure, we also commit to the community in which it's based.

Having grown up in Clondalkin, and not having experience in a any technical field, a job in the tech industry never crossed my mind. It just felt vaguely intimidating and alien. But I then stumbled into what has turned into a great career with AWS.

One of the best things for me about AWS is that the company genuinely values diversity of backgrounds. We want different voices in the room when big decisions are being made. And your view or opinion will be respected, no matter who you are or where you come from.

I'm also continually inspired by my female colleagues, particularly those who work at our infrastructure sites. It was often the case that they were amongst the very few women in their respective third level courses; now they are continuing to break gender stereotypes and excel in fields like technology and engineering within AWS.

6

AWS sustainability in Ireland

The AWS sustainability story in Ireland

AWS isn't just committed to investment and employment creation in Ireland – it's also dedicated to addressing some of the world's biggest environmental challenges. That means powering its Irish infrastructure with clean and renewable energy; designing that same infrastructure to be class-leading in terms of energy efficiency; utilising excess heat generated by AWS data centres to warm nearby homes and businesses; and constantly innovating in the manufacture and recycling of cloud hardware to limit waste.

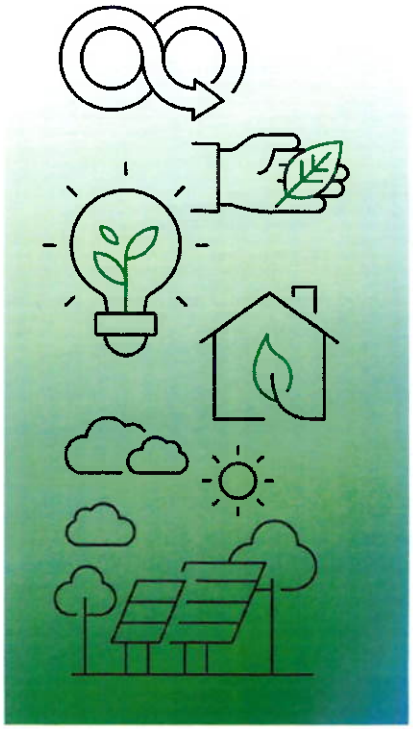
This approach in Ireland reflects Amazon's wider global sustainability commitments. In 2019, Amazon co-founded the Climate Pledge, a commitment to reach net zero carbon emissions by 2040, ten years ahead of the Paris Agreement. The company is now on a path to power its operations by 100% renewable energy by 2025, five years ahead of its original 2030 target. Globally, Amazon has already announced over 400 renewable energy projects representing 20 gigawatts of clean energy capacity.

As for its specific operations in Ireland, Amazon was the first company in the country to enter into unsubsidised corporate power purchase agreements (CPPAs). In other words, it's bringing renewable energy on stream without any direct Government subsidy. Its first CPPA project, located in Cork, is now fully operational. Other projects, situated in Galway and Donegal, are expected to come into operation in late 2023 and 2024 respectively. In total, these will together add 229 MW of renewable energy to the Irish grid each year – enough to power 185,000 Irish homes per annum.

"I have asked my officials that, when it comes to data centres, who is doing most to help us find solutions on sustainability? The answer was AWS. AWS is flexible, innovative and a partner for government."

Minister for the Environment,
Climate and Communications, Eamon Ryan T.D.

The Tallaght District Heating Scheme uses recycled heat from a nearby AWS data centre to warm local houses and other premises.

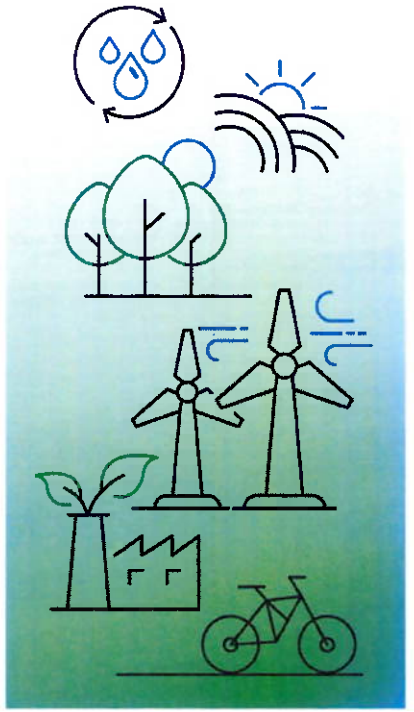


AWS designs its Irish data centres to meet exacting standards when it comes to comes to energy and water use. For example, its cloud infrastructure in Ireland use direct evaporative cooling systems that cool servers with outside air. This means that for more than 95% of the year, AWS uses no water to cool its Irish data centres. For the few hot days that Ireland does experience, only modest amounts of water are required. AWS' newest data centres in Ireland use as little as 1000m3 of water for cooling annually – that's the equivalent to the yearly water usage of eight average Irish households. Moreover, new AWS data centres in Ireland will reduce embodied carbon in concrete and steel through the use of ground granulated blast-furnace slag and green steel respectively.

AWS also supports local sustainability initiatives. In Dublin, AWS has worked with South Dublin County Council to deliver the Tallaght District Heating Scheme (TDHS), the first such initiative nationwide. This involves the use of excess heat from an AWS data centre to heat nearby public sector, residential, academic and commercial premises. It is projected that the TDHS will save almost 1,500 tonnes of CO_2 per annum during its first phase of operation.

AWS' approach to sustainability extends to the hardware deployed within its data centres. In 2019 the company opened a specialised server recycling facility in Dublin 15, where used server racks and components are sent in order to extend the life of data centre hardware. Racks are securely demanufactured, with components repaired and tested for re-use. In November 2020, the facility achieved the highest possible rating for Zero Waste to Landfill Certification. It is thereby helping AWS to avoid waste generation, reduce the use of raw materials and lower carbon emissions across its supply chain.

Amazon was the first company in Ireland to enter into unsubsidised coporate power purchase agreements.

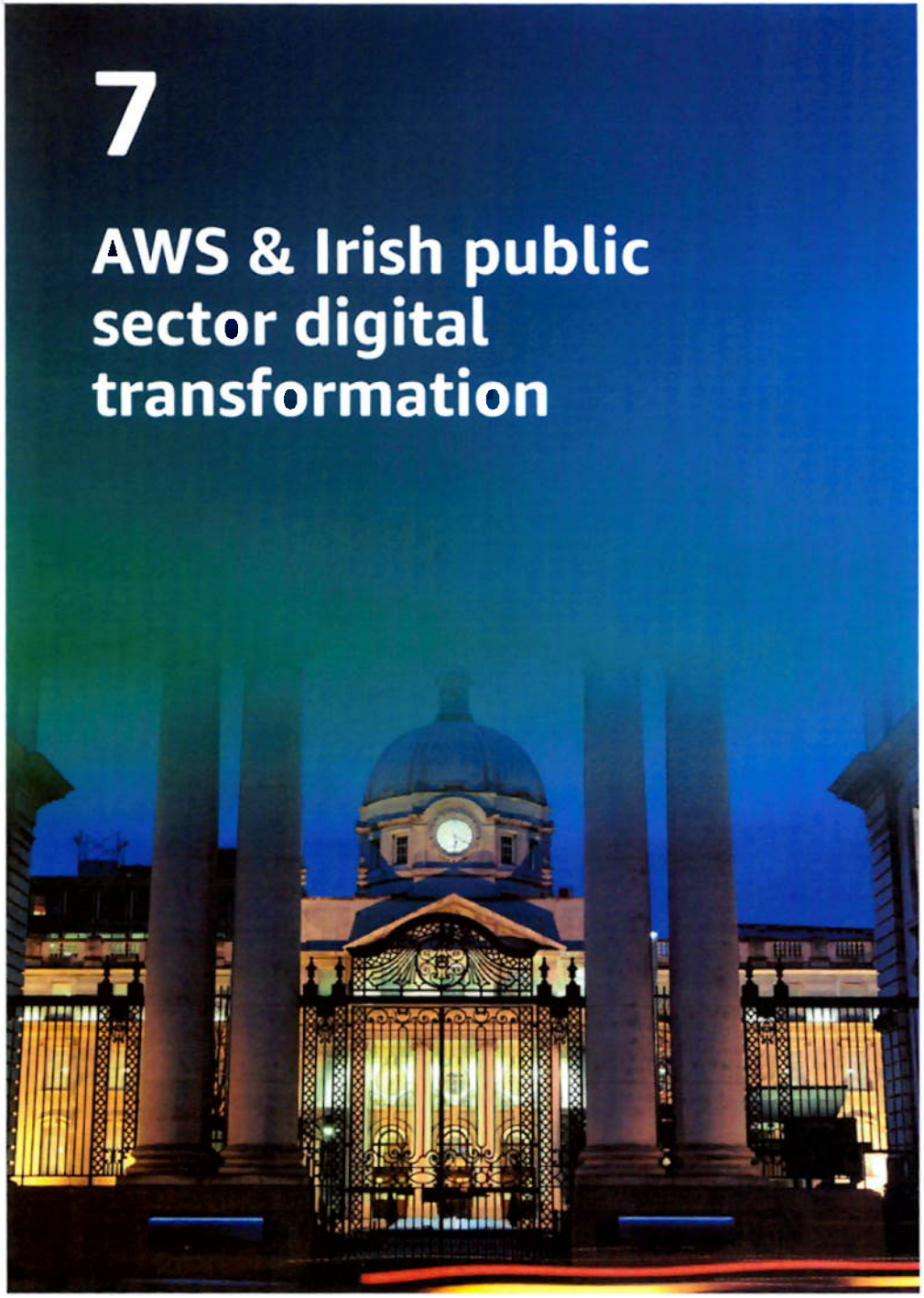


"We're excited to be working with AWS to help drive their renewable energy transition through the supply of our HVO. At Certa, our mission is to connect our customers with the most progressive energy solutions available, and as a straight drop-in replacement for conventional diesel, our HVO Bio Fuel provides up to 90% reduction in carbon emissions instantly, with no generator retrofitting required. We look forward to continuing the energy transition journey alongside AWS."

Andrew Graham,
Managing Director, Certa Ireland

7

AWS & Irish public sector digital transformation



AWS is helping the Irish public sector to digitalise and improve public services

Irish public sector bodies are increasingly moving to the AWS cloud in order to digitalise and improve service delivery. This is another benefit of AWS' infrastructure in Ireland – it affords Irish PSBs ready access to world-class cloud technology and expertise. The Government itself has recognised the importance of public sector cloud adoption. This is clear from its recent national digital and public sector ICT strategies, with their objectives of ensuring that 90% of applicable services are consumed online through a cloud-first approach.

"Public Sector Organisations should no longer decide whether to move to cloud for new or existing systems. The decision to be made now is what, how and when to move to cloud, which can offer a step change in carbon efficiency, security and value for money."

Minister for Finance,
Michael McGrath T.D.

The Government's deployment of AWS in response to the COVID-19 pandemic underlines how the company's services are being put to good use by the public sector. AWS, for example, provided the underlying cloud platform for the HSE's "COVID Tracker" smartphone app. This allowed a secure and reliable solution to be rolled-out quickly, enabling the HSE to improve the speed and accuracy of contact tracing for over 1.3 million of the app's active users. Similarly, when the Department of Health needed to rapidly establish a contact centre to assist the public with the EU Digital Covid Certificate, it turned to AWS. The company's virtual call centre service, Amazon Connect, allowed the Department to manage huge volumes of public queries, with more than 400,000 calls alone in the first weeks of operation.

The global shift by Governments to the cloud in order to improve public services is forecasted to quicken in the years ahead. Ireland is uniquely well-positioned to successfully navigate that transition, given the AWS infrastructure on its doorstep. Irish public sector bodies therefore have the opportunity of becoming global exemplars in how cloud technology can be deployed to better serve citizens.

How the Irish Refugee Council leveraged AWS to assist Ukrainian refugees

When Russia invaded Ukraine in February 2022, the nonprofit Irish Refugee Council (IRC) mobilised to support Ukrainians who were fleeing the conflict. The IRC needed a dedicated call centre that was scalable and could connect directly to staff who spoke Ukrainian. It also required a message service for after-hours contact to help Ukrainian refugees who couldn't call while they were sheltering or in transit.

The IRC engaged AWS and TTEC Digital, an AWS partner. Within two weeks a Ukrainian information helpline was launched using Amazon Connect, a cloud contact centre, which was subsequently used to assist more than 4,000 Ukrainians. Whether through the helpline or through web chat, Ukrainian refugees received reliable information in their native language so they could quickly understand their rights and potential supports in Ireland.

"It isn't simple for someone to find credible information when they don't speak the language, don't know whom to trust, and are facing a huge disruption in their lives because of a war. That's why it was critical that the Irish Refugee Council was able to give Ukrainians access to reliable, confidential, and trustworthy information. Amazon Connect allowed us to do that – using just laptops and headsets. It's been a privilege to work with the AWS team and to bring the benefit of robust technology to those who need it – and fast. Our partnership with AWS has made a real difference to our efforts to help people affected by the ongoing war in Ukraine."

Marianna O'Neill,
Ukraine Response Lead, IRC

Neil Morris, AWS Ireland Country Lead

Neil Morris is the AWS Country Lead for Ireland and AWS Operations Director (Northern Europe & Israel). Neil leads the AWS business in Ireland and represents AWS' interests with stakeholders across the country. He has worked in the multinational technology sector in Ireland for over 30 years. His experience includes, Data Centre Architecture & Operations, Semiconductors, Engineering, High Performance Team Leadership, Performance Psychology, Lean/Six Sigma, and electronics. Neil is a graduate of Dublin City University with a B.Sc. in Physics and has a proven track record in international management and delivering world class results in cross-cultural teams.

Neil is married to Evelyn and has lived in Kildare for the past 25 years. He enjoys playing traditional Irish music and being outdoors, as well as running and cycling.

Notes