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<b>Re:</b>	Further Information for Appeal - ABP Ref.: PL06F.318180 Climate and Low Carbon Development Act
<b>Client:</b>	Universal Developers LLC
<b>Date:</b>	21 <sup>st</sup> June 2024
<b>JSA Ref:</b>	22058

## INTRODUCTION

This document has been prepared by John Spain Associates in association with AWN Consulting.

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.”*

The following sections set out in detail the consistency of the proposed development with the foregoing.

## THE MOST RECENT APPROVED CLIMATE ACTION PLAN (2024 CLIMATE ACTION PLAN)

The 2024 Climate Action Plan<sup>1</sup> was published on the 20<sup>th</sup> of December 2023. Climate Action Plan 2024 (CAP24) is the third annual update to Ireland’s Climate Action Plan.

The Plan was approved by Government on to the 24<sup>th</sup> of May 2024, having undergone public consultation, Strategic Environmental Assessment and Appropriate Assessment.

The publication notes that *“Climate Action Plan 2024 builds upon last year’s Plan by refining*

<sup>1</sup> Link: <https://www.gov.ie/en/publication/79659-climate-action-plan-2024/b>

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*and updating the measures and actions required to deliver the carbon budgets and sectoral emissions ceilings. The Plan provides a roadmap for taking decisive action to halve Ireland's emissions by 2030 and reach net zero by no later than 2050, as committed to in the Climate Action and Low Carbon Development (Amendment) Act 2021.*

**Table 1: Statements and Policy Provisions of the 2024 Climate Action Plan and the Consistency of the Proposed Development with the Plan**

Section of CAP	CAP Statement	Consistency of the Proposed Development
<p><b>Page 28</b></p>	<p>Guided by our 2030 and 2050 targets, the programme of carbon budgets and sectoral emissions ceilings introduces more immediate and sector-specific emissions reduction targets that provide a pathway towards the 2030 51% reduction target and the 2050 climate neutrality goal.</p>	<p>The proposed development will not contribute to any exceedance of the sectoral emissions ceiling for the electricity sector, as the proposed development is included under existing electricity demand forecasts, and will bring forward renewables for contracted demand which is already accounted for within CAP 24.</p> <p>In addition, there is no current evidence that there will be an exceedance of the Sectoral Emission Ceiling. The recent DECC publication “<i>Summary of Analysis to Support Preparation of the Sectoral Emissions Ceilings</i>” (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<sup>2</sup>).</p> <p>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<sub>2</sub>eq is attainable.</p> <p>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<sup>3</sup>. 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.</p>
<p><b>Section 2.2, Page 32</b></p>	<p>Under the Climate Action and Low Carbon Development (Amendment) Act 2021, Ireland’s</p>	<p>Please refer to the section of this document relating to achievement of the National Climate Objective under the 2021 Act.</p>

<sup>2</sup> <https://www.eirgridgroup.com/site-files/library/EirGrid/All-Island-Generation-Capacity-Statement-2020-2029.pdf>

<sup>3</sup> <https://www.epa.ie/our-services/monitoring--assessment/climate-change/ghg/latest-emissions-data/#>

	<p>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 2021 Act also provides for a reduction of 51% in GHG emissions by 2030, compared to 2018 levels.</p>	
<p><b>Section 2.3, Page 34</b></p>	<p>Under the EPA’s projections, emissions in the first two carbon budgetary periods (2021- 2025 and 2026-2030) are expected to exceed their limits by a margin of 24%-34%, with the sectoral emissions ceilings for both budgetary periods projected to be exceeded in almost all sectors including: electricity; industry; transport; and agriculture. An overshoot in one carbon budgetary period will require an equivalent reduction in the emissions allowed in the following period, making the level of abatement to be reached in the subsequent period more challenging.</p>	<p>The applicant has committed to engaging in CPPAs (in line with Condition 13 of the FCC decision to grant permission, if applied by the Board), which will provide for renewable energy in line with the requirements of the Government Statement on the Role of Data Centres in Ireland’s Enterprise Strategy (2022)</p>
<p><b>Section 5.4, Pages 48-49</b></p>	<p><b>Electricity:</b> Corrective actions to accelerate renewable electricity generation and grid flexibility, and manage electricity demand growth, were implemented in 2023. The Offshore Wind Delivery Taskforce is developing a system-wide plan for delivery of Offshore Wind in Ireland, and an Implementation Plan for Future Arrangements for System Services Consultation Paper, and an Interconnection Policy were published. ESB Networks published their platform roadmap for the provision of tools and supports for community participation in flexibility measures that works towards managing electricity demand growth;`</p> <p><b>Industry:</b> In the industry sector, several strategic initiatives on decarbonisation were taken in 2023. A Green Hydrogen Strategy was introduced and a Green Public Procurement Strategy and Action Plan was published. Additionally, a study was undertaken</p>	<ul style="list-style-type: none"> <li>• The applicant is committed to entering into a CPPA</li> <li>• 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. (CAP24 states that energy management systems will be mandatory for organisations who use more than 85 TJ of energy per annum. The SEAI’s Large Industry Energy Network will support organisations in adopting energy management systems, developing emissions management systems, improving energy performance metrics, and adopting best practice in energy efficiency and emissions reductions)</li> </ul>

	<p>looking at shaping policy for the procurement of low carbon cement materials. To address decarbonisation of cement and construction, the Department of Enterprise, Trade and Employment successfully engaged expert services to advance the CAP23 action EN/23/12/a;`</p> <p><b>Built Environment:</b> Significant efforts were made to advance the decarbonisation of the building sector. The Heat and Built Environment Delivery Taskforce focuses on acceleration of system-wide programme and project delivery for the measures identified. The Energy Efficiency Directive takes the principle of “energy efficiency first” as a key policy requirement for buildings. The impending publication of a National Heat Policy Statement, informed by the National Heat Study, will outline the comprehensive approach to decarbonising the heat sector by the end of 2023. The District Heating Steering Group issued recommendations to enhance district heating. Lastly, the Policy Statement on Geothermal Energy for a Circular Economy further contributed to sustainable building initiatives;</p>	<ul style="list-style-type: none"> <li>• The proposed development will increase the embodied carbon reduction of concrete to 45% through increased level of GGBS in the concrete mix design. The proposed development will also utilise green steel. Steel is one of the largest contributors of embodied carbon in the structure of AWS data centres. AWS are lowering these emissions by working with 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%. (CAP24 outlines a target of a decrease in embodied carbon in construction materials: of 10% embodied carbon for material produced in Ireland in 2025 rising to 30% by 2030).</li> <li>• PUE (power usage effectiveness) 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 “<i>European enterprises cited on average a PUE of 2.1<sup>4</sup></i>” as compared to a PUE of 1.3 set by the Climate Neutral Data Centre Pact (which is dealt with in further detail within Section 4 of the previously submitted JSA Appeal Response document) and an annualised design PUE of 1.12 for the proposed development. (CAP24 has set a target for the industrial sector of a reduction in fossil fuel demand through energy efficiency: reduce by 7% in 2025 rising to 10% by 2030)</li> </ul>
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<sup>4</sup> 451 Research - <https://www.spglobal.com/marketintelligence/en/news-insights/research/improving-datacenter-efficiency-in-europe-the-role-of-pue>

<p><b>Section 11.2.2.4, Page 142</b></p>	<p>In order to meet the targets and objectives of this Climate Action Plan, it is necessary to direct the private sector towards financing the necessary investments. We are taking the lead in developing innovative approaches to financing our decarbonisation objectives and are committed, for example, to rolling out a low-cost residential retrofit loan scheme. To meet the scale of this challenge, the financial sector will also need to bring innovative solutions to the market. Through the commercial State sector and other Public Bodies, we will seek to leverage the significant volumes of private sector capital that is available for well-structured projects, including wind (both onshore and offshore) and solar electricity generation, interconnection, and major transport infrastructure.</p>	<p>As noted above, the applicant has committed to engaging in CPPAs (in line with Condition 13 of the FCC decision to grant permission, if applied by the Board), which will provide for renewable energy in line with the requirements of the Government Statement on the Role of Data Centres in Ireland’s Enterprise Strategy (2022)</p> <p>This represents a direct private sector investment in renewable energy in line with this section of the Climate Action Plan.</p>
<p><b>Section 11.2.3, Page 144 and 145</b></p>	<p>From a national planning policy perspective, the National Planning Framework (NPF) provides an established means through which to implement and integrate climate change objectives, including adaptation, at national, regional, and local levels, and the transition to a low carbon and climate resilient society. The NPF clearly states that “in addition to legally binding targets agreed at EU level, it is a national objective for Ireland to transition to be a competitive low carbon, economy by the year 2050”. The NPF sits at the top of the planning hierarchy and provides the overarching context for the regional and local tiers below it, thereby securing the alignment of policies and objectives as part of the plan-making process, including alignment with the Climate Action Plan.</p> <p>...</p> <p>The three Regional Spatial and Economic Strategies</p>	<p>The submitted Planning Report and Appeal Response forming part of the application details the compliance of the proposed development with the relevant policies and objectives of the National Planning Framework and the Regional Spatial and Economic Strategy for the Eastern and Midlands Regional Assembly (please refer to Section 5 of the submitted Planning Report for further details)..</p>

	<p>for each Regional Assembly area, sitting at the tier below the NPF, also contain a range of policy objectives in order to ensure emissions can be reduced and targets met, and these feed directly into Development Plans at the more local level. At this level, national and regional climate objectives (including energy) are given effect through specific policies and objectives that reflect the local context. Section 10(2)(n) of our Planning and Development Act, 2000 (as amended) specifically identifies Climate Action (adaptation and mitigation) as a mandatory objective to be included in all Development Plans. Adopted by the elected members of the Local Authority, these plans are subject to a review and evaluation by the Office of the Planning Regulator to ensure consistency with national policy and guidance. The role of Local Authorities in climate action is explored further in chapter 19.</p>	
<p><b>Section 11.2.4, Page 145 and 146</b></p>	<p><b>Digital Transformation</b> Harnessing Digital - The Digital Ireland Framework, launched in February 2022, reflects Ireland’s ambition to continue to be a digital leader at the heart of European and global digital developments. It is helping to drive the digital transition across our economy and society, and it complements work towards achieving Ireland’s climate targets, with our green and digital ambitions re-enforcing each other. The strategy sets out targets, high-level workstreams and deliverables across four dimensions, in line with the EU’s Digital Decade 2030: Digital Transformation of Business; Skills; Digital Infrastructure; and the Digitalisation of Public Services....</p> <p>The Government will also continue to support remote working through its Making Remote Work: National Remote Work Strategy as part of its wider</p>	<p>The proposed development itself comprises data centre development, which is the infrastructure of the digital transition.</p> <p>The Government Statement on the Role of Data Centres in Ireland’s Enterprise Strategy (2022) states the following:</p> <p><i>“Data centres, along with connectivity and cyber security, are important infrastructure enablers in an open modern economy, facilitating digital transformation of SMEs and associated productivity and competitiveness gains. Data can drive research and innovation and the training of AI systems in areas such as health, transport, agriculture, and the environment. Digital technologies have a vital role to play in enabling decarbonisation including through the gathering and analysis of important data for mitigating and adapting to climate change and protecting and restoring biodiversity and ecosystems. They can also help to unlock carbon emission reductions in hard-to-abate sectors such as buildings, industry, and agriculture - through solutions such as</i></p>

	<p>commitment to increased participation in the labour market; more balanced regional development; improved work/ life balance; reduced commuting times; and reduced transport-related carbon emissions.</p>	<p><i>aggregated energy system monitoring and management systems, renewables certification and product passports.”</i></p> <p><i>“Data centres represent a core digital infrastructure for both Ireland’s and Europe’s digital economies and for strengthening Ireland’s position as a strategic international location for IT services. This is the infrastructure that lies behind all digital aspects of our social and work lives, including video calling, messaging and apps, retail, banking, travel, media, and public service delivery in areas such as healthcare and welfare. Data centres enable digital economies through hosting critical software and data that allows the world’s leading companies to run their businesses, organise their supply chains, pay their staff, and host video conferencing applications. These are the suite of technologies and services that have facilitated the digitalisation of our economy, our work lives and many of the online applications, services and platforms widely used across society. During the pandemic, they enabled business and communities to quickly move to a remote model. Data centres also host and deliver entertainment and content services into homes. More broadly however, data centres are also the means by which Ireland’s major technology companies process and store companies’ most sensitive and strategic assets. They are also the means by which they are transitioning their businesses to the cloud, making Ireland critical to their global presence. Investments by technology multinationals in large, long-life assets such as data centres further secures the presence of the global technology sector in Ireland.”</i></p> <p>This highlights the core importance of data centres to supporting the digital transition across all sectors of the economy.</p> <p>Developments such as that which is now proposed enable and facilitate remote working in line with the National Remote Working Strategy, through the delivery of cloud computing capacity and services.</p>
<b>Electricity</b>		

<p><b>Page 149</b></p>	<p>The electricity sector continues to face an immense challenge in meeting its requirements under the sectoral emissions ceiling, as the decarbonisation of other sectors, including transport, heating, and industry, relies to a significant degree on electrification. The deployment rates of renewable energy and grid infrastructure required to meet the carbon budget programme for electricity is unprecedented and requires urgent action across all actors to align with the national targets.</p>	<p>The applicant has committed in engaging in CPPAs (in line with Condition 13 of the FCC decision to grant permission, if applied by the Board), which will provide for renewable energy in line with the requirements of the Government Statement on the Role of Data Centres in Ireland’s Enterprise Strategy (2022), thereby supporting the transition to renewable electricity sources.</p>
<p><b>Page 150</b></p>	<p><b>Measures and Actions</b></p> <p>Transformational policies, measures and actions, and societal change are required to increase the deployment of renewable energy generation, strengthen the electricity grid, and meet the demand and flexibility needs required for the challenges of: `</p> <ul style="list-style-type: none"> <li>• Increasing renewable generation to supply 80% of demand by 2030 through the accelerated expansion of onshore wind and solar energy generation, developing offshore renewable generation, and delivering additional grid infrastructure</li> <li>• Developing micro- and small-scale generation, as well as community projects, through actions such as grant funding and enabling small-scale production to participate in energy markets</li> <li>• Transforming the flexibility of the electricity system by improving system services and increasing storage capacity</li> </ul>	<ul style="list-style-type: none"> <li>• The applicant has committed in engaging in CPPAs (in line with CAP24 and Condition 13 of the FCC decision to grant permission, if applied by the Board), which will provide for renewable energy in line with the requirements of the Government Statement on the Role of Data Centres in Ireland’s Enterprise Strategy (2022).</li> <li>• 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.</li> <li>• 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.</li> <li>• In 2022, the electricity consumed in 19 AWS cloud computing regions, including their cloud region in Ireland, was attributable to 100% renewable energy.</li> </ul>

	<ul style="list-style-type: none"> <li>Developing tools and mechanisms that support demand side flexibility services which leverage smart metering, including market incentives and smart tariffs, reducing/removing regulatory barriers, and focusing on flexibility-ready standards for smart technology</li> </ul> <p>Delivery of at least 2 GWs of new flexible gas-fired generation</p>	
<p><b>Section 12.1.3, Page 154</b></p>	<p>At a time when the energy system is under severe pressure to ensure security of supply, amid projections of rapid electricity demand growth over the coming decade, the electricity sector has been set one of the smallest carbon budget allocations and the steepest trajectory (-75%) across all sectors. The scale of the challenge to meet the sectoral emissions ceiling is immense and requires policies to be moved from an ‘end of decade’ target trajectory towards a ‘remaining carbon budget’ target.</p>	<p>As set out within the application and the appeal response (Section 4), the development is subject of an existing connection agreement and does not represent additional electricity demand growth over and above what is already provided for in the existing executed connection agreement.</p> <p>As set out above, the applicant is also committed to engaging in a CPPA which will support the delivery of new additional renewable generation.</p> <p>With regard to the assessment of the proposed development in the context of the Sectoral Emissions Ceilings, we refer to the Appeal Response provided by AWN, which assesses the proposed development in their context (Section 5 of the AWN document refers).</p>
<p><b>Section 12.4.1.1, Pages 162 and 163</b></p>	<p><b>Accelerate Renewable Electricity Generation</b></p> <ul style="list-style-type: none"> <li>To reach 80% of electricity demand from renewable sources by 2030:</li> <li>Accelerate the delivery of utility-scale onshore wind, offshore wind, and solar projects through a competitive framework;</li> <li>Develop non-utility scale generation and community projects through actions such as</li> </ul>	<p>A per the above response to Section 12.1.3. .</p>

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	<p>grant funding and enabling such projects to participate in energy markets and flexibility schemes;</p> <ul style="list-style-type: none"><li>• Target 6 GW of onshore wind and up to 5 GW of solar by 2025;</li><li>• Target 9 GW of onshore wind, 8 GW of solar, and at least 5 GW of offshore wind by 2030;</li><li>• All new or repowered renewable electricity generation projects shall implement a Community Benefit Fund equivalent to the RESS requirements of €2/MWh;</li><li>• Most fundamentally, significant investment is needed in the transmission and distribution systems to maximise the usage of renewable electricity and to reduce constraints and congestion on the system. System Operators and the CRU must ensure the timely investment in, and delivery of, the required electricity network infrastructure, including key priorities such as the North South Interconnector, to meet the targets set out in this, and subsequent, Climate Action Plans;</li><li>• Deliver a streamlined electricity generation grid connection policy and process, and remove barriers, where possible, for the installation of renewables and flexible technologies reducing the need to build new grid, including hybrid (wind/solar/ storage) connections;</li><li>• Publish a new Electricity Generation Grid Connection Policy;</li><li>• Undertake a public consultation on proposed regional renewable electricity targets, including relevant environmental assessments in the upcoming draft National</li></ul>	
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	<p>Planning Framework revision;</p> <ul style="list-style-type: none"><li>• Provide for greater alignment between local plans and renewable energy targets at national (and regional) levels, taking into account regional targets once established and the revised National Planning Framework;</li><li>• Publish the Draft Renewable Electricity Spatial Policy Framework White Paper; ` Publish the revised methodology for Local Authorities Renewable Energy Strategies;</li><li>• Publish Draft Revised Wind Energy Development Guidelines;</li><li>• Commence drafting of Solar Energy Development Guidelines;</li><li>• Following finalisation of a Regional Roadmap, Regional Assemblies will publish and implement Regional Renewable Electricity Strategies, enabling a unified methodology for national and regional spatial and capacity targets, identifying areas suitable for renewable electricity deployment at regional and county levels that can inform the statutory planning process;</li><li>• Following adoption of the Regional Renewable Electricity Strategies, Local Authorities will include a statement within their next Local Authority Climate Action Plan which identifies the methods or processes that will be used to implement the required policy supports to achieve renewable electricity targets;</li><li>• In line with transposing the revised Renewable Energy Directive, which entered into force in November 2023, ensure that the permit-granting procedure, the planning, construction</li></ul>	
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	<p>and operation of renewable energy plants, the connection of such plants to the grid, the related grid itself, and storage assets are presumed as being in the overriding public interest;</p> <ul style="list-style-type: none"><li>• Map and designate Renewable Acceleration Areas for onshore renewables as required following transposition of the revised Renewable Energy Directive once the relevant provisions have been transposed into Irish law;</li><li>• Ensure that Local Authorities, An Bord Pleanála, and the Maritime Area Regulatory Authority have sufficient and appropriate expertise and resources to meet the State's needs in this area;</li><li>• All relevant public bodies will carry out their functions in a manner which supports the achievement of the renewable electricity targets, including, but not limited to, the use of road and rail infrastructure to provide a route for grid infrastructure where this is the optimal solution;</li><li>• Deliver the Small-scale Renewable Electricity Support Scheme to support nondomestic renewable electricity generators above 50 kW, and community energy and small and medium-sized enterprises' projects up to 6 MW;</li><li>• Target 1.6 GW of installed micro-generation capacity (<math>\leq 50</math> kW) by 2030; ` Production of 2 GW of renewable hydrogen sourced from offshore wind to be in development by 2030, which will help to provide greater certainty for investors, and create the production scales</li></ul>	
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	<p>needed to enable greater infrastructure deployment;</p> <ul style="list-style-type: none"> <li>• Ensure priority EU electricity infrastructure projects, Projects of Common Interest (PCI) will continue to receive prioritisation as provided by the EU TEN-E Regulation, addressing any administrative, market, or regulatory obstacles obstructing the implementation of PCIs to ensure their scheduled execution.</li> </ul>	
<p><b>Section 12.4.1.2, Page 164</b></p>	<p><b>Accelerate Grid Flexibility</b></p> <ul style="list-style-type: none"> <li>• Empower business and households by developing clear public information regarding electricity carbon intensity in real time and promote opportunities to shift demand to times of low carbon intensity;</li> <li>• Delivery of 2 GW of new flexible gas-fired power generation;</li> <li>• Phase out and end the use of coal and peat in electricity generation;</li> <li>• System Operators to transform the flexibility of the electricity system through changes to policies, standards, services, and tools, funded and incentivised through regulatory price controls;</li> <li>• As an urgent priority, establish the investment framework and competitive market arrangements needed to deliver zero carbon system services;</li> <li>• Deliver at least three new electricity transmission grid connections or interconnectors;</li> <li>• Explore further interconnection potential,</li> </ul>	<ul style="list-style-type: none"> <li>• As set out in the Planning Report and Further Information Response (Section 3(a)) as submitted to Fingal County Council, the proposed development does not entail a new request for power, because it has 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. The power required for the proposed development does not rely on flexible power generation.</li> </ul>

	<p>including hybrid interconnectors;</p> <ul style="list-style-type: none"> <li>• Publish the Electricity Storage Policy which will support the further deployment of electricity storage in Ireland, including longer term storage;</li> <li>• Increase deployment of medium to long-term storage technologies;</li> <li>• Undertake dispatch reform aimed at improving the efficiency of Transmission System Operators dispatch actions.</li> </ul>	
<p><b>Section 12.4.1.3, Pages 164 and 165</b></p>	<p><b>Manage Electricity Demand Growth</b></p> <ul style="list-style-type: none"> <li>• The overarching objective of managing electricity demand growth is to ensure, through a combination of energy efficiency and flexible electricity demand, that economic growth can be supported by low-carbon or no-carbon energy demand growth;</li> <li>• Ensure that 15-20% of the electricity system demand is flexible by 2025, increasing to 20-30% by 2030, to reduce the peak demand and shift the demand to times of high renewable output;</li> <li>• Deliver a demand side strategy that facilitates zero carbon demand, incentivises low carbon electricity consumption, and aligns with EU energy efficiency requirements, while facilitating electrification targets;</li> <li>• The demand side strategy should accelerate the rollout of local flexibility markets by the Distribution System Operator, as required to meet renewable electricity and carbon abatement targets, and contain measures to incentivise Large Energy Users to increase the flexibility in their electricity demand;</li> </ul>	<ul style="list-style-type: none"> <li>• As set out above, the proposed development does not entail a new request for power, because it has 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 Capacity Forecast.</li> </ul>

	<ul style="list-style-type: none"> <li>• Publish a regulatory decision on dynamic green electricity tariffs;</li> <li>• Enable and encourage domestic customers, businesses, and communities to participate in demand flexibility services;</li> <li>• Enable and encourage customers to participate in wholesale and system services markets as a matter of urgency. Local balancing of flexible demand and renewable generation will contribute to an increase in renewable electricity usage and a reduction in carbon emissions.</li> </ul>	
<b>Industry</b>		
<p><b>Section 13.3.2.2, Page 184</b></p>	<p><b>Construction -Reduction in Embodied Carbon in Construction Materials</b></p> <p>Under the Climate Action Plan, the Sustainable Energy Authority of Ireland (SEAI) are to lead several actions that will improve transparency of the embodied carbon in buildings. These actions entail the development of a national database system comprising building (and other construction) materials, an official embodied carbon calculation methodology with associated software, and a resultant embodied carbon rating system for buildings.</p> <p>Government is working towards the use of best-practice carbon management and reduction practices across our construction sector. In time that will include Lifecycle Global Warming Potential (GWP) assessments of public and private construction practices, ensuring carbon is minimised in the design of projects, the materials used, building practices, and ultimately throughout the lifetime of the building or</p>	<ul style="list-style-type: none"> <li>• The proposed development will increase the embodied carbon reduction of concrete to 45% through increased level of GGBS in the concrete mix design (with 40% GGBS content proposed as per section 7 of the AWN response document submitted as Appendix 3 to the response to third party appeals). The carbon savings are quantified within the HJL Carbon Report which formed Appendix 4 to the response to third party appeals. The proposed development will also utilise green steel. Steel is one of the largest contributors of embodied carbon in the structure of AWS data centres. AWS are lowering these emissions by working with 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%. (CAP24 outlines a target of a decrease in embodied carbon in construction materials: of 10% embodied carbon for material produced in Ireland in 2025 rising to 30% by 2030).</li> </ul>

	<p>infrastructure being built. Work is underway on the requisite methodology and ensuring data availability, aligned with the EU approach under the Energy Performance of Buildings Directive and the Construction Product Regulation. However, it will take time to develop the relevant product database, the appropriate oversight mechanisms, and the implementation skills required.</p> <p>Given the urgency of our decarbonisation targets, we need to start where we can make a big impact. The most carbon intensive elements of construction projects are generally concrete (and the cement it contains) and steel. The key component of cement, which is produced in a carbon intensive process, is the clinker. In simple terms we need to reduce the carbon intensity of clinker and the amount of clinker in cement; and to reduce the amount of cement in concrete, and the amount of concrete in how we design and build. New regulations and standards have a potential role to play here.</p>	
<p><b>Section 13.3.2.4, Page 186</b></p>	<p><b>Construction - Product Reformulation and Alternative Construction Materials</b></p> <p>Optimised design and modern methods of construction have the potential to reduce the quantities of concrete used in construction. However, cement will continue to be required in construction and infrastructure. Lower carbon cements will, therefore, make a valuable contribution to decarbonisation in the sector and there are options through reformulation and substitution. Cement products can be reformulated using fillers and alternative binders without compromising its integrity, and this in turn will reduce the clinker content and carbon intensity. In addition, novel cement</p>	<p>As per response above to section 13.2.3.3.</p>

	<p>chemistries are also under development internationally, that may further reduce the requirement for the use of clinker.</p>	
<p><b>Section 14.4, Page 208</b></p>	<p>Implement the recommendations of the report of the District Heating Steering Group to supply up to 0.1 TWh of district heating infrastructure to decarbonise heating in commercial and public buildings, including a mandate for public sector bodies to connect to district heating, where possible</p>	<p>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 &amp; Communications and Transport, Eamon Ryan TD on April 6th this year.</p> <p>The T-DHS will initially provide heat to 32,800m<sup>2</sup> 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 &amp; recreation building, followed by the new catering college (CAET), to be completed in 2024.</p> <p>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 <i>"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</i></p>

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		<p><i>implemented in the area.”</i></p> <p>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:</p> <p><i>“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.</i></p> <p><i>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.</i></p> <p><i>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.</i></p> <p><i>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).”</i></p> <p>AWS remain resolutely committed to supporting the B-DHS and are awaiting next steps from which include signature of a memorandum</p>
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		of understanding (MOU) to support the B-DHS move to the next phase of execution.
Page 219-220	<p><b>District Heating</b></p> <p>District heating offers significant potential to supply low- and zero-carbon heat to homes, businesses and public buildings from a central source.</p> <p>While the efficiencies of district heating in the heat sector are widely understood and accepted - there are tens of millions of district heating customers across Europe - it remains the case that there is currently one small scale district heating scheme operational in Ireland in Tallaght, with a number of smaller, communal schemes also operational.</p> <p>While the National Heat Study identifies that approximately 50% of the heat demand in Ireland can be met through district heating, such a proliferation will require significant resources to install a pipe trench network of approximately 1,000km along Irish roads to move the heat from central sources of heat to the buildings along the network that will utilise the heat. Significant financial resources will also be required to support such networks, at an estimated overall capital cost of €2.7 billion - €4 billion, with legislative and regulatory systems to underpin the sector to be developed.</p> <p>While the work of the District Heating Steering Group has played a significant role in beginning this process, with Government deciding on a number of actions in July 2023 to develop the sector, it is clear that a significant ramp-up in deployment of district heating networks will continue to be required to 2030 to bring</p>	Please refer to the response in respect of Section 14.4, Page 212 above.

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Ireland in line with the targets for this technology. Among the recommendations of the report of the District Heating Steering Group, published in August 2023 are:

- Drafting legislation to underpin the sector, and regulatory provisions to enable customer protections, and licensing and consenting provisions for district heating operators;
- Mandating that public sector buildings connect to available district heating networks (where available, and where technically and economically feasible), and that industrial facilities supply waste heat to district heating where the total rated energy input is at least 1 MW;
- Providing for a single technical standard that facilitates the growth and strategic interconnectivity of district heating systems and makes provision for State ownership of district heating infrastructure in the longer term;
- A centrally-planned approach to development of the district heating sector with, in time, a single State entity or a utility overseeing the development and expansion of networks, providing the skillsets, expertise and knowledge required by project sponsors in the short term;
- Predominantly market based district heating systems, with the provision of supports (such as domestic connections to a network) consistent with other decarbonised heat sources.

	<p>These actions are underway and projects such as the Dublin District Heating Scheme can now envisage, with the momentum at political and policy level, a route to delivery of heat to customers.</p>	
<p><b>Table 14.9, Page 232</b></p>	<p><b>Actions:</b></p> <ul style="list-style-type: none"> <li>• BE/24/13 Implement District Heating Steering Group recommendations, as approved by Government in July 2023</li> <li>• BE/24/14 Develop the planning and permitting frameworks required for the roll out of district heating</li> <li>• BE/24/15 Draft the General Scheme of a Heat Bill to establish a regulatory model for district heating that ensures consumer protection and the delivery of a vibrant district heating industry, and to mandate all Public Sector buildings and facilities to connect to district heating where available and technically and economically feasible</li> </ul>	<p>Please refer to the response in respect of Section 14.4, Page 212 above.</p>

## THE MOST RECENT APPROVED NATIONAL LONG TERM CLIMATE ACTION STRATEGY (LONG TERM CLIMATE ACTION STRATEGY 2023)

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 28<sup>th</sup> 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 Action Strategy 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) will be 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 carbon intensity of the electricity associated with the project, due to commitments in the CAP24, 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 used by the development will reduce in carbon intensity in line with both national and EU policy to reach net zero by 2050. When projecting into the future, there is an associated level of uncertainty in regards to the carbon intensity of the national grid in

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future years. The application is however committed to keeping in place CPPAs (as per Condition 13) until the grid is fully decarbonized irrespective of the time period involved. In summary, the applicant is committed to engaging in a CPPA which will support the delivery of new additional renewable generation in line with the Long Term Climate Action Strategy.

### **THE MOST RECENT APPROVED NATIONAL ADAPTATION FRAMEWORK AND APPROVED SECTORAL ADAPTATION PLANS (NATIONAL ADAPTATION FRAMEWORK 2018)**

The 2018 National Adaptation Framework (2018 NAF) (DOCCE, 2018) 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 2018 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 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.

The updated 2024 National Adaptation Framework (DECC, 2024) builds on the foundations of the existing 2018 NAF and states in regards to the updated 2024 NAF:

*“This new NAF introduces a broader set of guiding principles, emphasising the urgency for more intelligent, rapid, and far-reaching adaptation strategies. It advocates for a pathway planning approach, which considers a variety of potential future warming and impact scenarios, to ensure flexible and effective adaptation measures. The 2024 NAF moves towards an outcomes-based strategy to better monitor and evaluate progress in enhancing the resilience of infrastructure, ecosystems, and society at large against climate change. This chapter establishes the context for the new NAF by introducing the concept of climate adaptation and other related concepts and outlining the key progress made since 2018 in national adaptation.” (Page 14, DECC, 2024)*

The 2024 NAF defines climate resilience as *“the capacity of a system, whether physical, social, or ecological, to absorb and respond to climate change and, by implementing effective adaptation planning and sustainable development (including governance and institutional design), to reduce the negative climate impacts while also taking advantage of any positive outcomes. (NASC, 2018)”*. The 2024 NAF further details specifically what a climate resilient Ireland will resemble:

*“A climate resilient Ireland will acknowledge and consider climate risk, be proactive and flexible in the face of the impacts of climate change, will be open to innovative climate change solutions while also ensuring the safety and prosperity of our communities and that we look after those most impacted by climate change”. (Page 39, DECC, 2024)*

In relation to electricity and gas networks, the 2024 NAF outlines the following potential impacts due to climate change (Page 104, DECC, 2024):

<p><i>Electricity and gas networks</i></p>	<ul style="list-style-type: none"> <li>• <i>Water shortages and drought may affect the availability of cooling at conventional power plants,</i></li> <li>• <i>Changes in rainfall distribution could reduce hydro power generation during certain seasons, while increasing the role of hydro stations in flood alleviation.</i></li> <li>• <i>Floods may damage electricity and gas transmission systems, and coastal erosion could impact infrastructure.</i></li> <li>• <i>Increased wind variability may require backup generation or storage, and strong winds may lead to turbine shutdown or damage.</i></li> </ul>
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The 2024 NAF states the following in regards to the electricity and gas networks sectoral adaptation plan (SAP) scorecard that:

*“The electricity regulator and the network companies are mainstreaming adaptation into investment planning and project development financial resources are needed to improve the resilience of vulnerable critical infrastructure. The next Price Review will secure the funding needed for this adaptation work.” (Page 114, DECC, 2024)*

As outlined in Section 2.3 of the Addendum to Chapter 9 of the EIAR, ensuring the climate resilience 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 assessed to 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.

### **FURTHERANCE OF THE NATIONAL CLIMATE OBJECTIVE**

The National Climate Objective is defined under section (3)(1) of the Climate Action and Low Carbon Development Act 2015 (as amended by the 2021 amendment Act). The National Climate Objective is as follows:

*“The State shall, so as to reduce the extent of further global warming, pursue and achieve, by no later than the end of the year 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy.”*

The Proposed Development 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)

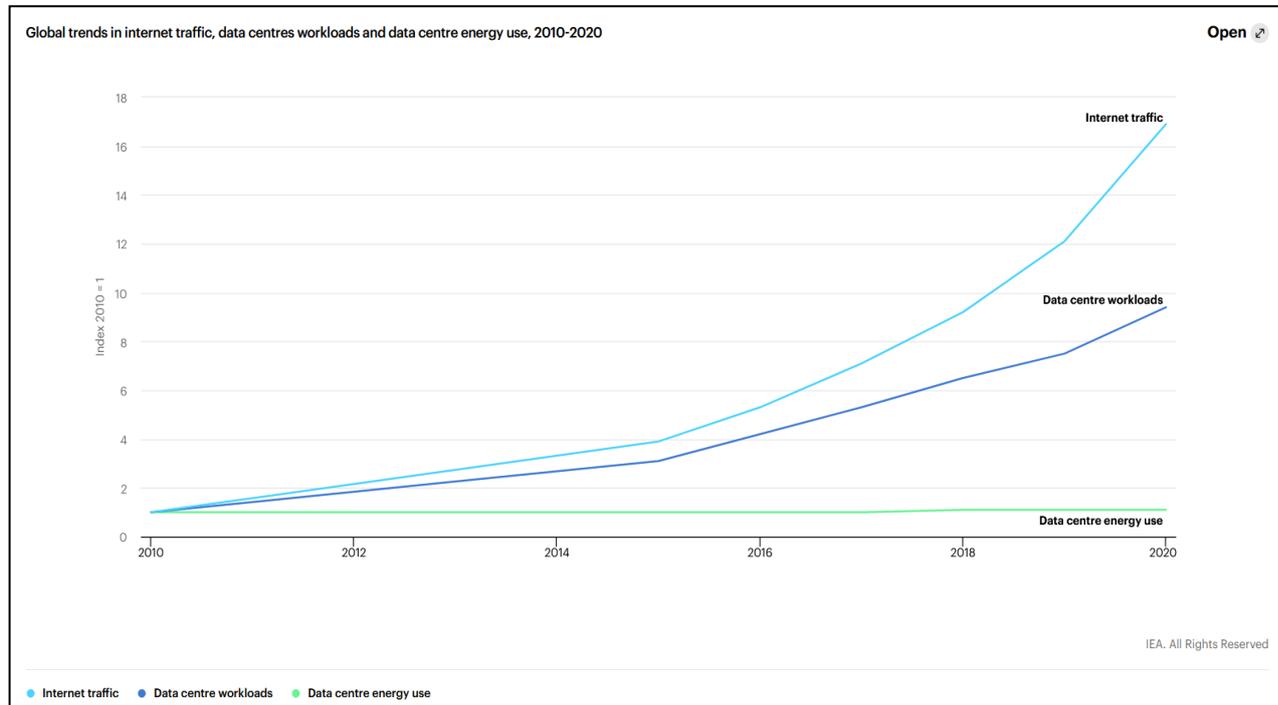
Thus, the IEMA guidelines have highlighted the usefulness of CPPAs as an appropriate net-zero approach in line with the furtherance of the national climate objective.

The Proposed Development furthers the national climate objective as firstly 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.”* Secondly, the proposed development will replace more carbon intensive IT infrastructure with saving of up to 80% achievable. Thirdly, AWS are committed to offsetting all GHG from the operation of the facility by way of CPPAs in line with best practice (IEMA, 2022).

## 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 EIA, 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:

- II. 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.
- III. 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<sup>5</sup> 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.
- IV. As outlined in Section 10 of the Addendum to Chapter 9 of the EIA, a report from the international Energy Agency (IEA) entitled "*Data Centres & Data Transmission Networks*" (IEA, 2021)<sup>6</sup> found that while global internet traffic surged by more than 40% in 2020, this strong growth in demand for 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

<sup>5</sup> <https://assets.aboutamazon.com/b0/3e/b0fc6b8a4a85b38ac65a3fbc584c/11061-aws-451research-advisory-bw-cloudefficiency-eu-2021-r5-final-corrected-data.pdf>

<sup>6</sup> <https://www.iea.org/data-and-statistics/charts/global-trends-in-internet-traffic-data-centres-workloads-and-data-centre-energy-use-2010-2020>

- V. 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, each of 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 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. The 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.
- VI. 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*”.