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29 May 2025

227501.0284AT05

RE: Response To Information Request From ABP Dated 2nd May 2025

This updated memo is a review of how the assessment of the Proposed Development and Overall Project has taken into account the inherent uncertainty in the assessment in line with the relevant guidance as follows:

- IEMA Guidance - *Assessing Greenhouse Gas Emissions and Evaluating their Significance 2nd Edition* (IEMA, 2022) (hereafter referred to as IEMA Guidelines (2022)),
- *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment* (EU, 2013),
- *EU Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report*" (EU, 2017).

In addition, this memo has been written for the purposes of addressing the ABP request dated 2nd May 2025 which states that the applicant should "*provide details of, and observations regarding, the significant differences that may arise in the emerging context noting the points raised in 2(a) and (b) above.*"

Kind regards

Dr. Edward Porter
AWN Consulting

ASSESSMENT OF UNCERTAINTY IN RELATION TO CLIMATE

The assessment of the uncertainty in relation to climate has been undertaken using the *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment* (EU, 2013) and other relevant guidance as outlined below.

The *Coyne* judgement[1] sets out a methodology to identify and address uncertainty as outlined in paragraphs 125 - 127 of the judgment as 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!*

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."

Chapter 9 of the Environmental Impact Assessment (EIAR) undertook a detailed assessment of the 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) on climate (GHG emissions) and the vulnerability of the Project to climate change. 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 Sectoral Emission Ceilings. Outlined below is a discussion of the uncertainty of the climate

[1] C*oyne v An Bord Pleanála* [2023] IEHC 412

assessment in terms of the climate guidance and methodology, the baseline climatic environment, the impact of the Proposed Development and Overall Project and proposed mitigation. This addendum has been updated now (attached in Appendix 5) to incorporate the findings of CAP25 and any additional new information which has become available since the previous version of the Addendum. All relevant updated plans and policies have been updated in this assessment including the following publications:

- Department of Environment, Climate and Communications (DECC) (2024) Future Framework for Offshore Renewable Energy Policy Statement
- Department of Environment, Climate and Communications (DECC) (2024) Buying Greener: Green Public Procurement Strategy and Action Plan (2024–2027)
- Global Facility for Disaster Reduction and Recovery (GFDRR) (2025) ThinkHazard! Tool. Available online at: https://thinkhazard.org/en/
- Government of Ireland (2025) 2025 Climate Action Plan
- Institute of Air Quality Management (IAQM) (2024) Guidance on the assessment of dust from demolition and construction v2.2
- Transport Infrastructure Ireland (TII) (2022) PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document

In addition, updated data of relevance to the climate impact assessment is outlined below:

- Environmental Protection Agency (EPA) (2024a) Ireland's Greenhouse Gas Emissions Projections 2023 – 2050
- Environmental Protection Agency (EPA) (2024b) Ireland's Provisional Greenhouse Gas Emissions 1990-2023 July 2024
- Environmental Protection Agency (EPA) (2025) Ireland's Greenhouse Gas Emissions Projections 2024 – 2055
- Met Éireann (2024a) Met Eireann website: https://www.met.ie/science/translate
- Met Éireann (2024b) Annual Statement for 2024

Climate Guidance & Methodology And Uncertainty

In terms of climate guidance and methodology, the IEMA Guidelines (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 the IEMA Guidelines (2022), offers a much more specific and robust assessment of current climate impacts, this guidance document was used in the Response to the 3rd Party Appeals (dated 6th November 2023) and in the current Response to An Bord Pleanála (dated 2nd May 2025).

The IEMA Guidelines (2022) outlines the approach to uncertainty in predicting climate impact. The IEMA Guidelines (2022) recommends that:

"*a relevant, complete, consistent, transparent and accurate assessment of the reasonable worst-case approach must be undertaken despite uncertainties*".

The IEMA Guidelines (2022) outlines that uncertainty can be determined by:

- Testing upper and lower limits,
- Testing for different inclusions and exclusions,
- Modifying study periods.

Further guidance on uncertainty is available from the EU including the "*Guidance On Integrating Climate Change And Biodiversity Into EIA*" (EU, 2013). This guidance suggests the following approach to uncertainty as outlined in the relevant pages:

- *"Use tools such as scenarios (for example, worst-case and best-case scenarios) to help handle uncertainty inherent in complex systems and imperfect data" (page 10)*,
- *"Base your recommendations on the precautionary principle and acknowledge assumptions and the limitations of current knowledge" (page 10)*,
- *"Working with uncertainty requires a qualitative approach, as quantitative data are often either unavailable or unreliable in predicting impact" (page 17)*,
- *"The use of scenarios is a response to uncertainty" (page 58)*.

Additional guidance on uncertainty is available from the EU publication "*EU Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report*" (EU, 2017). The guidance suggests the following approach to uncertainty:

- *"Predicting uncertain elements can be challenging, particularly concerning the availability of information, as well as ensuring that the assessment is carried out with reasonable effort",*
- *"Environmental Impact Assessments consider the impacts that climate change may have on the Project itself – and the extent to which the Project will be able to adapt to possible changes in the climate over the course of its lifetime. This aspect of the issue of climate change can be challenging as"…."it involves a considerable degree of uncertainty, given that the actual climate change impacts, especially at local levels, are challenging to predict. To this end, the EIA analysis should take trends and risk assessment into consideration".*

As outlined in Appendix 3 of the Response to the 3rd Party Appeals (dated 6th November 2023) under Section 4.3."3. *Emission Calculation Methodology & 4. Data Collection*" and in the attached (Appendix 5) Updated Addendum To The Climate Chapter Of The EIAR, the assessment of the Proposed Development and Overall Project has taken into account the inherent uncertainty of the assessment in line with the relevant guidance (IEMA Guidelines (2022), EU (2013), EU (2017)) and has been updated to reflect more recent data in respect to changes in the electricity grid and overall GHG emissions in Ireland.

Uncertainty In Relation To The Baseline Environment

Existing GHG baseline data is available from the Environmental Protection Agency (EPA). National total emissions (including LULUCF) for 2023 are 60.62 Mt CO_2eq, thus 2021 to 2023 have used 63.9% of the 295 Mt CO_2eq Carbon Budget for the five-year period 2021-2025[2]. This leaves 36.1% of the budget available for the succeeding two years, requiring an 8.3% average annual emissions reduction from 2024-2025 to stay within budget.

In their latest data, the EPA has reported that in the 2023 the energy industries GHG emissions decreased from 10.0 Mtonnes in 2022 to 7.85 Mtonnes in 2023. This is a 21.6% reduction compared to 2022 and is at an all time low over the period 1990 – 2023. This reduction is largely driven by a 12-fold increase in the amount of imported electricity which accounted for 9.5% of electricity supplied in 2023. There was also an increase in the renewable share in electricity generation rising from 38.6% to 40.7% from 2022 to 2023.

However, the baseline for the purposes of the EIAR is the year of opening which is projected to be 2025. As this is two years into the future from the most recent confirmed data, there will be uncertainty with the projected baseline figures. The EPA report[3] entitled "*Ireland's Greenhouse Gas Emissions Projections-2024-2055*" (EPA, May 2025) suggests that the 2021 – 2025 and 2026 – 2030 Carbon budgets will be difficult to comply with. Likewise, the report suggests that the 2021 – 2025 and 2026 – 2030 sectoral

[2] Environmental Protection Agency (EPA) (2024a) Ireland's Provisional Greenhouse Gas Emissions 1990-2023 July 2024

[3] Ireland's Greenhouse Gas Emissions Projections 2024-2055 | Environmental Protection Agency

emission ceilings will be difficult to comply with although in relation to the electricity sector the report confirmed that it is likely to achieve the first sectoral emission ceiling target:

> *"The sectoral ceilings projected to be achieved in the first budget period (2021-25) are in the Electricity, Buildings and 'Other' sectors"* (EPA, 2025 (Section 3.2.2))

The report does note, however, that currently it is projected that the electricity sector is unlikely to achieve the second sectoral emission ceiling period (2026-2030) target.

The report outlined two scenarios to project into the future:

- With Existing Measures (WEM) - a projection of future emissions based on currently implemented measures and actions committed by Government which are in place by the end of 2023.
- With Additional Measures (WAM) - a projection of future emissions based on currently implemented measures and actions committed by Government including all WEM measures plus those included in Government plans but not yet implemented.

However, in relation to electricity, there are number of measures which have been excluded from the EPA WEM and WAM scenarios as discussed above. These excluded measures include:

- CAP25 has projected 9 GW onshore wind, 5 GW offshore wind and 8 GW solar PV whilst the EPA has assumed in their projections that in reality, by 2030, there will be 7.1 GW onshore wind, 2.7 GW offshore wind and 6.3 GW solar PV.
- New flexible gas fired generation of 1.4GW was assumed by 2030 compared to 2 GW in CAP25.
- The CAP25 policy of 2 GW offshore wind for green hydrogen post-2030 is also not included in the EPA projections.
- The CAP25 policy of zero-emission gas-fired generation from biomethane and green hydrogen (via 2 GW offshore wind) post-2030 is also not included in the EPA projections.

Thus, in projecting forward to the opening year and to 2030 when compliance with the electricity emission ceiling is determined, there is a range of possible baseline GHG levels depending on whether some or all of the proposed measured are implemented in a timely manner. AWN Consulting have adopted a conservative approach to the assessment and potential uncertainty.

In terms of assessing the "*do nothing*" scenario, as a conservative approach, the GHG emissions in the assessment for the "*do nothing*" scenario has been assumed to be zero. This should be viewed as a very conservative assumption as, in reality, the operation of the Proposed Development and Overall Project (a data centre) will replace other existing and future computing and IT activities with greater GHG emissions as outlined in Section 6.3 "*A6.5 the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State*" in Appendix 3 of the Response to the 3rd Party Appeals (dated 6th November 2023) and in the current Response To An Bord Pleanála (dated 2nd May 2025):

- Data Centre facilities such as the Proposed Development and Overall Project represent a significantly more efficient means of data storage when compared to the historic distributed model of on-site data storage by companies (or 'enterprise sites'). The GHG savings associated with this have conservatively not been quantified and are not included in the assessment. The results of a recent study of US enterprise data centres by 451 Research[4] 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.

[4]https://assets.aboutamazon.com/b0/3e/b0fc6b8a4a85b38ac65a3fbc584c/11061-aws-451research-advisory-bw-cloudefficiency-eu-2021-r5-final-corrected-data.pdf

Uncertainty In Relation To The Proposed Development

The Proposed Development and Overall Project will have uncertainty associated with it which will impact on calculated GHG emissions. The factors which will be important include:

- Year of opening,
- Phasing of operations,
- Operational load,
- Changes to the electricity grid.

The factors outlined above have been reviewed below to determine their underlying uncertainty into the future. As a general principle, a reasonable worst-case assessment has also been applied in the EIAR as shown by the following approaches below:

- Year of opening: This has been assumed to be 2025 as a conservative assumption. There is no possibility of an earlier operational date but a later date is possible. GHG emissions will be higher when an earlier operational date is assumed as later dates will have a high percentage of renewables in the national grid. Hence, an opening year of 2025 is conservative.
- Phasing of operations: The assessment assumed 100% operation of the entire Proposed Development and Overall Project in Year 2025. In reality, there will be a ramp-up period with 100% operation not occurring until at least 2029 assuming construction starts in 2025 as outlined in Section 9.7.5 of the updated Addendum To The Climate Chapter (Appendix 5).
- 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 on Page 51 of the recent Department of Environment, Climate and Communications [DECC] publication "*Summary of Analysis to Support Preparation of the Sectoral Emissions Ceilings*" (DECC, 2022b)). Thus, the assumption of 100% operations will overestimate GHG emissions in the early years of the project particularly for Years 2025 and 2026. Secondly, the assumption of 100% operational load will likely overestimate GHG emissions by approximately 20% every year.
- It is acknowledged that due to delays in decision making and logistical delays that the opening year may move beyond Year 2025. However, by assuming Year 2025 as the opening year it will be a conservative assumption. As outlined in **Error! Reference source not found.** of the Updated Addendum to the Climate Chapter of the EIAR (Appendix 5), should the facility open in Year 2027 rather than Year 2025, this will lead to a reduction in GHG emissions in the first year of operation of approximately 21,600 tonnes of CO_2eq. In addition, should the Proposed Development operate at 50% of the maximum load in the first year of operation (assumed to be Year 2025), this will lead to a reduction of approximately 70,700 tonnes of CO_2eq in Year 2025 compared to the current assumption of 100% load in the first year of operation. Each year the percentage of renewables in the national grid is likely to increase in line with government policy. As a results, the GHG emissions associated with the use of electricity from the national grid are likely to decrease on a year-by-year basis.
- As the Sectoral Emission Ceilings and Carbon Budgets have targets set for 2030, the assessment has predicted future GHG emissions for this year. Information on future GHG emissions, beyond 2030, from electricity will be naturally uncertain as it will depend on many factors including the percentage of renewables in the grid, the fraction of imported electricity in the national grid, the fossil fuel mix (gas, oil, coal) and the average wind speed. Thus, the assessment approach and the use of the 2030 target is conservative to allow for this uncertainty. A recent report from MaREI (MaREI, Sept 2024) states that with the EPA's 2023 provisional greenhouse gas inventory reported that 67.9% of the sectoral emissions ceiling has been used in the first 3

years of the first carbon budget. The recently published *Climate Change Advisory Board Annual Review 2025: Electricity* (CCAB, 2025), based on the EPA's 2023 data combined with the latest emissions data from the EU ETS for 2024 estimated that 83.6% of the electricity sectoral emissions ceiling has been used in the first 4 years of the five-year sectoral emissions period. Thus, 2024 used 15.7% of the sectoral budget and assuming 2025 has emissions of a similar magnitude it is likely that the first electricity sectoral budget period (2021-2025) will be approximately 99% of the budget and thus in compliance. This analysis has recently been supported by work undertaken by MaREI at the University of Cork in terms of both sectoral emission ceilings and the first carbon budget[5]

"Ireland is currently on track to meet the first carbon budget (CB1) when we compare the last three years of data with a greenhouse gas emissions pathway that aligns with CB1. The CB1 pathway ensures Ireland remains within the statutory target of 295 $MtCO_2eq$ in the time period 2021-2025" (MaREI, Sept 2024).

- a GHG emission rate of 135 gCO_2/kWh[6] has been conservatively assumed for the national grid (based on 68.3% renewables) in 2030 which is higher than the SEAI[7] predicted 92.9 gCO_2/kWh for 2030,
- the power generation mix in 2030 is forecast by EirGrid to be 83% renewable as outlined on Page 52 of "*Summary of Analysis to Support Preparation of the Sectoral Emissions Ceilings*" (DECC, 2022b) rather than the assumed 68.3% renewable generation which was conservatively used in the current assessment.

Looking further ahead to 2050 will lead to greater uncertainty in GHG emissions. It is projected that GHG emissions will reduce from 2030 onwards, hence the use of the 2030 figures is a conservative approach. The government in CAP25 has reiterated the goal of achieving net-zero GHG emissions by 2050:

"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."

Thus, the assessment of the Proposed Development and Overall Project was based on this legally binding target. However, this is likely to be conservative for the following reasons:

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[5] https://acrobat.adobe.com/id/urn:aaid:sc:EU:9eb53277-d503-4d12-944f-3855a47f366f

[6] 135 gCO_2/kWh in 2030 has been derived as follows: Year 2023 has a GHG emission rate of 254 gCO_2/kWh based on 40.7% renewables in the national grid. Thus, this equates to a fossil-fuel GHG emission rate of 428 gCO_2/kWh (254 / (1.00-0.407) = 428). With the renewable rate predicted to be 68.3% in 2030, and assuming the same fossil-fuel GHG emission rate of 428 gCO_2/kWh, the overall GHG intensity of the grid in 2030 will be approximately 135 gCO_2/kWh (428 x (1.00-0.683) = 135)).

[7] 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

- 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 2, of the 122 TWh (1 TWh = 1000 GWh) of primary energy, 77 TWh will be derived from wind, 4 TWh will be derived from solar, 38 TWh will be derived from Bio and other renewables whilst only 1 TWh will be derived from oil. Thus, 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 1) will be achieved by 2040 (ESB, 2025)[8], given that Figure 1 shows net zero electricity being achieved by 2035, compared to the conservative assumption in the Updated Addendum to Chapter 9 of the EIAR (Appendix 5) that net zero electricity would not be achieved until 2050. Figure 2 shows the expected energy system in 2050 showing 100% renewable electricity. Thus, a range of policy decisions will impact on the decarbonisation of the national grid include policies which affect wind power (both onshore and offshore), solar, hydrogen and other energy sources, all of which will have a direct impact on the trajectory of the road to net zero GHG emissions. Should net zero GHG emissions be achieved by 2040, as the ESB is predicting (ESB, 2025) then the current assessment may be viewed as a worst-case as the assessment is based on the electricity grid reaching net zero ten years later in 2050. This range of uncertainty will lead to variations in the quantity of CPPAs that are required by the operator during this period. Thus, the GHG emissions in the Updated Addendum to Chapter 9 of the EIAR (Appendix 5) should be viewed as a reasonable worst-case assessment in line with the IEMA Guidelines (IEMA, 2022).

[8] ESB Strategy 2040 - Update 2025

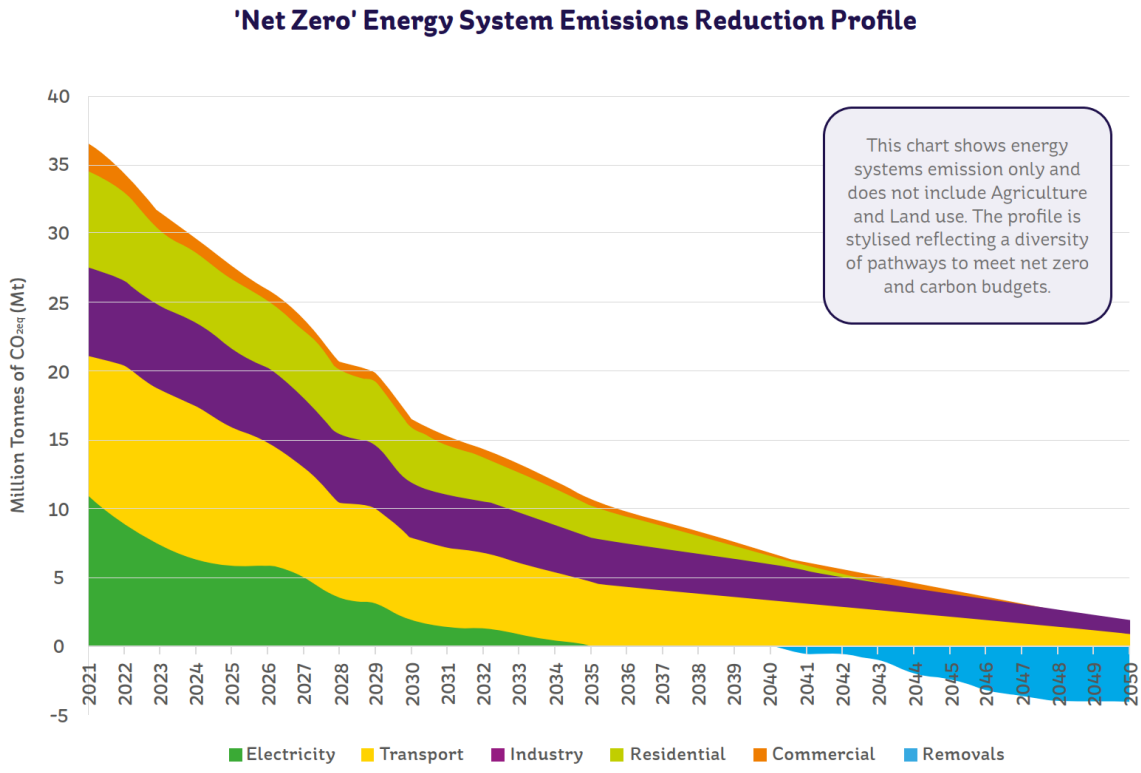

Figure 1 Net Zero Energy System Emissions Reduction Profile (UCC / MaREI) (ESB Networks, 2023)

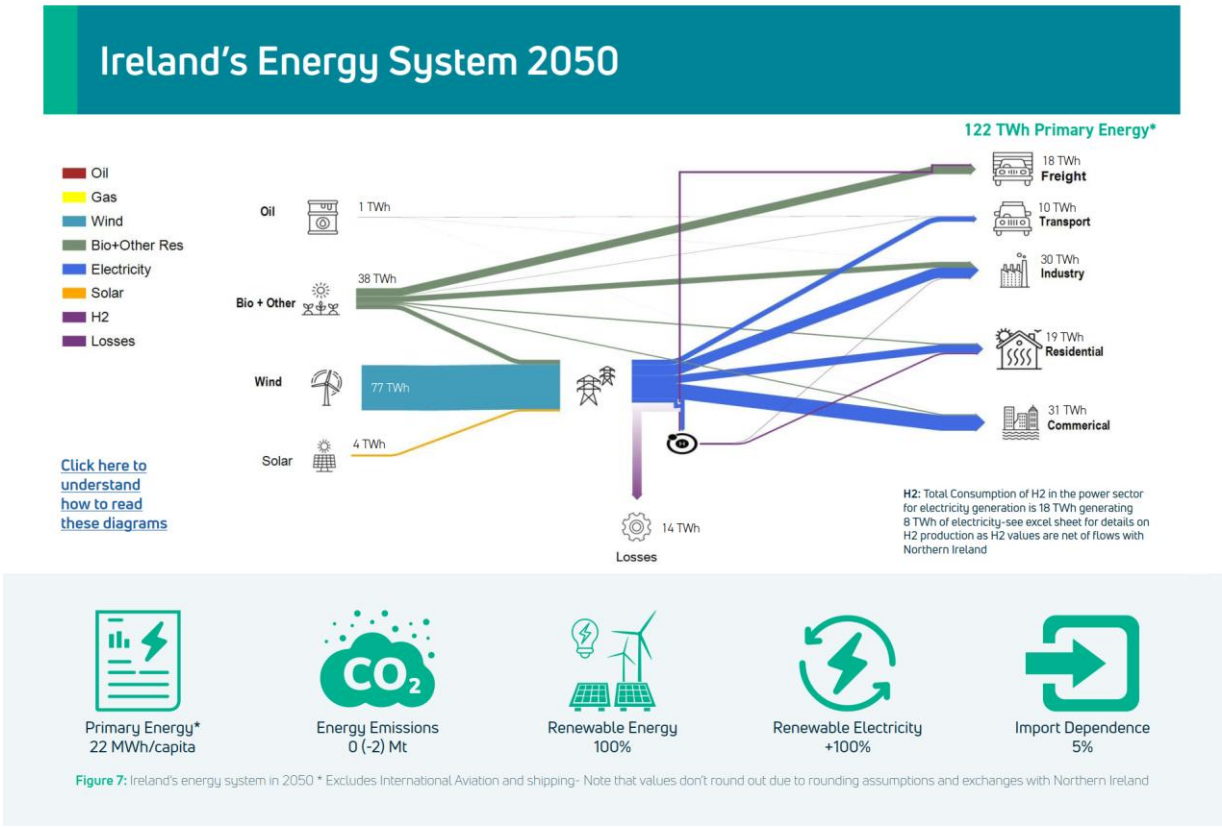

Figure 2 Ireland's Energy System 2050 (UCC / MaREI, 2021)

Uncertainty In Relation To Mitigation

AWS are committed to implementing a range of mitigation measures which will be implemented in line with "*best practice*" as outlined in IEMA Guidelines (2022). These measures can be viewed as allowing for the inherent uncertainty in future emissions as the CPPA will match the actual GHG emissions regardless of the quantity of emissions in any one year and the time period in which they occur whilst the operation of both indirect electricity and direct emissions will operate within the ETS which has committed to achieving net zero by 2050:

- A Corporate Purchase Power Agreement(s) will be entered into, as required by Condition 13, which demonstrates that the energy use of the development will be met by new renewable energy generation in line with the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy (2022). The Proposed Development's energy use will be met by the CPPA which will mitigate the actual GHG emissions in terms of quantity of emissions on an annualized basis.

- As outlined by the SEAI[9], there is the possibility that the import of electricity may increase or decrease in the future due to a range of both domestic and international considerations. Imported electricity is counted as having zero GHG emissions in Ireland as emissions are counted geographically in terms of the country where the electricity (and associated GHG emissions) are generated. The implication of this is that a higher fraction of imported electricity will lower the amount of fossil-fuel generated electricity in Ireland and lead to a reduced requirement in terms of quantity of CPPA purchases required for the Proposed Development. Thus, for the Proposed Development, the quantity of CPPA purchases required for the Proposed Development may vary year on year based on a range of factors including the rate of penetration of renewable energy into the national grid and the amount of imported electricity that occurs in any one year. The Proposed Developer has committed to ensuring that the facility operates in a net zero environment and will ensure that GHG emissions associated with 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) irrespective of the total amount that is required in any one year.

- 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 CAP25 which stresses the importance of the EU ETS in reducing industry GHG emissions.

- Whether or not climate and greenhouse gas emission targets are varied due to changes to legislation and policy, the CPPAs and the operations of the EU ETS will ensure that GHG emissions from the facility will be fully mitigated throughout its lifetime.

Summary

In summary, the climatic assessment of the Proposed Development and Overall Project has taken into account the inherent uncertainty of the assessment by taking a conservative approach in line with the relevant guidance (IEMA Guidelines (2022), EU (2013), EU (2017)) as summarised below:

Baseline Scenario – this assessment has highlighted that uncertainty is inherent in predicting future GHG emissions both in terms of the overall national GHG emissions over the period 2023 – 2050 and in terms of the "*do nothing*" scenarios and the GHG emissions where the proposed data centre development is not available to store and process IT data. In order to address the inherent uncertainty in regards to the baseline scenario, the assessment has assumed that the decarbonisation of the national grid occurs in 2050 whereas current predictions are that this may occur by 2040 as outlined in "*Networks For Net Zero*

[9] Energy-in-Ireland-2023.pdf

– *Delivering the Electricity Network for Ireland's Clean Electric Future*" (ESB Networks, 2023).

Proposed Scenario - this assessment has highlighted that uncertainty is inherent in predicting future GHG emissions for the proposed scenario in terms of year of opening, phasing of operations, operational load and changes to the national grid. In order to address the uncertainty in the year of opening, a worst-case approach has assumed that the Proposed Development will open in 2025 which will overstate the GHG from the national grid compared to assuming a later date. In order to address the uncertainty in the phasing of operations, a worst-case approach has assumed that the Proposed Development will immediately operate at full load whereas in reality the ramp-up period will be several years. In order to address the uncertainty in the operational load, a worst-case approach has assumed that the Proposed Development will operate at 100% load whereas the average annual load is likely to be no more than 80%. In order to address the uncertainty in the national grid, a worst-case approach has assumed that the national grid will only obtain net zero by 2050 rather than the predicted 2040.

Mitigation - this assessment has highlighted that uncertainty is inherent in predicting future mitigation requirements for the proposed scenario in terms of quantum of offsets required to fully mitigate the Proposed Development and in terms of the availability of renewable energy and variability in the GWh from these sources on an annual basis. However, in order to address this uncertainty, AWS is committed to ensuring that the CPPA for the energy use of the Proposed Development will mitigate the actual GHG emissions in terms of quantity of emissions on an annualized basis.