An Bord Pleanála

Inspector's Report PL06F.248544

Development	Construction of a data storage facility and associated works
Location	Cruiserath Road, Dublin 15.
Planning Authority	Fingal County Council.
Planning Authority Reg. Ref.	FW17A/0025
Applicant(s)	ADSIL
Type of Application	Permission
Planning Authority Decision	GRANT with conditions
Type of Appeal	2no. Third Party
Appellant(s)	Allan Daly; David Hughes
Observer(s)	Carmel McCormack
Date of Site Inspection	24/08/17
Inspector	John Desmond

Contents

1.0 Site Location and Description

1.1. The application site is located close to the north-western fringe of the built up area of Dublin. The site is within an existing business park in west County Dublin, in the southwest corner of Fingal County Council administrative area, north of Mulhuddart Village. The site is less than 2km north of Blanchardstown Major Town Centre and the junction to the N3, Dublin – Galway road, and a little over 3km from junction 6 on the M50.

1.2. The site of c.26ha stated area, is rectangular in shape and oriented along a north-south axis. It is greenfield land, possibly in continuing but limited agricultural use, and is set within a large area of land extending east to the M50, which is dominated by large industrial and commercial business type premises in formal business parks.

1.3. The site is bound by Church Road (R121) to the west, which is a dual carriageway distributer road with concrete barrier in the central median and pedestrian footway and cycle lanes either side, separated from the road by a narrow grass verge. To the south the site fronts onto Cruiserath Road (R121), a wide single carriageway road with central ghost island, with pedestrian footways and cycle lanes either side separated from the vehicular carriageway by grass verges and timber barriers. The said roads provide indirect connection to the N3/M3 to the south and the M50 to the east.

1.4. To the east the site abuts an industrial premise, Bristol Meyer Squib. To the north, the site is bounded by what would appear to be public open space, beyond which is a public road serving industrial and commercial lands, and a chain hotel premises beyond. To the west of Church Road there is significant suburban residential housing of relatively recent construction, with more recent denser residential and limited commercial retail type development to the northwest. There are significant undeveloped lands within the vicinity.

2.0 Proposed Development

2.1. The proposed development, as submitted with the application, is for the following:

- Data storage facility building up to 13m height and 20,739-sq.m total gross floor area, containing:

- Data halls
- Associated electrical and AHU plant rooms
- Loading bay
- Maintenance and storage space
- Office administration areas
- Screen plant and 100-sq.m solar panels at roof level

- Adjacent compound containing emergency generators, emission stacks and paladin fencing boundary treatment;
- Temporary client control building, transformer bay, temporary substation to facilitate construction of data storage facility;
- Permanent MV switchroom building and permanent MV / Control room building to facilitate construction of data storage facility;
- 220kV Gas Insulated Switchgear (GIS) substation of 1350sq.m and 4no. transformer bays;
- Water sprinkler pump room and storage tank, humidifier tanks and diesel tanks and filling area;
- Single-storey gate house/ security building at entrance to R121 / Church Road, with modification to entrance and provision of secondary entrance to southern boundary including to facilitate construction access;
- Internal road network, circulation, footpaths and 46no. car parking spaces, 1no. motorbike space and 15no. cycle spaces;
- Landscaping, planting, boundary treatment, lighting, security fencing, bollards, camera poles and all associated site works including drainage and utility cables.

2.2. **Amendments to development proposal:**

At the oral hearing the applicant withdrew the proposed 220kV substation from the application and clarified that the grid connection did not form part of the application.

2.3. **Supporting documentation:**

- EIS, plus EIS addendum submitted at oral hearing, and accompanying Non-Technical Summary;
- Appropriate Assessment Screening Report (attached as appendix 8.1 of Chapter 8 Flora and Fauna of the EIS), plus addendum AA Screening Report submitted at oral hearing;
- Planning Report – John Spain Associates
- Engineering Planning Report – Drainage and Water – Clinton Scannell Emerson Associates
- Landscape Design Rationale – Stephen Diamond Associates
- Flood Risk Assessment – AWN Consulting
- Mobility Management Plan – Clinton Scannell Emerson Associates
- Preliminary Tree Survey and Report – The Tree File Ltd
- External Lighting Design Report – Amazon Confidential
- Architectural Design Report – MCA Architects

2.4. Revised notices

The proposed development was re-advertised with revised public notices submitted 19/10/17.

3.0 Planning Authority Decision

3.1. **Decision**

To **GRANT** permission subject to 16no. conditions. Conditions of note relate to the following:

No.3 – i) The use to be strictly as indicated on submitted plans / documentation (data hall) and the offices, security hut and 220Kv substation shall remain ancillary to the data hall use. ii) Subdivision, amalgamation, additional mezzanines shall not be undertaken without a prior grant of permission.

No.5 – requires the submission of a Construction Management Plan prior to first occupation of development in the interest of traffic safety.

No.6 – standard archaeology condition.

No.7 - requires agreement of details of accesses, gated accesses in security line fence, segregation of loading bay traffic, provision of 39no. car parking spaces and requires compliance with any future requirement of the Planning Authority in relation to floodlighting and associated glare issues.

No.11(v) – imposes limits on nature and level of operational noise.

No.15 – all temporary buildings and structures including temporary client control room and temporary substation shall be removed when no longer required.

No.16 – Sn28 Development Contributions to sum of €1,462,406.

3.2. Planning Authority Reports

3.2.1. Planning Reports

The main points of the **Planning Officer's Report (**forming part of the Chief Executive Order, signed 25/04/17) may be summarised as follows:

- previous grants of permission for data centre development / use in Fingal County (not on site) Reg.Ref.F07A/1372, FW12A/0116, FW14A/0138 (amending FWA/0020) and FW15A/0117;
- in pre-planning consultation the principle was considered generally acceptable in principle and it was agreed that the electricity connection route to the grid (not finalised) could be dealt with separately;
- HT zoning objective and vision and chapter 12 of the FDP 2017-2023 concerning business parks and industrial areas, objective DA07 concerning the Outer Airport Noise Zone, objective EF07 concerning support of the Strategy for Energy Renewal 2012-2020, NREAP and NEEAP, and object EN09 concerning details of alternative renewable energy systems (buildings >1000-sq.m). Also s.3.7.2 of the NSS concerning energy;
- Provides a synopsis of the EIS, including likely potential significant impacts and the mitigation measures proposed; and concludes that the EIS is

compliant with the provisions of the Planning Regulations and has regard to the revised EIA Directive 2014/52/EU;

- Considered the conclusion of the applicant's Appropriate Assessment Screening Statement and the mitigation measures proposed to be acceptable;
- Provides a separate assessment on energy before the planner's assessment, having regard to FDP 2017 objectives EN07 and EN09 and section 2.5 of the EIS, including reference to the relative efficiency of cloud storage (29%) compared to traditional data storage. The Planning Officer notes the absence of a national policy concerning very high energy consuming projects but that the EirGrid All Ireland Capacity Statement 2016-2025 specifically acknowledges the projected electricity demand increase arising from data centre use in Ireland and, having regard to the benefit of the temperate climate and prevailing winds in Ireland which reduces energy demand relative to other locations, concluded that it is '*difficult to conclude that the proposed development is not acceptable in principle*'.

In his Assessment, the Planning Officer concludes:

- The principle of the development is acceptable on HT lands having regard to planning precedent;
- The landscape and visual impact was acceptable;
- Had no concern regarding impacts on residential amenities of the residential area to the west, subject to a condition requiring implementation of noise mitigation measures as per the EIS;
- Adopted the assessment and recommendation of the Council's Transportation Planning Section concerning traffic and transportation issues (i.e. no objection subject to conditions), and that of the Water Services Section concerning surface water drainage issues;
- Having discussed the residual risk of archaeological remains being present within the site with the DCHG archaeologist, considered that condition requiring the carrying out of an Archaeological Assessment prior to commencement of development (subject to provision of sufficient time to allow

for a review of its findings and the determining of a course of action) would be acceptable;

- Concluded that no undue negative impact would result and that the proposed development is acceptable under the HT zoning objective and the specific objectives of the FDP 2017 subject to conditions;
- The conditions recommended are as per those attaching to the decision (see s.3.1, above).

3.2.2. Other Technical Reports

Water Services Section (04/04/17) – No objection (having regard to surface water drainage) subject to standard-type conditions.

Transport Planning Section (12/04/17) – The 39no. car parking (207no. maximum required under CDP standards) and 16no. bicycle parking spaces (103no. minimum required under CDP standards) acceptable given low staff intensity and 24-hour use.

The detailed design of the main access to R121 (including visibility of pedestrians and cyclists), of service access gates and the segregation of HGV traffic internally (including between loading bay and staff parking), needs to be agreed.

Accepts the EIS (informed by TIA) findings that the traffic generated by the proposed development would not have any significant impact on junctions. No comment on the content of the submitted Mobility Management Plan.

No objection subject to conditions addressing the above issues, provision of 39no. car parking spaces, submission of a CMP for approval and adjustment of any floodlighting to resolve glare at the direction of the Council.

3.3. **Pre-planning consultation**

The minutes of a pre-planning consultation meeting held with the applicant's representatives on 25/10/6 highlighted issues including consideration of cumulative impacts of masterplan in the EIS, noise, landscape and visual, renewable energy and architecture.

3.4. **Prescribed Bodies**

EPA (13/03/17) – It is not possible to determine based on the documentation provided if the activity will require a license under the EPA Act 1992, as amended, and no license application has been received to the EPA. If an EPA license is required for a development where an EIA is also required as part of the application for development consent, consultation procedures between the EPA and the Planning Authority apply (EU (EIA) (IPPC) Regulations 2012 (S.I. No.282/2012)).

The EIS appears to address the key points in relation environmental aspects of the proposed activity which relate to matters that come within the functions of the Agency, including direct and indirect effects.

If and when a license application is received by the EPA, all matter concerning emissions to the environment from the activities proposed, the license application documentation and EIS will be considered and assessed by the EPA. According to s.87(1D)(d) of the EPA Act, the EPA cannot issue a Proposed Determination on a license application which addresses the above development until a planning decision has been made.

Transport Infrastructure Ireland (14/03/17) – No observations to make.

Environmental Health (14/03/17) – No objection subject to standard type conditions relating to construction and operational noise and air emissions.

Dublin Airport Authority (03/04/17) – No comment to make.

Development Applications Unit (DAHDDGA) (03/04/17) – Having examined the archaeological component of the EIS, an Archaeological Impact Assessment is required as further information to enable an informed archaeological recommendation to be made prior to a decision on the application.

3.5. **Third Party Observations**

Two letters of observation were received to the planning application on 04/04/17, from Allan Daly (Athenry, Co. Galway) and David Hughes (Dublin 2). The main points of the observations are repeated and or elaborated upon in the grounds of the appeal, summarised below. Additional points raised may be summarised as follows:

- Inadequate project description - does not include energy usage
- Inadequate EIS – no analysis of energy usage and no analysis of impacts on GHG emissions or appropriate mitigation of same
- The development should not be considered 100% renewable
- There is no Renewable Electricity Policy and Development Frame (currently under development by the DCENR); an SEA will be required for same; the REPDF is envisaged to deliver the 40% RES-E target under Ireland's NREAP) which will need to take account of and evaluate the impact of the high energy demands of data centres
- Consultation with prescribed bodies – Article 6 of the EIA Directive requires that Member States give '*authorities likely to be concerned by the project by reason of the specific environmental responsibilities'* the opportunity *'to express their opinion on the information supplied by the developer*,' such bodies being designed as '*the authorities to be consulted either in general terms or on a case-by-case basis*'. Contrary to the Directive, no prescribed bodies have yet been designated to review projects involving significant GHG emissions and climate change effects, therefore the Planning Authority is obliged to directly implement A.6 of the Directive and notify the EPA, SEAI, Teagasc, and the ESRI the four 'ordinary members' of the Climate Change Advisory Council established by the Climate Action and Low Carbon Development Act 2015 (No. 46 of 2015) whose functions include preparation of a national mitigation plan and national adaptation framework and the making of recommendations with regard to compliance with any existing obligation of the state. Consulting with these bodies will provide the planning authority and the public with the expertise of those most qualified to evaluate the project's electrical energy usage, greenhouse gas emissions, and climate change impacts, and to recommend mitigation measures to avoid, reduce and, if possible, remedy significant adverse effects.

4.0 Planning History

4.1. There is no relevant planning history pertaining to this site. The following planning decisions off-site and outside Fingal County concerning similar development proposals are relevant:

PL07.245518 / Reg.Ref.15/488: Permission **GRANTED** by the Board (11/08/16), upholding the decision of Galway County Council to grant permission to Apple Distribution International for the construction of a data centre (24,505-sq.m) and logistics building (5,232-sq.m logistics) and etc., on lands at Toberroe and Palmerstown, Derrydonnell, Athenry, Co. Galway. The decision was upheld on Judicial Review (**No.2016/748 JR**) but was subject to an application for appeal to the Supreme Court at time of writing.

Reg.Ref.SD14A/0023: Permission **GRANTED** by South Dublin County Council (14/04/14) to Google for the construction of a two storey data storage facility (30,361sq.m.), a double height warehouse building (1,670-sq.m) and a HV Substation area with two buildings; a 2-storey building (968-sq.m.) and 1 no. single storey building (190-sq.m) and associated site development works on a 11.25ha site at Aungierstown and Ballybane, Newcastle, Clondalkin, Co. Dublin.

PL17.245347 /Reg.ref.RA15/0605: Permission **GRANTED** by the Board (22/10/15), upholding the decision of the Planning Authority to grant permission to Facebook (Runways Information Services Limited) for the construction of a data centre campus in 2 phases with a total gross floor area of 76,200-sq.m together with ancillary administration buildings, new access road and ancillary works including drainage and landscaping on lands at Portan, Gunnocks and Clonee, Co. Meath.

PL27.237400 / Reg.Ref.10/2123: Permission **GRANTED** by Wicklow County Council (2010) for the development of a data centre on lands at Mountkennedy and Tinnypark Demesnes. This permission was the subject of an appeal to An Bord Pleanála who made a decision to refuse permission. This decision was subsequently quashed by the Supreme Court on the basis that the appeals had been withdrawn prior to the issuing of the decision by the Board.

4.2. The following planning decisions offsite but within Fingal County are referred to in the Council's Planning Report:

FW15A/0117: Permission **GRANTED** by the Planning Authority (26/01/16) to St Stephens Green Funds plc for the development of the change of use of floor-space from light industrial warehouse use with ancillary office use as a data centre with ancillary office (9,215-sq.m gross Data Centre use at ground floor level with 2,270 sq. m gross ancillary office use over ground and first floor level) on a 4.12 hectare at site formerly Creative Labs Ireland, Ballycoolin Industrial Estate, Ballycoolin, Blanchardstown, Dublin 15.

FW14A/0138 (amending FW14A/0020): Permission **GRANTED** by the Planning Authority (28/01/15) to Alexion Pharma International Trading Ltd for amendments to permission Reg.Ref.FW14A/0020 including, inter alia, changes in floor levels and overall height, the extension to the office building roof plant, the extension of the ESB Substation and for the retention and completion of a single level Data Centre (626-sq.m; note no data centre is included in FW14A/0020 development description) adjacent to the utility building at College Business and Technology Park, Snugborough Road, Blanchardstown, Dublin 15.

Reg.Ref.FW12A/0116: Permission **GRANTED** by the Planning Authority (30/01/13) to DataPlex Irl for the change of use from factory unit to electronic data storage centre, with external generator compound, office extension and boundary fencing at Building B10, IDA Business Park, Ballycoolin Industrial Estate, Blanchardstown, Dublin 15.

Reg.Ref.F07A/1372: Permission **GRANTED** by the Planning Authority (25/01/08) to Digiweb IDC Blanch Ltd., for the development will consist of a four-storey data storage building and ancillary functions a Network Operations Centre and associated development on a site south of existing Digiweb Building, College Business and Technology Park, Blanchardstown Road North, Dublin 15.

4.3. Other decisions pertaining to unrelated development proposals that are relevant to the Board's considerations in this appeal:

Ref:17.VC0087: The Board decided (18/05/15) that the proposed development, including a grid connection and provision of a 220 kV substation and associated works at Portan, Clonee, Co. Meath (to serve a data centre complex), will form part of the transmission network and is strategic infrastructure, generally in accordance with the Inspector's recommendation. The Board was satisfied that the substation

will form a new node on the transmission network and will be operated by Eirgrid the Transmission System Operator and noted that this type of facility has consistently been deemed by An Bord Pleanála to comprise strategic infrastructure.

PA0041: Permission **REFUSED** (12/10/16) by the Board for a Strategic Infrastructure Development application for the erection of 47 turbines of 169m tip-height ancillary works, substation, meteorological mast, cabling and access tracks, grid connection, etc., in north and central County Kildare and south County Meath. The three reasons for refusal included (reason no.1) on the grounds of premature development in the absence of a national wind energy strategy with a spatial dimension or of wind energy strategies at local level, given the scale and extensive geographical spread of the proposed wind farm. Under Judicial Review **No.2016/920 JR** the Judge determined that the Board has an obligation to properly evaluate the application in the light of existing policy (in particular the WEDG 2006 and the two relevant County development plans), notwithstanding the absence of a relevant national policy, and that reason no.1 was ultra vires, took into account irrelevant considerations and is invalid. The Board's decision was quashed and remitted the application back to the Board.

5.0 Policy Context

5.1. International framework

Ireland is a party to the UN Framework on Climate Change (UNFCCC) and the Kyoto Protocol which provide an international legal framework to address climate change. On November 4th 2016 Ireland and the EU ratified the Paris Agreement, which came into force on the same date. This is a legally binding agreement to achieve net zero emissions by the second half of this century, through increasing national determined contributions (NDCs) over time. The NDC for Ireland and all member states will be determined by the EU which has committed to reduce GHG emission by at least 40% by 2030 compared to 1990 levels.

5.2. European Union Action

2020 Climate and Energy Package[1] – This set three key targets - 20**%** cut in greenhouse gas emissions (from 1990 levels), 20% of EU energy to be from renewables, and 20% improvement in energy efficiency, which was agreed in 2007 and enacted in legislation in 2009. The ***Emissions Trading System*** (ETS) addresses GHG emission reductions from large-scale facilities in the power and industry sectors and aviation, which covers 45% of the EU's GHG emissions. Outside the ETS, the EU's ***Effort Sharing Decision*** addresses the other 55% of emissions including from housing, agriculture, waste and transport (excluding aviation) through binding annual national targets to 2020. Under the ***2030 Climate and Energy Policy Framework*** (European Council, 24/10/14) the European Council endorsed a binding EU target of at least 40% reduction in GHG emissions by 2030 and a binding EU target of at least 27% is set for the share of renewable energy consumed in the EU in 2030. The EU's ***Effort Sharing Regulation*** (July, 2016) suggests a 39% GHG reduction target of 30%[2] for Ireland to 2030.

Renewable Energy Directive 2009/28/EC (23/04/09) – Concerns the promotion of the use of energy from renewable sources. Article 4 requires each member state to produce a national renewable energy plan to achieve an overall reduction in GHG emissions of 20%, a 20% increase in energy efficiency and 20% of energy consumption across the EU to come from renewable energy by 2020. Member states are to achieve their individual binding target across the heat, transport and electricity sectors. Apart from a sub-target minimum of 10% applying to transport, each Member State may choose how to achieve their binding target across the different sub sectors. Ireland's overall target is to achieve 16% of energy from renewable sources by 2020.

Energy Efficiency Directive 2012/27/EU (25/10/17)[3] – It establishes a common framework of a set of binding measures to help the EU reach its 20% energy efficiency target by 2020 through the promotion of energy efficiency, where energy encompasses all forms of energy products inclusive of renewables and electricity

[1] https://ec.europa.eu/clima/policies/strategies/2020_en#tab-0-0 (accessed 22/11/17).
[2] As reduced down by 9% for cost-effectiveness (National Mitigation Plan, 2017).
[3] Amending Directives 2009/125/EC and 2010/30/EU.

and takes account of primary energy consumption (excluding non-energy uses) and final energy consumption (all energy supplied to industry, transport, households, services and agriculture). Under the Directive, all EU countries are required to use energy more efficiently at all stages of the energy chain, from production to final consumption and it includes the promotion of efficiency in heating and cooling (Article 14). It establishes measures for Energy efficiency which is defined as the ratio of output of performance, service, goods or energy, to input of energy and energy savings means the amount of saved energy determined by measuring the consumption before and after implementation of an energy efficiency improvement measure.

On 30 November 2016 the Commission proposed an update to the Energy Efficiency Directive, including a new 30% energy efficiency target for 2030, and measures to update the Directive to make sure the new target is met.

Digital Agenda for Europe - Launched in May 2010, the digital agenda for Europe is aimed at boosting Europe's economy by delivering sustainable economic and social benefits from a digital single market which forms part of the Europe 2020 Strategy. In addition, the Commission will come forward with proposals to complete the digital single market, notably by, inter alia, supporting the deployment of a high-quality, digital network infrastructure, underpinning all sectors of the economy across borders, progressively on a continental scale[4]. The Commission recognises the EU must enhance the interoperability of devices, applications, data repositories, services and networks[5]. EC Communication (COM(2015) 192 Final) ***A Digital Single Market Strategy for Europe*** is a policy document (with no mandatory authority) promoting the development of a single digital market for the EU, based on three pillars, including the maximization of growth potential of the European Digital Economy through investment in ICT infrastructures and technologies such as Cloud computing and Big Data, and research and innovation to boost industrial competiveness as well as better public services, inclusiveness and skills. The policy document recognises that big data, cloud services and the 'Internet of Things' are central to the EU's competitiveness.

[4] https://europa.eu/european-union/file/1497/download_en?token=KzfSz-CR (23/11/17)
[5] https://ec.europa.eu/digital-single-market/en/europe-2020-strategy (23/11/17)

5.3. **National Policy and Actions**

Climate Action and Low-Carbon Development National Policy Position **(2014)** – The Government recognises the threats arising from climate change, supports the global response to transition to a low-carbon future, recognises challenges and opportunities of this transition and, aims, as **a fundamental national objective**, to achieve transition to a competitive, low-carbon, climate resilient and environmentally sustainable economy by 2050. It notes Ireland's obligations under international agreements (UN Convention on Climate Change), the EU objective to reduce GHG emission by 80-95% by 2050 compared to 1990, our obligations under EU law and the evolution of international and EU climate policy and indicates that the evolution of climate policy in Ireland will be an iterative process based on the adoption of a series of plans to 2050, referring to the National Low-Carbon Roadmaps and the National Climate Change Adaptation Frameworks as the key pillars of the process.

Climate Action and Low Carbon Development Act, 2015 – Provides that the Minister shall make and submit for Government approval, a national mitigation plan and a national adaptation framework to achieve the national transition objective (i.e. '*to pursue, and achieve, the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050*').

Ireland's Transition to a Low Carbon Energy Future 2015-2030 (Energy Policy Whitepaper, DCENR, 2015) – The White Paper provides a framework to guide policy up to 2030, taking account of Ireland's commitments on climate change and the national objective to transition to a low carbon economy by 2050. It recognises that this will require, inter alia, a radical change in behaviour as citizens, industry and government, becoming more energy efficient, supporting the wide scale deployment of renewable heat in the business, public and residential sectors and employing new technologies as they emerge.

In the short and medium term, it expects substantial increases in cost of carbon through the ETS and anticipates a shift away from carbon intensive fuels to lower carbon fuels like natural gas, to be replaced largely by renewables in the longer term. It envisages citizens as driving the shift to more efficient energy usage (e.g. off-peak use) and to increasingly participate in energy efficiency and in renewable energy generation and distribution in lieu of centralised government and utility led

provision. In particular Government will widen the opportunity for citizen participation in energy, including shared community ownership of renewable energy projects and integrating energy issues into local area planning with locally appropriate solutions to address the gap between demand and supply (including district heating solutions).

In terms of delivering sustainable energy, it will: provide a policy framework to encourage CHP; will support the deployment of heat from renewable sources through Renewable Energy Feed-In Tariff (REFIT) 3 Scheme and develop supports to meet RES-H targets for 2030; facilitate deployment of proven RES-H technology; introduce a Renewable Heat Incentive in the non-ETS sector from 2016; develop a comprehensive heating strategy to reduce carbon intensity of heating; and develop a policy framework to encourage the development of district heating.

National Renewable Energy Action Plan (2010) - Ireland's National Renewable Energy Action Plan (NREAP) sets out the State's national 2020 targets for the share of energy from renewable energy sources (RES – total 16%) total to be consumed in electricity (RES-E 40%), heating and cooling (RES-H 12%) and transport (RES-T 10%), and how it intends achieving same (e.g. through REFIT for RES-E). It recognised the challenges posed by large amounts of intermittent power and how EirGrid is addressing the appropriate management of the grid and stability of the electricity system during this transition.

National Energy Efficiency Action Plan #4 (2017-2020) – 20% energy efficiency by 2020 requires energy savings of almost 32,000 GWh over the period. Based on current measures saving of only 25,905 GWh are projected for 2020, or 16.23%. It indicates that despite some success in decoupling energy use from economic growth (overall energy demand is down 15% compared to 2008 and the unit consumption of energy per dwelling is down 32% between 1990 and 2015), further efforts will be needed. Very significant additional funding (increasing by €27.5m to €100.2m in 2017) has been made available from the DCCAE for energy efficiency related measures to enable a scaling up of effort.

S.8.5 concerns promotion of efficient heating and cooling. It suggests that initial CBA carried out by Ireland, as required under the EE Directive, may have been unduly conservative concerning DHS potential and that further research by the SEAI indicates there may be significant opportunity for DHS. Whilst cost effectiveness of

retrofitting DHS is a challenge with the current building stock, it provides a good fit for fourth generation DH network[6] and possibly significant potential for such networks as the building stock is upgraded to near zero energy buildings (NZEB)[7] which can be heated from low temperature heating sources. It also notes that Part L of the Building Regulations, requiring mandatory use of renewables (10kWh/ sq.m p.a.), promotes the use of district heating fuelled by renewable; that such systems are also encouraged under the ***Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas*** (2009) [the guidelines specifically refer to use of waste heat from nearby industries]; and by REFIT 3, renewable electricity support scheme (RESS) and that a Renewable Heat Incentive scheme aimed at large industrial and commercial users in the non-ETS sector is under development[8].

National Mitigation Plan (DCCAE, July 2017) – The plan specifies the policy measures that the Government considers are required to manage GHG emissions and the removal of emissions at a level appropriate to further the national transition objective. The measures are framed around decarbonising four main carbon emitting sectors - electricity generation; the built environment; transport; and agriculture. To underline the importance of early action, it points out that:

> '*based on historic emissions in 2015, average annual reductions of 0.75Mt CO2 in total from electricity, built environment and transport sectors would be required between [2017] and 2050. However, when the projected position in 2035 under the EPS's 2017 'width additional measures' scenario is taken as the starting point, this would require a reduction of almost 2Mt CO2 per year to 2050.'*[9]

The EPA expects Ireland not to meet it GHG emissions reduction target, with a reduction of only 4%-6% below 2005 levels for all sectors, with emissions exceeding the effort sharing decision limit (337.9Mt CO_2eq) by 13.7Mt, compared to the 20% target. The plan anticipates that the challenge to be greatest in the agriculture and

[6] This is not defined in the NEEAP but I understand it refers to DHS that includes district cooling, smart energy and smart thermal grids.
[7] The 2019 (proposed) Building Regulations – dwellings (NZEB)
[8] At time of writing the DCCAE website indicated that the consultation period on the RHI closed in March 2017 but no final RHI had been adopted. https://www.dccae.gov.ie/en-ie/energy/consultations/Pages/Renewable-Heat-Incentive-Consultation.aspx (22/11/17).
[9] P.13.

transport sectors, which are projected to increase by 5% and 10-12% respectively. Additional mitigation measures will be necessary to achieve cumulative mitigation capacity of 89Mt CO2eq to 2030.

The plan does not specifically mention District Heat Systems or Combined Heat and Power, however, regarding decarbonising the built environment, it indicates that carbon mitigation will require a combination of energy efficiency and decarbonisation of heat through use of renewable or electric heat and it notes the proposed Renewable Heat Incentive mitigation measure currently under development.

Strategy for Renewable Energy 2012-2020 (DCENR, 2012) - The Government's overriding energy policy objective is to ensure competitive, secure and sustainable energy for the economy and for society, with the development of renewable energy central to overall energy policy. It recognises a number of significant challenges to going beyond current renewable energy deployment levels including, inter alia, tackling the barriers to developing renewable heat demand including CHP and District Heating Systems. It also notes that underpinning Ireland's ability to deliver on strategies for renewable energy in a cost effective way is the principle of energy demand reduction, including energy efficiency measures.

National Digital Strategy (DCENR, 2013) - This National Digital Strategy (NDS) is a foundation step in helping Ireland to reap the full rewards of a digitally enabled society. It is part of the overall Government commitment to a more digitally empowered society which involves a suite of complementary national measures. These include the National Broadband Plan, the National Payments Plan, the Action Plan for Jobs and the eGovernment Strategy and the eHealth strategy currently being developed by the Department of Health. It recognises the prospects for and benefits for growth within the thriving digital sector in Ireland, including Cloud Computing and Data Analytics, Media & Entertainment, Education, Healthcare, Retail and Financial Services in terms of direct and indirect jobs growth and access to larger markets.

Winning FDI 2015-2020 (IDA, 2015) – The strategy refers to the rapid growth of technology and recognises the opportunities for Ireland to maximise investing arising

out of the trends towards Cloud, Social, Mobile and Analytics which have the potential for disruption across many sectors. Key sectors within this area include, inter alia, the internet of things, big data and financial technology.

5.4. Other reference documents

Ireland's Grid Development Strategy: Your Grid, Your Tomorrow *(EirGrid, January 2017).* The document sets out the new grid development strategy taking account of the Government's Energy Whitepaper, in addition to the Action Plan for Jobs and the IDA's 2015-2019 strategy, and changes in demand for electricity and patterns of generation. Data centre development is identified as a major driver of growth in energy demand.

All-Island Generation Capacity Statement 2017-2026 (EirGrid Group, April 2017). This statement outlines the expected electricity demand and the level of generation capacity available on the island over the next ten years. The advent of the Integrated Single Electricity Market (ROI and NI) will give effect to the new Capacity Market which aims to procure enough supply to meet the demand to the adequacy standard. Any generator outside the CM could become commercially unviable, particularly with the increasing amount of intermittent renewable generation on the system. In the context of emissions legislation, the decommissioning of high-emission generation plant also needs to be addressed. The only new generation expected to connect comprises renewable (primarily wind and biomass / waste), to contribute to the 2020 renewables target. Data centre development is identified as a major driver in energy demand growth to 2026.

Tomorrow's Energy Scenarios 2017: Planning Our Energy Future (EirGrid, July 2017). A scenario planning document to assist in planning the electricity transmission grid, based on possibly growth scenarios for energy demand. Data centre development is identified as a major driver of growth in energy demand up to 2030.

5.5. **Development Plan**

Fingal Development Plan 2017-2023

Land use zoning objective '*HT – High Technology – Provide for office, research and development and high technology/high technology manufacturing type employment in a high quality built and landscaped environment*.'

Chapter 3 - Place making

Objective PM30 - Encourage the production of energy from renewable sources, such as from Bio-Energy, Solar Energy, Hydro Energy, Wave/Tidal Energy, Geothermal, Wind Energy, Combined Heat and Power (CHP), Heat Energy Distribution such as District Heating/Cooling Systems, and any other renewable energy sources, subject to normal planning considerations and in line with any necessary environmental assessments.

Chapter 6 - Economic Development

Objective ED27 - Promote the continued growth of the ICT sector in Fingal by creating high quality built environments offering a range of building sizes, types and formats, supported by the targeted provision of necessary infrastructure.

Objective ED110 - Proactively respond to the needs of enterprises undertaking pharmaceutical, data centre, food production and logistics activities that require bespoke building facilities to meet their specific manufacturing requirements.

Chapter 7 Movement and Infrastructure

Objective EN04 - Encourage development proposals that are low carbon, well adapted to the impacts of Climate change and which include energy saving measures and which maximise energy efficiency through siting, layout and design.

Objective EN05 - Prepare a Climate Change Mitigation and Adaptation Strategy and a Local Authority Renewable Energy Strategy (LARES), Spatial Energy Demand Analysis (SEDA) and a Sustainable Energy Action Plan (SEAP).

Objective EN06 - Encourage and facilitate the development of renewable energy sources, optimising opportunities for the incorporation of renewable energy in large scale commercial and residential development.

Objective EN07 - Support the implementation of the '*Strategy for Renewable Energy 2012-2020*' Department of Communications, Energy and Natural Resources (now Department of Communications, Climate Action and Environment) and the related *National Renewable Energy Action Plan* (NREAP) and *National Energy Efficiency Action Plan* (NEEAP).

Objective EN09 - Require details of the requirements for alternative renewable energy systems, for buildings greater than 1000sq m or residential schemes above 30 units, under SI 243 of *2012 European Communities (Energy Performance of Buildings)* to be submitted at pre planning stage for consideration. These should take the form of an Energy Statement or Feasibility Study carried out by qualified and accredited experts.

Chapter 12 - Development Management Standards

S.12.2 Common Principles for all Planning Applications – Sustainable Design – […] Layout and building design must conform to the highest possible standards of energy efficiency. […] Energy-saving and energy generating technologies, such as roof top solar panels and geothermal energy, shall be incorporated at the design stage where possible. […].

12.9 Enterprise and Employment – […] In assessing planning applications a number of considerations will be taken into account: [inter alia] Conformity with relevant Development Plan land use policies and objectives; […] Energy efficiency and overall sustainability of the development;

5.6. Natural Heritage Designations

Malahide Estuary SAC 000205 (13km)

South Dublin Bay SAC 000210 (14km)

North Dublin Bay SAC 000296 (15km)

Rye Water Valley / Carton SAC 001398 (8.7km)

South Dublin Bay and River Tolka Estuary SPA 004024 (14km)

Malahide Estuary SPA 004025 (13km)

North Bull Island SPA 004006 (12km).

6.0 The Appeal

6.1. Grounds of Appeal

6.1.1. **The main grounds of the third party appeal by Allan Daly of Ballygarraun South, Athenry, Co. Galway, concerns the following:**

- The failure of the EIS to disclose or assess the electrical power and energy usage of the proposed development, which constitutes one of the largest data centre proposed in Ireland to date;
- the failure of the EIS to provide mitigation for the impacts arising from the electrical power and energy usage subject impact same and;
- the failure of Fingal County Planning Authority to carry out EIA of the proposed development concerning this particular impact having regard to the obligations under the EIA Directive, as amended.

The detailed points made is support of these grounds may be summarised under the following headings:

- **No assessment of energy use arising** -
  - No statement in EIS or elsewhere of the quantity of electrical power / energy to be used, and no mitigation for same, for the development that, based on the masterplan would form part of the largest data centre proposals in Ireland;
  - No EIA by Planning Authority of the impact, just a cut and paste of Inspector's Report on PL07.245518 (Apple) and the Board is requested to review the application de novo;
- **Significance of data centre energy usage** -
  - The scale of energy use of data centres is beginning to be recognised, including in *Eirgrid All-Ireland Generation Capacity Statement 2017-2026* which notes data centres as one of the large new users driving growth in energy use;
  - Such industrial connections dominate Ireland's energy demand at the moment, which is not usual for a country;

- Eirgrid's consideration of possible energy generation and consumption in Ireland, set out in *Tomorrow's Energy Scenarios 2017,* predicts data centres will account for 75% of new demand growth in most of the scenarios, increasing from 2% to up to 30% of today's total demand by 2030 in some scenarios, which may pose a major challenge to the future planning and operation of the power system due to the short cost recovery period compared to 50-year cost recovery for transmission system assets.
- The Inspector's report on a similar sized data centre and masterplan considered it clear that the amount of energy consumed by the data centre, alone, and the build out of the masterplan, would be very significant.

- **Failure to comply with EIA Directive requirements concerning assessment of impacts on the environment from the energy use arising** -
  - Contrary to requirements of S.5(1) and Annex IV(4)(b), the EIS fails to describe the likely significant effects resulting from use of natural resources, including details of energy use (*the natural resources consumed offsite*) according to EPA *Advice Notes on Current Practice in the Preparation of EIS,* required by planning authorities and the Board;
  - Indirect impacts on air factor - from emissions arising from electricity used from fossil-fuel powered plants which are subject of National Emissions Ceilings (NEC) Directive 2016/2284/EU including SO_2, NOx, NMVOCs and $PM_{2.5}$.
  - Indirect impact on air factor – Ireland has not met its national emissions ceiling for NOx and NMVOCs from 2010 to 2014 inclusive (2015 reporting status) and the data centre will inhibit Ireland's ability to comply, including compliance with further reductions in the ceiling from 2020-2030, increasing the potential fines for noncompliance.
  - Indirect impact on climatic factor – Impact on implementation of Ireland's National Renewable Energy Action Plan (required under Renewable Energy Directive 2009/28/EC) including the target of 40% electricity consumption from renewable sources by 2020 (40% RES-E requirement)

to be delivered through a Renewable Electricity Policy and Development Framework (subject of SEA) which is outstanding;

- Indirect impact on climatic factor – EPA reports that GHG emissions from Irish companies in EU ETS increased in 2016 by 5.4% over 2015 and by 6.6% for power stations. Data centres would have significant financial implications for electricity customers as, in the absence of direct mitigation from project developers, the burden will be entirely on the Government through programs such as REFIT funded by the PSO level on electricity ratepayers.
- Indirect impacts on material assets factor – the EIS includes not substantive analysis of the large impact on electrical generating resources (power systems) and the national grid from data centre, such as need for future grid reinforcements, interconnectors and power plants, or mitigation to address same (EPA Advice Notes).
- Alternatives – no assessment of alternative locations in the project description as required by EPA Advice Notes, to address sites with maximum capacity to sustainably assimilate development.

- **EIS does not contain mitigation envisaged to reduce or eliminate significant impacts arising from energy use** -
  - Board has obligation to consider, inter alia, the design concept whereby there would be a phased development of a dedicated power plant (open-cycle gas turbines and subsequently combined-cycle gas turbines), located within a reasonable distance and connected by underground AC cables (as outlined in Engineers Ireland's Engineers Journal issue 20/09/16 article *'Is it back to the future for data centres – and should they be built in Ireland?*');
  - In terms of mitigation, the Board has obligation to consider alternative siting to accommodate waste heat recovery, onsite renewable energy production, delivery of off-site renewable energy to national grid, afforestation for carbon sequestration, financial contribution to energy efficiency schemes, financial contribution towards retirement of coal / peat fired utility boilers in Ireland or elsewhere and other measures.

6.1.2. **The main grounds of the third party appeal by David Hughes of Upper Erne Street, Dublin 12, concerns the following:**

- Description of nature and extent of the development is non-compliant with requirements for planning and for EIA and is grounds for refusal based on planning case law:

  Planning -

  - Failure to mention power requirements for development proposed or for masterplan development is contrary to a.9(3)(b) of the Planning and development Regulations concerning description of nature and extent of development on public notices;
  - The power requirements of the development are key for the Planning Authority to determine whether proposal represents the proper planning and sustainable development of the area and to carry out EIA;

  EIA -

  - Main characteristics of operational period, e.g. energy demand / use, is not included in EIS description of proposed development contrary to EPA guidance:

    '*Natural resources used – energy (the natural resources consumed offsite).*'

    (S.3.5.1) … *the main characteristics of the operational phases (in particular any proposed process), for example energy demand, energy used*

  - EIA Directive Annex 1 requirement for description of the project, including in particular:

    (c) '*a description of the main characteristics of the operation phase of the project…for instance, energy demand and energy used…*'

- Project splitting (project diminishing) – not assessment of the potential impacts of the larger plan of which the subject development forms part.
  - The EIS needs to assess entire development as master planned, not just the proposed development;

- The site selection criteria (under alternatives) required a direct connection to the 220kV transmission network (not a lower voltage distribution network connection only suitable for lower loads) to facilitate a single large data hall campus;
- Inadequate consideration of alternatives, including distributed type arrangements with data halls co-located with other development to facilitate reuse of waste heat;
- Each development (proposed development, Apple, Facebook) will add to the 200MW of data centres are already connected, each becoming very large scale developments in a short space of time;
- Data centres are a new class of development for which no clear policy is in place, the permitting of which could commit Ireland to an enormous draw on its material assets (power generation, transmission and distribution systems), leading to 1000MW of power demand or 9.25TWh annual consumption.

- The precautionary principle should be applied and permission for such development until the full impact of these data centres are assessed.
  - It was applied to Maighne wind farm;
  - The total energy demand loads arising from the build out of Apple (30MW permitted out of 240MW) and Facebook (80MW permitted out of 120MW) masterplans, in addition to the 200MW of data centres already connected, amounts to 560MW, and with Amazon masterplan (say 240MW) this will account for 75% of EirGrid's projection for data centre electricity consumption (9.25TWh);
  - 9.25TWh represents 37% of all electricity generated in Ireland (in 2014 baseline).
- Implications of high energy uses on National 20/20/20 targets
  - The growth in electricity consumption will have financial implications for the public including the PSO levy to support increased renewable electricity generation in order to avoid fines applied to the stated for its failure to meet 20/20/20 targets;

- As total energy consumption increases through use by large energy users, it will become increasingly difficult to achieve the 40% RES-E target under Ireland's NREAP (e.g. total electricity usage was c.25TWh in 2014 the 40% RES-E target was 10TWh to achieve 1MtCO_2, but the data centres will add 3.885MtCO_2 based on 9.25TWh additional energy use);
- Any progress on the 40% RES-E target will also be eroded by increased energy demand post-recession, and EPA figures suggest the Government's 2050 decarbonised Ireland policy will be hopelessly unachievable without radical change in policy;
- Ireland looks to be one of only two member states to be non-compliant with the 20/20/20 targets, reaching 4% and missing the target by 75%.;
- Ireland will be obliged to purchase compliance with the targets, paying a fine for each percentage point miss below the 16% target and at a rate of €100-€150 per MWh below the 40% target;
- If 2TWh is added by 2020 and up to 10TWh by 2030, the fines would be €300m and €1.5bn per annum for the data centres alone;
- It is not hard to see why Amazon don't want to declare the power requirement for the masterplan site.

- No cost benefit analysis of data centres to the Irish economy
  - The Board needs to undertake a Cost Benefit Analysis of the development to weight cost of energy emissions against economic benefit to the state using a standard baseline (year 2014);
  - Adding wind energy above 2000MW, above which the growth in network cost increase substantially;
  - One in every 3KW hours generated will be consumed by a data centre based on EirGrid's 37% figure;
  - In 2014 the entire residential sector (c.5 million people) used c.12.5TWh of the total consumed (25TWh), compared to the projected 9.25TWh predicted for data centres to power the physical infrastructure behind online companies which produce nothing but only stores data;

- Amazon will create only 32no. jobs, Apple 150no. and Facebook 60no., with no additional increase in jobs with additional phases of masterplan development (based on Apple oral hearing) and increased energy usage;

- Planning assessments
  - Nonetheless the Inspector on the Apple case considered the economic benefits from jobs created (direct and indirect and regional development) outweighed any impact on the environment (climate change and GHG emissions) and that such development had to be located somewhere, which was mirrored in the Planner's report on the current proposal;
  - Location – Ireland is an isolated island based energy system and has exploited c.75% of its hydro-power supply and is not an equal location to others, as suggested in the planner's report, where the development impact would be significantly different (e.g. Scandinavia where the development could use 100% non-intermittent renewable power within a large and continentally-connected power grid);
  - Economic benefit – the benefit is not significant compared to the energy that will be used and was not supported by analysis. In 2014 the commercial and industrial sector used 10.93TWh, accounting for 1.8 million jobs (€253 billion), or 5.84MWh per job compared to 14,000MWh per job for Apple. The data sector might produce 659 direct jobs and 1112 indirect jobs (total salary impact of c.€112 million per annum compared to €215 billion for employment created by existing industry and commercial development based on an equivalent energy usage). Data centres are not justified by employment benefit, with no jobs benefits as the full masterplan is built out and power requirements grow. The energy use per employee in operational stage is not sustainable (e.g. 3MWh for post / telecoms employees compared to 4100MWh for a data centre).

- Fines
  - SEAI's '*Efficient and Renewable Energy Targets 2020: Potential Purchase Costs and Potential Penalties for Shortfall*' – Estimated at €100-€150m per MWh for each 1 percentage point shortfall, ranging from €140 – 210

million. Applies if Ireland fails to generated 40% of its electricity from renewable sources.

- Assuming 2TWh required by a data centre, if 40% of energy requirement (or 800,000MWh) not achieved by renewables, a fine of €80-120 million would apply per annum, or €0.8-1.2 million per annum per employee.

- Alternatives
  - Data centres should be requested to achieve savings through investment in demand reduction measures to free up the energy they need to operated;
  - Data centres should make use of waste heat for further productive uses – e.g. district heating systems, heat for the NAC or horticulture;
  - In 2014 only 20% energy was from renewables, compared to the 40% target. Can increase proportion of renewable energy by either doubling renewable energy production or by halving overall energy demand.
  - Data centres should provide the capital to reduce overall energy demand, as all saving made by the general public, through insulating their homes and switching to lower energy electrical appliances will immediately be absorbed by data centres;
- Deficiency of EIS
  - Does not address the above points;
  - Revised EIS required, with scoping agreed with the Board;
  - The applicant has not declared the power requirement of the data centre or provided a meaningful assessment of same;
  - Concerning s.2.5 Sustainability Energy Efficiency & Resource, the proposed development will be connected to the 220kV grid and subject of the electricity production mix feeding the grid (20% renewable and 80% fossil fuel), as was accepted by the Inspector on the Apple case;
  - S.2.5.1 Energy Efficiency Benefits – ignores the fact that the energy savings benefits (84% reduction) arising for businesses located all over the world will be facilitated by increased energy production in (and

effectively paid for by) Ireland, within a power grid that is not meaningfully connected with other large electrical systems. Typical generation costs are c.€50 per MWh compared to the €100-150 per MWh fines imposed [for missing the 20/20/20 targets], with the cost of the fines 'socialised' to the Irish taxpayer who will be subsidising large companies outside Ireland for using Amazon's services;

- S.2.7 Potential Impacts of the Development – Operational air emissions generated by the power requirements are ignored by the EIS;
- S.2.8 Related Development and Cumulative Impacts – No 'high level cumulative impact' study of the data centre with other such data centres is included;
- S.3.3 Sustainable Development – There is no attempt to mitigate the enormous amounts of waste heat arising.
- The EIS (s.3.5 Consultations with FCC Planning Dept; s.3.6 Conclusions; s.5.10 Residual Impact; s.14.2 Electricity Supply; s.14.10 Use of Natural Resources; s.14.12 Residual Impacts on Material Assets; s.14.13 Cumulative Impacts on Material Assets - s.13.1 Impacts from Potential Masterplan Development, & s.13.2 Impacts from Neighbouring Development) provides an inadequate description of the impact on the environment and its conclusions on potential impact effectively accepted into the Council planner's report
- A totally revised EIS should be sought by the Board if they are minded not to deem the application void.

Attachments –

- Copy of observation to application (date 28/03/17 but received to FCC 04/04/17), plus receipt for same
- Copy of appeal by David Hughes on the Apple data centre application reg.ref.15/488 (PL07.245518)
- Copy of observation by David Hughes on Apple data centre application reg.ref.15/488

6.2. **Applicant Response**

6.2.1. **The main points of the response by ADSIL c/o John Spain and Associated Planning Consultants (20/06/17) to each of the appeals are summarised below:**

General comments

- (S.2) An oral hearing is not warranted as the application documentation addressed all the concerns raised; the development is fully compliant with all applicable national, regional and county policies and the established pattern of development and there were no objections from local residents, businesses of elected representatives; and no significant issues or new issues have been raised in the appeals.
- (S.3.8) The application is accompanied by an EIS which includes a detailed assessment of the development and assesses the cumulative impact of the overall development of lands envisaged in the indicative master plan to the extent possible having regard to the preliminary nature of the same and any adjacent sites subject of extant permissions.
- (S.3.11-3.13) the Planning Officer considered there to be precedent for such development on HT lands, that the development was visually acceptable and concluded that the development will have no undue negative impacts and that the EIS was compliance with the Planning Regulations.
- The planning application and EIS were submitted 01/03/17, prior to the transposition date for EIA Directive 2014/52/EU and the EIS is in accordance with A.3 of the 2014 EIA Directive, subject to the provisions of the 2011 EIS Directive.

Responding to Allan Daly's grounds of appeal

(A) Failure to address the large energy requirements in the application

- Will require 35MW electricity during operation, or 0.5% of the Single Energy Market for the island of Ireland
- Eirgrid have confirmed that grid capacity is available to accommodate the proposed development

- An assessment of the impact of the proposed development with respect to energy usage was carried out in chapter 2 (Description of the Proposed Development) and chapter 14 (Material Assets) of the EIS.
- Specifically, s.2.2.5.4 outlines that the development will be supported by 220kV GIS substation and the development operated at 110kV, with the 220kV mitigating any potential effects of operational disturbance should the site be further developed in future years.
- Specifically, s.2.2.4 describes the indicative masterplan for the build out of the site, which will be further developed and refined in future, and in each environmental assessment of the indicative masterplan development it is clearly stated that the application is for building 1 only. Any further development on site, whether as per the indicative masterplan or otherwise, will be subject to a full separate planning application inclusive of EIS, where required.
- EirGrid's *All-Island Generation Capacity Statement 2016* (26/04/17) notes the significant quantum energy demand from data centre operations and clearly sets out that EirGrid has the capacity to accommodate same based on 2026 projections, with capacity within the new I-SEM market procured by EirGrid to maintain the system security standard based on 8 hour LOLE.
- EirGrid's 2017-2026 statement states '*Currently, the system in Ireland has a generation surplus*', at present of c.41%, and the then existing generating surplus and 'close to standard' situation predict for 2025 (statement 2016-2025) in view of the development potential for data centres over that period, was acknowledged in the Inspector's report on the Apple case. Furthermore, the Inspector did not consider there to be a clear basis to support the objections concerning potential negative impact on grid infrastructure or the assertions that Apple would not make a fair contribution to maintaining grid capacity. He considered that the TUoS charges and electricity charges to be paid by Apple would likely lead to reduced charges for all users in the short run at least and that the situation

at the time of any future application for the data centre is hard to predict and would have to be assessed at that time.

- The impact of energy consumption arising on national capacity it fully contemplated and supported by EirGrid and will have very minimal impact on national energy capacity.

(B) EIS does not address indirect pollution from energy use:

- EIS chapter 9 (Air Quality & Climate) focused on local air quality impact and found resultant ambient air quality concentrations in compliance with required standards.
- All electricity generating power stations in Ireland are licensed by the EPA under the IED (Council Directive 2010/75/EC), are subject to strict emission limits (including NOx, SO2, dust), are designed to ensure emissions are in accordance with the IED limits and have undertaken air dispersion modelling to ensure exceedance of air quality standards (S.I.271/2011) does not occur.
- The electricity end user is not required to repeat this exercise [i.e. compliance with IED and air quality standards] and will have purchased electricity derived from a complex mix of sources over the course of any one year and therefore would not be in a position to determine the relative contribution of various power generators to the end user's facility.
- The industry average carbon emission factor in Ireland is 0.393t/MWh, taken across all types of generation (SSE letter contained in appendix B), or 96,285 tonnes CO_2e p.a. based on 35MW maximum power usage, or 0.2% of Ireland's total CO_2e emissions of 60 million tonnes p.a. (EPA's '*Ireland's Greenhouse Gas Emission Projections*') and is not significant.

(C) Effect on Ireland's renewable energy and emission targets

- The applicant will ensure that on an annual basis its power consumption will be matched by renewable energy generation and certification.
- S.2.5 of the EIS indicates that the applicant's energy supplier currently holds a CER certified fuel mix disclosure guaranteeing every MWh they

supply in the market is generated from renewable sources, with supply confirmed by Energy Supplier SSE Airtricity Ltd (letter in appendix B).

- The applicant is currently supporting the renewables targets through purchase of renewable energy, thereby encouraging renewable generation projects that contribute to Ireland's national targets.
- The applicant has demonstrated that there will be no significant impact on Ireland obtaining its renewable energy and emissions targets.

(D) Impact on power systems as a material asset as per EPA guidance:

- The power systems are adequately described and assessed in chapters 2 and 14 of the EIS in accordance with legislation and guidance (this repeats of the response to point (A)).
- The route for an underground ducting connection to the Corduff 220kV AIS substation has been subject of discussion with EirGrid and FCC, but it has now been agreed with EirGrid to supply power via the existing 110kV connection.
- A 220kV connection is not required for the proposed development. Further phases of the indicative masterplan development may necessitate a 220kV connection which would be subject of any required application and assessment before the construction of a connection.

(E) Failure to assess energy usage will precipitate financial implications for normal electricity rate payers:

- This is not a relevant planning matter, but the Transmission Use of System charged (TUOS) paid by the applicant will reduce network charges for all users, as was accepted by the Inspector on the Apple case.

(F) Insufficient examination of alternative locations or designs:

- Alternative locations were considered in a detailed assessment under s.4.2 of the EIS;
- Alternative designs were considered in a robust assessment under s.4.3 of the EIS;

- The design approach suggested in the Engineer's Ireland article is a potential concept for future data centres whereby a phased rollout of data centres would be undertaken concurrently with the development of a dedicated power plant (an open-cycle gas turbine initially, then reconfigured to use combined cycle gas turbines) to serve their power needs efficiently. The proposed data centre has been carefully sites to access the national grid and EirGrid advised that the necessary capacity is in place without need for a dedicated gas turbine power plant.

(G) The EIS does not outline mitigation measures to address energy use / indirect emission

- The Irish climate is conducive to a free cooling strategy, in-taking outside air to cool the servers and then exhaust higher temperature air to the atmosphere, helping to minimise GHG emission relative to less favourable locations.
- S.2.5.2 of the EIS details the energy efficiency mitigation measures – airside heat recovery systems, energy efficient electrically commutated fans and motors with variable wind speed drives, intelligent lighting systems and photo voltaic panels to supply hot water to the administration block and sanitary facilities.
- S.2.5.1 explains that a large data storage facility is much more energy efficient that individual smaller facilities, thereby minimising GHG emissions.
- It is indicated that the assessment of indirect emissions is addressed in further detail under s.5.5 of the response[10].

Responding to David Hughes's grounds of appeal

(A) Proposed development description

- The description of the proposed development is wholly in accordance with the requirement for a brief description of the nature and extent of

[10] There is no s.5.5.

development as required under the Planning and Development Regulations, 2001, as amended.

(B) EIA Directive and EPA guidance require energy-take to be included

- This is addressed in response to Allan Daly's appeal.

(C) EIS does not deal with indicative masterplan development

- The indicative masterplan was submitted at the request of the Planning Authority, but the proposed development is a standalone development that is not dependent on the implementation of the masterplan.
- Cumulative impacts of the overall development included in the indicative masterplan were assessed for all environmental factors, as far as possible.
- Any future development would necessitate a separate application, subject to EIA as required, evaluated by the Planning Authority. A grant of permission for the proposed development does not imply acceptance of further development or require further development within the indicative masterplan.

(D) Permission should not be granted for data centres, on the basis of the precautionary principle, as there is no policy for data centres.

- There is a wealth of applicable policy, guidance and regulations, including the EIA Directive and there is no requirement that specific guidelines be prepared for each class of development.
- The proposed development has been planned to accord fully with existing national, regional and local policy.
- The Board's Inspector on the Apple case considered it very difficult for the Board to make a decision that data centre development is not acceptable in principle in the context of the nature of the facility, the clear need for same and the necessity for it to locate somewhere. On this basis the applicant considers it clear that a refusal on the basis of lack of specific guidance / policy is not merited.
- The application was assessed and granted by FCC based on applicable policies and regulations.

(E) Data centre will expand Ireland's overall energy usage, making it more expensive to achieve the 40% renewable energy generation target and resulting in fines, and the cost of wind energy will increase with increased penetration.

- Ireland's 20/20/20 targets cover electricity, heat and transport sectors, with a national target of 16% reduction by 2020 relative to 1990 levels across the three sectors (Renewable Energy Supply (RES) – 40% Electricity; 12% RES Heat; 10% RES Transport).
- The targets, commitments and progress to reaching them are National Policy issues. The propose development will add c.0.5% to SEM demand and its impact is very low relative to RES-E within national targets.
- Based on Minister Naughton's statement to the Dáil in reference to RES-E targets, 2,796 MW wind renewable generation is connected to the grid and 3,750 MW renewable generation is contracted relative to the 4,300 MW required by EirGrid, there is sufficient ability within this sector to meet the target based on planned demand and planned generation.
- Energy usage, climate change impact and achievement of renewable energy targets were noted by the Inspector on the Facebook case (PL17.245347 and 17.VA0018), but he stated that the issued raised regarding climate change and national energy strategy were more appropriately considered at national policy level.
- Decarbonised energy and the RES-E targets are absolutely supported by the applicant.

(F) No more than 40% penetration of renewables is achievable without destabilising the grid.

- This is incorrect. A target of 40% electricity consumed in 2020 is to come from renewable sources.
- EirGrid states that the power system can operate at any one time with 60% of national demand met through non-synchronous renewable energy sources, delivered through EirGrid DS3 programme '*Delivering a Secure* and Sustainable Power [sic] System'.

- Eirgrid Annual Report 2016 – EirGrid is working towards facilitating ambitious levels of renewable energy in response to 2020 targets, including growth in weather dependent generation which create significant uncertainties, including through some displacement of the predictable strength of existing electromagnetic generation by newer electronic generation, and ensuring energy balance at all times. The DS3 Programme seeks to address these. In 2016, an increase to 60% in the maximum limit for System Non-Synchronous Penetration (SNSP) was achieved, with a target of 75% limit by 2020.

(G) The fines arising from missing the 2020 targets exceed the economic benefit in terms of job creation.

- There are positive direct and indirect economic benefits
- Amazon Data Services Ireland Limited (ADSIL) was established (2004) to support growing demand for cloud computing, the on-demand delivery of compute power, data storage, applications and other IT resources via the internet and physically underpinned by data storage facilities.
- Data storage facilities do not require significant onsite workforce, as most functions enabling cloud computing can operate remote from same. The majority of ADSIL's 1,000 employees are based in Dublin City Centre Corporate Offices.
- S.2.3.1.2 of the EIS notes indirect employment from construction will be in the order of c.400 staff (average 250) over 12-18 months.
- 32no. permanent jobs will be created at Cruiserath, but the development will support and create significantly more direct and indirect roles.

(H) Waste heat should be used as district heating for housing and horticulture.

- The energy efficiency measures are described in s.2.5.2 of the EIS.
- In use of waste heat, the efficiency and environmental impact of transmitting waste heat and the need for a willing recipient able to use the waste must be considered.

- Low grade heat (typically 30-40-degree C) from air cooled data storage facilities has limited uses at this time, with no district heating system in the environs and no significant environmental benefit in transmitting same over moderate or long distances for horticultural use.
- The land is not zoned for horticultural use.
- The Inspector on the Apple case accepted a decentralised arrangement for data centres would present very significant problems in terms of security of data, maintenance, costs and would require individual cooling systems for each and he accepted that alternative technologies including dispersed storage and district heating systems would arise in significant security concerns.

(F) Criticism of Planning Authority Assessment

- This is an unfounded criticism. It is evident from the Planning Officer's Report and those of other Internal Departments that the Planning Authority undertook a detailed assessment including EIA, in consultation with all relevant statutory bodies which raised no concerns.

Attachments

- EirGrid letter 20/06/17 confirming the application for 110kV connection and new 220kV substation at Cruiserath to facilitate the connection and potential future expansion.
- SSE Airtricity Ltd letter 20/06/17 confirming that it supplies ADSIL with 100% renewable power (verified and certified by CER) for their existing demand and proposed developments in Ireland, as the largest wind power provider in the SEM generating 580MW, in addition to its long term Power Purchase Agreements with third party renewable energy generators for over 300MW of wind and solar power and holds Guarantees of Origin from other Irish renewable energy generators as well as SSE owned generation sites in Great Britain. CER has confirmed that SSE Airtricity's carbon emissions are zero, compared to an industry average of 0.393t/MWh.

6.3. **Planning Authority Response**

The main points of the response of Fingal County Planning Authority (16/06/17) may be summarised as follows:

- It is an objective under the Development Plan (Objective EN07) to support the implementation of the 'Strategy for Renewable Energy 2012-2020' DCENR (now DCCAE) and the related NREAP and NEEAP.
- It objective under the Development Plan (Objective EN09) to require details of the requirements for alternative renewable energy systems, for buildings greater than 1000-sq.m … under SI 243 of 2012 EC (Energy Performance of Buildings) to be submitted at pre-planning stage for consideration. These should take the form of an Energy Statement of Feasibility Study carried out by qualified and accredited experts, as was advised to the applicant at pre-planning stage.
- Regarding energy issues, the proposed solar panels are noted as is the Planning Consultant's submission that cloud storage is 29% more energy efficient than on-premises data storage, thereby significantly reducing data-storage energy demand requirements.
- EirGrid's All Ireland Generation Capacity Statement 2016-2025 makes specific reference to the projected increase in demand arising from consented and likely planned data centres.
- Such facilities are required to facilitate the projected significant rise in demand for data storage for the foreseeable future.
- There is a strong case to locate such facilities in Ireland due to its temperate climate and prevailing winds which reduce overall energy requirement.
- In the absence of any national policy covering very high energy consuming projects it is difficult to justify the proposed development is not acceptable in principle.
- The development is considered acceptable in planning policy terms with regard to location, land use zoning, design and EIS and the decision to grant should be upheld.

6.4. **Observations**

The main points raised in the observations received from Carmel McCormack (19/06/17) may be summarised as follows:

- Missing information - In the absence of information on electricity / energy demand arising from the proposed data centre, how can direct and indirect impacts be subject of EIA? Apple DC is 240MW.
- Impact of backup diesel generators (regular testing / operation) not assessed.
- Impact on 20/20/20 targets and the impossible 40% Res-E target;
- Statistical information on penetration of wind energy is misleading and there will be little improvement on the 20% renewable energy level with additional wind energy development;
- Data centres will compound the problem [of meeting the RES-E target] and Amazon, if fully built out, will cost the state €100 million p.a. in carbon emission fines;
- It is not possible for the data centre to run on 100% renewable energy when it will be serviced by the national grid with 80% electricity produced by fossil fuel and 20% renewables.
- Claim that it will be 100% run of renewables provides an excuse for the wind energy industry to develop more wind farms to fill an electricity demand that this intermittent energy supply cannot realistically meet;
- Problems with using renewable energy to serve the proposed development:
    - technical limitations of intermittent renewable energy on an island Grid System arising from inertia
    - Not solved by interconnectors (with UK) which area incredibly expensive, very unreliable and very expensive to repair / replace and it is objectionable for the bulk of the capacity to be used up by data centres at the taxpayers' expense;
    - The UK has limited spare electricity capacity, is falling short of its own 20/20/20 targets, and may have duties added post Brexit;

- RoCoF – technical maximum penetration of wind energy is 42%, with higher rates destabilising the power grid due to its intermittent nature and a widening of RoCoF such that is likely to result in shorter lifespan for electronic equipment and consequential increased maintenance and write-down costs;
- Increase in intermittent renewable energy will increase load shedding, i.e. blackouts in designated areas which are likely not to include data centres until last;

- Overall power supply issue
  - The data centres will absorb all spare electricity capacity with nothing left for growth in the economy or peak domestic demand in winter;
  - Eirgrid All Ireland Generation Capacity Statement 2017-2026 indicates that demand growth potentially would require a new power plant in the Dublin region, at the expense of the taxpayer, with additional CO_2 emissions resulting in fines to the state and implications on cost of electricity and competitiveness;
  - EirGrid's report notes 250MVA of installed data centres in Ireland with 600MVA in the connection process, with inquiries from more than 1000MVA of additional data centres;
  - It is believed that there is ample capacity in the Eirgrid network to support additional loads but Dublin is rapidly approaching saturation point and it notes that data centre loads may need to be spread around the country;
- Costs to domestic electricity customers and to the taxpayer generally - The reduced cost rate of electricity for data centres, the cost of the required electricity infrastructure and the cost of renewable energy subsidies to fund the additional renewables to achieve the claim for 100% renewable energy power by the data centre will be paid by someone else [implied]:
  - PSO levies will increase to avoid shortfalls, possibly doubling to assist the intended offshore wind subsidy;
  - Increase in curtailment fees as intermitted renewable supplies increase;
  - REFIT guarantees minimum payment with no upper payment limit;

- The grid system is already at capacity and the 40% target is unachievable without curtailing demand;
- Domestic users of electricity pro-rata currently pay c.312% more of a PSO levy than industrial users, with an estimated reduction in PSO levy of €20 million (from €29 million) estimated for Amazon based on 240MW, subsidised by domestic customers to accommodate 30no. jobs;
- Ireland has the second highest electricity prices in Europe and fuel / energy poverty costs the state c.€500 million p.a. in assistance payments;
- Ireland has only €500 million fiscal space for Budget 2018;

- The 30no. jobs may not materialise as they can be remotely controlled from another jurisdiction and there is no information on the jobs to be create in terms of purpose or role.
- In the absence of Government policy for data centres permission should be refused on the basis of the precautionary principle.
- There is no incentive for a data centre to be as energy efficient as possible as the increased cost would put them at a disadvantage to its competitors within a subsidised energy market;
- The National Renewable Energy Plan is deeply flawed, adopted without SEA, a technical feasibility study or a comprehensive CBA.
- Potential for wind energy is limited, does little to reduce CO2 emissions on balance, requires backup by fossil fuel power plants, results in adverse environmental impacts on human beings (e.g. noise), results in lost jobs (green energy results in 5 lost jobs for every 1 created) but WED will be further encouraged by data centre development.
- CO2 emissions can't be solved by electrical vehicles or community led wind farms.
- Renewable energy within the proposed development is tokenism and energy efficiency and energy reduction measures proposed are lip service and the focus of investment should be on more efficient energy servers, decentralised servers and truly energy efficient measures and reduction measures.

- If the climate change theory is wrong, then increased CO2 could be a good thing, increasing plant growth, food and biomass for fuel.
- Ireland ranks 2nd in the world for energy efficient per unit GDP at $20,754 per tonne of energy consumed (barrel of oil equivalent) according to the World Bank National Accounts 2015 and extremely efficient (6th) in terms of CO2 emissions.
- The data centre will require almost the whole output of a CCGT power plant and should therefore be assessed as a power plant.
- The planner did not properly consider the alternatives put forward by the two appellants.
- **It is requested that Board appointee, Terry O'Niadh, be excused from involvement with the determination of this case.**
- The Board is requested to refuse permission.

6.5. **Further Responses**

David Hughes submitted a further response (21/06/17) comprising observations on Allan Daly's appeal, the main points of which may be summarised as follows:

- Supports the points made by Allan Daly concerning energy usage and failure of the Planning Authority to carry out EIA.
- The Board cannot carry out EIA without requesting the applicant to answer central questions.
- Notes that EirGrid are already talking about undertaking grid reinforcements to accommodate additional demand in the short term to accommodate the first phase of data centre development, the cost of which is socialised across all electricity users, but unequally based on the connection rating (maximum input capacity or MIC). For 240MW usage domestic customers would pay a PSO levy of nearly €30 million, compared to approximately €9.6 million for a data centre. This is effectively a subsidy of €660,000 per employee (30no.) p.a.

- The rapidly rising cost of PSO levy means the majority of the cost of electricity comprises fixed charges, with little incentive for domestic customers to reduce consumption, resulting in a vicious spiral of increasing demand, increased emissions and increased need for infrastructure to accommodate this.
- Baseload demand of c.2000MW must be accommodated by the operation of Moneypoint coal burning 1000MW power station 24 hours per day 365 days per year regardless of wind power generation available. EirGrid is obliged to take renewable energy first.
- Gas plants are required as backup generation in the absence of sufficient wind to generated power (to 40% energy requirement, i.e. 2000MW assuming peak of 5000MW), which run on a more efficient (55%) closed cycle that requires 3 hours to reach capacity and a less efficient (30%) open cycle that can be reached more quickly. Weather forecasting is only accurate to within 3 hours to enable wind power output to be predicted. When average wind speeds are predicted (4m/s) there is a strong possibility that the wind speed will be at 3m/s or less (i.e. below wind turbine cut-in speed) and therefore the back-up gas power plants have to be operated to ensure that the peak demand is met in anticipation of inadequate wind power regardless. The interconnectors are not reliable enough to provide emergency back-up.
- As energy demand increases and more energy is provided to the grid from wind power generation, more back-up power from gas power stations is required, thereby increasing overall CO2 (and NOx, SOx and PMs) emissions.
- Amazon's aim of 100% renewable energy usage therefore is a double whammy resulting in the nation having to pay in fines and to support REFIT and PSO levies to accommodate same.
- When wind energy is used it displaces the most efficient gas generators, not the least.
- Decarbonisation can only be achieved by reduction in energy use.
- Therefore, there is a need for SEA on this matter, to focus on reduction in energy use with regard to retrofitting the existing building stock (to reduce 1Mt CO_2 up to 2030 at a cost of €3 billion compared to existing approach of wind

farm payments, fuel poverty payments and NREAP fines to total cost of €86), with a policy requiring large energy users to displace a similar amount of power within the system to their energy demand, in addition to providing benefits from its waste heat and from a fibre optic network for a decentralised data centre model.

- The Board should refuse permission based on the precautionary principle and not to permit further demand increases.
- The EIS must contain mitigation measures to reduce or eliminate significant impacts, including large data centres providing their own dedicated power plants run on biofuel.

6.6. **Further submission subsequent to oral hearing**

6.6.1. The applicant was requested to re-advertise with new public notices arising from the submission of significant further information to the Board at the oral hearing. The following submissions were received:

The Planning Authority (10/11/17) – The main additional points may be summarised as follows

- No further comment concerning the overall appeal.
- The Authority considers the EIS and AA screening report addendums to adequately assess and address likely cumulative effects on the environment arising from the masterplan and grid and fibre connections.
- Option 2 is the preferred option for the grid connection to minimise disruption.
- Both fibre connection options are acceptable.
- Requests the Board to uphold the decision.

Carmel McCormack (15/11/7) – The main additional points raised may be summarised as follows:

- The issue of whether the grid connection does or does not form part of the application needs to be clarified.

- Questions the need for all the emergency generators (26no.) and whether the 20 hours per year maximum usage, inclusive of testing and emergency use can be complied with.
- If they are 2MW each (similar to those for Apple), they would generate 52MW energy. Would more be required for the masterplan?
- The EIS modelled for gas operated generators, but these are oil.
- Are the generators intended for more than just short term use (e.g. of Microsoft data centre to be powered by onsite gas generators; similarly, Orion Reo data centre).

6.7. **Oral Hearing**

6.7.1. An oral hearing was held on 26th and 27th of September 2017. The hearing was recorded and the recording is available to the Board. The parties in attendance are set out below, with the approximate time they made their submission in brackets

6.7.2. The two third party appellants, Allan Daly (day one from 16.20) and David Hughes (day two from 10.05), and the observer, Carmel McCormack (day two 12.15) where joined by a Mr Peter Sweetman (day two 13.05) as an expert witness supporting David Hughes and, subsequently, as an observer to the appeal. David Hughes was also accompanied by an expert witness, Mr Eric Ferrand (day two 11.45), who presented an overview of a dispersed cloud computing system model currently in operation in France, that uses its waste heat to heat individual residential premises. Mr Daly did not attend on day two, but was allowed to question the parties and was open to questioning before the end of the first day of the hearing (day one from 17.25 - only the Inspector had questions). The other third party and observers were not questioned, except for clarification of points during their presentations, or the course of the hearing generally. The parties each provided hard copies of their submissions, some with extensive appendices, which are attached on file.

6.7.3. The issues raised in the hearing were generally as per those raised in the written submissions (grounds of appeal and observations), but elaborated upon by the parties at the hearing and which I will refer to in my assessment, as appropriate. Allan Daly and Peter Sweetman also raised the issue of the 2014/52/EC EIA

Directive being applicable, not 2011/92/EC, having regard to the provision for transitional arrangements under A.1(3) of 2014/52/EC and to the submission of further information concerning environmental impact assessment, which was a new issue that the applicant was invited to address by the close of the hearing.

6.7.4. The Commission for Energy Regulation (now the Commission for Regulation of Utilities) was represent by John Melvin Director (day one 12.45), who attended the first day of the hearing and who was subject to cross questioning by the third parties immediately following his submission (day one 12.56 to 15.55). The Commissioner for Energy Regulation indicated that there was sufficient capacity on the grid to accommodate the proposed development in view of the Eirgrid All-Island Generation Capacity Statement 2017-2026, and the existing available deep grid infrastructure which did not necessitate any reinforcements to accommodate the development (only shallow infrastructure, i.e. between the site and the existing substation at Corduff, is required to facilitate grid connection). The CER/CRU supported the proposed development.

6.7.5. The Planning Authority was represented by Hazel Craigie Senior Planner Fingal County Council, with the case officer, Harry McLauchlan Senior Executive Planner, also in attendance (day one 16.10). The Authority was subject to limited questioning by the Inspector immediately after. The Planning Authority briefly outlined the basis for its decision and reiterated its support for the development.

6.7.6. The representatives for the applicant, ADSIL, and expert witnesses supporting the applicant's position through submissions to the hearing, were on day one as follows (approximate time submission commenced, in brackets);

- Senior Council Rory Mulcahy (10.05);
- Mike Beary of ADSIL (11.00)
- Brian Murphy MCA Architects (11.10);
- Dr Fergal Callaghan EIS Director AWN who had the role of leading the EIS team that co-ordinated and prepared the EIS (11.20);
- Kenneth Mathews Senior Manager Amazon Web Services global energy team and head infrastructure and energy for AWS in Europe, Middle East and Africa, who is responsible for connection of AWS data centres in EMEA to

national and regional utilities and ensuring the facilities are powered in a sustainable and cost effective manner (12.00).

- Dr Edward Porter Chartered Chemist, who undertook the air quality and climate appraisal and prepared the Air Quality and Climate Chapter (9) of the EIS (12.20).

In addition, Elaine Conlon (CFE) answered traffic questions from the parties (day two, c.14.57). At the hearing the applicant submitted that it was no longer intended to provide the proposed substation as part of the development and confirmed that the grid connection did not form part of the proposed (note, the grid connection did not form part of the proposed development). The applicant submitted an addendum to the submitted EIS to address the potential cumulative impacts of the proposed development and the future grid connection necessary for the proposed development to operate.

The applicant addressed the issue of compliance with EIA Directive 2014/52, the transposition date for which was 16/05/17.

The applicant submitted further information to the hearing, including significant additional data in relation to effects on the environment in relation to the above proposed development, comprising an addendum to the EIS and an addendum to the Appropriate Assessment Screening Report in respect of the proposed data storage facility, two power connection route options and two fibre connection route options for the proposed data storage facility.

The applicant and its expert witnesses were subject to cross questioning on day two (14.20 – 16.25).

7.0 **Assessment**

The issues arising in this appeal may be considered under the following headings:

7.1 Grid connection

7.2 Planning policy / principle

7.3 Energy policy context

7.4 Impact on energy infrastructure

7.5 Impact on climate change commitments

7.6 Financial implications

7.7 Other issues

7.1. **Grid connection**

7.1.1. Extent of development proposed - The proposed development will be dependent on an electricity supply provided via the national electricity grid to operate, except for emergency generator supply. According to the Council's Planner's Report, it was agreed in pre-planning consultation that the electricity connection route to the grid could be dealt with separately, although there is no reference to the grid connection in the pre-planning minutes provided by the Council. No grid connection was included as part of the application, either in the development description on the public notices, or in the detailed description in the EIS, or elsewhere on file.

7.1.2. The submitted drawings do not show any grid connection to Corduff 220kV AIS substation, temporary or permanent. The EIS (s.2.2.5.4) implies that a 110kV grid connection will be provided as a *temporary* supply for a period of up to 42 months, but it does not state that it is proposed to connect to electricity grid and the connection is not indicated or detailed on drawings or plans submitted on file. It was clarified in the written response to the appeal (s.6.6.2) that it was proposed to provide power via the existing 110kV connection to Corduff 220kV AIS substation.

7.1.3. The applicant clarified at the hearing (Rory Mulcahy day one c.10:15) that it was initially intended to connect to the 110kV line via existing ducting (and subsequently via a 220kV line) but that this has now was been discounted after further investigation which found there was not ducting with sufficient capacity available.

The applicant confirmed (day on c.14.20) that the substation no longer formed part of the application but was omitted, and that the grid connection never formed part of the application. In this regard, he highlighted that there were a number of high court decisions, including Alan Buckley v ABP (2017 JR 145), which found it was appropriate and permissible to apply for permission for a specific development (e.g. a wind farm), whereby other development not forming part of the application (such as grid connection) could be considered in the carrying out of EIA and requested that the Board followed this approach in this instance. I consider this to be acceptable

7.1.4. Strategic Infrastructure Development - That the necessary grid connection and substation may fall within the scope of Strategic Infrastructure Development under section 182B or the Seventh Schedule of the Planning and Development Act, 2000, as amended, was raised in the Oral Hearing Agenda. No pre-SID consultation has taken place with the Board regarding the grid connection and/or the substation.

7.1.5. The first party submitted to the hearing that in making the application, it was considered that the proposed 220kV substation, which was proposed as a customer only substation and, in the applicant's opinion, would not form a node on the transmission network and did not in itself entail transmission, did not constitute Strategic Infrastructure as it did not meet normal requirement for SID. On review and having regard to recent Board decision (VC0087 refers), the applicant accepted that perhaps too narrow a view had been taken in considering grid connection and substation, which may together be more appropriately addressed under 182B of the Act. The applicant now considers that it should engage under 182E.

7.1.6. In this regard, in response to questioning by the Inspector, John Melvin of the Commission for Energy Regulation (the CER, now the Commission for Regulation of Utilities or CRU) confirmed to the hearing (day one c.12.57) that 220kV is '*transmission*' connected, rather than distribution. Therefore, having regard to s.182A (9) of the Act, it would appear that the proposed 220kV substation and any 220kV grid connection would fall within the scope of 182A and 182B of the Act[11].

[11] For clarity, JM further elaborated that outside Dublin 110kV and above is considered to be part of the transmission network, but that in Dublin the definition is somewhat more complex for historical reasons arising from the creation of EirGrid out of the ESB network, with *some* elements of the 110kV network considered distribution

7.1.7. I would agree with the applicant that the Board may so decide to grant permission for the data centre and clarify by way of condition that the substation and grid connection, not forming part of the application, are not authorised as part of that permission. The applicant requested that the Board consider the substation and grid connection in its carrying out of EIA and AA (cumulative impacts and in-combination effects, respectively) and, to facilitate the Board's assessments, the applicant submitted two addendum reports (to the EIS and to the AA Screening Report) addressing two alternative options for the grid connection and two alternative options for the required fibre connection, also.

7.2. Planning policy / principle

7.2.1. National and EU planning policy context - The grounds of appeal by third parties included the absence of a clear national policy concerning data centres in view of the draw on material assets (power generation, transmission and distribution systems) arising from their particular energy demand.

7.2.2. The provision of data centres can be seem to be consistent with the Digital Agenda for Europe (part of Europe 2020 Strategy) and the Digital Single Market Strategy for Europe, which is supported by the Irish Government[12]. The accommodation of data centre development is also consistent with Ireland's National Digital Strategy[13] and related national measures. The accommodation of data centres and similar infrastructure is also consistent with the IDA's strategy to attract foreign direct investment in the area of cloud compute and big data, etc., in its Winning FDI 2015-2020 document.

7.2.3. The position of the Planning Authority is that, in the absence of any national policy covering very high energy consuming projects, such as data centres, it is difficult to justify the proposed development is not acceptable in principle. This is similar to the position taken by the Inspector on the Apple case, subsequently permitted by the Board. At the hearing the applicant referred (day one c.10.13) to apparent proposals by Government to include data centres within the scope of the Strategic

[12] https://www.dccae.gov.ie/en-ie/communications/topics/Digital-Agenda-for-Europe/Pages/Digital-Single-Market.aspx (20accessed 01/12/17).
[13] https://www.dccae.gov.ie/en-ie/communications/publications/Documents/63/National%20Digital%20Strategy%20July%202013%20compressed.pdf (accessed 01/12/17).

Infrastructure Development provisions as an indication of national policy support. At time of writing there is no information on progress of this proposal and therefore national policy position remains unchanged.

7.2.4. The applicant submits that the absence of a standalone policy document addressing data centres is not a barrier to permission being granted, that there is no legal requirement for a policy and that the relevant policy instruments necessary to inform the Board's decision, including the Development Plan, are in place. Support for this position is provided in the recent judgement (28/09/17) by Justice Haughton No.2016/920 JR, which found the Board's decision (PA0041) to refuse permission for a wind energy development on grounds of the absence of national policy to be ultra vires and invalid and quashed the decision. Having regard to the foregoing, I would advise the Board that the absence of a national policy specifically addressing data centre development is not a valid reason for refusal.

7.2.5. County planning policy context - The proposed development, comprising a data centre and associated works, was determined by the Planning Authority to be permitted in principle on lands zoned '*High Technology*' under the Fingal Development Plan 2017-2023 (FDP) and, as highlighted by the applicants at the hearing, the principle of the development on this site was not disputed by the parties. I would concur that the principle of data centre development on lands zoned '*High Technology*', where it is the objective to *Provide for office, research and development and high technology/high technology manufacturing type employment in a high quality built and landscaped environment*', is acceptable under the Plan. Furthermore, the site is well located with respect to public infrastructure, including the national and local road network, public transport, the national electricity grid, water and drainage networks and local populations and commercial centres. I am satisfied that the EIS, Chapter 4 Alternatives, provides justification for the selection of the application site within the planning framework context and that there is nothing to suggest that this particular site is not suitable for the development proposed in planning and environmental sensitivity terms.

7.2.6. The FDP (s.6.5 Information and Communications Technology) recognises the need to continue to grow the ICT presence in the County and to maximise the growth opportunities in this sector, and to develop strengths in emerging digital segments and in the strategic growth area of analytics and big data, which will require

facilitation of appropriate technical infrastructure. It is the objective of the Council (ED27) to promote continued growth in the ICT sector with targeted provision of necessary infrastructure and (ED28) to develop the ICT sector in collaboration with key stakeholders, and it is the Council's objective (ED110) to proactively respond to the specific facilities requirements of data centre enterprises. The principle of the data centre development is clearly supported by the policies and objectives of the Plan.

7.3. Energy policy context

7.3.1. The specific concerns raised by the third parties relate to the absence of policy having regard to the high level of energy usage of the data centre development and consequential indirects impacts concerning greenhouse gas emissions and climate change, in the absence of appropriate mitigation, rather than to concerns about data centre development per se. The Board, through its determination of appeals on previous appeals concerning similar large data centre development proposals (Facebook, Apple) will be aware of the high energy demand of data centres and the potential growth in total energy demand arising from anticipated growth in this sector as informed by the Inspector's Report on the Apple case. A number of strategy documents produced by EirGrid provide updated projections in this regard.

7.3.2. For clarity, the applicant submitted to the hearing that the only development before the Board is the phase 1 development subject of the application, which is not dependent on the indicative masterplan. The details on file and submitted to the hearing indicate that there is a definite timeframe for the implementation of the masterplan and there is evidence of strong demand pressure driving growth in this sector and within the applicant's business[14]. In consideration of the policy context, it is reasonable for the Board to have some regard to the indicative masterplan in view of the precedent for which a grant of permission by the Board would set. It is also

[14] In this regard I note that CNBE reported in Feb 2017 that Amazon's cloud business grew twice as fast as the company as a whole in 4Q 2016 (I assume) https://www.cnbc.com/2017/02/02/amazons-cloud-business-grew-twice-as-fast-as-the-company-as-a-whole.html
Forbes reports that '*Cloud computing spending is growing at 4.5 times the rate of IT spending since 2009 and is expected to grow at better than 6 times the rate of IT spending from 2015 through 2020.' …worldwide spending on public cloud computing will increase from $67B in 2015 to $162B in 2020 attaining a 19% CAGR*. https://www.forbes.com/sites/louiscolumbus/2017/04/29/roundup-of-cloud-computing-forecasts-2017/#3efdd96d31e8

reasonable for the Board to have regard to anticipated growth in the data centre sector.

7.3.3. It is my understanding that data centres have a high energy demand resulting mainly from the need to continually cool servers to avoid their overheating, in addition to the energy required to run the data storage and compute equipment operations themselves. According to the applicant's submission to the oral hearing, the proposed development has a power demand of 35MW, and that of the overall masterplan is either 200MW or 205MW[15], which equates to 267MVA[16]. To put this in context, EirGrid'd *All-Island Generation Capacity Statement 2017-2026* (April 2017) anticipates demand from data centre development in the median scenario would be 540MVA, in addition to c.250MVA already connected (i.e.790MVA), which together would account for c.15% of Ireland's total demand (TED) in 2026. The masterplan development would represent c.33% of the anticipated TED for data centres in 2026 and the proposed phase 1 development, alone would represent over 4% predicted TED for data centres. The high demand scenario anticipates a further 640MVA, or 1400 MVA TED[17].

7.3.4. Eirgrid's *Tomorrow's Energy Scenarios 2017* (July 2017) [18] predicts that data centres could account for 36% of TED by 2030 (from 2% currently), with TED rising by between 22% to 53% (between 850 to 1950MVA) to 2030[19] driven largely by the data centre sector, which accounts for 75% of growth in most forecast scenarios. It should be noted that these are only forecasts and, as the graph of page 8 of EirGrid's *Grid Development Strategy* (January 2017)[20] shows, its previous forecasts (2008) were significantly off mark. The Energy Scenarios' report also indicates that there are multiple factors that may increase or decrease predicted energy demand arising from data centres into the future.

7.3.5. The Board may consider the following policy documents and agreements, including at international, supranational, national and county level, concerning energy (use

[15] The witness statements of Dr Edward Porter and Mr Kenneth Mathews provide different figures.
[16] The figure for apparent power demand included in EirGrid's letter appended to Kenneth Mathews Witness Statement.
[17] S.2.2(d) Data Centres in Ireland.
[18] http://www.eirgridgroup.com/site-files/library/EirGrid/EirGrid-Tomorrows-Energy-Scenarios-Report-2017.pdf (EirGrid, 2017) accessed 23/10/17.
[19] S.3.3 Data Centres.
[20] https://issuu.com/designtactics/docs/eirgrid_-_ireland_s_grid_developmen?e=1919908/43298204 (EirGrid, 2017) accessed 23/10/17.

and production) and greenhouse gas emissions within the context of climate change, to be relevant to its considerations in reaching a decision on the proposed development.

7.3.6. Energy policy national level – The Board will be aware of the international framework concerning climate change to which Ireland is a party, including the UN Framework on Climate Change (UNFCCC), the Kyoto Protocol and the Paris Agreement ratified in November 2016, which forms the basis for the EU's and Ireland's approach to addressing the issue of climate change.

7.3.7. Ireland is subject to specific obligations and commitments under EU agreements and legislation, including the EU *2020 Climate and Energy Package* (enacted in legislation in 2009) which aims to achieve 20% cut in greenhouse gas emissions (from 1990 levels), 20% of EU energy to be from renewables, and 20% improvement in energy efficiency. The EU's Emissions Trading System (ETS) addresses GHG emission reductions from large-scale facilities in the power and industry sectors and aviation, which covers 45% of the EU's GHG emissions. The EU's Effort Sharing Decision addresses the other 55% of emissions (i.e. non-ETS emissions) including from housing, agriculture, waste and transport (excluding aviation) through binding annual national targets for Member States to 2020.

7.3.8. Key directives for the implementation of the Climate Change and Energy Packing, with relevance in the consideration of this case, include the Renewable Energy Directive 2009/28/EC (23/04/09) and Energy Efficiency Directive 2012/27/EU (25/10/17).

7.3.9. To implement its climate change obligations and commitments Ireland has produced a number of documents to charter the way forward in terms of national policy, including setting '*a fundamental national objective, to achieve transition to a competitive, low-carbon, climate resilient and environmentally sustainable economic by 2050'* as Ireland's national policy position on climate action and low carbon development[21]. The national policy position is supported by the *Climate Action and Low Carbon Development Act 2015* and by the DCNER's Energy Policy Whitepaper (2015) '*Ireland's Transition to a Low Carbon Energy Future 2015-2030'.*

[21] https://www.dccae.gov.ie/en-ie/climate-action/publications/Documents/5/National%20Climate%20Policy%20Position.pdf (accessed 01/12/17)

7.3.10. In accordance with the requirements of the RE Directive, Ireland produced its *National Renewable Energy Action Plan* (NREAP) (July, 2010)[22], setting out the State's 2020 binding targets for the share of energy from renewable energy sources (RES – total 16%), with its sub-targets renewable energy share from electricity (RES-E 40%), from heating and cooling (RES-H 12%) and from transport (RES-T 10%), and how it intends achieving same (e.g. through REFIT for RES-E).

7.3.11. In accordance with the EE Directive it produced the *National Energy Efficiency Action Plan* (NEEAP) (current plan is #4) setting out the measures required to meet the non-binding 20% energy efficiency target by 2020, entailing energy savings of almost 32,000 GWh over the period.

7.3.12. In accordance with the Act 2015, the DCCAE produced the first *National Mitigation Plan* setting out the Government's approach to reducing Ireland's GHG emissions, which contains a series of mitigation measures and actions to address the immediate challenge to 2020 and to prepare for the EU targets from 2021 to 2030.

7.3.13. I consider these to be the principle policy documents against which the Board may assess the energy and climate change impacts arising from the proposed development, and I will consider each in turn, with reference to supplementary strategies, policy documents and reports, in addition to the directives themselves, where relevant.

7.3.14. The overall approach in the NREAP is to pursue the development and expansion of renewable energy, together with a reduction in and the more efficient use of energy, inclusive of a programme to develop a coordinated and sustainable demand response in the context of the Integrated Single Electricity Market (ISEM, consisting of Ireland and Northern Ireland) to address, inter alia, overall demand reduction (p.89). The DCENR's '*Strategy for Renewable Energy 2012-2020*' (2012) considers energy demand reduction as underpinning Ireland's ability to deliver on strategies for renewable energy in a cost effective way, with the NREAP predicated on the targets (20% energy efficiency) in the National Energy Efficiency Plan being met. Energy demand reduction and energy efficiency can therefore be seen to be a significant element in Ireland's overall approach to achieving its 40% RES-E target. There is,

[22] P.29 http://www.dccae.gov.ie/documents/The%20National%20Renewable%20Energy%20Action%20Plan%20(PDF).pdf (accessed 18/10/17)

however nothing in the NREAP, or in the RE Directive, that would indicate that new large energy users, such as data centres are to be prohibited or discouraged.

7.3.15. The fourth NEEAP (2017) sets out the progress made towards the 20% energy efficiency target and the measures to be implemented across the residential, commercial, transport and public sectors necessary to ensure the target is met. Only 12% of the national target has been achieved to date. It notes that there is ongoing negotiation under the EU Climate and Energy Framework to further increase the agreed EU 2030 target of 27% to 30%[23][24]. NEEAP is focused on reducing energy use through improved energy efficiency in residential and public sector buildings and through provision of support and networking programmes and the adoption of energy management standards. There is nothing in NEEAP that would suggest that large energy users, such as data centres, should be prohibited or discouraged, only that any energy used should be used in the most efficient way.

7.3.16. Under the EE Directive, the headline energy efficiency target for the EU is 20%, but the Member State's national targets are non-binding. The applicant submits that data centres provide an 84% reduction in the amount of power required compared to typical onsite data storage facilities[25]. Accepting the applicant's figures at face value[26], such development would contribute positively to the EU headline target, assuming it replaces existing less efficient onsite facilities. Within the national context, this development may militate against the Member State's individual target due to the intensity and scale of energy demand added to the national balance sheet.

[23] National Mitigation Plan (DCCAE, July 2017) https://www.dccae.gov.ie/documents/National%20Mitigation%20Plan%202017.pdf (accessed 17/11/17)
[24] According to the NMP, p.38, '*it is not intended that the EU's 2030 renewable energy and energy efficiency targets be translated into nationally binding targets in EU legislation.'*
[25] S.2.5.1 of the EIS explains that *A typical data storage facility achieves approximately 65% server utilization rates versus 15% at on-premises servers. This typically means companies moving their data storage to the cloud require less than a quarter of the server infrastructure they would need if provided on-premises. A typical on-premises data storage facility is 29% less efficient in their use of power compared to a typical large-scale data storage facility that uses world-class facility designs, cooling systems, and workload-optimized equipment. Adding these together (fewer servers used plus more power efficient servers), cloud customers need 16% of the power required by those on-premises infrastructure. This represents an 84% reduction in the amount of power required.*
[26] The applicant has provided no detailed calculations for these figures, although the rationale behind them is loosely explained under s.2.5.1 of the EIS.

7.3.17. The EE Directive sets a maximum limit of 1483 Mtoe (million tonnes of oil equivalent) primary energy consumption (EU 28 achieved 1685Mtoe, 2012; 1627Mtoe, 2015[27]) and 1086 Mtoe final energy consumption (achieved 1108Mtoe, 2012; 1084Mtoe, 2015[28]) and the individual targets for member states are based on absolute levels of energy consumption[29]. The targets for Ireland are 13.9 Mtoe primary energy consumption (compared to 13.8Mtoe achieved in the year the Directive was adopted, 2012[30]) and 11.7Mtoe final energy consumption (10.6Mtoe, 2012[31]). These targets are based on projected energy consumption for 2020 (not to a base year as for GHG emissions reductions). Whilst it may be a reasonable interpretation that the Directive '*requires Member States to further decouple energy use from economic growth*'[32], there is nothing in the EE Directive that would specifically prohibit or discourage the accommodation of new large energy users.

7.3.18. A significant element of the EE Directive is the promotion of efficiency in heating and cooling, relating to *high-efficiency cogeneration*[33] (also known to as combined heat and power, CHP) and *efficient district heating and cooling*[34] (also known as district heating system, or DHS). Under Article 14(1) and14(3), member states were required to carry out a comprehensive assessment and CBA of the potential for high-efficiency cogeneration and efficient district heating and cooling. Ireland's initial assessments effectively discounted the feasibility of these technologies in Ireland, except in Dublin where it considered to there to be small but appreciable potential, and for data centres where the potential was recognised for waste heat to be

[27] Eurostat figures http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Gross_inland_consumption_of_energy,_1990-2015_(million_tonnes_of_oil_equivalent)_YB17.png (accessed 01/12/17)
[28] Eurostat figure http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Final_energy_consumption,_1990-2015_(million_tonnes_of_oil_equivalent)_YB17.png (access 01/12/17)
[29] Note these differs from the headline figure in the Directive to take account of the subsequent succession of Croatia to the Union.
[30] http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Gross_inland_consumption_of_energy,_1990-2015_(million_tonnes_of_oil_equivalent)_YB17.png (accessed 01/12/17)
[31] http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Final_energy_consumption,_1990-2015_(million_tonnes_of_oil_equivalent)_YB17.png (access 01/12/17)
[32] P.9, *Combined Heat and Power in Ireland* (SEAI, update 2016)
[33] Under the Directive, '*cogeneration' means the simultaneous generation in one process of thermal energy and electrical or mechanical energy*.
[34] Under the Directive, '*efficient district heating and cooling' means a district heating or cooling system using at least 50% renewable energy, 50% waste heat, 75 % cogenerated heat or 50 % of a combination of such energy and heat*.

captured for efficient district heating systems and for the system to provide cooling for the data centres[35]. NEEAP reports a subsequent revised assessment carried out by SEAI found '*that the district heating opportunity may be significant'* in Ireland[36]. NEEAP advises that, in the context of the Energy White Paper ambition and the ambition to reduce GHG emissions by 80%, the wider energy system impacts of large scale district hearing networks must be further evaluated and considered before determining the district heating opportunity in Ireland, but notwithstanding the challenge of implementing this system with the current building stock, it considered the cost effectiveness of the technology would become evident with the upgrade of the building stock within the context the evolving building regulations. It also indicates that '*the promotion of CHP for small to large industrial and commercial premises could result in significant energy efficiency improvements for Ireland*'[37], including with specific reference to the potential application of the technology to, inter alia, data centres.

7.3.19. The NEEAP highlights that Part L of the Building Regulations, requiring mandatory use of renewables (10kWh/ sq.m p.a.) and promotes the use of district heating fuelled by renewables; and that district heat systems are also encouraged under the *Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas* (2009), which specifically refer to use of waste heat from nearby industries. NEEAP also indicates that REFIT 3, a renewable electricity support scheme (RESS) and a Renewable Heat Incentive (RHI) scheme, aimed at large industrial and commercial users in the non-ETS sector, is under development[38]. The *Strategy for Renewable Energy 2012-2020* recognises that, inter alia, tackling the barriers to developing renewable heat demand including combined heat and power and district heating systems is required to enable increases in current renewable energy deployment levels. This would suggest there is a growing national policy and fiscal support framework for the development of district heating systems and waste heat recovery in Ireland, to complement that existing at European level.

[35] *Cost Benefit Analysis of the potential for High-Efficiency Cogeneration and Efficient District Heating & Cooling in Ireland* (SEAI, AECOM, 2015) https://ec.europa.eu/energy/sites/ener/files/documents/20151221%20SEAI%20EED%20ART14%20-%20Final.pdf (accessed 16/11/17).
[36] p.71 NEEAP
[37] p.34 NEEAP
[38] At time of writing the DCCAE website indicated that the consultation period on the RHI closed in March 2017 but no final RHI had been adopted. https://www.dccae.gov.ie/en-ie/energy/consultations/Pages/Renewable-Heat-Incentive-Consultation.aspx (22/11/17).

7.3.20. Given the scale and location of the proposed data centre, the recognised potential for waste heat capture from data centres and complementary cooling for data centres through district heat, and Ireland's obligations and commitments concerning climate change mitigation, the capture of waste heat arising from the proposed development through a district heat system cannot be casually discounted. Article 14(5) of the EE Directive obliges the Member state to require specific cost benefit analysis for specified installations including:

> *(c) an industrial installation with a total thermal input exceeding 20 MW generating waste heat at a useful temperature level is planned or substantially refurbished, in order to assess the cost and benefits of utilising the waste heat to satisfy economically justified demand, including through cogeneration, and of the connection of that installation to a district heating and cooling network;*

7.3.21. Whilst the proposed development (35MW) would ostensibly fall within the scope of this provision, the Directive allows the Member State to exempt installations from that requirement where the national assessments do not identify a potential that exceeds costs. Section 23(19) of the transposing legislation (S.I. 426/2014) allows for the Minister to exempt installations from the said requirement, but on the face of it the proposed development would not fall within the scope of those exemptions[39]. However, Section 23(11) of the transposing legislation only requires the carrying out of the CBA for relevant industrial installations when required to support an application to the EPA under the Act of 1992[40]. This would not appear to arise in this case.

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[39] (19) The Minister may exempt installations from the requirements of paragraph (11) where—
(*a*) the installation is of a class or at a location identified by the report submitted in accordance with paragraph (11) as not having potential for the implementation of cost beneficial energy efficiency measures,
(*b*) the installation is an electricity generating station which is planned to operate under 1,500 operating hours per year as a rolling average over a period of 5 years,
(*c*) the installation is an installation that needs to be located close to a geological storage site as permitted by the European Communities (Geological Storage of Carbon Dioxide) Regulations 2011 (S.I. No.575 of 2011), or
(*d*) the installation is below any threshold designated by the Minister for the amount of available useful waste heat, the demand for heat or the distances between industrial installations and district heating networks.

[40] The requirements for a developer to carry out a study of the feasibility of installing high efficiency alternative energy systems prior to construction under S.I.243/2012EU (as referred to in objective EN09 of the Fingal Development Plan), is not an equivalent requirement.

7.3.22. The observations received from the EPA (13/03/17) considered there to be insufficient information to determine whether or not an EPA license was required in this case, but did not indicate what a license might be required for. Rory Mulcahy (day two c.16.10.30) submitted that the applicant was of the opinion that an EPA license was not required, which would appear to be correct on the basis that the proposed development would not exceed the key criteria applicable in this case - the use of the emergency power generators operations, including testing, would not exceed the 18-hour limit per annum.[41].

7.3.23. The importance of considering more advanced climate change mitigation measures including, among other things, the capture and efficient use of waste heat through district heat systems, is apparent from the National Mitigation Plan. It reports that the EPA expects Ireland not to meet it GHG emissions reduction target, with a reduction of only 4%-6% below 2005 levels for all sectors, with emissions exceeding the Effort Sharing Decision limit (337.9Mt CO_2eq) by 13.7Mt, compared to the binding 20% target (for non-ETS emissions). It highlights that additional mitigation measures will be necessary to achieve cumulative mitigation capacity of 89Mt CO_2eq to 2030 agreed in the Effort Sharing Regulations.

7.3.24. There will be no significant direct GHG emissions from the operations of the proposed data centre. The indirect GHG emissions arising from its electricity use will not in themselves contribute to or militate against the binding 20% GHG reduction target as emissions from electricity generation are covered separately by the Emissions Trading Scheme. The NMP points out, however, that Ireland's '*ability to achieve a low carbon energy system will be linked to our ability to decouple economic growth from emissions growth'*, as the greater the volume of energy consumed, the greater the quantities of renewables that will be required to meet the binding RES 16% target, therefore achieving the non-binding 20% efficiency target is critical[42].

7.3.25. Significant progress has been made on renewables. The SEAI reports that Ireland achieved 25.3% renewable electricity in 2015 (14.7% gap to target), 6.7% renewable

[41] They submitted that the key criteria for determining need for an EPA license for the proposed operations was the 18-hour limit per annum for use of the emergency power generators, including testing. They submitted that their operations would be significantly below that by a number of hours – 5 or 6 hours. In response to questioning the Planning Authority indicated that they did not consider whether an EPA license was required.
[42] P.36

heat (5.5% gap to target) and 5.7% renewable transport (4.3% gap to target), amounting to 9.1% total renewable energy (6.9% gap to target) and that the EU 2017 Renewable Energy Progress Report plots a trajectory of 15.5% for Ireland for 2020, just shy of the 16% target.

7.3.26. The progress on energy efficiency has not been insignificant, but Ireland is likely to fall short on the target by a greater degree than on renewables. The NEEAP reports that an efficiency of 12% was achieved by 2016 and that only 16.23% (3.77 percentage point shortfall) will be made by 2020 (25,904GWh compared to c.32,000GWh target). EuroStat reports that in 2015, the most recent year for which data is available, Ireland's primary energy consumption was 14.2Mtoe[43] compared to the target of 13.9Mtoe (in 2012, the year the EE Directive was adopted, the state's consumption was 13.8Mtoe); and the final energy consumption was 11.2Mtoe, against the 2020 target of 11.7Mtoe (and compared to 10.2Mtoe in 2012)[44]. On the face of it, at least, the trend in energy efficiencies for primary energy consumption is rising rather declining as one might expect given the 2020 target. The situation concerning final energy consumption, whilst evidently more favourable, has also been rising.

7.3.27. The level of data centre development anticipated by EirGrid (accounting for 15% TED by 2026 and possibly 36% TED by 2030), without mitigation, would significantly increase primary and final energy demand within the state. In this context the attaining of demonstrably significant energy efficiencies and renewable energy within and / or in conjunction with such development, such as the district heating/cooling systems (waste heat recovery) suggested by third parties, and by other on or offsite renewables, would mitigate the potentially significant adverse impacts on Ireland's ability to achieve its climate change mitigation targets.

7.3.28. The NMP does not refer to high energy demand of the emerging data centre sector. It identifies the existing mitigation measures that apply to large energy users, including BE12 – Energy Audits for Large Energy Users and BE14 – Large Industry Energy Networks, but nothing prescriptive is included on waste heat energy recovery to reflect NEEAP #4 or other relevant policy documents. Within the context of decarbonising the built environment, the plan indicates that carbon mitigation will

[43] Million tonnes oil equivalent.
[44] Eurostat figures reference above.

require a combination of energy efficiency and decarbonisation of heat through use of renewable or electric heat, i.e. fuel sources for heating moving from fossil (typically oil or gas) to a low carbon option such as renewable or electric heat. It does not specifically mention district heat/cooling systems or combined heat and power. In terms of options for renewable heat it notes biomass and biogas from waste streams and from energy crops, solar thermal and geothermal energy, but does not refer to waste streams from general industry or specifically from data centres, as is referred to in the NEEAP. The NMP therefore does not provide the unambiguous policy support for waste heat recovery and district heat/cooling systems that might be expected in light of the SEAI research findings and NEEAP#4.

7.3.29. The NMP notes the planned Renewable Heat Incentive (RHI) scheme as a mitigation measure (BE20) under consideration that would provide a key policy support measure for the development of renewable heat. This measure went to public consultation, completed in March 2017, and there is no update on its status on the DCCEA website. It is my reading of the draft RHI consultation[45] that it considered waste heat recovery solely within the context of energy from waste plants and that the existing REFIT 3 would not apply to recovery of waste heat from industry but from biomass[46]. It can therefore be seen that, despite what might be expected arising from the Energy Whitepaper and other relevant plans or strategy documents in this area, there is no clear policy or fiscal support for the development of district heating/cooling using waste heat recovered from general industry as a sustainable energy source.

7.3.30. Energy policy county level - National energy policy is reflected and supported at local level in the Fingal Development Plan 2017-2023. The operative statutory plan includes extensive policies and objectives related to energy usage, conservation and climate change, including (under s.1.6) a strategic policy (no.25) to prepare a sustainable energy strategy for the county, which is expected to be adopted by way

[45] https://www.dccae.gov.ie/en-ie/energy/consultations/Documents/21/consultations/Renewable%20Heat%20Incentive%20Consultation.pdf (accessed 04/12/17)

[46] REFIT 3 is designed to incentivize the addition of 310MW of renewable electricity capacity to the Irish grid composed of High Efficiency Combined Heat and Power (using both Anaerobic Digestion and the thermo-chemical conversion of solid biomass), biomass combustion and biomass co-firing. https://www.dccae.gov.ie/en-ie/energy/topics/Renewable-Energy/electricity/renewable-electricity-supports/Pages/REFIT-3.aspx (accessed 04/12/17).

of statutory variation of the adopted plan at a later date. Under s.1.8 (Cross-cutting themes) the Council recognises that most mitigation effort will be required in the areas of transport, energy and the built environment, with climate change considerations becoming increasingly important in development plans. The plan contains provisions dealing with climate change mitigation in areas including, inter alia, urban design and energy and the Council is working with CODEMA (Dublin's Energy Agency) to deliver a Climate Change Mitigation Action Plan with the three other Dublin Authorities.

7.3.31. Under section 3.4 the Council considers it essential to ensure all new developments contribute positively towards reduced energy consumption and the associated carbon footprint and, to this effect it is the policy of the Council, inter alia, (PM30) to encourage the production of energy from renewable sources, including CHP and heat energy distribution such as district heating / cooling systems. In this regard I note from the Council's pre-planning records that the Planning Authority advised the applicant to include renewable energy within the proposed buildings, but the minutes do not elaborate on the nature of the renewable energy discussed. The potential for reuse of waste heat energy through a district heat system does not appear to have been discussed at pre-planning stage.

7.3.32. The development plan includes a number of objectives under s.7.3 Energy and Climate Change, including (EN01) to support international, national and county initiatives for limiting emissions of GHGs through energy efficiency and the development of renewable energy sources, (EN04) to encourage development proposals that are low carbon and include energy saving measures, (EN06) to optimise opportunities for incorporation of renewable energy in large scale commercial development, and (EN07) to support the DCNER's Strategy for Renewable Energy 2012-2020, the NREAP and the NEEAP.

7.3.33. Energy-saving and energy generating technologies, including rooftop solar panels are required to be incorporated at design stage of development where possible for all development under the Council's development management standards (s.12.2). It is also the policy of the Council (objective EN09) to require details of requirements for alternative systems for buildings greater than 1000-sq.m under S.I. 243/ 2012 EU

(Energy Performance of Buildings)[47] at pre-planning stage in the form of an Energy Statement or Feasibility Study carried out by qualified and accredited experts (the Act itself requires a Feasibility Study be carried out only prior to construction). There is no evidence that the applicant carried out and submitted either an Energy Statement or Feasibility Study in accordance with the policy. At the oral hearing, Hazel Craige, Senior Planner Fingal County Council, indicated that they had encouraged the applicant to provide extensive solar panelling to the roof area but that the applicant considered it would conflict with the air venting system and ultimately the applicant proposed 100-sq.m photovoltaic solar panels (within the c.20,000-sq.m roof area) to the proposed building. At the hearing the applicant indicated that it had just tendered for a renewable energy project in Ireland, as was indicated in S.2.5 of the EIS (although the EIS referred to Ireland and the UK), the nature and extent of which was not stated.

7.3.34. In terms of renewable district heating/cooling, this does not seem to have been considered by the Planning Authority, notwithstanding its own policies, and there is no evidence that the applicant considered it to any significant degree. In this regard there is no existing district heating system in the vicinity and there is no evidence of proactive approach by the Planning Authority, the state, or any utility providers to develop district heating infrastructure in this area or within the county, or state, generally. Therefore notwithstanding that the locality may in many respects be suitable for district heating (extensive undeveloped zoned and mixed use lands within the metropolitan area of Dublin), the potential for mutually positive benefits for the proposed development and surrounding area, and the benefits in terms of mitigating potential significant adverse impacts on Ireland's achieving its climate change mitigation targets, the necessary infrastructure does not exist and there is no foreseeable likelihood for it to be developed in the current policy context. In contrast, within the context of Development Plan policy (EN09) and the scale and intensity of the energy demand, the failure to demonstrably consider and maximise the provision of significant renewables on site is more difficult to justify.

[47] S.6(1) of the Act requires that a person who commissions the construction of any new building other than a dwelling shall ensure the technical, environmental and economic feasibility of installing high efficiency alternative energy systems is considered and …. taken into account in the design of that new building, which shall include (*a*) decentralised energy supply systems based on energy from renewable sources, (*b*) cogeneration, (*c*) district or block heating or cooling, particularly where it is based entirely or partially on energy from renewable sources, and (*d*) heat pumps.

7.3.35. Energy policy conclusion – Ireland's obligations and commitments regarding climate change mitigation are based on targets for renewable energy, GHG emissions reductions and energy efficiency, which are acknowledged as interdependent in Ireland's relevant policy documents. In particular, the importance of achieving the non-binding energy efficiency target is recognised as essential in decoupling growth in GHG emissions from economic growth and in achieving the binding renewable energy targets.

7.3.36. Within the national and county level policy context and in view of the intensity and scale of the energy demand arising from the proposed development, the failure of the applicant to demonstrably consider and maximise the provision of significant renewables on site, at least in the form of solar panels, is difficult to justify.

7.3.37. Whilst there is strong policy support for renewable heat, including the recovery of waste heat from industry to feed into district heat systems at EU level within the EE Directive, a potential recognised in Ireland's NEEAP#4, this does not follow through to the national policy support framework comprising the National Mitigation Plan. Furthermore, the requirements under A.14(5) of the EE Directive for a CBA to be carried out for cogeneration and district heating / cooling potential for certain industrial development would not seem to apply to the proposed development under Ireland's transposing legislation. In any case, this is a separate code overseen by other regulatory authorities.

7.3.38. Although there are a number positive objectives, policies, visions and aims under the Fingal Development Plan that would support the provision of district heating / cooling, without targeted policy and / or fiscal support at national level and a proactive approach at county and national level concerning the provision of the relevant infrastructure (such as through some utility provider), the feasibility of recovering waste heat from development, such as that proposed, is likely to remain low notwithstanding the benefits that might arise.

7.3.39. Notwithstanding the conflict that would appear to arise between the proposed development and Ireland's stated fundamental national objective on transitioning to a low-carbon economy and the state's obligations and commitments on climate change mitigation due to the intensity and scale of energy demand arising, in the absence of definite, appropriate and significant mitigation measures, and within the

context of further such development intended for the wider site and the anticipated growth in the data centre sector in the medium term, the policy and infrastructural support context is insufficient to require and / or facilitate the applicant to maximise energy efficiency and renewable energy through the provision of district heating / cooling and waste heat recovery.

7.4. **Impact on energy infrastructure:**

7.4.1. Third party grounds of appeal included concern about impact on the electricity network, including electricity generation and delivery (transmission), as a material asset.

7.4.2. I've already noted EirGrid's projections for TED growth arising from the anticipated growth of the data centre sector. EirGrid considers data centres to pose a major challenge to the future planning and operation of the power system due to their relatively short cost recovery period and the possibility that breakthroughs in server technology may mean electricity demand from data centres could significantly decrease in the future[48].

7.4.3. Third party appellant, David Hughes, claimed that the failure to mention the power requirements in the development description on the public notices is contrary to requirements. I am satisfied, however, that the provisions for public notice set out under Article 18 and 19 of the Regulations do not require this level of detail in the development description.

7.4.4. That the EIS failed to provide any indication as to the energy demand is a concern (Chapter 14 Material Assets, merely indicates that the proposed development entails significant power usage). Under Annex IV of the EIA Directive 2011/92/EU (as transposed into the Planning and Development Regulations, 2001, as amended – schedule 6) the description of the project should include:

> *(b) a description of the main characteristics of the production processes, for instance, the nature and quantity of the materials used*[49]*.;*

[48] http://www.eirgridgroup.com/site-files/library/EirGrid/EirGrid-Tomorrows-Energy-Scenarios-Report-2017.pdf (EirGrid, 2017) accessed 23/10/17.

[49] It should be noted that under the new EIA Directive 2014/52/EU the description of the project is to include: *(c) a description of the main characteristics of the production processes, operational phase of the project (in particular any production process), for instance, energy demand and*

This omission was rectified at the hearing in the witness statements of Dr Edward Porter and Kenneth Mathews which indicated potential energy demand of the proposed development (35MV) and the potential build out of the masterplan for the overall (200MV / 205MW). The EIS was also lacking in how it addressed the potential impacts on the electricity network as a material asset, but I am satisfied that this issue was rectified over the course of the hearing. Kenneth Mathews stated that the annual energy usage of the proposed development would amount to 0.76% of Ireland's total energy requirement (TER) in 2020, and the masterplan 4.4% of TER in 2026 (this is stated to the larger ISEM, rather than to Ireland's TED). Information on cooling as one of the main processes within operations, including the proportion of TED arising therefrom, was not included in the EIS and would have been beneficial to the Board's considerations on this case, however these details were not specifically sought in the Oral Hearing Agenda, or at the hearing.

7.4.5. The potential for impact on the electricity network as a material asset arises mainly during the operational phase, but development may also impact on infrastructure from the construction stage in terms of necessitating provision of physical infrastructure (grid connection – shallow reinforcements) at the outset to accommodate operations. The grid connection was not considered in the applicant's EIS, however this was rectified at the hearing with the submission of an EIS Addendum and an AA Screening Report Addendum. John Melvin of the CER/CRU indicated that there were no concerns about the shallow reinforcements necessary to accommodate the proposed development and indicative masterplan and the they satisfied that the proposed data centre was appropriately located relative to the electricity transmission network. John Melvin also confirmed that the proposed development, inclusive of indicative masterplan, would require no deep reinforcements of the electricity grid and that there was capacity to accommodate the anticipated loading via the Corduff AIS substation. I am satisfied that the grid connection and substation, not forming part of the proposed development, would not in themselves result in significant adverse impacts on the electricity grid in terms of transmissions.

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energy used, the nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used[.] which clarifies the situation going forward.

7.4.6. The CER/CRU welcomed the proposed development on the basis that it would use and pay for spare capacity existing on the network, the cost of which would otherwise be borne only by existing customers. John Melvin indicted that there was no concern arising from the scale and profile of energy use, and that it would actually be easier for wholesale market to accommodate and easier for transmissions due to its flat energy use profile and that this energy use profile is encouraged under the EU Clean Energy Package currently going through Europe. The energy use profile is also considered by the CER/CRU to be more facilitative of wind energy than daytime only demand, by making efficient use of spare renewable energy capacity at night-time. This flat demand will not, however alleviate the peakedness of existing electricity demand, but rather will rise the overall baseline demand 24 hours per day, which will still have to be accommodated by other production within the electricity generating system.

7.4.7. The CER/CRU indicated that the proposed project was already accounted for in the in section 2.2(d) of EirGrid's Capacity Statement 2017-2016 concerning the potential energy demand arising from data centres. This may not be entirely accurate as the median growth scenario assumes only 63% of data centres with material enquiries[50] will connect (i.e. 630MVA of 1000 MVA). Nonetheless, the CER/CRU is satisfied that there are no concerns about energy supply capacity for the proposed development (phase 1) and or the indicative masterplan development.

7.4.8. Concern regarding the potential medium-term impact on electricity supply arising from anticipated cumulative growth the data centre sector would seem reasonable within the context of EirGrid's prediction of zero capacity for 2021. John Melvin explained to the hearing (day one 14.43) that the purpose of the capacity statements is ensure that the new Capacity Market[51] mechanism procures enough electricity supply to meet the demand to the adequacy standard[52]. It is effectively a short to medium term forward planning tool to match predicted demand with sufficient supply

[50] Kenneth Mathew notes the proposed development and masterplan were included in the 'material enquiry' cohort.
[51] A capacity remuneration mechanism through ISEM in auction to purchase capacity over the period, to signal investors, to ensure that the right level of product is provided at the right time and that it is more efficient new production.
[52] The aim of the proposed Capacity Market (Ireland's new Integrated Single Electricity Market (ISEM), commencing in May 2018) is to obtain enough generation to operate the system in a secure manner, through forecasting. Any excess capacity will not receive capacity payments and may not be commercially viable (EirGrid CS 2017).

purchased through an auction system and, in that context the prediction, of a zero surplus is not an issue.

7.4.9. In terms of energy generation, the only new generation EirGrid[53] confidently expects to connect in future comprises renewable (primarily wind and biomass / waste), to contribute to the 2020 renewables targets. The energy demand arising from the proposed development, taken cumulatively with the demand arising from anticipated data centre and other development, can be expected to necessitate a significant and rapid increase in renewables up to 2026. It begs the question as to whether this is feasible in the context of projected growth in TED, particularly having regard to the NMP's suggestion that increasing renewables may present a significant challenge. It also assumes no significant growth in energy demand from electrification of transport (electric vehicles), until at least from 2025[54].

7.4.10. The potential significant reduction in energy demand in future through from the data centre sector, whether through improvements in server energy use or evolution or obsolescence of the sector in the future, may have implications for the sustainability of the electricity system. Again, it was pointed out that the Capacity Market is designed to react to demand and ensure adequacy of supply, although it was accepted that such an event would have cost implications for customers.

7.4.11. With regard to the foregoing issue, the CER/CRU accepts that there are legitimate concerns regarding cumulative impact of data centre development energy demand, but that its connections policy must treat all applicants equally and it does not ask them what they are using it for. Similarly, in terms of the acceptability of accommodating a particular sector of energy users, EirGrid don't ask what energy is to be used for (notwithstanding that it is treated separately in EirGrid's capacity planning scenarios) and that CER/CRU doesn't have involvement in this regard. When asked if there was a need for policy in the area of data centre sector development within the context of it being a large, energy intensive sector, John Melvin indicated that he did not want to comment in this regard (day one, from c.4.35).

7.4.12. However, the CER/CRU (day one c.14.55) currently has no concerns about data centres and that EirGrid are relatively confident that they can meet the electricity

[53] P.3, *All Island Generation Capacity Statement 2017-2026*
[54] S.3.4 Tomorrow's Energy Scenarios.

demand arising. It noted that that whilst large connections coming in quickly (associated with data centres) are new to Ireland, this is not necessarily a novel issue worldwide and neither CER/CRU or EirGrid have any concerns regarding same.

7.4.13. **Impact on energy infrastructure conclusion:** Based on the submissions made by John Melvin on behalf of the CER/CRU, it can be concluded that the proposed development, in itself and / or taken with the indicative masterplan development, will not have a significant adverse impact on the transmission network or on overall energy supply capacity. Having regard to the TED increase arising from anticipated data centre sector development (projected by EirGrid), the ISEM Capacity Market mechanism and forecasting methodology implemented by EirGrid is designed to ensure that there will always be adequate supply and therefore it may be concluded the potential impact on energy supply as a material asset, whilst likely to be significant, is not detrimental or unacceptable.

7.5. **Impact on climate change commitments:**

7.5.1. The key obligations and commitments for Ireland in terms of climate change mitigation are the binding RES 16% (of which RES-E 40% forms a binding sub-target); the binding GHG emissions reduction 20%; and non-binding 20% energy efficiency.

7.5.2. As the proposed development is to be fully served by electricity from the national grid (which falls within the ETS), it can be concluded that, apart from testing and emergency use of onsite diesel generators (use totalling less than 18 hours p.a.), direct GHG emissions arising (non-ETS) will not be significant and therefore there will be no significant impact on Ireland's binding 20% GHG emissions reduction target.

7.5.3. The EIA Directive and A.94 of the Planning and Development Regulations, 2001, as amended, require consideration of indirect and cumulative impacts in addition to direct effects. The EIS acknowledged that Ireland's compliance with the GHG emissions reduction targets will be very challenging, but it provided no assessment of the potential direct or indirect impacts on climate within the context of anthropogenic induced climate change during operation, notwithstanding reference to the climate change political context and targets and progress under section 9.2.2

and 9.3.3 thereof. Additional information submitted in response to the appeal and presented by Dr Edward Porter at the hearing rectified this matter.

7.5.4. Based on the national fuel mix for electricity production, Dr Porter calculated that the proposed 35MW development (equating to 245GWh p.a.) would produce c.96,285t CO_2eq p.a.[55] or 0.2% of Ireland's national annual emissions (59.9 Mt CO_2eq in 2015). The indirect CO_2eq emissions arising from the indicative masterplan (200MW[56]) development (stated as equating to 1400 GWh p.a.) is projected at 660,000t CO_2eq p.a., or 1.1% of CO_2eq emissions from total electricity supply generation in Ireland[57]. This is larger than the existing largest single industrial energy user in Ireland currently and can therefore reasonably be classified as significant.

7.5.5. In response to questioning, Dr Porter (day two, from 15.46) indicated that the indirect carbon emissions resulting electricity usage arising from the indicative master plan operations would account for 6% of Ireland's C_{O2}eq emissions that are covered by the Emissions Trading Scheme[58]. Pro rata, the proposed 35MW development can be expected to result in indirect CO_2eq ETS emissions in the region of 1%, which is not insignificant for a single new development but can reasonably be concluded as not detrimental. Taken cumulatively with overall anticipated data centre sector growth, the potential impact of this sector, inclusive of existing permitted data centres and the indicative masterplan clearly has the potential to have a significant impact on GHG emissions covered by the ETS, without commensurate growth in renewable energy.

7.5.6. The NMP reports that emissions are increasing across all sectors in line with economic and employment growth, particularly in the transport sector, and that Ireland's ability to achieve a low carbon energy system will be linked to our ability to decouple economic growth from emissions growth. The NMP recognises that increasing TED will make meeting the RES 16% target more difficult through increasing the volume of renewables required to achieve same (the RES-E 40% sub-target is equivalent to approximately 6% to 7% of total energy consumed in

[55] The SEAI figure for average CO_2 emissions for electricity generation in Ireland at 0.476kgCO2/kWh in 2015 based on the national fuel mix.
[56] Note, a figure of 205MW is given by Mr Kenneth Mathews, Amazon.
[57] On balance, notwithstanding some apparent discrepancies, the calculations appear to be robust.
[58] David Hughes (day one 15.03) also made this point in response to the CER's submission that the proposed data centre, at 1%, would not be considered a large user.

Ireland[59]). The EU's energy efficiency target, of 20% by 2020, is therefore considered critical to meeting Ireland's renewable targets, as meeting the efficiency target will reduce the total quantity of renewables required to meet the RES and RES-E targets. The proposed development, by reason of the scale and intensity of its energy demand can therefore be seem to present some conflict to the state's meeting its climate change mitigation obligations and commitments. Considering the scale of permitted and anticipated data centre development, the potential cumulative conflict is of much greater significance.

7.5.7. There are, however, some mitigating elements (and proposed measures) forming part of the development that the Board may take into account within the policy context, including the applicant's proposals regarding renewable energy and efficiencies arising from the proposed development. In addition, there are other possible mitigation measures suggested by third parties that the Board may also consider.

7.5.8. Site location - The location of the proposed development within the temperate climate zone may be regarded as mitigation by location. The applicant has elected to locate its data centre in Ireland for the reason that the Irish climate is conducive to a free cooling strategy, using free-cooling media without the need for mechanical cooling. Air handling equipment will be fitted with airside condensers to use outside air to cool the space, with additional cooling by evaporation with water recycling (daily use average 10.8m3 and peak 86.4m3). This would appear to obviate the need for active cooling through refrigeration and the energy this would require and, in global terms the site location may be seen as positive in the long term, comparative to warmer locations.

7.5.9. Nature of the facility - The nature of the facility, accommodating cloud compute and cloud storage within a single large facility enables significant savings in energy use compared to individual data server facilities located on site. S.2.5.1 explains that a typical on-premises data centre is 29% less efficient in its use of power compared to a large-scale data cloud provided, with customers using only 16% of the power compared to use of onsite infrastructure, which represents an 84% reduction in the

[59] P.36 NMP

amount of power required, thereby minimising GHG emissions and reducing climate impact, which is a long term positive impact.

7.5.10. Unfortunately, these savings in energy use and GHG emissions are made internationally, not within Ireland and therefore the savings do not contribute positively to Ireland's national climate change obligations. Rather the impact on Ireland is significantly negative in the medium term due to the increase in energy demand and indirect GHG emissions associated with such a large energy user.

7.5.11. Energy efficient systems - S.2.5.2 of the EIS details the energy efficiency mitigation measures – airside heat recovery systems, energy efficient electrically commutated fans and motors with variable wind speed drives and intelligent lighting systems. In response to question, Kenneth Mathews submitted that the applicant was committed to using the most efficient servers and technologies for their data centres and that the specification for same may evolve as the master plan development is built out. Whilst this approach may alleviate the, already stated, potential for adverse impacts on Ireland meeting it climate change obligations, the potential significance and certainty for these improvements is not stated.

7.5.12. The proposed development will result in significant quantity of waste heat emitted to the atmosphere. The total quantity of energy expended on cooling, as a proportion of the centre's total energy demand is not provided. The total quantity of thermal energy exhausted as waste has not been quantified by the applicant but can be expected to be significant given the nature of the use. This loss of energy may conflict with the EU's EE Directive and with Ireland's targets on energy efficiency and on renewable heat (RES-H).

7.5.13. Renewable energy – The proposed development does not include any significant renewable energy provision to connect to the electricity grid, or otherwise, either within or off site. According to EIS S.2.5.2, photo voltaic panels are proposed to supply hot water to the administration block and sanitary facilities, but these amount to only 100-sq.m in area and are not significant.

7.5.14. At pre-planning stage the Planning Authority encouraged the applicant to provide more extensive renewable energy in the form solar photovoltaics above the 20,000-sq.m building, in accordance with Development Plan policy. There is no evidence

that the applicant seriously considered the potential for solar energy on the site. Although the potential extent of PV panels is limited by the existing layout of the proposed air handling units, the layout of the units is not such as to limit the PVs to only 100-sq.m. There is no evidence that the applicant investigated alternative layouts and arrangements of the air handling units that might be more compatible with extensive solar PV provision. There is no evidence that the applicant considered alternative PV arrangements, such as vertical PVs on the southern facing elevation of the proposed building or PV panels distributed within the site.

7.5.15. Some idea of the potential for solar energy within the development can be gained from solar photovoltaic windfarm proposals elsewhere in Ireland, with a proposal for c.30,000-sq.m of panels (on 12.2ha site) providing around 5MW (e.g. PL03.247632). It is possible that PVs would not feasibly provide mitigation of significance within the context of the proposed development, but the applicant has failed to demonstrate that this is the case, such as may have been made plain through the submission of an Energy Statement or Feasibility Study as is required by policy EN09 of the FDP.

7.5.16. The EIS stated that the applicant intended to run a competitive tender for purchasing the offtake from new renewable energy projects in Ireland and the UK in the latter half of 2017. At the hearing Kenneth Mathews indicated that the applicant had just issued a competitive tender to purchase the offtake from new and additional future renewable energy projects in Ireland (that would be outside of REFIT or any support mechanism). This is to be welcomed, however no details of the intended scale (in MW) and nature of the project(s) were provided and there is no renewable energy project forming part of the application under appeal. Should the applicant progress its tendering process to a completed renewable energy project to offset its electricity demand, on the basis that an individual industrial wind turbine is generally in the region of 2-3 MW (depending on height), the TED of the proposed development (35MW) could notionally be offset by 12-18 wind turbines, (68-103 wind turbines in the case of the indicative masterplan), not taking into account the intermittent nature of wind energy production

7.5.17. According to the EIS (S.2.5.2) the applicant has a long-term commitment to achieve 100% renewable energy usage for its global infrastructure footprint. A letter from SSE Airtricity Ltd (20/06/17) was attached (as appendix B) to the response to the appeal confirming that it supplies ADSIL with 100% renewable power (verified and

certified by CER) for their existing demand and proposed developments in Ireland, as the largest wind power provider in the SEM. The applicant confirmed to the hearing that the contract is for a 2-year period.

7.5.18. The letter indicates that SSE generates 580MW of power and that it has long term Power Purchase Agreements with third party renewable energy generators for over 300MW of wind and solar power. In addition, SSE holds Guarantees of Origin (GOs) from other Irish renewable energy generators as well as SSE owned generation sites in Great Britain[60]. The applicant clarified at the hearing that it is not claiming that it would be operated on renewable energy at all times (renewable electricity is overwhelmingly intermittent), but that its energy use will be matched 100% by renewable energy production through the Guarantees of Origin and other recognised mechanisms. This is reasonable.

7.5.19. It is the applicant's position that it is supporting the renewables targets through purchase of renewable energy, thereby encouraging renewable generation projects that contribute to Ireland's national targets and accordingly it considers that there will be no significant impact on Ireland meeting its renewable energy and GHG emissions targets.

7.5.20. Whilst the applicant committed to purchasing 100% renewable energy, at any one time no more than 40% of electricity on the grid will come from renewables assuming Ireland achieves its RES-E target objective soon after 2020. Going beyond this target currently presents significant problems for the electricity grid, even with the implementation of EirGrid's DS3 program[61] to assist intermittent renewable energy to get onto the grid. The CER / CRU confirmed that DS3 will not increase the average level of renewables on the grid (day one c.15.13). Regardless of its 100% renewable energy commitment, at any particular time Amazon will have to take electricity from the grid produced from the same range of sources as would any other customer. The applicant's contract with SSE Airtricity would seem to merely

[60] The CER / CRU confirmed that SSE Airtricity's carbon emissions are zero, compared to an industry average of 0.393t/MWh.

[61] http://www.eirgridgroup.com/__uuid/a6f0ce76-c5a9-4120-8b53-cac2daa99840/#comp_000056cb5b8e_00000006da_78f0 concerning the DS3 programme, states '*The aim of DS3 System Services is to put in place the correct structure, level and type of service in order to ensure that the system can operate securely with higher levels of non-synchronous renewable generation (up to 75% instantaneous penetration).*'

notionally displace other general electricity customer's energy use to carbon based energy.

7.5.21. The applicant's commitment to running on 100% renewable energy is to be facilitated by the use of Guarantees of Origin[62]. John Melvin (day one c.14.50) explained that the GO system is effectively an accounting mechanism managed by the CER/CRU, enabling the applicant to buy the necessary certified units to show that a specific quantity of renewable energy was produced over the year. The CER/CRU is of the view that the commitment of companies like Amazon to buying more than 40% electricity from renewable sources, through the GO and fuel mix disclosures system, ensures a market for renewable electricity and therefore helps achieve RES-E 40%.

7.5.22. Third party Allan Daly submitted to the hearing that GOs do not contribute to Ireland's RES target under the RE Directive. His assertion that Ireland is the largest purchaser, within the EU, of GOs from other EU countries was not disputed by the other parties. He claimed that the purchasing of GOs from other EU states only stimulates demand for renewable energy production within the countries from which they were purchased and therefore does not stimulate demand for production within Ireland. This point was effectively conceded by the CER/CRU. Whilst John Melvin's conclusion that the applicant's use of GOs (through SSE Airtricity) would still have a positive impact on global climate change through stimulating renewables within the EU (they would contribute to the overall EU headline target), the potential for a positive impact on Ireland's binding targets are, at best, unclear.

7.5.23. Based on the evidence on file, the details presented to and discussed and interrogated during the course of the hearing, I would conclude that the proposed development will not contribute to Ireland achieving its binding RES 16% and the RES-E 40% targets. Rather, as recognised in the NMP, the greater the volume of energy consumed, as would be driven by the proposed development, the indicative masterplan and the current and anticipated growth in the data centre sector, the greater the quantity of renewables that will be required to meet the said targets.

[62] Some debate took place between the parties about use of Guarantee of Origin for purchase of renewable energy certificates by developers as a mechanism to show they only use renewable energy. GOs are provided for under RE Directive 2009/28/EC with the sole function of providing proof to a final customer that a given share or quantity of energy was produced from renewable sources as required by Article 3(6) of Directive 2003/54/EC, however the net effect on Ireland's national fuel mix for electricity generation is unchanged with or without GO certificates.

Notwithstanding the current tendering process issued by the applicant, there are no concrete and committed proposals for a specified quantity of renewable energy to be provided, on or off site, that would offset the intensity and scale of the proposed development's energy demand.

7.5.24. I note EirGrid's confidence that the only electricity generation expected to connect to the grid over the next decade will be renewables (primarily wind and also biomass/waste), which would therefore be expected to offset the growth in TED arising from data centre development taken into account in the Capacity Statement. The NMP would suggest that this will present a not-insignificant challenge given that it reports that reaching the RES-E 40% target by 2020 '*is becoming increasingly challenging*'[63] and, in that context, the achieving energy efficiencies will be critical going forward.

7.5.25. Waste energy recovery – A major issue for data centres is the significant energy demand arising from the need to continually cool data servers to avoid overheating, with consequential significant emissions of waste heat. Third parties submitted that data centres should be requested to achieve savings through investment in demand reduction measures to free up the energy they need to operate. Specifically, it was submitted that data centres should make use of waste heat for further productive uses – e.g. district heating systems to heat local homes, or major energy users such as the National Aquatic Centre or for horticulture purposes.

7.5.26. It has been submitted by third parties that the recovery of waste heat as an energy source has the potential to increase the overall proportion of renewable energy produced and contribute to both the binding RES (and RES-E) target and the non-binding energy efficiency target, and thereby have a double positive effect on Ireland's climate change mitigation obligations and commitments. This is logical and has not been disputed by the applicant. The significance of the potential benefit of waste heat recovery is far from clear as the applicant has provided no information on the total energy demand arising from cooling the servers, as a proportion of TED arising, or information on the thermal emissions arising from the operations. According to A.94 of Regulations (transposing the EIA Directive 2011/92/EC), the information contained in an EIS shall include:

[63] P.40

Schedule 6: 2(a)(iii) ***an estimate, by type and quantity, of expected*** *residues and* ***emissions*** *(****including*** *water, air and soil pollution, noise, vibration, light,* ***heat*** *and radiation)* ***resulting from the operation of the proposed development****;*

7.5.27. In response to questioning Kenneth Mathews (ADSIL's Energy Resource Manager), submitted that the heat emitted from air cooled data storage facilities was typically of a low grade (typically 30-40-degree C for exhaust air) but there was no clarification of total thermal emissions.

7.5.28. Kenneth Mathews indicated that the applicant considered and discounted the provision of waste heat recovery to feed into a district heat system, submitting that the low temperature of exhausted cooling air emissions has limited uses at this time. David Hughes submitted that heat recovery systems can recover up to 90% of heat from air at 20-degree temperature and that higher recovery potential was possible at higher air temperatures. He claimed that, on the basis that a 35MW power source would consume 840MWh electrical energy per day, the consequential waste heat could provide space heating for up to 11,200 homes (or many more with improved insulation), or hot water for up to 80,000 homes. Whilst I cannot confirm the accuracy of these figures (the applicant did not comment either way), they give some indication of the potential of waste heat recovery. There is no evidence on file that the applicant considered the feasibility of recovering waste heat from the proposed operations and, as already noted, no Energy Statement or Feasibility Study was submitted by the applicant as required under FDP policy EN09.

7.5.29. The applicant's suggestion that heat recovery is not viable/feasible is contradicted by the aforementioned SEAI reports and research on cogeneration and district heating which found there may be significant potential for such systems in Ireland. Even the initial (2015) SEAI CBA report (subsequently updated), which found the potential to be limited, suggested that largescale data centre development within Dublin would be a viable candidate for energy recovery through a district heat system. There are examples of the capture of waste heat arising from similar data centres elsewhere, including (as presented by Allan Daly) one in Finland. Of note is the recently developed Apple data centre in Jutland, Denmark[64], which is reportedly feeding, or

[64] According to Apple.com. It is interesting to note that whilst Apple's Denmark data centre purports to be run on 100% renewable energy, the proposal has also been disputed from some

will feed its waste heat into a local district heating system. There is also at least one example of a district heat system in Ireland in the Dublin Docklands DHS, supporting the SEAI's latest research findings that the technology is viable within the Irish context.

7.5.30. It is indisputable, however that there are some obvious impediments to the useful recovery of waste heat energy in the context of the application site. There is no existing district heat system within the vicinity of the application site. The examples in Finland and Denmark plug into existing district heating systems. Allan Daly (day one, 17.27) conceded that it would be unusual that a data centre would provide a district heat system, but he made the point that if the development is strategically designed at the outset, it might be able to feed into a district heat system at some point in the future.

7.5.31. There is nothing to suggest it would not be feasible to develop district heating within the vicinity of the site, given the appropriate policy, fiscal and organisational context. There are the zoned masterplan lands to the north (Tyrelstown Master Plan MP12.B - for a local centre)[65], extensive residential zoned lands in the southwest and other undeveloped zoned lands in the vicinity, not to mention the existing development within the vicinity (the substantial hotel to the north and existing residential development to the west). However, as noted under the policy section above, I do not consider the necessary policy and forward planning context to currently be in place to develop district heating and therefore the applicant cannot reasonably be expected to make provision for same, no matter how much waste heat it will generate and despite the potential conflict with Ireland's energy efficiency target.

7.5.32. In terms of alternative means of recovering waste heat, Allan Daly provided the example of the Endex data centre, which is air cooled but which uses heat pumps from exhaust air to extract heat to heat water, that would not entail not intrusive design changes. This would not overcome the problem in terms of reuse of the waste heat within the current national and county policy context.

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quarters (possibly biased) as misleading for the reason that it is supplied from the national grid which is provide with only near 40% renewables and it otherwise coal dependent or dependent on electricity imports produced from a mix of fuels.

[65] It is an objective (Blanchardstown 18) to prepare and / or implement the masterplan during the lifetime of the development plan. I could find no existing master plan for this site on the Council's website.

7.5.33. David Hughes submitted to the hearing that a dispersed cloud data system model, with smaller servers located in dwellings or commercial premises, could be provided in lieu of the centralised data centre model to provide space heating. His expert witness, Mr Ferrand, presented an interesting overview of a dispersed cloud data system currently operating in France. It emerged that the system provides cloud compute with no data storage (for security reasons) and is complementary to and compatible with data centre facilities, but is not an alternative to data centre facilities. (the system is actually dependent on Amazons existing data storage facilities). This may be taken as an example of the rapid developments in the area of cloud compute and data, which supports EirGrid's assertion that there is much uncertainty in forecasting potential energy use arising from the sector.

7.5.34. In response to questions (day two from 15.49) concerning investigation of alternatives for waste heat use, the applicant referred back only to the alternatives examined by the appellant. The EIS did not include any consideration of alternatives in this regard and the applicant provided no evidence of any detailed consideration of feasible alternatives concerning use of waste heat to the hearing, but it is my interpretation that there is no obligation on the applicant to do so under A.94 (or Schedule 6 (1)(d)) of the Regulations, 2001, as amended, or under the EIA Directive.

7.5.35. **Impact on climate change commitments conclusion** – The proposed development, in addition to the indicative masterplan, will not impact directly, or indirectly on Ireland's binding GHG emissions reduction target as the proposed operations will be served by electricity through the national grid.

7.5.36. By reason of the high intensity and large scale of energy use arising, in the absence of any concrete renewable energy proposals to be provided as part of or in tandem with the proposed development, the proposed development, in itself and taken cumulatively with existing permitted data centres and projected growth in the data centre sector, may indirectly significantly increase Ireland's GHG emissions covered by the ETS through significant increase in electricity demand, without commensurate growth in renewable electricity generation. And for the same reason, the proposed development, in itself and taken cumulatively with existing permitted data centres and projected growth in the data centre sector, will militate against Ireland achieving its binding RES 16% target (and RES-E 40% sub-target) as the significant increase

in TED will increase the quantity of renewables necessary to meet that target. Whilst EirGrid's Capacity Statement, which takes account of increase in TED arising from projected data sector growth, is confident that the only new generation expected to be added over the period concerned will be from renewables, the NMP suggests that achieving the necessary growth in renewables will be a significant challenge. Therefore, I do not believe that one can be confident that this potential conflict will be easily resolved.

7.5.37. The proposed development, by reason of the site location in a temperate climate which benefits from free-cooling, and by reason of the nature and scale of the facility which benefits from 84% efficiency savings over on-premises data systems, would accord with the overall EU headline target or energy efficiency, assuming it replaces on-premises systems. The proposed development, by reason of the high intensity and large scale of energy use arising would, however militate against Ireland meeting its non-binding 20% energy efficiency target, the achieving of which the NMP considers to be of critical importance to our meeting the renewable energy target RES 16%. Within this context, I consider it a significant omission of the applicant not to have demonstrated it considered the potential contribution that could be made by the proposed development, in terms of energy efficiency and renewable energy that could be obtained from the recovery of waste thermal energy generated through cooling operations, including with reference to the total energy demand of cooling operations and the total quantity of energy lost through thermal emissions. However, in the absence of the necessary policy, fiscal and organisational context to facilitate the useful recovery of waste heat, such as through a district heat system, the omission is not critical in the consideration of this case (phase 1 development) at the current time.

7.6. Financial implications

7.6.1. I consider the main concerns raised by third parties regarding financial implications may be summarised as follows - indirect significant financial impact on the state, with implications for electricity customers through increases in the PSO levy, necessary to fund additional renewables necessary to meet Ireland's RES target and RES-E sub-target; indirect significant financial impact on the state through EU fines for failure to comply with the targets for renewable energy production and GHG

emission reductions; increasing financial implications as revised binding targets come into effect from 2021.

7.6.2. It has been suggested in the appeal that the Board undertake a Cost Benefit Analysis of the development to weigh the cost of energy emissions against economic benefit to the state. This is neither feasible, nor within the remit of the Board. It is the remit of the Irish Government Economic and Evaluation Service (IGEES) to evaluate value for money in public policy making across all departments. Notwithstanding that the financial implications may be outside the usual scope of considerations, for the sake of completeness given the submissions by the parties, I have addressed the issues broadly, below.

7.6.3. Emissions Trading Scheme cost - The indirect GHG emissions arising from the proposed development arise from electricity production and will fall within the Emissions Trading Scheme. These emissions do not count against Ireland binding 20% reduction target, or possible financial penalties arising for non-compliance. These indirect emissions will, however be subject to carbon tax under the ETS.

7.6.4. The Energy White Paper anticipates substantial increases in the cost of carbon, in the short and medium-term, through the EU Emissions Trading Scheme. The proposed development would account for 4% (and indicative master plan account for 33%) of the total data centre energy demand anticipated by EirGrid in the median scenario to 2026 in which year data centre development may account for 15% of total electricity demand. Such rapid growth in energy demand may have a significant impact on the total cost of the ETS to Ireland without commensurate growth in renewable electricity. As noted above, EirGrid, taking account of TED growth projections which include data sector growth, confidently expects the only new generation to connect over the next decade to be renewables. Assuming EirGrid's expectations are met, this would offset GHG emissions from data sector growth and therefore limit the impact on ETS costs. The NMP would suggest that achieving the necessary growth in renewables will present a significant challenge.

7.6.5. John Melvin (day one 14.57) accepted that the quantity of credits existing generators will have to purchase will increase, assuming there in an increase in non-renewable energy production overall. He considered, however, that development which

ensures it is backed by 100% renewables would ensure that there is no increase in the CO_2 permits required.

7.6.6. Renewable Energy costs - As noted in the NMP, the greater the volume of energy consumed, the greater the quantities of renewables required to meet the 40% target[66]. The NMP indicates that the RE Directive provides that Member States that don't reach their national target may purchase credits, known as statistical transfers in order to reach their target. Although the cost of same is as yet unknown, the SEAI has estimated that the cost may be in the region of between €65m to €130m for every percentage point Ireland falls short of the overall 16% target[67]. The NMP, notes that the EU projects Ireland as achieving 15.5%, which one may reasonably assume takes into account EirGrid's projections on energy demand growth[68].

7.6.7. As noted elsewhere in this report, the proposed development and masterplan, through the intensity and scale of energy demand, will have a significant impact on total energy demand and increase the total level of renewables required to meet Ireland's RES and RES-E target. Under the RE Directive, the use of GOs to facilitate the applicant's commitment to 100% renewable energy do not count to Ireland's targets. Therefore, in the absence of the applicant providing significant renewable energy as part of the development, it would appear likely that there will be a cost to the state arising from the purchase of statistical transfers, the significance of which I am not in a position to determine.

7.6.8. At the hearing Kenneth Mathews indicated that the applicant had just issued a competitive tender to purchase the offtake from new and additional future renewable energy projects in Ireland (that would be outside of REFIT or any support mechanism). Whilst this would reduce the potential for costs to arise to the state, the scale (in MW) and timescale for implementation of the projects are not stated.

[66] Mr Hughes submits that, as an example, total electricity usage was c.25TWh in 2014, with the 40% RES-E target equating to 10TWh achieving 1MtCO2, but the data centres will add 3.885MtCO2 based on 9.25TWh additional energy use.

[67] This differs not insignificantly from the figure of €100-€150m per MWh for each 1 percentage point shortfall referred to by Mr Hughes, from the SEAI's '*Efficient and Renewable Energy Targets 2020: Potential Purchase Costs and Potential Penalties for Shortfall*'.

[68]. The NMP includes reference to EirGrid's *Ireland's Grid Development Strategy* (2017), a technical report which refers to potential data centre growth, if not in the same detail as the capacity statement and future demand scenario reports which are not referenced by the NMP.

7.6.9. Public Service Obligation costs – To avoid potential increased costs of the ETS and purchases of statistical credits under the RE Directive, it is necessary either to reduce TED (and / or increase energy efficiency) and / or increase the proportion of renewable energy to offset same. The Public Service Obligation (PSO) levy is imposed by the Government on all final electricity customers to recover the additional costs associated with electricity from, inter alia, renewable sources[69] through the Renewable Energy Feed in Tariff (REFIT) program.

7.6.10. The Energy White Paper indicates that data from the Report of the Council of European Regulators 2015 demonstrates that per-unit supports for RES-E in Ireland are among the lowest in Europe[70], however this refers to 2012 data. The PSO levy on domestic and small commercial customers has increased annually from €19.33 (ex. VAT) in 2011 to €92.28 in 2017[71][72][73].

7.6.11. According to the NMP there is difficulty in accurately projecting PSO costs due to a range of factors, but that the provision of a new renewable electricity support scheme (RE6) funded through PSO will result in further increased costs of electricity for all customers. The significant increase in energy demand of proposed development and the indicative masterplan will further increase the quantity of renewable required to meet Ireland's RES and RES-E target and the funding required to achieve same. This cannot be offset by the applicant's commitment to 100% renewables facilitated by the use of GOs. The potential mitigating effects from the eventual outcome of the applicant's tendering process is of uncertain significance due to the lack of details regarding the scale, implementation timeframe and the early stage of the process.

7.6.12. As pointed out by the CER/CRU, the applicant will also pay the PSO levy and it did not see the impact on the PSO levy as an issue of concern. The CER/CRU

[69] The PSO has funded a number of renewable electricity supports - Alternative Energy Requirement (AER)(RE4) scheme and three REFIT schemes which have been in place for a number of years.
[70] P.90
[71] A different rate applies to larger energy users, with business customers charged a different rate based on their Maximum Import Capacity (MIC) – €26.55 per month where MIC <30kVA; €3.64 per kVA where MIC =>30kVA. According to A.7(3) of S.I.no.217/2002 the PSO Levy imposed by this Order shall terminate no later than 31 December 2021 but current information indicates that it is to be extended.
[72] It has been claimed by observers that domestic users currently pay, pro-rata, 312% more in PSO than heavy industrial users. I do not know this to be the case and I consider it outside the scope of considerations of the Board.
[73] I note the third party concerns that the energy costs of big businesses are being effectively subsidised or socialised across all energy users through the provision of more favourable rates to such enterprises. I consider these are outside the scope of considerations of the Board.

expressed the position (day one 15.05) that development would potentially exert a downward pressure on the PSO levy where it proposed purchasing renewable electricity over and above the 40% rate, if the renewables fall outside the REFIT mechanism, and that such development would also exert a downward pressure on the overall wholesale price of renewable electricity. In this instance the applicant's commitment to purchase 100% renewables is facilitated by use of the GO mechanism and energy imports which don't contribute to Ireland's RES and RES-E target. As discussed above, this may stimulate demand for renewables outside Ireland and the ultimate impact on the PSO is therefore not clear.

7.6.13. The impact on the PSO levy is therefore uncertain.

7.6.14. Transmissions costs - The CER/CRU indicated that the applicant would be charged 50% of the cost of shallow reinforcements to connect to the grid. The connection offer stands regardless of energy offer and they'll pay TUoS (Transmission Use of System) like anyone else that will reduce overall network charges for all user (as was accepted by the Inspector on the Apple case) through the more efficient use of the system, particularly due to the non-peaked pattern of its demand. The CER/CRU considered the proposed development and indicative masterplan, which do not require deep grid reinforcements, to represent a beneficial use of existing infrastructure.

7.6.15. Other potential costs – Regarding potential impact on the sustainability of the grid (and associated costs) from unforeseen loss of data centre development in the future, the CER/CRU accepted that all developments bring risks, with large customers bringing different risk to small customers. In this regard the CER/CRU only decides on connection policy and not the acceptability of sectors of development like data centres. As to whether the is a need for national policy on this matter, the CER/CRU declined to comment. However, it submitted that in this instance there is c.50% spare capacity in the deep side of the transmission network (already extant) that would be used and paid for by the applicant over the next 15-20 years. The CER/CRU welcomes this as a positive impact that would reduce overall costs.

7.6.16. Other economic issues – Third parties submit that the benefit of the proposed development, including through direct employment and indirect jobs, is not offset by the overall consequential costs that would arise to the economy.

7.6.17. It is apparent that the proposed facility will have a very low employee to gross floor space ratio, with a maximum of 32no. staff onsite within a 24-hour period, including 3-4no. security staff at any one time, 15no. day staff and 3no. night staff and up to 6no. staff infrequently visiting the site for inspections[74]. The total number of staff is not expected to significantly increase with the build out of the indicative masterplan. Given the intensity and scale of its power demand for the proposed development (35MW) and the proposed masterplan (205MW) it is evident that the direct employment arising is insignificant within the context of the power demand arising.

7.6.18. On the basis that economic growth is measured through the value a business contributes to the economy through employment[75], it would be difficult to argue that data centres provide any significant economic benefit through employment, particularly in operational stage. The main economic impact would appear to comprise the purchasing of electricity. It would, however be myopic to consider only direct employment. That Amazon already employs more than 2,500 people in Ireland[76] is not an insignificant positive impact on Ireland's economy and the provision of major digital infrastructure, comprising a major data centre associated with Amazon's existing operations within the state, must surely be viewed positively.

7.6.19. A letter from the IDA was attached to the witness statement of Mike Beary, extolling the benefits of foreign direct investment to Ireland's economic importance (FDI recorded €130bn in exports in 2015), providing critical support to Ireland's GDP, employment base (almost 200,000 jobs in FDI sector 2016) and Government Revenue (€3bn annual corporation tax payments by FDI in 2015), which is pursued by the IDA under its organisational strategy *'Winning FDI 2015-2019'*, with a focus on technology, global business services and high tech manufacturing sectors. The IDA considers data centres to be of strategic national importance in that they anchor the existing operation of large technology companies already present in Ireland and are designed for a 20 to 25-year lifespan at minimum and generate a positive profile

[74] EIS Chapter 13
[75] The Board may consider this to be a reasonable economic measure in the absence of any other objective measure available on file.
[76] Mike Beary, General Manager for Amazon Dublin, Witness Statement.

for the state, with substantial spending during construction and sub-supply, direct and indirect employment opportunities. It views data centre facilities and infrastructure as crucial to Ireland's ongoing competitiveness as a global location for such investment and to support the national agenda of creating job opportunities and investment benefitting the public. The importance of ongoing FDI, including in particular within the high-tech sector, is inarguably of critical importance to the Irish economy.

7.6.20. **Financial considerations conclusion** – The potential for significant financial impacts to arise from the proposed development, alone and taken cumulatively with the masterplan and existing and projected data centre development, due to indirect impacts on Ireland's ability to meet its climate change mitigation obligations and commitments arising from the particularly high energy demands of this sector, in the absence demonstrably appropriate and adequate mitigation measures, is uncertain. There would be positive impacts in terms of reduced TUoS charges to customers and possibly by downward pressure on energy prices, in addition to benefits to the economy through the provision of significant digital infrastructure in accordance with the policy context.

7.7. Other issues

7.7.1. SEVESO – Whilst the Development Plan maps indicate that the neighbouring site to the east is a SEVESO site (within 1000m), it is my understanding that this is an error and that that SEVESO designation relates to Swords Laboratories (trade name Bristol Meyer Squib), located at Watery Lane, Swords. Notification of the Health and Safety Authority was therefore not required under A.28 of the Planning and Development Regulations, 2001, as amended. The report of the Council's Planning Officer did not refer to the designation.

8.0 Environmental Impact Assessment

8.1. Procedural issues

8.1.1. The application for development, which included the submission of an Environmental Impact Statement, was made on 1 March 2017, prior to the date for transposition (16 May 17) of EIA Directive 2014/52EU which amends the 2011 EIA Directive

(2011/92/EU). Therefore, having regard to departmental circular letter PL 1/2017, Directive 2011/92/EC continues to apply.

8.1.2. According to A.3(2) of 2014/52/EU projects shall be subject to the obligations under A.3 and A5-11 of 2011/92/EU (prior to amendment of 16 May 2017) where scoping opinion was initiated on A.5(2) of 2011/92/EU *or* the information referred to in A.5(1) (i.e. the information specified in Annex IV of that Directive) was provided. However, applicant submitted an addendum to the EIS at the oral hearing held 26 and 27 September in response to issues raised by the Board in its notification (of the parties of the oral hearing), including information specified in Annex IV. It is my interpretation that the provisions of 2011/92/EU continue to apply, including to the addendum material, noting in particular that A.5(2) refers to where either (a) *or* (b) applies. In this regard I would also draw the Board's attention to the spirit underpinning the new Directive as evident from recital 39 of 2014/52/EU (bold emphasis added) which states:

> *In accordance with the principles of legal certainty and proportionality and in order to ensure that the transition from the existing regime, laid down in Directive 2011/92/EU, to the new regime that will result from the amendments contained in this Directive is as smooth as possible, it is appropriate to lay down transitional measures.* ***Those measures should ensure that the regulatory environment in relation to an environmental impact assessment is not altered, with regard to a particular developer, where any procedural steps have already been initiated under the existing regime and a development consent or another binding decision required in order to comply with the aims of this Directive has not yet been granted to the project****. Accordingly, the related provisions of Directive 2011/92/EU prior to its amendment by this Directive should apply to projects for which the screening procedure has been initiated, the scoping procedure has been initiated, (where scoping was requested by the developer or required by the competent authority) or the environmental impact assessment report is submitted before the time-limit for transposition.*

8.1.3. The intention is clearly to provide for a smooth transition between application of the two directives, which would evidently not be the case where the developer and the

competent authority were obliged to apply the two directives simultaneous to information submitted before and after the transposition date. I therefore advise the Board that only the Directive 2011/92/EU applies.

8.1.4. In addition, it was submitted by Allan Daly that the Climate Change Advisory Council, or its constituent members should have been given the opportunity to express their opinion on the development in accordance with Article 6 of the Directive. The requirements regarding provision of notice to certain bodies (prescribed bodies) are set out under article 27 of the Planning and Development Regulations 2001, as amended, and also under article 121 of the Regulations for applications accompanied by an EIS/EIAR. The Climate Change Advisory Council is not a prescribed body under the Regulations. I am satisfied that all authorities likely to be concerned by the project by reason of their specific environmental responsibilities, or otherwise, were notified in accordance with the requirements of the Regulations and the obligations under the Directive.

8.2. **Environmental Impact Statement**

8.2.1. I am satisfied that the information contained in the EIS generally complies with the requirements of Article 94 of the Planning and Development Regulations, 2001, as amended. A separate Non-Technical Summary is also attached on file.

8.2.2. Alternatives – Article 5(3)(b) of the Directive, as transposed to Irish law (schedule 6(1)(d) refers), require an EIS to contain '*an outline of the main alternatives studied by the developer and an indication of the main reasons for his choice, taking into account the environmental effects*'. The headings under EIS Chapter 4 Alternatives address alternative project locations, design/layouts and processes.

8.2.3. Regarding alternative locations, whilst I consider the EIS to adequately justify the selection of the application site, it does not any reference any alternatives studied in this regard, taking account of the environmental effects. In the context of the application site being is zoned for such development under the Fingal Development Plan, 2017-2023, which has been subject of a Strategic Environmental Assessment, in addition to the site being proximate to the necessary relevant infrastructure to accommodate the proposed development, I do not regard this as material.

8.2.4. In terms of design/layout, the EIS justifies the selected design/layout and states that several alternative arrangements and configurations were considered in view of the environmental sensitives associated with the surrounding land use. Concerning processes, the EIS submits that the technology proposed is essentially the same as that used by the applicant around the world and represents state of the art data storage technology, and that it is committed to continually assessing and improving same with regard to minimising power and water usage. Whilst the applicant's approach to consideration of alternatives in chapter 4 of the EIS is less than informative, I am satisfied that within the context of the provisions of the Development Plan and the information provided by the parties over the course of the application, it does not materially conflict with the requirements of the Directive and that the selected site location, design / layout and processes have been justified.

8.2.5. The EIS Addendum submitted to the hearing clearly considered alternative grid connection and fibre connection options, having regard to the environmental effects. As these developments do not form part of the proposed development before the Board, but will be subject of a separate application for permission, the final option has not been selected.

8.3. Environmental Impact Assessment

8.3.1. I have carried out an examination of the information presented by the applicant, including the EIS and the submissions made during the course of the appeal and application. A summary of the results of the submissions made by the planning authority, prescribed bodies, appellants and observers, including submissions made at the oral hearing, has been set out at Section 6.0 of this report and, where appropriate under Section 7.0.

8.3.2. In accordance with the requirements of Article 3 of the EIA Directive and Section 171A of the Planning and Development Act, 2000 (as amended), the environmental impact assessment is carried out by the competent authority under the following headings, pertaining to the individual factors of the environment:

(a) Human beings, fauna and flora;

(b) Soil, water, air, climate and the landscape;

(c) Material assets and the cultural heritage;

(d) The interaction between the factors referred to in points (a), (b) and (c).

The EIA has had regard to the application documentation, including the EIS and its associated documentation and addendums, the NIS, and the written and oral submissions made over the course of the appeal.

In response to the appeal and at the hearing the applicant submitted that the proposed development is a standalone development that is not dependent on the indicative masterplan and that the proposed development is only development for consideration by the Board. This is not project splitting. I have had regard to the potential cumulative effects of the proposed development and the grid and fibre connections which will be necessary to accommodate the operation of the proposed data centre, as included for in the EIS Addendum.

8.3.3. **Human beings** – Noise and vibration: The main potential environmental impacts arising on human beings resident in the vicinity relate to noise and vibration. Impacts from noise and vibration from the proposed development are addressed under chapter 10 of the EIS and section 10.0 of the EIS Addendum also addresses cumulative impacts with the necessary grid and fibre connections not forming part of the application. Noise sensitive receptors in the vicinity are identified in Insert 10.3 of the chapter, comprising the private housing development to the west of the site (Noise Sensitive Locations A, B and C) and a hotel to the north (NSL D). The background daytime noise level for these Noise Sensitive Receptors (NSRs) was found to be between 44-49 $dBL_{A90, T}$ daytime and 33-39$dBL_{A90, T}$ night-time.

The noise impact during construction is predicted to be negative, slight and short term. The impact will be greatest at Curragh Hall, the most southerly area of housing to the west of proposed development site and would suggest be greatest significance at site clearance stage. Mitigation to address construction noise is set out under s.10.6.1, to include limiting hours of construction, providing for liaison, monitoring, selection of plant, use of barriers around plant, and considerate siting of plant. Noise impact from construction traffic would not be significant. Vibrations arising during construction are intended to not exceed those set out in TII *Guidelines for the Treatment of Noise and Vibration in National Road Schemes* (table 10.7 of the EIS refers) and anticipates no significant impacts. Cumulative impact with the

grid and fibre connections will only occur where works are carried out simultaneously with phase 1 project, but the grid connection in itself would have a more significant but more localised and short duration noise impact.

8.3.4. The ambient noise levels at existing NSLs in the vicinity are predicted to remain unchanged with the development in operation and noise from operational traffic is predicted not have a significant impact, although emergency operations and occasional testing of emergency generators would have greater noise impact but would be infrequent. No cumulative impacts are anticipated to arise from operation of the grid and fibre connections.

I am satisfied that the proposed development, alone or taken cumulatively with the grid and fibre connections, would not have any unacceptable direct or indirect significant impacts in terms of noise and vibration, subject to the mitigation measures which form part of the proposed scheme.

8.3.5. Visual impact - In terms of visual impact on the human environment, the proposed development would, in itself, form a significant new structure in this area and therefore would have consequential visual impacts. In this regard I note the photomontages submitted by the applicant. There may also be a visual impact from exhausted coolant air vented from the building. I am satisfied that the visual impact would not be excessive within the site context. There would be no significant cumulative visual impacts arising from the grid and fibre connections. The proposed development is separated from existing residential development to the west by a dual carriageway incidental greenspace and planting such that there would be no significant adverse visual impact or unwarranted visual intrusion on residential amenities of that area arising from the proposed development, alone or taken cumulatively with the grid and fibre connections.

I am satisfied that the proposed development, alone or taken cumulatively with the grid and fibre connections, would not have any unacceptable direct or indirect impacts in terms of visual impact, subject to the mitigation measures which form part of the proposed scheme.

8.3.6. Interactions - Interrelations between material assets (energy infrastructure) and climate (GHG emissions to air) are not clearly addressed in the EIS but were discussed at length during the oral hearing. In the planning assessment it was

determined that the there was uncertainty in terms of the potential significance of indirect adverse socio-economic impacts on human beings arising from the scale and intensity of energy demand of the proposed development (phase 1 operations), the significant (within the national context) indirect consequential GHG emissions, and the potential consequential financial implications for the state in terms of meeting or failing to meet its obligations and commitments concerning climate change mitigation. The potential impact is not demonstrably mitigated by relevant concrete and quantified proposals for renewable energy, including waste energy recovery. The significance of the potential adverse impact is uncertain.

8.3.7. **Fauna and flora** – EIS Chapter 8, EIS Addendum section 8.0 and AA Screening Report Addendum. The ecological survey and desk study would indicate that the site, comprising longstanding agricultural land, is not of ecological significance. Due to the separation distance (>8km) and the lack of direct pathways to any Natura 2000 site the Appropriate Assessment Screening Report concluded that the proposed development is not likely to have any significant effect on any Natura 2000 sites, alone or in combination. Standard mitigation measures are recommended under section 8.6.

I am satisfied that the proposed development, alone or taken cumulatively with the fibre and grid connections, would not have any unacceptable direct or indirect impacts in terms of fauna and flora, subject to the mitigation measures which form part of the proposed scheme.

8.3.8. **Soil (including geology)** – EIS Chapter 6 and Section 6.0 of the EIS Addendum. There is no indication that the existing soils and bedrock on site are of particular importance. A localised landfill was identified at investigation borehole no.BH8, comprising fragments of plastic sheeting but without olfactory evidence and the EIS indicated that testing of the leachate found all samples were within the relevant standards / limits (table 1 of appendix 6.3).

8.3.9. During the construction phase extensive excavations will be required for pad foundations, drainage services, access road, car parking, etc. Some rock-breaking will be required due to the shallow depth of soils. Construction spoil will be re-used in infilling, landscaping and site levelling and infilling of an onsite farm drain. It is

proposed that temporary storage of soil will be carefully managed so as to prevent any potential negative impact on the receiving environment and movement of soil will be minimised in order to reduce degradation of soil structure and generation of dust. It acknowledges that contamination of groundwater by silt and/or accidental spillage will need to be managed and minimised by mitigation including a CEMP (relevant guidance stated under s.6.6.2.1) and provision of appropriate bunded storage areas (construction and operation), staff training concerning fuel and chemical handing, and the import of ready-mixed concrete, the use of surface attenuation and the design of underground drainage networks. The potential cumulative impacts arising from the grid and fibre connections are predicted as negligible.

I am satisfied that the proposed development, alone or taken cumulatively with the grid and fibre connections, would not have any unacceptable direct or indirect impacts in terms of soils or geology, subject to the mitigation measures which form part of the proposed scheme.

8.3.10. **Water (including hydrogeology)** – EIS Chapters 6 and 7 and Sections 6.0 and 7.0 of the EIS Addendum. There are no public water supplies sourced from groundwater in the area and no Source Protection Zones in the vicinity. The site straddles two aquifers – one is a poorly productive bedrock aquifer; the other is moderately productive in local zones. The EIS classifies the groundwater at this site is rated as Low Importance (to NRA methodology). The aquifer classification is rated high-to-extreme due to shallow overburden thickness on site.

8.3.11. The main potential risks to groundwater quality arise from construction and comprise accidental spills and leaks of fuels and chemicals from storage area or from machinery or vehicles, and from spillage of cement (highly alkaline). The EIS rates the potential negative impact as short term and slight. It is proposed to mitigate impacts through standard best practice (as per soil and geology, above) set out under section 6.6.2 Construction Phase. Impact arising from the construction grid and fibre connections are anticipated as minimal.

8.3.12. There are no surface water features on site, except for a relatively shallow farm drain (there is no discharge from the ditch offsite). The Tolka and its tributaries are located >1km south of the site (rated as low importance) and Moortown Stream <500m to the north and is rated as ‘Poor Status’ fro 2010-2015 and at risk of not

achieving good status. It is rated of Low Importance according to the NRA mythology. There is potential for contaminated runoff during construction, including during limited dewatering. The main risk to surface water is from increased surface water runoff and contaminated surface water runoff. These issues are addressed by design and standard best practice including onsite attenuation (discharge will be via the IDA storm water network which has sufficient capacity) set out under s.7.6. There will be no cumulative impacts arising from the grid and fibre connections during operation.

8.3.13. Regarding potential impacts on the water environment, I also note the content of the Stage 1 Flood Risk Assessment and the Engineering Report (Drainage and Water).

I am satisfied that the proposed development, alone or taken in combination with the grid and fibre connections, would not have any unacceptable direct or indirect impacts in terms of water, subject to the mitigation measures which form part of the proposed scheme.

8.3.14. **Air** – EIS Chapter 9 and Section 9.0 of the EIS Addendum. During construction, dust nuisance has the greatest potential impact on air quality during construction although there will be air pollutants from construction vehicles, generators, machinery and etc. The EIS submits that direct fugitive dust emissions will be insignificant and pose no nuisance to nearby receptors subject to compliance with the dust mitigation measures detailed in s.9.6.1, which are standard type mitigation measures. Whilst there is potential for cumulative dust impacts with the grid and fibre connections, subject to implementation of the proposed mitigation measures these are anticipated as temporary and imperceptible.

8.3.15. The EIS assessed the potential impact of concentration of Nitrogen Dioxide (NO2) arising from the proposed development and its impact on public health with use of predictive AERMOD modelling of emissions from the emergency generators, with regard to, inter alia, '*Diesel Generator Short-Term NO2 Impact Assessment*' (UK SA, 2016) guidance document. Modelling was carried out only for NO2 as the emissions of CO, PM10 and PM2.5 from the generators are significantly lower than NOx emissions relative to the ambient air quality standards, thus ensuring of compliance with NO2 ambient limit value will ensure compliance for all other pollutants. The facility will have 26no. emergency generators, with flue heights of 20m, assumed to

operate at 80% capacity during emergency use (estimated at between 24-48 hours p.a.) and a testing load of 25% (once per week).

8.3.16. The proposed 20m stack height for each generator leads to compliance with ambient air quality standards and requires no additional mitigation, with the modelling showing that the cumulative impact, inclusive of the Bristol Meyer Squib facility adjacent to the east, would not exceed the relevant air quality standards. Consequential traffic generation during operations will also emit pollutants, however the potential impact from same was not assessed due to the limited additional traffic flow arising, which I consider reasonable.

8.3.17. Third parties submit that the EIS fails to provide mitigation for the indirect impacts on air arising from the proposed electrical power usage during operations. The emissions from fossil-fuel powered electricity generating plants are subject of National Emissions Ceilings (NEC) Directive 2016/2284/EU including SO_2, NOx, NMVOCs and $PM_{2.5.}$ The applicant responded that all electricity generating power stations in Ireland are licensed by the EPA under the IED (Council Directive 2010/75/EC), are subject to strict emission limits (including NOx, SO2, dust), are designed to ensure emissions are in accordance with the IED limits and have undertaken air dispersion modelling to ensure exceedance of air quality standards (S.I.271/2011) does not occur, and that the electricity end user is not required to repeat this exercise as they would have purchased electricity derived from a complex mix of sources over the course of any one year. I would agree with this position.

I am satisfied that the proposed development, alone or taken cumulatively with the grid and fibre connections, would not have any unacceptable direct or indirect impacts in terms of air quality, subject to the mitigation measures which form part of the proposed scheme.

8.3.18. **Climate** – EIS Chapter 9. No significant impact is anticipated during construction of the proposed development, along or cumulatively with the grid and fibre connections.

8.3.19. The potential impacts arising from operation of the proposed development are addressed in detail in the planning assessment, above.

I have concluded that there is potential for significant indirect effects on climate in terms of GHG emissions arising from high electricity demand arising from the

operation of the proposed development, within the national context. However, within a global (and EU) context, I am satisfied that these would be avoided, managed and mitigated by the measures which form part of the proposed scheme whereby 100% of the applicant's energy use will be offset by 100% renewable energy, assuming this commitment continues beyond the current 2-year contract period with the renewable energy provider. In this regard, relevant interactions are addressed under human beings, above.

I am satisfied that no significant cumulative impacts arise in this regard with the grid and fibre connections, subject to the mitigation measures which form part of the proposed scheme.

8.3.20. **Landscape** – EIS Chapter 11 and Section 11.0 of the EIS Addendum. There are no protected views in the vicinity of the site and the EIS considers the lands neither significant nor sensitive from a landscape and visual perspective. The EIS includes photomontages from 12 viewing points appended to Chapter 11. I also note the content of the Architectural Design Report and accompanying CGI representations of the proposed development, the Landscape Design Rationale, External Lighting Design Report and the Preliminary Tree Survey Report. Any landscape and visual impacts during construction of the proposed development, alone and taken cumulatively with the grid and fibre connections, will be temporary and not significant.

8.3.21. Mitigation measures are indicated as including a high-quality facility, with perimeter mounding, with augmentation and inter-planting existing woodland planting for screening. Whilst 3m-high security fencing is proposed, this is setback within site, behind planted mounds and primary boundary fencing along the perimeter of the site.

I am satisfied that the proposed development, alone or taken cumulatively with the grid and fibre connections, would not have any unacceptable direct or indirect impacts in terms of landscape, subject to the mitigation measures which form part of the proposed scheme.

8.3.22. **Cultural Heritage** – EIS Chapter 12 and Section 12.0 of the EIS Addendum. The potential for significant impacts appears to arise only during construction. There is no evidence that the site is of any archaeological or cultural significance and there are no recorded monuments or buildings or sites of cultural heritage on site. There are a number of RMPs and NIAH sites within the vicinity (0.4km to south for nearest) within the immediate vicinity and the EIS indicates that archaeological excavations in the vicinity in advance development of other sites, including Bristol Meyers Squib have identified items of cultural heritage (appendix 12.3 of EIS refers). Accordingly, the EIS recommends that, in advance of the development, a pre-construction archaeological assessment be undertaken in the form of a geophysical survey by a suitably qualified practitioner under license of the DCHG., followed by trench testing to inform appropriate mitigation measures.

I am satisfied that the proposed development, alone and taken cumulatively with the grid and fibre connections, would not have any unacceptable direct or indirect impacts in terms of cultural heritage, subject to the mitigation measures which form part of the proposed scheme.

8.3.23. **Material Assets** – The main material assets of concern include electricity infrastructure, addressed in the planning assessment, above, and water supply and waste water networks.

I am satisfied that the proposed development, alone or taken cumulatively with the grid and fibre connections, would not have any unacceptable direct or indirect significant impacts in terms of material assets comprising electricity infrastructure.

8.3.24. Traffic and transport – EIS Chapter 13 and Section 13.0 of the EIS Addendum. The site is served by a modern road network, including a dual carriageway to the west, through which it is connected to the national motorway network. Although not noted by the EIS, the surrounding roads include raised cycle lane and pedestrian footways. The site is also served by Dublin bus with three routes stopping within the vicinity.

8.3.25. There is 70% available capacity on the dual carriageway onto which the proposed development will access, which can comfortably accommodate construction traffic arising from the proposed development and grid and fibre connection works. A T2 road opening license will be required for road opening works for the grid and fibre connections and traffic management measures will be implemented over the 16-

week construction period, with overall impact anticipated as temporary and not significant. The Addendum considers the cumulative impact during construction of the data centre and grid and fibre connections to be not significant.

8.3.26. In terms of operational impacts, the proposed facility will have a very low employee to gross floor space ratio, with a maximum of 32no. staff onsite within a 24-hour period (3-4no. security staff at any one time, 15no. day staff and 3no. night staff and up to 6no. staff infrequently visiting the site for inspections). It is anticipated that a maximum of 2no. HGV deliveries will arrive per day during the operational period.

8.3.27. The trips generated will add to capacity issues at some of the junctions within the vicinity (namely the R121, Cruiserath Road, Church Road, Damastown Avenue and Powerstown Road roundabout) operating at or close to capacity at peak times, however the additional traffic generated would be minimal. The EIS advises (s.13.6) that the capacity of the said junction can be increased by design and is warranted even in the absence of the proposed development. The said roundabout is outside the application site boundary and I would advise the Board against requiring that the junction be improved as proposed in the EIS as this traffic measure would constitute the continuation of the unsustainable predict and provide approach to road development. In this regard I note that the Planning Authority did not attach a condition concerning the capacity of the said junction. I also note the content of the Mobility Management Plan.

8.3.28. The details of the proposed site entrances (primary and secondary) are not very clear, but it is apparent that the main entrance will interrupt and divert the existing pedestrian and cycle infrastructure along the perimeter of the site, which would be an adverse impact on the sustainable transport network. The design of the entrance and crossover from the private site to the public road should be amended to comply with DMURS by way of condition in the event of a decision to grant permission.

I am satisfied that the proposed development, alone or taken cumulatively with the grid and fibre connections, would not have any unacceptable direct or indirect impacts in terms of traffic and transport, subject to mitigation which form part of the proposed scheme, in addition to the amendment of the proposed entrance design to comply with DMURS by way of condition.

8.3.29. Water infrastructure – Chapter 14 and 7 of the EIS and 7.0 of the EIS Addendum. During operations the proposed development is expected to have an average water demand of 10.8m3, or 86.4m3 peak daily use, which I understand not to be particularly significant in terms of industrial usage.

I am satisfied that the proposed development, alone or cumulatively with the grid and fibre connections, would not have any unacceptable direct or indirect impacts in terms of water infrastructure, subject to the mitigation measures which form part of the proposed scheme.

8.3.30. Waste materials - Chapter 14 and 7 of the EIS and 7.0 of the EIS Addendum. The EIS sets out the proposals for a high level of waste recovery and recycling of materials proposed to be achieved during the construction and operational phase.

I am satisfied that the proposed development, alone or cumulatively with the grid and fibre connections, would not have any unacceptable direct or indirect impacts in terms of waste materials, subject to the mitigation measures which form part of the proposed scheme.

8.3.31. **Interaction between the factors** – I have considered the potential interactions with reference to the relevant environmental factors, above.

8.4. EIA Conclusion

Having regard to the examination of environmental information contained above, and in particular to the EIS and supplementary information provided by the developer, and the submission from the planning authority, prescribed bodies, appellants and observers in the course of the application and appeal, including submissions made to the oral hearing, I am satisfied that, subject to the implementation of the mitigation measures set out in the environmental information, that there would be no significant adverse impacts on the individual factors of the environment arising from the proposed development, alone and taken cumulatively with the grid and fibre connections, excluding the uncertain potential for significant impacts on human beings in terms of indirect effects arising from the potential financial implications on the state (to meet or for failing to meet its climate change mitigation obligations and commitments) arising from the high energy use and consequential indirect GHG emissions arising from the proposed development.

9.0 **Appropriate Assessment**

9.1.1. Legal protection is provided for habitats and species of European importance under the Habitats Directive 92/43/EEC, which established a network of designated conservation areas known as Natura 2000 or European sites, which include Special Areas of Conservation (SAC) under the Habitats Directive and Special Protection Areas (SPA) under the Birds Directive (Directive 2009/147/EC). Article 6(3) of the Habitats Directive requires Appropriate Assessment to be carried out for any plan or project not directly connected with or necessary to the management of a European site (or sites) concerned, but that it likely to have a significant effect thereon, on its own or in combination with other plans or project, in view of its conservation objectives.

9.1.2. The proposed development is not directly connected with or necessary to the management of any European site and the applicant has submitted an Appropriate Assessment Screening Report which concludes that, in the absence of mitigation measures, '*the proposed development is not likely to have any significant impacts on any Natura 2000 Sites, alone or in combination with other plans or projects in the area'*. Accordingly, a Natura Impact Statement (NIS) was not submitted.

9.1.3. In response to issues raised by the Board in its agenda for the oral hearing, the applicant submitted an addendum to the Appropriate Assessment to consider two probable power connection route options to connect the proposed development to Corduff 220kV substation, and the option variant for the required fibre connection between the site and the existing ADSIL facilities in the vicinity, in addition to the proposed development considered in the initial AA Screening Report. The Addendum report concluded that, in the absence of mitigation measures, '*the proposed development is not likely to have any significant impacts on any Natura 2000 Sites, alone or in combination with the grid connection options and fibre connection other plans or projects in the area'*. Accordingly, a Natura Impact Statement (NIS) was not submitted.

9.1.4. **Stage 1 screening** – Stage 1 is concerned with determining whether a described development, not being a development directly connected with or necessary to the management of a European site, in itself or in-combination with other described projects or plans, has the potential to have significant effects on any European site.

9.1.5. The site is not within or adjacent to a European site. The Screening Report, and Addendum, considered 7no. European sites located within 15km of the application site (separation distance from the application site in brackets) – Malahide Estuary SAC 000205 (13km), South Dublin Bay SAC 000210 (14km), North Dublin Bay SAC 000296 (15km), Rye Water Valley / Carton SAC 001398 (8.7km), South Dublin Bay and River Tolka Estuary SPA 004024 (14km), Malahide Estuary SPA 004025 (13km) and North Bull Island SPA 004006 (12km). I consider the European sites taken into account by the applicant to be the relevant European sites.

9.1.6. The assessment follows the criteria set out in the EC guidance document, '*Assessment of Plans and Projects Significantly Affecting Natura 2000 sites: Methodological Guidance*'. The details of the European sites, including the Qualifying Interests / Features of Interest, conservation status and conservation objectives are set out under table 4 of the Screening report.

9.1.7. The elements of the project likely to give rise to impacts are identified on p.20 of the report and p.13 of the Addendum, comprising contaminated surface water runoff from construction works onsite and from the grid and fibre connection option routes (excavation and backfilling), and during operation from discharges of surface runoff from the site into surface water network and to the River Tolka and to Dublin Bay, and from general discharges (no process drainage network is proposed) to the foul water network.

9.1.8. Potential for direct, indirect and cumulative effects arising from the proposed development are set out under tables 5, 6, 7 and 8 of the report and tables 1, 2, 3 and 4 of the Addendum report. These clarify that, in the absence of mitigation measures, no direct, indirect or cumulative effects are anticipated on any European site arising from the proposed project, alone or taken in combination with the grid and fibre connections or other plans or projects in the area. I consider this to be reasonable.

9.1.9. **Stage 1 screening conclusion** – It is reasonable to conclude that on the basis of information on the file, which I consider to be adequate in order to issue a screening determination, that the proposed development, individually or in combination with other plans or projects would not be likely to have a significant effect on European sites - Malahide Estuary SAC 000205 (13km), South Dublin Bay SAC 000210

(14km), North Dublin Bay SAC 000296 (15km), Rye Water Valley / Carton SAC 001398 (8.7km), South Dublin Bay and River Tolka Estuary SPA 004024 (14km), Malahide Estuary SPA 004025 (13km) and North Bull Island SPA 004006 (12km) and a Stage 2 Appropriate Assessment (and submission of a NIS) is not required.

10.0 Conclusion and recommendation:

It is considered that, subject to compliance with the conditions set out below, the proposed development of a data centre with 12no. data halls, would be consistent with European and Government policy concerning the development of digital infrastructure and would accord with the policies and objectives pertaining to such development and to the zoning objection for the application site as set out in the Fingal Development Plan 2017-2023, and would not seriously injure the amenities of the area or of property in the vicinity and would not, in itself or taken cumulatively with the grid and fibre connections, have detrimental direct or indirect impact on the factors of the environment or have a significant adverse effect on any European site in view of its conservation objectives.

1. The development shall be carried out and completed in accordance with the plans and particulars lodged with the application, as amended by the further information received by the Board at the Oral Hearing on the 26th and 27th day of September 2017, except as may otherwise be required in order to comply with the following conditions. Where such conditions require details to be agreed with the planning authority, the developer shall agree such details in writing with the planning authority prior to commencement of development and the development shall be carried out and completed in accordance with the agreed particulars.

   Reason: In the interest of clarity.

2. This decision to grant permission shall not authorise a grid connection or the provision of the 220kV substation.

   Reason: To clarify the terms of the permission, having regard to the information submitted by the applicant to the Oral Hearing

3. All mitigation measures identified in the environmental impact statement and associated documentation submitted with the application, shall be implemented in full, except as may otherwise be required in order to comply with the following conditions.

   Reason: In the interest of clarity and the protection of the environment.

4. Water supply and drainage arrangements, including the disposal of surface water, shall comply with the requirements of the planning authority for such works.

   Reason: To ensure adequate servicing of the development, and to prevent pollution

5. The noise level shall not exceed 55 dB(A) $_{Leq\ 1hr}$ (corrected for any tonal or impulsive component) at the nearest noise sensitive locations, including dwellings, between 0800 and 2000 hours, Monday to Friday inclusive, and shall not exceed 45 dB(A) $_{Leq\ 1hr}$ at any other time. All sound measurement shall be carried out in accordance with ISO 1996-1:2016 “Acoustics - Description, measurement and assessment of environmental noise - Part 1: Basic quantities and assessment procedures”. Procedures for the purpose of determining compliance with this limit shall be submitted to, and agreed in writing with, the planning authority prior to commencement of development.

   Reason: To protect the amenities of property in the vicinity of the site.

6. Prior to the commencement of development, the applicant shall submit for the written agreement of the Planning Authority, full details, drawings and samples, as required by the Authority, of:

   a. All proposed external finishes to the proposed building.

   b. All proposed signage to serve the development.

   Reason: In the interest of visual and residential amenity.

7. (a) The developer / operator shall ensure that there is no light spill or glare from lighting provided within the site into surrounding properties or onto the public road.

   (b) The applicant shall comply with the requirements of the Planning Authority in relation to adjusting external lighting provided within the site, including the fitting of louvres, necessary to address light spill or glare that becomes evident on commissioning the installations.

   Reason: In the interest of amenities and road traffic safety.

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

   Reason: In the interest of visual amenity.

9. All service cables associated with the proposed development (such as electrical and communication cables) shall be located underground.

   Reason: In the interest of visual amenity.

10. Prior to the commencement of development, the applicant shall submit for the written agreement of the Planning Authority:

    a. Details and drawings of the entrances from the site to the public road to comply with the Design Manual for Urban Roads and Streets (2013);

    b. Details of the location, type, design and construction of the proposed gated access points in the security fence line.

    c. Details and drawings showing the segregation of the loading bay area turning movement from the staff parking area.

    Reason: In the interest of pedestrian and cyclist permeability and safety across the proposed entrances to the site and traffic safety.

11. The developer shall facilitate the archaeological appraisal of the site and shall provide for the preservation, recording and protection of archaeological materials or features which may exist within the site. In this regard, the developer shall:

    a. notify the planning authority in writing at least four weeks prior to the commencement of any site operation relating to the proposed development, and
    b. employ a suitably-qualified archaeologist prior to the commencement of development. The archaeologist shall assess the site and monitor all site development works. The assessment shall address the following issues:
    (i) the nature and location of archaeological material on the site, and
    (ii) the impact of the proposed development on such archaeological material.

    A report, containing the results of the assessment, shall be submitted to the planning authority and, arising from this assessment, the developer shall agree in writing with the planning authority details regarding any further archaeological requirements including, if necessary, archaeological excavation prior to commencement of construction works. In default of agreement on any of these requirements, the matter shall be referred to An Bord Pleanála for determination.

    Reason: In order to conserve the archaeological heritage of the area and to secure the preservation by record and protection of any archaeological remains that may exist within the site.

12. The construction of the development shall be managed in accordance with a Construction Management Plan, which shall be submitted to, and agreed in writing with, the planning authority prior to commencement of development. This plan shall provide details of intended construction practice for the development, including:

a. Location of the site and materials compound(s) including area(s) identified for the storage of construction refuse;
b. Location of areas for construction site offices and staff facilities;
c. Details of site security fencing and hoardings;
d. Details of on-site car parking facilities for site workers during the course of construction;
e. Details of the timing and routing of construction traffic to and from the construction site and associated directional signage, to include proposals to facilitate the delivery of abnormal loads to the site;
f. Measures to obviate queuing of construction traffic on the adjoining road network;
g. Measures to prevent the spillage or deposit of clay, rubble or other debris on the public road network;
h. Alternative arrangements to be put in place for pedestrians and vehicles in the case of the closure of any public road or footpath during the course of site development works;
i. Details of appropriate mitigation measures for noise, dust and vibration, and monitoring of such levels;
j. Containment of all construction-related fuel and oil within specially constructed bunds to ensure that fuel spillages are fully contained. Such bunds shall be roofed to exclude rainwater;
k. Off-site disposal of construction/demolition waste and details of how it is proposed to manage excavated soil;
l. Means to ensure that surface water run-off is controlled such that no silt or other pollutants enter local surface water sewers or drains.

A record of daily checks that the works are being undertaken in accordance with the Construction Management Plan shall be kept for inspection by the planning authority.

Reason: In the interest of amenities, public health and safety.

13. The developer shall pay to the planning authority a financial contribution of €1,462,406 (one million, four hundred and sixty-two thousand, four hundred and six euro) in respect of public infrastructure and facilities benefiting development in the area of the planning authority that is provided or intended to be provided by or on behalf of the authority in accordance with the terms of the Development Contribution Scheme made under section 48 of the Planning and Development Act 2000, as amended. The contribution shall be paid prior to commencement of development or in such phased payments as the planning authority may facilitate and shall be subject to any applicable indexation provisions of the Scheme at the time of payment. The application of any indexation required by this condition shall be agreed between the planning authority and the developer or, in default of such agreement, the matter shall be referred to An Bord Pleanála to determine.

Reason: It is a requirement of the Planning and Development Act 2000, as amended, that a condition requiring a contribution in accordance with the Development Contribution Scheme made under section 48 of the Act be applied to the permission.

John Desmond
Senior Planning Inspector

12th December 2017