Not Here Not Anywhere
Care of Jessie Dolliver,
[redacted]
www.notherenotanywhere.com
T:@NHNAireland
I:@notherenotanywherenhna
F:@notherenotanywhereNHNA
For a fossil free future for Ireland

Planning,
Cork County Council,
County Hall,
Carrigrohane Road,
Cork T12 R2NC

10th July 2023

Planning Application Reference: 235104

Applicant: ESB

Location: Aghada

Proposed Development: The Proposed Development relates to development of a 299 Megawatt (MW) Open Cycle Gas Turbine (OCGT) generator and associated plant and equipment; a secondary fuel storage facility, secondary fuel storage, electrical bay to include underground services/electrical cabling and ancillary extension to the existing gas Above Ground Installation (AGI) to the existing electricity substation within the boundary of the existing ESB Aghada Power Station across a c.10.22-hectare (ha) site.
In full, the Proposed Development will consist of:

- OCGT generating plant and associated buildings (including fire suppression skid) and ancillary structures
- a 40m (h), 8m (w) emissions stack
- air intake (26m high, 18m wide, 24m long) upon 14m high stilts
- nine number fin fan coolers (8m high, 19m wide, 27m long) ESB Aghada Power Station ProjectReference: Aghada ESB OCGT Project number: 60683777 PreparedFor: ESB AECOM 6
- a secondary fuel storage facility, with propane store
- 1000m2 expansion to existing gas Above Ground Installation (AGI)
- electrical bay - underground services / electrical cabling and ancillary extensions to connect to AGI
- distillate fuel transfer pipework
- gas conditioning compound with natural gas compression equipment
- electrical transformer/equipment
- indoor gas insulated switchgear
- water treatment building and associated water storage; and
- administration / workshop and stores building

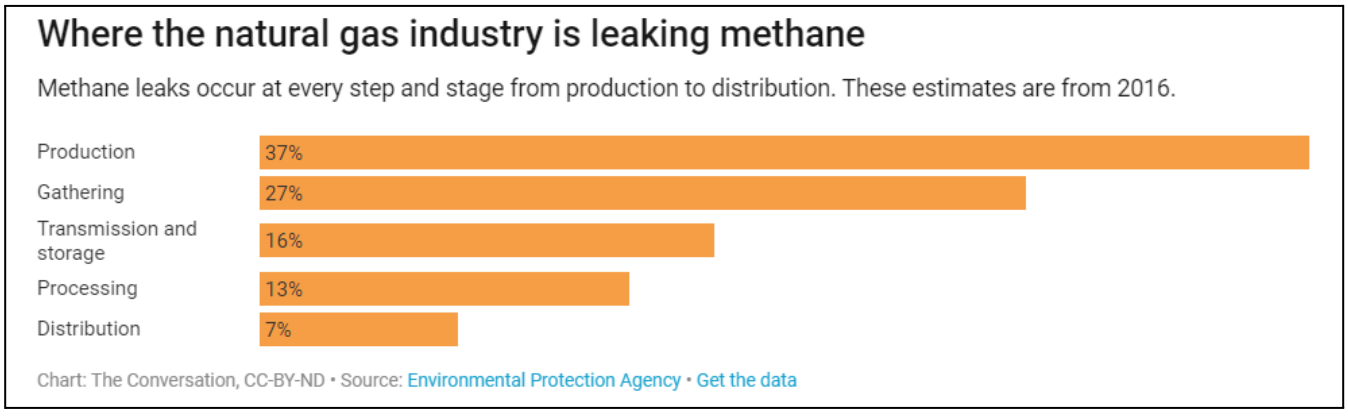
This submission is made on behalf of Not Here Not Anywhere (NHNA), a nationwide, grassroots, non-partisan group campaigning to end fossil fuel exploration and the development of new fossil fuel infrastructure in Ireland and across the world. We advocate for fair society-wide energy usage and a just transition to renewable energy systems.

NHNA welcomes Ireland's commitment to transition to net zero by 2050 and the urgent adaptation of our energy supply. We recognise that the transition to renewables must be carried out in a way that guarantees nationwide energy security. However, we argue that the development of new fossil fuel infrastructure to facilitate this transition is not a viable solution.

International climate agreements

At COP26 in Glasgow in 2021, Ireland became a core member of the international Beyond Oil and Gas Alliance (BOGA), committing to align oil and gas production with the objectives of the Paris Agreement. In signing on to this international coalition, the government recognised that oil and natural gas demand must decline by 75% and 55% respectively between 2020 and 2050 to achieve net zero, with nations of the global North pioneering this transition (Beyond Oil and Gas Alliance [BOGA], 2021; International Energy Agency, 2021). In this light, we urge Cork County Council to reject the application made for a new gas power station proposed by ESB.

COP26 also saw our government aligning with a global partnership to cut methane emissions by 30% by 2030. Methane is a potent greenhouse gas, with a Global Warming Potential 86 times that of C02 over a 20 year period (Myhre et al., 2013, p714, Table 8.7). Natural gas is frequently portrayed as a 'clean alternative' to coal and oil, as burning it emits less CO2 than oil and coal. However, research emerging on the significant amount of methane leaked in the production and transport of natural gas disproves these claims (Borunda, 2020; Environmental Defence Fund, n.d). Leakage is an inherent part of the natural gas system as highlighted in the below graph (The Conversation, 2018) adapted from the US Environmental Protection Agency's 2018 inventory report on GHG emissions (EPA, 2018).
We cannot justify accompanying the transition to renewable energy with new gas-fueled power plants.



McMullin and Price (2019, p6) emphasise the need for "extremely rapid and immediate absolute reductions in near-term fossil fuel usage, at a year-on-year rate of c. 20%, falling effectively to zero within 10-15 years (c. 2030-2035)" to achieve Paris-aligned climate targets. Further, we reinstate

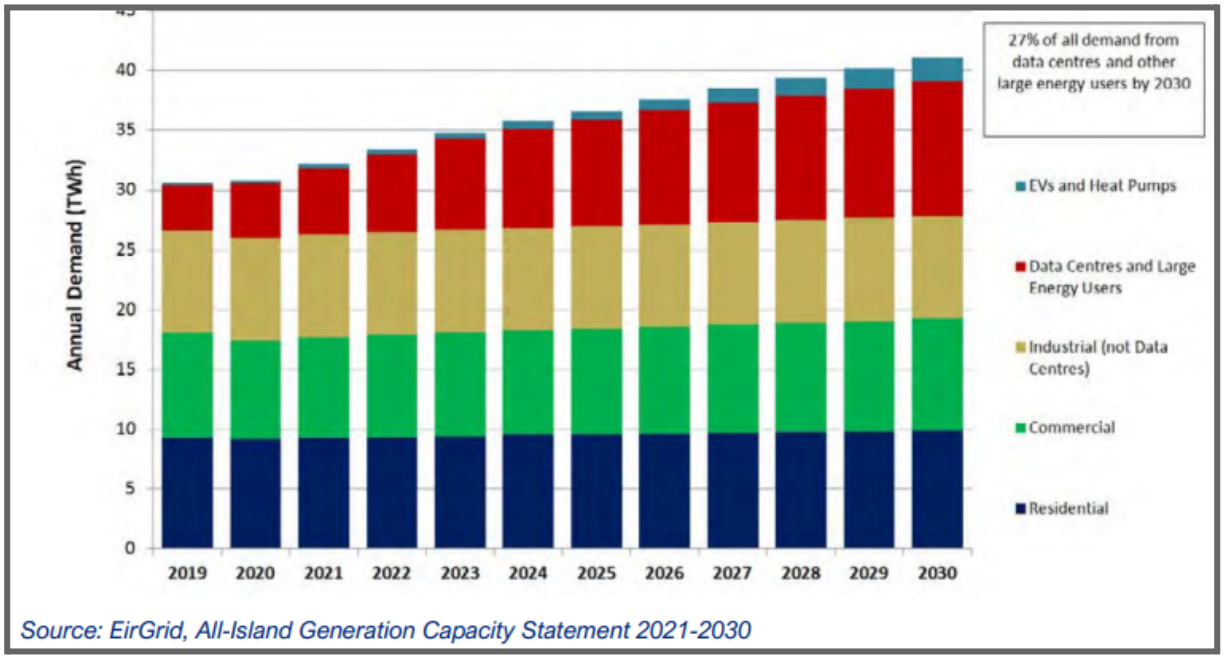
that the current application is not made in isolation. When considering a new gas plant in Aghada, the cumulative impact of multiple potential new gas plants in Ireland must also be considered.

National and regional climate targets

The application by ESB claims this new gas plant will be used "to support the electricity supply system at times of peak demand and at times when other electricity generation sources are not sufficient to meet demand." and that it is "likely therefore that the OCGT will remain on stand-by for the majority of the time and will be run mainly as required to complement the Country's renewable power generation technology". However, the expansion of fossil fuel infrastructure inevitably leads to economic reliance on these dirty energy sources, and a 'lock-in' effect to fossil fuels (Borunda, 2020; McMullin & Price, 2019). It is crucial that Ireland does not further lock-in its dependence on fossil fuels if we are to meet our climate targets under the Paris Agreement and the Climate Action and Low Carbon Development (Amendment) Bill 2021 - which legally obliges us to achieve a 51% reduction of our 2018 emissions levels by 2030 and net-zero by no later than 2050. Fundamentally, the climate risks of locking Ireland into new fossil fuel infrastructure far outweigh any potential energy security risks related to gas supply.

Data centres and energy security

This application emphasises the contribution of the proposed gas plant to energy security, but we must acknowledge that Ireland's energy security is greatly undermined by the recent and rapid growth of data centres in Ireland. Eirgrid estimates that data centres could account for up to 27% of Ireland's electricity demand by 2028, and up to 50% of new electricity demand growth (Eirgrid, 2021).



Source: EirGrid, All-Island Generation Capacity Statement 2021-2030

Currently, many companies claim to operate data centres powered by 100% renewable energy. However, the energy is largely sourced indirectly through Renewable Energy Certificates or Purchase Power Agreements (Chernicoff, 2016). If we continue to allow companies to virtually purchase clean energy where it is cheapest to create, while actually using and increasing demand

for dirty energy in Ireland, we allow them to profit while our real emissions continue to rise. We cannot continue to increase Ireland's energy demand so dramatically, only to continue building fossil fuel infrastructure to cater to this demand. As outlined in our policy briefing, a moratorium on data centre development is imperative until an appropriate regulatory framework is in place (Not Here Not Anywhere, 2021). We ask Cork County Council to be cognisant of data centre growth in Ireland when considering Ireland's energy demand, and to prioritise our climate targets and commitments over the continued expansion of the data centre industry.

Local climate commitments

We recognise that implementing a complete transition to renewables does not come without challenges. But, in the context of the climate emergency, increasing our use of and reliance on fossil gas cannot be the solution to Ireland's energy security. We encourage Cork County Council to review current energy use within their district, and consider the adaptations possible in order to bring about more efficient and more sustainable energy demand and consumption. Rather than focusing solely on sufficient infrastructure to guarantee energy security, there is an onus on all individuals and all communities to reflect on and readjust our energy demand. City and County Councils play an integral role in bringing about this transition. Section 17.7.9 of the Cork County Council Development Plan 2022-2028 lays out a vision "to facilitate and support investment in sustainable energy production and infrastructure in Cork to meet the future local and national needs, while transitioning to a low carbon economy, addressing the climate change challenge with greenhouse gas emissions and protection of the environmental, cultural and heritage assets of the county." We urge Cork County Council to demonstrate their commitment to this vision by prohibiting the development of new fossil fuel infrastructure and realising energy security through demand reduction and demand management measures, and use of battery storage in tandem with expansion of renewable energy supply.

Omission of methane leakage emissions

In addition, with regards to the specific application made for a new Open Cycle Gas Turbine power plant at Aghada, we would like to highlight omissions and discrepancies in the emissions calculations of the Environmental Impact Assessment Report (the EIAR) accompanying this application.

In Section 11.4.3.2 Operational Phase Impacts and Effects of the EIAR, it is stated that approximately 114,213,000 m^3 of natural gas will be burned each year. Table 11.15 indicates that 230,224 tonnes of CO_2 equivalent (tCO_2e) will be emitted each year from operating the plant. This is summarised in Table 1 below.

Table 1- Operational emissions from combustion as per EIAR Volume II

Variable	Value
Total gas (m^3 per year)	114,213,000
Emissions proposed (tCO2e per year)	230,224

Nowhere in the EIA Report does the applicant account for CO_2e emissions from the leakage of methane. Table 2 below proposes three different leakage scenarios (Howarth et al., 2012, p2, Table 1; Hayhoe et al., 2002) and calculates the volume of leaked gas and the volume of gas that would actually be combusted under each scenario. Again let it be stated that the applicant has not considered leakage anywhere in their application and so our calculations below may currently be the only estimation for this project. We have used a range of industry averages within which the specific proposed project may lie.

Table 2 - Volumes of gas for combustion accounting for leakage			
Variable	**Low Estimate**	**Best Estimate**	**High Estimate**
Leakage rates	0.2%	2.5%	10%
Total volume of gas (m3 per year)	114,213,000	114,213,000	114,213,000
Total gas leaked (m3 per year)	**228,426**	**2,855,325**	**11,421,300**
Total gas to be burned (m3 per year)	**113,984,574**	**111,357,675**	**102,791,700**

Once the volume of gas likely to be combusted, accounting for leakage, has been calculated, the new emissions value from burning this gas was estimated as per Table 3 below. The estimation is based on the proportions provided by the applicant as shown in Table 1 of this document.

Table 3 - CO2 Emissions from combustion after leakage volume has been accounted for			
Variable	**Low Estimate**	**Best Estimate**	**High Estimate**
Gas to be burned (m3 per year)	113,984,574	111,357,675	102,791,700
Total Emissions from burning (tCO2e per year)	**229,764**	**224,468**	**207,202**

Table 4 takes the volume of gas leaked, assumes it contains 85% methane (Britannica, 2019) and calculates the emissions from this leaked gas in tCO_2e by applying the Global Warming Potential of methane over a 20 year period. Please note that 85% is somewhat conservative and it's not uncommon for natural gas to comprise 95% methane.

Table 4 - Emissions from leaked methane			
Variable	**Low Estimate**	**Best Estimate**	**High Estimate**
Gas leaked (m3 per year)	228,426	2,855,325	11,421,300
% Methane of natural gas	85%	85%	85%
Methane leaked (m3 per year)	194,162	2,427,026	9,708,105
Density of methane gas at STP (kg/m3)	*0.7165*	*0.7165*	*0.7165*
Methane leaked (kg per year)	*139,117*	*1,738,964*	*6,955,857*

Methane leaked (tonnes per year)	*139*	*1,739*	*6,956*
GWP20 of methane	*86*	*86*	*86*
Total Emissions from leakage (tCO2e per year)	**11,964**	**149,551**	**598,204**
Total Leakage emissions over 25 years (tCO2e)	**299,102**	**3,738,773**	**14,955,093**

In Table 5 the new total operational emissions per year are calculated by combining the emissions from leakage with the emissions from combusting a lower volume of gas due to leakage. The difference is displayed in both tCO_2e and as a percentage and shows how significant the omission of leakage can be if even a small percentage of the gas escapes.

Table 5 - Additional emissions per year once leakage has been accounted for			
Variable	**Low Estimate**	**Best Estimate**	**High Estimate**
Total operational emissions (tCO2e per year)	241,728	374,019	805,405
Reported estimate as per EIAR (tCO2e per year)	230,224	230,224	230,224
Total emissions unaccounted for (tCO2e per year)	**11,504**	**143,795**	**575,181**
Difference (%)	**5%**	**62%**	**250%**

Table 6 shows the potential difference in operational emissions over the full 25 year lifecycle of the proposed development when leakage is accounted for.

Table 6 - Difference over 25 years once leakage has been accounted for			
Variable	**Low Estimate**	**Best Estimate**	**High Estimate**
Total operational emissions (tCO2e)	6,043,191	9,350,483	20,135,133
Reported operational emissions as per EIAR (tCO2e)	5,755,600	5,755,600	5,755,600
Total emissions unaccounted for (tCO2e)	**287,591**	**3,594,883**	**14,379,533**
Difference (%)	**5%**	**62%**	**250%**

Given the impact methane leakage can have on the operational emissions of such a development, it is illogical to proceed with the planning process until this is understood and accounted for. We recognize that the applicant included figures for embodied carbon emissions during the construction phase, but if they are willing to account for such a negligible value, it does not make sense to exclude such an impactful figure as leaked methane emissions.

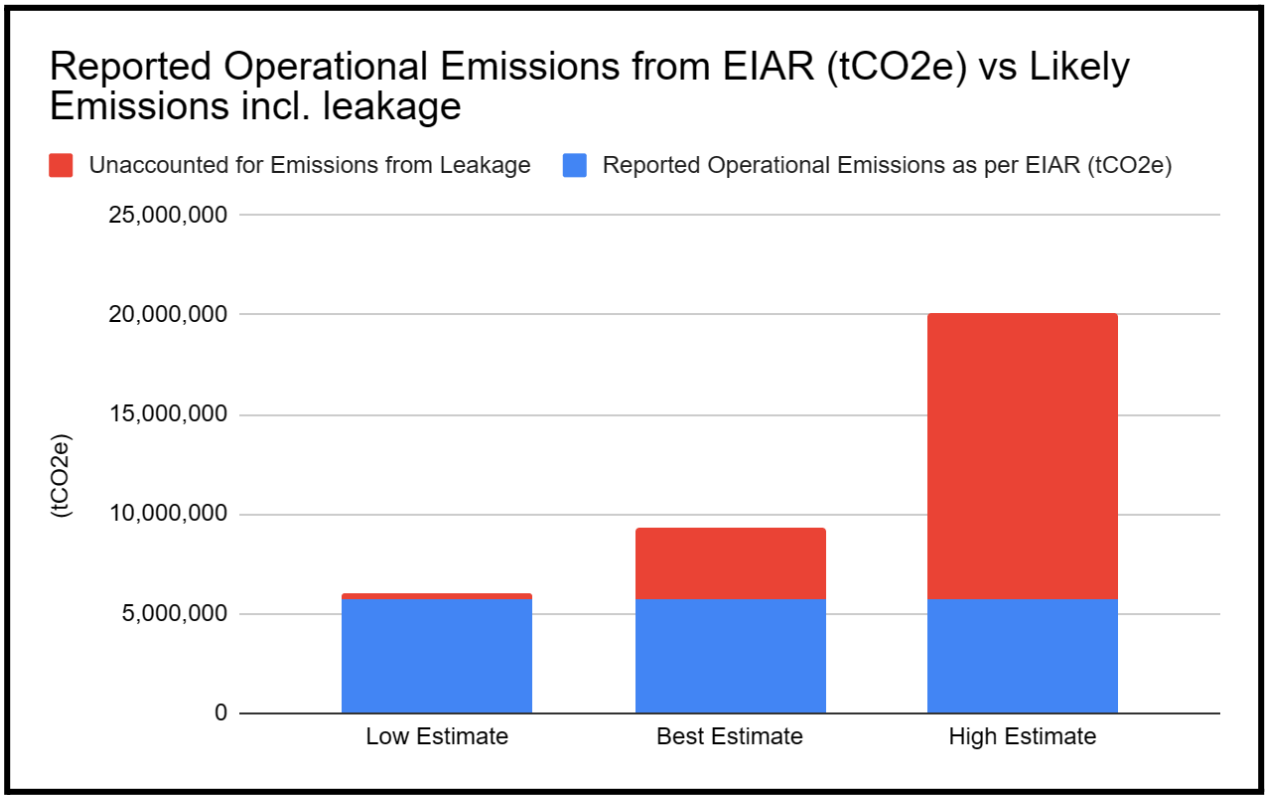


Table 7 - Total emissions from operations (incl. leakage) and construction as a percentage of Ireland's next carbon budget			
Variable	**Low Estimate**	**Best Estimate**	**High Estimate**
Total emissions incl. leakage & construction (tCO2e)	6,061,684	9,368,976	20,153,626
Total emissions over a 5-year period (tCO2e)	1,212,337	1,873,795	4,030,725
Ireland's Carbon Budget 2026-2030 (tCO2e)	200,000,000		
Total emissions over 5 years as a % of carbon budget	0.61%	0.94%	2.02%

Unaccounted-for Emissions 🏭 equivalent to lifecycle emissions of 47,932* cars 🚗

*based on Best Estimate of leakage and assuming the average Irish car produces 3 tCo2e per year (O'Riordan & Daly, 2020) applied over 25 years.

Conclusion

We urge Cork County Council to reject the application made for the new gas power station proposed by ESB for the following reasons:

- New fossil fuel infrastructure, such as the proposed development at Aghada, is not in line with Ireland's international climate commitments.
- New fossil fuel infrastructure of this type threatens our national and local climate targets.
- Failure of the applicant to account for damaging methane leakage in the EIA report.

Yours sincerely,

Jessie Dolliver
On behalf of Not Here Not Anywhere

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