Submission to the New South Wales Department of Planning and Environment: Hunter Power Project (Kurri Kurri Power Station)

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Doctors for the Environment Australia (DEA) is an independent, self-funded, non-government organisation of medical doctors in all Australian states and territories.

DEA's work is based on the premise that humans need a future with clean air and water, healthy soils capable of producing nutritious food, a stable climate, and a complex, diverse and interconnected humanity whose needs are met in a sustainable way. We are therefore interested in environmental protection and restoration to promote human health and social stability.

DEA's work is supported by a distinguished Advisory Committee of scientific experts whose knowledge of medical and public health issues is fully contemporary. Our members work across all specialties in community, hospital, and private practices.

Doctors for the Environment welcomes the opportunity to make this submission to the New South Wales Department of Planning, Industry and Environment. The focus of this submission is on the health of present and future Australians and the environment on which health depends.

Doctors for the Environment is opposed to the project on the grounds that:

- The community of Kurri Kurri and surrounding communities will be adversely affected, and their health put at risk. There is a health risk from a deterioration of air quality.
- The project will contribute a significant quantity of greenhouse gases at a time when Australia is required to urgently reduce these emissions and join a global effort to keep global warming under 2 degrees Celsius above pre-industrial temperature. Failure to do so risks the health and well-being of Australians during the life of this project.
- The project is against the advice of energy experts who have publicly stated that it is not needed.
- The large cost of the project and the likely cost of an associated pipeline project will burden the next generation with debt while contributing to the impacts they will endure from climate change.

The town of Kurri Kurri and surrounds.

The IES describes a community of over 18,000 people with an unemployment rate of 9.5% and a median weekly household income of $1,121. The community also includes a higher proportion of indigenous people than the national average.

The potential health impacts of the project on local communities are described in the Environmental Impact Statement and appendices.

"The Proposal's operation would generate air pollutant emissions from the combustion of natural gas and diesel fuel. Both of these fuel sources generate emissions of carbon monoxide, carbon dioxide (CO_2), nitrogen oxides, sulphur oxides, suspended particulate matter (such as PM_{10} and $PM_{2.5}$), and unburnt hydrocarbons and other volatile organic compounds. Snowy Hydro has considered the technologies available for controlling emissions from gas turbine plants, and assessment has shown that the best available and appropriate control technology for these units is to utilise Dry Low Emissions burners when operating on natural gas fuel, and using Water Injection control technology when operating on diesel fuel. With the application of the above emissions control technology, air quality modelling demonstrated that the emitted concentrations of all airborne substances and particulate matter would be low and not expected to cause adverse air quality impacts in the vicinity of the Proposal Site nor in the region, and would not cause any additional exceedances of EPA criteria".

DEA finds this conclusion questionable because it is now known that health impacts from nitrogen dioxide and PM2.5 particulates occur at levels below existing EPA criteria.[1] [2] [3]

[1] https://www.dea.org.au/wp-content/uploads/2021/04/Final-air-pollution-submission-PDF.pdf

[2] https://onlinelibrary.wiley.com/doi/full/10.1111/1753-6405.12264

[3] https://onlinelibrary.wiley.com/doi/pdfdirect/10.1111/1753-6405.13060

The very low-capacity factor expected from a plant operating for 2% or less of the time suggests that air pollution impacts are likely to be small. However, they will not be negligible and will add to the pollution burden now existing in the Hunter region from other sources, including coal fired power, bushfire/hazard reduction burns, and the M15 motorway.

It is now well recognised by epidemiologists and health experts that for PM2.5 particles and nitrox compounds that there is no safe threshold below which health harm does not occur. It is not clear from the EIS that the proposed emission controls will be effective enough to prevent exacerbations of childhood asthma in the local community. If diesel is to used, it must be borne in mind that emissions from diesel combustion are carcinogenic. [4]

While the footprint of the project is relatively small, it is not clear from the EIS what consultation with families in proximity to the plant has occurred, nor their attitude to it. Have they been made aware of the nature of the emissions from the two 36 metre exhaust stacks? Have they been made aware of the conclusion of the Commonwealth Department of Agriculture, Water, and the Environment DAWE that "*the proposed action is likely to have significant impact on the environment, including but not limited to, emissions and pollutants which may impact air quality, and potentially disturbing contaminated and/or acid-sulphate soils in the proposed action area with potential flow on effects to surface and ground water*"?

The Role of Fossil Gas in the Climate Emergency

The likely greenhouse gas emissions during construction and during the operating life of the project are detailed in the EIS:

Table 15.12: Annual Operation Emissions (Years 2-30)

Emissions Source	Estimated Fuel Quantity	Energy Consumption	Scope 1 Emissions ($t CO_2e$)	Scope 2 Emissions ($t CO_2e$)	Scope 3 Emissions ($t CO_2e$)	Total Emissions ($t CO_2e$)
Natural Gas Combustion in Gas Turbine	162,674,830 m^3	6,393,121 GJ	329,438	-	89,504	418,941
Diesel Combustion in Gas Turbine	28,341 kL	1,093,952 GJ	76,795	-	3,938	80,734
Diesel Combustion in Generator	10 kL	371 GJ	26	-	1	27
Grid Energy Usage	578,000 kWh	2,079 GJ	-	468	52	520
Plant Input Haulage	1,034,337 tonne-kilometre truck	NA	-	-	77	77
Plant Waste Haulage	214 t.km truck	NA	-	-	Negligible	Negligible
Total	-	**7,489,523 GJ**	**406,259**	**468**	**93,572**	**500,299**

Figure 15.8 displays the annual operational emissions divided by the source. As expected, the two largest contributors of emissions were the combustion of natural gas and diesel in the turbines. Emissions from the other sources contributed a smaller portion of annual operation emissions.

[4] https://onlinelibrary.wiley.com/doi/pdfdirect/10.1111/1753-6405.13060

Climate change in Australia

Australia's vulnerability to climate change has become all too evident. The increased incidence of drought and the continuing drying of the southern half of the continent are now part of the climate record[5 6 7 8 9].

Record heat has been recorded in many parts of Australia and Australia's average temperature has increased by 1.44 degrees Celsius since records began[10], well above the global average increase of 1.16 reported by the US National Oceanic and Atmospheric Association NOAA in March 2020[11], the second hottest year on record. 10 of the warmest years on record have occurred since 2005[12]. Extreme heat is Australia's biggest cause of death related to a natural hazard[13 14 15]. In the heat wave of January/February 2009 in Victoria, in addition to 173 deaths directly related to the bushfires, there were 374 deaths above the average for that period; emergency callouts increased by 46%, presentations for heat related illness increased by 34 times, and cardiac arrests tripled[16].

Bushfires in Australia have increased in intensity, duration and extent[17]. The unprecedented mega-fires of 2019/20 were 30% more likely to happen because of climate change, according to scientists, a figure described as too conservative by CSIRO scientist David Karoly[18]. For several weeks a large percentage of the Australian population was exposed to bushfire smoke, a known health risk. The Medical Journal of Australia has described these risks which include high rates of asthma, increased hospital presentations for heart and cardiovascular problems and increased mortality for vulnerable groups[19].

Other consequences for Australia of the failure of the global community to address climate change include loss of the Great Barrier Reef, extensive coastal erosion, the spread of some zoonotic diseases secondary to changes in vector range, and water shortages, including reduced flows in the Murray Darling system and elsewhere.

The Climate Impacts of Expansion of the Gas Industry

DEA contends that a gas led recovery is not compatible with a safe climate. In 2020, 25 of Australia's most eminent climate scientists wrote a letter to the Chief Scientist stating that the use of gas as a transition fuel

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[5] https://www.unisa.edu.au/Media-Centre/Releases/2019/south-australias-droughts-are-getting-worse/

[6] https://www.agriculture.gov.au/abares/products/insights/effects-of-drought-and-climate-variability-on-Australian-farms

[7] https://www.agriculture.gov.au/sites/default/files/documents/advice-long-term-strategy-drought-preparedness-resilience_1.pdf

[8] https://www.agriculture.gov.au/ag-farm-food/drought/drought-policy

[9] http://www.clw.csiro.au/publications/waterforahealthycountry/swsy/pdf/SWSY_Climate_TechRpt.pdf

[10] http://www.bom.gov.au/climate/current/annual/aus/

[11] https://www.ncdc.noaa.gov/sotc/global/202003

[12] https://www.noaa.gov/news/2020-was-earth-s-2nd-hottest-year-just-behind-2016

[13] https://theconversation.com/melbourne-and-adelaide-have-been-australias-most-vulnerable-major-cities-to-killer-heatwaves-100950

[14] https://www.theguardian.com/environment/ng-interactive/2020/feb/27/killer-heat-how-a-warming-land-is-changing-australia-forever

[15] https://www.abc.net.au/news/2018-01-18/heatwaves-australias-deadliest-hazard-why-you-need-plan/9338918

[16] https://www.climatecouncil.org.au/uploads/b6cd8665c633434e8d02910eee3ca87c.pdf

[17] https://www.climatecouncil.org.au/not-normal-climate-change-bushfire-web/

[18] https://www.nature.com/articles/d41586-020-00627-y

[19] https://www.mja.com.au/journal/2020/212/8/bushfire-smoke-urgent-need-national-health-protection-strategy

over decades is not consistent with a safe climate, nor with the Paris Agreement[20]. They pointed to the urgency of the climate crisis and wrote, inter alia,

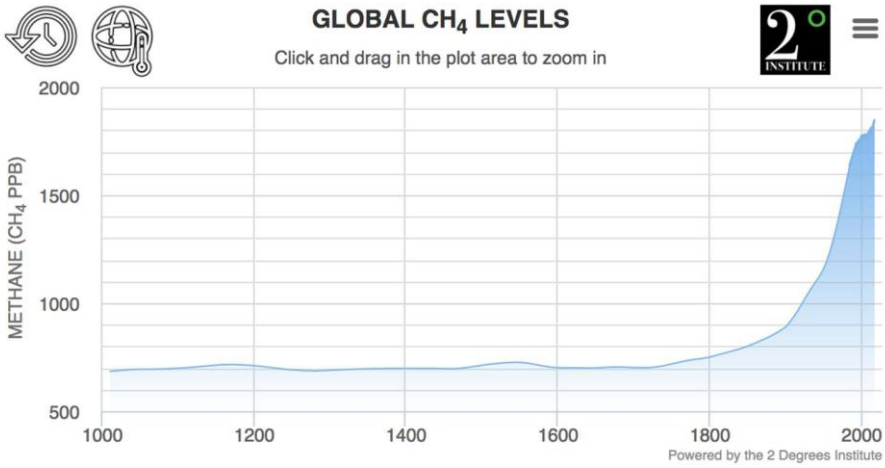
"The combustion of natural gas is now the fastest growing source of carbon dioxide to the atmosphere, the most important greenhouse gas driving climate change".

The authors also point out that we are already committed to a temperature rise of 1.3-1.4 degrees which will have "escalating impacts"; global methane emissions from fossil fuel sources and agriculture are rising; and the rate of methane leakage from the gas industry has "far exceeded earlier estimates".

The Intergovernmental Panel on Climate Change Interim 1.5C report made clear the urgent need to rapidly reduce short term climate pollutants, methane particularly, if the world is to stay below 2 degrees Celsius of warming and warned methane emissions will need to reduce by 35% or more if a sub 2 degrees target is to be achieved[21]. Methane is a powerful greenhouse gas, 86 times more powerful than CO2 over a 20-year time frame.

"Limiting warming to 1.5°C implies reaching net zero CO_2 emissions globally around 2050 and concurrent deep reductions in emissions of non-CO_2 forcers, particularly methane": IPCC Interim 1.5 Report.

Global methane levels have been rising steeply this century and more steeply in the last decade in concert with the expansion of fossil fuel use. Atmospheric methane is now at more than double preindustrial levels.



https://www.methanelevels.org

Evidence from around the world has shown that fugitive emissions can vary between 1.4-17%.[22] It is worth noting that when fugitive emissions are at 2-3%, any benefit that gas has over coal for greenhouse gas emissions disappears. But even if the fugitive emissions are 0.5%, there are still significant emissions of greenhouse gases. It is implausible that fugitive emissions from Australia's gas industry are at a level of 0.5%[23].

A rise in fugitive emissions correlates closely with the expansion of the gas industry; the National Greenhouse Gas Inventory in its quarterly update to December 2019 noted in reference to fugitives from

[20] https://www.smh.com.au/environment/climate-change/australia-s-chief-scientist-is-wrong-on-gas-say-leading-experts-20200824-p55oty.html

[21] https://www.unep.org/interactive/emissions-gap-report/2020/

[22] https://www.climatecollege.unimelb.edu.au/files/site1/docs/6032/20161023%20Review%20of%20Methane%20Emissions.pdf

[23] https://australiainstitute.org.au/report/a-review-of-current-and-future-methane-emissions-from-australian-unconventional-oil-and-gas-production/

fossil fuel, “annual emissions in this sector increased by 6.1 per cent over the year to September 2019. This increase in *fugitive* emissions was driven by an increase of 22.8 per cent in natural gas production”[24].

An article in the journal Nature 19/02/20 revealed that anthropogenic sources of methane (principally from fossil fuel extraction) have been underestimated by 25%-40%. Further, this research revealed that natural sources of methane have been overestimated[25].

The associated pipeline proposed for the project will have an environmental impact of its own, including fugitive emissions. If LNG is to be used, extra energy expended in producing the LNG will be an additional source of emissions.

The latest United Nations Gap Report, released in December 2020, reveals that the world is on a 3-degree warming trajectory, which will be catastrophic for Australia[26]. Although emissions fell slightly because of the pandemic and measures to control it, much greater ambition to bring emissions down, around 7% per year, will be required to have a 66% chance of limiting warming to less than 2 degrees.

In a recent report the **International Energy Agency** laid out a path to net zero emissions by 2050 which stated that fossil fuel use will need to decline, in the case of gas, by 55% if the world is to have any chance of meeting the goals articulated in the Paris Agreement.

Justification

The justification for the project is based on a predicted shortfall of electricity supply at peak periods when the Liddell power station is decommissioned in 2023. However, a variety of energy experts have been highly critical of the project, saying it will not be needed, that gas consumption is predicted to decline as less carbon intensive energy sources fill the gap, and that government intervention in the market will turn private investors away.[27] [28]

At issue is also the question of intergenerational equity with school children now prepared to take the government and companies to court over what they perceive as climate damaging policies or projects.[29] The Kurri Kurri project not only burdens today’s children with debt, but it also adds to the burden of further greenhouse gas release, albeit at a low level.

Conclusion

Doctors for the Environment Australia is opposed to the Hunter Power/Kurri Kurri project. The opinion of DEA is that this project is in the interests of neither the local community of Kurri Kurri nor the nation. The need to decarbonise electricity generation and the economy is now a matter of urgency.

[24] https://www.industry.gov.au/sites/default/files/2020-02/nggi-quarterly-update-sep-2019.pdf

[25] https://www.nature.com/articles/s41586-020-1991-8

[26] https://www.unep.org/emissions-gap-report-2020

[27] https://www.thechemicalengineer.com/news/australia-to-recklessly-invest-a-600m-in-gas-project/

[28] https://ieefa.org/australia-energy-security-board-chairman-says-hunter-valley-doesnt-stack-up/

[29] https://theconversation.com/in-a-landmark-judgment-the-federal-court-found-the-environment-minister-has-a-duty-of-care-to-young-people-161650