



DOC21/353820-23, EF21/7956

Department of Planning, Industry and Environment

Via Major Projects Portal

Attention: Mr Jack Turner

1 June 2021

Dear Mr Turner,

EPA ADVICE ON ENVIRONMENTAL IMPACT STATEMENT

SNOWY HYDRO - KURRI KURRI POWER STATION (SSI-12590060)

Thank you for the request to review the Environmental Impact Statement for the proposed Hunter Power Project - Kurri Kurri Gas Power Station (Application SSI-12590060) at Hart Road, Loxford (Premises).

The EPA has reviewed the Environmental Impact Statement titled "Hunter Power Project", prepared by Jacobs Group (Australia) Pty Limited, dated 22 April 2021 (EIS).

The EPA understands the proposal is to develop a gas fired power station, comprising the following:

- Two open cycle gas turbines (OCGTs) and all associated balance of plant infrastructure required for an operating power station; and
- A 132 kV electrical switchyard adjacent to the power station and connection into the existing 132 kV network.

Based on the information provided, the proposal will require an Environment Protection Licence under section 47 of the *Protection of the Environment Operations Act 1997* (POEO Act) for scheduled development work; and then a licence under 48 of the POEO Act for scheduled activities under clause 17 of Schedule 1.

The EPA has reviewed the EIS and notes that it does not provide the information required by the Secretary's Environmental Assessment Requirements to adequately assess the potential impacts to air quality and noise. The EPA's detailed assessment of these issues and additional information required to assess the proposal are provided under Attachment A.

If you have any questions about this matter, please contact Hamish Rutherford on (02) 4908 6824 or email RegOps.MetroRegulation@epa.nsw.gov.au.

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Yours sincerely

A handwritten signature in blue ink, appearing to be 'S. James', written over a circular stamp or seal.

STEVEN JAMES

**Unit Head Regulatory Operations Metro North
Environment Protection Authority**

Attachment. A

Attachment A

AIR QUALITY

The EPA has reviewed the Hunter Power Project - Air Quality Impact Assessment (Jacobs, 30 March 2021) (AQIA) provided under Appendix K of the EIS and provides the following comments.

1. Unclear Cumulative Impact Concentrations

The AQIA provides contour plots of the maximum incremental impacts and summary tables of maximum cumulative impacts. However, the results as presented in Section 6 of the AQIA do not provide enough information or clarity regarding how the maximum predicted impacts of the proposal were determined or what they represent. Although the AQIA states a contemporaneous assessment approach was taken, the AQIA does not provide enough transparency to evaluate the predicted impacts as only summary of the background air quality and the summary results are provided.

The EPA recommends the AQIA include more detailed background air quality data for the modelled year if contemporaneous assessment is undertaken.

The EPA recommends the AQIA be revised to include a refined assessment for the most impacted receptors which evaluates the cumulative impacts from both the highest backgrounds and the highest increments, which includes, as a minimum:

- *Time/date*
- *Project (only) increment*
- *The adopted background*
- *Cumulative (total) impact.*

2. NO₂ and SO₂ criteria

In April 2021, the National Environment Protection Council agreed to vary the National Environment Protection (Ambient Air Quality) Measure (AAQ NEPM), to tighten ambient NO₂ and SO₂ standards (<http://www.nepc.gov.au/system/files/pages/d2a74405-16f6-4b06-baf1-7c2fc1c1e12f/files/key-changes-aaq-measure-agreed-ministers-april-2021.pdf>).

The EPA recommends the proponent note the revised Ambient Air Quality NEPM standards for NO₂ and SO₂ and include them accordingly in the assessment.

3. Ozone Assessment

Ozone precursors, NO_x and VOCs, will be emitted from the proposed power station. The AQIA does not include an ozone assessment, nor does it robustly evaluate potential for inter-regional pollutant transport.

The EPA advises that exceedances of national ozone standards have been recorded by the NSW Government air quality monitoring network at Lower Hunter and Central Coast monitoring sites.

Further, given the nature of the proposed power station, a peaking station, it is likely that the power station will operate during periods of high electricity demand on the grid. These periods typically occur during hot summer days which historically coincide with higher risks of ozone impacts. Additionally, the approved Newcastle Power Station will be located only 22 km away from the proposed project which is also intended to operate as a peaking power station and likely to contribute to cumulative ozone impacts.

The recommends the proponent conduct an ozone and inter-regional transport assessment. The ozone assessment must be conducted in accordance with Tiered Procedure for Estimating Ground-Level Ozone Impacts from Stationary Sources: <https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/air/estimating-ground-level-ozone-report.pdf?la=en&hash=5B3D0AC78A22BE0863A37B6570108E5336E53B03>

4. Start-up and shut-down assessment

The AQIA incorrectly states that the Protection of the Environment Operations (Clean Air) Regulation 2010 (Clean Air Regulation) does not require assessment of conditions during start-up and shutdown. Whilst clause 52 of the Clean Air Regulation exempts the standards of concentration applying during start-up and shutdown periods, it does not exempt assessment of emissions and impacts. Further, the premises will still be subject to the requirements to prevent and minimise air pollution at all times.

The EPA advises that there can be considerable variation in emissions and pollution control efficiency across plant load, including start-up and shutdown of the plant, which can result in increased peak impacts from the operation of the plant. The AQIA has not considered potential impacts associated with the expected emission variability.

The EPA recommends that the proponent prepare a revised assessment which adequately considers emission variability, including evaluating emissions and impacts from plant start-up, shutdowns and variable load.

5. Validation and clarity of emissions

The AQIA states the emission parameters used in the modelling represent worst-case impacts as final plant design has not been determined. The AQIA states that best practice technology controls (DLE and water injection) will be in place and while the proposed emission concentrations (Table 2.2) generally align with the EU's BAT (BREF, 2017) a detailed evaluation of achievable emissions has not been provided.

Figure 2.2 indicates 1 exhaust stack per turbine, however, the emission parameters in Table 2.3 are unclear in the derivation of the emission rates and whether they apply per stack or are combined. Additionally, no emission parameters for principal or individual toxics (e.g. formaldehyde, acrolein and PAHs) have been provided.

The EPA recommends the proponent:

- *undertake a detailed control technology and emissions performance benchmarking against all relevant international guidance and technologies; and*
- *assess worst-case impacts based on final design. Where final plant design cannot be provided, the proponent must provide all information used to model impacts for all pollutants, including, but not limited to:*
 - *the specific emission factor(s) and/or manufacturer emission parameters,*
 - *all calculations and assumptions used to determine emission rates and concentrations,*
 - *emission parameters provided at reference conditions and per stack.*

6. Unable to verify SO₂ emission calculations

The AQIA evaluates SO₂ emission rates based on the sulfur content in the fuels used: 50 mg/m³ for natural gas and 10 mg/kg for diesel. However, the AQIA does not provide enough information to evaluate the validity of the calculated SO₂ emission rates in Table 2.3.

The EPA recommends the proponent provides all information and calculations used in the determination of the SO₂ emission rates.

7. Background data and results given at 25°C

The AQIA provides the background air quality data and the predicted impact results at 25°C. For criteria pollutants the conversion to µg/m³ is to be done at 0°C in accordance with the Ambient Air Quality NEPM and as used to convert the concentrations in the *Approved Methods for the Modelling and Analysis of Air Pollutants in NSW* (Table 7.1).

The EPA recommends the proponent revise the AQIA to provide concentrations of criteria pollutants in µg/m³ at 0°C.

8. Validation of modelled meteorology

The AQIA has provided limited description of the parameters used to generate the meteorology data used in the modelling. Only basic information on the grid resolution is provided.

Validation of the model generated meteorology has not been sufficiently presented. Only basic wind speed comparison is provided.

The recommends the AQIA be revised to include:

- *all information regarding the methodology for the meteorological modelling. This must include presenting the adopted parameters and settings used to set up the model.*
- *additional information to evaluate the performance of the modelling, including, but not limited to Calmet generated wind roses for the project site and for Beresfield or another suitable.*

NOISE

The EPA has undertaken a detailed review of the Hunter Power Project - Noise Impact Assessment (Jacobs, 6 April 2021) (NIA) provided under Appendix L of the EIS and provides the following comments. Some aspects of the NIA, relating to background noise assessment and the selection of receiver amenity categories, may appreciably change the outcomes of the assessment.

1. Background Noise

Section 3.3 states that background noise monitoring was carried out during the summer months of December 2020 and January 2021, and that fauna/insect noise affected the background noise measurements at NM1 and NM3. Table 3.1 states that 'environmental noise' was a predominant background noise feature at all four monitoring locations. While it is acknowledged that noise contributions from the Hunter Expressway would also be significant in some locations, the EPA is concerned that the background noise environment during the cooler months (in the absence of fauna/insect noise) may be lower than that presented in Table 3.2 at all of the monitoring locations.

In addition, some of the RBL values (e.g. at NM4) shown in Table 3.2 appear very high for a location described in Section 3.1 as 'isolated farmhouses and pasture'. No attended noise monitoring results are presented in the report that might provide insight into the background noise sources, and their relative contributions, giving rise to these results at NM4, other than a general description of 'environmental noise' in Table 3.1.

The EPA is also concerned that the results of noise monitoring have been assigned as being representative across a large catchment (e.g. NM1 results are considered representative of the entire NCA1 catchment), and whether those results are representative at all locations within that catchment. For example, location NM1 is shown to be approximately 200m from the Hunter Expressway carriageway. However, its noise environment has been considered representative of residences in NCA1 on the western side of Sawyers Gully Road, up to approximately 1km from the Expressway, and where the traffic noise contribution and resultant background noise levels are likely to be significantly lower.

The EPA also notes that less than the 7 days of valid monitoring data required in Table A1 of the *Noise Policy for Industry (NPfI)* has been collected at NM2 (approx. 6 days), NM3 (approx. 3.5 days) and NM4 (approx. 5.5 days).

The EPA recommends the proponent:

- *Provide additional background noise monitoring (for a minimum of 7 days of valid data) that is not likely to be affected by fauna/insect noise (preferably during the winter season) at surrounding sensitive receivers.*
- *Provide operator-attended background noise measurements to identify the nature and relative contribution of any ambient noise sources and support the results of the long-term unattended monitoring.*

- *Review the defined noise catchments and representative receivers, and provide additional detail, in the form of measurements and/or supporting analysis, to justify that the noise environment at a receiver is fully representative of its entire catchment.*

2. Amenity Criteria

Section 4.2.3 states that the 'urban' amenity category was applied for residential receivers as the measured background noise levels were over 45 dBA (day), 40 dBA (evening) and 35 dBA (night). This appears to be based on the 'typical existing background noise levels' column in Table 2.3 of the NPfI. This table describes the noise environment of the 'urban' amenity category as being dominated by 'urban hum', having through traffic with characteristically heavy and continuous traffic flows, near commercial or industrial districts. These attributes do not align significantly (or at all in the case of NCA3 and NCA4) with the 'predominant background noise feature' column description in Table 3.1 of the NIA. It is also difficult to reconcile land uses described in Table 3.1 of the NIA as predominantly 'rural residential' and 'farmland' as being 'urban' in nature. The EPA is concerned that adopting the 'urban' noise amenity category without strong justification may set artificially high noise criteria and unduly impact the noise environment in these catchments, particularly at those receivers more distant from road traffic and industrial noise influences.

The primary basis for selecting a receiver amenity category should be the land use zoning in the Local Environmental Plan (LEP). From the Cessnock City Council mapping portal at <https://maps.cessnock.nsw.gov.au/intramaps99/default.htm>, the predominant land use zoning in all NCAs defined in the NIA is RU2 – rural landscape, and as such the rural residential receiver category applies. This has the potential to result in lower operational noise criteria for the proposal than those currently in the NIA, in some cases.

The EPA recommends the proponent:

- *Adopt the 'rural residential' noise amenity category at residential receivers in the noise catchment areas currently defined in the NIA; or*
- *Provide strong justification, to the satisfaction of the EPA, as to why an alternative amenity category is appropriate, with detailed reference to each of the considerations in table 2.3 of the NPfI.*

3. Other Items

- Table 4.4 shows sleep disturbance criteria. The LAFMax criteria should be set 5dB higher than those presented, at 15dB above the night-time adjusted Rating Background Levels presented in Table 4.5. These should be reviewed as appropriate to reflect comments in 'Background Noise' above.
- Section 6.2 states that additional construction traffic associated with the Proposal would only contribute 0.2 dBA to the overall traffic noise level during the day, and less than 0.1 dBA during the night. This wording should be revised. The EPA understands that the construction traffic contribution would increase predicted overall traffic noise levels by these amounts.
- Table 6.6 of the NIA shows predicted noise levels below the relevant criteria yet states that there is an exceedance of the criteria. This should be revised as necessary.
- The EPA notes that Table 6.8 shows the predicted low frequency noise contribution in the 50Hz band at NCA 2 Nearest Residential Receiver is 5 dB above the relevant threshold value. While the assessment has appropriately applied a 2dB correction based on the guidance in the NPfI in this instance, there is some potential for a higher 5dB correction to apply if the post-commissioning measured level is higher than the prediction. This may, in turn lead to a potential exceedance of the criteria at NCA2 based on the results in Table 6.4 of the NIA. The proponent should carefully review the modelling carried out to support the low frequency noise assessment and confirm that sufficient feasible and reasonable noise mitigation measures can be implemented to ensure any low frequency noise impacts are satisfactorily addressed.

- e. Section 6.6 states that additional operational traffic associated with the Proposal would contribute less than 0.1 dBA to the overall traffic noise level during the day. This wording should be revised. The EPA understands that the construction traffic contribution would increase predicted overall traffic noise levels by these amounts.
- f. The EPA notes that the cumulative construction noise impacts predicted in Section 6.8.1.1 of the NIA are close to or at the criterion level in some phases. Cumulative construction works should be carefully managed to ensure cumulative noise impacts are minimised.
- g. Section 6.8.2 of the NIA states that modelling was carried out to determine the contribution of the gas receival station (GRS) to overall operational noise levels. Further detail should be provided on what other items of plant and equipment were modelled to be operating in conjunction with the GRS, together with their sound power levels and locations, operating modes, etc. The statement that the GRS would contribute 'less than 0.1dB' to the noise levels at the boundary is unclear, and further detail should be provided on the predicted noise levels of the GRS in relation to other site components.
- h. Further detail should be provided in Section 6.8.3 on the quantitative noise impacts of the demolition and remediation of the Hydro Aluminium smelter, a qualitative assessment is not sufficient to determine whether the cumulative impacts of these activities will be acceptable over their duration.
- i. Depending on the outcomes of a revised assessment of noise triggered by any necessary revisions to the operational and construction noise criteria or other matters, additional feasible and reasonable mitigation may be required to achieve the criteria. Any additional detail on the nature and extent of those mitigation measures should be included in Section 7. The proponent should take care to ensure that any plant and equipment sound power levels used in the noise assessment are accurate and suitably guaranteed by the manufacturer(s), so as to not present the proponent with a potential compliance risk.