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NSW Department of Planning & Environment
Resource & Energy Assessments
GPO Box 39
SYDNEY NSW 2001

Attention: Mr Mike Young

## Bayswater Power Station Turbine Efficiency Upgrade – Submissions Report

### Background

AGL Macquarie Pty Limited (AGL Macquarie) owns and operates the Bayswater Power Station (Bayswater). Bayswater was commissioned in 1985. Over recent years, Bayswater has produced approximately 15,000 gigawatt hours (GWh) of electricity a year, enough to power approximately two million average Australian homes.

Bayswater generates electricity using four generating units. AGL Macquarie proposes to replace the turbines within each of the generating units (Project) to best ensure the continued safe, reliable and efficient operation of Bayswater until its scheduled retirement in 2035 and to ensure that all new turbines are fully operational prior to the retirement of Liddell in 2022.

The Project has been declared to be critical State significant infrastructure (Critical SSI) under Division 5.2 of the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act). An Environmental Impact Statement (EIS) for the Project was publicly exhibited from 18 July 2018 and 15 August 2018. This letter responds to the submissions made in relation to the Project.

### Project Overview

The Project is limited to the replacement of the turbines in each of the four existing generating units at Bayswater over a four-year period – one generating unit per year. This will increase the continuous maximum rating (CMR) capacity of Bayswater from 660 MW to 685 MW for each generating unit. A full description of the Project was provided in Chapter 3 of the EIS. No changes are proposed to the Project as described in the EIS

Importantly, other than the replacement of the turbines, the Project does not include any changes to the existing operations at Bayswater which will continue to be managed in accordance with existing authorisations, including Environmental Protection Licence 779 (EPL).

### Assessment Process

AGL Macquarie publicly announced its plan for the Project on 28 February 2018.

The Project was declared to be Critical SSI for the purpose of the EP&A Act on 2 March 2018. AGL Macquarie lodged a State significant infrastructure application report with the Department of Planning and Environment (DP&E) on 28 March 2018 and was issued with Environmental Assessment Requirements (EARs) on 4 May 2018. In preparing the EARs, the DP&E received input from each of the Department of

Primary Industries - NSW Department of Industry Crown Lands and Water Division; the Environment Protection Authority (EPA); the Department of Transport - Roads and Maritime Services (RMS); the NSW Rural Fire Service (RFS); and Muswellbrook Shire Council.

The EIS was prepared to address these EARs and was placed on public exhibition for four weeks, between 18 July 2018 and 15 August 2018, during which time submissions were invited. Submissions were also accepted after the public exhibition period closed. The submissions received were collated by the DP&E and provided to AGL Macquarie for review and response.

## The Submissions

The following submissions were received in relation to the Project:

- 5 submissions, categorised as comments, were received from government agencies (refer to Table 1 of Attachment 1 for details);
- 6 submissions and 2 supplemental submissions were received from 6 special interest groups objecting to the Project (refer to Table 2 of Attachment 1 for details); and
- 44 submissions were received from members of the general public of which 42 objected to the Project, one provided comment and 1 was a duplicate (refer to Table 3 of Attachment 1 for details).

The submissions made by the special interest groups and community focused on concerns about air quality impacts. A number of the submissions also raised concerns relating to the extent of consultation.

This letter outlines AGL Macquarie's response to these key issues and provides an update on the additional consultation carried out since the EIS was prepared.

Attachment 1 contains a summary of the issues raised in each of the submissions and AGL Macquarie's response to each issue. Full details of these submissions are available on the DP&E website.

## AGL Macquarie's Commitments

AGL Macquarie values the Hunter Valley community. We are committed to transparency and honest communications and engagement as we help shape a sustainable energy future for Australia.

AGL Macquarie knows it is important for the community, particularly in the Upper Hunter, to understand the environmental impacts of Bayswater and that strong views are held on air emission limits, monitoring and reporting as well as the environmental implications of our operations. We recognise that air emissions from our operations such as Bayswater can potentially contribute to regional airshed issues.

We have committed to retiring Liddell in 2022 and Bayswater in 2035. We are currently working with the community to deliver the Liddell Innovation Project – with the mission to deliver the best possible uses for the Liddell site post-2022. The Liddell Innovation Project demonstrates our commitment to evidence-based, best practice site repurposing and remediation, and to constructive engagement with local communities and other stakeholders.

AGL Macquarie has established a Community Dialogue Group (CDG) in compliance with the AGL Community Engagement Policy and Standard. The CDG has an independent chair and was formed for ongoing community engagement in relation to the ongoing operations of Bayswater and Liddell as well as contributing to the Liddell Innovation Project. In establishing the CDG, AGL Macquarie invited a range of local stakeholders including members of the previous Macquarie Generation CCC, representatives from our three local councils, business chambers, neighbours, local indigenous representatives and interested community representatives. Participants were selected based on existing local involvement, and interest in ongoing operations, regional transition and the Liddell Innovation Project.

When the time comes to close Bayswater we will:

- Continue to work with the community and workforce to build the foundations for new opportunities and diversify the economy in the transition towards a carbon constrained future;
- Support the transition of the workforce to new opportunities prior to and following retirement; and
- Rehabilitate the site in line with the commitments made in our Rehabilitation Report. Our Rehabilitation Report outlines how AGL is approaching the challenges associated with rehabilitating large, long-lived assets and infrastructure and provides an overview of processes, strategies and timelines that are considered in the development of rehabilitation plans.

Until then, we will continue to invest in Bayswater in accordance with all regulatory requirements and the commitments made in the AGL Environment Policy.

The AGL Environment Policy records our commitment to:

- Adhere to high standards to protect the environment where we do business;
- Meet or exceed our regulatory obligations;
- Analyse and improve the way we do business to reduce environmental risks and impacts;
- Continuously improve our environmental performance through developing and reviewing effective management systems, measurement and targets;
- Contribute to research and adaptation to new technologies that improve environmental outcomes; and
- Use resources and energy efficiently, minimising emissions and waste.

The Project strongly aligns with these commitments and will use new turbine technology to increase energy output via efficiency gains, ensuring the efficient use of resources whilst not generating any additional emissions.

## Response to Air Quality submissions

The eight responses from special interest groups and most of the public submissions focus on air emissions and the expectation for best available emissions technology to be installed as part of the Project.

The key recurring themes from these submissions are addressed below with specific responses to submissions provided in Attachment 1.

### *The power station will emit unacceptable levels of toxic air pollution.*

The Project is limited to the replacement of the turbines which do not, of themselves, generate any air emissions, with more efficient newer technology. The efficiency gains resulting from the Project will enable Bayswater to generate in accordance with the increased 685 MW rated capacity from each generating unit without increasing the level of coal consumption and consequent air emissions when compared with the continued operation of Bayswater in the absence of the Project. The EIS confirms that, on the basis that no changes are proposed to the current approved operations, it is expected that the Project will result in a marginal decrease in overall air emissions from Bayswater.

Air emissions from Bayswater are regulated by the conditions imposed on the EPL and the requirements of the *Protection of the Environment (Clean Air) Regulation* (Clean Air Regulation). Bayswater currently operates in compliance with all applicable air emissions limits and it will continue to do so once the Project is implemented (if approved).

Further, as outlined in the EIS, the implementation of the Project coincides with the announced Liddell retirement in 2022. As Liddell emissions will cease once it closes, it is estimated that the Upper Hunter airshed power station particulate emissions will reduce by 30-50 per cent, and NOx and SO2 by approximately 30 per cent. This will result in an overall improvement in the Upper Hunter ambient air quality.

Separately to the Project, the EPA is undertaking a review of the performance, monitoring and reporting from all 5 coal fired power stations operating in NSW as part of its regular 5 yearly review of the environmental protection licences for the power stations. AGL Macquarie will work with the EPA to achieve the best outcomes for all stakeholders as part of this review.

*The Project should be a trigger for improved emission control technologies*

The Project is limited to the upgrade of turbines only which do not generate any air emissions. Air emissions from Bayswater will continue to be regulated by the conditions imposed on the EPL and the requirements of the Clean Air Regulation.

Further, and acknowledging the need for assumptions regarding market demand for energy, the EIS confirms that no changes are proposed to the existing approved operation of any emission generating units at Bayswater as part of the Project. In particular, coal consumption, air and noise emissions, water consumption and ash generation will not increase as a result of the Project and will continue to vary as the operation of Bayswater responds to market demand. The Project will enable this continued variation in the overall operating level of Bayswater to occur at a more efficient level than possible in absence of the Project.

*The Project may prolong the operating life of Bayswater power station and the length of time that communities in the Hunter region, and throughout Sydney, will be exposed to air pollution from the power station.*

The Project does not seek any extension to the operational life of Bayswater. AGL has announced the retirement of Bayswater will occur in 2035, aligned with a 50-year operational life of similar generating assets. AGL has a clearly articulated Greenhouse Gas Policy to achieve decarbonisation of its generation assets by 2050. The announced retirements of Liddell in 2022 and Bayswater in 2035 form a key part of this plan which is aligned with the NSW Climate Change Policy Framework. The Project is a key component of AGL's plans to improve the greenhouse gas efficiency of existing operations and to manage the transition to a decarbonised energy future, while responding to the requirements of a reliable and affordable electricity market.

*Project would lead to increased capacity factor and therefore increased coal consumption and emissions*

There are numerous potential future market scenarios under which Bayswater will be required to operate. In the absence of certainty, AGL Macquarie has made assumptions based on current understanding of the wholesale energy market and future operating scenarios within our control.

AGL Macquarie agrees that Bayswater is currently the lowest marginal-cost coal generator in NSW. That this current low-cost position does not translate into Bayswater operating at a capacity factor closer to 100% is indicative of the fact that its output is already influenced by renewable and other non-coal generators. It is widely acknowledged that renewable generation is the lowest marginal cost generators and renewables will continue to impact future generation at Bayswater - this would be the case either with or without the Project.

The Australian Energy Market Operator (AEMO) recognises that the Vales Point and Eraring power stations may, subject to market demand, either close prior to the announced closure of Bayswater or extend their operational lives. In the event that the Vales Point and Eraring power stations close, their contribution to regional air emissions would be removed. In the event that they continue to operate, any

improvement emissions intensity and efficiency at Bayswater would only displace less efficient generation by other coal generating assets. Accordingly, the impact of the Project on the National Electricity Market (NEM) is that any increased market demand for energy from Bayswater would only displace less efficient coal-generating assets, resulting in a net positive benefit on total air emissions from energy generation across the NEM.

### Consultation Update

A number of submissions raise concerns regarding the adequacy of consultation with the community and special interest groups. As with all State significant infrastructure projects, the public exhibition of the EIS is the primary way in which all stakeholders and interested parties were given an opportunity to provide input into the Project. However, additional consultation was also carried out in relation to the Project. The timeline of consultation is provided below:

- AGL Macquarie publicly announced its plan for the Project on 28 February 2018 with the announcement receiving local and State wide media coverage;
- The State significant infrastructure application report, providing preliminary consideration of potential environmental impacts of the Project was made available on the Department of Planning and environment website in March 2018;
- The Project was discussed at a meeting of the CDG held on 1 May 2018, as part of a broader discussion on AGL's NSW Generation Plan. Except for local employment, economic stimulus potential and welcomed additional electricity capacity, no stakeholder issues were raised by the CDG in relation to the Project at this meeting;
- A second CDG meeting was held on 19 June 2018 and the Project was further discussed at this meeting. No additional issues were raised at this meeting;
- The Project was also discussed at NSW EPA Upper Hunter Air Quality Advisory Committee meeting held on 24 May 2018, as part of the discussion relating to Liddell and more specifically NOx emissions and the sites proposed closure in 2022. The EPA noted that the Upper Hunter Air Quality Monitoring Network measures air quality at the monitoring locations, not the source of the pollutants, and that the National Pollutant Inventory estimates what is emitted from each source. The EPA confirmed that it uses both sources of information to develop strategies to improve air quality;
- The Project was also informally discussed with a senior representative from the Nature Conservation Council at a Liddell Innovation Project information day and launch event in July. A copy of the EIS was also hand delivered to the Nature Conservation Council by AGL Macquarie on 17 July 2018; and
- The EIS was publicly exhibited by the DPE for 28 days from 18 July 2018 and 15 August 2018 both online and in hard copy at Muswellbrook Shire Council, Nature Conservation Council and NSW Service Centres.
- AGL Macquarie has actively engaged with senior representatives and elected members of Muswellbrook Shire Council on the Project since the release of AGL's NSW Generation Plan in December 2017. Following the announcement of the Project, DP&E facilitated a meeting on 11 April 2018 with the Mayor, General Manager, and Council's Planning representatives and the EPA. AGL Macquarie provided a detailed overview of the Project, site tour and ensured the team was available to discuss the Project and answer any further questions. A further offer to meet with Council separately was made on 24 June 2018 allowing representatives to raise any other issues independently and directly to AGL Macquarie. Muswellbrook Shire Council advised there were no further issues they wished to raise and would lodge a submission as part of the public submissions process. The Project was tabled at the 1 May and 19 June 2018 meetings with Council. Muswellbrook Shire Council is also a member of the AGL Macquarie CDG.

- AGL Macquarie met with RMS on both 27 June and 1 August 2018 to discuss the proposed transport route & bridge loads for moving the equipment. RMS have confirmed that they are satisfied with the Project and look forward to receiving a traffic management plan prior to project commencement.

## Conclusion

AGL Macquarie will continue to operate Bayswater until its scheduled retirement in 2035 in accordance with the EPL and all relevant approvals.

The Project is required to best ensure the continued safe, reliable and efficient operation of Bayswater and ensure that all new turbines are fully operational prior to the retirement of Liddell in 2022.

The Project is a key component of AGL's plans to improve the greenhouse gas efficiency of existing operations and to manage the transition to decarbonised energy future, while responding to the requirements of a reliable and affordable electricity market.

The Project has been declared by the NSW Minister for Planning to be Critical SSI on the basis that it would increase the capacity, reliability and efficiency of Bayswater and deliver greater energy security for NSW. This will sustain flow-on economic and social benefits for NSW by providing employment during the carrying out of the Project as well as access to more reliable and affordable electricity.

Yours sincerely,

**Leonard McLachlan**

Operations Director – AGL Macquarie

**Table 1 – Government Agency Submissions**

| Stakeholder | Submission summary | AGL Macquarie's Response |
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| **NSW Rural Fire Service** | No specific recommendations in relation to bush fire protection. | Submission noted. |
| **NSW Roads and Maritime Services** | No additional comments or requirements for the Project. Notes that an approved Road Occupancy Licence (ROL) and Traffic Management Plan (TMP) will be used. | Submission noted. A ROL will be obtained separately prior to transportation of goods and meetings with RMS have taken place to discuss the development of an appropriate TMP. |
| **NSW EPA** | The EPA understands that the proposal only relates to the mechanical efficiency upgrade of the four turbines at the premises and that all other approved operations in respect of the Bayswater Power Station remain unchanged. Given these factors, the EPA has no objection to the proposal as outlined and assessed. The EPA regulates environmental pollution matters regarding Bayswater Power Station via Environmental Protection Licence 779 (the Licence) which will remain unchanged if the proposal is approved.<br><br>Separate to this proposal, the EPA is undertaking further works in respect of improved performance, monitoring and reporting from all 5 coal fired power stations operating in NSW following the EPA's recent review of these coal fired power stations. The EPA's report following this review can be accessed here: https://www.epa.nsw.gov.au/your-environment/air/industrial-emmissions. | Submission noted. |
| **Muswellbrook Shire Council** | Muswellbrook Shire Council raised issues relating to its preference that the 1980 Consent granted by Muswellbrook Council for Bayswater be modernised. No specific issues relating to the impacts of the Project were raised by Muswellbrook Shire Council. | The issues raised by Muswellbrook Shire Council are broader than the Project.<br><br>As outlined in the EIS:<br><br>*AGL Macquarie acknowledges that Bayswater is regulated under a large number of planning approvals. Separately to the Project, AGL Macquarie is undertaking a detailed review of its existing planning* |

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| | | *approvals that takes into account potential future operational requirements and will seek to consolidate relevant approvals, where practicable as part of future approval applications made following this detailed review. In the meantime:*<br>• *Any State significant infrastructure planning approval granted for the Project under Part 5, Division 5.2 of the EP&A Act will regulate the carrying out of the Project only. The ongoing operation of Bayswater will continue to be regulated by the existing planning approvals and licenses described in Table 1.1 above.*<br>• *In particular, the EPL will continue to regulate operational impacts from Bayswater, including by setting limits on air and water emissions. The EPL is regularly reviewed and updated by the EPA, with the most recent amendments to the EPL having being made on by the EPA on 7 September 2017; and*<br>• *AGL recognises the increasing expectations of all levels of government and surrounding communities for appropriate site rehabilitation that successfully supports future land uses. Accordingly, AGL has committed to rehabilitating Bayswater following its planned end of life in 2035 in accordance with the AGL Rehabilitation Report (AGL, 2017c).*<br><br>AGL Macquarie is continuing to separately working with the DP&E and Muswellbrook Shire Council with the aim of consolidating and simplifying a number of existing planning approvals, where practicable as part of future approval applications made. |

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| **Department of Industry – Lands and Water** | Considers that areas of regulatory interest have been adequately addressed. | Submission noted. |

**Table 2 – Special Interest Group Submissions**

| Stakeholder | Submission summary | AGL Macquarie's Response |
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| **Nature Conservation Council – Submission 1** | *As proposed, the power station will emit unacceptable levels of toxic air pollution and the NCC recommends that conditions be imposed to require the modified power station to fit pollution controls in line with global best-practice.* | As outlined in the EIS:<br>• Apart from the upgraded turbines, no changes are proposed to the existing approved operation of any other component of Bayswater as part of the Project. Once the turbines have been replaced, the upgraded turbines and Bayswater as a whole will continue to be operated and maintained in a manner which responds to market demand and complies with all applicable laws and existing authorisations.<br>• The efficiency gains resulting from the Project will enable Bayswater to generate in accordance with the increased 685 MW rated capacity from each generating unit without increasing the level of coal consumption and consequent air emissions when compared with the continued operation of Bayswater in the absence of the Project. On the basis that no changes are proposed to the current approved operations, it is expected that the Project will result in a marginal decrease in overall air emissions from Bayswater.<br>• Air emissions from Bayswater will continue to be regulated by the conditions imposed on the EPL and the requirements of the Clean Air Regulation. |
| | *It is imperative that as the power station seeks modifications to upgrade the turbines to the best-available technology, that the pollution controls which* | Air emissions from Bayswater currently comply with the emission limits prescribed by the EPA in the EPL and the Clean Air Regulation. No changes to air emissions are proposed as part of the Project and |

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| | *can protect the health of NSW residents are also upgraded to best-available technology.* | additional emission controls are not required in order to ensure continued compliance with the applicable emissions limits. |
| | *Bayswater is the largest single source of $SO_2$, $NO_x$ and PM2.5 pollution in the Hunter Valley. The EIS acknowledges that current air pollution limits in the neighbouring community are regularly exceeded. Indeed, it shows that the current annual PM2.5 standard of 8 ug/$m^3$ has been breached every year since recording began in Muswellbrook.* | The EIS acknowledges that, while the largest single source contributor for fine particle (PM2.5) sources in the Upper Hunter are wood heaters, coal fired power stations also contribute to these source emissions, both as direct emissions and secondary sulphates and nitrates.<br>The EIS contained monitoring results and highlighted any exceedances of the annual criteria while noting that these exceedances of ambient air quality criteria reflect contributions from all sources in the region, including other industries and natural sources. |
| | *Levels of $SO_2$, a respiratory irritant and precursor to PM2.5, are also unhealthy in the neighbouring community. Since 2005, the World Health Organisation (WHO) standard for ambient $SO_2$ has been set at 0.7 pphm (24 hr average). EIS figure 8.4 reveals that this health standard is breached dozens of days each year in Muswellbrook and Singleton. NCC is deeply concerned that the EIS attempts to characterise these unsafe levels of $SO_2$ as "low" when they actually breach WHO guidelines.* | In NSW the EPA adopt $SO_2$ ambient air quality objectives based on National Environmental Protection Council (NEPC) standards which are different to the WHO standards. For example, the NSW EPA (NEPC) 24-hour objective is 8 ppm, and the EIS confirms there has been no exceedance of this objective in the past 5 years. |
| | *The health impacts of the pollution from Bayswater are a burden borne by the residents of NSW. The EIS makes no attempt to quantify these health impacts, and this should be amended.* | The EIS was prepared to address the requirements of the EARs for the Project, including the requirements of the EPA, and was directed at assessing any change in air emissions impact as a result of the Project.<br>As detailed in the EIS, the additional 100 MW of generating capacity that will result from the Project will result from efficiency gains only. In fact, a marginal decrease in total coal consumed and total emissions is predicted as a result of the Project under current assumptions of future energy generation scenarios. The more efficient generation of electricity resulting from the Project means that environmental performance would improve on a per megawatt hour of energy produced basis. |
| | *It is imperative that as the power station seeks modifications to upgrade the turbines to the best-* | The Project is upgrading the turbines with consideration of best available turbine technology and will result in improved efficiency and a lower |

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| | *available technology, the pollution controls which protect the health of NSW residents are also upgraded.* | greenhouse gas intensity when compared with existing turbines. The turbines are not a source of air pollution and the Project will not increase air emissions. |
| **Nature Conservation Council – submission 2** | *Upgrade triggers POEO group 6 classification and requires improved NOx controls*<br><br>*Clause 33 (1) of the POEO regulation stipulates that following certain alterations to units, they will be considered as group 6 emissions units, and therefore be required to meet more stringent emissions standards.*<br><br>*NCC suggests that the increase of the capacity of each generating unit by 25 MW will lead to increased air emissions, so clause 33 (1) is triggered and the consent authority should regard upgraded Bayswater units as "group 6". Therefore require modern pollution controls such as selective catalytic reduction are required, that will allow Bayswater to meet group 6 requirements.*<br><br>*In the EIS, the proponent claims that the upgrade, air emissions will remain unchanged. However we contend that this is due to (1) incorrect and untested coal throughput assumptions, and (2) unrealistic baselines.* | The Project will not result in a change to the air emissions grouping which applies to Bayswater under the Clean Air Regulation.<br><br>In particular, clause 33(1) of the Clean Air Regulation does not apply as the Project does not require either a modification of a development consent under section 96(2) of the EP&A Act or a variation to the EPL. |
| | *Likely increase in energy generation, capacity factor and air emissions*<br><br>*Although the EIS finds that Bayswater coal consumption and therefore air emissions will remain flat, or slightly decline, we note that this is a direct result of assumptions made by the proponent, rather than a reliable forecast that includes the dynamics of the energy market.*<br><br>*Table 7.6 in section 7.2.4.1 identifies operational input data used to calculate greenhouse gas emissions. In this section, the proponent states that "within the model it has been assumed that there will be no other change to* | As raised by NCC, there are numerous potential future market scenarios under which Bayswater will be required to operate. In the absence of certainty, AGL Macquarie has made assumptions based on its current understanding of the wholesale energy market and the future operating scenarios within its control.<br><br>As outlined in the main body of this letter, AGL Macquarie agrees that Bayswater is currently the lowest marginal-cost coal generator in NSW but it already currently competes with renewable generation, which is widely acknowledged to by the lowest marginal cost generators. Such competition would continue either with or without the Project and any increased capacity factor resulting from the Project would only displace less efficient coal-generating assets, resulting in a net positive air emissions benefit. |

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| | *the capacity factor" - i.e. the capacity factor is assumed to be 69% in both the upgrade and do nothing scenarios.*<br><br>*Given that under the upgrade, Bayswater will be operating with a lower cost per MWh produced, we suggest that the default economic scenario should expect an increase in dispatch from Bayswater, i.e. the plant will run at a higher capacity factor. That is, despite the approximately 4% efficiency improvement, market forces would tend to incentivise Bayswater owners to burn more coal and produce more electricity and hence air emissions than in the do nothing scenario.*<br><br>*The proponent appears to recognise this possibility in Table 7.6, however they claim that it will be offset by increased penetration of renewable energy generation resulting in reducing demand for energy generation at Bayswater. This is flawed because it fails to consider that three important points. Firstly, other coal fired power stations will close in the interim. AEMO expects Liddell, Eraring and possibly Vales Point to close in the meantime. Secondly, Bayswater is competing more with other coal power stations - both in NSW and imported coal power from Queensland and Victoria - than renewable energy. Recent generation data (Department of the Environment and Energy, Australian Energy Statistics, Table O, April 2018) shows from that coal accounted for 81% of NSW generation in 2017, while wind and solar accounted for a total 6%. NSW also imported significant quantities of mostly coal generation from Qld in this period. Thirdly, even if renewable energy does reduce demand for Bayswater to produce power, as the proponents claim, this would also happen in the "do-nothing" scenario. It is plain that the comparison in EIS Table 7.7 is flawed on this third point - either the capacity factor in the "upgraded" case should increase due to market effects, or the capacity factor in the "current turbines" case should decrease due to a claimed increase in renewable energy penetration. Table 7.7 needs to be revised.* | At a local level, and as stated in the EIS, "Project completion coincides with, and is designed to help replace, the announced Liddell retirement in 2022. With a marginal decrease in total coal consumed and total emissions is predicted as a result of the Project under current assumptions of future energy generation scenarios, and with Liddell emissions reducing to zero, it is estimated that that Upper Hunter airshed power station particulate emissions will reduce by 30-50 per cent, and NOx and SO2 by approximately 30 per cent. This will result in significant overall net improvements in the Upper Hunter ambient air quality". It is noted that the Project responds to requests from the Commonwealth Government that AGL Macquarie needs to demonstrate how Liddell's capacity may be replaced in order to demonstrate why Liddell should be allowing to close. Should increase demand for energy from Bayswater result in an increased capacity factor then this would apply to a similar extent even in the absence of the Project.<br><br>AGL Macquarie confirms that coal consumption, air and noise emissions, water consumption and ash generation will not increase as a result of the Project and will continue to vary as the operation of Bayswater responds to market demand. The Project will enable this continued variation in the overall operating level of Bayswater to occur at a more efficient level than is possible in absence of the Project. |

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| | *Bayswater is the lowest marginal-cost coal generator in NSW, and the proposed project will further this advantage. Failing further information in the form of an independent assessment of the likely market outcomes of Bayswater reducing its cost of production due to energy efficiency gains, the default assumption should be that this upgrade will result in an increased capacity factor, and therefore air emissions for Bayswater.* | |
| | *Unrealistic baselines*<br><br>*The proponent admits that the base case used in Table 7.7 is not realistic:*<br><br>*"The 'do nothing' scenario is theoretical because the turbines need to be replaced due to their age..." EIS page 46.*<br><br>*That is, without the upgrade works, the turbines would need to be overhauled, or the plant retired sooner.*<br><br>*The EIS results are flawed because the proponents use this unrealistic baseline to claim that the upgrade will reduce, or at least cause no increase in emissions.*<br><br>*NCC suggests that other scenarios, such as "efficiency 660" (EIS section 1.7.4) be used as an appropriate baseline for determining whether the proponent's upgrade results in an emissions increase. The "efficiency 660" scenario appears to be the lowest cost scenario (other than closing the plant) and the proponent notes that it results in even greater efficiency gains than the preferred option - capacity 685.* | The theoretical "do nothing" scenario is considered a reasonable base case for comparison purposes as it represents one scenario in the absence of the Project. The EIS clearly states that AGL Macquarie considers that the turbines need to be replaced because of their age, and the do nothing scenario is "not considered a viable option as it risks almost certain failure of some turbine components prior to 2035, resulting in decreased reliability, lost generation, lost capacity, and significant repair costs". However, it remains a theoretical possible based on major overhaul of all turbines prior to 2020 and a subsequent major overhaul in a further 12 years in accordance with the experience of the wider NSW Power Stations experience with continued degradation and partial recovery post overhaul out to 2035.<br><br>AGL Macquarie could also replace the turbines components on a like for like basis, as described under the "base case 660" during scheduled outages but this would result in the inefficient energy production and not contribute to addressing the identified generation shortfall after the closure of Liddell as outlined in the EIS.<br><br>The "efficiency 660" option was similarly not selected as the preferred option as, while it would result in reduced coal consumption, it would also not contribute to addressing the objective of the Project to help offset the identified generation shortfall resulting from the closure of Liddell. |
| | *According to the POEO regulation Part 5, an "emissions unit" is defined as follows:*<br><br>*Emission unit means an item of plant that forms part of, or is attached to, some larger plant, being an item of plant that emits, treats or processes air impurities or* | As stated by NCC an emissions unit is defined as "an item of plant that forms part of, or is attached to, some larger plant, being an item of plant that emits, treats or processes air impurities or controls the discharge of air impurities into the atmosphere". |

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| | *controls the discharge of air impurities into the atmosphere.*<br><br>*As the EIS sets out in EIS Table 7.6, and we expand on above, the change in capacity and efficiency of the turbines is likely to result in the generators running more often and generating more electricity. It is therefore clear that the four turbines form an inseparable part of the four emissions units at Bayswater plant, as changes to the turbines will change the rate of discharge of air impurities to the atmosphere.* | The turbines are not an emissions unit as they do not emit, treat, process air impurities or control their discharge. |
| **Environmental Justice Australia – submission 1 and 2** | *Bayswater's sulphur dioxide (SO2) are excessively higher than any US power station. Bayswater power station emits more SO2 pollution than any single coal-fired power station in the US and twice as much as the largest single emitter of SO2 pollution from a coal-fired power station.* | Air emissions from Bayswater comply with the emission limits prescribed by the EPA in the EPL and the Clean Air Regulation. |
| | *The downtime required to install new turbines as proposed by the project is the ideal time for the consent authority to require the power station to install best available technologies for SO2 and oxides of nitrogen (NOx) reduction. These pollution controls are standard installations in power stations throughout the European Union, the United States, China, and India.* | No changes to air emissions are proposed as part of the Project and additional emission controls are not required in order to ensure continued compliance with applicable emissions limits. |
| | *Since the NSW Office of Environment and Heritage expanded its Hunter Valley air pollution monitoring network in 2012, annual average concentrations of fine particle pollution (PM2.5) have exceeded the national standard of 8 micrograms per cubic metre. The annual average PM2.5 concentrations during 2011-2017 were 9.1, 10, 9.5, 9.7, 8.7, 8.4 and 9.4 micrograms per cubic metre.* | The EIS acknowledges that, while the largest single source contributor for fine particle (PM2.5) sources in the Upper Hunter are wood heaters, coal fired power stations also contribute to these source emissions, both as direct emissions and secondary sulphates and nitrates.<br><br>The EIS contained monitoring results and highlighted any exceedances of the annual criteria while noting that these exceedances of ambient air quality criteria reflect contributions from all sources in the region, including other industries and natural sources. |

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| | *Once completed, the project may prolong the operating life of Bayswater power station. This will also prolong the length of time that communities in the Hunter region, and throughout Sydney, will be exposed to the SO2 and NOx pollution from the power station. It is imperative, then, that best available technologies are installed at Bayswater to significantly reduce its SO2 and NOx emissions.* | The Project does not seek or propose any extension to the operational life of Bayswater. |
| | *The NSW EPA has required both Vales Point and Liddell power stations to prepare Pollution Reduction Program (PRP) reports to identify and assess pollution reduction technologies for NOx emission reductions. In their reports, both power stations identify Selective Catalytic Reduction (SCR) as the most effective control to reduce NOx. We note that Bayswater already has low-NOx burners installed at the power station. However as both NOx reduction reports for Vales Point and Liddell demonstrate, SCR removes substantially more NOx which reduces community and environmental exposure to this toxin.*<br><br>*The best available pollution control for SO2 emissions reductions from coal-fired power stations is flue gas desulphurisation (FGD). Internationally, FGD is considered the best technology to control sulfur dioxide emissions from coal combustion. FGD can remove up to 99% of SO2 emissions, substantially reducing community and environmental exposure to this pollutant and reducing the creation of toxic secondary sulfates.* | No changes to air emissions are proposed as part of the Project and additional emission controls are not required in order to ensure continued compliance with applicable emissions limits.<br><br>AGL Macquarie has complied with the pollution reduction program relating to NOx imposed on the Liddell EPL.<br><br>Separately to the Project, and the current pollution reduction programs under the EPLs, the EPA, is undertaking a review of the performance, monitoring and reporting from all 5 coal fired power stations operating in NSW as part of its regular 5 yearly review of the EPLs. |
| **Hunter Communities Network** | *The management of high levels of air pollution from coal mining and coal-fired power generation in the Hunter Region is very poor.* | Air emissions from Bayswater currently comply with the emission limits prescribed by the EPA in the EPL and the Clean Air Regulation. |
| | *HCN objects to the proposed upgrade of Bayswater Power Station Efficiency Upgrade as exhibited because it fails to include pollution controls.* | No changes to air emissions are proposed as part of the Project and additional emission controls are not required in order to ensure continued compliance with applicable emissions limits. |

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| | *Bayswater is the single largest emitter of sulphur dioxide (SO2), nitrous oxides (NOx) and fine particle emissions (PM2.5) in the Hunter Region.*<br><br>*Best practice technologies – either flue gas desulfurisation or selective catalytic reduction - can reduce toxic emissions of NOx and SO2 by 90% or more. Both of these technologies are obligatory in other countries such as the USA, the EU, China and India.*<br><br>*It is time that the health of communities in the Hunter Region has the same level of protection from power station pollution as people in other countries.*<br><br>*If AGL want to upgrade the Bayswater Power Station, it's time that they were required to upgrade the pollution controls.* | The Project is upgrading the turbines with consideration of best available turbine technology and will result in improved efficiency and a lower greenhouse gas intensity when compared with existing turbines. The turbines are not a source of air pollution and the Project will not increase air emissions. |
| | *Community members in the Hunter Region are very disappointed by the poor community consultation held on this project prior to and during the exhibition period. HCN received no notification of this project.* | Refer to the information provided in the body of this letter regarding the community consultation carried out in relation to the Project. |
| | *We urge the Department of Planning and Environment and the Environment Protection Authority to require AGL to install either flue gas desulfurisation or selective catalytic reduction technology to limit air pollution as a condition, if this project is approved.* | Refer to the information provided in relation to issue 1 above. |
| **Hunter Community Environment Centre** | *The HCEC objects to the development on the grounds that AGL should be required to fit best-practice pollution control measures for SO2, NOx, atmospheric mercury, particulate emissions and coal combustion residue management.* | No changes to air emissions are proposed as part of the Project and additional emission controls are not required in order to ensure continued compliance with applicable emissions limits.<br><br>The Project is upgrading the turbines with consideration of best available turbine technology and will result in improved efficiency and a lower greenhouse gas intensity when compared with existing turbines. The turbines are not a source of air pollution and the Project will not increase air emissions. |

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| | *The Planning Assessment Commission should hold a public meeting to ensure that residents of the Hunter Valley, interested and affected stakeholders can determine the impacts of this project and provide input to improve air and water quality mitigation measures of the plant.* | Refer to the information provided in the body of this letter regarding the community consultation carried out in relation to the Project. |
| **Hunter Environment Lobby Inc** | *We note that there is to be an upgrade of turbine efficiency at Bayswater and ask that the generator regulator ensure that there is pollution control for the major sources of pollutants, i.e.; sulphur dioxide SO2; nitrous oxides NO2 and fine particle emissions, PM2.5.*<br><br>*We note that Bayswater is the single largest emitter of these pollutants in the Hunter region – the NSW Dept of Health has in the past said that Hunter communities are at their limit of pollution, already community members are dying years earlier than average here in the Hunter.*<br><br>*Indeed health guidelines are regularly exceeded here in the Hunter – HEL has continued to say, this must stop – knowledge is responsibility – the NSW Dept of Health has warned many times that increasing emissions will increase early deaths.*<br><br>*HEL is surprised that there is not a requirement to install world's best practice pollution control mechanisms – we must improve the Hunter's air quality – not deliberately make it worse?* | No changes to air emissions are proposed as part of the Project and additional emission controls are not required in order to ensure continued compliance with applicable emissions limits.<br><br>The Project is upgrading the turbines with consideration of best available turbine technology and will result in improved efficiency and a lower greenhouse gas intensity when compared with existing turbines. The turbines are not a source of air pollution and the Project will not increase air emissions. |
| | *We find it reprehensible that community groups were not made aware that this issue was on exhibition – so much for transparency?* | Refer to the information provided in the body of this letter regarding the community consultation carried out in relation to the Project. |

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| **Environment Council of Central Queensland** | *The Environment Council of Central Queensland (ECoCeQ) advocates for the protection of our natural environment including air and climate, waterways and oceans, land and habitat, and biodiversity.*<br><br>*Our organisation objects to the proposal by AGL to spend $200 million to upgrade the facility at Bayswater. Carbon emissions from the plant will further contribute to climate change and the proposal is not consistent with Australia's commitment at the Paris agreement.*<br><br>*AGL must be required to fit best practice controls for pollutants such as Sulphur dioxide and nitrogen oxides. Bayswater is the single largest contributor to these pollutants in the Hunter Valley, and NSW health has acknowledged the significant health risks associated with*<br>*these toxic inhalants, including preterm births. Best practice technologies for limiting pollution are obligatory in India, (imagine that!) European Union, USA, and China. Retro-fitting best practice technologies to existing infrastructure would be best use of the $200 million that AGL has available, and the NSW Planning Department should require this.* | No changes to air emissions are proposed as part of the Project and additional emission controls are not required in order to ensure continued compliance with applicable emissions limits.<br><br>The Project is upgrading the turbines with consideration of best available turbine technology and will result in improved efficiency and a lower greenhouse gas intensity when compared with existing turbines. The turbines are not a source of air pollution and the Project will not increase air emissions. |
| | *The NSW Planning commission must arrange a public hearing to enable residents and other stakeholders to hear of the impacts of the proposal and have opportunity to provide input.* | Refer to the information provided in the body of this letter regarding the community consultation carried out in relation to the Project. |

**Table 3 – Public submissions**

Note: The submissions received from members of the public have been grouped based on the key themes raised in the submissions.

| Submission reference number | Submission details | AGL Macquarie Response |
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| **276345; 276325; 276329; 276337; 276305; 276331; 276323; 276315; 276317; 276309; 276349; 276351; 276341; 276343; 276339; 276321; 276311; 276347; 276389; 276379; 276365; 276373; 276357; 276355; 276385; 276383; 276387; 276369; 276371; 276363; 276393; 276361; 276391; 276375; 276381; 276395; 276397; 276359; 276377; 280771;280787.** | Objects the Project on the basis of existing emissions from Bayswater and lack of additional air quality controls particularly for SO2, NOX or PM2.5. | No changes to air emissions are proposed as part of the Project and additional emission controls are not required in order to ensure continued compliance with applicable emissions limits. The Project is upgrading the turbines with consideration of best available turbine technology and will result in improved efficiency and a lower greenhouse gas intensity when compared with existing turbines. The turbines are not a source of air pollution and the Project will not increase air emissions. |
| **276345; 276337; 276331; 276323; 276315; 276317; 276309; 276349; 276351; 276341; 276343; 276339; 276321; 276311; 276347; 276389; 276365; 276373; 276355; 276385; 276383; 276387; 276371; 276363; 276393; 276361; 276391; 276375; 276381; 276397; 280771; 280787.** | Level of community consultation. | Refer to the information provided in the body of this letter regarding the community consultation carried out in relation to the Project. |
| **276307; 276359; 276367** | Submission objects and raises need to transition away from polluting energy generation to renewable generation. | AGL has a clearly articulated plan to achieve decarbonisation of its generation assets by 2050. The announced retirements of Liddell in 2022 and of Bayswater in 2035 form a key part of this |

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| | | plan which is aligned with the NSW Climate Change Policy Framework. The Project is a key component of AGL's interim plans to improve the greenhouse gas efficiency of existing operations and to manage the transition to decarbonisation, while responding to the requirements of the market in relation to reliable and affordable electricity. |
| **276313** | Objects. Reasons unspecified. | In the absence of further detail AGL Macquarie is unable to respond. |
| **276377; 276367** | Objection refers to life extension | The Project does not seek or propose any extension to the operational life of Bayswater. |