



Submission

in response to

Delta Electricity's application for a licence variation (1605000) to attach a condition 'exempting' Vales Point power station from Group 5 emission limits

prepared by

**Environmental Justice Australia &
Australian Conservation Foundation**

10 November 2021

About Environmental Justice Australia

Environmental Justice Australia (formerly the Environment Defenders Office, Victoria) is a not-for-profit public interest legal practice. We are independent of government and corporate funding. Our legal team combines technical expertise and a practical understanding of the legal system to protect our environment.

We act as advisers and legal representatives to community-based environment groups, regional and state environmental organisations, and larger environmental NGOs, representing them in court when needed. We also provide strategic and legal support to their campaigns to address climate change, protect nature and defend the rights of communities to a healthy environment.

We also pursue new and innovative solutions to fill the gaps and fix the failures in our legal system to clear a path for a more just and sustainable world.

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About Australian Conversation Foundation

ACF is Australia's national environment organisation. We are 700,000 people who speak out for the air we breathe, the water we drink, and the places and wildlife we love. We are proudly independent, non-partisan and funded by donations from our community.

EXECUTIVE SUMMARY

1. Sunset Power International (trading as Delta Electricity) (**Delta**) has made its third application to be 'exempted' from complying with emissions limits that were first introduced in 2005 and scheduled to come into effect in 2012. Environmental Justice Australia (**EJA**) and Australian Conservation Foundation (**ACF**) welcome the opportunity to provide a submission to the Environment Protection Agency (**EPA**) in relation to this application. Attachment A to this submission is an export report prepared by Mr Bruce Buckheit.
2. Australia's current air pollution standards are significantly weaker than the WHO guidelines on air quality. The research and understanding of the concentrations of pollutants and their health impact has increased dramatically since 2005.¹ Air pollution is harmful to health and there is no safe level of air pollution.
3. If the EPA grants Delta's application it will have a significant adverse impact on air quality and amenity for the reasons set out below (which are addressed in detail in the submissions):
 - a. There are feasible pollution controls that Delta can install to comply with Group 5 limits and which its own report predicts would result in reductions of NO_x emissions of up to 50-85%.²
 - b. NO_x emissions have repeatedly been shown to be associated with respiratory effects (in particular asthma), cardiovascular effects, total mortality, birth outcomes and cancer.
 - c. NO_x emissions also form secondary fine particle pollution. There is substantial evidence that exposure to PM_{2.5} emissions leads to increased mortality and morbidity and that there is no known level at which there is no impact on health.
 - d. Australia and NSW is behind the world in regulating NO_x emissions and PM_{2.5} and in setting air quality standards.
4. Refusing to grant the variation sought by Delta is consistent with the matters which the EPA is required to consider when determining this application (set out at paragraph 38 below).
5. EJA and ACF recommend that:
 - a. The EPA does not grant the variation sought by Delta and requires Delta to implement pollution control measures as quickly as possible to enable Vales Point power station to operate in compliance with the Group 5 limits.

¹ World Health Organisation. (2021). WHO global air quality guidelines: Particulate matter (PM2.5 and PM10), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide. Geneva. (**WHO air quality guidelines**) Pages xiv and 11. Access via: <https://apps.who.int/iris/bitstream/handle/10665/345329/9789240034228-eng.pdf?sequence=1&isAllowed=y>, page 4.

² Jacobs Group (Australia Pty Limited). Vales Point – Evaluation of Potential Nox Emissions Controls. 6 October 2021. (**2021 Jacobs Report**).

BACKGROUND

6. The *Protection of the Environment Operations (Clean Air) Regulation 2021 (the Clean Air Regulation)* and its predecessors provide that scheduled plants belong to one of 6 Groups, depending on the year in which the plant commenced operating. The Clean Air Regulation includes emission standards for a range of pollutants that apply to each Group and these standards tend to become stricter in moving from Group 1 through to Group 6.
7. The Clean Air Regulation and its predecessors have provided since 2005³ that as at 1 January 2012, Group 2 power stations would phase and be taken to be Group 5 power stations and accordingly have to comply with the stricter Group 5 emissions limits.
8. The Clean Air Regulation allow an owner of a Group 2 power station to apply to the EPA for its licence to be varied by attaching a condition which has the effect of exempting the plant from phasing to Group 5 emission limits. Vales Point power station (**Vales Point**) has twice applied for and received this variation, in 2011 and in 2015.
9. Relevantly, but for a condition on its licence which states otherwise Vales Point would have been taken to be a Group 5 power station and have had to comply with Group 5 emission limits since 1 January 2021.
10. On 23 December 2020, Delta made the third application for Vales Point's licence to be varied to attach a condition with the effect that it does not have to comply with the Group 5 NO_x limits at Boilers 5 and 6.

Legislative framework for determining Delta's application

11. Clause 38 of the Clean Air Regulation requires the EPA to consider the impact granting that application will have on local and regional air quality and amenity having regards to specified matters including the principles of ecologically sustainable development set out in section 6 (2) of the *Protection of the Environment Administration Act 1991*.
12. Section 45 of the POEO Act contains a further list of mandatory considerations that the EPA must consider in exercising their functions under Chapter 3 of the Act. As the application is made under section 58 of the Act, the EPA is required to consider the section 45 matters in determining the application. Amongst the matters set out in s 45 are the objectives of the EPA set out in s 6(1) of *Protection of Environment Administration Act 1991* and the requirement to consider any public submission in relation to the licence application received by the EPA.

³ *Protection of the Environment Operations (Clean Air) Amendment (Industrial and Commercial Activities and Plant) Regulation 2005*.

SUBMISSIONS

Granting the application will have a significant adverse impact on air quality and amenity

13. Air pollution is harmful to health and there is no safe level of air pollution. Granting the application will have a significant adverse impact on air quality and amenity for the reasons set out in detail below.

Meeting the Group 5 limits is feasible and could reduce NO_x emissions by up to 85%

14. Under s 45 of the POEO Act in making this decision the EPA is required to consider the practical measures that could be taken to prevent, control, abate or mitigate the pollution caused or likely to be caused and to protect the environment from harm.
15. Further, under cl 38 of the Clean Air Regulation the EPA must consider the impact on local and regional air quality and amenity of a decision to grant the application, having regard to the principles of ecologically sustainable development. This includes the principle of polluter pays, “that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement”.⁴
16. The 2021 Jacobs Report finds that of the NO_x control mechanisms considered in its evaluation “five appear technically feasible to achieve the desired limits of at least 800 mg/Nm³ and two appear potentially able to achieve 500 mg/Nm³ or less”. Of those five mechanisms, two are stated not able to guarantee 100% compliance with the Group 5 limit.⁵ Table 9-3 shows for the remaining three mechanisms the effectiveness in reducing NO_x emissions is as follows:
- e. Low NO_x burners & OFA – up to 50% reduction
 - f. Selective non-catalytic reduction (SNCR) – 50% reduction
 - g. Selective Catalytic reduction (SCR) - 85% reduction
17. The EPA’s letter dated 10 May 2021 which provided further detail regarding its request for further information requested at paragraph 5 (emphasis added):
- c) Provide a detailed feasibility evaluation of additional NO_x and SO_x emission control, or mitigation measures that are not currently used at the premises. For the purpose of this requirement, **feasibility is taken to be what is technically possible to be implemented at the premises from an engineering perspective.**
 - d) Based on the evaluation in item 5c (above), identify feasible measures that could be implemented to reduce NO_x and SO_x emissions at the premises.
 - e) For each mitigation measure evaluated in item 5c (above) that is determined not to be feasible for implementation, detailed justification with supporting

⁴ Protection of the Environment Administration Act 1991, s 6(2).

⁵ See Table 9-1, 2021 Jacobs Report.

evidence on why these measures are not feasible for implementation must be provided.

18. The EPA's letter dated 10 May 2021 then requested at paragraph 6 h):

h) Dispersion modelling scenarios, including but not limited to:

...

iv) emissions representative of feasible mitigation measures identified in item 5d (above)

19. Contrary to the EPA's requests for information:

- a. The 2021 Jacobs Report finds that the pollution control mechanisms at 16 above are "not considered feasible primarily due to the total estimated costs for retrofitting far outweighing the saving in LBL (Load Base Licensing) fees that can be achieved."⁶
- b. The Katestone report explains that its modelling scenarios do not include emissions representative of feasible mitigation measures (as per request at paragraph 6 h)) due to the Jacob's Report finding that only two measures were feasible "when considering both the technical and cost implications" and that "[n]one of the feasible NO_x reduction measures would guarantee compliance with the Group 5 standard of concentration of 800mg/Nm³ for 100% of the time."⁷

20. In considering Delta's application, the feasibility of compliance with the regulated emissions limits should not be primarily determined by whether reductions in LBL fees offset the required expenditure.

- a. The EPA expressly requested the evaluation be done on the basis of what is technically possible from an engineering perspective.
- b. It is acknowledged that the LBL fees alone are not a strong enough financial motivator to install NO_x pollution controls and would need to be significantly increased to reflect the value of the "avoided damage cost" (the benefit to the community) in reducing NO_x emissions.⁸
- c. The EPA is required to consider practical measures to prevent pollution alongside the principles of ecologically sustainable development including that the polluter pays.

21. Broadening the assessment of feasibility beyond that required by the EPA has unnecessarily excluded the assessment of mitigation measure in the dispersion modelling. Despite this obfuscation, it is clear that there are practical measures that could be taken to prevent,

⁶ Page 66.

⁷ Katestone Environmental Pty Ltd. Vales Point Power Station Air Quality Assessment for Group 5 Exemption Extension. October 2021 (**Katestone Report**), page 16.

⁸ See Acil Allen Consulting, Report to NSW Environmental Protection Authority: Load-based licence fee comparison. September 2014. Appendix F pages 64-65; see also Ancev, Tiho & Betz, Regina 'Load-Based Licensing: Getting the rates right', January 2006, available <http://www.ceem.unsw.edu.au/sites/default/files/uploads/publications/ancevbetz-1.pdf>

control, abate or mitigation pollution and that these measures could reduce NO_x emissions by up to 50- 85%.

NO_x emissions are damaging to health

22. There is sufficient evidence available to the EPA to demonstrate that the NO_x emissions adversely impact air quality and amenity and consequently health. Importantly for the purposes of Delta's application, generation of electrical power from coal is the highest source of NO_x in the GMR, by significant amounts compared with the next highest sources.⁹
23. By way of brief summary, we note the following evidence regarding the health impact of NO_x emissions:
- a. An integrated health assessment for oxides of nitrogen prepared in 2016 by the United States of America Environment Protection Agency following extensive review of the evidence made following determinations:¹⁰
 - i. There is a causal relationship between short-term NO₂ exposure and respiratory effects in particular that it can trigger asthma attacks.
 - ii. It is likely there is a causal relationship between long-term NO₂ exposure and respiratory effects such as asthma development.
 - iii. The evidence is suggestive of a causal relationship between NO₂ exposure and cardiovascular effects, total mortality, birth outcomes and cancer.
 - iv. Importantly that it **"is not clear whether there is an exposure concentration below which effects do not occur"** (emphasis added) as "[n]o specific NO₂ averaging time, duration, or age of exposure is more strongly associated with asthma attacks or asthma development."
 - b. Since the integrated health assessment above further reviews have supported the role of long-term exposure to NO₂ in causing cardiovascular mortality and provided more support to the role in increasing all non-accidental mortality.¹¹
 - c. The relationship between NO₂ exposure and asthma is significant given Australia already has one of the world's highest prevalence rates of asthma and high asthma death rates.¹² Adverse effects of on current asthma in children occurs even at low

⁹ This is based on the most recent Air Emissions Inventory: <https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/air/19p1917-air-emissions-inventory-2013.pdf?la=en&hash=9217ADF2C8D5647147FF00F447258319D00BB75D/>

¹⁰ The United States of America Environment Protection Authority, Integrated Science Assessment for Oxides of Nitrogen – Health Criteria, January 2016, pages 83-89 (available at https://ofmpub.epa.gov/eims/eimscomm.getfile?p_download_id=526855).

¹¹ WHO air quality guidelines page 47.

¹² AIHW, 2011. Australian Centre for Asthma Monitoring, Asthma in Australia 2011. AIHW Series No. 4 Cat. No. ACM 22. Canberra, Australian Institute of Health and Welfare. <https://www.aihw.gov.au/getmedia/8d7e130c-876f-41e3-b581-6ba62399fb24/11774.pdf.aspx?inline=true>

levels of concentration.¹³ A national cross-sectional study conducted in 2018 in Australia using air quality monitoring data found increased risk of asthma and reduced lung function in children aged 7 – 11 years at a mean NO_x exposure of 18 ug/m³.¹⁴

- d. In 2021, the Australian and NZ Journal of Public Health has published research which demonstrated that a 25% reduction in exposure to NO₂, from current values across NSW would lead to between 2,597 and 12,286 fewer children developing asthma.¹⁵

Secondary emissions from NO_x (PM_{2.5} and O₃)

24. In addition to the direct health impacts of NO_x emissions, NO_x also forms secondary fine particle pollution. There is strong evidence demonstrating the relationship between exposure to small particulates and increased mortality and morbidity and health impacts occur even at very low concentrations and no level has been identified at which no damage to health occurs.¹⁶

25. The health impacts of PM_{2.5} include:

- a. Strong evidence demonstrating a causal relationships between PM_{2.5} exposure and “all-cause mortality, as well as acute lower respiratory infections, chronic obstructive pulmonary disease (COPD), ischaemic heart disease (IHD), lung cancer and stroke”.¹⁷
- b. Increasing evidence suggests causal relationships for type II diabetes and as well as impacting neonatal mortality resulting from low birth weight and short gestation.¹⁸

26. It has been estimated that power stations account for 10.5% of anthropogenic PM_{2.5} exposure in the Greater Metropolitan Region and that the removal of power station NO₂ emissions would produce 38,000 life-years which is valued at \$1.8 billion.¹⁹ This study also found that power stations are responsible for 0.1% of mortality (equivalent to 620 years of life lost) attributable to long-term anthropogenic PM exposure.²⁰

27. Ozone (O₃) is not usually directly emitted rather it forms when NO at ground level reacts with VOC. O₃ impacts the airways and lungs and studies have shown an association between long

¹³ Knibbs, Cortés de Waterman, Toelle, Guo, Denison, Jalaludin, Williams. (2018). The Australian Child Health and Air Pollution Study (ACHAPS): A national population based cross-sectional study of long-term exposure to outdoor air pollution, asthma, and lung function. *Environment International*, 120, 394-403; page 401.

¹⁴ Knibbs, Cortés de Waterman, Toelle, Guo, Denison, Jalaludin, Williams. (2018). The Australian Child Health and Air Pollution Study (ACHAPS): A national population based cross-sectional study of long-term exposure to outdoor air pollution, asthma, and lung function. *Environment International*, 120, 394-403; page 402.

¹⁵ Ewald, B., Knibbs., L & Marks, G. (2021) Opportunity to reduce paediatric asthma in New South Wales through nitrogen dioxide control. *Australian & NZ Journal of Public Health*, 45, 400-402.

¹⁶ World Health Organisation, (2021) Ambient (outdoor) air pollution fact sheet available at [https://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health)

¹⁷ WHO air quality guidelines, page 11.

¹⁸ WHO air quality guidelines, page 11.

¹⁹ This is noted to likely be an underestimate as the calculation does not include health benefits of reducing NO which are independent of PM_{2.5} reductions. Broome, p 6.

²⁰ Broome, R., Powell, J., Cope, M., & Morgan, G. (2020) The mortality effect of PM_{2.5} sources in the Greater Metropolitan Region of Sydney, Australia, *Environment International*, 137, page 6.

term O₃ concentrations and respiratory mortality and total mortality.²¹ The best method of reducing O₃ concentration is through reducing both NO_x and VOC emissions as reducing NO_x alone can result in increased O₃.²²

28. In addition to the research regarding the health impact of secondary emissions there is also research which demonstrates the extent to which PM_{2.5} from coal-fired power stations in NSW can travel an enormous geographical area affecting air quality not only in Sydney but also extending into Queensland and Victoria.²³ It is therefore noteworthy that Delta determined not to provide the modelling requested in relation to the ground level O₃, NO₂ and secondary particle impacts on the regional and inter-regional environment, including the Greater Metropolitan Region.²⁴

The Hunter Valley community and NSW are getting left behind

Air quality standards

29. Delta's application material states that air quality monitoring data shows that concentrations of NO₂ have been below the current air quality criteria²⁵ and that consequently NO_x control measures "are not warranted".²⁶

30. This overlooks that a number of Australian studies from the last decade have demonstrated statistically significant health impacts at concentrations well-below the national standards for NO₂ SO₂ and O₃.²⁷ This is reinforced by the World Health Organisation's updated and stronger air quality guidelines which state that "air pollution is now recognized as the single biggest environmental threat to human health".²⁸ Australia's current air pollution standards are significantly weaker than the WHO global air quality guidelines.

31. The WHO guidelines reflect the latest body of epidemiological research on the health risks of air pollution and state that the insight into concentrations of pollutants and their contribution to burden of disease has "increased dramatically" since 2005.²⁹ The WHO recognise that the "burden of disease resulting from air pollution also imposes a significant economic burden" and that exceedance of its air quality guidelines is "associated with important risks to public health".³⁰

²¹ WHO air quality guidelines, page 102.

²² Environmental Justice Australia, (2021) People's Clean Air Action Plan for NSW, page 25.

²³ Farrow, A., Anhäuser, A., & Myllyvirta, L. (2020) Lethal Power: How Burning Coal is Killing People In Australia pp. 18-19., available at: <https://www.greenpeace.org.au/wp/wpcontent/uploads/2020/08/GPAP-Lethal-Power-full-report.pdf>.

²⁴ Letter from Delta dated 8 October 2021, page 7.

²⁵ Letter from Delta dated 8 October 2021, page 4; Katestone Report, page 38.

²⁶ 2021 Jacobs Report, page 48.

²⁷ See Walter, C., & Smith M., et al. (2019) Health-based standards for Australian regulated thresholds of nitrogen dioxide, sulfur dioxide and ozone: Expert Position Statement 2019: <https://www.envirojustice.org.au/wp-content/uploads/2019/11/Expert-Position-Statement-PDF.pdf>, pp.6-7.

²⁸ WHO air quality guidelines, page xiv.

²⁹ WHO air quality guidelines, page 4.

³⁰ WHO air quality guidelines, pages xiv and xv.

Comparative emission limits

32. Vales Point's emission limits are significantly behind world standards. The US, EU, South Korea, China, Japan and other nations have required increasingly effective controls for PM, NO_x, SO₂, and mercury. Representative emissions limits for existing coal-fired power stations in those jurisdictions are all significantly lower than Vales Point current emission limits and below group 5.³¹
33. The EPA is required to consider the impact of granting the condition on air quality and amenity as well as the EPA's objective of "adopting the principle of reducing to harmless levels the discharge into the air...of substances likely to cause harm to the environment".³² The EPA's consideration must take into account and reflect the extensive evidence that is available which demonstrates that there is no safe level of pollution.

Response to Delta's key claims

34. Delta claims that complying "with the Group 5 NO_x limit for 100% of the time would provide no discernible impact on inter-regional, regional or local air quality and therefore would provide no discernible improvement to the environment or human health."³³
35. This claim appears to be made at in part by reference to a non-existent scenario where compliance with Group 5 limits would result in simply avoiding current exceedances. Delta's letter dated 8 October 2021 suggests that as Vales Point currently meets the Group 5 limits 98% of the time, that the impact of granting the condition is limited to the 2% of time when Vales Point exceeds the Group 5 limits.³⁴
- a. Delta's own reports do not demonstrate any pollution control mechanism that will result in simply avoiding the 2% of exceedances. The 2021 Jacobs Report shows that meeting the Group 5 limits means installing pollution control mechanisms which are predicted to result in reductions of NO_x emissions of up to 50-85%.
36. This claim also appears to rely on and/or reinforce the modelling that estimates that compliance with the Group 5 limits would result in reductions in concentrations of between 1.4% and 5.4% (and no more than a 0.5-2.1% reduction in annual emissions of NO_x compared to 2020).³⁵
- a. This estimate is calculated by removing any concentrations that exceed the Group 5 limit and replacing the value with the Group 5 limit.³⁶ There is no mechanism or pollution control proposed by Delta which would result in only preventing the exceedances of Group 5 limits with no other change to its NO_x emissions.

³¹ Environmental Justice Australia, (2021) People's Clean Air Action Plan for NSW, Table 4.

³² *Protection of the Environment Administration Act 1991*, s 6(1).

³³ Letter from Delta dated 8 October 2021, page 4.

³⁴ Letter from Delta dated 8 October 2021, page 3.

³⁵ Katestone Report, pages 16 and 144.

³⁶ Katestone Report, page 16.

- b. Despite being requested to do so,³⁷ Delta has not provided any modelling on the emissions representative of installing of any of the potential pollution controls.

37. Delta also claims that allowing the regulated 'phasing' to Group 5 to take place (if the EPA refused the variation) would result in an inequitable outcome of setting different limits based on the age of the power station.³⁸ This fundamentally misunderstands that is how the Group system operates: different emissions limits are set based on the age of the power station and the provision was made for phasing older power stations to newer emission limits.

RELEVANT CONSIDERATIONS FOR THE EPA

38. For the reasons set out above, refusing the application for a variation to attach the condition sought by Delta would be consistent with the EPA's requirement to consider the following:

- a. The impact on local and regional air quality and amenity of a decision to grant the application, having regard to the principles of ecologically sustainable development, notably:³⁹
 - i. precautionary principle
 - ii. polluter pays principle
- b. The matters set out in s 45 of the POEO Act including the pollution caused or likely to be caused by the carrying out of the activity or work concerned and the likely impact of that pollution on the environment and
 - i. the practical measures that could be taken—
 - 1. to prevent, control, abate or mitigate that pollution, and
 - 2. to protect the environment from harm as a result of that pollution; and
 - ii. any public submission in relation to the licence application received by the appropriate regulatory authority under this Act,
- c. The objectives of the EPA⁴⁰ including to reduce the risks to human health and prevent the degradation of the environment, by means such as the following—
 - i. promoting pollution prevention,
 - ii. adopting the principle of reducing to harmless levels the discharge into the air, water or land of substances likely to cause harm to the environment,
 - iii. setting mandatory targets for environmental improvement,

³⁷ Letter from EPA dated 10 May 2021, paragraph 6 h).

³⁸ Letter from Delta dated 8 October 2021, page 3.

³⁹ Clause 38 of the Clean Air Regulation.

⁴⁰ Section 45(b) of the POEO Act requires consideration of the objectives of the EPA as relevant. The objectives are set out at s 6(1) of the *Protection of the Environment Administration Act 1991*.

- iv. promoting community involvement in decisions about environmental matters,

RECOMMENDATION

39. EJA and ACF recommend that:

- a. The EPA does not grant the variation sought by Delta and requires Delta to implement pollution control measures as quickly as possible to enable Vales Point power station to operate in compliance with the Group 5 limits.

Attachment A

10 November 2021

NSW Environment Protection Authority
PO Box 488G
NEWCASTLE NSW 2300
By email: RegOps.MetroRegulation@epa.nsw.gov.au

RE: VALES POINT EPL761 – LICENCE VARIATION APPLICATION FOR NOX EMISSION LIMITS

Dear Sir or Madam,

I have been asked by Environmental Justice Australia (EJA) to review the application of the Sunset Power International Pty Ltd, trading as Delta Electricity, (Delta) for a licence variation to attach a condition extending the current NOx emissions limit exemption that applies to Vales Point Power Station and to provide relevant comments within my expertise. The views expressed herein are my own and do not necessarily represent the views of EJA.

I have advanced degrees in physics and law and, for over 30 years, worked for the U.S. Government, serving as Senior Counsel in the U.S. DOJ's Environmental Enforcement Section and as Director of U.S. EPA's Air Enforcement Division. After leaving Federal service in 2004, I was appointed to the Virginia Air Pollution Control Board, which is responsible for policy and direction of clean air regulation in the Commonwealth of Virginia. During this period I was directly involved in the regulation of coal-fired power plants, including consideration and adoption of policy affecting all U.S. coal-fired power plants and specific requirements for improved control of NOx emissions at several dozen existing coal-fired power plants. I currently provide technical and strategic advice to a broad range of government agencies, corporations, state organizations and environmental groups on issues at the intersection of energy and the environment. This latter activity has included reviews of permit license applications for several NSW and Victoria power stations and comment to the NSW Parliamentary Inquiry into the Protection of the Environment – Operations Amendment (Clean Air) Bill 2021.

I have reviewed Delta's submissions and current license provisions, the operating history of the Vales Point Power station and the relevant provisions of NSW laws and regulations. The station did not demonstrate that the earlier licence variations were in the public interest and it is my view that the current application does not support the grant of a variation at this time.

Delta's principal argument asks EPA to assume that the plant will close in 2029, but experience in the U.S., the EU, Australia and elsewhere has demonstrated that the concept of an engineering useful life, if ever valid, is no longer operative. Vales Point was commissioned in 1978, at a time when it was assumed that the engineering useful life of the plant was 30 years. Had this notion proved to be controlling the Vales Point station would have retired in 2008. Instead, we now engage the concept of the "economic useful life" of the plant, where it is understood that major components of the plant will be replaced as necessary and the plant will operate as long as the owner projects (correctly or not) that it will be profitable to do so. Further, in the U.S. we see a substantial number of coal-fired units *that are not economical to operate* continue to operate because the owners hope for more favorable conditions in the future, because of local political issues or because the operators prefer to postpone the cost of closing and demolishing the plant. Economists refer to this as "stickiness" in retirement trends.

Coal, natural gas and liquefied natural gas (LNG) prices are volatile and not susceptible to accurate long term prediction and Australia has not fully embraced renewable energy development. In the

U.S. coal-fired generation fell for several years because of our very low natural gas prices (<\$3/GJ), but in the past year U.S. natural gas prices have nearly doubled and coal-fired generation has increased. International and Australian gas/LNG prices are even higher than current U.S. prices and also rising.

In its comment Delta highlights the fact that authorities have not identified replacement generation for Vales Point in 2029 and argues that an earlier retirement would increase the risk of outages associated with an earlier retirement. This same argument suggests that, if replacement generation is not online by 2029, Vales Point will not retire at that time. For these reasons, Delta's current, unenforceable plans for a 2029 retirement of should not simply be assumed in any decision making.

But even assuming a 2029 retirement date does not establish that all potential NOx reduction options are "infeasible." Delta concedes that each of the several options discussed are "technically feasible". Delta must make this concession since each of these technologies have been installed at several thousand locations around the globe. Delta argues that the less effective and less expensive technologies could not be guaranteed to meet limits of 500 mg/Nm³ or 800 mg/Nm³ all of the time.

The most effective technology (SCR in combination with OFA)¹ can comply with limits of 100 mg/Nm³ and, as Delta concedes, can readily comply with 500 mg/Nm³ at all times. In my decades of experience the regulated community has raised concerns about the cost of complying with proposed environmental regulations, and then found much less expensive means of complying with those regulations. Given the unabated NOx levels reported I have no doubt that, if the requested exemption is denied, Delta will find a way to meet the applicable limits without employing SCR/OFA. But, for purposes of the pending decision, NSW EPA may assume that SCR/OFA may be necessary² and still deny the requested exemption. This is because this technology is both technically and economically feasible, having been employed both as new and retrofit applications at power stations serving thousands of communities, both affluent and less affluent throughout the globe. Delta does not identify any features other than its unenforceable projected retirement date to show why, if economically feasible elsewhere, these controls are not feasible in New South Wales.

Instead Delta's submission assumes that these options are feasible only if they would cost the company less than otherwise required under its current licence. Delta's submission³ concludes that all of the control mechanism options that were considered technically feasible in reducing emission to less than 800mg/Nm³ or even 500mg/Nm³ are

"not considered feasible primarily due to the total estimated costs for retrofitting far outweighing the saving in LBL (Load Base Licensing) fees that can be achieved."

Such a test might be employed when a company undertakes a voluntary investment at its facility, but the entire concept of a regulation is to require a person to do something that it otherwise would not do. The control devices under consideration should only be considered infeasible (1) if it could be shown that Delta does not have access to sufficient capital to fund them or (2) the impact on the ratepayers would be so great as to make electricity unaffordable.

There is nothing in the record to suggest that Delta could not arrange financing for SCR/OFA (the most effective package), let alone the less expensive options. And here we see that, even employing Delta's cost and generation assumptions the impact on the cost of these controls would be minimal

¹ Selective Catalytic Reduction in combination with Overfire Air.

² And indeed, from an environmental and public health perspective, this combination should be preferred over less effective options.

³ See page 10 of Attachment X

compared to the wholesale price of the electricity generated. Transmission and distribution costs would not change, nor would cost of generation at other NSW facilities. Units dispatch on running costs, not sunk capital investment, and the impact of these control devices is minimal. And so, depending on market conditions the consumer might see no impact on rates. This occurred in a matter I was involved in when USEPA/DOJ forced the Tampa Electric Company to retrofit controls on its largest coal-fired plant – the controls were installed without any impact on consumer rates.

Delta projects that adding the most expensive and effective option would lead to AUD\$ 400 million capital and operating costs incurred and that during this period Delta projects the plant would generate 55,820 GWh of electricity. Delta’s cost estimate is not supported in the documentation and is roughly double the recent SCR cost estimate by the engineering consulting firm WSP Global sponsored by the Australian Energy Council.⁴ Delta then asserts that these estimates demonstrates that the technology is “infeasible”. But these figures convert to only AUD\$ 0.40 per MWh. This is but a small fraction – less than one percent - of wholesale electricity prices that are forecast to remain in the range of AUD\$ 55 through 2029 (and increase thereafter). At current and projected wholesale prices Delta’s projected generation during the period would yield revenues of roughly AUD\$ 3 billion.

The Jacobs Report also raises concerns about whether Delta could find sufficient engineering support (“an experienced and competent retrofit partner”) to retrofit NOx controls at Vales Point. This is a variant of the U.S. experience where operators claimed that there were not enough boilermakers in the U.S. to retrofit pollution controls.⁵ Southeast Asia has been and is the “hot” market for coal-fired power plants and associated pollution controls for those plants. All of the large companies, including GE, Alstom, Mitsubishi, Babcock Power, Babcock and Wilcox, Siemens, Wartsila and Korean, Chinese and Indian vendors are competing for a share of the retrofit market. Among others GE specifically asserts that it provides such services in Australia.⁶ To the extent that some of these companies have not yet established an “in country” presence in Australia, it may be presumed that the lack of demand for pollution controls may have something to do with it. It should also be understood that these international companies regularly do business around the world, even in countries where they do not have a substantial physical presence. Delta does not identify the company that it asserts has left the Australian market, but just last year the Australian Energy Council engaged an Australian subsidiary of a Canadian energy consulting firm WSP Global to provide order of magnitude cost estimates for pollution controls at Australia’s power plants and that WSP still reportedly provides services in Australia.⁷ Delta’s argument goes too far in that it also suggests that Delta will not have access to the engineering support necessary to safely maintain and operate the facility through 2029.

Delta cites several statements from the 2005 Regulatory Impact Assessment for the underlying rules:

The proposed review of the emission standards applicable to older scheduled industry recognises:

- *the objective of protecting against adverse health impacts by controlling emissions through application of contemporary technology, in relation to which the application of suitable control*

⁴ https://www.energycouncil.com.au/media/17637/aec-position-statement-on-wsp-report-cnk_1.pdf

⁵ The U.S. EPA ignored these concerns and sufficient labor was found.

⁶ See, [GE Steam Power in Asia Pacific | GE Steam Power](#). Note also that Alstom provided services respecting the combustion system at Vales Point. See also, [The Environmental Group Limited - Total Air Pollution Control \(TAPC\)](#)

⁷ [WSP.TO - WSP Global Inc Profile | Reuters](#)

technology to potentially harmful emissions is no less necessary just because a plant is established

• the economic life of pollution control equipment and the investment cycle of industry. Most pollution control equipment has a life of approximately 20 years; therefore, it is reasonable to expect that older industry has replaced older equipment with more contemporary control equipment and processes, or is due to do so.

“It is not intended that existing plant is unnecessarily or arbitrarily required to be upgraded as a result of this proposal. Under the proposal, operators of Group 1 and Group 2 premises may seek a five-year extension to their existing standards...”

“The proposal is intended to provide flexibility for a case-by-case review of emission standards of older industrial plant, while also sending a clear signal to industry that outdated plant and equipment (including pollution control technology) will need to be progressively upgraded to more contemporary technology.”⁸

As I read these statements I take them to outline a program where derogations (similar to those provided by the EU) may be possible in certain cases for certain periods of time, but where the overall program is expected to require system-wide upgrades to more contemporary technologies.⁹ In 2005 Vales Point was more than 20 years old and the referenced investment cycle suggests that it was understood that old units such as Vales Point were “due to replace older equipment.” Vales Point has now received the benefit of two such 5 year extensions and employs the same NOx control strategies (i.e., none) as in 2011 (and perhaps in 1974). In seeking to continue unabated NOx emissions past the 50th birthday of the plant Delta misses the “clear signal that outdated plant and equipment (including pollution control technology) will need to be progressively upgraded to more contemporary technology”. If the exemption is granted to January, 2027 as requested, it is a near certainty that this facility will continue unabated NOx emissions until whenever the operator decides to retire it. Similarly situated units throughout New South Wales can make the same arguments, thereby nullifying the standard. Delta’s interpretation is contrary to the language and intent of the program as I understand it.

The New South Wales rule requiring progressive upgrading of pollution controls at existing older facilities is neither arbitrary, nor novel. The U.S. has through NSR enforcement, the NOx SIP Call and other programs has required substantial NOx reductions, including requiring SCR/OFA at hundreds of units. Indeed, under U.S. law Delta’s replacement of the original burner tips with “wide range burner tips” on Unit 6 increased projected actual annual NOx emissions by more than 40 tons per year and so would require installation of SCR/OFA. The EU has acted in a more systematic and comprehensive fashion through a series of directives that reduced allowable NOx emissions from existing large combustion sources. The most recent directive includes yearly average emission levels (BAT-AELs) for NOx emissions to air from the combustion of coal and/or lignite of 175 mg/Nm³ for existing combustion plants with a total rated thermal input of more than 300 MW.¹⁰

Delta has submitted TAPM modeling demonstrating the dispersion of SO₂, NOx and PM emissions from Vales Point and asserts that is all that is necessary to assess the public health impacts from the facility. Over the past several years industry modeling has been severely criticized by Dr. Ranajit Sahu and others. The conclusions expressed on behalf of Delta rest on many, many, assumptions that must be independently validated. These assumptions includes that the lower emissions reported for 2020

⁸ Letter of 8 October 2021

⁹ SCR/OFA was in commercial service as of this date.

¹⁰ [EU toughens emissions standards for large combustion plants – AirQualityNews](#)

are representative of future operations and not substantially affected by the COVID pandemic and that the stations used to provide background data are representative. Even so, the TAPM model predicted exceedances of NAAQS for NOx and SO₂. These are dismissed in the analysis as unlikely and ascribed to model over-predictions. Not surprisingly, the consultants reject exceedances as over-predictions but accept model results when predictions are under thresholds. It is not clear how emissions inputs were constructed from the CEMS data sets and what assumptions were made to exclude and substitute data. Here I also note that the CEMS do not record condensable PM.

PM_{2.5} and ozone are the most dangerous forms of conventional pollution and are formed by photochemical reactions that occur after emission from the stack. The submitted air pollution modeling was not conducted using photochemical models capable of analyzing these impacts and does not provide a useful estimate of the impact of granting a further exemption. NSW EPA asked Delta to conduct the necessary photochemical modeling and Delta declined. Unless NSW EPA has modeling of the PM_{2.5} and ozone impacts that *it has confidence in* the agency should not grant the exemption. Under U.S. Administrative Law such an act would be considered “arbitrary and capricious” and would be overturned by a Court; under any constraint it would be considered bad policymaking.

Thank you for the opportunity to provide information and views on this important matter. Please do not hesitate to contact me if you need further information or documentation.

Regards,

A handwritten signature in cursive script that reads "Bruce C. Buckheit".

Bruce C. Buckheit