

Mt Piper Power Station Extension

ENVIRONMENTAL ASSESSMENT

CHAPTER 15 – PROJECT JUSTIFICATION AND CONCLUSION

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15. Project Justification and Conclusion

The Director-General's requirements:

The Environmental Assessment must include a conclusion justifying the project taking into consideration the environmental, social and economic impacts of the project, the suitability of the site and the public interest.

15.1 Strategic Issues

The alternative to going ahead with the Mt Piper Power Station Extension proposal is to rely on other sources of electricity generation or demand management to overcome NSW's electricity deficiency in the future.

Although demand management techniques and supply side management options, such as renewable energy sources and distributed generation, are desirable energy sources, they are not considered to be a viable alternative for this proposal as they cannot provide the capacity or availability required to meet the future large base-load demand for electricity for a competitive price.

Upgrading existing plants is a cost effective way of providing new generation, although the potential capacity from plant upgrades is likely to be limited to a year or two of demand growth. Expanding transmission interconnection is unlikely to be economically and technically feasible for NSW to rely solely on as a means of addressing all future supply shortfalls. Renewable energies such as wind and solar have a future in the supply of power for NSW and this is recognised in the percentage of renewable energy to be available by 2020. However, ultra-supercritical coal and CCGT gas generation provide the only real options for providing for the baseload power required in NSW within the next 5-7 years

Currently NSW has reserve capacity to meet both peak and base-load demands. However, as increased energy consumption continues, NSW will experience a reserve deficit and reliability of supply may be compromised unless additional capacity is brought to the market. The proposed Mt Piper Power Station extension is considered to provide the best means of meeting these demands in the long term.

The consequences of the project not proceeding may result in interruptions to the power supply which can have serious social, economic and environmental impacts. In addition, it would result in lost opportunity to provide for increased in base load demand in NSW in a manner that uses commercially available technology in an innovative way to minimise environmental impacts of coal or gas fired generation.

15.2 Key Environmental Considerations

15.2.1 Water Management

The assessment demonstrated that the development has little or no discernible change in water requirements from the existing water supply schemes and, as a consequence there would be no impacts on the availability of water to other users, either existing or future.

In order to reduce the potential water quality impacts during construction, general measures to control erosion of soil and sedimentation would be implemented prior to construction works. Appropriate soil erosion and sedimentation controls would need to be in place during the period of construction until all ground surfaces are stabilised and re-vegetated.

Water quality treatment during the operational phases has been proposed that would treat and reuse all water used to operate the plant. The continued use of the water recycling processes in place for the existing plant would assist in meeting the requirements of zero wastewater discharge for the site.

15.2.2 Noise and Vibration

Conclusions resulting from the investigations undertaken as part of the Noise Impact Assessment were as follows:

- Operational noise emissions from the site will not exceed the INP criteria during neutral or adverse meteorological conditions. However, the predicted impacts show the potential for an exceedance to the criteria at some locations during more conservative assumptions during adverse meteorological conditions;
- Noise generated by construction activities would not have a detrimental effect on sensitive receivers;
- Noise management measures detailed for construction and operation would be considered to minimise adverse noise impacts where they may occur, to achieve compliance with criteria where reasonable and feasible;
- Future road traffic noise levels would comply with the relevant criteria at all assessment locations.

The DECCW's Industrial Noise Policy takes cumulative impact into account with its Amenity Criteria, which considers all existing industrial noise sources at each noise assessment location and sets noise criteria that avoid the cumulative build-up or 'creep' of industrial noise over time in an area. Therefore, by following the policy guidelines, noise impact from each noise source is minimised to acceptable levels, thus minimising cumulative noise impacts upon receivers.

15.2.3 Air Quality

The construction air quality assessment outlined showed that, with the prescribed mitigation measures in place, the ambient air quality criteria would be met around the site borders. The air quality assessment of the operations phase concluded that there will be exceedances of DECCW criteria. Cumulative impacts were included in the assessment of the operational phase air quality impacts by including background levels of air pollution within the modelling assessment.

Inter-regional modelling was able to demonstrate that there would be no detrimental effects on the photochemical smog formation in the Sydney basin.

15.2.4 Greenhouse Gases

Greenhouse gas emissions have been estimated for the two project options, namely, an ultra-supercritical coal-fired plant or a combined cycle gas turbine plant. The direct (Scope 1) and indirect (Scope 2 and 3) emissions have been estimated, and are summarised as follows:

- 10.47Mt CO₂-e of direct emissions for the USC proposal (Scope 1);
- 4.91Mt CO₂-e of direct emissions for the CCGT proposal (Scope 1);
- 10.92Mt CO₂-e of total (direct and indirect) emissions for the USC proposal (Scope 1,2,3);
- 7.03Mt CO₂-e of total (direct and indirect) emissions for the CCGT proposal (Scope 1,2,3).

These estimates can be compared Australia's net GHG emission estimates for 2006 of 287 Mt CO₂-e for stationary sources from the energy sector and 401 Mt CO₂-e for the total energy sector.

The NSW Greenhouse Gas Abatement Scheme (GGAS) estimated NSW pool coefficient for 2009 is 0.967tCO₂-e/MWh. Applying the GGAS emissions calculation methodology to Mt Piper Extension gives an emissions intensity of 0.838tCO₂-e/MWh (including coal mine fugitive emissions), well below the current estimated pool coefficient.

15.2.5 Hazard and Risk

The hazardous events that may have an impact at the site boundary comprise:

- Gas fitting line incident leading to gas leak as a result of external interference;
- Gas leak into the gas turbine enclosure, ignition and explosion/jet fire; and
- Chlorine release from a pigtail failure in the chlorine storage area.

The risk levels expected at the boundary of the site are around 0.336 pmpy. These risk levels are considered acceptable under the NSW Department of Planning guidelines.

Hence, this analysis, along with the previous assessments, indicates that the power station can be classified as potentially hazardous and not actually hazardous and that the installed

safeguards at the facility are considered adequate and within the “as low as reasonably practicable” (ALARP) range.

15.2.6 Flora and Fauna

The site represents a highly disturbed and modified environment that provides habitat to a number of common, disturbance tolerant flora and fauna species. Within the areas of likely disturbance, the habitats and vegetation communities present are considered to be of low ecological value. The proposal is not considered to affect, threaten or have an adverse impact on any of those plants or animals listed under schedules of the TSC Act or the EPBC Act.

15.2.7 Visual Amenity

The visual impact of the Mt Piper Power Station Extension would generally be quite low due to the distance between the power station and sensitive viewing locations, the low number of vantage points, the surrounding topography and vegetation, the similarities in appearance between the existing plant and new plant and the design modifications such as the use of air cooled condensers rather than cooling towers.

15.2.8 Cultural Heritage

The site has been extensively disturbed through its use as open cut mine and as a power station. As a result there are no heritage constraints for development of the site and no further heritage assessments for the site would be required as part of the detailed design.

15.2.9 Socio-economic

The potential adverse impacts associated with the proposal are considered to be outweighed by the benefits associated with new plant such as the increased power generating capacity and the creation of jobs and associated economic benefits during construction and operation.

The safeguards and mitigation measures identified in this EA would ensure that many of the potentially adverse social impacts are minimised as far as practicable.

15.3 Ecologically Sustainable Development

Ecologically Sustainable Development (ESD) is a major principle now used in guiding environmental impact assessment. While there is no universally accepted definition of ESD, the NSW Government in its various State of the Environment Reports has suggested the following definition of ESD:

“Using, conserving and enhancing the community’s resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased.”

By following an ecologically sustainable path of development, the likelihood of serious environmental impacts arising from economic activity and development should be reduced.

The principles of ESD, as defined in Clause 6 of Schedule 2 of the EP&A Regulation are as follows:

- The precautionary principle – namely, that if there are threats of serious environmental damage, lack of scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;
- Inter-generational equity – namely, that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations;
- Conservation of biological diversity (biodiversity) and ecological integrity;
- Improved valuation and pricing of environmental resources.

The principles of ESD were considered during the assessment of the proposed Mt Piper Power Station Extension.

15.3.1 Precautionary Principle

The precautionary principle was invoked in the means by which impact assessment was undertaken and mitigation measures identified and prescribed. This was undertaken as follows:

- Potential impacts were identified conservatively, in that all potential impacts were considered and assessed, even if there was no evidence that there may be an impact possible from the proposed development activity;
- Assessment of impacts was undertaken using established and, in some cases, Government prescribed methodology, all of which were conservative in their approach and likely to identify an impact when one was not necessarily likely; and
- Mitigation measures and monitoring programs were identified to ensure that impacts, should they occur even when not predicted, would allow any unforeseen impacts to be addressed as appropriate.

15.3.2 Inter-generational Equity

The maintenance of inter-generational equity is essential in the development of any infrastructure project. This was considered in the proposed extension through:

- Scarce resources will not be used in the construction or operation of the development. Relative savings have been identified in reduced greenhouse gas emissions by a choice of appropriate technology; and

- Existing impacts on the community will not be increased beyond that which would otherwise occur. The proposed development would not separately contribute to any impacts which future generations will need to deal with. Of particular note, the greenhouse gas emission levels from carbon burning technology were identified by the community as problems that will become worse. The proposed extension would contribute to these, but levels would be minimised through the use of the latest technology for coal fired or gas generation consistent with the economic need to provide base load power generation capacity within the time frame required. In addition, the decision to construct and operate the plant would be undertaken within the context of the Carbon Pollution Reduction Scheme proposed to allow Australia to meet its emission targets for 2020 and beyond.

15.3.3 Conservation of Biological Diversity

The site of the proposed development has very limited, if any, ecological value at present. The only identified impact from the proposal would be if the remnant vegetation near the entrance was disturbed and the specimens of *Eucalytus canonnii* were removed.

To off-set this potential impact, the design will ensure that these areas will be avoided.

15.3.4 Improved Valuation and Pricing of Environmental Resources

Environmental and social impacts have not been quantified in any financial sense, although the impacts have been identified and mitigation measures identified to control those impacts.

15.4 Summary

Assessment of the project against the principles of ESD provided a framework for the proposed extension to:

- Recognise, describe and assess the effects of construction and operation on environmental resources;
- Avoid irreversible and detrimental damage to ecological resources;
- Enhance the health and quality of the environment, and may assist in benefiting present and future generations;
- Minimise any impact on rare and endangered species and ensure conservation of biological diversity; and
- Ensure that environmental costs are included, if possible, in the economic evaluation of the project.

In preparing this EA, the potential environmental impacts from the proposed activities have been investigated and a range of mitigation measures developed to minimise any adverse effects. All mitigation measures proposed in the EA have been developed based on the

principles of ESD. It is clear that the principles of inter-generational equity and conservation of biological diversity are met and, if there is any doubt about potential detrimental effects on the environment, a precautionary approach is applied.

The principles of ESD will be further assessed by the proponent during the detailed design phase of the project. This design assessment will enable the identification and investigation of the feasibility of implementing additional ESD measures, including further opportunities to:

- Use low impact building materials;
- Minimise the consumption of water and energy and the generation of waste;
- Further reduce the impact of the proposal on the biophysical environment and the community; and
- Identify suitable site management practices.

The outcomes of this further ESD assessment will be incorporated as appropriate into the final design of the site or the relevant Construction or Operational EMP.

15.5 Conclusion

It is concluded that the development of the proposed Mt Piper Power Station Extension:

- Is justified in terms of addressing NSW Government policy aims in terms of providing power generation capacity economically while minimising the extent of greenhouse gas emissions and the consequences of those;
- Is justified in providing social and environmental benefits for the general community, while managing any potentially negative impacts by adopting appropriate management measures; and
- Would not detrimentally affect the health, diversity and productivity of the environment and would assist in these elements being maintained for the future benefit of generations.