



# Eraring energy

## Elements of Environmental Excellence: Current Projects

### Environmental aspects of three current projects

Eraring Energy has proposed a number of upgrades to assist in the national and blackstart capability for Eraring Power Station (EPS) to meet the State's requirement for additional generation capacity, and to improve efficiency of existing generation capacity. These projects include:

- Installation of an emergency gas turbine generator;
- Coal combustion product management system upgrade and expansion; and
- Generation capacity increase and the construction of an attemperation reservoir.

This newsletter provides a description of these upgrades and identifies some of the environmental aspects of the projects.

### Emergency gas turbine generator (EGTG)

This project involves the installation of an emergency gas turbine generator (EGTG) on the EPS site, enabling the Power Station to restart in the event of a State black-out. In addition to providing black start capability, this generator will also be used when there is a shortfall of system electricity supply, for example during times of peak demand.

Previously, EPS required an external electricity supply to restart in the event of a system collapse or black-out and this process was expected to take a minimum of 3 hours after collapse. The EGTG will help to secure the State electricity supply, reducing the time taken to restore the NSW electricity supply following a total black-out, and improving efficiency in responding to consumer demand.

The turbine used in the generator is 42 MW nominal output, will have dual fuel capability (distillate and gas), and will be capable of starting using batteries and its own diesel engine start system. This project was granted Project Approval by the Minister on 14 December 2006 and is now in the commissioning phase.

Environmental aspects of this project include:

- Use of a second hand turbine, promoting the reuse of materials;

- Potential use of coal bed methane gas (from a local coal mine) which would otherwise be lost to the atmosphere during mine operations; and
- Lower green house gas emissions and adoption of the highest emission standard (CAPER, Group 6).



### Coal Combustion Product (CCP) management system upgrade and expansion

Coal Combustion Product (CCP) is a by-product of electricity generation, produced by the burning of coal and is comprised of fly ash and furnace bottom ash. Recent data published by the Ash Development Association of Australia (ADAA) indicates that EPS is achieving very high levels of utilisation of current production volumes. Approximately 40% of all CCP produced at EPS is sold and reused in other processes such as concrete manufacturing or as a gravel substitute for use in landscaping and roads, and the remainder of CCP is stored in the CCP storage facility.

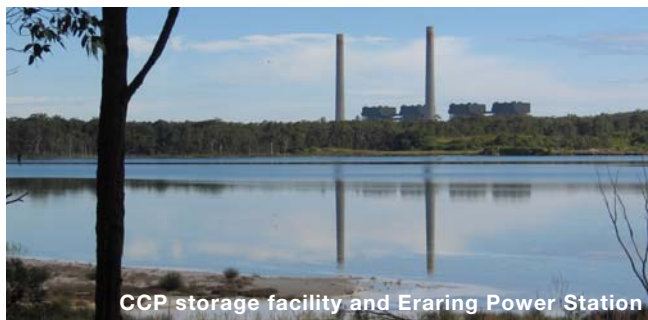
Previously, CCP management at the power station involved the use of 'lean phase' ash placement, which comprises a mix of 30% ash and 70% water being pumped into the CCP storage facility. The proposed upgrade involves expanding the CCP storage facility and introducing 'dense phase' fly ash placement, which comprises a mix of 70% ash and 30% water.

The project will allow continued operation of EPS beyond 2025, as the current CCP storage capacity would otherwise be full by 2011/12. The upgrade allows for greater control in CCP management and greater efficiency in terms of land uptake, but also provides environmental benefits by reducing the amount of water used. Concept Approval for

this project was granted by the Minister on 14 December 2006 and the Environmental Assessment was submitted to the Department of Planning in November 2007.

Environmental aspects of this project include:

- Reduced water consumption through dense phase placement;
- Less potential for dust generation through the use of dense phase placement, rather than the use of lean phase placement;
- 42 hectares of compensatory habitat to be provided to offset 21 hectares of land to be cleared;
- Installation of artificial nest boxes and roosting boxes within these areas to replace tree hollows at a ratio of 2:1;
- Potential for increased reuse of fly ash, as a raw material resulting in reduced fly ash input and reduced selenium concentration of water in CCP storage facility; and
- Eraring Energy has committed to increased reuse targets of CCP.



CCP storage facility and Eraring Power Station

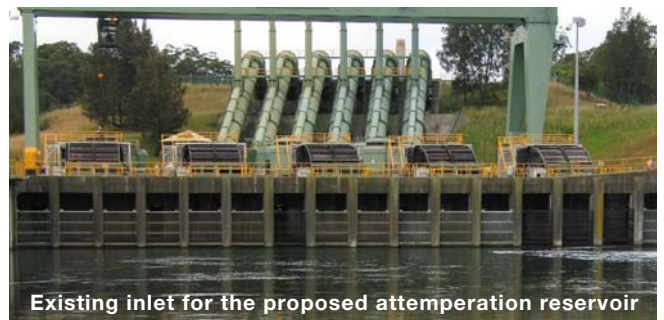
## Capacity increase and attemperation reservoir

Eraring is proposing to undertake capacity increase and performance improvements to the existing Power Station. The upgrade would allow the four existing 660 MW generating units to operate at a maximum continuous rating of up to 720 MW. This improved performance would be used to meet increasing consumer demand for electricity, particularly during peak periods. The project would include the replacement of some existing aging components of plant and equipment within the EPS operating units, and would enable improved efficiency of operations and environmental and safety performance.

The project would also include construction of an attemperation reservoir to provide additional cooling water. This would allow the EPS generating units to operate during periods of high ambient lake water temperatures without the need to reduce load in order to meet discharge temperature limits specified in Eraring's Environmental Protection Licence. The Environmental Assessment for this project was submitted to the Department of Planning in May 2007.

Environmental aspects of this project include:

- Reduction of 200,000 tonnes of greenhouse gas per year;
- Increase in average 'cycle efficiency' through retrofitting of more modern and advanced design;
- Installation of low NOx burners would result in a 30% decrease in NOx stack emissions;
- Installation of more thermally efficient equipment would reduce the amount of coal combustion product (CCP) produced by about 1 tonne per GWh;
- Improved management of cooling water discharge temperatures; and
- 39 hectares of compensatory habitat would be provided to offset 19.5 hectares of land to be cleared.



Existing inlet for the proposed attemperation reservoir

## Diary note

Commissioning of the Emergency Gas Turbine Generator has commenced. The EGTG will be fully operational in March 2008, enabling the Power Station to restart in the event of a State black-out.

## Eraring Energy

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