MAJOR PROJECT ASSESSMENT: Proposed Upgrade to Eraring Power Station, Rocky Point Rd, Dora Creek

Director-General's
Environmental Assessment Report
Section 75I of the
Environmental Planning and Assessment Act 1979

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EXECUTIVE SUMMARY

Eraring Energy (the Proponent) is a State-Owned Corporation that manages a diverse set of electricity-generating assets located throughout NSW including a coal-fired power station at Eraring, known as Eraring Power Station (EPS). The Eraring power station operates four 660 megawatt generating units contributing 14,600,000 MWh of power to the NSW electricity grid in 2003/2004.

The Proponent proposes to undertake an upgrade to the existing power station, including:

- the installation of a 42 MW emergency turbine generator, operated on diesel fuel for about 200 hours per year for black start/peaking capability; and
- improvements and expansion to the existing ash disposal facility, with progressive implementation over a 20 year period and involving expansion of the ash dam disposal facility by some extra 52 hectares to the north of the existing ash disposal dam. The upgrade of the ash disposal facility will also require a range of new infrastructure including storage vessels and pumping facilities, and will involve changes in the disposal method, from the current "lean phase" disposal method (70% water and 30% ash) to the proposed "dense phase" disposal method (30% water and 70% ash).

The Proponent has estimated that the capital cost of the project will be in the order of $41 million.

The primary purpose of the proposed emergency turbine is to provide 'black start' capability to the power station in the event of total blackout of the electricity grid. The Proponent also seeks approval to operate the emergency turbine when there is a shortfall of system electricity supply (for example, during periods of peak demand). The need for an additional restart capability for the North region is identified in Transgrid's NSW Power System Restart Capability Strategy Paper which indicates that the present restart capability for the region is not sufficient for reliable system restart. In addition, the need for additional electricity supply is identified in the NSW Government discussion paper Energy Directions Green Paper (2004), which identifies that the demand for peak electricity supply is growing at a rate of 4% per annum, and at times of peak demand, demand marginally exceeds the State's domestic supply having to import electricity from other jurisdictions. Although the Proponent has indicated that is currently in negotiations with the Mandalong mine gas/coal bed for the future supply of gas to run the emergency turbine (subject to further environmental assessment and approval), under the current application the emergency turbine is proposed to run on diesel fuel for approximately 200 hours per year for the purposes of black start situations, routine testing and at times of shortfalls in supply of electricity.

Additional ash disposal capacity for the Eraring power station is required as at current disposal rates the existing ash dam will be full by 2011/2012. As the power station has a life beyond 2030, a new method of ash disposal is required to meet the needs to the power station beyond 2011/12.

The proposed project is subject to Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and requires the approval of the Minister for Planning. The Proponent, in a single application, is seeking project approval for the proposed emergency turbine and concept approval for the proposed upgrade of the ash dam facility under Part 3A of the EP&A Act. On 26 January 2006 the Minister for Planning authorised the submission of a concept plan for the proposed upgrade of the existing ash dam disposal facility.

The Environmental Assessment was placed on public exhibition from 18 May 2006 to 20 June 2006 and re-exhibited from 21 July 2006 to 21 August 2006. The Environmental Assessment was re-exhibited to include additional lot and DP number that were not included in the original Environmental Assessment. A total of 36 submissions were received during the two-month period public exhibitions, from state agencies (five submissions from four agencies including the Department of Environment and Conservation (DEC), the Department of Natural Resources (DNR), the Mine Subsidence Board and the Hunter-Central Rivers Catchment Management Authority), Lake Macquarie City Council, special interest groups (10 submissions, two of them from the same group) and the local community (20 submissions, four of them from two residents). Of the 36 submissions received, about 78% objected to the proposal and about 20% indicated that they had some concerns or made comments regarding the proposal.

Key issues that were raised by the community largely relate to matters associated with the expansion of the ash dam disposal facility including the lack of justification for the selected option, the need to consider other ash disposal options, the ecological impacts of clearing 52 hectares of native vegetation, the need to refer the proposal to the Commonwealth for assessment and/or approval under the *Environment Protection and Biodiversity Conservation Act 1999 (*EPBC Act) and the potential for water quality impacts of the ash disposal facility. Other issues raised relate to potential air quality impacts of the emergency turbine.

The Proponent's Environmental Assessment indicated that providing management measures and monitoring systems are implemented to mitigate impacts, the proposed development would not have a significant impact on the biophysical and social environment. The Proponent's Environmental Assessment included a Statement of Commitments and the Submissions Report incorporated an additional commitment to create a habitat corridor as compensatory habitat for the clearing of native vegetation required for the ash dam expansion.

The Department has undertaken its own assessment of the proposal based on a review of the Environmental Assessment report, submissions received during the exhibition period, and additional information provided by the Proponent in response to submissions.

Key issues associated with the emergency turbine include the potential for air quality impacts and the justification of proposed mode of operation of the emergency turbine using diesel fuel. In this regard, the Department concurs with the DEC in not supporting the use of diesel fuel for power generation in areas such as the Greater Metropolitan Region for other than 'black start' and emergency operation given the potential for high level emissions of key pollutants. The Department has adopted the DEC's recommended conditions in the project approval of the emergency turbine which include a restriction to 100 hours per year of the operation of the emergency turbine for routine testing and system emergency shortfall, limits to stack discharge pollutant concentrations and requirements to monitor the turbine's stack during operation. The Department is satisfied that the implementation of the mitigation measures proposed as part of the Statement of Commitments provided in the Environmental Assessment and conditions of approval would ensure that any potential impacts of the turbine, including air quality impacts, will be minimised to acceptable levels.

In relation to the proposed expansion of the ash dam disposal facility, the Department recognises the need to provide additional ash disposal capacity to ensure the viability of the power station beyond 2011/12, but it also considers that any proposed expansion of the dam will need to be undertaken in a way that minimises environmental impacts within acceptable levels. Following the assessment of the proposal, the Department considers that there is scope to minimise the area required for ash expansion and consequent vegetation clearing by further investigating and optimising ash management measures. The Department also considers that there is potential to progressively increase the percentage of ash sold for reuse and therefore reduce the power station disposal needs. Consequently the Department has recommended that the Minister grant a 'modified' concept approval for residual ash disposal at the ash dam facility subject project approval and further assessment under Part 3A of the EP&A Act. Prior to such project approval being granted, the Proponent will require to further review and optimise ash management measures, justify the final scale of the dam and carry out further environmental assessment. The recommended concept approval requires the preparation and implementation of a Long-Term Ash Management Strategy including a program for investigation and assessment of alternative ash management measures with a stipulated goal for 100% reuse of ash by 31 December 2011. The recommended 'modified' concept approval limits the maximum area allowed for progressive clearing to approximately half of the area originally proposed in the Environmental Assessment and provides for the provision of compensatory habitat in a ratio of 2:1, ie. 2 hectares of compensatory habitat per hectare cleared. The recommended concept approval provides for on-site residual disposal capacity until at least 2022 (at current disposal rates) or further if reuse/other ash management options are optimised under the Long-Term Management Strategy. The Department considers that the recommended concept approval provides a balanced approach to ensuring the viability of the Eraring power station in the future, optimising ash management practices at the power station and minimising environmental impacts to acceptable levels within context of the need for the proposal.

CONTENTS

1. BACKGROUND

Eraring Energy (the Proponent) is a State-Owned Corporation that manages a diverse set of electricity-generating assets located throughout NSW including a coal-fired power station at Eraring, known as Eraring Power Station (EPS). EPS operates four 660 megawatt generating units contributing 14,600,000 MWh of power to the NSW electricity grid in 2003/2004.

The Proponent proposes to undertake an upgrade to the existing Eraring power station, including:

- EPS consisting of the installation of a 42 MW emergency turbine generator (EGT) operated on diesel (or distillate as referred to in the project application) for about 200 hours per year for black start/peaking capability; and
- improvements and gradual expansion of the existing ash disposal facility over an approximate area of 52 hectares to the north of the existing facility. The proposed upgrade and expansion of the ash disposal facility will require the acquisition of some 35 hectares of land adjacent to the existing ash dam as well as a range of new infrastructure including storage vessels and pumping facilities. The method ash disposal is proposed to be modified from the existing "lean phase" method (70% water and 30% ash) to a "dense phase" disposal method (30% water and 70% ash) which will result in more ash placed per cubic metre and therefore less ash disposal area required.

The Proponent is seeking project approval for the proposed EGT and concept approval for the proposed upgrade of the ash dam facility under Part 3A of the *Environmental Planning and Assessment Act 1979 (*EP&A Act). Should the Minister determine to grant concept approval to the ash dam facility expansion at this time, a further and future project application and approval would be required before the Proponent could implement this component of the proposed works.

1.1 Location

The Eraring power station is located on Rocky Point Road in the suburb of Dora Creek, some 40 kilometres southwest of Newcastle. The power station site comprises approximately 1200 hectares of land on the western shore of Lake Macquarie, of which 150 hectares is currently occupied by the power station itself. The remainder of the land is largely undeveloped and is characterised by open grasslands, canals and bushland (see Figure 1 for site layout). The proposed development is to be carried out on land owned by consisting of the following lots:

- Lot 11 DP 1050120;
- Lots 301 & 302 DP 806475;
- Lot 3/8 Section L DP 6747;
- Lots 13/16 Section O & Part Lot 13/16 Section U DP 6747;
- Lot 7/16 DP 262501;
- Lot 19 DP 262501;
- Lot 1 DP 817425;
- Lots 100 and 101 DP 828283;
- Lot 211 DP 840670;
- Lots 50 and 51 DP 840671;
- Lots 1, 2 and 3 DP 621697;
- Lot 1 DP 816174; and
- Lots 20 and 21 DP 734860.

In addition to the abovementioned land, the Proponent is in negotiations with the Department of Lands to procure approximately 32 hectares of land to the north of the existing ash dam, known as Crown Land adjoining the northern boundary of Lot 11 DP 1050120 to the ridge line. The purchase of this additional land will allow the expansion of the existing ash disposal facility. The Proponent has received a licence from the Department of Lands over Crown Land for this parcel to allow survey work to be carried out. Discussions have also been held with Centennial Coal who is the holder of a coal lease over the land in question. The discussions with both the Department of Lands and Centennial Coal are continuing to allow the Proponent to procure the land required for the project.

It should be noted that the Proponent, as a public authority, was not required to obtain landowner's consent for the lodgement of the subject application, and landowner's consent is not required before the Minister determines the application. The Department understands, however, that the Department of Lands has raised no objection to the lodgement and processing of the subject application in accordance with the *Environmental Planning and Assessment Act 1979*. The environmental planning process does not, however, affect or pre-empt the outcomes of any commercial discussions underway between the Proponent and the landowner with respect to this parcel of land.

1.2 Surrounding Land Use

The power station itself is separated from surrounding landuses by tracts of largely undeveloped land including open grassland, canals and bushland. This undeveloped land has largely been retained by the Proponent as a buffer between its power station operations and surrounding, more sensitive land uses (particularly to avoid land use conflicts from residential encroachment), as well as for possible future expansion or upgrade works that may be required at the power station (such as those the subject of the current application). Land uses surrounding the Eraring power station site include:

- quarries, coal loading and unloading and railway lines to the north;
- South – rural and residential lands and Lake Macquarie to the south;
- Whiteheads Lagoon (surrounding lands zoned environmental protection) to the east, with residential lands to the south-east; and
- the main northern railway line, Cooranbong Colliery and Muddy Lake wetland to the west, with this land zoned rural and environmental protection.

The closest residential area to the Eraring power station is Dora Creek (approximately 2km to the south-west). The nearest sensitive land use is the Eraring Public School, located about 1.5 km south-east of Eraring power station main building.

Figure 1 - Existing Site Layout and Location of Ash Dam

(sourced from the Environmental Assessment (HLA, May 2006))

2. PROJECT DESCRIPTION

2.1 Existing Development

Eraring Power Station

The existing Eraring power station is a coal-fired facility comprising four 660MW units with a total capacity of 2,640MW. The four units contain steam driven, tandem compound reheat turbines. The four associated boilers are single-furnace. A turbine steam by-pass system stabilises boiler firing at low load and enables easy matching of steam to turbine metal temperature during startup. Each generator is connected to a pair of generator transformers which raise the generated voltage of 23 kV to the transmission voltage of 330 kV on Units 1 and 2 and to 500 kV on Units 3 and 4. Electricity is transmitted overhead to the 330 and 500 kV switchyards which form part of the interconnected transmission system. Coal for the power station is sourced from five different mines in the local area. The plant burns some 5.2 million tonnes of coal per annum. The layout of the existing power station is shown in Figure 1.

When a complete collapse of a major portion of the electricity system occurs, the system must be able to be restored to normal operations as quickly as possible (black start capability). The Eraring power station had four 25 MW Frame 5P units at the former Northern GT Station connected to the 132 kV transmission network to provide black-start capability. In 2002, the Northern GT Station was decommissioned and removed and therefore the power station has no black-start capability. As a result, power station cannot restart following a "System Black" situation without an external electricity supply. Currently, restart of the power station following a black-out is expected to take a minimum of three hours.

Ash Disposal

Ash is produced as a by-product of electricity generation through the burning of coal. Two types of ash are produced at the power station: bottom ash (10-15% of total); and fly ash (85-90% of total). Currently the Proponent sells approximately 45% of all fly ash to Fly Ash Australia for production processes such as concrete manufacturing and all bottom ash to Blue Circle Ash for reuse as a gravel substitute for use in landscaping and roads. The remainder of the ash is disposed of on-site.

The existing Eraring power station ash disposal facility is located to the north-east of the main power station, covering an area of approximately 200 hectares (refer to Figure 1). The disposal process currently used is termed 'lean phase disposal', involving a 30% ash and 70% water mix. The lean phase ash is piped from the main power station to the ash dam approximately four kilometres from the power station itself. Gradually, the water evaporates, leaving an ash residue which is mixed with the soil before the land is rehabilitated. The Proponent has indicated that at current recycling rates, there is a requirement to dispose of approximately 700,000 tonnes of fly ash per annum in this manner.

The total capacity of the existing ash dam is estimated at 29.2 million m³. The Proponent's records show that in 2002 some 16.6 million m³ of this capacity had been filled with ash, leaving capacity of around 12.6 million m³. The Proponent has also indicated that notwithstanding the current level of reuse of ash and ongoing efforts to identify new reuse options, at the current rate of disposal, the existing ash dam will be full by 2011/ 2012.

2.2 Proposed Development

The Proponent seeks **project approval** for a new 42MW generator, run on distillate fuel, to provide blackstart capability and to be operated as a peaking facility in times of high electricity demand. The Proponent also seeks **concept approval** for expansion of the ash dam facility. A project application for the ash dam expansion would be lodged, assessed and determined in future. The proposed generator is referred to by the Proponent as an "emergency gas turbine" unit, because the turbine has been designed to run on gas as a fuel. In reality, however, the Proponent intends to operate the generator using distillate fuel (which the generator can accommodate) and seeks approval to operate the turbine in circumstances other than "emergencies" (ie during periods of supply shortfall).

Emergency Gas Turbine

The proposal presented in the Environmental Assessment is for the installation of an emergency gas turbine at the Eraring power station, operated on diesel for the purposes of black-start capability and also to supplement the electricity supply during times of peak demand. The Environmental Assessment indicates that the primary purpose of the emergency turbine is for restarting the power station's main 660MW units in the event of a "system black" situation. The emergency turbine will provide the electricity needed to restart two of the main units within the existing power station simultaneously to minimise the time taken to restore power to the State grid. The Proponent also seeks approval to operate the emergency turbine when there is a shortfall of system electricity supply, as indicated by NEMMCO messages or market pool price excursions.

The emergency turbine is intended to have a nominal 42 MW output, which the Proponent indicates is the minimum size required for black-start purposes at the Eraring power station. The turbine would have dual fuel capability (distillate and gas) and would be capable of starting using batteries and its own diesel engine start system. The emergency turbine would be air cooled, without the requirement for external water supplies for cooling. In the event that water injection is used for the reduction of NOx, demineralised water from the existing power station storage tanks would be used as a fuel diluent.

The Environmental Assessment indicates that the Proponent is currently in negotiations with the Mandalong mine gas/ coal bed for the use of 1,500 GJ/day of methane gas to run the black-start unit. Such development, which is not part of the current application, would require a gas supply pipeline to the power station and therefore further environmental assessment and approval. Under the current application, the emergency turbine is proposed to run on diesel fuel during black start situations, during routine testing (about 20 hours per year) and at times of shortfalls in supply of electricity. The Environmental Assessment indicates that in total, the generator would be expected to be operated for up to approximately 200 hours per year if fired only on diesel fuel.

The proposed emergency turbine is approximately 40 metres long and six metres wide, with some additional footprint (approximately five metres by three metres) for the fan coolers. The unit will reach some 15 metres in height at the highest point, being the top of the exhaust stack. The proposed emergency turbine will be centrally located within the main station area, close to fuel oil, demineralised water and main electrical system. The emergency turbine would occupy a marginal portion of the existing developed area within the Eraring power site. The approximate location of the emergency turbine is shown in Figure 2. The construction of the EGT would take approximately six months.

Expansion of Ash Disposal Facility

The proposed upgrade and expansion of the ash disposal facility involves the use of dense phase disposal to provide greater efficiency in ash disposal on the site in conjunction with an expansion of the ash disposal footprint (refer to Figure 2).

The proposed dense phase high concentration method utilises a mix of 70% ash and 30% water which produces waste material which sets in a solid form, similar to that of concrete. Due to the higher concentration of ash in this material, the disposal method is reportedly more efficient and enables the expansion of the existing dam using the adjacent ridge as a wall. As dense phase disposal requires a smaller footprint per unit of material disposed, the proposed increase in the disposal will enable the life of the ash dam facility to be extended beyond 2030. The proposed upgrade at the scale sought by the Proponent will affect a total area of 52 hectares, and will require removal of native vegetation on that land. The Proponent intends to stage clearing of vegetation over a 20-year period, with clearing rising up the ridgeline by five metres during the first year, five metres between years one to five, five metres between years five to ten, and a final five metres between years 10 to 20.

Thirty-five hectares of the 52 hectare footprint affected by the ash dam expansion is currently owned by the Crown (Department of Lands). The Proponent has advised that is currently negotiating with the Department of Lands to procure this land. In this regard, consent to acquire the land, subject to indemnification and a number of stipulations, has been provided by the Department of Lands and is attached in the Environmental Assessment.

The proposed upgrade will also require a range of new infrastructure including storage vessels and pumping facilities. New infrastructure required will include larger storage vessels or each hopper for each unit (eight per unit), additional storage for dry ash, new plant for conditioning ash and new pump facility.

Ash produced by the power station and which is not sold will be collected in vessels and pneumatically transferred to intermediate storage silos. These silos will have the facility to load trucks for transportation to other locations for reuse or dispose in the dense phase system. The use of dense phase disposal will result in 40% more ash placed per cubic metre (1.4 tonnes per cubic metre) than the current lean phase method (one tonne per cubic metre). The dry ash is wetted in a pug mill and then mixed to the desired dense phase concentration (approximately 70% ash 30% water) before being pumped to the ash dam using piston diaphragm pumps. The discharge line can be moved as the ash level rises thus allowing controlled discharge and clearing of land incrementally, as needed. The disperser pipe will be progressively raised up the ridgeline as the dam is filled until the grade reaches approximately 2% (refer to Figure 3). The dense phase slurry dries to form a solid crust which can then be rehabilitated. It is anticipated that up to some 750,000 tonnes of ash per annum will be disposed of in this manner. The proposed ash expansion and switch to dense phase disposal would increase existing ash disposal capacity by some 10 million m^3, providing capacity at present disposal rates to around 2032. Total capacity of the proposed expanded ash dam would therefore be approximately 40 million m^3 (compared with current total capacity of 29.2 million m^3)

The construction period for the ash disposal component is likely to last for up to 24 months, including the initial land clearing and site preparation works, installation of storage facilities and infrastructure. Use of the existing ash disposal facility would continue until the new system is phased into service during 2008/2009. During this time, the proposed ash disposal facility and 'dense phase' disposal method would need to be progressed from concept stage to detailed design.

2.3 Project Need and Justification

Emergency Gas Turbine

The primary purpose of the emergency turbine is to provide 'black start' capability to the power station in the event of total blackout of the electricity grid. The Proponent also seeks approval to operate the "emergency" turbine when there is a shortfall of system electricity supply, as indicated by NEMMCO messages or market pool price excursions.

The need for an additional restart capability for the North region is identified in Transgrid's NSW Power System Restart Capability Strategy Paper. The paper finds that:

- present restart capability for the North region is not sufficient for reliable system restart; and
- the minimum improvement required is another North region power station with a gas turbine restart source to ensure quick restart or at least two main units.

One of the main aims of the subject development proposal is to optimise the speed of restoration and to minimise risks to the community and to critical industries from prolonged interruption to supplies. Currently, the Eraring power station cannot restart in the event of a system collapse without an external electricity supply. Under current conditions this is expected to take a minimum of three hours after collapse. The proposed emergency turbine will enable the power station to restart in the event of a system collapse and minimise the time taken to restore the NSW electricity supply. The proposed turbine will permit restart of two main units at the power station simultaneously thereby advancing unit and system restart by at least three hours.

A submission raised the issue of the need for black start capacity at the Eraring power station in light of the recently approved gas-fired power station at Munmorah, which also includes black start/ emergency capability. In response, the Proponent has indicated that TransGrid requires a minimum of two major units (1320 MW capacity) in the Northern region to be restarted as soon as possible in the event of a system failure and that the Munmorah facility will only provide 600 MW. Therefore, an additional unit would be required to be restarted to meet the Transgrid's system requirements. The Proponent also reports that the proposed turbine is embedded within the Eraring power station switchboard network and can be operated to secure up to two main unit auxiliaries prior to a system shutdown. This will result in a much faster unit restart time at the power station. The Proponent also highlights that the Munmorah facility will be operational no sooner than 2009, while in contrast, the proposed emergency turbine at the Eraring power station could be available as soon as 2007. The Department considers that additional black start generation capacity improves security and response capacity, speed of system restoration, and ultimately minimises the risk of damages associated with system black-outs. The Department considers that there is adequate justification for the provision of black start capability at the Eraring power station.

In addition to black start capability, the Proponent seeks approval for operation of the emergency turbine to supplement the electricity supply during times of peak demand. The Proponent seeks a total of approximately 200 hours per year for the diesel operation of the turbine, which would include black-start operation, routine testing and peak demand generation.

The NSW Government discussion paper Energy Directions Green Paper (2004) identified the need for additional electricity supply, particularly in the supply of peak electricity demand. Peak electricity demand is growing at a rate of 4% per annum, and at times of peak demand, demand marginally exceeds the State's domestic supply having to import electricity from other jurisdictions. Based on forecasts, the paper indicates that the next increment of new generation capacity or demand side management capability is likely to be initially needed to meet demand at peak times. In this context, the Department supports the installation of additional peak electricity capacity supplied with gas, and concurs with the DEC's submission of not supporting the use of distillate fuel for power generation, in areas such as the greater metropolitan region, for other than 'black start' and emergency operation given the potential for high level of emissions for key pollutants. Based on the review of the Environmental Assessment documentation and submissions from the DEC, the Department recommends that the project approval of the emergency turbine includes conditions limiting the diesel operation of the emergency turbine for system emergency shortfalls to a maximum of 100 hours per year and imposing limits to the concentration of pollutants emitted from the turbine stack.

Upgrade of the Ash Disposal Facility

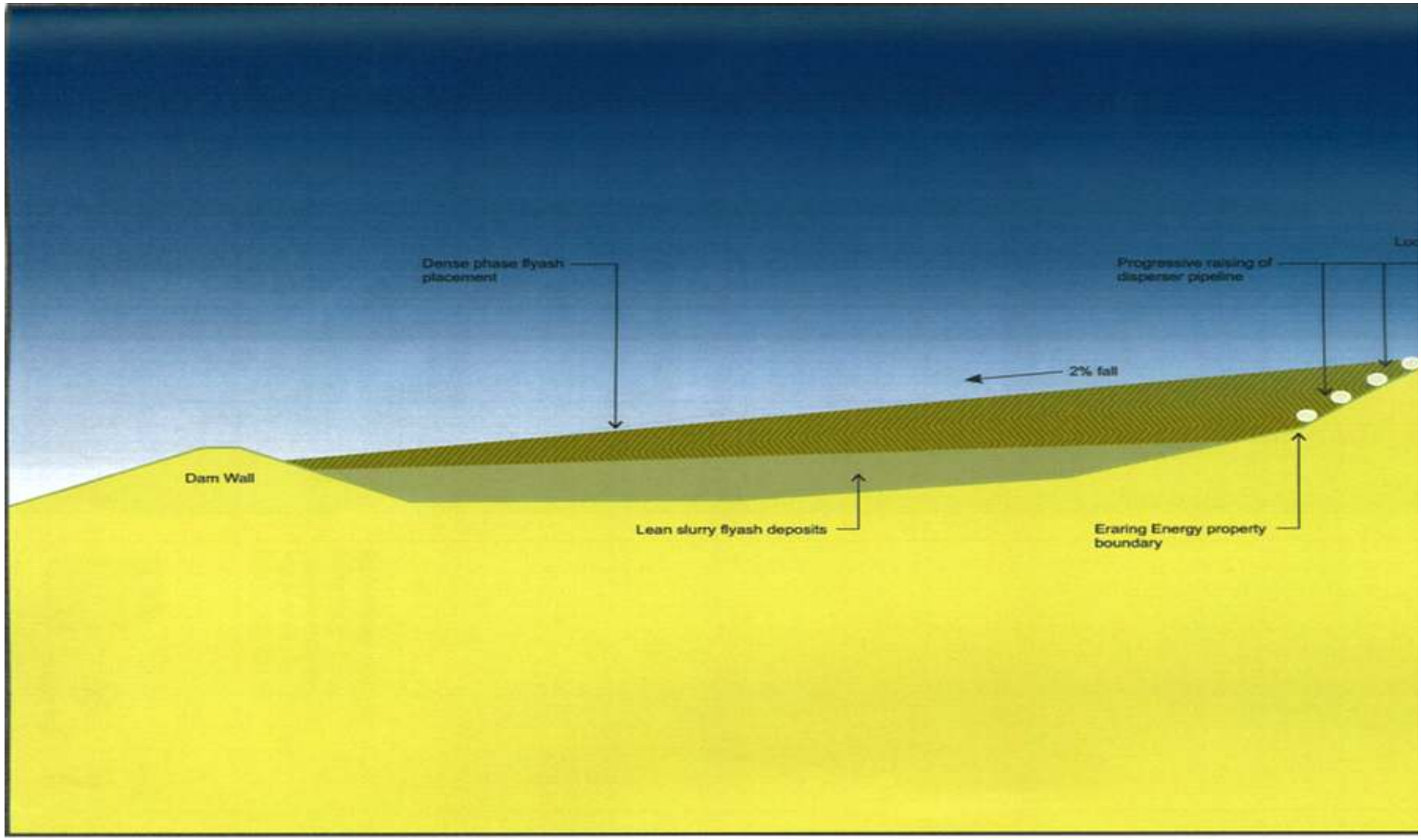
Additional ash disposal capacity is required to ensure the longevity of the power station's operation as the disposal capacity of the current facility will be exhausted by the year 2011/2012. The Eraring power station has an expected life beyond 2030, therefore should additional ash disposal capacity not be found the power station would not be forced to cease operations around 2011/2012. While the Proponent is reportedly seeking alternative methods of ash disposal, particularly reuse, it is proposed to expand the ash dam as a contingency to secure the continued operation of the power station into the future, with implications for the reliability and security of the State's electricity supply. The Environmental Assessment presents a number of options and justifies the selection of the preferred option (expansion of the ash dam disposal facility) on environmental and economic grounds.

A significant number of submissions (75%) raised concerns over the adequacy of the review of ash management options presented in the Environmental Assessment and a perceived lack of justification for the preferred option. The Proponent responded to these concerns in its Submissions Reports, including review of other options and providing additional justification for the selection of the preferred approach. The Department considers that the justification of the proposed ash disposal option presented in the Environmental Assessment is a key issue. This matter has been further considered in Section 5 of this report, including discussion of ash disposal options presented in the Environmental Assessment and Submissions Report, and the Department's review of such assessment and selection of preferred option. In summary, whilst the Department concurs with the Proponent in the need for additional ash disposal capacity to ensure the viability of the Eraring powers station beyond 2011/12, it considers that further review and optimisation of ash management measures is required prior granting project approval. Consequently, the concept approval recommended to the Minister is for a modified concept that would allow contingency on-site disposal subject to project approval under Part 3A of the EP&A Act. Prior to such project approval being granted, the Proponent will require to further review and optimise ash management measures, justify the final scale of the dam and carry out further environmental assessment. The recommended concept approval requires the preparation and implementation of a Long-Term Ash Management Strategy including a program for investigation and assessment of alternative ash management measures with a stipulated goal for 100% reuse of ash by 31 December 2011. The recommended 'modified' concept approval limits the maximum area allowed for progressive clearing to approximately half of the area originally proposed in the Environmental Assessment and provides for the provision of compensatory habitat in a ratio of 2:1, ie. 2 ha of compensatory habitat per hectare cleared. The recommended concept approval provides for on-site residual disposal capacity until at least 2022 (at current disposal rates) or further if reuse/other ash management options are optimised under the Long-Term Management Strategy. The Department considers that the recommended concept approval provides a balanced approach to ensuring the viability of the Eraring power station in the future, optimising ash management practices at the power station and minimising environmental impacts to acceptable levels within context of the need for the proposal.

Figure 2 – Proposed New Development Components

(sourced from the Environmental Assessment (HLA May 2006))

Figure 3 – Proposed Expanded Ash Disposal Facility Profile



(sourced from the Environmental Assessment (HLA, May 2006))

3. STATUTORY CONTEXT

3.1 Major Project

The project is declared to be a Major Project under *State Environmental Planning Policy (Major Projects) 2005* because it is development for the purpose of an electricity generation facility that has a capital investment value of more than $30 million (clause 24(a)). On 6 December April 2005, the Director-General, under delegation from the Minister, formed the opinion that the project meets the requirements of the Major Projects SEPP and declared the project to be a major project under Part 3A of the *Environmental Planning and Assessment Act 1979* (the EP&A Act).

3.2 Concept Plan Authorisation

On 26 January 2006 the Minister for Planning authorised the submission of a Concept Plan for the proposed upgrade of the existing ash dam disposal facility.

3.3 Nature of Recommended Approval

The Proponent seeks project approval for the proposed emergency turbine and concept approval for the proposed ash dam expansion. A single application and supporting Environmental Assessment were lodged with the Department for these two development components.

A significant number of submissions to the Environmental Assessment (about 61%) requested that the emergency turbine and ash dam expansion proposals be considered separately. Although both have been included in a single application, the two components of the application will follow separate approval processes under Part 3A, ie. project and concept approval processes (see discussion below for details).

Concept Approval – Ash Dam Expansion

In determining the concept plan application, the Minister has the power to approve a concept plan which such modifications as the Minister may determine necessary (Section 75O(4) of the EP&A Act). The Minister has also the power to specify subsequent assessment and approval steps for the detailed project application stages under the concept plan (Section 75P(1) of the EP&A Act).

The Department, on review of the information included in the Environmental Assessment and Submissions Reports considers that whilst there is need to provide contingency ash disposal capacity on-site to ensure the viability of the Eraring power station beyond 2011/2, that further review of ash management measures, justification of the final ash footprint, and assessment is required prior to granting a project approval for on-site ash disposal.

The nature of the recommended concept approval is for a modified concept that would allow contingency disposal on site subject to demonstrating that all possible ash management options for off-site ash disposal and reuse have been comprehensively investigated and implemented where possible. The modified concept approval limits the clearing of native vegetation to approximately half of the 52 ha originally proposed, and requires the provision of compensatory habitat in a ration of 2:1 for any clearing of native vegetation.

In this instance it is recommended that further assessment be undertaken under Part 3A for project approval because issues relating to these component raise matters of regional environmental planning significance, such as the potential clearing of a large area of native vegetation for the disposal of up to 750,000 tonnes of ash per annum for the life of the Eraring power station, as well as the significance of the power station in terms of securing energy supply to the State. Therefore it is recommended that the Minister retain the project approval role under Part 3A.

Project Approval – Emergency Turbine

In relation to the proposed emergency, the Department considers that the Proponent has provided sufficient information and environmental assessment and it is therefore recommended that project approval be granted subject to recommended conditions of approval.

3.4 Permissibility

The emergency turbine component of the proposal lies on land zoned 4(1) Industrial (Core) under the *Lake Macquarie Local Environmental Plan 2004*, and is permissible in that zone as an "energy generation work" and as a "utility installation".

The ash dam expansion affects land zoned 7(2) Conservation (Secondary) and 9 Natural Resources. The ash damn expansion is permissible in both of these zones as a "utility installation".

3.5 Environmental Planning Instruments

There are no Environmental Planning Instruments that substantially govern the carrying out of the development.

3.6 Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

Eighteen submissions (50% of all submissions), including the submission made by Lake Macquarie City Council, raised the issue that the proposal should be referred to the Commonwealth for consideration under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. The Department has drawn this issue to the attention of the Proponent and recommended that the Proponent refer the proposal to the Commonwealth in the event of any doubt over the need for an approval under Commonwealth legislation.

4. CONSULTATION AND ISSUES RAISED

The Environmental Assessment was publicly exhibited from 18 May 2006 to 20 June 2006 and re-exhibited from 21 July 2006 to 21 August 2006 to reflect corrections made by the Proponent to the real property description provided on its application form. A total of 36 submissions were received during these two exhibition periods (30 submissions during the original exhibition period, and 6 as a result of the re-exhibition).

Six submissions were received from State and local government bodies (the Department of Environment and Conservation (DEC), the Department of Natural Resources (DNR), the Mine Subsidence Board (two submissions), the Hunter-Central Rivers Catchment Management Authority and Lake Macquarie City Council). Thirty submissions were received from the public, of which 10 submissions were made by special interest groups and 20 were made by individuals. Of the total submissions received, 78% objected the proposal, 2% supported it and 20% did not state a position (instead raising issues to be considered as part of the assessment process). The majority of submissions (94%) raised concerns over the ash dam expansion, compared with only 19% of submissions relating to the emergency turbine component of the application.

The majority of submissions focused on issues associated with the proposed expansion of the ash disposal facility (94% of all submissions) compared with 19% of submissions relating which raised issues related to the EGT. The most frequently raised issues were ecological impacts/loss of bushland from the expansion of the ash dam (in 78% of all submissions), inadequate ash disposal options review/justification (in 75% of all submissions), need to consider separately the EGT and ash dam expansion proposals (in 61% of all submissions), need to refer the project to the Commonwealth under the EPBC Act (in 50% of all submissions), water quality impacts of the ash disposal dam facility (in 22% of all submissions) and air quality impacts of the EGT (in 11% of all submissions).

Issues Raised in Public Submissions

Key issues raised in submissions from the public and special interest groups can be summarised as follows:

1. ecological impacts, including:
   - loss of native bushland from the expansion of the ash dam;
   - impacts on threatened species from the clearing required for the expansion of the ash dam;
   - impacts on aquatic ecology from hot water discharges, and runoff and leachate from the ash dam;
2. inadequate review and assessment of options for ash disposal, and project justification;
3. air quality impacts, including:
   - impacts of dust from the ash dam on the local communities;
   - greenhouse gas emissions;
4. noise impacts, particularly with respect to the adequacy of the noise assessment;
5. land use planning implications, including:
   - need to maintain the buffer zone around the Eraring power station;
   - the long term use of the ash dam disposal facility;
6. consultation and the environmental planning and assessment process, including:
   - whether the proposal should be referred to the Commonwealth under the *Environmental Protection and Biodiversity Conservation Act 1999*;
   - that the emergency turbine and ash dam should be assessed and determined separately;
   - not enough time provided for public comment; and
7. water quality impacts, particularly issues with existing ash disposal facility and rehabilitated areas.

Issues Raised in State and Local Government Submissions

Issues raised in submissions from State and local government bodies can be summarised as follows:

Department of Environment and Conservation (DEC)

- the DEC does not support the use of distillate fuel for power generation, in areas such as the greater metropolitan region, for reasons other than 'black start' and emergency operation. The DEC's recommended conditions of approval restrict the use of distillate fuel.

- deficiencies in the air quality assessment included a) the methodology applied to meteorological model inputs is not appropriate; b) no reasonable cumulative impact assessment for key pollutants; and c) predicted NO_x emission from the turbine are 44 mg/m^3, a level that is difficult to achieve with distillate fuel, with upgrades to the turbine necessary and this can increase VOC impacts and may not provide sufficient power for a black start.
- the DEC considers that noise from the emergency turbine is unlikely to impact on residential receptors. There is potential for elevated noise during construction.
- the emergency turbine is expected to generate small quantities of wastewater and this issue does not appear to have been addressed in the Environmental Assessment. Bunding of the turbine will allow the management of contaminated water.
- the Flora and Fauna study provides an adequate description of the existing environment and potential impacts of the ash disposal facility, however there a number of deficiencies and outstanding issues such as a) progressive clearing of 52 hectares of native vegetation that contains habitat for some threatened species; b) proposed mitigation measures are unlikely to adequately offset the removal of threatened species habitat; c) no consideration is given to the provision of compensatory habitat and measures to control weeds; d) limited information provided on the proposed rehabilitation plan; and e) no ecological assessment of the alternative ash disposal options has been undertaken. The DEC indicates that these issues should be addressed by either an amended statement of commitments or as conditions of any concept approval for expansion of the ash disposal facility.
- whilst Aboriginal heritage sites are not known in this area, conditions are recommended to address the possibility of such objects being unearth during construction.
- while the DEC acknowledged that up to 50% of the ash generated is used offsite for beneficial purposes, it considered appropriate to substantially increase, over time, the quantity of material beneficially reused.
- the DEC concluded that the proposed Dense Phase Ash Disposal had the potential to extend the life of the existing ash dam and to improve the environmental performance of the facility, i.e. water management and dust. The DEC would support a concept approval being issued for such proposal to allow a more detailed process design and environmental management to be undertaken.
- The DEC recommended a number of conditions of approval, including limiting the operations of the emergency turbine to black start and for testing/maintenance purposes (20 hours per year), and requiring the applicant to submit by 31 December 2011 details of a proposal to reuse all ash generated on the premises for beneficial purposes (with a provision to enable the Proponent to apply for an extension of such deadline to the Director-General if reuse options are proved to be slow to emerge or they are considered to be unfeasible on economic, environmental or industrial reliability criteria).

Department of Natural Resources (DNR)

- the existing and proposed expansion of the ash dam may have the potential to cause contamination of the groundwater (both on and off-site impacts). DNR recommends that the issue of potential contamination be assessed with appropriate conditions for groundwater monitoring and remediation included in the determination.
- monitoring bores or excavation works that intercept the groundwater require licensing under Part 5 of the *Water Act 1912*.

Mine Subsidence Board (MSB)

- the EGT is within the confines of the existing power station and the MSB would have no objection to its approval.
- the expansion of the ash dam facility includes an area of shallow mine workings and there is the potential for further mining. MSB recommends that the applicant be required to undertaken a risk analysis regarding the ash dam extension and the proximity of the old mine workings. The Proponent should also consult with the Department of Primary Industries – Mineral and the Local Lease Holder to ensure the ash dam extension will not impact on the future extraction of coal reserves in the area.
- MSB supports the project provided a geotechnical assessment of abandoned mines is carried out to verify that they are collapsed and there is no risk of future subsidence.

Hunter-Central Rivers Catchment Management Authority (CMA)

- the CMA expects that the 'improve or maintain' principle of the *Native Vegetation Act 2003* be adopted as part of the assessment of the proposal and would further expect that a full assessment of conservation

value of the vegetation community existing on the site and an assessment of how any clearing following a rezoning could improve or maintain environmental outcomes. The Draft Catchment Action Plan should be taken into consideration.

- the Environmental Assessment does not appear to consider the objectives of zone 9 – Natural Resources in the Lake Macquarie LEP.

Lake Macquarie City Council

Council objected to the proposal and raised the following issues:

- insufficient justification for the removal of 52 hectares/ash disposal.
- failure to identify long term ash disposal needs of the power station.
- approval should be obtained from the Commonwealth Minister for the Environment and Heritage under the EPBC Act.
- long term rehabilitation and land use of the ash dam should be resolved before granting any approval.
- decommissioning of the emergency turbine is not addressed.
- the proposal to supply the emergency turbine with methane gas via a pipeline should form part of this application.
- the proposal is contrary of zone objectives and the Environmental Assessment does not address adequately the objectives of the Hunter Regional Environmental Plan.
- the proposal is contrary to Council's local Greenhouse Action Plan.
- deficiencies in the ecological investigations of the Environmental Assessment. Council's request for compensatory habitat is not addressed in the Environmental Assessment.
- cumulative impacts of clearing 52 hectares in conjunction with other clearing throughout the city have not been assessed.
- water and air quality impacts of the ash dam disposal facility.

4.1 Submissions Report

On review of the issues identified in submissions received during public exhibition, the Department required the Proponent to prepare a Submissions Report. A Submissions Report (dated 8 August 2006) providing responses to submissions received during the first public exhibition period and a supplement to the Submissions Report (dated 30 August 2006) addressing new issues raised during the second public exhibition period were submitted to the Department. These documents are included in Appendix D.

In the Submissions Report, the Proponent indicated that the project has not changed from that described in the Environmental Assessment and therefore a Preferred Project Report was not necessary. The Submissions Report included an attachment detailing additional provision of compensatory habitat at the decommissioned ash dam (HLA, 7 August 2006), and emergency turbine manufacturer's details including emissions performance data. The Proponent also sought reconsideration of some of the DEC's recommended conditions of approval. For example, the Proponent requested that the number of hours the emergency turbine is allowed to operate (including black start, routine testing and in the event of a system shortfall being defined as a NEM dispatch or up to two hour predispatch of $300/MWh or more) be increased to 100 hours in a calendar year, and also requested to modify the ash reuse targets to 60% by 2011, 75% by 2015 and 100% beyond 2015.

Additional information provided in the Submissions Report or the supplement to the Submissions Report is further discussed below or otherwise in the relevant parts of Section 5 of this report.

Additional Compensatory Habitat Measures

In response to the DEC submission's issue about the limited consideration given in the Environmental Assessment to the provision of compensatory habitat, the Proponent prepared a supplementary report (HLA, 7 August 2006) with additional compensatory habitat measures in the form of rehabilitation and weed control measures. The focus of the proposed compensatory habitat is the construction of a habitat corridor based on floral assemblages of both the Coastal Plains Smooth-barked Apple Woodland vegetation community and Coastal Plains Scribbly Gum Woodland, both of which occur on the Eraring power station lands. The proposed habitat corridor is approximately 40 metres wide and 500 metres across and is designed to provide a pathway running east-west for the movement of arboreal and avian fauna across the decommissioned ash dam, and in doing so provide linkages to surrounding areas of native vegetation.

The Proponent notes that is proposing to develop a compensatory habitat of approximately 30 hectares including the habitat corridor described above, continued development of the wetland at the north eastern edge of the ash dam and rehabilitation of part of the reclaimed area of the ash dam (referred to as area C, the last area to be capped). The Proponent indicates that this work will use similar techniques as outlined above (ie. HLA, 7 August 2006). The Proponent also indicates that further rehabilitation work will be carried out on other reclaimed areas of the ash dam over the following years to develop additional areas of compensatory habitat as clearing of land for the ash dam is required. The Proponent notes that this is part of the long term management plan for the ash dam area.

Emergency Manufacturer's Details

The emergency turbine manufacturer's details were provided in response to the DEC's submission issue about emissions to air. The Submissions Report indicates that the supplier of the turbine unit has advised a NO_x guarantee emissions figure of 65 ppmvd when firing on distillate, and that to cover all events the Proponent agrees with the 86 ppmvd nominated in the DEC submission to remain as the NO_x emission licence limit if it is measured as an hourly average. It also indicates that the water injection NO_x abatement system will actually enhance power output without raising VOC emissions, rather than reducing the machine's power output and increasing output of VOC.

4.2 DEC Review of the Submissions Report

The response of the DEC to the Submissions Report and to the Proponent's request for review of some of the DEC's recommended conditions of approval can be summarised as follows:

- while the DEC recognises a role for diesel fuel use of black start capacity and system wide emergency shortfall response, the DEC does not favour the use of diesel fuel for the generation of peak load power.
- the DEC clarified the meaning of a system emergency shortfall and recommended the allowance of a total of 100 hours/year of operation for the EGT for black start, routine testing and maintenance, and a system emergency shortfall.
- the DEC did not agree in the Proponent's request to modify a condition which require the applicant to submit by December 2011 details of a proposal to reuse all ash generated on the premises, indicating that the timeframes proposed by the Proponent (ie. 60% by 2011, 75% by 2015 and 100% beyond 2015) were too long. The DEC however supported an amendment to the recommended condition if the Proponent was to present a detailed action plan describing how the reuse/recycle rates and timeframes described in the submission will be achieved.
- in relation to the Proponent's additional compensatory habitat (ie. habitat corridor) proposed in the Submissions Report, the DEC indicates that whilst the method of constructing the corridor may be acceptable, a long narrow corridor in isolation is highly susceptible to edge effects and unlikely to provide quality habitat. The DEC indicates that this issue must be addressed by preparation of a comprehensive rehabilitation plan and timetable for the entire ash dam area as a compensatory habitat area ad within a reasonable timeframe.

5. ASSESSMENT OF ENVIRONMENTAL IMPACTS AND ISSUES

After consideration of the Environmental Assessment and the issues raised in submissions, the Department has identified the key issues associated with the proposal to be:

- justification and need (Ash Dam Expansion);
- air quality impacts (Emergency Turbine);
- ecological impacts (Ash Dam Expansion);
- water quality impacts (Ash Dam Expansion); and
- Aboriginal heritage impacts (Ash Dam Expansion).

All other issues are considered to be relatively minor compared with the key issues indicated above and have been addressed as part of the Proponent's Submissions Report and supplement to the Submissions Report, Environmental Assessment and Statement of Commitments.

5.1 Justification and Need (Ash Dam Expansion)

Issues

The Proponent considered the following ash disposal options in its application:

1. ***Do Nothing*** - the Environmental Assessment discards this option as the Eraring Power Station's existing ash disposal facility will be full by the year 2011/2012 and the power station's expected life is beyond 2030. If no action is taken, there will be insufficient capacity to dispose the ash on-site during the operational life of the power station.
2. ***New dam on the other side of the ridge using the same 'lean phase' disposal method*** - this option was discarded as it would involve the use of a substantial area of previously undeveloped land on the site and would utilise a relatively inefficient method which requires a larger footprint and provides lesser capacity.
3. ***Continuation of lean phase disposal*** - this option was discarded as the use of lean phase disposal on the site would require more land and would be a less sustainable and efficient form of ash disposal.
4. ***Mine Disposal*** - previous reviews of the option to dispose of fly ash in local mine workings both underground and open cut have indicated that the underground mining technique used and the angle of repose of the fly ash greatly inhibits the mine working to be an effective disposal site. The use of dense phase placement into local coal mines was considered in a trial by ACARP (Australian Coal Association Research Program) during 1998 and 2001. The Proponent suggests that although tests to date have yielded certain positive results, the potential for groundwater contamination was of particular concern and that further studies on the effect of groundwater (leaching, etc) would be required before it could be determined a viable option. The Proponent also highlights the difficulties with transfer of ash slurry to local mine voids, requiring either significant traffic generation or potentially expensive pipe and pump infrastructure.
5. ***Reuse of ash*** - the Proponent currently sells approximately 45% of the fly ash to Fly Ash Australia and all bottom ash to Blue Circle Ash. Fly Ash Australia has advised the Proponent that reuse should increase by about 2% per annum. Blue Circle Ash has advised the Proponent that fly ash may have a possible use in bricks, and as consequence a trial use was carried out in October 2005 with results being currently evaluated. The Proponent has advised that it will continue to seek options for the reuse of ash, however in the meantime it is prudent to assume that an appropriate storage/disposal facility is still required on the site, and therefore the reuse option will continue to be used in conjunction with an ash disposal facility. The Proponent has committed to continue to investigate and pursue opportunities for the reuse of ash, and to periodically report to both the Director-General and the Department of Environment and Conservation on progress towards increasing the reuse of ash.
6. ***Expansion of existing dam using dense phase disposal.*** The Proponent argues that the dense phase disposal method, which utilises a mix of 70% ash and 30% water (instead of the current 30% ash and 70% water), is more efficient and enables the expansion of the existing dam using the adjacent ridgeline as a wall. The Environmental Assessment indicates that this was the selected disposal method due to the added efficiency, minimal construction and land required, and subsequent reduction in environmental impact. Two sub-options were considered for the dense phase disposal:

6A. Using the full dam including the area previously capped and rehabilitated - the Proponent indicates that whilst this option would have reduced the area required to be cleared, it was found to have issues related to run off during storm events and air quality impacts associated with dust which outweighed the potential impacts of the preferred option. The Proponent indicates that by using previously rehabilitated areas, the total run-off into the dam would increase and that the potential for discharge into Lake Macquarie would be greater. It also notes that using these areas would also increase the total bare ash exposed area, thus increasing the volume of run-off available to leach selenium from the ash deposit. In addition, the Proponent indicates that static and stability issues would limit the height to which ash deposit could be built up on the capped area. If the ash deposit is raised too high or the containment embankment is located too close to the existing dam wall, this could lead to instability in the ash deposits and the main embankment. Consequently, the additional ash storage gained by utilising the capped areas would be limited and it is unlikely that the area would be large enough to hold all the ash produced. A further issue associated with the use of these rehabilitated areas is reportedly the potential for unplanned discharge via the spillway during extreme storm events. As the ash level rises, it will be necessary to raise the pond operating level to maintain the decant pond which would in turn lead to an increased potential for spillway flood flows. Finally, the Proponent reports that the use of these areas would result in greater potential for dust problems due to a greater area of exposed ash surface.

6B. Using half the dam area and increase the land area north of the dam - the Proponent indicates that this option was selected as the preferred option because it was considered to have fewer environmental issues and much lower environmental operating costs. The Proponent notes that the use of 'dense phase' disposal would facilitate the expansion of the existing dam, rather than the construction of a new dam due to the higher density of the material being disposed. Due to the higher concentration of this material, the disposal method is reportedly more efficient and enables the expansion of the existing dam using the adjacent ridgeline as a wall. The Proponent concludes that this was the selected option for the project due to the added efficiency, minimal construction and land required, and subsequent reduction in environmental impact.

Submissions

A key concern raised in public submissions related to the Proponent's justification for the need, scale and capacity of the proposed ash dam expansion. This issue was raised in a total of 27 submissions (75% of all submissions), with concerns focussing a perceived lack of thorough consideration of operations, the need to further consider disposal in mine voids or abandoned underground mine workings, and the lateral extent and configuration of the ash dam expansion.

Consideration

The Department concurs with the Proponent that there is a clear need for additional ash management capacity at the Eraring power station. The power station is an important component of the State's electricity generation and supply network, and it is important to ensure viability of the power station beyond 2011/12 when current ash disposal capacity is likely to be exhausted. However, while the Department does consider that ash management capacity is necessary in the longer term, it does not agree with the Proponent that the most effective and sustainable approach would be on-site disposal over the course of some twenty years.

While the Proponent has considered a number of options for ash management in the Environmental Assessment, the Department is not satisfied that the Proponent has adequately justified the proposed scale of the ash dam expansion. In particular, the Proponent has extrapolated current ash management practices over the twenty year life of the proposed ash dam expansion, without focussing on increased reuse opportunities or efficiencies in power station operations and ash handling practices. The Environmental Assessment suggests that there is potential to progressively increase the percentage of ash sold for reuse and therefore reduce the Eraring power station ash disposal needs. For example Fly Ash Australia, which currently buys approximately 45% of all fly ash, has reportedly indicated that ash reuse should increase by about 2% per annum, and Blue Circle Ash, which currently buys all bottom ash, has reportedly indicated fly ash may have a possible use in bricks and that a trial of this use was carried out in 2005 which is currently being evaluated. Based on the information provided in the Proponent's application, the Department considers that there may be opportunities in the future to maximise other

ash disposal/reuse options available to the Proponent and consequently optimise the ash dam expansion to residual/contingency disposal only. Over time, technological advances and the emergence of new ash reuse markets can further influence ash management practices of the Eraring power station. The Department also considers that, in the context of remaining operational life of the power station (more than 20 years), periodical reviews of ash reuse/optimisation of options must be undertaken to ensure that any ash dam expansion reflects the optimisation/ maximisation of ash management options. Most importantly, the Department considers that approval of the full capacity of the expanded ash dam currently sought by the Proponent would relieve much of the necessary drive behind investigation of alternative ash management measures. The Department considers that an appropriate balance of disposal and reuse would lie with concept approval for approximately 10-years disposal capacity, with strong emphasis on attaining full ash reuse over the longer term.

The consequence of adopting the option proposed in the Environmental Assessment is the progressive clearing of 52 hectares of significant native bushland and the potential loss of threatened species habitats (further detail assessment of this impact is provided in section 5.3). Given the significance of such impacts, the Department considers that further refinement and optimisation of ash management measures should be undertaken prior to the Proponent seeking project approval. Ultimately, the Department considers that the footprint of any ash dam expansion should reflect the residual need for disposal after all alternative management options have been comprehensively investigated and applied where feasible.

The Department recommends that a modified concept approval be granted for contingency on-site disposal at the upgraded ash dam disposal facility to ensure viability of the power station after 2011/12 and to manage risks associated with ash management if reuse options fail to accommodate full diversion of ash in the short to medium term. The Department recommends that contingency on-site disposal capacity be limited to approximately 10-years capacity, as a balance between ash management risks and ecological impacts. The Department also recommends that the concept approval require the preparation of a Long-Term Ash Management Strategy by December 2011, or on lodgement of a project application (whichever is the sooner) including a program for investigation and assessment of alternative ash management measures with a stipulated goal of 100% ash reuse. Under the strategy, the Proponent would be required to develop a framework for the optimisation of ash disposal and (ongoing) management measures on site, consistent with contemporary best practices.

The concept approval would also require a further and future application and assessment to be undertaken under Part 3A of the *Environmental Planning and Assessment Act 1979* as the issues associated with the ash dam expansion and the actual operation of the EPS are considered matters of state significance. The project approval would need to be consistent with the approved Long Term Ash Management Strategy and requires further investigation and assessment of environmental parameters.

By requiring the Proponent to prepare a Long-Term Ash Management Strategy, including a program for investigation of alternative ash management measures, and by limiting the maximum area of clearing to about half that originally proposed, the Department considers that the Proponent would be induced to actively search for the optimisation of ash management measures at the in accordance with best environmental practices. The Department believes that the recommended modified concept plan provides a balanced approach to ensuring the viability of the Eraring power station in the future, optimising ash management practices at the power station and minimising environmental impacts to acceptable levels within the context of the need for the proposal.

5.2 Air Quality Impacts (Emergency Turbine)

Issues

The key air quality issues associated with the proposed emergency turbine relate to the air emissions from the turbine, and the mode of operation of the turbine (peak load capacity operating with diesel fuel in addition to use as an emergency unit).

The 42-megawatt "emergency gas turbine" is proposed to have dual fuel capability, although approval is only sought at this time for firing on distillate. The Environmental Assessment indicates that the Proponent is currently in negotiations with the Mandalong mine gas/coal bed for the use of 1,500 GJ/day of methane gas to run the black-start unit. Such development, which is not part of this proposal, would require a gas supply pipeline to the Eraring power station and therefore further environmental assessment and approval. Under the current

application, the emergency turbine is proposed to run on diesel fuel during black start situations (infrequent occurrence), during routine testing (about 20 hours per year) and at times of shortfalls in supply of electricity (peak load situations). The Environmental Assessment indicates that in total, the generator would be expected to be operated for up to approximately 200 hours per year if fired only on diesel fuel.

The Environmental Assessment presents an air quality impact assessment undertaken in accordance with *Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in New South Wales* (DEC, 2005). For the purpose of this modelling, the Proponent assumed that the turbine would operate continuously over a full year. The aim of this assumption was to determine the worst case short term average pollutant concentrations at nearest receptors for the full 365 day meteorological date file. This worst-case concentration was used for comparison with existing operations and specified ambient limits. The results of the air quality modelling are presented in Table 1.

Table 1 – Predicted Air Quality Impacts at Sensitive Receptor Locations

Pollutant	Criteria (μgm^{-3})	Maximum Contribution (μgm^{-3})	Maximum Contribution (% of Criterion)	Cumulative Concentration (μgm^{-3})
SO_2 (10-minute)	712	3.0	0.4%	291.2
SO_2 (1-hour)	570	2.1	0.4%	175.8
SO_2 (24-hour)	228	0.6	0.2%	38.5
NO_2 (1-hour)	246	11.6	4.7%	108.7
PM_{10} (1-hour)	50	1.1	2.2%	No background data available
CO (15-minute)	100,000	2.8	0.003%	
CO (1-hour)	30,000	2.1	0.007%	
CO (8-hour)	10,000	1.3	0.013%	

As shown in Table 1, the predicted air pollutant concentrations at nearby sensitive receptors comply with relevant ambient air quality criteria. Cumulative pollutant concentrations do not result in exceedance of any of the pollutants for which background data exists (SO_2 and NO_2). The Proponent also concludes that for the pollutants for which background data does not exist, concentrations are not expected to pose a problem cumulatively due to the low relative contribution of each of the pollutants (PM_{10} expected to contribute a maximum of 1.1 μgm^{-3} and CO less than 2.8 μgm^{-3} toward the ambient environment).

Submissions

Four submissions (11%) raised issues related to air quality impacts from the emergency turbine. Key issues raised included use of distillate fuel instead of gas fuel, increased greenhouse and other pollutant emissions, and deficiencies in the air quality assessment.

In its submission, the DEC indicated that it does not support the use of distillate fuel for power generation in the Greater Metropolitan Region for situations other than 'black start' and emergency operation. It also indicates that if the Proponent intends to use the emergency turbine for peak load power it should operate the turbine on coal bed methane gas and/or natural gas fuel (which such proposal requiring further environmental assessment). The DEC pointed out a number of issues with the air quality assessment (summarised in section 4 of this report) and recommended conditions to address the issues raised in its submission, including limiting the hours of operation of the proposed emergency turbine to no more than 100 hours per annum.

Consideration

Under the current project application, the emergency turbine is proposed to be used on distillate fuel for black start situations, during routine testing and at times of shortfalls in supply of electricity (totalling about 200 hours per year). As per the DEC, the Department does not support the use of distillate fuel for power generation in areas such as the Greater Metropolitan Region for other than 'black start' and emergency operation. The DEC has recommended conditions that restricts the use of distillate fuel for not more than 100 hours per calendar year for routine testing and maintenance, and for a system emergency shortfall (being defined as an NEM dispatch

price of up to two hours pre-dispatch price of $300/MWh or more, or such other definition as may be defined in an EPL). The Department has adopted the DEC's recommendations as they provide a balance between achieving the objective of providing emergency capability to the power station and protecting the local amenity.

The Environmental Assessment's predictive air dispersion modelling and assessment concluded that emissions from the emergency turbine would not result in exceedances of air quality criteria. Although the assessment predicted worst-case pollutant concentrations under the conservative assumption of continuous operations, the DEC identified some deficiencies in the air quality assessment that could have underestimated impacts. The Proponent has not undertaken additional modelling to address such deficiencies but provided additional information in the Submissions Report to address the DEC's concern about predicted NO_x emissions from the turbine. In this response the Proponent provided NO_x guarantee emission below the criteria recommended by the DEC's submission and provided clarification from the supplier that the water injection NO_x abatement system would actually enhance power output without raising VOC emissions (rather than reducing the machine's power output and increasing output of VOC).

The DEC, in its submission to the Environmental Assessment, concluded that it could support the project approval of the emergency turbine subject to conditions, such as restricting the number of hours of operation of the turbine, providing limits to the turbine's stack discharge pollutant concentrations and requiring the Proponent to monitor the turbine's stack during operation. Overall, the Department is satisfied that with the adoption of DEC's recommended conditions of approval and the measures indicated by the Proponent in its response to the submissions, the emergency turbine will not cause significant impacts on air quality. In addition, the recommended project approval includes a requirement to monitor stack discharges. It is also noted that the Environmental Protection Licence for the Eraring power station requires on-going ambient monitoring in residential areas. This requirement will continue in the revised Environmental Protection Licence.

The Environmental Assessment predicts 6,800 tonnes per annum of CO_2 from the emergency (or 0.03% increase of the 1995's greenhouse emissions in the Lake Macquarie LGA, or 0.004% increase of the 1995's greenhouse emissions in NSW). Restricting the turbine's operating hours would further reduce the predicted greenhouse emissions which overall are expected to be insignificant in the context of total emissions in the LGA.

The Department considers that provided all environmental commitments and the requirements of the recommended conditions of approval are implemented during construction and operational phases of the EGT, the resultant air quality impacts from the proposed emergency turbine would not be significant. Notwithstanding this, the Department believes that the Proponent should be required to undertake continuous and regular emissions testing to ensure that air contaminants from the site remain well below the nominated criteria. This approach is reflected in the recommended project approval instrument.

5.3 Ecological Impacts (Ash Dam Expansion)

Issues

The proposed expansion of the ash dam would require the clearing of approximately 52 hectares of native vegetation in stages over a 20 year period. The area proposed for clearing is within the woodland buffer maintained by the Proponent as well as certain Crown land to the north which is to be acquired by the Proponent (about 35 hectares). The Proponent seeks concept approval for the upgrade and expansion of the ash disposal facility, and would seek further project approval(s) for this aspect of the proposal in future, as need may arise.

A flora and fauna investigation was undertaken as part of the Environmental Assessment which included a review of existing information followed by general flora and fauna surveys and targeted surveys. The flora and fauna surveys, carried out in July 2005 with further targeted surveys carried out in November 2005, covered the area subject to proposed clearing.

A total of 124 vascular plant species were recorded within the study area. The species were primarily within two vegetation communities, the Coastal Plains Smooth-barked Apple Forest and Coastal Plains Scribbly Gum Woodland (refer to Figure 4), with a few species recorded in the limited aquatic habitat that is present within the study area. The general condition of the study area is reported to be very good, based on the diversity and dominance of native species. *Tetratheca juncea*, a threatened plant species protected by the provisions of the

Threatened Species Conservation Act 1995 (TSC Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*, was identified in the study area. A total of 94 vertebrate species, excluding fish, were recorded. The majority of the species were birds, with four mammal species recorded, including the Sugar Glider. Five threatened animal species under the TSC Act were recorded including the Grey-headed Flying-fox (*Pteropus poliocephalus*) plus four species of insectivorous bats: the Eastern Freetail-bat (*Mormopteris norfolkensis*); the Eastern False Pipistrelle (*Falsistrellus tasmaniensis*); the Little Bent-wing Bat (*Miniopteris australis*); and the Common Bent-wing Bat (*Miniopteris shreibersii oceanensis*). Habitat is reportedly present within the study area for a further 18 listed threatened species.

The Environmental Assessment indicates that the greatest impact is the loss of approximately 52 hectares of an area of high native and low exotic species biodiversity that is also structurally diverse. The proposed dam expansion would affect approximately 22 hectares of Coastal Plains Scribbly Gum Woodland and 11 hectares of Coastal Plains Smooth-barked Apple Forest. This equates to less than 11% of the approximately 300 hectares of woodland within the Eraring power station lands, including the lands to be acquired for the proposed ash dam expansion. The removal of 52 hectares of vegetation will result in the removal of fauna habitat, such as mature hollow bearing eucalypts, dense shrub understorey, dense ground cover, fallen logs and leaf litter that supports native fauna. Species affected would include small mammal populations, arboreal mammals and insectivorous bats that roosts in tree hollows. The clearing will impact on the six threatened species recorded in the area, including the removal of 34 hectares of habitat for *Tetratheca juncea*. Clearing of native vegetation is a key threatening process under Schedule 3 of the TSC Act. The Environmental Assessment indicates that it is likely that it would take over 100 years for a community of a similar structure to develop from a rehabilitated area, providing native biodiversity can be maintained.

In order to minimise the impacts of the proposal upon native flora and fauna, the Proponent has committed to the following safeguards:

- staging of clearing in increments over a twenty year period, with a rise up the ridgeline of 5 metres during the first year, a further 5 metres during years 1 to 5, a further 5 metres during years 5 to 10 and another 5 metres during years 10 to 20 (refer to Figure 5). Each stage of clearing would be subject to further ecological assessment to allow for ongoing monitoring of the success of mitigation measures;
- retention of a buffer zone of a minimum of 20 metres along the ridgeline;
- preparation and implementation of a Flora and Fauna Management Plan including details of the timing of clearing to ensure that it does not coincide with critical periods in the lifecycles of significant species, general safeguards to be installed and monitoring programs to be implemented. The Management Plan would also include a Vegetation Clearance Protocol incorporating details on the delineation of areas of remnant vegetation to be cleared, progressive clearing, the identification of fauna management strategies, the collection of seed from the local areas, the salvage and reuse of material from the site, the control of weeds during clearing activities, measures to minimise the occurrence of feral pests, selective planting of native vegetation, and the provision of roosting/nesting resources for fauna;
- the Proponent would take all practicable measures to minimise vegetation clearing during the development;
- installation of artificial nest/ roost boxes within nearby woodland and particularly within the buffer zone prior to the first stage of clearing. These nest/ roost boxes will replace tree hollows at a ratio of 2:1 and their condition will be regularly monitored. Monitoring of the condition of artificial nest boxes would be incorporated into the Biodiversity Management Plan being prepared for the Eraring power station lands;
- preparation and implementation of a rehabilitation plan to be submitted to the Director-General, including utilisation of soil and regolith stripped during clearing and, if practicable, the ash deposited as part of the proposed project. Rehabilitation is to utilise a similar vegetation community, particularly with regard to nectar producing species, to that which will be removed as part of the proposed project. Measures to control the occurrence of weeds is to be included in the plan;

Seven-part tests undertaken by the Proponent's consultant as part of the Environmental Assessment concluded that with the implementation of the above safeguards, the proposed project would not have significant impacts upon threatened species.

In its Submissions Report, the Proponent presented additional mitigation measures to be incorporated in the project. The additional measures were developed in response to the flora and fauna issues raised in the DEC's

submission on the proposal. The additional measures relate to the provision of compensatory habitat, albeit in the form of rehabilitation and measures to control the occurrence of weeds. The proposed compensatory habitat involves the construction of a habitat corridor, 500 metres long and 40 metres wide, based on floral assemblages of both the Coastal Plains Smooth-barked Apple Woodland vegetation community and Coastal Plain Scribbly Gum Woodland, both of with occur on Eraring power station lands. The corridor is designed to provide a strategic pathway running east – west for the movement of arboreal and avian fauna across the decommissioned ash dam, and in doing so provide linkages of surrounding areas of native vegetation.

In the supplement to the Submissions Report, the Proponent notes that it proposes to develop a compensatory habitat of approximately 30 hectares including the habitat corridor described above, continued development of the wetland at the north eastern edge of the ash dam and rehabilitation of part of the reclaimed area of the ash dam (referred to as area C, the last area to be capped). The Proponent also indicates that further rehabilitation work will be carried out on other reclaimed areas of the ash dam over the following years to develop additional areas of compensatory habitat as clearing of land for the ash dam is required. The Proponent notes that this is part of its long term management plan for the ash dam area.

Submissions

Concern over the ecological impacts of clearing native bushland for the purpose of expanding the ash dam disposal facility was expressed in twenty-eight submissions (about 78%). Key issues raised in the submissions related impacts on threatened species, the loss of native vegetation, the lack of adequate mitigation measures and provision of compensatory habitat, the adequacy of the flora and fauna surveys carried out for the Environmental Assessment, and long term rehabilitation and land use of the site.

Consideration

The Department considers that the Proponent has generally provided an adequate description of the existing environment and potential impacts associated with the proposed expansion of the ash disposal facility. The flora and fauna studies covered the whole study area and included a review of existing information and general and targeted flora and fauna surveys using a range of standard methods and techniques for recording species. The flora and fauna investigations identified a number of threatened species but also acknowledged that other threatened species may be present at the site. Further assessment of flora and fauna impacts would be undertaken for the project approval phase of the ash dam upgrade.

What the Proponent has clearly identified, and what it does not deny, is the fact that the ash dam expansion proposal, as it is framed in the application, seeks to destroy 52 hectares of high quality and high value native vegetation, including significant threatened species. While the Proponent intends to offset these losses with a comprehensive compensatory habitat package, significant concern is presented in submissions about the appropriateness of this approach, and in relation to the details of how the proposed compensation will measure up to the quality of habitat lost to the development. Public submissions generally argue that the Proponent has not sufficiently justified the need to clear the vegetation in the first instances, and the Department of Environment and Conservation raises concern over the level of detail and ability for the compensatory measures outlined by the Proponent to achieve the desired ecological outcomes.

The Department agrees with the generally concerns raised in submission from the public and other government agencies concerning the extent and significance of vegetation proposed to be cleared for the ash dam expansion. As noted earlier in this report, the Department concurs with the Proponent that additional ash management capacity is required to ensure the on-going viability of the power station, but does not accept that a simple 20-year ash dam expansion based on current ash management conditions to be an acceptable or justified outcome. The Department has recommended that the Minister modify the concept plan to restrict expansion of the ash dam to a level predicted to be required for ten years capacity (post 2011/12). This, in concert with requirements for active investigations for alternative ash management measures to attain a goal of full ash reuse by 2011 is considered an effective means to encourage sustainable ash management practices.

The proposed modification to limit ash dam expansion to roughly 10 years' capacity is based firstly on what is considered by the Department to be a reasonable balance between encouraging ash reuse and managing the risk of having insufficient ash management capacity at some point in future (thereby jeopardising the operation of

the power station). Secondly, and potentially more significant, this 10-year limit would see no more than approximately 28 hectares of the original 52 hectares lost to the ash dam expansion (assuming full reuse of ash is not achieved in the medium term). In simple area terms this is a significant reduction in the footprint of the ash dam expansion from that originally presented by the Proponent. In terms of quality, however, restriction to the 10-year limit has been established to avoid the most significant impacts on Coastal Plains Smooth-barked Apple Woodland and to avoid significant tracts of undisturbed *Tetratheca juncea*. This approach also ensures that a vegetated habitat corridor is maintained and undisturbed by the proposal along the northern boundary of the proposed ash dam expansion. Figure 5 shows the originally-proposed extent of clearing, and the "10-year line" recommended by the Department as the maximum limit imposed through a modified concept plan.

With the suite of ash management conditions recommended by the Department, it is possible, if not probable, that full reuse of ash from the power station will be realised in future, and the extent of the ash dam expansion could be further reduced from the 10-year line. It is therefore important that the full 10-year ash dam footprint is not cleared up-front, only to find that the full expanded capacity is not required. To manage this issue, the Department recommends that the concept approval provide for progressive clearing of the ash dam expansion are in at least three stages with no more than seven hectares cleared in any single stage.

Having addressed the issues of justification and avoidance/ minimisation of impact, it is now appropriate to consider compensatory habitat measures to address those reduced areas of clearing necessary for the ash dam expansion. Given the significance of vegetation to be removed, the Department recommends that compensatory habitat be required in a ratio of 2:1 and be linked to staging of clearing works. The Department suggests that before the Proponent is permitted to commence clearing for each stage of the ash dam expansion (at least three stages of no more than seven hectares each), compensatory habitat to off-set the previous stage should be implemented to the Director-General's satisfaction. This approach has the double benefit of minimising the total vegetation deficit at any particular stage of the development, but also of encouraging timely implementation of off-sets ahead of future clearing.

The Department considers these provisions appropriate for minimising and managing ecological impacts associated with the ash dam expansion. It is important to note that these requirements are to be imposed as minimum requirements under a concept approval. There is potential for the Proponent to consider these issues and further improve ecological outcomes ahead of seeking project approval. The Department has encouraged the Proponent to proactively follow this course when formulating any future project application for the ash dam expansion.

Figure 4 – Vegetation Communities in the Study Area

(sourced from the Environmental Assessment (HLA, May 2006))

Figure 5 – Extent of Proposed Ash Dam Vegetation Clearing

(sourced from the Proponent's Submissions Report (30 August 2006))

5.4 Water Quality Impacts (Ash Dam Expansion)

Issues

The proposed upgrade of the ash dam disposal facility has the potential to impact on surface and ground waters during the construction and operational phases of the project. Potential construction impacts include erosion of soils and sedimentation from the clearing of vegetation. During operation, leachate from the ash dam can impact on groundwaters and runoff from the dam can impact on surface waters.

Submissions

Eight submissions raised the issue of water quality impacts from the ash dam disposal facility. Key issues were leachate impacting on groundwater, and contaminated surface runoff impacting on surface waters and ultimately Lake Macquarie.

Consideration

The Department considers that the two key issues associated with water quality impacts of the upgrade of the ash disposal facility relate to potential impacts of leachate on groundwaters and the potential for surface water runoff from the ash dam reaching off-site surface water and ultimately Lake Macquarie.

The Department considers that water quality impacts during construction can be appropriately managed through the implementation of an Erosion and Sediment Control Plan prepared in accordance with relevant best management practice guidelines. The Department supports the Proponent's commitment to prepare and implement such a Plan, as well as a surface water monitoring program for the development. Such a Plan will be a requirement of any future project approval for the proposed ash dam upgrade.

Ash dam water is contained in the ash dam facility with licensed discharges only occurring during periods of high rainfall. In the Environmental Assessment, the Proponent indicates that the existing dam wall will remain unchanged as part of the current proposal and that existing management measures would continue to prevent runoff to nearby watercourses. It also noted that the proposed dense phase disposal method (30% water and 70% ash, compared with the current lean phase method of 70% water and 30% ash) would result in less water being discharged to the dam. In the longer term, this approach would reduce the volumes of water to be managed and would further reduce the risk of environmental impact from this water.

The Environmental Assessment does not include a detailed assessment of environmental impacts of leachate from the ash dam on groundwater, but the Proponent has indicated that due to the depth of the groundwater at the site it is not expected to be a significant constraint on the project. In response to submissions, the Proponent has also indicated that the preliminary groundwater studies carried out to date have shown that there is no migration of groundwater to Myuna Bay from the ash dam. It is noted that the Department of Natural Resources highlights that risk of impacts to groundwater will be a key issue for consideration as part of any future project application. The Department of Environment and Conservation notes similar issues in its submission, with respect to the management of potential surface water and groundwater contamination. Neither Department considers these issues to be insurmountable, subject to careful and comprehensive detailed design considerations.

The Department considers the management of surface and groundwater associated with the operation of the ash dam can be adequately and appropriately addressed through the application of best management practice. In that regard the Department considers that, in addition to the water management practices proposed, further investigation and assessment of water quality issues should be undertaken prior to the grant of any project approval for the ash dam expansion. This approach has been reflected in the Proponent's statement of commitments, including commitments to carry out hydrological and surface and ground water quality studies as part of the detailed design of the proposed ash dam expansion. Further, the Proponent has comment to undertake groundwater studies detailing the likely quality and quantity of seepage from the dense phase emplacement and any impact on receiving groundwaters as well as a for control measures to minimise pollution for surface and groundwaters from the expanded ash dam. A report detailing these studies would be submitted to the Director-General prior to the granting of any project approval for the ash dam expansion. In the recommended concept approval, the Department has also included environmental assessment requirements

including specifications to undertake a water quality impact assessment and to develop a plan to manage any identified impacts on waters (including Lake Macquarie) for the project approval phase of the proposed upgrade of the ash dam facility. Monitoring of water quality discharges and ambient water quality at Lake Macquarie continue as part of the Environment Protection Licence for the site.

5.5 Aboriginal Heritage (Ash Dam Expansion)

Issues

An Aboriginal heritage study was carried out as part of the Environmental Assessment. The study involved review of existing information, field investigation and Aboriginal consultation. The consultation process involved a number agencies (namely DEC, the Local Aboriginal Land Council (LALC), the Native Title Tribunal, Office of Registrar and Lake Macquarie Council) and three Aboriginal groups that, according to the Environmental Assessment, wished to be involved in the process (namely, the Koompahtoo LALC, Wonnarua Nation Aboriginal Corporation (WNAC) and Yarrawalk Enterprises Pty Limited (Yarrawalk)). The Koompahtoo LALC is reported to be the relevant LALC for the area, while the WNAC and Yarrawalk have been involved in an indigenous land use agreements with Power Coal Pty Ltd covering an area of 87km^2 ending just north of Eraring. The Environmental Assessment indicates that there are currently no registered Native Title claims existing in the area. The Environmental Assessment notes, however, that based on discussions with the Department of Lands in early 2006, it is understood that a Native Title process affecting the crown land portion of the proposed site may have been initiated. This issue was clarified as part of the Proponent's submissions report, which indicates that the claim in question has been finalised and does not affect any land the subject of the current application for planning approval.

Field work undertaken as part of the Aboriginal heritage studies was attended by the Proponent's archaeologist in the company of Yarrawalk and WNAC representatives, and covered about 30-40% of the study area. No Aboriginal sites were identified during the survey. The study concluded that from the geomorphological interpretations and known sites in the area that the entire study area has a very low potential for archaeological sites and/or deposits.

Submissions

Three submissions raised concern in relation to issues of Aboriginal heritage. Specifically, key issues raised included the need for further consultation with Aboriginal communities and groups, potential land claims on the Crown land proposed for acquisition and the need to protect Aboriginal heritage items.

Consideration

The Department is satisfied that the Proponent has undertaken an adequate level of assessment of the impacts of the proposal on Aboriginal heritage. The Department agrees with the Proponent that the proposal will unlikely have significant impacts on Aboriginal heritage.

The Proponent's consultation with Aboriginal representatives is generally considered acceptable for this phase of the project. Although the Proponent has indicated that the Aboriginal Land Claim has been finalised and land to be acquired by the Proponent was not included in the claim (supplement to the Submissions Report, 30 August 2006), the Department considers that, prior to the project approval of the upgrade of the ash disposal facility, further consultation with the Aboriginal community and search for Native Title claims should be undertaken. In that regard, the Department has included in the concept approval an environmental assessment requirement to update the Aboriginal heritage investigation of the proposed ash dam upgrade, having regard to the status of any Native Title claims that apply to the land affected by or surrounding the project, and requiring consultation with relevant Aboriginal groups prior to project approval.

Whilst Aboriginal cultural heritage sites are not known in the area, the Proponent has committed to cease all work immediately and made contact with the DEC in the event that an Aboriginal site or object is discovered during the carrying out of the development.

6. CONCLUSIONS AND RECOMMENDATIONS

Following the review and assessment of the Environmental Assessment, Statement of Commitments, submissions on the proposal, and the Submissions Report prepared by the Proponent, the Department is satisfied that the impacts of the proposed emergency turbine can be mitigated and/or managed to ensure an acceptable level of environmental performance. The implementation of the mitigation measures proposed as part of the Statement of Commitments provided in the Environmental Assessment and conditions of the project approval would ensure that any potential impacts of the emergency turbine are minimised to an acceptable level and the project does not unduly impact on the surrounding community.

In relation to the proposed expansion of the ash dam disposal facility, the Department recognises that there is a need to provide additional ash disposal capacity to the Eraring power station to ensure the viability of the plant beyond 2011/12. In that respect, the Department notes the significance to the State of continued, secure operation of power stations such as the Eraring power station, but also the need to minimise impacts within acceptable limits.

Although there is a need for the continue operation of the power station beyond 2011/12, the Department considers that the Proponent has not fully justified the scale of the proposed ash dam expansion to the scale proposed and that further investigation/optimisation of ash management options at the EPS is required prior to allowing the project to proceed. The Department therefore recommends that concept approval be granted for a modified concept to allow contingency and residual on-site ash disposal at the existing or expanded dam facility subject to further assessment and project approval under Part 3A of the EP&A Act. The modified concept approval limits vegetation clearing to about half the area originally proposed and requires the provision compensatory habitat in a ratio 2:1 for any clearing required for the selected option.

APPENDIX A – RECOMMENDED CONCEPT APPROVAL

APPENDIX B – RECOMMENDED PROJECT APPROVAL

APPENDIX C – STATEMENT OF COMMITMENTS

APPENDIX D – RESPONSE TO SUBMISSIONS

APPENDIX E – ENVIRONMENTAL ASSESSMENT