



Mt Piper Power Station Ash Placement Project

ENVIRONMENTAL ASSESSMENT

CHAPTER 12 – PROJECT JUSTIFICATION AND CONCLUSIONS

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12. Project Justification and Conclusions

This chapter summarises the project, providing a justification of why the project should proceed in the form described in Chapter 3 - Project Description, with consideration of the environmental, social and economic impacts of the project, the suitability of the sites and the public interest. It addresses the project in the context of ecologically sustainable development and provides a conclusion for the project.

12.1. Strategic Issues

Ash removal, placement and storage are critical to the long-term ongoing operation of the existing Mt Piper Power Station. In the absence of a significant increase in reuse opportunities or an alternative area to place the ash produced during power generation activities, Mt Piper Power Station Units 1 and 2 would be required to either reduce production to extend the operational life of the existing ash placement area or close down the operations of the power station when the present ash placement area reaches capacity. Either of these outcomes would have associated impacts on the electricity supply to NSW, an economic impact on the local region and both are considered highly undesirable. As a result, this project involving the provision of further storage areas for ash is required to maintain the existing level of power supply in NSW.

By the end of 2009 approximately 10.1 million tonnes of ash from Mt Piper 1 & 2 had been placed in the present ash placement area, Area No. 1. Under planned operations, the approved ash storage area is expected to reach capacity by around 2015, well before the existing power station reaches the end of its economic life. Accordingly, there is a need to undertake planning activities and obtain approvals to enable the continued placement of ash once the existing ash placement area reaches capacity. The selection of additional ash placement areas is required to maintain the operation of the Mt Piper Power Station Units 1 and 2 and to provide for the operation of the proposed Mt Piper Extension should it be constructed as a coal-fired plant.

In January 2010 Delta obtained concept approval (Application 09_0119) for the development of 2,000MW of new generating capacity at the Mt Piper site (known as Mt Piper Extension). This new capacity would be either coal-fired, fired or combined cycle and if it were to proceed as a coal-fired plant there would be a need for further ash placement areas.

The Mt Piper Extension development site has been made available for sale to the private sector as part of the NSW Government's Energy Reform Strategy. Should the buyer seek project approval to build a coal-fired power station then there would be additional demand for ash storage facilities that is best met by use of the same ash storage sites as those sought for Mt Piper Units 1 and 2. Accordingly, this environmental assessment provides conceptual considerations for ash storage requirements of Mt Piper Extension should it be coal fired.

12.2. Key Environmental Considerations

12.2.1. Air Quality

Computer-based dust dispersion modelling was undertaken for the Lamberts North and Lamberts South ash placement areas and used to assess the impacts of the proposal, while a qualitative assessment for the proposed Ivanhoe No. 4 and Neubecks Creek sites was undertaken. Meteorological data from the Mt Piper Power Station site were combined with estimated dust emissions from proposed activities to predict off-site TSP, PM₁₀ and deposited dust levels.

An additional scenario was also developed which took into account of ash requiring disposal from the proposed Mt Piper Extension Project.

The results from the assessment indicated that the project is unlikely to cause exceedances of annual PM₁₀, TSP and dust deposition criteria at nearest sensitive receptor locations. There is potential for the maximum 24-hour average PM₁₀ criteria to be exceeded from time to time although it is unlikely that the project will be the cause of such exceedances. It was noted that the probability of the project causing an exceedance of 50 µg/m³ increases with increasing background levels. The maximum 24-hour average model results represented the “worst-day” at each location in terms of potential impacts from the project, and so the probability of maximum project impacts occurring at the same time as maximum background levels would be very low.

The assessment was based on a worst case scenario, in which no controls have been put in place to reduce onsite dust emissions. It is intended that existing dust control measures used in Area 1, such as application of sprays to exposed surfaces and water trucks on unpaved haul roads, would also be applied to the proposed expansion areas. Consequently, dust concentrations and deposition levels should be lower than predicted.

Assessment of the Ivanhoe No. 4 and Neubecks Creek found that ash placement at these sites would have the potential to generate dust and may require further detailed assessment in accordance with the DECC *Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in NSW*, should these areas be required for ash storage.

The project also found that emissions are unlikely to cause exceedances of air quality criteria for ash contaminants and odour at all ground-level locations.

12.2.2. Noise

A quantitative noise assessment was undertaken at Lamberts North and Lamberts South using methods prescribed by NSW Government requirements. A qualitative assessment was undertaken for Neubecks Creek and Ivanhoe No 4.

Under neutral weather conditions, the operation of the ash placement areas for Lamberts North and South both indicate that compliance with the established noise goals would generally be expected. A marginal exceedance of the project specific noise goals may occur, without mitigation measures, at one location (known as Location 2 in Chapter 6) when operations reach the Lamberts South placement area in 2023. This is likely to occur in the early stages of the operations due to the topography of the site and the proximity to the receiver at this location near the eastern edge of the placement area.

At Lamberts North, the predicted noise levels under adverse meteorological conditions indicate general compliance during the daytime for both locations, with a marginal exceedance possible without mitigation measures during the latter stages at Location 2. The same result is again expected at Location 2 for the evening period, although an exceedance of up to about 3 dB(A) is possible at Location 1 during this time.

At Lamberts South, the results generally indicate exceedances for both receiver locations without mitigation measures, the exception during this phase of works is Location 1 for the daytime period, which is expected to comply even under adverse weather conditions. The exceedances during the evening period are predicted to be up to 4 dB(A) at Location 2. These are expected, however, to reduce to approximately 1-2 dB(A) at both locations during the final stage of works.

The nature of the operations for the ash placement makes mitigation feasible by utilising the benched ash mound as a noise barrier. Testing various barrier options has indicated that where the top of the barrier is 4 m higher than the ground level of the equipment, a 5-6 dB(A) reduction in the noise level at the receiver location is possible.

There are limitations to this method due to the mobile nature of the noise sources and the movement of trucks to and from the dump location, since the barriers effectiveness would be decreased as the noise source moves further from it. While the use of the ash placement as a barrier has been identified as a potential solution, the construction of the ash mound and its progression through the site will require more detailed planning and may be subject to safety and process constraints.

Placement of fly ash and furnace ash at the proposed Ivanhoe No. 4 and Neubecks Creek sites would have potential noise impacts on nearby sensitive receivers and would require further detailed assessment.

Modelling predictions for construction noise indicate that the noise levels from construction activities would be below the project noise goals at the receiver locations. No construction noise mitigation measures would be required.

12.2.3. Water Management

The four project investigation areas are only very small portions of the Upper Cocks River Catchment, which contribute to the Sydney drinking water catchments and development of the ash placement areas would have negligible impact on the Sydney drinking water catchments in terms of water availability.

The proposed ash placement facilities would not require water allocations or licences to operate, as the facilities would be supplied by the water harvested from the disturbed areas of the sites. The water would be used for rehabilitation and dust suppression to supply to the operation. The water sourced from the disturbed areas of the proposed ash placement facility would be achieved by the development of the site water management system developed for each site to manage surface runoff from the sites.

Existing surface water from Neubecks Creek and groundwater data from the existing ash placement Area 1, Lamberts North and Lamberts South were reviewed. There exists sufficient data from the on-going water monitoring and groundwater modelling studies undertaken to show that the main contribution to elevated water quality parameters in Neubecks Creek is due to past, underground coal mining activities rather than the existing ash placement works at Area 1 or the operation of Mt Piper Power Station.

The management of works at the existing Area 1 is appropriate to minimise the risk of a discharge from the construction and operation of the active ash placement areas. A continuation of these practices in the Lamberts North and Lamberts South areas, as well as similar practices at the Neubecks Creek and Ivanhoe No 4 sites would be appropriate to ensure that ash placement has limited if any effects on the water quality of Neubecks Creek.

To reduce potential water quality impacts of the site during construction, general measures to control erosion of soil and sedimentation would be implemented prior to construction works.

12.2.4. Flora and Fauna

The proposed Lamberts North and Lamberts South ash placement areas (approximately 108 ha in the Lamberts Gully area) comprise mostly disturbed lands currently part of an active mine and areas rehabilitated following mining activities. Native vegetation within the proposal area is limited to three patches of vegetation at the southern end of the Lamberts Gully area, totalling about 9ha. There will also be impacts to regenerating vegetation within rehabilitation areas at the northern and southern end of the Lamberts Gully area.

Habitat for fauna within the proposed ash placement areas is limited to the remnant vegetation patches in the southern-most area proposed for ash placement. The remnant vegetation is of

generally good habitat value, supporting an abundance and diversity of foraging, refuge and breeding opportunities for fauna. Although there is vegetation adjacent to the ash storage areas, the loss of habitat (particularly the hollows, trees with decorticating bark and wetland) constitutes a net loss for the locality with consequences for local fauna, including reduced breeding and refuge habitat opportunities and disturbance to remaining habitats. However, impacts on local populations would not lead to an increased risk of extinction, and hence the loss of habitat is considered not significant. Remaining areas of the ash storage area are cleared and modified lands and there are no areas of conservation value for fauna.

An assessment of the impacts of this proposal on species, populations and ecological communities listed under TSC Act and the EPBC Act was undertaken. One plant species listed as vulnerable under both the TSC Act and the EPBC Act, Capertee Stringybark (*Eucalyptus cannonii*) was observed in one location comprising three individuals. Previous studies undertaken in the area also recorded the presence of this species in the perimeter lands, and noted its widespread distribution.

Up to three individuals of the *Eucalyptus cannonii* would be removed to accommodate the proposed ash placement. No other threatened flora species were recorded despite targeted searches within areas of suitable habitat, and it is unlikely that other threatened flora species are present considering the extent and type of habitats present and the degree of survey effort undertaken. Hence, the results of the TSC Act and EPBC Act tests of significance indicate the loss of habitat would not significantly affect the viability of threatened species in the area.

The site may provide at least foraging and possibly roosting habitat for a suite of microbat species, and could form part of the territory of Spotted-tail Quoll, owl and glider species. However, the results of the TSC Act and EPBC Act tests of significance indicate the loss of habitat would not significantly affect the viability of threatened species in the area.

An area of up to 9 ha of remnant vegetation would be offset to ensure there is no net loss of flora and fauna values in the area. This would provide a habitat offset of 1:1. Although no threatened species or ecological communities would be affected by the loss of the 9 ha of vegetation, the generally good habitat value would suggest that an offset would be appropriate. The remnant vegetation within the offset location should have similar habitat attributes as the remnant vegetation within the proposal area, comprising a relatively mature area of vegetation with an abundance of hollow trees and fallen timber. Although only three specimens of Capertee Stringybark would be lost to the development, the proposed offset area should contain specimens of that species, if possible.

The Neubecks Creek and Ivanhoe No 4 sites, although previously subject to mining activities, have remnant or regrowth areas of vegetation and associated potential ecological values. These would need to be further assessed before any approvals are given for ash placement.

12.2.5. Indigenous Heritage

Previous cultural heritage surveys of the Lamberts North and Lamberts South areas demonstrate that this area was used in the past by Aboriginal people. However, as a result of the wholesale nature of the subsequent disturbance associated with open cut mining operations and the reshaping of the ground surface soils which has completely modified the entire local landscape, there is now very low / zero potential for intact archaeological deposits over the proposed ash placement study area.

The two previously identified sites, one just west of the Lamberts South (Sites # 45-1-0218) and one to the east of Lamberts South (# 45 -1-2601), remain intact and are currently protected by a CHMP. For the purpose of this project, these two previously registered sites remain as constraints and would be avoided by project impacts.

Surveys undertaken at both Neubecks Creek and Ivanhoe No. 4 also identify these areas as having been used in the past by indigenous groups with a number of sites known to occur in areas where ash placement could potentially occur. Further assessment and survey of the Ivanhoe No. 4 Concept Area would eventually be required to ensure all indigenous heritage has been adequately identified and documented.

With regards to the general results over the study area (all sites) the following general management would be implemented:

- Avoidance of impact - If this can be done, then a suitable curtilage around the recorded sites would be determined so as to ensure their protection both during the short term construction phase of development and in the long term use of the area;
- If impact is unavoidable - then an Aboriginal Heritage Impact Permit – (AHIP) may be applied for from the NSW DECCW and approval would depend on many factors including the assessed significance of the recorded sites. Sites of moderate to high significance and/or potential may require either test or salvage excavation, or more detailed recording, as part of the conditions of an AHIP being granted. Sites of low significance may have an AHIP approved with no further archaeological assessment being required, or with an approved monitoring programme. Once granted, the local Aboriginal communities may wish to collect or relocate artefacts, whether temporarily or permanently, if necessary. Consultation with the Indigenous community is required for all AHIP applications.

In reference to Neubecks Creek and Ivanhoe No. 4 areas:

- There is already known evidence of Aboriginal occupation over both the Neubecks Creek and Ivanhoe No. 4 Concept Areas and hence any proposed impacts would need to be assessed

against known heritage values of these locations such that appropriate heritage management measures could be devised;

- A significant component of this process would be Aboriginal community consultation in relation to the assessment for sites, the cultural significance of any recorded locations and with regards to mitigation and management measures.

12.2.6. Visual Amenity

Visual impacts were assessed by comparing the visual modification and visual sensitivity and generally relate to the ability of the landscape to absorb visual modification. The degree to which the environment can absorb any visual impacts is influenced by topography (whether it can be screened) and vegetation (whether it can be concealed). In general, there are more opportunities to minimise the visual impact of a development from distant views and in varied and undulating landscapes than areas of flat terrain.

Photomontages were used to assess the impacts of the ash placement areas at Lamberts North and Lamberts South. Photomontages were produced for three key locations which would have views of the proposed development. The photomontages show that only the tops of the proposed ash placement areas would be visible from the surrounding areas. It follows that the beginning of the placement below ground would not be visible from these places.

It is evident that high visual impact would result on one key location due to the close proximity of the sensitive receiver to the proposed ash placement areas. Visual impacts from 2 sites would be low to moderate, given their proximity to the proposed development and existing land use. For the finished profile of the sites, the ash placement areas are expected to appear greyish in colour from the viewpoint locations.

Following ash placement, the resultant ash mounds would be capped, revegetated and rehabilitated. Given that the rehabilitated and revegetated ash placement areas would be readily absorbed into the surrounding natural environment and the long distances between the sensitive viewing locations and the proposed ash areas, the visual impact of the proposed development would be low.

Development of ash placement areas at Neubecks Creek and Ivanhoe No 4 of a similar scale to those proposed at the Lamberts North and South are likely to result in visual impacts to surrounding receivers. A detailed visual impact assessment including line of sight analysis would be undertaken once preliminary design of ash placement areas is completed. This would be used to identify potentially visually sensitive sites in the study area.

12.3. Ecologically Sustainable Development

Ecologically Sustainable Development (ESD) is a major principle now used in guiding environmental impact assessment and the NSW Government, in its various State of Environment Reports, has suggested the following definition of ESD:

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

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

The principles of ESD, as defined in Clause 6 of Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*, are as follows:

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

The principles of ESD were considered during the assessment of the proposed ash placement.

12.3.1. Precautionary Principle

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

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

12.3.2. Intergenerational Equity

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

- Scarce resources would not be used for the proposed development. In particular all water usage would come from recycled water from the power station (for ash treatment) and from reuse of sediment and ash contaminated water on site (for dust management and site rehabilitation);
- It would provide additional capacity for ash placement without affecting any natural, greenfield sites, as the proposed development at Lamberts North and Lamberts South would be located within the pits of the previous mining activities;
- It would continue to develop opportunities for the re-use of ash, thus reducing the in-ground storage requirements where practicable and the need to mine other resources;
- It would allow continued electricity production of the existing Mt Piper Power Station, contributing to the maintenance of power supply in NSW;
- It would provide for forecast increases in electricity demand by providing an ash repository for the proposed Mt Piper Extension Power Station should it be coal fired; and
- It would provide beneficial environmental outcomes in that it would allow for rehabilitation of the mining pits subsequent to ash placement.

12.3.3. Conservation of Biological Diversity

Overall, the proposed development would have a neutral impact on the biodiversity or ecological integrity of the area proposed for development. Most of the site for the ash placement at Lamberts North and Lamberts South has limited ecological value, as the works would be located within the footprint of previous mining pits which have been previously disturbed and cleared. The area of 9ha of vegetation which would be cleared is of generally good ecological value and, accordingly, a biodiversity offset of the same area will be sought by Delta.

The Environmental Assessment has identified the potential to improve the ecological values in the area by rehabilitating the previous mine sites and revegetating the whole area. This will occur over the life of the ash placement area at Lamberts North and Lamberts South. Weed management measures would be implemented to assist in maintain biodiversity and the ecological values of the site.

12.3.4. Improved Valuation and Pricing of Environmental Resources

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

12.3.5. Summary of Assessment against the Principles of ESD

Assessment of the project against the principles of ESD provided a framework for the proposed ash placement areas to:

- Recognise, describe and assess the effects of the development on environmental resources;
- Avoid irreversible and detrimental damage to ecological resources;
- Enhance the health and quality of the environment, and assist in benefiting present and future generations; and
- Minimise any impact on rare and endangered species and ensure conservation of biological diversity.

In preparing this Environmental Assessment, the potential environmental impacts from the proposed development have been investigated and a range of mitigation measures developed to minimise any adverse effects. All mitigation measures proposed in the Environmental Assessment have been developed based on the principles of ESD. It is clear that the principles of inter-generational equity and conservation of biological diversity are met and, if there is any doubt about potential detrimental effects on the environment, a precautionary approach is applied.

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

- Minimise the consumption of water and the generation of waste;
- Reduce the impact of the proposal on the biophysical environment and the community; and
- Identify suitable site management practices.

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

12.4. Conclusion

It is concluded that the development of the Mt Piper Ash Placement project is justified:

- In terms of addressing NSW Government policy for providing power generation capacity by providing an appropriate place to store ash products from power generation, thus allowing the existing power station to operate over its full life cycle and the proposed new power station to have a repository for its ash should it be coal fired;

- In providing social and environmental benefits for the general community whilst managing any potentially negative impacts on local communities by adopting appropriate management measures; and
- In that it would not detrimentally affect the health, diversity and productivity of the environment and would assist in these elements being maintained for the benefit of future generations.