aurecon

Munmorah Power Station
Rehabilitation

Environmental Assessment

VOLUME 2: Appendices

Delta electricity

Submission date
October 2009

Appendix Contents

Director Generals Requirements

Appendix A

NSW GOVERNMENT
Department of Planning

Contact: Dinuka McKenzie
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Our ref: S09/01051

Mr Rodney Ward
General Manager - Development
Delta Electricity
PO Box Q863
QVB NSW 1230

Dear Mr Ward

Munmorah Power Station Rehabilitation (Project Application: MP 09_0117) – Director-General's Requirements

I refer to your project application for the Munmorah Power Station Rehabilitation project (MP 09_0117), which comprises the rehabilitation of generating units 3 and 4 at the existing Munmorah Power Station to enable base-load generation at a capacity of up to 700 megawatts using coal or a combination of coal and natural gas.

I wish to advise that on 19 June 2009 I formed the opinion pursuant to clause 6 of the *State Environmental Planning Policy (Major Projects) 2005* (Major Project SEPP), under delegation from the Minister for Planning, that the project is development of a kind described in Schedule 1 of the Major Project SEPP and is therefore a project to which Part 3A of the *Environmental Planning and Assessment Act 1979* applies. Consequently, the Minister for Planning is the approval authority for the project. I have enclosed a copy of the record of my opinion for your information and reference.

The project is also a 'critical infrastructure project' by virtue of a declaration made by the Minister for Planning on 26 February 2008, with respect to energy generating facilities with the capacity to generate at least 250 MW and for which an application is made prior to 1 January 2013.

I have also attached a copy of my requirements as Director-General (DGRs) for the preparation of an Environmental Assessment for the project. These requirements have been prepared following the Planning Focus Meeting held on 19 June 2009 and in consultation with relevant government agencies.

The Environmental Assessment prepared for the project application must give equal consideration to the coal fired option and the option using a combination of coal and natural gas.

It should be noted that the DGRs have been prepared based on the information provided to date. Under section 75F(3) of the Act, the Director-General may alter or supplement these requirements if necessary and in light of any additional information that may be provided prior to the Proponent seeking approval for the project.

I would appreciate it if you could contact the Department at least two weeks before you propose to submit the Environmental Assessment for the project to determine:

- the fees applicable to the application;
- relevant land owner notification requirements;
- consultation and public exhibition arrangements that will apply;
- options available in publishing the Environmental Assessment via the Internet; and

- number and format (hard-copy or CD-ROM) of the Environmental Assessment that will be required.

Prior to exhibiting the Environmental Assessment, the Department will review the document to determine if it adequately addresses the DGRs. The Department may consult with other relevant government agencies in making this decision. If I consider that the Environmental Assessment does not adequately address the DGRs, I may require the Proponent to revise the Environmental Assessment to address the matters notified to the Proponent. Following this review period, the Environmental Assessment will be made publicly available for a minimum period of 30 days.

If your project includes any actions that could have a significant impact on matters of National Environmental Significance, it will require an additional approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This approval would be in addition to any approvals required under NSW legislation and it is your responsibility to contact the Department of the Environment, Water, Heritage and the Arts to determine if an approval under the EPBC Act is required for your project (http://www.environment.gov.au or 6274 1111).

Please note that the Commonwealth Government has accredited the NSW environmental assessment process for assessing impacts on matters of National Environmental Significance. As a result, if it is determined that an approval is required under the EPBC Act, please contact the Department immediately as supplementary Director-General's requirements will need to be issued.

If you have any enquiries about these requirements, please contact Ms Dinuka McKenzie, Senior Environmental Planning Officer, Major Infrastructure Assessments on 02 9228 6348 or via email (dinuka.mckenzie@planning.nsw.gov.au).

Yours sincerely

SHaddad

Sam Haddad
Director-General

4/7/2009

Director-General's Requirements

Section 75F of the *Environmental Planning and Assessment Act 1979*

Project	Rehabilitation and replacement of existing aged and worn out base-load generating components of units 3 and 4 at the Munmorah power station with current available technology to increase efficiency, restore generating capacity and extend the operating life of the facility. The rehabilitated power station would have a maximum generating capacity of 700 megawatts and would be powered by coal and/ or natural gas.
Site	Existing Munmorah Power Station, on the Central Coast near Doyalson between Lake Munmorah and Lake Budgewoi and the coal conveyer easement between the Vales Point and Munmorah Power Stations in the Wyong local government area.
Proponent	Delta Electricity
Date of Issue	4 July 2009
Date of Expiration	4 July 2011
General Requirements	The Environmental Assessment must include: • an **executive summary**; • a **description of the proposal** including: ➢ details of project construction, operation, decommissioning, staging and key ancillary infrastructure including fuel delivery and storage, waste disposal (e.g. ash) and water management; ➢ details of the extent to which existing infrastructure and facilities at the Munmorah and/ or Vales Point Power Stations would be used for the project; ➢ identification of fuel source options for the project and feasibility of those options; and ➢ supporting maps/plans clearly identifying existing environmental features (e.g. watercourses, vegetation), infrastructure and landuse (including nearby residences and any approved sensitive landuse) and the siting of the project in the context of this existing environment; • consideration of any **relevant statutory provisions** including the consistency of the project with the objects of the *Environmental Planning and Assessment Act 1979;* • an **assessment of the key issues** outlined below, during construction, operation and decommissioning (as relevant). The Environmental Assessment must assess the worst case as well as representative impact for all key issues considering cumulative impacts, as applicable, from the nearby Munmorah (Colongra), Vales Point and Eraring Power Stations and considering coal and gas fired generation scenarios; • a **draft Statement of Commitments** detailing measures for environmental mitigation, management and monitoring for the project; • a **conclusion justifying the project** taking into consideration the environmental, social and economic impacts of the project; the suitability of the site; and the public interest; and • **certification** by the author of the Environmental Assessment that the information contained in the assessment is neither false nor misleading.
Key Assessment Requirements	The EA must include assessment of the following key issues: • **Strategic Justification**- the Environmental Assessment must: → include a strategic assessment of the need, scale, scope and location for the project in relation to predicted electricity demand, transmission constraints and the strategic direction of the region and the State in relation to electricity supply, demand and electricity generation technologies; → include an analysis of site suitability with respect to potential land use conflicts with existing and future land uses taking into account local and strategic landuse objectives; and → describe alternatives considered for the project in particular technology and configuration including fuel source, air emission and options for waste disposal/ beneficial reuse and provide justification for the project demonstrating its

benefits at a local and strategic scale in comparison to alternatives considered, including the do nothing option.

- **Greenhouse Gases** – the Environmental Assessment must include a comprehensive greenhouse gas assessment undertaken in accordance with the methodology specified in the *National Greenhouse Accounts (NGA) Factors* (Department of Climate Change, November 2008) including:
  - → quantification of emissions (in tonnes of carbon dioxide equivalent) in accordance with the *Greenhouse Gas Protocol: Corporate Standard (World Council for Sustainable Business Development & World Resources Institute)* including: direct emissions (Scope 1), indirect emissions from electricity (Scope 2) and any significant up or down stream emissions (Scope 3) considering all stages of the project (construction, operation and decommissioning);
  - → comparison of predicted emissions intensity and thermal efficiency against best achievable practice and current NSW averages for the activity, and of predicted emissions against total annual national emissions (expressed as a percentage of total national greenhouse gases production per year over the life of the project);
  - → evaluation of the availability and feasibility of measures to reduce and/ or offset the greenhouse emissions of the project including options for carbon capture and storage. Where current available mitigation technology is not technically or economically feasible, the Environmental Assessment must demonstrate that the proposal will use best available technology, including carbon capture readiness, and identify options for triggers that would require staged implementation of emerging mitigation technologies; and
  - → evaluation of the project in the light of carbon emission prices of $10, $25 and $50 per tonne under the proposed Commonwealth Carbon Pollution Reduction Scheme, both with and without proposed mitigation measures.

- **Air Quality Impacts** – the Environmental Assessment must include a comprehensive air quality impact assessment prepared in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (DECC, 2005) (Approved Methods) considering worst case operating scenarios and meteorological conditions, representative monitoring and receiver locations and cumulative impacts, as applicable, from the nearby Munmorah (Colongra), Vales Point and Eraring Power Stations. The Environmental Assessment must address air quality impacts at a local, regional and interregional level and the potential impacts of emissions on photochemical smog formation in the Sydney basin. The assessment must demonstrate that the project would meet the impact assessment criteria in Section 7 of the Approved Methods and the requirements of the *Protection of the Environment Operations (Clean Air) Regulation 2002*. The Environmental Assessment must clearly demonstrate that the project has been designed to include the application of Best Available Control Technology (BACT) in relation to air emissions, including an assessment of the feasibility, effectiveness and reliability of proposed measures and any residual impacts after these measures have been implemented. The Environmental Assessment must include details of how the performance and efficiency of the project would be monitored and managed against established performance standards.

- **Noise and Vibration Impacts** – the Environmental Assessment must include a comprehensive operational noise impact assessment for the project, prepared in accordance with *NSW Industrial Noise Policy* (EPA, 2000) considering worst case operating scenarios and meteorological conditions, representative monitoring and receiver locations, and cumulative impacts from the nearby Munmorah (Colongra), Vales Point and Eraring Power Stations and from the upgrade of the Vales Point to Munmorah Power Station coal conveyer. The assessment must consider the potential for low frequency noise generation and peak noise impacts (with the potential to cause sleep disturbance). The Environmental Assessment must also consider the potential for:
  - → construction noise impacts consistent with the DECC's "construction noise - existing guidelines" available electronically at http://www.environment.nsw.gov.au/noise/constructnoise.htm

	→ vibration impacts during construction and operation consistent with *Assessing Vibration: A Technical Guideline* (DECC, 2006); and → traffic generated noise during construction and operation consistent with *Environmental Criteria for Road Traffic Noise* (EPA, 1999). The Environmental Assessment must clearly outline the noise mitigation, monitoring and management measures the Proponent intends to apply to the project. This must include an assessment of the feasibility, effectiveness and reliability of proposed measures and any residual impacts after these measures have been implemented. • **Hazards and Risk Impacts** – the Environmental Assessment must include a screening of potential hazards on site to determine the potential for off site impacts and any requirement for a Preliminary Hazard Analysis (PHA). The PHA, should potential off-site impacts be identified, must be prepared in accordance with the Department's *Hazardous Industry Planning Advisory Paper No. 3*, *Hazardous Industry Planning Advisory Paper No. 6* and *Multi-level Risk Assessment.* The Environmental Assessment must demonstrate that the exhaust plumes associated with the project would not pose any greater risk to aviation safety than the existing Munmorah Power Station. • **Water Cycle Management** – the Environmental Assessment must: → include a water balance for the project identifying the maximum water use, wastewater generation and disposal requirements for the operation of the project; → demonstrate the availability of viable water sources to sustainabley meet the water requirements of the project for the life of the project, considering the security of supply and current and future water demand in the region; and → provide an assessment of the likely risks to water quality (including temperature) associated with the project considering key ancillary components (such as ash disposal), including demonstration that the cooling water disposal requirements of the project would not significantly impact on the water quality, aquatic ecology or recreational values of the Tuggerah Lakes System (including Budgewoi and Munmorah Lakes). • **Waste Management** – identification of the major waste streams to be generated by the proposal (including brine concentrate and coal ash) and measures for its management and disposal including options for recycling and reuse where reasonable and feasible. • **General Environmental Risk Analysis** – notwithstanding the above key assessment requirements, the Environmental Assessment must include an environmental risk analysis to identify potential environmental impacts associated with the project (construction and operation), proposed mitigation measures and potentially significant residual environmental impacts after the application of proposed mitigation measures. Where additional key environmental impacts are identified through this environmental risk analysis, an appropriately detailed impact assessment of these additional key environmental impacts must be included in the Environmental Assessment.
Consultation Requirements	You must undertake an appropriate and justified level of consultation with the following parties during the preparation of the Environmental Assessment: • Commonwealth Department of Climate Change; • NSW Department of Environment and Climate Change; • NSW Department of Water and Energy; • NSW Department of Primary Industries; • Wyong Shire Council; and • the local community. The Environmental Assessment must clearly indicate issues raised by stakeholders during consultation, and how those matters have been addressed in the Environmental Assessment.

NSW GOVERNMENT
Department of Planning

Record of Minister's opinion for the purposes of Clause 6(1) of the State Environmental Planning Policy (Major Projects) 2005

I, the Director-General of the Department of Planning, as delegate of the Minister for Planning under delegation executed on 4 March 2009, have formed the opinion that the development described in the Schedule below, is development of a kind that is described in Schedule 1, Group 8, clause 24 of *State Environmental Planning Policy (Major Projects) 2005* namely development for the purpose of a gas or coal fired generation facility that has a capital investment value of more than $30 million. It is therefore declared to be a project to which Part 3A of the *Environmental Planning and Assessment Act 1979* applies for the purpose of section 75B of that Act.

Schedule

A proposal by Delta Electricity for the refurbishment of Munmorah Power Station, a 700 megawatt gas and/ or coal-fired electricity generating facility and associated infrastructure located in the Wyong shire local government area, as generally described in the document titled "Delta Electricity Munmorah Power Station Rehabilitation Preliminary Environmental Assessment" prepared by Aurecon Australia Pty Limited and dated 5 June 2009.

S Haddad

Director-General
Department of Planning

Date: 19th June 2009.

Appendix A - Director General Requirements related to relevant chapters

	Environmental Assessment Requirements	Section/Chapter addressed in EA
Project	Rehabilitation of Munmorah Units 3 and 4	
Site	Existing Munmorah Power Station on Central Coast near Doyalson	
Proponent	Delta Electricity	
Date of Issue	4 July 2009	
General Requirements	**The Environmental Assessment must include:** • an **executive summary**	Page iii
	• a **description of the proposal** including:	Chapter 3
	– details of project construction, operation, decommissioning, staging and key ancillary infrastructure including fuel delivery and storage, waste disposal (e.g. ash) and water management;	Section 1.5 Chapter 3
	– details of the extent to which existing infrastructure and facilities at the Munmorah and/ or Vales Point Power Stations would be used for the project;	Section 1.4
	– identification of fuel source options for the project and feasibility of those options; and	Section 3.5
	– supporting maps/plans clearly identifying existing environmental features (e.g. watercourses, vegetation), infrastructure and landuse (including nearby residences and any approved sensitive landuse) and the siting of the project in the context of this existing environment;	Figure 1.2
	• consideration of any **relevant statutory provisions** including the consistency of the project with the objects of the *Environmental Planning and Assessment Act 1979;*	Chapter 4
	• an **assessment of the key issues** outlined below, during construction, operation and decommissioning (as relevant). The Environmental Assessment must assess the worst case as well as representative impact for all key issues considering cumulative impacts, as applicable, from the nearby Munmorah (Colongra), Vales Point and Eraring Power Stations and considering coal and gas fired generation scenarios;	Chapter 5 Chapter 12
	• a **draft Statement of Commitments** detailing measures for environmental mitigation, management and monitoring for the project;	Chapter 14
	• **a conclusion justifying** the project taking into consideration the environmental, social and economic impacts of the project; the suitability of the site; and the public interest; and	Chapter 13
	• **certification by the author** of the Environmental Assessment that the information contained in the assessment is neither false nor misleading.	Page i

	Environmental Assessment Requirements	Section/Chapter addressed in EA
Key Assessment Requirements	**The EA must include assessment of the following key issues:**	
	• **Strategic Justification**- the Environmental Assessment must:	Chapter 2 Chapter 13
	– include a strategic assessment of the need, scale, scope and location for the project in relation to predicted electricity demand, transmission constraints and the strategic direction of the region and the State in relation to electricity supply, demand and electricity generation technologies;	Sections 2.1.1 – 2.2.2 Section 2.2.4
	– include an analysis of site suitability with respect to potential land use conflicts with existing and future land uses taking into account local and strategic landuse objectives; and	Section 2.2.4
	– describe alternatives considered for the project in particular technology and configuration including fuel source, air emission and options for waste disposal/ beneficial reuse and provide justification for the project demonstrating its benefits at a local and strategic scale in comparison to alternatives considered, including the do nothing option.	Section 2.3 and 2.4 Section 3.5 (fuel options) Chapter 7/Appendix E (air) Chapter 9 (waste)
	• **Greenhouse Gases –** the Environmental Assessment must include a comprehensive greenhouse gas assessment undertaken in accordance with the methodology specified in the *National Greenhouse Accounts (NGA) Factors* (Department of Climate Change, November 2008) including:	Chapter 6 Appendix C Appendix D
	– quantification of emissions (in tonnes of carbon dioxide equivalent) in accordance with the *Greenhouse Gas Protocol: Corporate Standard (World Council for Sustainable Business Development & World Resources Institute)* including: direct emissions (Scope 1), indirect emissions from electricity (Scope 2) and any significant up or down stream emissions (Scope 3) considering all stages of the project (construction, operation and decommissioning);	Sections 6.2.1 – 6.2.2
	– comparison of predicted emissions intensity and thermal efficiency against best achievable practice and current NSW averages for the activity, and of predicted emissions against total annual national emissions (expressed as a percentage of total national greenhouse gases production per year over the life of the project);	Section 6.2.1 – current NSW averages Section 6.2.4 – national averages Section 2.3.7/ Table 6.9 – comparison to best achievable practice
	– evaluation of the availability and feasibility of measures to reduce and/ or offset the greenhouse emissions of the project including options for carbon capture and storage. Where current available mitigation technology is not technically or economically feasible, the Environmental Assessment must demonstrate that the proposal will use best available technology, including carbon capture readiness, and identify options for triggers that would require staged implementation of emerging mitigation technologies; and	Section 6.3

	Environmental Assessment Requirements	Section/Chapter addressed in EA
	– evaluation of the project in the light of carbon emission prices of $10, $25 and $50 per tonne under the proposed Commonwealth Carbon Pollution Reduction Scheme, both with and without proposed mitigation measures.	Section 6.2.4 and 6.2.5 Tables 6.9 to 6.12
	• **Air Quality Impacts –**the Environmental Assessment must include a comprehensive air quality impact assessment prepared in accordance with the Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (DECC, 2005) (Approved Methods) considering worst case operating scenarios and meteorological conditions, representative monitoring and receiver locations and cumulative impacts, as applicable, from the nearby Munmorah (Colongra), Vales Point and Eraring Power Stations.	Chapter 7 Appendix E
	– The Environmental Assessment must address air quality impacts at a local, regional and interregional level and the potential impacts of emissions on photochemical smog formation in the Sydney basin.	Section 7.7 – Local/regional Section 7.8 – Inter regional
	– The assessment must demonstrate that the project would meet the impact assessment criteria in Section 7 of the Approved Methods and the requirements of the Protection of the Environment Operations (Clean Air) Regulation 2002.	Section 7.7 and 7.8 Appendix E
	– The Environmental Assessment must clearly demonstrate that the project has been designed to include the application of Best Available Control Technology (BACT) in relation to air emissions, including an assessment of the feasibility, effectiveness and reliability of proposed measures and any residual impacts after these measures have been implemented.	Section 7.9
	– The Environmental Assessment must include details of how the performance and efficiency of the project would be monitored and managed against established performance standards.	Sections 7.10
	• **Noise and Vibration Impacts** – the Environmental Assessment must include a comprehensive operational noise impact assessment for the project, prepared in accordance with *NSW Industrial Noise Policy* (EPA, 2000) considering worst case operating scenarios and meteorological conditions, representative monitoring and receiver locations, and cumulative impacts from the nearby Munmorah (Colongra), Vales Point and Eraring Power Stations and from the upgrade of the Vales Point to Munmorah Power Station coal conveyer. The assessment must consider the potential for low frequency noise generation and peak noise impacts (with the potential to cause sleep disturbance). The Environmental Assessment must also consider the potential for:	Chapter 11 Appendix H
	– construction noise impacts consistent with the DECC's "construction noise - existing guidelines" available electronically at http://www.environment.nsw.gov.au/noise/constructnoise.htm	Section 11.3
	– vibration impacts during construction and operation consistent with *Assessing Vibration: A Technical Guideline* (DECC, 2006); and	Section 11.4

	Environmental Assessment Requirements	Section/Chapter addressed in EA
	– traffic generated noise during construction and operation consistent with *Environmental Criteria for Road Traffic Noise* (EPA, 1999).	Appendix H Section 11.6
	– The Environmental Assessment must clearly outline the noise mitigation, monitoring and management measures the Proponent intends to apply to the project. This must include an assessment of the feasibility, effectiveness and reliability of proposed measures and any residual impacts after these measures have been implemented.	Sections 11.3.4 (construction), 11.4 (vibration), 11.5.9 (operational)
	• **Hazards and Risk Impacts** – the Environmental Assessment must include a screening of potential hazards on site to determine the potential for off site impacts and any requirement for a Preliminary Hazard Analysis (PHA). The PHA, should potential off-site impacts be identified, must be prepared in accordance with the Department's *Hazardous Industry Planning Advisory Paper No. 3*, *Hazardous Industry Planning Advisory Paper No. 6* and *Multi-level Risk Assessment.* The Environmental Assessment must demonstrate that the exhaust plumes associated with the project would not pose any greater risk to aviation safety than the existing Munmorah Power Station.	Appendix G Chapter 10 Section 10.6.4 (aviation)
	• **Water Cycle Management –** the Environmental Assessment must:	Chapter 8
	– include a water balance for the project identifying the maximum water use, wastewater generation and disposal requirements for the operation of the project;	Section 8.3 Figure 8.3
	– demonstrate the availability of viable water sources to sustainably meet the water requirements of the project for the life of the project, considering the security of supply and current and future water demand in the region; and	Section 8.3
	– provide an assessment of the likely risks to water quality (including temperature) associated with the project considering key ancillary components (such as ash disposal), including demonstration that the cooling water disposal requirements of the project would not significantly impact on the water quality, aquatic ecology or recreational values of the Tuggerah Lakes System (including Budgewoi and Munmorah Lakes).	Sections 8.4 – 8.9
	• **Waste Management –** identification of the major waste streams to be generated by the proposal (including brine concentrate and coal ash) and measures for its management and disposal including options for recycling and reuse where reasonable and feasible.	Chapter 9 Section 9.5 (ash)
	• **General Environmental Risk Analysis –** notwithstanding the above key assessment requirements, the Environmental Assessment must include an environmental risk analysis to identify potential environmental impacts associated with the project (construction and operation), proposed mitigation measures and potentially significant residual environmental impacts after the application of proposed mitigation measures. Where additional key environmental impacts are identified through this environmental risk analysis, an appropriately detailed impact assessment of these additional key environmental impacts must be included in the Environmental Assessment.	Chapter 5 Chapter 12

	Environmental Assessment Requirements	Section/Chapter addressed in EA
Consultation Requirements	• You must undertake an appropriate and justified level of consultation with the following parties during the preparation of the Environmental Assessment:	Section 5.2
	– Commonwealth Department of Climate Change;	Section 5.2.2
	– NSW Department of Environment and Climate Change;	Section 5.2.2
	– NSW Department of Water and Energy;	Section 5.2.2
	– NSW Department of Primary Industries;	Section 5.2.2
	– Wyong Shire Council; and	Section 5.2.2
	– the local community.	Section 5.2.3
	The Environmental Assessment must clearly indicate issues raised by stakeholders during consultation, and how those matters have been addressed in the Environmental Assessment.	Section 5.2.4