

Project Approval

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

I, the Minister for Planning, approve the project referred to in Schedule 1, subject to the conditions in Schedule 2.

These conditions are required to:

- prevent, minimise, and/or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the project.



The Hon Tony Kelly MLC
Minister for Planning

11 OCT 2010

Sydney

2010

File No: S09/01051

SCHEDULE 1

Application No:	09_0117
Proponent:	Delta Electricity
Approval Authority:	Minister for Planning
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.
Major Project:	The proposal is declared a Major Project under section 75B(1)(a) of the <i>Environmental Planning and Assessment Act 1979</i> , because it is a project of a kind described in Group 8, clause 24 of Schedule 1 to <i>State Environmental Planning Policy (Major Development) 2005</i>
Critical Infrastructure:	The project is declared to be a critical infrastructure project under section 75C of the <i>Environmental Planning and Assessment Act 1979</i> by virtue of an Order made by the Minister for Planning on 26 February 2008 with respect to certain developments for the purpose of electricity generation facilities with capacity to generate at least 250 MW.

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SCHEDULE 2

Act, the	<i>Environmental Planning and Assessment Act, 1979</i>
Conditions of Approval	The Minister's conditions of approval for the project.
DECCW	Department of Environment, Climate Change and Water
Department, the	Department of Planning
Director-General, the	Director-General of the Department of Planning (or delegate).
Director-General's Approval	<p>A written approval from the Director-General (or delegate).</p> <p>Where the Director-General's Approval is required under a condition the Director-General will endeavour to provide a response within one month of receiving an approval request. The Director-General may ask for additional information if the approval request is considered incomplete. When further information is requested the time taken for the Proponent to respond in writing will be added to the one month period.</p>
EPA	Environment Protection Authority as part of the Department of Environment, Climate Change and Water
EPL	Environment Protection Licence issued under the <i>Protection of the Environment Operations Act, 1997</i>
Minister, the	Minister for Planning
Proponent	Delta Electricity
Publicly Available	Available for inspection by a member of the general public (for example available on an internet site or at a display centre).
Site	Land to which Major Projects Application 09_0117 applies.

1. ADMINISTRATIVE CONDITIONS

Terms of Approval

- 1.1 The Proponent shall carry out the project generally in accordance with the:
 - a) Major Project Application 09_0117;
 - b) *Munmorah Power Station Rehabilitation: Environmental Assessment* (two volumes) prepared by Aurecon Australia Pty Ltd and dated October 2009;
 - c) *Munmorah Power Station Rehabilitation: Submissions Report* prepared by Aurecon Australia Pty Ltd and dated December 2009;
 - d) *Munmorah Power Station Rehabilitation: Supplementary Submissions Report* (undated), prepared by Delta Electricity and submitted to the Department by email dated 23 February 2010; and
 - e) the conditions of this approval.
- 1.2 In the event of an inconsistency between:
 - a) the conditions of this approval and any document listed from condition 1.1a) to 1.1d) inclusive, the conditions of this approval shall prevail to the extent of the inconsistency; and
 - b) any document listed from condition 1.1a) to 1.1d) inclusive, the most recent document shall prevail to the extent of the inconsistency.
- 1.3 The Proponent shall comply with any reasonable requirement(s) of the Director-General arising from the Department's assessment of:
 - a) any reports, plans or correspondence that are submitted in accordance with this approval; and
 - b) the implementation of any actions or measures contained in these reports, plans or correspondence.

Limits of Approval

- 1.4 This project approval shall lapse ten years after the date on which it is granted, unless the works the subject of this approval are physically commenced on or before that time.
- 1.5 The project shall only utilise natural gas and/ or coal as a fuel for the generation of electricity. Distillate/ fuel oil may only be utilised during start-up and for combustion support/ flame stabilisation.

Note: any fuel proposed to be used in the project for the generation of electricity, other than those fuels referred to under condition 1.5 shall be subject to further assessment and approval under the <i>Environmental Planning and Assessment Act 1979</i> .

- 1.6 The sulfur content of coal fuel used in the project shall not exceed 0.5% by weight (as burnt) on a monthly average basis. This condition ceases to apply to the project if the Minister approves an alternative sulfur dioxide emission limit for the project under condition 2.4 of this approval.
- 1.7 This approval does not include any works associated with the provision of new or upgraded gas transfer infrastructure (pipelines) to the project. Any such new or upgraded gas transfer infrastructure (pipelines) shall be subject to separate assessment and approval in accordance with the *Environmental Planning and Assessment Act 1979*.

2. SPECIFIC ENVIRONMENTAL CONDITIONS

Air Quality Impacts

Dust Generation

- 2.1 The Proponent shall construct and operate the project in a manner that minimises or prevents dust emissions from the site, including wind-blown and traffic-generated dust.

Monitoring and Discharge Points

- 2.2 For the purposes of this approval, air monitoring/ air discharge points shall be identified as provided in Table 1 below.

Table 1 - Identification of Air Monitoring and Discharge Points

Monitoring / Discharge Point Identifier	Monitoring/ Discharge Point Location
1a	Flue stack servicing refurbished boiler number 3
1b	Flue stack servicing refurbished boiler number 4
2	Ambient air monitoring station at Lake Munmorah Public School
3	Ambient air monitoring station at Wyee
4	Ambient air and meteorological monitoring station at a site to be agreed with DECCW
16	Meteorological monitoring station defined and located in Environment Protection Licence 759

Discharge Limits

- 2.3 The Proponent shall design, construct, operate and maintain the project to ensure that for each flue stack discharge point (discharge points 1a and 1b as identified under condition 2.2) the concentration of each pollutant listed in Table 2 is not exceeded. This condition only applies to the operation of the project, and to avoid any doubt, does not apply during start-up or shut-down.

The emission limit for sulfur dioxide specified under this condition is an interim emission limit applicable to the project unless and until an alternative sulfur dioxide emission limit is approved in accordance with condition 2.4.

Table 2 - Maximum Allowable Discharge Concentration Limits (Air)

Pollutant	100 Percentile limit (mgm ⁻³)	Reference conditions
Cadmium	0.04	dry, 273 K, 101.3 kPa, and 7 % O ₂
Chlorine	100	
Fluorine (F ₂) and any compound containing fluorine, as a total fluoride (HF) equivalent	30	
Hydrogen chloride	50	
Mercury	0.2	
Nitrogen dioxide (NO ₂) or nitric oxide (NO), or both (as NO ₂)	500	
Solid particles (total)	50	
Sulfuric acid mist and sulfur trioxide (as SO ₃)	40	
Sulfur dioxide	1665	
Total of Sb, As, Cd, Pb, Hg, Be, Cr, Co, Mn, Ni, Se, Sn and V	1	
Volatile organic compounds (VOCs) as n-propane equivalent	40	

- 2.4 Following the first two years of continuous sulfur dioxide monitoring data collection after the commencement of operation of the project (monitored at discharge points 1a and 1b as identified under condition 2.2), the Proponent shall prepare and submit to the satisfaction of the Director-General and DECCW a report that reviews the sulfur dioxide limit for the project.

The emission data collected for the purpose of the review shall be obtained during use of coal fuel with a maximum sulfur content of 0.5% by weight on a monthly average basis. The review shall present an analysis of the first two years of continuous sulfur dioxide monitoring data and the coal sulfur content (as burnt) on a monthly average basis. The review shall include a time series analysis with time paired coal sulfur content and sulfur dioxide emissions.

Should the outcomes of the review demonstrate to the satisfaction of the Director-General in consultation with DECCW, that the project can achieve a lower sulfur dioxide emission limit to the interim limit specified under condition 2.3, then the lower sulfur dioxide emission limit shall apply to the operation of the project from such date as specified by the Director-General.

- 2.5 The Proponent shall install emissions monitoring equipment capable of monitoring and reporting solid particulate emissions from the project on a continuous basis, as approved by the Director-General in consultation with DECCW.
- 2.6 After two years of operation of the project, the Proponent shall submit a Proof of Performance Report to the Director-General and DECCW, outlining:
- a) the operational performance of the continuous monitoring equipment for air emissions; and
 - b) the capability of the project to meet a solid particles (total) emission concentration limit of 30 mgm^{-3} , measured as a 24-hour average by the installed continuous monitoring equipment.

Note: a discharge limit for solid particles (total) measured as a 24-hour average and a 1-hour average will be added to the Environment Protection Licence for the project based on the findings of the Proof of Performance Report.
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- 2.7 The Proponent shall undertake the project so as not to preclude cost-effective retro-fitting, if necessary, of flue gas desulfurisation technology.

Greenhouse Gas Emissions

- 2.8 The Proponent shall undertake the project so as not to preclude cost-effective retro-fitting of post-combustion carbon capture technology.
- 2.9 The Proponent shall, on a triennial basis from the date of this approval, evaluate and report on the availability of viable greenhouse gas reduction, mitigation and/or offset options that may be applied to the project taking into consideration relevant contemporaneous economic drivers including applicable legislative framework (such as an emissions trading scheme) and electricity demand and supply projections. Unless otherwise agreed to by the Director-General, a report outlining the outcomes of this evaluation shall be submitted to the Director-General and DECCW on a triennial basis and made publicly available on the website required to be established under condition 5.1 (with the exception of any commercial-in-confidence material) no later than six weeks from the date of the report being lodged with the Director-General and DECCW. The report shall evaluate the viability of greenhouse gas reduction, mitigation and/or offset options (including but not necessarily limited to carbon capture and storage, solar augmentation, biomass co-firing and undertaking additional boiler modifications to enable the plant to accept 100% gas fuel taking into account relevant externalities such as fuel sourcing, delivery and storage and captured emission storage and transport) on the basis of Long Run Marginal Cost, unless an alternative methodology is agreed to by the Director-General in consultation with DECCW.
- 2.10 If the investigations into greenhouse gas reduction, mitigation and/or offset options required under condition 2.9 identify any technically and economically feasible measures and:
- a) if a national legislative scheme to control and/ or reduce greenhouse gas emissions is either not in effect, or not applicable to the project; or
 - b) if the project and/ or the Proponent is not in full compliance with that scheme;

then the Proponent shall prepared and submit to the DECCW, within such period as the DECCW may agree or require, a pollution reduction program designed to implement the technically and economically feasible measures identified, within a practicable time period and to the satisfaction of the Director-General of DECCW.

Noise Impacts

Construction Noise

- 2.11 The Proponent shall only undertake construction activities associated with MV conveyor upgrade component of the project that would generate an audible noise at any residential premises during the following hours:
- 7:00 am to 6:00 pm, Mondays to Fridays, inclusive;
 - 8:00 am to 1:00 pm on Saturdays; and
 - at no time on Sundays or public holidays.

This condition does not apply in the event of a direction from police or other relevant authority for safety reasons. To avoid any doubt, this condition does not apply to construction activities other than those associated with the MV conveyor.

- 2.12 The hours of construction activities specified under condition 2.11 of this approval may be varied with the prior written approval of the Director-General. Any request to alter the hours of construction specified under condition 2.11 shall be:
- considered on a case-by-case basis;
 - accompanied by details of the nature and need for activities to be conducted during the varied construction hours; and
 - accompanied by any information necessary for the Director-General to reasonably determine that activities undertaken during the varied construction hours will not adversely impact on the acoustic amenity of receivers in the vicinity of the relevant construction site.

Operation Noise

- 2.13 The Proponent shall design, operate and maintain the project to ensure that the noise contributions from the project (including from the Munmorah-Vales Point conveyor) to the background acoustic environment do not exceed the maximum allowable noise limits specified in Table 3, at those locations and during those periods indicated. The maximum allowable noise limits do not apply under the following meteorological conditions:
- wind speeds greater than 3 ms^{-1} at 10 metres above ground level;
 - stability category F temperature inversion conditions and wind speeds greater than 2 ms^{-1} at 10 metres above ground level; or
 - stability category G temperature inversion conditions.

Table 3 - Maximum Allowable Noise Limits

Location	Day	Evening	Night	
	7:00am to 6:00pm Mondays to Saturdays 8:00am to 6:00pm Sundays and public holidays	6:00pm to 10:00pm on any day	10:00pm to 7:00am Mondays to Saturdays 10:00pm to 8:00am Sundays and public holidays	
	L _{Aeq} (15 minute)	L _{Aeq} (15 minute)	L _{Aeq} (15 minute)	L _{Amax} OR L _{A1} (1 minute)
Macleay Drive (Sunnyvale Caravan Park), Halekulani	39	39	39	45
Kalele Avenue, Halekulani	39	39	39	45
Alpine Avenue, San Remo	39	39	39	45
Any residence on Denman Street, Doyalson	39	39	39	45
Any residence adjacent to the Pacific Highway at Doyalson Welding	39	39	39	45

- 2.14 For the purpose of assessment of noise limits specified under condition 2.13 of this approval, the Proponent shall:
- utilise meteorological data recorded at ambient air monitoring point 16 (as defined under condition 2.2) to determine meteorological conditions, and determine stability

- category temperature inversion conditions in accordance with the sigma-theta method referred to in Part E4 of Appendix E of the *NSW Industrial Noise Policy* (EPA, 2000);
- b) utilise class 1 or class 2 noise monitoring equipment calibrated in accordance with manufacturer's specifications and used in accordance with AS IEC61672.1-2004 and AS IEC61672.2-2004;
 - c) position noise monitoring equipment such that it is:
 - i) where applicable to determine compliance with the $L_{Aeq(15\text{-minute})}$ noise limits: approximately on a location's property boundary that is closest to the project, where any dwelling at the location is within 30 metres of the location's property boundary that is closest to the project; or within 30 metres of a dwelling façade where any dwelling at a location is situated more than 30 metres from the location's property boundary that is closest to the project;
 - ii) within one metre of a dwelling façade at a location to determine compliance with the $L_{A1(1\text{-minute})}$ noise limits;
 - iii) at the most-affected point at a location where there is no dwelling at the location; or at the most-affected point at a location under i) or ii) above.

Notwithstanding, should direct measurement of noise from the project be impractical, the Proponent may employ an alternative noise assessment method deemed acceptable by the DECC (refer to Section 11 of the *New South Wales Industrial Noise Policy* (EPA, 2000)). Details of such an alternative noise assessment method accepted by the EPA shall be submitted to the Director-General prior to the implementation of the assessment method.

- 2.15 To avoid any doubt, the noise limits specified under condition 2.13 shall be taken to have been breached if noise is detected in excess of those limits is detected:
- a) in an area at a location other than an area prescribed under conditions 2.14c)i) or 2.14c)ii); and/ or
 - b) at a point other than the most-affected point at a location.

Ecological Impacts

- 2.16 The Proponent shall design, construct, operate and maintain the project to ensure that the temperature of water discharged from the cooling water outlet canal into Lake Budgewoi never exceeds 37.5°C. This condition does not apply in the event that the Proponent is directed, pursuant to the National Electricity Rules, to maintain, increase or be available to increase power generation for system security, for the duration of such a direction.
- 2.17 In the event that monitoring undertaken to comply with condition 3.7 of this approval indicates that thermal impacts from the power station on the ecology of Lake Budgewoi are significantly increasing, the Director-General may require the Proponent to investigate measures to reduce the thermal impacts of the project.

Soil and Water Quality Impacts

- 2.18 Except as may be expressively provided by an Environment Protection Licence for the project, the Proponent shall comply with section 120 of the *Protection of the Environment Operations Act 1997* which prohibits the pollution of waters.
- 2.19 Soil and water management controls shall be employed to minimise soil erosion and the discharge of sediment and other pollutants to lands and/or waters during construction activities, in accordance with *Managing Urban Stormwater: Soils and Conservation* (Landcom, 2004)

Hazards and Risk

Bunding and Spill Management

- 2.20 The Proponent shall store and handle all dangerous goods, as defined by the Australian Dangerous Goods Code, and all fuels, oils chemicals or other environmentally hazardous materials strictly in accordance with:
- a) all relevant Australian Standards;
 - b) for liquids, a minimum bund volume requirement of 110% of the volume of the largest single stored volume within the bund; and
 - c) *Bunding and Spill Management* (EPA, 2001).

In the event of an inconsistency between the requirements listed from a) to c) above, the most stringent requirement shall prevail to the extent of the inconsistency.

Aviation Impacts

2.21 Prior to the commencement of construction, the Proponent shall consult with the Civil Aviation Safety Authority in relation to any modifications to instruments or procedures required at the Warnervale Airport, or other airports where relevant, as a result of the project. At the request of the Civil Aviation Safety Authority, the Proponent shall fund, or reasonably contribute to funding, any such modifications to the satisfaction of the Director-General.

Pre-Construction Hazards Studies

2.22 Prior to the commencement of construction of the project, the Proponent shall prepare and submit for the approval of the Director-General, the following studies:

- a) a **Fire Safety Study** for the project, covering all aspects detailed in *Hazardous Industry Planning Advisory Paper No. 2 - Fire Safety Guidelines* (DUAP, 1993) and the *Best Practice Guidelines for Contaminated Water Retention and Treatment Systems* (NSW Government, 1994). The Study shall include a strict maintenance schedule for essential services and other safety measures. The Study shall meet the requirements of the NSW Fire Brigades;
- b) a **Hazard and Operability Study (HAZOP)** for the project, chaired by an independent, qualified person or team. The independent person or team shall be approved by the Director-General. The Study shall be carried out in accordance with *Hazardous Industry Planning Advisory Paper No. 8 - HAZOP Guidelines* (DUAP, 1995);
- c) a **Final Hazard Analysis** prepared in accordance with *Hazardous Industry Advisory Paper No.6 – Guidelines for Hazard Analysis* (DoP, 1992). The Final Hazard Analysis shall review the assumptions made in the Preliminary Hazard Analysis and shall include assessment of the packaged systems (as defined in the Preliminary Hazard Analysis); and
- d) a **Construction Safety Study** for the project, prepared in accordance with *Hazardous Industry Planning Advisory Paper No. 7 - Construction Safety Study Guidelines* (DoP, 1992).

Pre-Commissioning Hazards Studies

2.23 Prior to the commencement of commissioning of the project, the Proponent shall prepare and submit for the approval of the Director-General the following studies:

- a) an **Emergency Plan** for the project. The Plan shall be prepared in accordance with *Hazardous Industry Planning Advisory Paper No. 1 - Industry Emergency Planning Guidelines* (DoP, 1993); and
- b) a **Safety Management System**, covering all operations at the project and any associated transport activities involving hazardous materials. The System shall be developed in accordance with *Hazardous Industry Planning Advisory Paper No. 9 - Safety Management* (DoP, 1995).

Heritage Impacts

2.24 In undertaking the project, the Proponent shall not destroy, modify or otherwise physically affect PAD 1 (AHIMS 45-7-0249) and PAD 2 (AHIMS 45-7-0250). The Proponent shall ensure clear demarcation of these sites, through fencing, boundary marking or similar, prior to the commencement of construction works associated with the upgrade of the MV conveyor.

2.25 All works associated with the upgrade of the MV conveyor shall be undertaken within the existing disturbed corridor, and shall not involve soil disturbance, excavation or vegetation clearing on adjacent land.

2.26 A suitably qualified archaeologist/ indigenous cultural expert shall be engaged by the Proponent to assess all soil-disturbing and excavation works within the MV conveyor corridor and to assist with the identification of any potential items of Aboriginal heritage significance uncovered during those works. In the event that previously unknown items of actual or potential indigenous heritage significance are uncovered, all works that may affect those

items shall cease, and the Proponent shall contact representatives of the local Aboriginal community to determine the significance of the items. The Proponent shall consult with representatives of the local Aboriginal community to assist in the identification of the objects, to determine their cultural significance, if any, and to advise on appropriate management strategies, where relevant. The Proponent shall ensure that the site is registered with the DECCW.

Waste Generation and Management

- 2.27 All waste materials removed from the site shall only be directed to a waste management facility lawfully permitted to accept the materials.
- 2.28 The Proponent shall not cause, permit or allow any waste generated outside the site to be received at the site for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by a licence under the *Protection of the Environment Operations Act 1997*, if such a licence is required in relation to that waste.
- 2.29 The Proponent shall ensure that all liquid and / or non-liquid waste generated and / or stored on the site is assessed and classified in accordance with *Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes* (DECC, 2004), or any future guideline that may supersede that document.
- 2.30 All hazardous and industrial waste generated by the project shall be stored and disposed of in a manner that minimises its impact on the environment, including appropriate segregation and separate disposal by an appropriately-licensed waste transporter.

3. ENVIRONMENTAL MONITORING AND AUDITING

Air Quality Monitoring

- 3.1 The Proponent shall determine the pollutant concentrations and emission parameters specified in Table 4 below, at each of the flue stack discharge points (monitoring points 1a and 1b as identified under condition 2.2, and established in strict accordance with the requirements of TM-1). Monitoring shall be undertaken during operation of the project, at the frequency indicated in the Table, unless otherwise agreed by the DECCW.

Table 4 – Periodic and Continuous Pollutant and Parameter Monitoring (Air)

Pollutant/ Parameter	Units of Measure	Method	Frequency
Nitrogen dioxide (NO ₂) or nitric oxide (NO), or both (as NO ₂)	mgm ⁻³	TM-11 and CEM-2	Post commissioning and continuously
Solid particles	mgm ⁻³	TM-15 and US-EPA Performance Specification 11 (refer to conditions 0 and 2.6)	
Sulfur dioxide	mgm ⁻³	TM-4 and CEM-2	
Volumetric flow rate	m ³ s ⁻¹	TM-2 and CEM-6	
Cadmium	mgm ⁻³	TM-12	Post commissioning and annually
Carbon monoxide	mgm ⁻³	TM-32	
Chlorine	mgm ⁻³	TM-7	
Copper	mgm ⁻³	TM-12, TM-13 and TM-14	
Dry gas density	kgm ⁻³	TM-23	
Hydrogen chloride	mgm ⁻³	TM-8	
Mercury	mgm ⁻³	TM-12	
Moisture content	%	TM-22	
Molecular weight of stack gases	g.gmol ⁻¹	TM-23	
Oxygen (O ₂)	%	TM-25	
Sulfur acid mist and sulfur trioxide (as SO ₃)	mgm ⁻³	TM-3	
Temperature	°C	TM-2	
Total fluoride	mgm ⁻³	TM-9	

Total of Sb, As, Cd, Pb, Hg, Be, Cr, Co, Mn, Ni, Se, Sn and V	mgm ⁻³	TM-12, TM-13 and TM-14	
Velocity	ms ⁻¹	TM-2	

- 3.2 The Proponent shall determine the pollutant concentrations specified in Table 5 below, at each of the ambient air monitoring points (monitoring points 2, 3 and 4 as identified under condition 2.2, and established in strict accordance with the requirements of AM-1 and AM-2). Monitoring shall be undertaken during operation of the project, at the frequency indicated in the Table, unless otherwise agreed by the DECCW.

Table 5 – Ambient Air Quality Monitoring Monitoring

Pollutant	Units of Measure	Method	Frequency
Nitrogen oxides (NO and NO ₂)	pphm	AM-12	Continuously
Sulfur dioxide	pphm	AM-20	

- 3.3 The Proponent shall determine the pollutant concentrations specified in Table 6 below, at each of ambient air monitoring point 3 (as identified under condition 2.2, and established in strict accordance with the requirements of AM-1 and AM-2). Monitoring shall be undertaken during operation of the project, at the frequency indicated in the Table, unless otherwise agreed by the DECCW.

Table 6 – Ambient Air Quality Monitoring Monitoring

Pollutant	Units of Measure	Method	Frequency
Hydrogen fluoride	mgm ⁻³	AM-8	Continuously

Air Quality Performance Verification

- 3.4 Within 90 days of the commencement of operation of the project, or as may be agreed by the Director-General, and during a period in which the project is operating under design loads and normal operating conditions, the Proponent shall undertake a program to confirm the air emission performance of the project. The program shall include, but not necessarily be limited to:
- point source emission sampling and analysis subject to the requirements listed under conditions 3.1 and 0;
 - where point source emission sampling and analysis indicates potential for greater air quality impacts than predicted in the documents referred to under condition 1.1, a comprehensive air quality impact assessment, using actual air emission data collected under a). The assessment shall be undertaken strictly in accordance with the methods outlined in *Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in New South Wales* (EPA, 2001);
 - where relevant, a comparison of the results of the air quality impact assessment required under b) above, and the predicted air quality impacts detailed in the documents listed under condition 1.1 of this approval;
 - where relevant, a comparison of the results of the air quality impact assessment required under b) above, and the impact assessment criteria detailed in *Approved Methods and Guidance for the Sampling and Analysis of Air Pollutants in New South Wales* (EPA, 2001); and
 - details of any complaints made relating to air quality impacts.

A report providing the results of the program shall be submitted to the Director-General and DECCW within 28 days of completion of the testing required under a).

- 3.5 In the event that the program undertaken to satisfy condition 3.4 of this approval indicates that the operation of the project, under design loads and normal operating conditions, will lead to:
- greater point source emissions or ground-level concentrations of air pollutants than predicted in the documents listed under condition 1.1 of this approval; or

- b) greater point source emissions or ground-level concentrations of air pollutants than the impact assessment criteria detailed in *Approved Methods and Guidance for the Sampling and Analysis of Air Pollutants in New South Wales* (EPA, 2001);

then the Proponent shall provide details of remedial measures to be implemented to reduce point source emissions or ground-level concentrations of air pollutants to no greater than that predicted in the documents listed under condition 1.1 of this approval and to meet the impact assessment criteria detailed in *Approved Methods and Guidance for the Sampling and Analysis of Air Pollutants in New South Wales* (EPA, 2001). Details of the remedial measures and a timetable for implementation shall be submitted to the Director-General for approval within such period as the Director-General may require, and be accompanied by evidence that the DECCW is satisfied that the remedial measures are acceptable.

Meteorological Monitoring

- 3.6 The Proponent shall determine the meteorological parameters specified in Table 7 below, at the meteorological monitoring station(s) indicated (monitoring points 4 and 16 as identified under condition 2.2). Monitoring shall be undertaken during operation of the project, at the frequency indicated in the Table, unless otherwise agreed by the DECCW.

Table 7 – Periodic and Continuous Pollutant and Parameter Monitoring (Air)

Parameter	Units of Measure	Monitoring Station(s)	Method	Frequency
Wind speed (at 10 metres)	ms ⁻¹ (15-minute average)	4 and 16	AM-2 and AM-4	Continuously
Wind direction (at 10 metres)	degrees (15-minute average)	4 and 16		
Sigma theta	degrees (15-minute average)	4 and 16		
Additional siting requirements	-	4 and 16	AM-1	
Ambient temperature (at 2 metres and 10 metres)	°C (15-minute average)	16 only	AM-4	
Humidity	% (15-minute average)	16 only		
Solar radiation	Wm ⁻²	16 only		

Water Quality and Ecological Monitoring

- 3.7 Prior to the commencement of operation of the project, the Proponent shall prepare and submit for the approval of the Director-General a **Seagrass Monitoring Program** to monitor the distribution of seagrasses in the northern end of Lake Budgewoi and the thermal effects of cooling water discharges on those areas of seagrasses. The Program shall be developed in consultation with I&I NSW and DECCW, and shall include, but not necessarily limited to:
- monitoring the water temperature at the northern end of Lake Budgewoi, between the cooling water outlet canal and Goobarabah Point and Buff Point, using real-time temperature loggers and monthly Landsat data to determine the correlation between temperature logger data, modelled temperature isotherms and Landsat data;
 - monitoring the distribution of seagrasses in the northern end of Lake Budgewoi, between the cooling water outlet canal and Goobarabah Point and Buff Point, using low altitude, high resolution digital photography, annually in February – March;
 - presentation of data from real-time temperature loggers, highlighting temperature differentials between the cooling water outlet canal and Lake Budgewoi's ambient water temperatures;
 - presentation of thermally-calibrated Landsat images showing monthly changes in Lake Budgewoi's ambient water temperatures;
 - quantification of the nature and extent of any recorded changes in annual seagrass mapping in the northern end of Lake Budgewoi and description of any correlations between observed changes in seagrass mapping, water temperature and project operation;
 - where observed changes indicate a reduction in seagrass areas and the observed changes are likely to be attributable to the operation of the project, a description of ameliorative measures, including a timeframe for management actions, and in the case where impacts are considered unavoidable, a description of how impacts will be offset;
 - provision for reporting the outcomes of any ameliorative management actions and/ or offset measures to the Director-General, DECCW and I&I NSW;

- h) provision for annual reporting on the data, analysis and conclusions of the Program in June each year and for a period of no less than five years from the commencement of operation of the project, unless otherwise agreed by the Director-General; and
- i) provision for the publication of the data, analysis and conclusions of the Program on the website referred to under condition 5.1.

3.8 Within 12 months of the commencement of operation of the project, or within such period otherwise agreed by the Director-General, the Proponent shall undertake and submit to the Director-General and DECCW a **Water and Sediment Quality Study** of Lake Budgewoi, focusing on the quality of water discharged from the cooling water outlet canal and its potential impacts on the receiving environment of Lake Budgewoi. The Study shall be prepared in consultation with DECCW and shall include, but not necessarily limited to:

- a) characterisation of the water quality discharged from the Munmorah ash dam into the inlet canal, including concentrations and daily mass loads of cadmium, copper, lead, manganese, selenium (and associated speciated forms) and zinc. Daily mass loads shall be calculated based on a minimum of six sample events collected as grab samples over a minimum six-week period in combination with the daily volumes measured;
- b) characterisation of the water quality discharged from the cooling water outlet canal into Lake Budgewoi, including concentrations and daily mass loads of cadmium, copper, lead, manganese, selenium (and associated speciated forms) and zinc. Daily mass loads shall be calculated based on a minimum of six sample events collected as grab samples over a minimum six-week period in combination with the daily volumes measured;
- c) investigation of the impacts of water discharged from the cooling water outlet canal on sediments within Lake Budgewoi, with a focus on the concentration of cadmium, copper, lead, manganese, selenium and zinc within the sediments;
- d) determination of selenium concentrations in biota within Lake Budgewoi and the potential bioaccumulation impacts within the aquatic food chain; and
- e) details of any amelioration measures, where relevant, that can be adopted to reduce, treat and/ or prevent the discharge of metals and metalloids into Lake Budgewoi.

Note: subject to consideration of the outcomes of the Study referred to under condition 3.7, DECCW may require or license the project to include additional ameliorative measures to minimise any significant impacts on the receiving environment identified in the Study and attributable to the power station.

Noise Monitoring

3.9 Within 90 days of the commencement of operation of the project, or as may be agreed by the Director-General, and during a period in which the project is operating under design loads and normal operating conditions, the Proponent shall undertake a program to confirm the noise emission performance of the project. The program shall meet the requirements of the DECCW, and shall include, but not necessarily be limited to:

- a) noise monitoring, consistent with the guidelines provided in the *New South Wales Industrial Noise Policy* (EPA, 2000), to assess compliance with condition 2.13 of this approval;
- b) methodologies, locations and frequencies for noise monitoring (including at sites assessed in the Environmental Assessment);
- c) identification of monitoring sites at which pre- and post-project noise levels can be ascertained; and
- d) details of any complaints made relating to noise impacts.

A report providing the results of the program shall be submitted to the Director-General and the DECCW with 28 days of completion of the testing required under a).

3.10 In the event that the program undertaken to satisfy condition 3.9 of the approval indicates that the operation of the project, under design loads and normal operating conditions, will lead to greater noise impacts than permitted under condition 2.13 of this approval, then the Proponent shall provide details of remedial measures to be implemented to reduce noise impacts to levels required by that condition. Details of the remedial measures and a timetable for implementation shall be submitted to the Director-General for approval within

such period as the Director-General may require, and be accompanied by evidence that the DECCW is satisfied that the remedial measures are acceptable.

Hazard Compliance

- 3.11 Within 90 days of the commencement of operation of the project, or as may be agreed by the Director-General, the Proponent shall submit a report detailing compliance with conditions 2.22 and 2.23 of this approval. The report shall include, but not necessarily be limited to:
- a) dates of study, plan or system completion, and commencement of construction and commissioning;
 - b) actions taken or proposed to implement recommendations made in the studies, plans or systems; and
 - c) responses to each requirement that may be requested by the Director-General in respect to the implementation of any measures arising from recommendations of the studies or reports described by conditions 2.22 and 2.23.

Auditing

- 3.12 Twelve months after the commencement of operation of the project, or within such period otherwise agreed by the Director-General, the Proponent shall commission an independent, qualified person or team to undertake a **Hazard Audit** of the project. The independent person or team shall be approved by the Director-General prior to the commencement of the Audit. A Hazard Audit Report shall be submitted for the approval of the Director-General no later than one month after the completion of the Audit. Further Hazard Audits shall be undertaken every three years, or as otherwise agreed or required by the Director-General. Hazard Audits shall be carried out in accordance with Hazardous Industry Planning Advisory Paper No. 5 - Hazard Audit Guidelines (DoP, 1991). The hazard audit report shall be accompanied by a program for the implementation of all recommendations made in the hazard audit report. If the Proponent intends to defer the implementation of a recommendation, justification must be included.

4. COMPLIANCE MONITORING AND TRACKING

Compliance Tracking Program

- 4.1 The Proponent shall develop and implement a **Compliance Tracking Program** to track compliance with the requirements of this approval. The Program shall include, but not necessarily limited to:
- a) provisions for periodic review of the compliance status of the project and each of its components;
 - b) provisions for periodic reporting of the compliance status to the Director-General;
 - c) a program for independent environmental auditing in accordance with *AS/NZ ISO 19011:2003 - Guidelines for Quality and/or Environmental Management Systems Auditing*;
 - d) procedures for rectifying any non-compliance identified during environmental auditing or review of compliance;
 - e) mechanisms for recording environmental incidents and actions taken in response to those incidents;
 - f) provisions for reporting environmental incidents to the Director-General during construction and operation; and
 - g) provisions for ensuring all employees, contractors and sub-contractors are aware of, and comply with, the conditions of this approval relevant to their respective activities.

5. COMMUNITY INFORMATION, CONSULTATION AND INVOLVEMENT

Provision of Electronic Information

- 5.1 Prior to the commencement of the project, the Proponent shall establish and maintain a new website, or dedicated pages within its existing website for the provision of electronic information associated with the project. The Proponent shall publish and maintain up-to-date information on this website or dedicated pages including, but not necessarily limited to:
- a) information on the project, each of its components and the current implementation status of each component and stages;
 - b) a copy of this approval;
 - c) a copy of each relevant environmental approval, licence or permit required and obtained in relation to the project;

- d) a copy of each monitoring program and each environmental management plan required under this approval;
- e) details of the outcomes of reviews and audits of the proposal and each of its components undertaken in accordance with the Compliance Tracking Program referred to under condition 4.1; and
- f) details of a contact point(s) to which community complaints or inquiries may be directed, including a telephone number, a postal address and an email address.

Complaints Procedure

- 5.2 Prior to the commencement of construction of the project, the Proponent shall ensure that the following are available for community complaints for the life of the project (including construction and operation):
- a) a telephone number on which complaints about construction and operational activities at the site may be registered;
 - b) a postal address to which written complaints may be sent; and
 - c) an email address to which electronic complaints may be transmitted.

The telephone number, the postal address and the email address shall be displayed on a sign near the entrance to the site, in a position that is clearly visible to the public, and which clearly indicates the purposes of the sign.

- 5.3 The Proponent shall record details of all complaints received through the means listed under condition 5.2 of this approval in an up-to-date Complaints Register. The Register shall record, but not necessarily be limited to:
- a) the date and time, where relevant, of the complaint;
 - b) the means by which the complaint was made (telephone, mail or email);
 - c) any personal details of the complainant that were provided, or if no details were provided, a note to that effect;
 - d) the nature of the complaint;
 - e) any action(s) taken by the Proponent in relation to the complaint, including any follow-up contact with the complainant; and
 - f) if no action was taken by the Proponent in relation to the complaint, the reason(s) why no action was taken.

The Complaints Register shall be made available for inspection by the Director-General upon request.

6. ENVIRONMENTAL MANAGEMENT

- 6.1 Prior to the commencement of construction of the project, or as otherwise agreed by the Director-General, the Proponent shall nominate for the approval of the Director-General a suitably qualified and experienced Environmental Representative(s) independent of the design, construction and operation personnel. The Proponent shall engage the Environmental Representative(s) during any construction activities, and throughout the life of the project, or as otherwise agreed by the Director-General. The Environmental Representative(s) shall:
- a) oversee the implementation of all environmental management plans and monitoring programs required under this approval, and advise the Proponent upon the achievement of these plans/programs;
 - b) have responsibility for considering and advising the Proponent on matters specified in the conditions of this approval and the documents referred to under condition 1.1 of this approval;
 - c) oversee the implementation of the environmental auditing of the project in accordance with the requirements of condition 4.1 of this approval and all relevant project Environmental Management System(s); and
 - d) be given the authority and independence to recommend to the Proponent reasonable steps to be taken to avoid or minimise unintended or adverse environmental impacts, and, failing the effectiveness of such steps, to recommend to the Proponent that relevant activities are to be ceased as soon as reasonably practicable if there is a significant risk that an adverse impact on the environment will be likely to occur.

Construction Environmental Management Plan

- 6.2 The Proponent shall prepare and implement a **Construction Environmental Management Plan** to outline environmental management practices and procedures to be followed during construction of the project. The Plan shall be consistent with *Guideline for the Preparation of Environmental Management Plans* (DIPNR 2004) and shall include, but not necessarily be limited to:
- a) a description of all activities to be undertaken on the site during construction including an indication of stages of construction, where relevant;
 - b) statutory and other obligations that the Proponent is required to fulfil during construction including all approvals, consultations and agreements required from authorities and other stakeholders, and key legislation and policies;
 - c) details of how the environmental performance of the construction works will be monitored, and what actions will be taken to address identified adverse environmental impacts.
 - d) a description of the roles and responsibilities for all relevant employees involved in the construction of the project;
 - e) the additional studies listed under condition 6.3 of this approval; and
 - f) complaints handling procedures during construction.

The Plan shall be submitted for the approval of the Director-General no later than one month prior to the commencement of any construction works associated with the project, or within such period otherwise agreed by the Director-General. Construction works shall not commence until written approval has been received from the Director-General.

- 6.3 As part of the Construction Environmental Management Plan for the project, required under condition 6.2 of this approval, the Proponent shall prepare and implement the following:
- a) a **Traffic Management Protocol** to outline management of traffic conflicts that may be generated during construction of the project. The Plan shall address the requirements of relevant local council(s) and the RTA and shall include, but not necessarily be limited to:
 - i) details of traffic routes for heavy vehicles, including any necessary route or timing restriction for oversized loads;
 - ii) detailed consideration of measures to be employed to ensure traffic volume, acoustic and amenity impacts along the heavy vehicle routes are minimised;
 - iii) detailed consideration of alternative routes (where necessary);
 - iv) demonstration that all statutory responsibilities with regard to road traffic impacts have been complied with.

Operation Environmental Management Plan

- 6.4 The Proponent shall prepare and implement an **Operation Environmental Management Plan** to detail an environmental management framework, practices and procedures to be followed during operation of the project. The Plan shall be consistent with *Guideline for the Preparation of Environmental Management Plans* (DIPNR 2004) and shall include, but not necessarily be limited to:
- a) identification of all statutory and other obligations that the Proponent is required to fulfil in relation to operation of the project, including all approvals, licences, approvals and consultations;
 - b) a description of the roles and responsibilities for all relevant employees involved in the operation of the project;
 - c) overall environmental policies and principles to be applied to the operation of the project;
 - d) standards and performance measures to be applied to the project, and a means by which environmental performance can be periodically reviewed and improved, where appropriate;
 - e) management policies to ensure that environmental performance goals are met and to comply with the conditions of this approval; and
 - f) the environmental monitoring and auditing requirements outlined under conditions 3.1 to 3.11 of this approval, inclusive.

The Plan shall be submitted for the approval of the Director-General no later than one month prior to the commencement of operation of the project, or within such period otherwise agreed by the Director-General. Operation shall not commence until written approval has been received from the Director-General.

- 6.5 Prior to the commencement of operation of the project, the Proponent shall prepare and submit for the approval of the Director-General a **Long-Term Ash Management Strategy** for the project. The Strategy shall be developed in consultation with DECCW, and shall include, but not necessarily be limited to:
- a) a stipulated goal of 40% reuse or recycling of ash from the project within five years of the commencement of operation of the project. This goal may only be altered with the prior written agreement of the Director-General, based on a demonstration by the Proponent that market conditions reasonably preclude this goal being achieved;
 - b) a program for the investigation of alternative ash disposal and re-use opportunities, with a particular focus on the minimisation of ash storage and disposal on site and beneficial reuse of ash;
 - c) a framework for the on-going identification and assessment of alternative ash management measures from time to time, having regard to the operational needs of the project, and social, economic and environmental implications of those measures;
 - d) a strategic management framework for the optimisation of ash storage and disposal capacity on the site, and periodic review of ash management practices to achieve this outcome;
 - e) an environmental management framework for the on-going management of ash disposal and ash management measures on site, consistent with contemporary best environmental practice, with particular focus placed on dust generation and water pollution; and
 - f) a strategy for the reconciliation of the generating life of the project and the availability and management of ash produced by the project, including consideration of any new, upgraded or modified ash storage and disposal facilities that may be required over time (and subject to separate assessment and approval in accordance with the *Environmental Planning and Assessment Act 1979*).

With respect to a), if reuse options are slow to emerge, or they are not feasible on economic, environmental, legislative or industrial reliability criteria, the timeframe goal may be extended with the agreement of the Director-General, in consultation with the DECCW, and subject to the Proponent providing to the satisfaction of the Director-General, information of available reuse options, justification of why these cannot be – or have not been - adopted, and a description of what measures will be implemented to facilitate the reuse of all ash generated on the premises for a beneficial purpose. After reviewing this information, the Director-General in consultation with the DECCW, may approve a modified timeframe goal(s), and may require the Proponent to carry out further investigations or works into reuse of all ash generated on the site for a beneficial purpose.

7. ENVIRONMENTAL REPORTING

Incident Reporting

- 7.1 The Proponent shall notify the Director-General of any incident with actual or potential significant off-site impacts on people or the biophysical environment within 12 hours of becoming aware of the incident. The Proponent shall provide full written details of the incident to the Director-General within seven days of the date on which the incident occurred.
- 7.2 The Proponent shall meet the requirements of the Director-General to address the cause or impact of any incident, as it relates to this approval, reported in accordance with condition 7.1 of this approval, within such period as the Director-General may require.
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