



Wallerawang Ash Repository
Operational Environmental Management Plan
October 2018

Wallerawang Ash Repository Operational Environmental Management Plan

October 2018



Operational Environmental Management Plan

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1. Introduction

This document describes the Operation Environmental Management Plan (OEMP) that will be implemented by EnergyAustralia NSW and its contractors during the operation of the Kerosene Vale Stage 2 ash repository and the Sawyers Swamp Creek Ash Dam. Collectively the KVAR and SSCAD are referred to as the Wallerawang Ash Repositories (refer to figure 1-1).

The OEMP provides a framework to manage the environmental aspects associated with the operation of the Wallerawang Ash Repositories. The OEMP outlines the requirements associated with the Wallerawang Ash Repositories as stipulated in the relevant provisions of the Wallerawang Ash Repositories Approval 07_0005 issued by the NSW Department of Planning (DPE), the Environment Protection Licence 766 (EPL) issued by the NSW Environment Protection Authority (EPA), and the Statement of Commitments (SoC) presented in the Submissions Report (PB 2008).

1.1 Background to the Wallerawang Ash Repositories

The WWPS is now closed however the operational activities for the Wallerawang Ash Repositories will continue to ensure compliance with approval conditions is maintained until the site is rehabilitated and closed.

It should be noted that all aspects of the OEMP continue to apply in respect to the environmental monitoring, management and mitigation controls.

The SSCAD was constructed in the late seventies and has been used since at least the early 1980's to store ash generated from the operations of the WWPS. It is still being used to store ash, stormwater or settling pond sediments from the WWPS. Water levels within SSCAD are managed to prevent a site discharge by the transfer of water to the WWPS Caustic Injection Plant (CIP) and discharged through a licenced discharge point. Due to progressive ash emplacement since the early 1980's the storage area has reached its maximum storage height with the exception being a water filled depression along the SSCAD wall. SSCAD is a prescribed dam under the *NSW Dam Safety Act 1978* (DS Act) and is subject to regular surveillance and monitoring by certified engineers in accordance with the DS Act.

KVAR was originally established between 1960 and 1990. During this time it was filled with a combination of by-product ash from Wallerawang Power Station and mining spoil. The ash repository area was capped around 1990.

The need to further develop the KVAR area to maintain power-generation operations at Wallerawang Power Station was identified in 2001. This was a result of the existing wet ash storage area (i.e. the Sawyers Swamp Creek Ash Dam) approaching its design capacity. The placement of dry ash at the KVAR was identified as a viable alternative to meet this need.

The placement of ash on the Repository was developed in two stages:

- Stage 1: Comprises about one third of the area associated with the repository site and located on the south-western section of the site, this area was designed to operate for a period of 5 years, and has now reached its design capacity and been capped.
- Stage 2: Comprises the remainder the repository site, covering an area from the open face of the Stage 1 area to the edge of the original storage area. This stage was designed to operate about 10 years, depending on actual ash production rates.

The extent of both stages has been outlined in Figure 2-1. The works associated with implementing Stage 2 underwent a comprehensive environmental assessment process which received Project Approval 07_0005 from the Minister of Planning under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) on December 2008. Refer to Appendix D for a copy of the Project Approval instrument.

Project Approval 07_0005 contains a number of conditions that need to be complied with by EnergyAustralia NSW, as the proponent, at different stages of the Project. Condition 6.4 of Project Approval 07_0005 requires

an OEMP be developed prior to the commencement of operations at the site. This document has been prepared to comply with this requirement.

A Contractor has been engaged by EnergyAustralia NSW to operate Stage 2. Relevant terms and conditions stipulated in the contractual arrangement between the Contractor and EnergyAustralia NSW have been considered in the development of this OEMP to ensure consistency.

1.2 Scope of OEMP

The scope of the OEMP covers all operations involving the movement and storage of ash, water and sediment pond fines from Wallerawang Power Station (WWPS) to the Wallerawang Ash Repositories area. It should be noted whilst the bulk transport and disposal of ash to Wallerawang Ash Repositories has ceased there will be a requirement to dispose small volumes of ash during the demolition of WWPS. Complementary to this is the capping of the Wallerawang Ash Repositories that will involve the importation of suitable material from sources across New South Wales.

The OEMP has been updated to reflect the current Operational activities at Wallerawang Ash Repositories to satisfy the following requirements:

- relevant Conditions of Approval as stipulated in the Wallerawang Ash Repositories Approval (PA) 07_0005 as Modified
- relevant commitments as stipulated in the Statement of Commitments provided as part of the Submissions Report for the Wallerawang Ash Repositories
- relevant clauses in Environment Protection Licence 766.

1.3 Objectives of OEMP

The objectives of this OEMP include the following:

- To provide a framework demonstrating EnergyAustralia NSW's commitment to conduct its activities in a manner that minimises impacts to the physical, biological, cultural and social environment;
- To evaluate potential environmental impacts of the Wallerawang Ash Repositories area and to ensure such impacts are minimised or avoided where practical;
- To ensure that all EnergyAustralia NSW employees and Contractors involved in the Wallerawang Ash Repositories activities are aware of their environmental responsibilities and are proactive in their approach to environmental management; and
- To comply with relevant legislative requirements.

Under the contractual arrangements for the Wallerawang Ash Repositories area, all companies, contractors and sub-contractors undertaking work on the Wallerawang Ash Repositories must comply with this OEMP.

1.4 Structure of OEMP

The structure of the OEMP has been developed to be consistent with the elements of AS/NZS ISO 14001 as well as complying with the general requirements and objectives stipulated within the *Guideline for the Preparation of Environmental Management Plans* (DIPNR 2004).

The OEMP comprises the following sections:

- | | |
|------------------|--|
| Section 1 | Describes the Wallerawang Ash Repositories background, the OEMP purpose and format, and it lists the key reference documents surrounding the OEMP . |
| Section 2 | Describes the key operation activities. |
| Section 3 | Establishes the environmental management framework for implementing the OEMP including roles and responsibilities for managing operations and adhering to environmental regulations. |

Section 4 Describes the environmental controls applicable to the Wallerawang Ash Repositories, including:

- a summary of statutory approval requirements and associated environmental legislation and regulations
- an outline of the risk assessment undertaken
- A summary of the Wallerawang Ash Repositories' environmental aspects, impacts and associated mitigation measures outlined in the relevant sub-plans.

Section 5 Addresses environmental monitoring specifications and responsibilities.

Section 6 Outlines the implementation framework through the management sub-plans and the associated environmental targets and key indicators.

Appendix A Contains the Operational Noise and Vibration Management Plan

Appendix B Contains monitoring parameters

Appendix C Contains relevant statutory and regulatory instruments

1.5 Reference documents

This OEMP incorporates the obligations and criteria outlined in the following documents:

- *Project Approval 07_0005* (NSW Department of Planning)
 - Submissions Report - Statement of Commitments (PB, June 2008)
 - Environmental Assessment - Kerosene Vale – Stage 2 Ash Repository Area (PB, April 2008).
- Operational Noise Management Plan
- Groundwater Management Plan
- Surface Water Management Plan
- Air Quality Management Plan
- Landscape/Revegetation Plan
- Operational Transport Management Plan
-
- Modification application 07_0005 Mod 1
 - Wallerawang Power Station to Submissions Report (EA, 2018)
- *Environment Protection Licence 766* (NSW Environment Protection Authority)

1.6 Abbreviations & Definitions

The following abbreviations have been used throughout this document.

Table 1-1 Abbreviations and definitions

| Abbreviation | Definition |
|------------------|---|
| AR | Annual Review |
| Capping material | Material used to cap ash repository areas of the site. |
| CEMP | Construction Environment Management Plan |
| CoA | Conditions of Approval stipulated on the Project Approval (Application 07_0005) granted by the Minister for Planning for the Project under Part 3A of the Environmental Planning and Assessment Act 1979. |
| Contractor | The company responsible for the Stage 2 ash repository operations and project works. |

| Abbreviation | Definition |
|------------------------------|---|
| DPE | Department of Planning and Environment |
| EA | Environmental Assessment |
| EA NSW | EnergyAustralia NSW |
| EMS | Environmental Management System |
| EPA | Environment Protection Authority |
| EP&A Act | Environmental Planning and Assessment Act 1979 |
| EPL | Environment Protection Licence No. 766 |
| Heavy Vehicle | A vehicle that has a combined Gross Vehicle Mass or Aggregate Trailer Mass of more than 4.5 tonnes. |
| KVAR | Kerosene Vale Ash Repository |
| Licensee | The Licensee for this Project is EnergyAustralia NSW |
| OEMP | Operations Environmental Management Plan (Operation) |
| Operations | <p>The operational activities of the project include:</p> <ul style="list-style-type: none"> • Ash haulage, placement and management systems • Onsite water management systems • Capping material haulage, placement and management • Landscaping and revegetation/rehabilitation of the site; and • Upgrading and maintaining internal access roads in the project area |
| POEO Act | Protection of the Environment Operations Act 1997 |
| Project | Refers to the project described in the environmental assessment for the modification |
| Proponent | The Proponent for this Project is EnergyAustralia NSW. |
| RMS | Roads and Maritime Services. |
| SSCAD | Sawyers Swamp Creek Ash Dam |
| SoC | Statement of Commitments – public submissions to the Stage 2 ash repository works outlined in the Submissions Report by Parsons Brinckerhoff (June 2008), and agreed upon by EnergyAustralia NSW. |
| Wallerawang Ash Repositories | Collectively the KVAR and SSCAD are referred to as the Wallerawang Ash Repositories. |
| WWPS | Wallerawang Power Station |

2. Operational Activities

This section provides an overview of the extent of activities relating to the Wallerawang Ash Repositories Operation, including the likely methods and procedures that will be used by EnergyAustralia NSW, its contractors and associated consultants. These environmental aspects have been used as the basis for developing the management and control strategies contained in this OEMP.

2.1 Overview

The WWPS is now closed however the operational activities for the Wallerawang Ash Repositories will continue to ensure compliance with approval conditions is maintained until the site is rehabilitated and closed. A detailed Closure and Rehabilitation Plan is being developed for the Wallerawang Ash Repositories and will form part of the reclamation works for the Wallerawang Power Station.

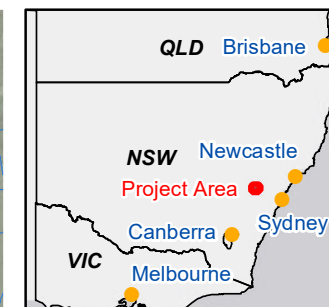
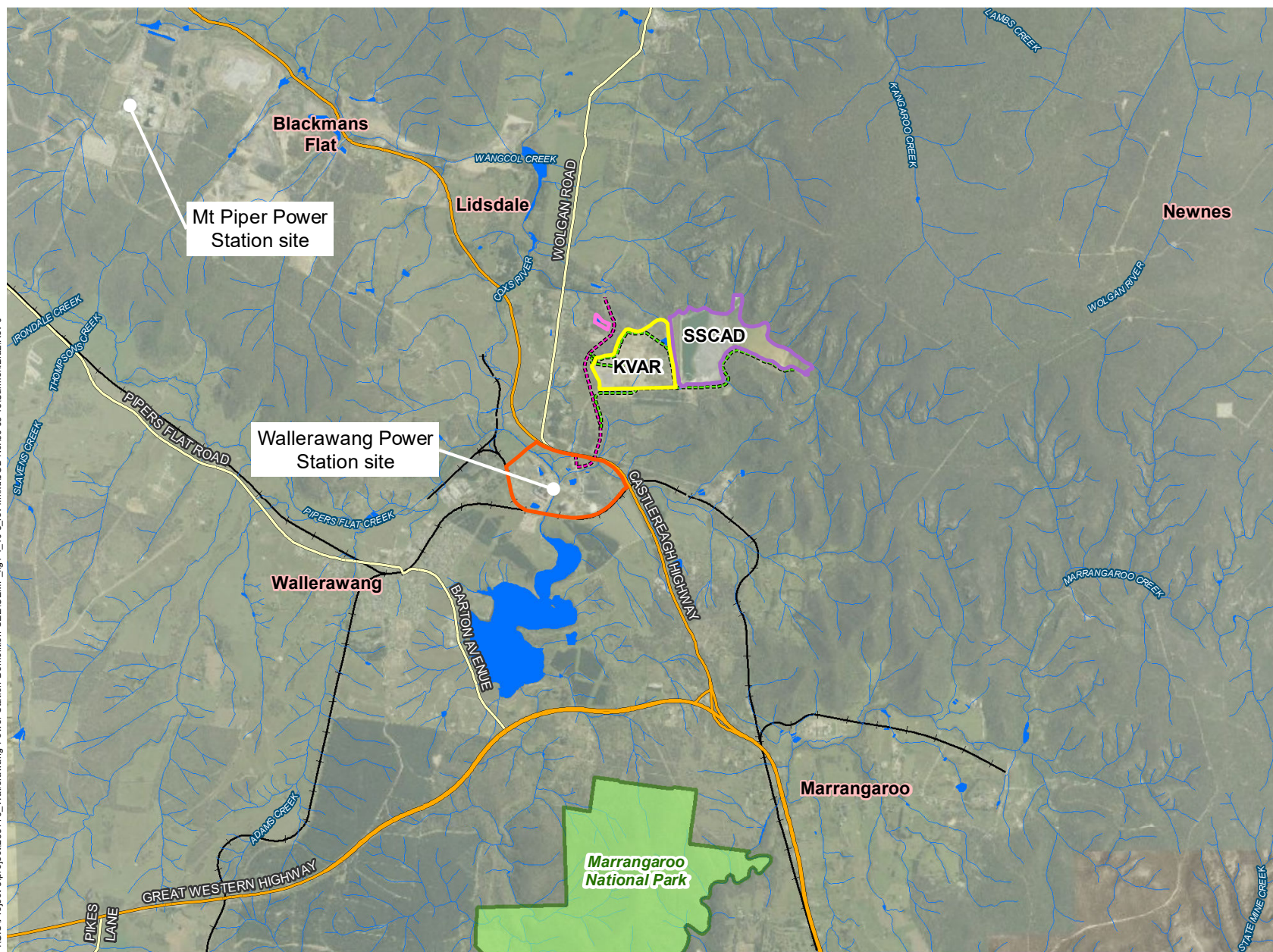
Activities will continue to be undertaken in a manner that is consistent with the relevant provisions of the Wallerawang Ash Repositories Approval and Environmental Protection Licence, and as such will be monitored regularly to ensure compliance with regulated air and noise emission levels. The management of the groundwater, surface water and landscape aspects of the Wallerawang Ash Repositories will also be under constant review and monitoring to provide all stakeholders to the Wallerawang Ash Repositories assurance that the environmental impacts have been recognised and continue to be managed appropriately.

2.2 Extent of Stage 2 ash placement

KVAR area is located approximately 2.5 kilometres north-east of Wallerawang Power Station and approximately 10 kilometres north-west of the city of Lithgow, which is 150 kilometres west of Sydney.

KVAR Stage 2 activities extend the existing Stage 1 repository from the eastern edge directly adjacent to the pine plantation area generally north towards Sawyers Swamp Creek. Refer to Figure 2-1 for further details.

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Legend

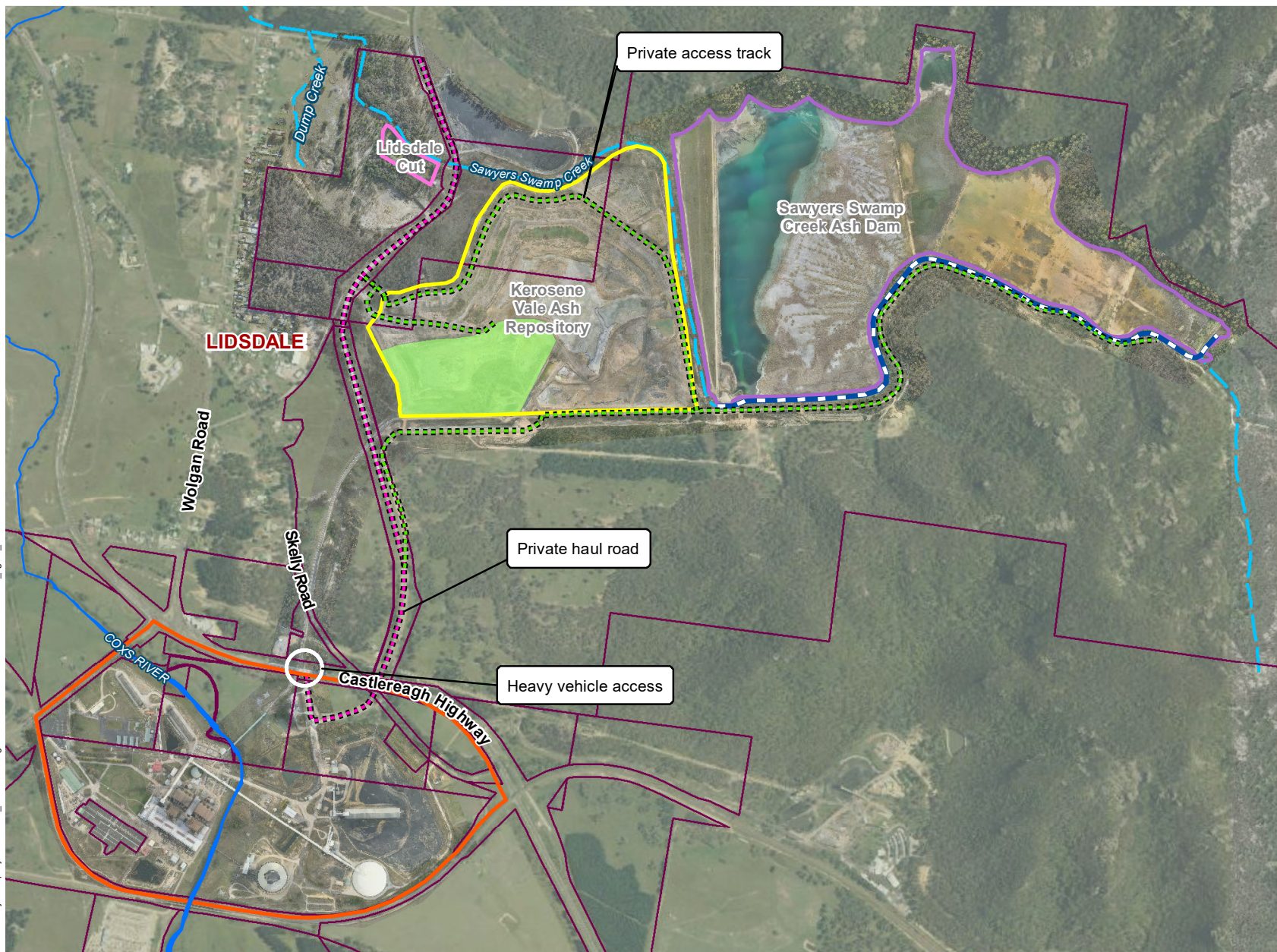
- Wallerawang Power Station site
- Sawyers Swamp Creek Ash
- Kerosene Vale Ash Repository
- Lidsdale Cut
- Private access track
- Private access track
- Highways
- Local roads
- railway
- Waterways
- Water bodies
- National Park

Source: Aurecon, LPI

Wallerawang Ash Repository **OEMP**

FIGURE 1-1: Project locality

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Legend

- EnergyAustraliaNSW owned land / licence area (EPL 766)
- Wallerawang Power Station site
- Sawyers Swamp Creek Ash Dam
- Kerosene Vale Ash Repository - Stage2
- Kerosene Vale Ash Repository - Stage1
- Lidsdale Cut
- Sawyers Swamp Creek
- Private access track
- Private haul road
- Clean water diversion drain

Source: Aurecon, LPI,
Lithgow Local Environmental Plan 2014



1:18,000
0 250 500m

Projection: GDA 1994 MGA Zone 56

Wallerawang Ash Repository **OEMP**

Figure 2-1: Project area

2.3 Operational Activities

2.3.1 Hours of operation

Normal operating hours

The normal hours of operation for the Wallerawang Ash Repositories are between 7 am and 10 pm Monday to Sunday. Operations outside these hours are defined as abnormal or emergency operating conditions and are subject to specific requirements, as described below.

Abnormal or Emergency operating conditions

Conditions under which operations outside the normal hours of operation can occur have been specified in the Wallerawang Ash Repositories Approval and can be described as follows:

- where it is required to avoid the loss of lives, property and/or to prevent environmental harm

Under these circumstances, EnergyAustralia NSW shall notify the EPA and nearby sensitive receivers prior to any emergency ash haulage or placement activities, and the Secretary of the DPE within 1 week after the emergency activities have occurred.

2.3.2 Ash delivery

Due to the closure of the Wallerawang Power Station ash is no longer required to be delivered to the Wallerawang Ash Repositories on a regular basis by dedicated haulage trucks. Small volumes of ash will be transported intermittently to the Wallerawang Ash Repositories during the dismantling of the Wallerawang Power Station.

The ash will be transported via the existing haul road using trucks. It is estimated that less than 2 vehicle trips per month will be required. It should be noted that approximately 60 vehicle trips were required per day when the site was operational. All truck loads will be covered during transport to minimise dust emissions.

2.3.4 Capping material delivery

The approval of modification application (07_0005) by the Department of Planning in August 2018 provides the authority for EnergyAustralia to import material from areas outside of the Lithgow local government area for capping the ash repositories for the Wallerawang Ash Repositories. The approval conditions relating to the importation of soil material are detailed below.

- Prepare in consultation with RMS and Council an Operational Transport Management Plan prior to the importing of capping material from outside the Lithgow local government area. The plan will cover details associated with the transport route and include measures to minimise traffic safety issues for road uses.
- not import more than 100 heavy vehicle loads of capping material to the site per day
- cover all heavy vehicle loads of capping material
- not transport capping material on local roads in the Lithgow local government area
- notify the Department before commencing the importation of capping material from sources outside of the Lithgow local government area; and
- not import capping material to the site for more than 2 years following its commencement

SSCAD and KVAR have been partially capped and rehabilitated, although continuation of these activities is not possible without the importation of material as capping material has been exhausted from within the WWPS and Wallerawang Ash Repository. Capping material to be used for this will be sourced from various locations across NSW and will comprise virgin excavated natural material (VENM) and excavated natural material (ENM).

Trucks transporting capping material will access the Wallerawang Ash Repositories via the existing heavy vehicle entrance to WWPS on the Castlereagh Highway. Trucks would travel between WWPS and the capping sites on the private roads that link the WWPS to Angus Place Colliery and the Wallerawang Ash Repositories area.

2.3.3 Water management

Water required during operation of the Wallerawang Ash Repositories will be sourced from the site retention basins, the existing storage of SSCAD or pumped to site from the WWPS. Note water sourced from SSCAD would only be used within the SSCAD facility for dust suppression.

The management, collection and monitoring of surface water to ensure site runoff is contained will be undertaken as part of the Operation activities and is addressed within this OEMP. Site specific management practices will be put in place to prevent site runoff from exposed ash surfaces from entering Sawyers Swamp Creek. Site surface water management measures are addressed in section 6.4 of this OEMP and include:

- The water management system for SSCAD does not authorise discharges into the Sawyers Swamp Creek Catchment, whereby water is transferred to the WWPS via the return water pipeline for treatment by the CIP and disposal via a licensed discharge point 3 (LDP3) to maintain water levels within operational limits. This ensures that untreated water from SSCAD does not enter the adjacent Sawyers Swamp Creek.
- Development of a retention basin (or use of the existing basin) to capture site surface water runoff.
- Management of ash with designated slopes to direct water to retention areas.
- Diversion of clean water away from disturbed areas to existing surface water drains and Sawyers Swamp Creek to provide environmental flows.
- Capping and revegetating completed areas to enable the diversion of clean water to site drainage systems.
- Sediment and erosion controls.

As part of the operation of the Wallerawang Ash Repositories, surface and groundwater monitoring will be undertaken to assess any change in receiving water quality. Details of the monitoring regimes are outlined in sections 6.4 and 6.5 of this OEMP.

The generation of leachate from the Wallerawang Ash Repositories has been reduced through the implementation of a range of mitigation measures. These measures will be continued throughout the operations phase and will include:

- Recycling and reuse of runoff from the ash repository area.
- Recycling of water from the water-retention basin and perimeter drains for reuse at the KVAR area.
- Capture and pump back of leachate collected in the sump below the SSCAD wall to the SSCAD facility

Surface drainage from the ash repository area will be captured to minimise impacts on Sawyers Swamp Creek and for reuse in site activities. Recaptured water will be stored in a retention basin as described above.

3. Environmental management framework

The basic elements of an Environmental Management System (EMS) are similar to the key elements that make up an Environmental Management Plan (EMP). This OEMP has been developed to be consistent with and incorporate key components of EnergyAustralia NSW's EMS that are relevant to the Wallerawang Ash Repositories.

3.1 Environmental management system

EnergyAustralia NSW's Environmental Management System is based on and certified to AS/NZS ISO 14001 for all its power stations.

The ISO 14001 standard provides best practice specification for implementation of an EMS. An EMS provides a framework for managing the company's environmental responsibilities so that they are integrated into overall operations. The standard approach integrates environmental management and supports the company's compliance with legislated and voluntary environmental requirements as well as continuously improving their overall environmental performance.

This international environmental standard ensures a consistent approach is undertaken to integrate environmental management at all levels of the organisation by:

- Identification of significant environmental risks.
- Identifying and maintaining awareness of relevant environmental legislation.
- Assignment of roles and responsibilities.
- Establishment of procedures for internal and external communications.
- Establishment of procedures for monitoring and measuring environmental performance.
- Setting and reviewing objectives and targets for improving environmental performance.
- Monitoring and measuring environmental compliance and community inquiries.
- Setting and reviewing management system programs for achieving objectives and targets.
- Provision of environmental training aligned to skill requirements.
- Review of EMS performance for continual improvement.

This OEMP has been developed to be consistent with the relevant provisions of EnergyAustralia NSW's EMS.

3.2 Environmental responsibilities

The key responsibilities and accountabilities of Wallerawang Ash Repositories staff, including the Environmental Representative, are outlined in Table 3-1. These responsibilities may be modified further depending on the needs of the Wallerawang Ash Repositories while in operation. The procedures covering specific activities and the relevant daily operational responsibilities are outlined in Section 6 of this OEMP.

Table 3-1 Summary of responsibilities

| Role | Reports to | Summary of responsibilities |
|--|---|---|
| Asset Lead (EnergyAustralia NSW) | Head of Mt Piper (EnergyAustralia NSW) | <ul style="list-style-type: none"> ▪ Key point of contact with Head of Mt Piper. ▪ Ensure adequate resources are made available to Wallerawang Ash Repositories for the effective environmental management of operations. ▪ Ensure regulatory compliance and effective management of environmental performance of the Wallerawang Ash Repositories and implementation of the OEMP. ▪ Ensure the environmental management aspects and impacts are considered and incorporated in all Wallerawang Ash Repositories planning activities. ▪ Report to the Head of Mt Piper as required. ▪ Attend meetings with Government Authority and/or community groups as requested by the Head of Mt Piper. ▪ Review corrective and preventative actions to monitor the implementation of recommendations made from audits and site inspections. ▪ Ensure community consultation and complaints handling occurs in accordance with relevant procedures and all complaints are resolved satisfactorily. ▪ Ensure all environmental incidents are recorded in accordance with procedures and mitigation measures are implemented to minimise the possibility of the same incident happening again. |
| Ash & Dust Engineer (EnergyAustralia NSW) (Principal's Representative) | Asset Lead (EnergyAustralia NSW) | <ul style="list-style-type: none"> ▪ Ensure implementation of the OEMP and its sub-plans. ▪ Ensure environmental awareness training and inductions are provided to all relevant Wallerawang Ash Repository staff and contractors. ▪ Ensure appropriate staff and contractors are trained in incident management and response procedures applicable to the Wallerawang Ash Repository. ▪ Monitor and report on environmental performance of Wallerawang Ash Repository, including OEMP compliance to Asset Lead and Environmental Representative on a monthly basis or as required. ▪ Assists the Environmental Representative in the provision of information when environmental audits are conducted in accordance with the requirements of the OEMP. ▪ Undertake environmental risk assessment of additional work locations, if identified, against environmental criteria and assess whether amendments to the OEMP are required. ▪ Monitor activities against the conditions of approval to evaluate compliance with the OEMP. ▪ Liaise with Asset Lead, Environmental Representative and Site Manager on environmental matters, as required. ▪ Provide support on environmental matters and implement appropriate corrective actions to address complaints where appropriate. |

| Role | Reports to | Summary of responsibilities |
|--|---|--|
| Ash & Dust Engineer (EnergyAustralia NSW) (Principal's Representative) | Asset Lead (EnergyAustralia NSW) | <ul style="list-style-type: none"> Ensure non-compliances and environmental incidents are reported to Asset Lead, Site Manager and Environmental Representative and ensure corrective actions are implemented and monitored. Ensure contractors fulfil their environmental obligations throughout the period of engagement. Provide advice to Contractors on general environment issues and matters relating to the OEMP requirements. Review Contractor procedures and Work Method Statements for suitability and adequacy in meeting specified OEMP requirements and objectives as required. Advise Environmental Representative of any amendments or variations to the approved OEMP. |
| Environmental Representative (NSW Environment Leader) (EnergyAustralia NSW) | Enterprise Environment Leader (EnergyAustralia) Head of Mt Piper (EnergyAustralia NSW) Secretary (DPE) | <ul style="list-style-type: none"> Key point of contact with all Government Authorities. Oversee the implementation of all environmental management plans and monitoring programs required under the Wallerawang Ash Repository Approval and undertake independent review. Advise EnergyAustralia NSW on matters specified in the conditions of this approval and the Statement of Commitments. Review the environmental awareness and site induction training program to ensure the training is in accordance with EnergyAustralia NSW's licence and the Conditions of Approval. Oversee the implementation of the environmental auditing of the Wallerawang Ash Repository in accordance with the requirements of the Wallerawang Ash Repository Approval and this OEMP. Has the authority and independence to recommend the implementation of reasonable mitigation measures to avoid or minimise unintended or adverse environmental impacts. Has the authority and independence to request that relevant activities cease to operate, as soon as reasonably practicable, should the mitigation measures that have been implemented fail to remedy or minimise the adverse environmental impacts. Ensure all reporting to Government Authorities is submitted in a timely manner. Report on environmental incidents to relevant Government Authorities. Reports to Enterprise Environment Leader and Head of Mt Piper in accordance with the EnergyAustralia corporate reporting structure. Attend meetings with Government Authority and/or community groups, as required. Update and review the OEMP in consultation with the Ash & Dust Engineer and Site Manager, as required. |
| Site Manager (Contractor) | Contract Administrator (EnergyAustralia NSW) | <ul style="list-style-type: none"> Overall implementation of the OEMP in responsible work area by ensuring that adequate resources are made available to all operational personnel. |

| Role | Reports to | Summary of responsibilities |
|-------------------------------------|--|--|
| Site Manager (Contractor) | Contract Administrator (EnergyAustralia NSW) | <ul style="list-style-type: none"> Ensure that operational personnel are aware of responsibilities with respect to the environment and the requirements of the OEMP. Develop the environmental awareness and site induction training program in consultation with the Contract Administrator. Ensure that operational personnel are aware of community contact protocols and responsibilities. Provide support to Repository Team Leader and operational staff on environmental issues and OEMP implementation. Ensure that all operational personnel and sub-contractors have completed environmental awareness and inductions programs as required. Ensure that the environmental requirements as set out in the duly executed contract are followed. Participate in environmental audits. Receive environmental audit reports and respond as necessary. Ensure that corrective actions arising out of audits, environmental incidents etc are implemented in a timely and satisfactory manner. Ensure that all environmental incidents are immediately reported to the Contract Administrator and Environmental Representative. |
| Repository Team Leader (Contractor) | Site Manager (Contractor) | <ul style="list-style-type: none"> Receive (either directly or indirectly from others in Wallerawang Ash Repositories Team) and develop/implement actions to address community complaints in consultation with the Site Manager, Environmental Representative, and others in the Wallerawang Ash Repositories Team. Facilitate communications between the Wallerawang Ash Repositories Team and the affected members of the wider community. Preparation and issuing of 'Upcoming Work' Notifications. Monitor the closing out of community complaints. Report to Site Manager on community relations issues and Wallerawang Ash Repositories complaints. Input of complaints, records of community contact and other relevant information into Communication/Complaints Register. Follow the environmental requirements as set out in the duly executed contract. |
| Repository Staff (Contractor) | Repository Team Leader | <ul style="list-style-type: none"> Follow instructions and procedures stipulated in the environmental awareness/induction training program. Follow the environmental requirements as set out in the duly executed contract. Install environmental controls as directed by Site Manager or Repository Team Leader. Maintain environmental controls to ensure they remain effective. Notify environmental incidents to Site Manager or Repository Team Leader as soon as practicable. |

| Role | Reports to | Summary of responsibilities |
|----------------------------------|------------------------|---|
| Repository Staff (Contractor) | Repository Team Leader | <ul style="list-style-type: none"> Carry out corrective and preventative actions as directed by Site Manager or Repository Team Leader. Adhere to community relations procedures/protocols. |

3.3 Wallerawang Ash Repository communications

Effective Wallerawang Ash Repository communications are essential to the transfer of information between EnergyAustralia NSW, the Contractor, the Environmental Representative, key stakeholders, regulatory bodies and the community in general.

3.3.1 Wallerawang Ash Repository team communications

EnergyAustralia NSW has established a dedicated team of specialists to manage the decommissioning, demolition and rehabilitation (DDR) of the Wallerawang Power Station and the Wallerawang Ash Repositories area. An external engineering consultancy has been engaged to provide technical expertise to the DDR team. All communications relating to the Wallerawang Power Station and the Wallerawang Ash Repositories area are coordinated by the Site Manager.

3.3.2 Regulatory communications

The relevant regulatory authorities for the Wallerawang Ash Repositories are the NSW Environment Protection Authority (EPA) and the NSW Department of Planning and Environment (DPE). Consultation with government departments has been undertaken throughout the development of the OEMP as per the requirements of the CoA. The conditions of the EPA, NSW Department of Primary Industries (DPI), and WaterNSW (formerly the Sydney Catchment Authority (SCA)) have been incorporated into this OEMP as required.

The requirements for ongoing reporting of progress and regulatory compliance are outlined in Table 4-1 of this OEMP.

EnergyAustralia NSW will be responsible for ensuring that reporting to the regulatory authorities is achieved as per the CoA, EPL, and this OEMP.

3.3.3 Community and stakeholder communications

EnergyAustralia NSW has established a community consultation program whereby a committee of community organisations and individuals meet with EnergyAustralia NSW management on a quarterly basis. The Wallerawang Ash Repositories works at Kerosene Vale is a regular agenda item with progress and any matters being covered in this forum.

EnergyAustralia NSW maintains a website for the provision of electronic information associated with the Wallerawang Ash Repositories. EnergyAustralia NSW will, subject to confidentiality, publish and maintain up-to-date information on this website including:

- the Major Wallerawang Ash Repositories Application 07_0005, Environmental Assessment including Appendices prepared by Parsons Brinckerhoff (April 2008), Submissions Report prepared by Parsons Brinckerhoff (May 2008) and the Conditions of Approval (CoA) issued by the Department of Planning
- relevant strategies, plans and programs required under the CoA, or details of where this information can be viewed
- Information on the status of the Wallerawang Ash Repositories area.

The intention is to ensure that these key pieces of information are made publicly available to promote community and stakeholder engagement.

EnergyAustralia NSW will continue to use the measures for communication established for Wallerawang Ash Repositories activities to ensure all community complaints and enquiries received are managed in an appropriate manner. The measures include:

- list of 24 hour EnergyAustralia NSW staff contact numbers on which complaints and enquiries relating to operational activities can be registered
- an email address to which electronic complaints and enquiries can be transmitted.

The above contact details are also available on the EnergyAustralia NSW website (<https://www.energyaustralia.com.au/about-us/energy-generation/wallerawang-power-station-closure/kerosene-vale-ash-repository>). The following stakeholders have been identified as relevant to this Wallerawang Ash Repositories:

- DP&E
- EPA
- Department of Primary Industries – Office of Water
- WaterNSW
- Lithgow City Council
- Affected landowners and local community.

A list of nominated contacts for each of the above organisations will be updated as the Wallerawang Ash Repositories operations progress. This list is presented in Table 4-3 to ensure all future Wallerawang Ash Repositories notifications, correspondence and updates are sent to the appropriate contact at each organisation.

3.4 Environment awareness training and site inductions

All personnel involved in the Wallerawang Ash Repositories activities will receive an environmental awareness and induction training prior to commencing work on the site. The environmental component to the site general induction has been developed by the Site Manager in consultation with the Environmental Representative.

An Induction Register will be maintained by the Site Manager to record all attendees, dates and written acknowledgment of understanding and agreement to comply with its requirements.

The purpose of the training will be to provide sufficient education relevant to the Wallerawang Ash Repositories operation activities so that personnel:

- understand how their role interacts with the environment and the local community
- understand their community obligations and environmental responsibilities
- can identify potential environmental and community issues and act promptly to ensure appropriate control measures and corrective actions are undertaken.

The induction training will be delivered by the Site Manager or Repository Team Leader and will cover, but not be limited to, the following topics:

- hours of operation
- haul road speed restrictions and transport protocols
- location of nearest sensitive receptors
- erosion and sediment controls
- dust suppression techniques
- water quality protection
- waste management
- heritage issues and management
- storage and handling of chemicals, fuels and oils
- spill prevention and response
- site hazards
- emergency preparedness and response

- community communication protocols and procedures
- incident/non-compliance reporting requirements.

Additional environmental training may be required in response to specific environmental issues or concerns, requests by Authorities or changes in the Wallerawang Ash Repositories scope that will affect the environmental aspects of the operations.

3.5 Complaints management process

EnergyAustralia NSW is responsible for implementing and managing the complaints management process.

EnergyAustralia NSW records the details of all complaints received in a Complaints Register. The register includes:

- the date and time of the complaint
- the means by which the complaint was made (e.g. telephone, email, mail, in person)
- any personal details of the complainant that were provided, or if no details were provided a note to that effect
- the nature of the complaint
- the time taken to respond to the complaint
- any investigations and actions taken by EnergyAustralia NSW and/or the Contractor in relation to the complaint
- any follow-up contact with, and feedback from, the complainant
- if no action was taken by EnergyAustralia NSW or the Contractor in relation to the complaint, the reason(s) why no action was taken.

The Contract Administrator, Site Manager and the Environmental Representative will work together to ensure that the community relations protocols identified in this OEMP are communicated to all Wallerawang Ash Repository personnel covering complaints received on site during operations and that appropriate training covering the protocols is established in site inductions. The key elements of the on-site complaints management protocol are outlined below:

- all persons wishing to register a complaint to operations personnel will be politely directed to the Site Manager, who will forward the complainant to the Ash & Dust Engineer. The Ash & Dust Engineer will then direct the complainant to the NSW Environment Lead and Support Services Lead, in line with EnergyAustralia NSW's existing complaints procedure.
- The Environment Lead and Support Services Lead will deal with the complaint, will take down particulars of the complaint as per the criteria listed on the complaints register, and will take action to resolve the issue whilst ensuring that all correspondence relating to the issue is documented. All attempts will be made to resolve the issue on the same day, however if this is not possible, the complainant will be updated regularly on the progress of the matter.

3.6 Environmental inspections

Environmental inspections will be undertaken by the Ash & Dust Engineer and Environmental Representative regularly, in accordance with the program outlined in Table 3.2. These measures will be implemented to ensure operations are undertaken in compliance with the regulatory requirements outlined in this OEMP. The inspections may also identify areas where improvements to the environmental performance of the Wallerawang Ash Repositories operations can be achieved.

3.6.1 Environmental inspections

Site inspections will be undertaken by the Contractor staff daily, with observations and any corrective actions being recorded on an inspection checklist. Some of the key items that will be checked during each inspection are likely to include the following:

- sediment controls for all entry points to the catchment/dirty water collection system and the condition and effectiveness of any nearby drainage lines

- sediment and erosion controls surrounding all stockpiles and ash placement zones
- all dust suppression measures such as irrigation systems are fully functional, and in effective locations
- capping requirements are being managed as per the Ash Delivery and Placement Sub- plan
- haul roads are in good condition
- environmental monitoring locations are secure with equipment in good working order
- activities are taking place inside the approved disturbance areas
- condition of equipment, vehicles and plant to control spills and leaks
- any waste materials have been removed from the approved operation zone and disposed of in an appropriate manner
- all chemicals and fuels are being stored away from drainage lines and within bunded areas as required
- all Wallerawang Ash Repositories complaints are being logged and directed to the appropriate personnel to be actioned.

KVAR and SSCAD have been managed generally in accordance with the above list since its inception. Issues revealed in site inspections are reported to the Ash & Dust Engineer. Table 3-2 outlines the schedule for environmental inspections. Appendix D provides examples of typical site inspection checklists that will be used for the Wallerawang Ash Repositories.

Table 3-2 Environmental inspection program

| Potential impact | Locations | Parameters | Frequency | Technique | Reporting | Responsibility |
|-------------------------------|--|---|-----------|--|---------------------------------------|------------------------------|
| General environmental impacts | All Wallerawang Ash Repositories operational areas | Potential impacts listed in Table 4.8 of OEMP | Daily | Site environmental inspections | Daily environmental checklists site | Contractor |
| | All Wallerawang Ash Repositories operational areas | Potential impacts listed in Table 4.8 of OEMP | Monthly | Site environmental inspections | Monthly environmental checklists site | Environmental Representative |
| Dust related impacts | Haul roads and ash placement zones | Potential impacts listed in Table 4.8 of OEMP | Weekly | Environmental inspections targeting haul roads and ash placement zones | Weekly management checklist ash | Contract Administrator |

3.7 Environmental audits

The Environmental Representative has the authority and independence to recommend to EnergyAustralia NSW and the Contractor what reasonable steps are to be taken to avoid or minimise unintended or adverse environmental impacts. Failing the effectiveness of such steps, the Environmental Representative has the authority to recommend to EnergyAustralia NSW and the Contractor that relevant activities are to cease as soon as reasonably practicable if there is a significant risk that an adverse impact on the environment is likely to occur.

3.7.1 Non-compliances

Non-compliances or potential non-compliances are situations or events that do not comply with the safeguards and procedures stipulated in the OEMP, in conjunction with the Conditions of Approval and other relevant environmental legislation, licenses, permits and approvals. Non-compliances or potential non-compliances may be identified in any of the following situations:

- as part of site inspections, supervision or monitoring of normal activities
- during internal or external audits
- following significant verbal or written third party complaints.

All non-compliances will be recorded in the appropriate location i.e. site inspection checklists, auditing reports, complaints register. Corrective actions will be recorded on the site inspection checklist as per Appendix D. Notification and reporting of non compliance matters to DPE shall be undertaken in accordance with the conditions of approval. The non conformance will be investigated and managed by the contract administrator until compliance is achieved.

3.8 Environmental incident management

3.8.1 Types of environmental incidents

Examples of environmental incidents include (but are not limited to):

- Discharge of sediment or polluted water to Sawyers Swamp Creek.
- Collapse of ash steep slopes.
- Collapse of bunds, capping or surface water control measures.
- Significant dust or noise impacts on surrounding community.
- Spills of chemicals, fuel or oil.

3.8.2 Environmental incident response procedure

The Site Manager must communicate any environmental incident that occurs during Wallerawang Ash Repositories operations (including near misses) to the Contract Administrator immediately. The Contract Administrator, in conjunction with the Environmental Representative, will endeavour to resolve the issue as soon as practicably possible.

A list of the incident categories and appropriate actions is provided in Table 3-3.

Table 3-3 Incident Categories

| Incident type | Incident characteristics | Action required |
|---------------|--|--|
| Near-miss | <ul style="list-style-type: none"> potential for but no actual pollution general environmental hazards (such as hazardous substances not stored in secured locations) handling mishaps with fuels, oil, lubricants and/or hazardous substances not resulting in spillage loss of control of equipment not resulting in damage to vegetation or property inefficient or lacking traffic and access controls that almost resulted in an incident. | Contractor staff must report incident to the Site Manager or Repository Team Leader immediately. EnergyAustralia NSW must then be notified within 24 hours and be provided with an incident notification record. Contractor must advise suitable controls to be implemented in future situations to prevent recurrence. |
| Minor | <p>A minor environmental incident has occurred when material has been spilled or released to the environment (land, air, water, people affected), causing no significant pollution or harm to the environment.</p> <p>Its consequence/impact are measured as minor or important and includes some or all of the following aspects:</p> <ul style="list-style-type: none"> material easily contained and recovered is confined to work site boundaries involves minimal or minor interruption to work activities complaints easily handled at the work site has no external or regulatory involvement (community, Council, emergency services, media, other relevant authorities). | <p>Contractor staff must report incident to the Site Manager or Repository Team Leader immediately.</p> <p>EnergyAustralia NSW must then be notified immediately and be provided with an incident notification record.</p> <p>The Environment Representative will be notified of the incident.</p> <p>Contractor must advise suitable controls to be implemented in future situations to prevent recurrence.</p> |
| Major | <p>Any incident with actual or potential significant impacts on the biophysical environment and/or off-site impacts on people and includes some or all of the following aspects:</p> <ul style="list-style-type: none"> actual or potential breach of environmental legislation or permit/licence/consent/ approval condition actual or potential significant environmental harm involves or has the potential to involve community, media or regulatory authorities. | <p>Contractor staff must report incident to the Site Manager or Repository Team Leader immediately.</p> <p>EnergyAustralia NSW must then be notified immediately and be provided with an incident notification record.</p> <p>The Environment Representative, EPA will be notified immediately. The State Emergency Services may also be notified, depending on nature of the incident. DPE will be notified within 12 hours of becoming aware of the incident.</p> <p>EnergyAustralia NSW must provide incident report to the Secretary of the DPE and EPA within 7 days of the incident occurring.</p> |
| Disaster | <ul style="list-style-type: none"> National press coverage regulatory investigation and significant penalties/fines incurred and potential or actual loss of licence major community impacts (for example whole suburb) major and long term consequence on environment. Extensive clean-up required with external assistance. | <p>Contractor staff must report incident to the Site Manager or Repository Team Leader immediately.</p> <p>EnergyAustralia NSW must notify the Emergency Services, Environment Representative, EPA and DPE immediately.</p> <p>EnergyAustralia NSW shall provide a incident report to the Secretary of DPE and EPA within 7 days of the incident occurring..</p> <p>Work on site to cease during external incident investigation.</p> |

All near misses and incidents must be actioned, reported and recorded. In the event of an environmental incident occurring that is above the 'near-miss' category and which cannot be managed by equipment on-site, the most senior person on site at the time of the incident must immediately obtain assistance from EnergyAustralia NSW.

EnergyAustralia NSW may engage and coordinate external service providers, such as the State Emergency Services, to assist in the response.

The Environmental Representative must be notified as soon as possible in order to address the cause or impact of the environmental incident and to ensure procedures are undertaken in accordance with this OEMP and EnergyAustralia NSW's existing emergency response system.

3.8.3 Incident investigation

The Environmental Representative must be involved in the investigative process as an independent observer. EnergyAustralia NSW and the Contractor must also have representatives involved, and a collaborative effort must be made to ensure that the cause of the incident is identified in order to establish the most suitable methods for preventing recurrence.

An incident report will be provided to the Secretary of the DPE and the EPA establishing full details including causes and the mitigation measures implemented within seven days of the date on which the incident occurred.

3.9 Document controls

Wallerawang Ash Repositories records, including Contractor records, will be maintained to provide evidence of the effective operation of this OEMP. The records will be identifiable as to the item/area concerned. Such records include, but are not limited to:

- correspondence to/from stakeholders and interested parties
- permits, licences and approvals
- induction training records
- environmental complaints/enquiries registers
- non-compliance reports
- environmental incident reports
- environmental inspection checklist and audit reports.

Records will be filed, stored and maintained in accordance with EnergyAustralia NSW's quality assurance procedures.

4. Environmental controls

4.1 Statutory requirements

The operation of the Wallerawang Ash Repositories must comply with the following statutory requirements:

- The Minister's Conditions of Approval as stipulated in the Wallerawang Ash Repository Approval (Application No 07_0005), dated December 2008).
 - Kerosene Vale Stage 2 Ash Repository Area – Environmental Assessment, prepared by Parsons Brinckerhoff and dated 1 April 2008.
 - Kerosene Vale Stage 2 Ash Repository Area – Submissions Report, prepared by Parsons Brinckerhoff and dated 30 May 2008.
- Modification application (07_0005) Mod 1
 - Wallerawang Power Station Capping Wallerawang Ash Repository – Environmental assessment of importation of clean fill to Wallerawang Ash Repository dated March 2018
 - Wallerawang Power Station Capping Wallerawang Ash Repository – Response to Submissions June 2018
- Environment Protection License No. 766.
- Licenses, permits and approvals (refer Section 4.1.3).
- Relevant legislation, regulations and guidelines (refer Section 4.1.4).

4.1.1 Wallerawang Ash Repository approval

The Environmental Assessment for the Kerosene Vale Stage 2 Ash Repository works was prepared to satisfy the requirements of Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Environmental Assessment was assessed by the Department of Planning and Environment (DPE) in consultation with other relevant Authorities.

The Environmental Assessment went on public exhibition on 2 April 2008 for a period of 30 days and received the KVAR Stage 2 Approval from the Minister for Planning on December 2008.

The Statement of Commitments (SoC) included in the Submissions Report, which was amended as a result of the submissions received during the public exhibition period, demonstrates EnergyAustralia NSW's commitment to a comprehensive management approach to minimise the environmental impacts associated with the operation of Kerosene Vale Stage 2 Ash Repository.

KVAR Stage 2 Approval (07_0005) has been subject to one modification that was approved on the 9 August 2018 under section 75W of the EP&A. Refer to the Minister's conditions of Approval (refer Appendix C).

The modification provides authority to import virgin excavated natural material and excavated natural material to be used as capping material at the Wallerawang Ash Repositories. These materials are defined by the EPA Waste Guideline Classification Guidelines 2014 and referred to as capping material in this EA.

This OEMP has been prepared to satisfy the SoC, and the combined Wallerawang Ash Repositories Approval conditions. The only exception is the preparation of the Operational Transport Management Plan that will be a separate document.

4.1.2 Environment Protection Licence

Environment Protection Licence No 766 (EPL 766) regulates the operation of Wallerawang Power Station, including the operation of Kerosene Vale ash repository.

The licence was issued by the EPA under the provisions of the *Protection of the Environment Operations Act 1997* (POEO Act).

EnergyAustralia NSW, as the licensee, must comply with the conditions of this licence, and must submit annual returns. The Annual Return must include a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints) and be submitted to the EPA within 60 days after the end of each reporting period.

4.1.3 Licenses, permits and approvals

There are a number of permits and approvals that must be obtained prior to the commencement of particular activities associated with the Wallerawang Ash Repositories operations. The majority of these requirements are derived from the Wallerawang Ash Repositories Approval, as illustrated in Table 4-1 and associated dates of approval.

Table 4-1 Licenses, permits and approvals required for the Wallerawang Ash Repositories

| Relevant Authority | Source requirement of | Responsibility for obtaining licence/approval/permit | Trigger | Information required | Approximate processing time | Additional comments | Status |
|--|-----------------------|--|--|---|-----------------------------|---|---|
| NSW Department of Planning & Environment Major Infrastructure Assessments | CoA 6.2 | EnergyAustralia NSW | Need to construct stabilisation structure on northern embankment and re-alignment of Sawyers Swamp Creek | Prepare a Construction Environment Management Plan (CEMP) CEMP to contain framework outlining construction activities, potential environmental impacts and mitigation measures and procedures. | 4-6 weeks | To be submitted 4 weeks prior to commencement of construction works. | CEMP developed and approved by the DP&E in August 2011. |
| | CoA 2.26 | EnergyAustralia NSW | Need to realign Sawyers Swamp Creek | Prepare the Sawyers Swamp Creek Re-alignment Rehabilitation Plan | 4-6 weeks | To be submitted 2 months prior to the realignment of Sawyers Swamp Creek | Realignment of Sawyers Swamp Creek deemed unnecessary. Not applicable |
| | CoA 4.1 | EnergyAustralia NSW | Need to comply with Conditions of Approval applicable to commencement of Stage 2 operation | Submit written certification outlining compliance with Conditions of Approval relating to Stage 2 operation commencement | 4-6 weeks | To be submitted prior to the commencement of operations of Stage 2 works | Written certification outlining compliance with CoA approved by DP&E. |
| | CoA 4.2 | EnergyAustralia NSW | Need to comply with Conditions of Approval throughout Stage 2 operation | Develop Compliance Tracking Program to track compliance with Conditions of Approval relating to Stage 2 operation | 4-6 weeks | To be implemented prior to Stage 2 operations, and submitted for approval within 4 weeks of commencement of Stage 2 works | Compliance Tracking Program provided in Appendix A of ARs. |
| | CoA 6.1 | EnergyAustralia NSW | Need to nominate a suitable Environmental Representative | Candidate profile information to be provided to Secretary to aid in approval process | 4-6 weeks | ER details to be submitted prior to commencement of Stage 2 works | Environment Manager approved as Environmental Representative in March 2009. |

| Relevant Authority | Source requirement of | Responsibility for obtaining licence/approval/permit | Trigger | Information required | Approximate processing time | Additional comments | Status |
|--|--------------------------------|--|---|---|-----------------------------|--|---|
| | CoA 7.3 | EnergyAustralia NSW | Need to regularly report on environmental performance of Wallerawang Ash Repositories | Submit Annual Review, reviewing against OEMP and Conditions of Approval | 4-6 weeks | To be submitted no later than 12 months after commencement of operations, and each year thereafter | Ongoing |
| Department of Primary Industries (Fisheries) | CoA 3.6 | EnergyAustralia NSW | Need to realign Sawyers Swamp Creek | Prepare Sawyers Swamp Creek Realignment Hydrological Monitoring Program Program must include sampling before and after realignment works, with monitoring continuing 5 years post-realignment. | 4-6 weeks | To be submitted 2 months prior to the realignment of Sawyers Swamp Creek | Realignment of Sawyers Swamp Creek deemed unnecessary. Not applicable |
| | CoA 3.7 | EnergyAustralia NSW | Need to realign Sawyers Swamp Creek | Sawyers Swamp Creek Realignment Ecological Monitoring Program Program must include sampling and assessment of ecological health before and after realignment works, with monitoring continuing 5 years after final planting. | 4-6 weeks | To be submitted 2 months prior to the realignment of Sawyers Swamp Creek | Realignment of Sawyers Swamp Creek deemed unnecessary. Not applicable |
| NSW Department of Primary Industries - Water | Part 5 of the Water Act (1912) | EnergyAustralia NSW | Need to construct groundwater monitoring bores | Application for licence to construct groundwater bores | 4-6 weeks | Licence to be attained prior to construction | Bore licences obtained as required. |

4.1.4 Relevant legislation, regulations and guidelines

Legislation and guidelines relevant to the Wallerawang Ash Repositories are listed in Table 4-2. This table also lists the Administering Authorities for the various environmental issues identified as being relevant to this Project.

Relevant legislation and subsequent implications are broadly identified in this document. It will be the responsibility of EnergyAustralia NSW and the Contractor to ensure that the relevant provisions of the following legislation and guidelines are complied with when carrying out work for the Project.

The OEMP will be updated as required in line with any legislative changes made after the drafting date.

Table 4-2 Relevant Legislation, Guidelines and Standards

| Relevant legislation (Administering Authority) | Summary of legislation requirements | General requirements |
|--|---|---|
| Australian Standard AS4282 1997- Control of the Obtrusive Effects of Outdoor Lighting | Deals primarily with obtrusive lighting within residential and urban areas, where a measurement of light on residential windows is considered but has few references to requirements or locations of illuminated signs in rural areas. | EnergyAustralia NSW needs to take all reasonable and practical measures to ensure lighting associated with operation of Stage 2 complies with this AS4282. (Refer to COA 2.35 in Wallerawang Ash Repository Approval) |
| <i>Environmental Planning and Assessment Act, 1979</i> (Department of Planning and Environment) | Establishes a framework to control development in NSW by prohibiting, permitting, or placing conditions on activities. The legislation also details the process by which approval can be gained, and the relevant authority. | Changes to the Wallerawang Ash Repository as currently approved and described in the Environmental Assessment, Submissions Report and this OEMP have been completed. |
| <i>Local Government Act, 1993</i> (Lithgow City Council) | Controls environmental impacts including noise, pollution and nuisance not controlled under the POEO Act. Provides for infrastructure under the control of council and identifies requirements for developers. | No requirement for permits, licenses or approvals have been identified for the Wallerawang Ash Repositories. |
| <i>Mine Subsidence Compensation Act 1961</i> (Mine Subsidence Board) | Provides for payment of compensation for damage to properties and structures resulting from subsidence following coal or shale mining. Works within designated areas must comply with the requirements to ensure they are covered by the scheme. | At the moment, the provisions of this Act do not apply to the operation of the repository. The potential future mining of an area of the Stage 2 repository may invoke certain provisions of the Act. To be determined during the approval process associated with the proposed mining activities at the repository site. |
| <i>Contaminated Land Management Act, 1997</i> (NSW Environment Protection Authority) | Establishes a process for investigating and where appropriate remediating land where contamination presents a significant risk of harm to the environment. | Environment Protection Licence 766 allows for the placement of certain types of wastes at the repository site. The repository site would be considered 'contaminated land' under the provisions of this Act. |

| Relevant legislation (Administering Authority) | Summary of legislation requirements | General requirements |
|---|---|--|
| <i>Drinking Water Catchments Regional Environmental Plan No. 1</i> (Water NSW) | This plan was prepared in accordance with Part 3 of the EP&A Act and the <i>Sydney Water Catchment Management Act 1998</i> . The plan was made to secure the environmental, social and economic future of the catchments that supply drinking water to Sydney, the Blue Mountains and the Illawarra. The plan aims to sustain these catchments so as to create healthy water catchments, improve water quality in degraded areas, and maintain or improve water quality where it is currently suitable. | The Stage 2 operation requires the realignment of a section of Sawyers Swamp Creek, which feeds into the Cocks River, and is part of the Drinking Water Catchment. The Environmental Assessment indicated that the water quality as defined by the Drinking Water Catchments Regional Environmental Plan No. 1 would be adequately managed under certain conditions. These conditions are outlined in the Surface and Groundwater Sub-plans of this OEMP. |
| <i>Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-liquid Wastes 1999</i> | These guidelines aid in the classification, assessment, storage and management of liquid and non-liquid wastes should there be any. | The guidelines are relevant to the Stage 2 operations. Refer to the Waste Management Sub-Plan for details (Section 6.8) |
| <i>Environmentally Hazardous Chemicals Act, 1985</i> (NSW Environment Protection Authority) | Regulates the disposal of wastes issued with a "chemical control order" and designates chemical wastes. Disposal requirements for designated hazardous waste are identified under the POEO Act. Chemical wastes designated under this Act include: <ul style="list-style-type: none"> ▪ PCB ▪ pesticide wastes including used pesticide containers ▪ copper/chrome/arsenic (CCA) wastes. | No environmentally hazardous chemicals are to be placed at the Stage 2 repository. These types of wastes are not permitted under EPL 766. No requirement for permits, licenses or approvals have been identified for the Wallerawang Ash Repositories. |
| <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth Department of Environment and Energy) | The Act is triggered by developments that will have a significant impact on Matters of National Environmental Significance including Endangered Ecological Communities, threatened species and migratory species. | No requirement for permits, licenses or approvals have been identified for the Wallerawang Ash Repositories |
| <i>Heritage Act, 1977</i> (NSW Office of Environment & Heritage) | Protects all items of environmental heritage (natural and cultural) in New South Wales. The Act does not apply to Aboriginal "relics". Applies if any heritage items are identified during operation works. | No requirement for permits, licenses or approvals have been identified for the Wallerawang Ash Repositories |
| NSW Industrial Noise Policy 2000 (NSW Environment Protection Authority) | This Policy is set in place to establish noise criteria that would protect the community from excessive intrusive noise and preserve amenity for specific land uses. | The Policy is applicable to the operation of the Wallerawang Ash Repositories. Refer to the Noise Management Sub-Plan for further details (Section 6.3). |
| <i>Noxious Weeds Act, 1993</i> (Department of Primary Industries – Agriculture) | Provides for the identification, classification and control of noxious weeds in NSW. Applies to the management and disposal of noxious weeds if found and removed during the works. | No requirement for permits, licenses or approvals have been identified for the Wallerawang Ash Repositories |

| Relevant legislation (Administering Authority) | Summary of legislation requirements | General requirements |
|---|--|--|
| <i>National Parks and Wildlife Act, 1974</i> (NSW Office of Environment & Heritage) | <p>Provides protection for most fauna species and protected flora, as well as indigenous heritage, in New South Wales.</p> <p>It is an offence: to harm any animal which is part of a threatened species, population or ecological community; to pick any plant which is part of a threatened species, population or ecological community.</p> <p>It is also an offence if a person knows that an area of land is the habitat of a threatened species, population or ecological community, to do something or fail to do something, resulting in damage to that habitat.</p> <p>It is an offence to knowingly destroy, deface or damages, or cause or permit the destruction or defacement of or damage to, an Aboriginal object or Aboriginal place without a permit.</p> | <p>No requirement for permits, licenses or approvals have been identified for the Wallerawang Ash Repositories.</p> <p>If previously unidentified indigenous heritage items or places are discovered on site, permits may be required.</p> |
| <i>Soil Conservation Act, 1938</i> (NSW Department of Primary Industries - Land) | <p>Controls activities causing or likely to cause soil erosion or land degradation.</p> <p>Wallerawang Ash Repositories activities must prevent soil erosion or land degradation.</p> | No requirement for permits, licenses or approvals have been identified for the Wallerawang Ash Repositories |
| <i>Water Act, 1912</i> (Department of Primary Industries-Water) | Regulates the influence of impacts on waterways, outlining control and remedial measures (i.e. groundwater wells), licensing and offences. | No requirement for permits, licenses or approvals have been identified for the Wallerawang Ash Repositories |
| <i>Threatened Species Conservation Act, 1995</i> (NSW Office of Environment & Heritage) | This Act protects vulnerable and threatened species, populations and ecological communities. | <p>No threatened species, populations or communities were recorded within the site.</p> <p>No requirement for permits, licenses or approvals have been identified for the Wallerawang Ash Repositories.</p> |
| <i>Protection of the Environment Operations Act, 1997</i> (NSW Environment Protection Authority) | <p>This Act controls how activities should be undertaken in consideration of environmental protection on all aspects, including air, water, soil, and noise pollution, as well as waste.</p> <p>Scheduled activities are required to obtain a licence to operate from the EPA.</p> | The provisions of EPL 766 apply to the operation of the Wallerawang Ash Repositories. |
| <i>Waste Avoidance and Resource Recovery Act, 2001</i> (NSW Environment Protection Authority) | Promotes the waste management hierarchy (avoidance, resource recovery, and disposal). | The provisions of this Act do not apply to this Wallerawang Ash Repositories. |
| <i>Water Management Act 2000</i> (Department of Primary Industries-Water) | Controls water use for activities and in areas of NSW. | The provisions of this Act do not apply to this Wallerawang Ash Repositories. |

4.2 Stakeholder consultation for the Wallerawang Ash Repository

EnergyAustralia NSW will continue to engage key stakeholders during the operation phase of the site as required. Further consultation with stakeholders will be conducted during the development of the closure and rehabilitation plan proposed for the site.

The key stakeholders which were previously engaged for the Wallerawang Ash Repositories have included:

- DPE
- EPA
- NSW Department of Primary Industries – Water
- Lithgow City Council
- Water NSW
- NSW Department of Primary Industries – Fisheries
- Office of Environment & Heritage
- Centennial Coal
- Bathurst Local Aboriginal Land Council
- nearest privately owned residents to the site.

Table 4-3 Stakeholder consultation schedule for Wallerawang Ash Repositories

| Stakeholder | Nature of involvement in Wallerawang Ash Repositories | When Consulted | Person responsible for consultation |
|--|---|--|-------------------------------------|
| NSW Department of Planning and Environment | Environmental management performance monitoring Compliance monitoring Incident management | Approval of changes to Environmental Representative Notification following emergency operation Reporting following noise non-compliance Dispute with landowners on noise mitigation measures Prior to construction works Reporting on compliance with CoA Reporting on ash management strategy Notification following environmental incident Submission of Annual Review | Environmental Representative |
| Environment Protection Authority | Environmental Management performance monitoring Incident management | As required or under conditions of the EPL Notification prior to emergency operations Reporting on operational noise review On-going for operational and construction noise monitoring | Environmental Representative |
| Department of Primary Industries - Fisheries | Works associated with the realignment of Sawyers Swamp Creek Incident management | For consultation on surface water management and Sawyers Swamp Creek realignment issues In the event of a fish kill in the vicinity of operations | Environmental Representative |
| WaterNSW | Environmental Management performance monitoring Incident management | For consultation on groundwater and surface water management issues | Environmental Representative |
| Department of Primary Industries - Water | Works associated with the realignment of Sawyers Swamp Creek Environmental Management performance monitoring Incident management | For consultation on ground and surface water management and Sawyers Swamp Creek realignment issues. | Environmental Representative |
| Lithgow City Council | Environmental Management performance monitoring Incident management | As required | Environmental Representative |
| Office of Environment & Heritage | Heritage issues | Notification if indigenous heritage items are identified. | Environmental Representative |
| Bathurst Local Aboriginal Land Council | Incident management | Notification if indigenous heritage items are identified | Environmental Representative |
| Nearest residents | Regular involvement and representation at quarterly community consultation meetings, general enquiries and complaints | Notification prior to emergency operations During discussions regarding noise exceedences and appropriate noise mitigation measures. | Environmental Representative |

4.3 Environmental risk assessment

The Environmental Aspects and Impacts Register in Section 4.4 and the relevant sub-plans in Section 6 of this OEMP both provide a framework for the environmental risks associated with the operation of the Stage 2 ash repository. In order to calculate and assess the likelihood, consequences and risk rating of these environmental risks and others that may emerge as the Wallerawang Ash Repositories progresses, the Contractor in consultation with EnergyAustralia NSW must incorporate the risk assessment framework outlined in this section with the relevant environmental aspects and impacts.

A risk assessment register has been established by the Contractor in consultation with EnergyAustralia NSW and the Environmental Representative as individual activities are undertaken in order to assess environmental issues and to mitigate the risks in a practical manner.

4.3.1 Risk assessment

The following tables outline the risk assessment process using three steps to identify the appropriate management measures required.

- Use Table 4-4 to determine the likelihood that the aspect will have an impact on the environment or the reputation of the Wallerawang Ash Repositories.
- Use Table 4-5 to determine how severe the potential impact will be.
- Then determine the level of risk utilising Table 4-6. This will determine the type and level of environmental protection measures that will be required. Where a significant risk to the environment has been identified, environmental protection measures must be introduced to reduce the risk to an acceptable level. Aspects with a medium or low risk should also have practicable management measures implemented if these can further reduce risk (refer to Table 4-7).

Table 4-4 Likelihood criteria

| Level | Occurrence | Frequency | Probability |
|-------------------|--|---|--------------------------------------|
| A. Almost Certain | Already happened or is expected to occur in most circumstances. | Once per month or more. | 90% or greater chance of occurrence. |
| B. Likely | May probably occur in most circumstances. | Once per year up to once per month. | 66% up to 90% chance of occurrence. |
| C. Possible | Not unusual and might occur in the foreseeable future. | Once in 3 years up to once per year. | 33% up to 66% chance of occurrence. |
| D. Unlikely | Could occur at some time but unlikely in the foreseeable future. | Once in 10 years up to once in 3 years. | 10% up to 33% chance of occurrence. |
| E. Rare | Is expected to occur only in exceptional or extreme circumstances. | Less than once in 10 years. | Less than 10% chance of occurrence. |

Table 4-5 Consequence criteria

| Consequence (impact) | Environmental, legal and/or reputation impact |
|----------------------|---|
| Insignificant | Environmental – Limited and localised, environmental consequence is limited to weeks. Reputation – Potential to cause negligible level of impact. |
| Minor | Environmental – On-site release immediately contained by local personnel, short-term. Temporary environmental impact, environmental consequence is less than 12 months. Reputation – Potential to cause a low level of impact. |
| Moderate | Environmental – On-site release contained with assistance from personnel not based at the works location. Medium term environmental impact, environmental consequence 1-2 years. Reputation – Potential to cause a medium level of impact. |
| Major | Environmental – Off-site release or pollution with a medium to long term environmental impact, environmental consequence 2-5 years. Reputation – Potential to cause a high level of impact. |
| Catastrophic | Environmental – Toxic pollution and off-site contamination, permanent or long term environmental impact, environmental consequence >5 years. Reputation – Potential to cause a severe level of impact. |

Table 4-6 Risk rating

| | | Likelihood | | | | |
|--------|---------------|------------|----------|----------|--------|----------------|
| | | Rare | Unlikely | Possible | Likely | Almost certain |
| Impact | Insignificant | Low | Low | Medium | Medium | Medium |
| | Minor | Low | Medium | Medium | High | High |
| | Moderate | Medium | Medium | High | High | Severe |
| | Major | Medium | High | High | Severe | Severe |
| | Catastrophic | High | High | Severe | Severe | Severe |

Table 4-7 Risk ranking

| Risk ranking | Management required |
|--------------|---|
| Severe | Immediate management action required. |
| High | Priority management action warranted. |
| Medium | Management action warranted. |
| Low | Management action should be considered, particularly for low level impacts which nevertheless occur on a continual basis. |

The DDR team in consultation with EnergyAustralia NSW and the Environmental Representative shall determine how the risks can be successfully remedied to ensure sound environmental management.

This may include updating the OEMP to cover any further identified management measures and mitigation strategies.

It is the responsibility of the Site Manager (in consultation with EnergyAustralia NSW) to ensure that all personnel are aware of the nature and implications of any changes to the operational activities during the Wallerawang Ash Repositories works.

4.4 Environment aspects and impacts register

Environmental aspects and potential adverse environmental impacts relevant to the Wallerawang Ash Repositories area while in operation are summarised in Table 4-8.

Table 4-8 Environmental aspects and impacts - Wallerawang Ash Repositories operations

| Environmental aspect | Potential impacts | Corresponding OEMP sub-plan |
|---------------------------------|---|---------------------------------------|
| Site Management | Capping and bund erosion and sedimentation associated with surface flows and increased runoff. | Surface Water Quality Sub-plan |
| | Potential for infiltration of surface/rain water to groundwater, affecting groundwater levels and/or quality. | Groundwater Quality Sub-plan |
| | Impacts of the ash repository on site drainage and surface runoff. | Surface Water Quality Sub-plan |
| | Impacts from the repository on the surrounding catchment area. | Surface Water Quality Sub-plan |
| | Direct or indirect impacts on items of Indigenous or non-Indigenous heritage value. | Ash Management Sub-plan |
| Dust Suppression | Potential erosion and damage to bunds and capping, as a result of faults and leaks in irrigation system. | Ash Management Sub-plan |
| Importation of capping material | Impacts to the community associated with Wallerawang Ash Repositories-related traffic impacts | Operational Transport Management Plan |

5. Environmental monitoring

5.1 Overview

Environmental monitoring for the Wallerawang Ash Repositories area is designed to comply with the requirements of statutory approvals and provide an analysis of the condition of the environment surrounding the works.

The results of the monitoring program will be used as indicators of the effectiveness of the environmental controls, and as guidelines for the management and maintenance of key environmental procedures. An adaptive management approach will be implemented by EnergyAustralia NSW should the monitoring results show adverse trends.

Detailed procedures outlining the environmental monitoring responsibilities of key stakeholders and the impacts to be mitigated can be found within the individual sub-plans in Section 6 of this OEMP. In addition to the environmental monitoring the SSCAD is a prescribed dam under the Dams Safety Act and is subject to regular surveillance as detailed in the dam safety emergency response plan that does not form part of this OEMP.

Figure 5-1 outlines the various locations and categories of environmental monitoring to be established at the Kerosene Vale Ash Repository for the duration of the Wallerawang Ash Repositories activities.

Table 5-1 outlines the general monitoring program including timeframes and Table 5-2 describes the nature of inspections that are undertaken throughout the Wallerawang Ash Repositories activities.

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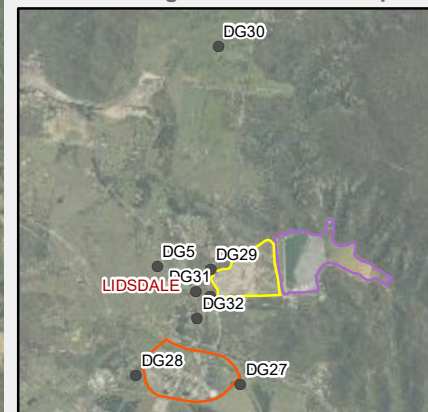


Legend

- EnergyAustraliaNSW owned land / licence area (EPL 766)
- Wallerawang Power Station site
- Sawyers Swamp Creek Ash Dam
- Kerosene Vale Ash Repository - Stage2
- Kerosene Vale Ash Repository - Stage1
- Lidsdale Cut
- Private access track
- Private haul road
- Sawyers Swamp Creek
- Noise monitoring site
- Dust gauge
- Surface water monitoring site
- Groundwater monitoring site
- Clean water diversion drain

Source: Aurecon, LPI,
Lithgow Local Environmental Plan 2014

Dust Gauge DG30 - Inset map



1:18,000
0 250 500m

Projection: GDA 1994 MGA Zone 56

Wallerawang Ash Repository **OEMP**

Figure 5-1: Environmental monitoring locations

5.2 Environmental monitoring program

An overview of the environmental monitoring activities that have been specified by the respective sub-plans under Section 6 of the OEMP is provided in Table 5-1. Please refer to specific sub-plans under Section 6 for further details.

Table 5-1 Environmental monitoring program

| Potential impact | Locations | Parameters | Frequency | Technique | Reporting | Responsibility | OEMP Sub-plan Reference |
|---|---|---|---|---|--|--|---|
| Noise – Initial 60 day reporting period | 4 main locations adopted for a total of 5 monitoring sites: <ul style="list-style-type: none"> Skelly Road Maddox Lane Neubeck Street Wolgan Road. (Refer to Figure 5-1) | L_{Aeq} , L_{A10} , L_{A90} and L_{Amax} | 4 separate days – 3 week days and a Sunday | Attended monitoring using hand held sound level meter Monitoring to be continuous throughout full day of operations for each 15 minute period, including 30 mins prior to and following normal operating hours (7am to 10pm). Nearest potentially affected receiver to be monitored at 07.00 and at least once between 20.30 – 22.30. | Report to be submitted to EPA within 1 week of monitoring COMPLETE | Specialist Consultant on behalf of EnergyAustralia NSW | Section 6.3 Operational Noise and Vibration Management Plan – Appendix A |
| Noise Normal conditions | - Minimum of 3 most affected locations as per the 60 day post commissioning assessment. To include periods of ash placement at far western area of the site and where noise mitigation measures are in place. (as per COA 2.15) (Refer to Figure 5-1) | Noise levels shall not exceed an L_{Aeq} of 40dB(A) at the nearest most affected receiver | During daytime (7am-6pm) and evening time (6pm-10am) Every 6 months or more frequent if adverse trends are noted | Ongoing attended monitoring using hand held sound level meter. | 6 monthly noise monitoring report If non-compliance, report is to be forwarded to DPE and EPA within 14-days of conducting monitoring | Specialist Consultant on behalf of EnergyAustralia NSW | Section 6.5 Operational Noise and Vibration Management Plan – Appendix A |
| Noise Emergency conditions | - At the complainant's property or nearest available representative location. | Noise levels shall not exceed an L_{Aeq} of 40dB(A) at the nearest most affected receiver | As required | Attended monitoring using hand held sound level meter | 6 monthly noise monitoring report | Specialist Consultant on behalf of EnergyAustralia NSW | Section 6.3 Operational Noise and Vibration Management Plan – Appendix A |

| Potential impact | Locations | Parameters | Frequency | Technique | Reporting | Responsibility | OEMP Sub-plan Reference |
|-----------------------|---|---|--|---|---------------------------------------|--|-------------------------|
| Dust impacts | 7 existing dust monitoring locations (Refer to Figure5-1) | Total dust deposition of 4 g/m ² /month (annual) | Monthly | Dust deposition gauges | Monthly air quality monitoring data | NATA approved specialists on behalf of EnergyAustralia NSW | Section 6.6 |
| Groundwater Quality | 3 bores upstream and 6 downstream of repository (Refer to Figure5-1) | Analytical suite as per Appendix B, water depth and flow direction, and baseline data | Monthly | Sample collection from the 9 monitoring locations as per procedures outlined in the Groundwater Quality Sub-Plan | Monthly groundwater monitoring data | NATA approved specialists on behalf of EnergyAustralia NSW | Section 6.5 |
| Surface water quality | 2 in Sawyers Swamp Creek, 1 in Dump Creek, and 1 in Sawyers Swamp Creek Ash Dam (Refer to Figure5-1) | Analytical suite as per Appendix B, plus dissolved oxygen, turbidity, total phosphorus, nitrogen and baseline data. | Monthly | Sample collection from the 4 monitoring locations as per procedures outline din the Surface Water Management Sub-plan | Monthly surface water monitoring data | NATA approved specialists on behalf of EnergyAustralia NSW | Section 6.4 |
| | 2 in Sawyers Swamp Creek, 1 in Dump Creek, and 1 in Sawyers Swamp Creek Ash Dam (Refer to Figure5-1) | Analytical suite as per Appendix B, plus dissolved oxygen, turbidity, total phosphorus, nitrogen and baseline data. | Following wet weather events, with a minimum of 2 events recorded within the first 12 months of operation. | Sample collection from the 4 monitoring locations as per procedures outlined in the Surface Water Quality Sub-plan. | Monthly surface water monitoring data | NATA approved specialists on behalf of EnergyAustralia NSW | Section 6.4 |

6. Implementation

6.1 Environmental targets and key indicators

The following environmental performance indicators will be used to assess the performance of the Wallerawang Ash Repositories operations. If adverse trends are noted a review of the relevant procedures and mitigation measures will be initiated by the Environmental Representative in consultation with the Contractor and EnergyAustralia NSW, to address the issue in question and achieve acceptable performance.

Table 6-1 Environmental targets and performance indicators

| Environmental issue | Performance targets | Performance indicators |
|--------------------------------------|---|--|
| Noise impacts at sensitive receptors | <ul style="list-style-type: none"> Achieve compliance with the noise criterion of LAeq of 40dB (A) at the nearest most affected receiver during normal operations. Achieve a significant reduction in the number of noise-related complaints during emergency operations (less than 5 per year, stretch target = zero complaints per year). | <ul style="list-style-type: none"> The number of noise-related complaints. Noise monitoring data obtained from the sensitive receiver locations Compliance indicators as assessed by the specialist noise consultant and the Environmental Representative, as required. |
| Surface water quality | <ul style="list-style-type: none"> The water quality within Sawyers Swamp Creek is not impacted by Wallerawang Ash Repositories operations. Zero environmental incidents that relate to pollution of waters at Swayers Swamp Creek. | <ul style="list-style-type: none"> The surface water monitoring results and the assessment of water quality in accordance with the ANZECC guidelines. No visual evidence of erosion and sedimentation impacts on Sawyers Swamp Creek following significant rain events. Records of trend analysis, management procedures and observations for each of the nominated monitoring locations. |
| Groundwater quality | <ul style="list-style-type: none"> The quality of the groundwater underlying the site is not impacted by Wallerawang Ash Repositories operations | <ul style="list-style-type: none"> Groundwater monitoring results indicating reduction in surface infiltration through use of preventative measures such as ash stacking and compaction techniques Results of monitoring trends undertaken by NATA accredited specialists as per OEMP . |
| Air quality | <ul style="list-style-type: none"> The local air quality in the vicinity of the project is not impacted by Wallerawang Ash Repositories operations. Zero incidence of dust-related complaints. | <ul style="list-style-type: none"> Zero visible dust events in vicinity of Wallerawang Ash Repositories during site operations. Complaints register demonstrating zero occurrence of dust-related complaints |
| Landscape and revegetation | <ul style="list-style-type: none"> All areas of the Wallerawang Ash Repositories that have reached their final height will initially be covered with capping material and revegetated to stabilise the soil surface. | <ul style="list-style-type: none"> Evidence of final batter development and regular placement and spreading of capping material. . |
| Waste | <ul style="list-style-type: none"> Waste disposal practices at the Wallerawang Ash Repositories to reflect Environment Protection Licence conditions. Wastes generated on site to be recycled or disposed of as per Waste Management Sub-plan. | <ul style="list-style-type: none"> 100% of material unloaded at the ash placement area to correspond to the EPL criteria outlined in the Waste Management Sub-plan. Evidence of recycling system in use and site-generated waste being disposed of to an appropriate facility. |

| Environmental issue | Performance targets | Performance indicators |
|------------------------------|--|--|
| Delivery of capping material | <ul style="list-style-type: none"> Achieve compliance with the excavated natural material order 2014 and excavated natural material exemption 2014 Achieve compliance with the requirement to not import more than 100 heavy vehicle loads of capping material to the site per day Achieve compliance with the requirement to cover all heavy vehicle loads of capping material | <ul style="list-style-type: none"> Prior to delivery of capping material the generator of capping material is to provide confirmation that the capping material has been classified as virgin excavated natural material or excavated natural material. Document control system in place to record heavy vehicle loads to the site Regular monitoring of truck movements and placement operations show compliance in areas such as speed limit adherence and the covering of loaded vehicles. |

6.2 Environmental management sub-plans

Detailed management sub-plans have been developed to mitigate potential environmental impacts associated with the Wallerawang Ash Repositories area. This section provides operational management guidelines for environmental issues identified in the Environmental Assessment and outlines environmental mitigation measures and safeguards outlined as specific approval conditions by the regulatory authorities. These environmental safeguards will form the basis of the environmental controls for the Wallerawang Ash Repositories operations.

The sub-plans follow an issue-based format where the environmental impacts, management activities and controls are organised under each identified environmental issue. The operational transport management plan has been prepared as an external document to allow for revisions due to changing operational requirements with capping stockpile locations and RMS road access requirements. A closure and rehabilitation plan for the project is being developed and will be incorporated on completion of the consultation phase with relevant government agencies.

The following sub-plans are included in subsequent sections:

- Operational Noise and Vibration Management Sub-plan
- Surface Water Quality Sub-plan
- Groundwater Management Sub-plan
- Air Quality Management Sub-plan
- Landscape and Revegetation Sub-plan
- Waste Management Sub-plan

6.3 Noise and vibration management sub-plan

| | |
|--|---|
| Targets | <ul style="list-style-type: none">▪ Achieve compliance with the noise criterion of L_{Aeq} of 40dB(A) at the nearest most affected receiver during normal operations.▪ Achieve a significant reduction in the number of noise-related complaints during emergency operations (less than 5 per year, stretch target = zero complaints per year). |
| Indicators | <ul style="list-style-type: none">▪ The number of noise-related complaints.▪ Noise monitoring data obtained from the sensitive receiver locations▪ Compliance indicators as assessed by the specialist noise consultant and the Environmental Representative, as required.▪ Observed and monitored reduction in noise generation due to adaptation where necessary of engineering measures on trucks, the implementation of operating techniques such as limited compression braking and speed limit restrictions. |
| Supporting documentation | |
| Appendix A: - KVAR Stage 2 Operations- Operational Noise and Vibration Management Plan | |
| Australian Standard AS 2436 – Guide to noise control on construction, maintenance and demolition sites | |
| Key issues/constraints/strategies | |
| Wallerawang Ash Repositories activities are not anticipated to result in impacts at the nearest potentially affected receivers. Noise impacts in varying conditions can be assessed and used to predict similar scenarios in the future to determine which measures are most effective and when. | |
| Wallerawang Ash Repositories activities are not anticipated to result in perceived vibration-related impacts at the nearest potentially affected receivers. Appendix A provides procedures to be implemented should vibration-related non-conformances occur. | |
| A Specialist Consultant will be undertaking the prescribed monitoring and analysis of noise results, as per this plan. | |

| Relevant aspect/impact | Management and mitigation measures | Source of requirement | Frequency | Relevant records | Responsibility |
|---------------------------------|--|-----------------------|-------------------------------------|------------------------------|---------------------|
| General requirements | ▪ Noise levels shall not exceed an LAeq of 40dB(A) at the nearest most affected receiver | CoA 2.15 | During normal conditions | Noise monitoring records | EnergyAustralia NSW |
| | ▪ The distance between noisy plant, equipment and sensitive receptors shall be maximised where possible or practicable. | OEMP | Daily | Site inspection checklist | Contractor |
| | ▪ All noise intensive works shall be scheduled between late morning to early evening periods to minimise impact on sensitive receivers, including peak periods (where transportation noise dominates), when possible or practicable. | OEMP | Daily | Site inspection checklist | Contractor |
| | ▪ No onsite activities or engines shall be started before the prescribed start time of 7:00am. | OEMP | Daily | Site inspection checklist | Contractor |
| | ▪ All equipment and plant used on the Wallerawang Ash Repositories shall meet the typical noise levels presented in AS 2436. | OEMP | Daily | Site inspection checklist | Contractor |
| | ▪ All equipment shall be adequately maintained and kept in good operating order. | OEMP | Daily | Site inspection checklist | Contractor |
| | ▪ All equipment shall be operated in an appropriate and efficient manner. | OEMP | Daily | Site inspection checklist | Contractor |
| | ▪ Any unusually noisy equipment will be investigated and rectified as soon as practicable. | OEMP | Daily | Site inspection checklist | Contractor |
| | ▪ Noise issues shall be discussed as part of routine 'tool box' talks to keep staff aware of current operations and potential noise issues. | OEMP | Daily or as required | Toolbox talk meeting minutes | Contractor |
| On site plant noise attenuation | ▪ Use of audible reversing alarms on plant machinery shall be limited to normal operations (i.e. 7am – 10pm periods). | OEMP | During normal conditions | Site inspection checklist | Contractor |
| | ▪ The use of alternative warning devices on plant machinery shall be used during emergency operations (subject to OHS requirements) | OEMP | During emergency conditions | Site inspection checklist | Contractor |
| On site truck noise attenuation | ▪ All trucks shall be fitted with residential class mufflers. | OEMP | Prior to commencement of operations | Site inspection checklist | Contractor |
| | ▪ Trucks may also be fitted with engine shrouds, body dampening and rubber stoppers on tail gates prior to operation, where feasible. | CoA 2.16 | As required | Site inspection checklist | Contractor |

| Relevant aspect/impact | Management and mitigation measures | Source of requirement | Frequency | Relevant records | Responsibility |
|---|--|-----------------------|--|------------------------------------|----------------------------------|
| On site truck noise attenuation | <ul style="list-style-type: none"> Drivers shall obey all existing haul road speed limits (i.e. maximum of 80 km/h) and be instructed to avoid using compression braking where feasible. | OEMP | Daily | Site Inspection checklist | Contractor |
| | <ul style="list-style-type: none"> Trucks shall travel on a one-way system to minimise the need for reversing and/or queuing of vehicles. | CoA 2.16 | Daily | Site inspection checklist | Contractor |
| | <ul style="list-style-type: none"> Noise reduction techniques applied to trucks shall be routinely inspected and maintained to ensure required operational efficiency. | OEMP | As required by manufacturers or following complaints | Site Inspection checklist | Contractor |
| Monitoring and assessment of noise compliance | <ul style="list-style-type: none"> A review of the noise performance of the Wallerawang Ash Repositories operations shall be undertaken to assess compliance with the prescribed noise criterion of 40dB(A) $L_{Aeq, 15min}$ at the nearest noise sensitive receivers. Note: Refer to the Noise and Vibration Management Plan, Appendix A for further details. | CoA 3.2 | Complete | Operational Noise Review report | EnergyAustralia NSW |
| | <ul style="list-style-type: none"> Based on the results of the operational noise review (above), a comprehensive noise risk matrix shall be developed to provide key response actions that will proactively avoid or minimise noise impacts at the noise sensitive receivers. Note: Refer to the Noise and Vibration Management Plan, Appendix A. | OEMP | Complete | Noise Risk Matrix | EnergyAustralia NSW / Contractor |
| | <ul style="list-style-type: none"> Observed attended noise monitoring throughout the initial 60 day reporting period shall be undertaken at sensitive receivers as outlined in the Operational Noise and Vibration and Management Plan, Appendix A. Note: Refer to the Noise and Vibration Management Plan, Appendix A for further details. | OEMP | For 4 separate days within the initial 60 day reporting period | Report to EPA | EnergyAustralia NSW |
| | <ul style="list-style-type: none"> Observed attended noise monitoring and assessment of compliance of operations shall be undertaken at sensitive receivers on a periodic basis, or as a result of a complaint or due to changes in operations. Note: Refer to the Noise and Vibration Management Plan, Appendix A for further details. | CoA 6.3b) | As required in response to complaints or change in operations. | 6 monthly noise monitoring reports | Specialist Consultant |

| Relevant aspect/impact | Management and mitigation measures | Source of requirement | Frequency | Relevant records | Responsibility |
|---|--|-----------------------|--|------------------------------------|--|
| Monitoring and assessment of noise compliance | <ul style="list-style-type: none"> Attended ambient noise monitoring shall take place at a maximum of 5 residential receiver locations (incl. Skelly Road, Neubeck Street, Wolgan Road and Maddox Lane) and shall provide periodic 15-minute ambient noise levels. Note: Refer to the Noise and Vibration Management Plan, Appendix A for further details. | OEMP | During daytime (7am-6pm) and evening time (6pm-10am) for one day | 6 monthly noise monitoring reports | EnergyAustralia NSW / Specialist Consultant |
| | <ul style="list-style-type: none"> Where non-compliance with the 40 dB(A) $L_{Aeq, 15min}$ noise criterion is identified through noise monitoring a further assessment of feasible noise management and mitigation measures shall be undertaken and implemented. Note: Refer to the Noise and Vibration Management Plan, Appendix A for further details. | CoA 2.18 | As required | 6 monthly noise monitoring reports | EnergyAustralia NSW / Specialised Consultant |
| | <ul style="list-style-type: none"> Any identified non-compliance shall be reported to the Secretary within 14 days of completion of all noise monitoring works. | CoA 3.1 | As required | Report to Secretary | EnergyAustralia NSW |
| | <ul style="list-style-type: none"> A log of noise related incidents shall be kept at the premises. The log shall record all noise complaints, including location, action carried out and outcomes of investigations and measures implemented. | OEMP | As required | Noise incident log | EnergyAustralia NSW |
| | <ul style="list-style-type: none"> The noise management log shall be reviewed on a periodic basis to determine trends. | OEMP | Annually | Noise incident log | EnergyAustralia NSW |
| | <ul style="list-style-type: none"> In the event of a noise related complaint associated with the operation of Wallerawang Ash Repositories activities, an assessment of received noise influence and potential mitigation measures shall be undertaken. Note: Refer to the Noise and Vibration Management Plan, Appendix A for further details. | OEMP | As required | Noise incident log | EnergyAustralia NSW / Contractor |
| | <ul style="list-style-type: none"> The Noise and Vibration Management Plan shall be reviewed every 5 years. | OEMP | Every 5 years | Noise Management Sub-Plan revision | EnergyAustralia NSW |
| Reporting | <ul style="list-style-type: none"> EnergyAustralia shall submit for the approval of the Secretary an Operational Noise Review within 60 days of the Commencement of Stage 2 operations. The review shall be prepared in consultation with the EPA. | CoA 3.2 | Complete | Operational Noise Review | EnergyAustralia NSW |

| Relevant aspect/impact | Management and mitigation measures | Source of requirement | Frequency | Relevant records | Responsibility |
|------------------------|---|-----------------------|---|---|---|
| Reporting | <ul style="list-style-type: none"> EnergyAustralia NSW shall prepare in consultation with the EPA, a Noise Monitoring Program to assess compliance against operational noise criterion throughout the life of the Wallerawang Ash Repositories. | CoA 3.3 | Throughout Stage 2 works | Noise Monitoring Program | EnergyAustralia NSW |
| | <ul style="list-style-type: none"> A report shall be forwarded to the Secretary and the EPA within 14 days of the noise assessment should any non-compliance occur relating to ongoing operational noise monitoring. | CoA 3.3 | As required | Report to Secretary and EPA | EnergyAustralia NSW |
| | <ul style="list-style-type: none"> In the case of non-compliance, a report shall be provided to the Secretary within 60 days of completion of monitoring works. Feasible noise mitigation measures shall be considered in the report. | CoA 2.18 | Within 60 days of completion of monitoring works, where non-compliance of noise criterion is identified | Report to Secretary | EnergyAustralia NSW / Specialist Consultant |
| | <ul style="list-style-type: none"> The criterion to limit cumulative operational noise levels to below 40 dB(A) $L_{Aeq\ 15\ min}$ does not apply where EnergyAustralia NSW and the potentially affected landowner have reached a negotiated agreement in regard to noise and a copy of this agreement has been forwarded to the Secretary and the EPA. | CoA 2.15 | As required | Noise level agreement between EnergyAustralia NSW and Landowner | EnergyAustralia |
| | <ul style="list-style-type: none"> The Annual Review will be submitted to the Secretary complete with noise monitoring data gathered throughout the year. | CoA 7.3 | Annually | Annual Review | EnergyAustralia NSW |

6.4 Surface water quality sub-plan

Targets

- The water quality within Sawyers Swamp Creek is not impacted by Wallerawang Ash Repositories operations.
- Zero environmental incidents that relate to pollution of waters at Sawyers Swamp Creek.

Indicators

- The surface water monitoring results and the assessment of water quality in accordance with the ANZECC guidelines.
 - No visual evidence of erosion and sedimentation impacts on Sawyers Swamp Creek following significant rain events.
 - Records of trend analysis, management procedures and observations for each of the nominated monitoring locations.
-

Supporting documentation

Key issues/constraints/strategies

Clean water is defined as rainfall runoff from undisturbed areas including areas of ash repository that have been capped and revegetated. The control of clean water is managed through the use of earth bunds and diversion drains which divert clean water away from operational areas. A diversion channel is in place to divert clean water runoff around the SSCAD and safely back into the Sawyers Swamp Creek .

Dirty water comprises water collected from within KVAR disturbed areas including the exposed ash face, un-vegetated capped areas, work areas, stockpiles and haul roads. Within these parameters, and using appropriate surface water controls, the impact of the KVAR operations on the surrounding catchment can be minimised.

Emphasis shall be placed on the operation of the Wallerawang Ash Repositories as a zero dirty water discharge site. The 3ML and 25ML storage ponds located within the KVAR are designed to control these discharges, with dirty water being re-used on site or transferred to SSCAD. SSCAD is managed whereby no water can be discharged without first being pumped to the WWPS Ash Return Water Storage Tank for processing by the Caustic Injection Plant at WWPS. This practice ensures that water releases are minimised and only water that meets the water quality discharge criteria for LDP 3 is released into the Coks River. The parameters monitored and reported in the Environmental Protection Licence 766 at LDP 3 include pH, sulfate and total suspended solids. Consequently, any runoff from earthworks within the perimeter of the SSCAD is stored in the facility and does not report to the Sawyers Creek Catchment.

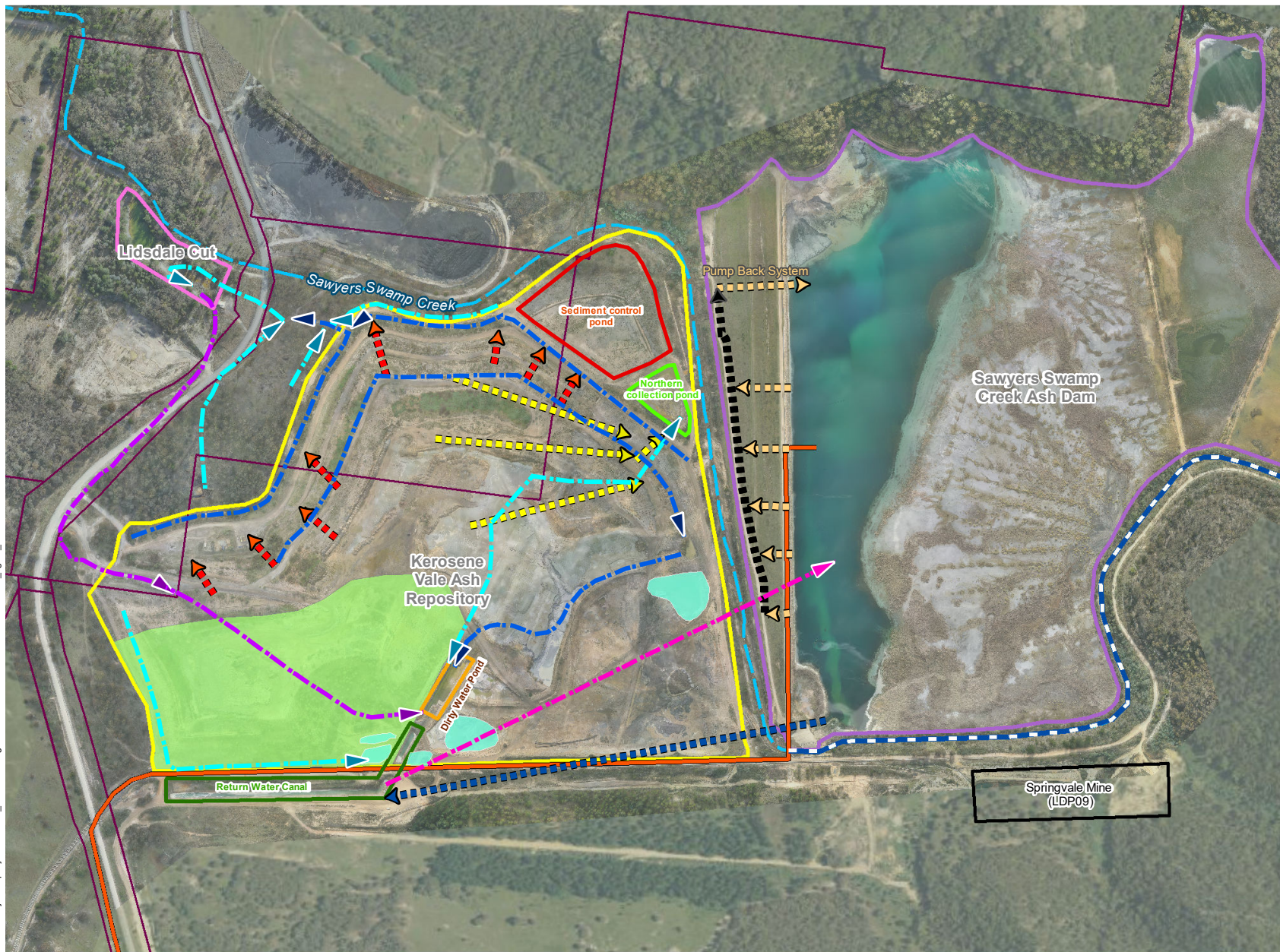
A Specialist Consultant has established the surface water monitoring locations and continues to undertake the prescribed monitoring and analysis of surface water results, as per this plan.

| Relevant aspect/impact | Management and mitigation measures | Source requirement of | Frequency | Relevant records | Responsibility |
|---|---|-----------------------|-----------------------------------|---------------------------|----------------|
| General requirements | <ul style="list-style-type: none"> All clean water shall be diverted around exposed ash surfaces and into surface drains which discharge into Sawyers Swamp Creek. | OEMP | Ongoing | Site inspection checklist | Contractor |
| | <ul style="list-style-type: none"> All runoff from the south east area of the ash repository and revegetated areas shall be diverted to the return water channel back to WWPS using earth bunds and constructed spoon drains. | OEMP | Ongoing | Site inspection checklist | Contractor |
| | <ul style="list-style-type: none"> Dirty water from all disturbed areas shall be diverted to the 3ML collection pond (sedimentation basin) where it shall either be used on site for dust suppression and moisture control of ash, or pumped to the return water channel for further treatment and re-use at WWPS. | OEMP | Ongoing | Site inspection checklist | Contractor |
| | <ul style="list-style-type: none"> Any overflow from the 3ML collection pond shall be pumped into the 25 ML storage dam. This water-retention system shall be established to serve as a water collection basin to ensure that all site runoff is captured for further treatment and re-use at WWPS to minimise impacts on Sawyers Swamp Creek. | OEMP | Ongoing | Site inspection checklist | Contractor |
| | <ul style="list-style-type: none"> Water from the 25ML storage dam shall either be used for dust suppression onsite or pumped to the return water channel for further treatment and re-use at WWPS. | OEMP | Ongoing | Site inspection checklist | Contractor |
| | <ul style="list-style-type: none"> The 25ML storage dam shall be used as a retention area to contain overflows from dirty water catchment during extreme storm events. The water shall then be used on site or pumped to the return water channel for further treatment and re-use at WWPS. | OEMP | As required | Site inspection checklist | Contractor |
| | <ul style="list-style-type: none"> The area of exposed ash face will be limited to about 1.5 hectares to minimise the volume of dirty water runoff generated and stored on-site, should there be a significant rain event. | OEMP | Daily | Site inspection checklist | Contractor |
| | <ul style="list-style-type: none"> Capping and revegetation of completed areas shall be undertaken as soon as practicable after reaching the maximum AHD, with total disturbed area limited to a maximum of 5 hectares at any one time. | OEMP | As required | Site inspection checklist | Contractor |
| Controlling pollution and contamination | <ul style="list-style-type: none"> All works in disturbed areas shall be restricted during heavy rainfall events. | OEMP | As required during heavy rainfall | | Contractor |

| Relevant aspect/impact | Management and mitigation measures | Source requirement of | Frequency | Relevant records | Responsibility |
|---|--|-----------------------|-------------|--|---|
| Controlling pollution and contamination | <ul style="list-style-type: none"> In accordance with CoA 2.31 earthworks not associated with the realignment of Sawyers Swamp Creek shall not be undertaken within 50m of the Creek where reasonable and feasible. | CoA 2.31 | As required | Site inspection checklist | Contractor |
| | <ul style="list-style-type: none"> All equipment, machinery and vehicles associated with the operation of the Wallerawang Ash Repositories shall be operated and maintained in a manner that minimises the potential for oil and grease spills/leaks. | CoA 2.32 | As required | Pre-start checks Equipment register | Contractor |
| | <ul style="list-style-type: none"> Cleared vegetation shall be mulched, chipped or re-used on-site for sediment filter fences or other uses, where appropriate. | SoC Table 7.1 'Waste' | As required | Site inspection checklist | Contractor |
| Water quality monitoring | <ul style="list-style-type: none"> Water quality monitoring will be undertaken at the four existing monitoring locations: Two within Sawyers Swamp Creek (upstream and downstream of KVAR), one within Dump Creek, and one within the Sawyers Swamp Creek Ash Dam. Refer to Figure 5-1 for location details. | CoA 3.5 | Monthly | Figure 5-1 Surface water monitoring records | EnergyAustralia NSW / Specialist Consultant |
| | <ul style="list-style-type: none"> The following analytes will be monitored in addition to those outlined in Table A of Appendix B: <ol style="list-style-type: none"> Dissolved oxygen Turbidity Total phosphorous Total nitrogen | CoA 3.5 | Monthly | Surface water monitoring records | EnergyAustralia NSW / Specialist Consultant |
| | <ul style="list-style-type: none"> Additional surface water monitoring will be undertaken following wet weather events, with a minimum of 2 events recorded within the first 12 months of operation, to ensure that the implemented water quality management controls are operating effectively and preventing impacts during wet weather events. | CoA 3.5 | Complete | Surface water monitoring records | EnergyAustralia NSW / Specialist Consultant |
| | <ul style="list-style-type: none"> Water quality monitoring results shall be assessed in conjunction with the baseline data provided in Table B of Appendix B, and against the baseline condition as assessed in the Environmental Assessment within the ANZECC 2000 – Freshwater Aquatic Ecosystems guidelines (95% PL) to be used as a reference point. | OEMP | Annually | Surface Water monitoring assessment report | EnergyAustralia NSW / Specialist Consultant |

| Relevant aspect/impact | Management and mitigation measures | Source requirement of | Frequency | Relevant records | Responsibility |
|--------------------------|--|-----------------------|--|--|---|
| Water quality monitoring | <ul style="list-style-type: none"> Should results reveal that Wallerawang Ash Repositories activities are having an adverse impact on surface water quality (results outside the baseline parameters), EnergyAustralia NSW in consultation with the Contractor, shall review and intensify the surface water quality controls within this sub-plan, which may include: <ul style="list-style-type: none"> - Reducing the batter length of the exposed ash face - Reducing the maximum allowable disturbed area at any one time - Increase capacity of collection pond - Review diversion bunds and drains and rectify as required. | OEMP | As required | Surface water monitoring assessment report | EnergyAustralia NSW / Contractor |
| | <ul style="list-style-type: none"> The groundwater monitoring results (see Section 6.5) shall be assessed to ascertain any impacts on Sawyers Swamp Creek from existing groundwater discharge points into the creek. | OEMP | As required | Surface and groundwater monitoring records | EnergyAustralia NSW / Specialist Consultant |
| | <ul style="list-style-type: none"> A review of surface water monitoring locations shall be undertaken as a result of the groundwater studies to ensure potential water quality impacts downstream from these points can be monitored. | OEMP | As required | Surface and groundwater monitoring records | EnergyAustralia NSW / Specialist Consultant |
| Reporting | <ul style="list-style-type: none"> The results shall be assessed against the existing baseline data (Table B, Appendix B) and against the baseline condition (as per the EA) while the ANZECC 2000 – Freshwater Aquatic Ecosystem guidelines should be used as a reference point. In the case of exceedences, the response taken must be documented within the report. Any deviations from the proposed monitoring program must also be justified. | CoA 6.5 | Annually from the commencement of operations | Surface water quality assessment report | EnergyAustralia NSW / Specialist Consultant |
| | <ul style="list-style-type: none"> The Regional DPI-Fisheries Office shall be contacted in the event of a fish kill in the vicinity of the Wallerawang Ash Repositories activities. The incident shall be investigated; however the department shall be contacted regardless of the cause. | OEMP | As required | Report to DPI-Fisheries | EnergyAustralia NSW |
| | <ul style="list-style-type: none"> The Annual Review will be submitted to the Secretary complete with surface water monitoring data gathered throughout the year. | CoA 7.3 | Annually | Annual Review | EnergyAustralia NSW |

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Legend

- EnergyAustraliaNSW owned land / licence area (EPL 766)
- Sawyers Swamp Creek Ash Dam
- Kerosene Vale Ash Repository - Stage2
- Kerosene Vale Ash Repository - Stage1
- Lidsdale Cut
- Creek
- Clean water diversion drain
- Water transfer pipeline
- Seepage Flow
- Lidsdale Pond Return Flow
- Return Canal - SSCAD Pump Back
- KVAD Toe Drain
- KVAR Stage II seepage
- KVAR Sub-Surface Drains
- Gravity Overflow
- Concrete Drain - Open
- Dam seepage
- Surface runoff collection pond

Source: Aurecon, LPI,
Lithgow Local Environmental Plan 2014



1:9,000
0 150 300m

Projection: GDA 1994 MGA Zone 56

Wallerawang Ash Repository **OEMP**

Figure 6-1: Existing Site Drainage

6.5 Groundwater quality sub-plan

| | |
|--|--|
| Targets | <ul style="list-style-type: none"> The quality of the groundwater underlying the site is not impacted by Wallerawang Ash Repositories operations |
| Indicators | <ul style="list-style-type: none"> Groundwater monitoring results indicating reduction in surface infiltration through use of preventative measures such as ash stacking and compaction techniques Results of monitoring trends undertaken by NATA accredited specialists as per OEMP |
| Supporting documentation | |
| Key issues/constraints/strategies | |
| <p>While an accurate and effective monitoring system is essential to provide on-going analytical data, the ability to adequately manage environmental controls is a key part of groundwater management. Controls involving ash placement, capping and surface water management must be maintained to a high standard and procedures outlined in this OEMP must be adhered to in order to effectively manage the quality of groundwater flows in the area.</p> <p>The use of monitoring locations up and down-stream of the ash placement area allows a comparison to be made of groundwater quality as a result of existing works, and also as a result of the adjustment from Stage 1 to Stage 2 ash placement. The monitoring of groundwater quality at regular intervals provides a clear indication of trends and allows mitigation measures to be implemented before significant impacts can be felt.</p> <p>A Specialist Consultant has established the groundwater monitoring bores and continues to undertake the prescribed monitoring and analysis of groundwater results, as per this plan.</p> | |

| Relevant aspect/impact | Management and mitigation measures | Source of requirement | Frequency | Relevant records | Responsibility |
|--------------------------------|---|-----------------------------|---|--------------------------------|--|
| General requirements | <ul style="list-style-type: none"> Ash stacking rates shall be staged and lift sizes limited from 1 to 2 metres to reduce the potential for pore pressure related changes to groundwater levels, particularly in and around the Sawyers Swamp Creek and Lidsdale Cut areas. | SoC Table 7.1 'Groundwater' | Daily | Site inspection checklist | Contractor |
| | <ul style="list-style-type: none"> The potential for changed groundwater levels and quality due to infiltration of water and leachate to the groundwater system through the ash repository shall be controlled by: <ul style="list-style-type: none"> - Limiting the area of ash face exposed at any one time; - Ensuring appropriate compaction is undertaken; - Capping and rehabilitating completed sections as soon as practicable | SoC Table 7.1 'Groundwater' | As required | Site inspection checklist | Contractor |
| | <ul style="list-style-type: none"> Following completion of the Stage 2 activities, the last remaining disturbed areas shall be capped and revegetated to minimise surface water infiltration. | SoC Table 7.1 'Groundwater' | During final ash placement and capping operations | Site inspection checklist | Contractor |
| Groundwater quality monitoring | <ul style="list-style-type: none"> Water quality monitoring results shall be assessed in conjunction with the baseline data provided in Table C of Appendix B, and against the baseline condition as assessed in the Environmental Assessment, with the ANZECC Irrigation and Ecosystem Protection guidelines to be used as a reference point. | CoA 6.5b | Monthly unless advised otherwise. | Groundwater monitoring records | EnergyAustralia NSW / Specialised Consultant |
| | <ul style="list-style-type: none"> Monitoring of the groundwater at the 6 bore sites outlined in Figure 5-1 shall be undertaken at an initial frequency of once every month for the first 12 months of operation to establish baseline groundwater quality data. | CoA 3.4 | Complete | Groundwater monitoring records | EnergyAustralia NSW / Specialised Consultant |
| | <ul style="list-style-type: none"> The monitoring shall include: <ul style="list-style-type: none"> - Water quality as per the groundwater monitoring analytical suite outlined in Table A, Appendix B - Depth using bore water levels taken at the bore sites outlined in Figure 5-1 - Flow direction using slug tests. | CoA 3.4 | Monthly unless advised otherwise. | Groundwater monitoring records | EnergyAustralia NSW / Specialised Consultant |

| | | | | | | |
|------------------------|---------|---|---------|---|---------------------------------------|--|
| Groundwater monitoring | quality | <ul style="list-style-type: none"> Should the first 12 months of Stage 2 activities have no impact on groundwater monitoring data, then the established monitoring program shall be continued but subject to the addition of: <ul style="list-style-type: none"> low detection limit analysis for trace metals (to ensure detection limit is lower than guideline values) Key salinity indicators included in the analytical suite | OEMP | Monthly unless advised otherwise. | Groundwater monitoring records | EnergyAustralia NSW / Specialised Consultant |
| | | <ul style="list-style-type: none"> Should results reveal adverse trends over baseline data, a review of the groundwater quality controls shall be undertaken, including: <ul style="list-style-type: none"> further reduction in lift sizes for ash stacking Further reduction in area of ash face exposed Higher compaction rates on emplaced ash Improvements to surface water controls adjacent to ash placement operations. | OEMP | As required | Groundwater monitoring records | EnergyAustralia NSW / Contractor |
| Reporting | | <ul style="list-style-type: none"> The results and analysis of the monitoring data shall be included and assessed against the baseline data and the baseline condition (as per the EA) with the ANZECC 2000 – Irrigation and Ecosystem Protection guidelines to be used as a reference point. In the case of baseline data exceedences, the response taken must be documented within the report. Any deviations from the proposed monitoring program must also be justified. | CoA 7.3 | Annually from commencement of operations. | Groundwater Quality Assessment Report | EnergyAustralia NSW / Specialised Consultant |
| | | <ul style="list-style-type: none"> The Annual Review will be submitted to the Secretary with groundwater monitoring data gathered throughout the year. | CoA 7.3 | Annually | Annual Review | EnergyAustralia NSW |

6.6 Air quality sub-plan

Targets

- The local air quality in the vicinity of the Wallerawang Ash Repositories is not impacted by project operations.
- Zero incidence of dust-related complaints.

Indicators

- Zero visible dust events in vicinity of Wallerawang Ash Repositories during operations
 - Complaints register demonstrating zero occurrence of dust-related complaints
-

Supporting documentation

Key issues/constraints/strategies

The key objective of the air quality management system is to manage resources effectively to ensure the prevention of conditions that may lead to visible dust emissions. Through the use of dust suppression equipment and the implementation of air quality management procedures, dust events can be controlled.

In the event of fugitive emissions, an effective system for dust suppression will ensure any impacts on the surrounding environment are minimal. Other measures to be included are the use of a water cart, wheel wash facilities and dust suppressants on the active face, when necessary. Air quality monitoring practices are designed to provide an on-going indication of the effectiveness of the air quality management system within a measurable framework.

A Specialist Consultant has established the air quality monitoring locations and continues to undertake the prescribed monitoring and analysis of results, as per this plan.

| Relevant aspect/impact | Management and mitigation measures | Source of requirement | Frequency | Relevant records | Responsibility |
|-----------------------------|---|-----------------------|--------------------------------|--------------------------------|---|
| General requirements | <ul style="list-style-type: none"> Wallerawang Ash Repositories operations shall be conducted in a manner that minimises dust impacts generated by operational activities, including wind-blown and traffic-generated dust. All activities on the site shall be undertaken with the objective of preventing visible emissions of dust from the site. Should such visible dust emissions occur at any time, practicable dust mitigation measures shall be identified and implemented, including cessation of relevant works, as appropriate, such that emissions of visible dust cease. | CoA 2.33 | Ongoing | Site inspection checklist | Contractor |
| Capping Material Deliveries | <ul style="list-style-type: none"> The load must be covered except when loading or unloading capping material. | CoA2.36A | Ongoing | Site inspection checklist | Contractor |
| | <ul style="list-style-type: none"> Achieve compliance with the requirement to not import more than 100 heavy vehicle loads of capping material to the site per day | CoA2.36A | Daily | Project diary | Contractor |
| | <ul style="list-style-type: none"> The private haulage roads shall be maintained in a clean condition by routinely washing the surface. This applies to the haul roads within the repository zone and does not include the private haul road from the power station. | OEMP | As required | Site inspection checklist | Contractor |
| Dust controls | <ul style="list-style-type: none"> A water cart shall be used to undertake dust suppression activities throughout the repository site as required. | OEMP | As required | Site inspection checklist | Contractor |
| Dust controls | <p>A dedicated water sprinkler and surface irrigation system shall be installed to cover the capping material stockpiles. Note: Application rates and the coverage area shall have the capacity to ensure that no visible emissions from the repository occur.</p> | OEMP | As required | Site inspection checklist | Contractor |
| | <ul style="list-style-type: none"> In the event of visible dust emissions from the repository area, personnel shall notify the Site Manager or Repository Team Leader immediately, who will immediately direct the water cart operator to spray the area and review the location and application rate of the sprinkler system. | OEMP | As required | Site inspection checklist | Contractor |
| Air quality monitoring | <ul style="list-style-type: none"> A total of 7 deposition gauges shall be used to monitor dust emissions at the perimeter of the ash repository area, and at key locations adjacent to residential properties and Wallerawang Power Station. Refer to Figure 5-1 for further details. | OEMP | Monthly to monitor activities. | Air quality monitoring records | EnergyAustralia NSW / Specialist Consultant |

| Relevant aspect/impact | Management and mitigation measures | Source of requirement | Frequency | Relevant records | Responsibility |
|------------------------|---|-----------------------|--|--------------------------------|---|
| Air quality monitoring | <ul style="list-style-type: none"> Samples shall be removed from the dust deposition gauges on a monthly basis by a NATA approved laboratory and assessed for compliance with the appropriate air quality criteria. | OEMP | Monthly | Air quality monitoring records | EnergyAustralia NSW / Specialist Consultant |
| | <ul style="list-style-type: none"> The EPA amenity-based criteria for dust fallout is a maximum total dust deposition of 4 g/m²/month (annual). The Stage 2 operations shall aim to achieve compliance with this limit. | OEMP | Ongoing | Air quality monitoring records | EnergyAustralia NSW / Contractor |
| | <ul style="list-style-type: none"> If the 4 g/m²/month limit is exceeded by more than 2 g/m², a review of the effectiveness of the dust suppression regime and further mitigation measures shall be undertaken, including: <ul style="list-style-type: none"> - Increased application rates of the irrigation system at the capping material stockpile; - Increased application rates of water on haul roads, particularly during high wind events; - Trial the use of cover crops to provide stabilisation of the ground surface. Review the adequacy of the management and mitigation measures for air quality compliance and implement additional measures as required. | OEMP | Ongoing | Air quality monitoring records | EnergyAustralia NSW / Contractor |
| Reporting | <ul style="list-style-type: none"> The results and analysis of the monitoring data shall also be included and assessed against the air quality criteria (4 g/m²/month) and the baseline data provided in Table D of Appendix B. in the case of exceedences, the response taken must be documented within the report. Any deviations from the proposed monitoring program must also be justified. | CoA 7.3 | Annually from the commencement of operations | Annual Review | EnergyAustralia NSW / Specialist Consultant |
| | <ul style="list-style-type: none"> The Annual Review will be submitted to the Secretary complete with air quality monitoring data gathered throughout the years. | CoA 7.3 | Annually | Annual Review | EnergyAustralia NSW |

6.7 Landscape and revegetation sub-plan

Targets

- All areas of ash placement that have reached final batter grades are to be covered with capping material and stabilised with cover crops.

Indicators

- Evidence of final batter development and regular placement and spreading of capping material
-

Supporting documentation

Environmental Assessment prepared by Parsons Brinckerhoff Australia 2008

Australia Standard AS4282 Control of Obtrusive Effects of Outdoor Lighting.

Key issues/constraints/strategies

Key issues include the visual impacts on nearby residents (within up to 20 kilometres of the site) and the change in view from residences located west and south-west of the site. The revegetation is designed to improve the visual amenity of the finished surfaces, while binding the capping layer and preventing fugitive dust emissions from occurring.

| Relevant aspect/impact | Management and mitigation measures | Source of requirement | Frequency | Relevant records | Responsibility |
|--------------------------------|---|--|---|---------------------------|----------------------------------|
| General requirements | <ul style="list-style-type: none"> Measures to reduce the visual impact of the repository, including capping and re-vegetation, shall be implemented as soon as practicable after final capping of each section. | SoC Table 7.1 'Erosion and Sediment Control' | After completion of each area and final capping | Site inspection checklist | Contractor |
| | <ul style="list-style-type: none"> As far as practicable and without jeopardising the safety of the operation, lighting associated with the operations shall be directed away from residential properties in the vicinity and towards Sawyers Swamp Creek Ash Dam and comply with AS4282. | SoC Table 7.1 'Landscape and Visual' | Ongoing | Site inspection checklist | Contractor |
| Site rehabilitation procedures | <ul style="list-style-type: none"> All new batters shall be rehabilitated as soon as practicably possible. | OEMP | Once final placement and subsequent capping has been achieved | Site inspection checklist | Contractor |
| | <ul style="list-style-type: none"> A summary of the rehabilitation objectives include: <ul style="list-style-type: none"> developing a broad acre planting strategy on slopes at a 1 vertical to 4 horizontal ratio. using small trees and shrubs to control soil movement planting grasses as a base soil conditioner, providing soil organic matter and establishing native perennial grass species to facilitate a long term functional soil profile(erosion control, soil health, nutrient cycling). | CoA 6.5e)i | As required | Revegetation procedure | EnergyAustralia NSW / Contractor |
| Site rehabilitation procedures | <ul style="list-style-type: none"> A re-vegetation procedure which outlines the methods that would be used to revegetate the batters, including type of grass, shrubs, sow rate, fertilisers/ground treatment and irrigation plan will be developed as part of the closure and rehabilitation plan. Note: The procedure shall ensure that locally native species are used in the revegetation activities, where possible or feasible depending on soil conditions. | OEMP 6.5e) CoA | Prior to revegetating capping layer | Revegetation procedure | Contractor |
| | <ul style="list-style-type: none"> The re-vegetated areas shall be watered twice-weekly until the vegetation is established to EnergyAustralia NSW's satisfaction. | OEMP | Twice weekly until vegetation is established | Revegetation procedure | Contractor |

| Relevant aspect/impact | Management and mitigation measures | Source requirement of | Frequency | Relevant records | Responsibility |
|--------------------------------|--|-------------------------|--|-----------------------------------|----------------------------------|
| | <ul style="list-style-type: none"> Once the Wallerawang Ash Repositories area has reached its design limit and the establishment phase of revegetation for the area has been reached. EnergyAustralia shall ensure the revegetated zone continues to control erosion and dust impacts and runoff quality, while providing adequate visual amenity to the area. | CoA 6.5e) OEMP | During vegetation establishment and beyond | Monthly Site Inspection checklist | EnergyAustralia NSW |
| | <ul style="list-style-type: none"> The ash shall be capped to a minimum depth of 0.75m, with the capping material to be spread with a dozer blade and then contour ripped to preclude soil movement during rainfall or other erosion events. Other soil stabilisation methods may be utilised including broom brushing or silt fencing as required. | OEMP | Capping initiated once final height is reached. | Revegetation procedure | Contractor |
| | <ul style="list-style-type: none"> While total vegetation cover on finished surfaces will be difficult to achieve in the short term, the development of site biodiversity (grasses, shrubs, trees) over the longer term will enable this goal to be achieved. | CoA 6.5e)ii | As required | Revegetation procedure | EnergyAustralia NSW / Contractor |
| Site rehabilitation procedures | <ul style="list-style-type: none"> The soil capping shall be conditioned to facilitate revegetation. If capping material does not contain stockpiled topsoil or is inappropriate to foster revegetation, appropriate soil conditioning methods shall be implemented. These may include the addition of organic matter through compost products such as green-waste or a cover crop such as annual grass species. Excavated Natural Material (ENM) or Virgin ENM and / or soil amendment products as defined by the EPA waste Classification Guideline dated 2014 may be used if required. Cover crop grass species will include various ratios of rye corn, millet, oats, | CoA 6.5e)ii, v. OEMP | During capping and prior to soil stabilisation | Revegetation procedure | Contractor |
| | <ul style="list-style-type: none"> Cover crop grass species shall be sown in the beginning of autumn or during spring, and shall be grown for a season before being incorporated into the soil using harrows or dozer tynes. This will provide a conditioned base for oversowing with perennial grasses. | CoA 6.5e)iv | Post capping and in the beginning of autumn or during spring | Revegetation procedure | Contractor |
| | <ul style="list-style-type: none"> Seed will generally be applied using a hydroseeder truck driven along the laybacks, or a back-pack seeder for smaller areas. | OEMP | As required | Revegetation procedure | Contractor |

| Relevant aspect/impact | Management and mitigation measures | Source requirement of | Frequency | Relevant records | Responsibility |
|--------------------------------|---|-----------------------|---|---------------------------|---|
| | <ul style="list-style-type: none"> The second stage of grass cover revegetation shall include the sowing of a mix of perennial grasses, in either autumn or spring. Successful trials have indicated species such as red grass, wallaby grass, phalaris, couch, consul love grass and paspalum will be suitable. Native perennial species to be used include Microlaena and Poa. | CoA 6.5e) iii, iv | Either autumn or spring | Revegetation procedure | Contractor |
| | <ul style="list-style-type: none"> Batters shall be shaped through the use of a tracked vehicle to prepare the capping and to provide rip lines along the contour. | CoA 6.5e) ii | After stabilisation and soil conditioning | Revegetation procedure | Contractor |
| Site rehabilitation procedures | <ul style="list-style-type: none"> Irrigation shall be undertaken at establishment and as required thereafter, to ensure revegetation occurs. Fertilisers shall also be applied on an ongoing basis as required. Previous results indicate that a suitable fertiliser will most likely include standard nitrogen, phosphorous, potassium and sulphur application, with the use of specialist bio dynamic products that include humic acids, liquid lime products, sea weed kelp based products and a hot-mix NPK blend (10-10-10) with chelated trace elements and potent organic fertilisers. | CoA 6.5e) ii, iv, v | Post seeding and as required | Revegetation procedure | Contractor |
| | <ul style="list-style-type: none"> Threats to revegetation such as grazing by hares, rabbits and wallabies shall be managed through the maintenance of fencing and through other means as appropriate. | CoA 6.5e) ii | Post seeding and as required | Site inspection checklist | Contractor |
| | <ul style="list-style-type: none"> Soil testing shall be undertaken using representative sampling to analyse total carbon, nitrogen and available phosphorous, pH, electrical conductivity, and soil cations, calcium, magnesium, potassium and sodium. Results shall be analysed to assess the ongoing ability of the soil to support revegetation. | CoA 6.5e) i, ii, iv | As advised | Soil testing record | EnergyAustralia NSW / Contractor |
| | <ul style="list-style-type: none"> The plant establishment, growth and species diversity shall be assessed annually. Assessments are to be based on representative sampling. | CoA 6.5e) v | Annually | Plant assessment record | Environmental Representative / Contractor |

| Relevant aspect/impact | Management and mitigation measures | Source requirement of | Frequency | Relevant records | Responsibility |
|--------------------------------|---|--------------------------|---|---------------------------|---|
| | <ul style="list-style-type: none"> The planting of shrubs and trees shall be undertaken using tube stock after the establishment of the perennial grass species. The tube stock shall be sourced from locally gathered provenance or shall be selected from types found within the region. | CoA 6.5e) i ,ii, iii, iv | Conduct after establishment of perennial grass species in winter months | Revegetation procedure | Contractor |
| | <ul style="list-style-type: none"> Tree species trials were undertaken in July 2008 from a regional selection to establish suitability for the area. Trials involved: Apple box, Long leaved box, Argyle apple, Red box, Western scribbly gum, Candle-bark gum, Red ironbark, Honey Myrtle and Sydney Golden Wattle | CoA 6.5e) i ,ii, iii, iv | Complete | Site inspection checklist | Environmental Representative / Contractor |
| Site rehabilitation procedures | <ul style="list-style-type: none"> Trials of local provenance tree species were performed in July 2009 and included: Red stringy bark, Narrow leaved peppermint, Western scribbly gum, Silver wattle and Red stem wattle. Note: while planting may occur before these trial species have reached maturity, the result of these trials will provide insight into the success rates for growth at the most critical, early age. | CoA 6.5e) i ,ii, iii, iv | Complete | Site inspection checklist | Environmental Representative / Contractor |
| | <ul style="list-style-type: none"> The tube stock shall be planted 5-10m apart to ensure the maintenance of ground cover after establishment. Measures such as guards shall be used as protection against grazing. | CoA 6.5e) ii | Conduct after establishment of perennial grass species in winter months | Revegetation procedure | Contractor |
| Reporting | <ul style="list-style-type: none"> The Annual Review will be submitted to the Secretary complete with landscape and revegetation progress assessed throughout the year where applicable. | CoA 7.3 | Annually | Annual Review | EnergyAustralia NSW |

6.8 Waste management sub-plan

| | |
|-------------------|---|
| Targets | <ul style="list-style-type: none">Waste disposal practices at Wallerawang Ash Repositories is to reflect Environment Protection Licence conditions.Wastes generated on site to be recycled or disposed of as per the guidelines specified in this Sub-plan. |
| Indicators | <ul style="list-style-type: none">100% of material disposed of within the Wallerawang Ash Repositories is to correspond to the EPL criteria outlined in this Sub-plan.Evidence of recycling system in use and site-generated waste being disposed of to an appropriate facility. |

Supporting documentation

Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes (NSW EPA 1998)

Key issues/constraints/strategies

All staff involved in the Wallerawang Ash Repositories activities are to be made aware of the waste management procedures as outlined in this sub-plan. Waste-related documents and records are to reflect adherence to these protocols, thereby providing the foundations for a transparent approach to waste management.

| Relevant aspect/impact | Management and mitigation measures | Source of requirement | Frequency | Relevant records | Responsibility |
|--------------------------|---|-----------------------|-------------|------------------|----------------------------------|
| General requirements | <ul style="list-style-type: none"> Unless authorised by EPL 766, EnergyAustralia NSW and the Contractor shall not cause, permit or allow any waste generated outside the ash repository to be received at the ash repository for storage, treatment, processing, reprocessing or disposal. Any waste generated at the ash repository shall not be disposed of at the ash repository, unless expressly permitted by the EPL 766. | EPL CoA 2.41 | Ongoing | Waste records | EnergyAustralia NSW / Contractor |
| | <ul style="list-style-type: none"> EnergyAustralia NSW and the Contractor shall ensure that all waste materials are assessed, classified, managed and disposed of in accordance with Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-liquid Wastes (EPA, 1999) | CoA 2.39 | As required | Waste records | EnergyAustralia NSW / Contractor |
| Ash repository operation | <ul style="list-style-type: none"> EnergyAustralia NSW and the Contractor shall ensure that only the following types of waste are to be disposed of at the ash repository: <ul style="list-style-type: none"> - Ash - Mill pyrites - Demineralisation and polisher plant effluents - Chemical clean solutions - Cooling tower sediments - Ion exchange resins - Fabric filter bags - Brine conditioned fly ash - Biomass co-firing ash - Settling pond sediments - Oil and grit trap sediments | EPL | Ongoing | Waste records | EnergyAustralia NSW / Contractor |
| | <ul style="list-style-type: none"> Maintenance wastes, such as oils and greases, shall be disposed of by the Contractor to an appropriate facility. Waste generated by site personnel shall be collected on a regular basis. Waste must either be recycled or disposed of to an appropriate facility. | SoC Table 7.1 'Waste' | As required | Waste records | Contractor |

| Relevant aspect/impact | Management and mitigation measures | Source of requirement | Frequency | Relevant records | Responsibility |
|---------------------------|--|-----------------------|-------------|------------------|---------------------|
| Ash repository operations | <ul style="list-style-type: none"> All cleared vegetation shall be mulched, chipped or re-used on-site for sediment filter fences, site rehabilitation or other uses, where appropriate. | SoC Table 7.1 'Waste' | As required | Waste records | Contractor |
| | <ul style="list-style-type: none"> Illegally dumped rubbish or waste found inside the ash repository boundaries shall be disposed of by the Contractor at an appropriate licensed waste facility. | OEMP | As required | Waste records | Contractor |
| Reporting | <ul style="list-style-type: none"> The Annual Review will be submitted to the Secretary complete with waste management data gathered throughout the year. | CoA 7.3 | Annually | Annual Review | EnergyAustralia NSW |

Appendix A Operational Noise and Vibration Management Plan

Appendix A:

Operational Noise and Vibration Management Plan

November 2008



Parsons Brinckerhoff Australia Pty Limited ABN 80 078 004 798

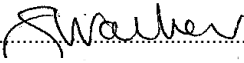
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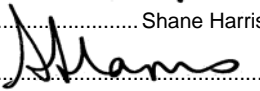
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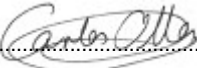
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Date: November 2008

Distribution:

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1. Introduction

This operational noise and vibration management plan forms part of the Operational Environmental Management Plan (OEMP) for the Stage 2 Kerosene Vale Ash Repository operations at Wallerawang Power Station, Lidsdale. The noise management plan has been developed in response to Condition of Approval (CoA) numbers 6.5 of the Department of Environment and Climate Change (DECC) Section 75J *Environmental Planning and Assessment Act 1979*, Schedule 1 Application 07_005.

The operational noise and vibration management plan identifies measures to minimise and mitigate noise impacts on surrounding land uses from the proposed works. The level of noise generated during the proposed works program will depend on the location of the receiver, the type and duration of works and intervening topography, and existing building structures between the noise emission source and receiver.

1.1 Noise generating activities

The ash placement and ash haulage operational works include:

- Unloading of ash from trucks at the repository.
- Placement and handling of ash at the repository site.
- Operational of trucks on the private haul road; trucks leave WPS loaded with ash and return from the repository empty.

The noise and vibration aspects of the ash placement and haulage operations, including potential mitigation measures and enhancements, have been dealt with specifically in the Kerosene Vale – Stage 2 Ash Repository Area (two volumes) – Environmental Assessment, (KVAR EA, PB April 2008).

The controls documented in this management plan include:

- Best Management Practice and Best Available Technology Economically Achievable principles applied for plant selection and ash placement activity.
- Employing best practice techniques to minimise noise emissions to sensitive receivers from ash truck on the private haul road.
- Undertake operational noise monitoring post commencement of operations and throughout the project lifetime.
- Implement a log for all ash truck private haul road movements.
- Implemented a noise risk matrix for staff response to potential noise issues.

1.2 Vibration generating activities

As per Section 11 of the Environmental Assessment (PB 2008), the Stage 2 operational activities are not anticipated to result in perceived vibration-related impacts at the nearest potentially affected receivers. Section 8.1 of this management plan provides procedures to be implemented should vibration-related non-conformances occur.

1.3 Environmental objectives

The purpose of this plan is to comply with the requirements of the CoA and to minimise potential noise impacts on the local community.

The objectives of this sub-plan are to:

- Develop noise management measures for compliance with the adopted operational noise criterion.
- Manage potential noise impacts from the ash placement and private haul road operations.
- Minimise noise impacts on the local community.
- Implement noise monitoring strategy for post commissioning and ongoing operational noise monitoring.

2. Legislative requirements and guidelines

2.1 Overview

The *Protection of the Environment Operations Act, 1997* (POEO Act) regulates noise generation and prohibits the generation of 'offensive noise' as defined under the Act.

In addition to the regulatory requirements under the POEO Act, the Department of Environment and Climate Change (DECC) provides guidelines regarding acoustic criteria and noise controls.

Key legislation and guidelines relevant to noise management is provided in Table 2-1.

Table 2-1 Key legislation and guidelines

| Relevant key legislation and guidelines | Applicable to project |
|--|--|
| <i>Protection of the Environment Operations Act, 1997</i> (POEO Act) | Provides for the control of polluting activities in NSW to prevent pollution of the environment. This relates specifically to noise pollution for this project. |
| <i>Protection of the Environment Operations (Noise Control) Regulation, 2000</i> | Provides provisions on matters relating to noise emissions, maintenance of control equipment, use of certain articles and inspection and testing procedures. |
| Environment Protection Authority <i>NSW Industrial Noise Policy</i> (2000) | Guidelines for the measurement, analysis and assessment of environmental noise to maintain residential amenity and limit intrusion potential in a balanced and structured manner. |
| Environment Protection Authority <i>Environmental Noise Control Manual</i> (1994) | Describes noise control policies and procedures within a framework or relevant legislation, acoustic theory and technology. Noise goals for construction works outlined. |
| Australian Standard AS 1055 <i>Acoustics—Description and Measurement of Environmental Noise</i> (1997) | Outlines provisions for the measurement of environmental noise levels. |
| Australian Standard AS 2107 <i>Acoustics—Recommended Design Sound Levels and Reverberation Times for Building Interiors</i> (2000) | Recommends internal noise levels for various land uses and habitable rooms. |
| DoP Section 75J <i>Environmental Planning and Assessment Act 1979</i> , Schedule 1 Application 07_005 | Department of Planning Conditions of Approval for the extension of existing Kerosene Vale Ash Repository Area operations for the continued disposal of ash from the Wallerawang Power Station. |
| NSW Department of Environment and Climate Change (DECC), <i>Environmental Protection Licence 766</i> (EPL) | Operational environmental licence for Wallerawang Power Station operations. |

Changes to legislation, regulations or guidelines during site works will require 'corrective action' to review and assess the impacts of the legislation on the environmental management of the site. Affected procedures will be modified accordingly.

3. Performance objectives

3.1 Operational noise

Considerate of DoP Project Approval 07_005, ash repository activities shall be undertaken in accordance with operational noise commitments outlined in Table 3-1.

Condition 2.15, has established a 40 dB(A) $L_{Aeq, 15min}$ noise criterion for ash placement and ash haulage works at the nearest potentially affected sensitive receivers.

Post 60 days of commencement of Stage 2 ash placement and ash haulage works a noise compliance assessment is required to determine compliance with the adopted noise criterion. Future compliance throughout the project lifetime is to be assessed through periodic monitoring and assessment of received operational noise influence in the surrounding environment.

In the event of non-compliance, conditions have been established to assess reasonable and feasible noise mitigation measures including consideration of additional noise mitigation measures at affected properties.

Table 3-1 Stage 2 Conditions of Approval noise commitments

| Condition of Approval | | Operational noise commitment |
|-----------------------|------------------------------|---|
| 2.8 | Operational hours | Activities associated with Stage 2 ash repository operations shall be undertaken only during the hours 7am to 10pm Monday to Sunday. Operations outside of these hours are permitted in accordance with stipulations in condition 2.10. |
| 2.10 | Operational hours | <p>Operations outside the hours 7.00 am to 10.00 pm Monday to Sunday are only permitted in the following emergency situations:</p> <ul style="list-style-type: none"> where it is required to avoid the loss of lives, property and/or to prevent environmental harm; or breakdown of plant and/or equipment at the repository or the Wallerawang Power Station with the effect of limiting or preventing ash storage at the power station outside the operating hours stated above; or a breakdown of an ash haulage truck(s) preventing haulage during the operating hours stipulated above, combined with insufficient storage capacity at the Wallerawang Power Station to store ash outside of the project operating hours; or in the event that the National Electricity Market Management Company (NEMMCO), or a person authorised by NEMMCO, directs the Proponent (as a licensee) under the National Electricity Rules to maintain, increase or be available to increase power generation for system security and there is insufficient ash storage capacity at the Wallerawang Power Station to allow for the ash to be stored. |
| 2.15 | Operational noise criterion | <p>Cumulative operational noise from the ash placement works and the ash haulage shall not exceed 40 dB(A) $L_{Aeq, 15min}$ at the nearest most affected sensitive receptor during 7am to 10pm Monday to Sunday.</p> <p>The noise goal is applicable for meteorological conditions;</p> <ul style="list-style-type: none"> wind speeds up to 3 meters/second at 10 meters above ground; and /or temperature inversion conditions of up to 3° C/100 meters and source to receiver gradient winds of up to 2 meters/second at 10 meters above ground level. <p>The noise criterion is not applicable where a negotiated noise agreement has been reached between Delta and the landowner(s).</p> |
| 2.16 | Ash truck noise attenuation | Noise attenuation shall be installed to ash trucks operational on the haul road. Where feasible, noise reduction techniques are to include and are not limited to residential class mufflers, engine shrouds, body dampening, speed limiting and rubber stoppers on tail gates, limiting the use of compression braking and ensuring trucks operate in a one-way system at the ash repository. |
| 2.17 | Liaison with Centennial Coal | Delta shall liaise with Centennial Coal with the objective of developing a protocol for co-operative management and mitigation of noise impacts associated with Coal and ash truck movements on the private haul road. |

| Condition of Approval | | Operational noise commitment |
|-----------------------|---|--|
| 2.18 | Identification of non-compliance of noise criterion | <p>In the event post commissioning or on going periodic noise monitoring determines non compliance with the operational noise criterion, Delta shall prepare and submit to the Director-General for approval a report including:</p> <ul style="list-style-type: none"> ▪ An assessment of feasible source noise management and mitigation measures to include but not limited to <ul style="list-style-type: none"> I.Noise barrier along haulage road II.Alternative ash haulage routes III.Alternative methods of ash conveyance to the repository. ▪ Identification of preferred measures for reducing noise at the source. ▪ Community response and comment and DECC feedback on the proposed noise management and mitigation measures. ▪ Location, type, timing and responsibility for implementation of the noise management and mitigation measures. <p>The report shall be provided to the Director-General for approval within 60 days of the noise monitoring identifying the non compliance with the operational noise criterion.</p> <p>All reasonable and feasible noise management and mitigation measures shall be implemented considerate of Director-General requirements.</p> |
| 2.19 & 2.20 | Additional noise mitigation measures | <p>Post implementation of all reasonable and feasible source noise controls identified in the reporting required by condition 2.18, where operational noise from the ash placement and ash haulage activity exceeds the criterion stipulated in condition 2.15 at an identified sensitive receiver, upon received written request from the affected landowner (unless that landowner has acquisition rights under condition 2.21 (Land Acquisition Criteria) and has requested acquisition), Delta shall implement additional reasonable and feasible noise mitigation measures in consultation with the landowner. If, after three months of receiving this request from the landowner, Delta and the landowner cannot agree on measures to be implemented, or there is a dispute regarding the implantation of these measures, then either party may refer the matter to the Director-General for resolution.</p> <p>The application of additional noise measures does not apply to the construction of new dwellings approved post 12 months of the date of this Project Approval. (COA 2.20)</p> |

| Condition of Approval | | Operational noise commitment |
|-----------------------|--------------------------------------|---|
| 3.2 | Operational Noise Review | <p>Within 60 days of the commencement of operation of the Project, unless otherwise agreed to by the Director-General, Delta shall submit for the approval of the Director-General an Operational Noise Review to confirm the operational noise impact of the Project. The Operational Noise Review must be prepared in consultation with, and to the satisfaction of, the DECC. The Review shall:</p> <ul style="list-style-type: none"> Identify the appropriate operational noise objectives and level for sensitive receivers. Describe the methodologies for noise monitoring including the frequency of measurements and location of monitoring sites. Document the operational noise levels at sensitive received as ascertained by the noise monitoring program. Assess the noise performance of the project against the noise criterion specific the condition 2.15, and the predicted noise levels as detailed in the report (KVAD NIA, PB, 2008). Provide details of any entries in the Complaints Register (COA 5.4) relating to noise impacts. <p>Where noise monitoring indicates noise levels in excess of the operational noise criterion specific in condition 2.15, Delta shall prepare a report as required by condition 2.18.</p> |
| 3.3 | Ongoing Operational Noise Monitoring | <p>Delta shall prepare and implement an Operational Noise Monitoring Program to assess compliance against the operational noise criterion stipulated in condition 2.15 throughout the life of the Project. The noise monitoring program shall be prepared in consultation with, and to the satisfaction of, the DECC.</p> <p>The noise monitoring program shall be prepared in accordance with the requirements of the NSW Industrial Noise Policy (NSW EPA INP, 2000) and must include, but not limited to:</p> <ul style="list-style-type: none"> Monitoring during ash placement in the far western area of the site adjacent to the haul road. Monitoring of the effectiveness of any noise mitigation measures against the noise criterion specific in condition 2.15 and the predicted noise levels as detailed in the Kerosene Vale – Stage 2 Ash Repository Area – Environmental Assessment (PB, 2008). <p>Noise from the Project is to be measured at the most affected point or within the residential boundary, or at the most affected point within 30 meters of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary, to determine compliance with the noise criterion stipulated in condition 2.15. Where it can be demonstrated that direct measurement of noise from the Project is impractical, the DECC may accept alternative means of determining compliance (Chapter 11 INP). The modification factors in Section 4 of the INP shall also be applied to the measured noise levels where applicable.</p> <p>Delta shall forward to the DECC and the Director-General a report containing the results of any non-compliance within 14 days of conducting a noise assessment. Where monitoring indicates noise levels in excess of the operational noise criterion specified in condition 2.15, Delta shall prepare a report as required by condition 2.18.</p> <p>The noise monitoring program shall form part of the Operational Noise Management Plan (condition 6.5a).</p> |

Reference Section 75J *Environmental Planning and Assessment Act 1979*, Schedule 1 Application 07_005

4. Summary of Stage 2 operations

4.1.1 Ash delivery and placement activities

Normal conditions

Ash delivery and placement operations will be undertaken between 7 am and 10 pm Monday to Sunday. Operations outside these times will be limited to abnormal and emergency conditions.

Standard operations

- ash will be conveyed from WPS to a storage silo. Semi-trailer trucks would then collect the ash from the silo and transport it via the existing haul road
- ash truck operations on the haul road are to be between 7am - 10pm, with operational truck frequency to be responsive to ash removal demand and the management of the ash silo
- ash will be deposited at the placement area and raised in 1-2 metre increments by compactors and bulldozers
- ash will be progressively capped until the design height of 940 Australian Height Datum is achieved
- placement will progress in an easterly direction over the pine plantation area and then in a northerly direction towards Sawyers Swamp Creek.

Emergency conditions

Operations occurring outside the hours specified under *Normal Conditions* are permitted only under the emergency conditions outlined in the ash delivery and placement sub-plan. Under these circumstances, Delta must notify the DECC and nearby sensitive receivers prior to any emergency ash haulage or placement operations, and must notify the Director-General within 1 week after the emergency operations have occurred.

5. Potential noise impacts

As part of the KVAR EA (PB April 2008), the existing ambient noise environment was characterised and an assessment of the potential noise impacts undertaken.

Key noise issues from the assessment have been summarised in this chapter for the identification of potential noise impacts associated with the development.

5.1 Existing ambient noise environment

Ambient noise monitoring was undertaken during July 2007 for the identification of day time, evening and night time noise levels and determination of existing influences to noise environs.

The day time noise environment in the surrounding environment at nearest potentially affected receivers to the private haul road at receiver locations on Skelly Road, Neubeck Street and Maddox Lane, is influenced by Wallerawang Power Station (WPS) operational noise. Noise from WPS can be characterised as an 'industrial hum'. Additional intermittent influence occurred from Stage 1 ash truck movements associate with WPS operations on the haul road.

Distant traffic was audible from the Castlereagh Highway, vehicle pass by was sporadic and measured up to 2 dB(A) above the steady state noise level.

An indicative background location, where WPS and Stage 1 ash repository activity was inaudible, was adopted at Woodlands. At this location, distant road traffic pass by from Castlereagh Highway influenced the noise environment.

5.1.1 Meteorological conditions

Adopted from the KVAR EA, meteorological data for the period 2004 to 2007 from the Delta Electricity operated Mount Piper Meteorological Station has been analysed to identify the propensity for received noise levels from Stage 2 operations to be influenced by seasonal meteorological conditions.

The NSW INP guidance (Section 5, INP) for the assessment of influencing meteorological conditions was applied to the data set. The INP determines that 'where source to receiver wind speeds of 3 m/s or below occur for 30 percent of the time or more in any assessment period (day, evening, night) in any season' they are considered a feature of the area.

Through analysis of wind speed and wind direction data sets, gradient wind events have been identified as not being a feature for the study area.

Temperature inversions were analysed applying the NSW INP guidance methodologies for determining frequency of temperature inversions. To determine the presence of temperature gradients, analysis of temperature and wind speed was carried out using the Pasquill-Gifford scheme (Appendix E of the NSW Industrial Noise Policy). The data, and analysis approach adopted, inferred temperature gradients are unlikely to be a feature of the area.

5.2 Predicted Stage 2 ash repository noise impacts

Stage 2 ash truck haulage potential operational noise impacts were assessed for averaged daily ash truck movements on the private haul road indicative of two truck passages; from WPS to the repository loaded with ash and the return when empty.

Considerate of existing Coal truck operations a cumulative scenario of ash truck and Coal truck operation on the private haul road was considered.

A potential peak 15 minute assessment scenario of 6 ash trucks was adopted.

Table 5-1 provides day time (7am – 6pm) and evening (6pm – 10pm) period noise levels predicted at nearest potentially affected receiver locations during neutral meteorological conditions.

Table 5-1 Predicted operational noise impacts from Stage 2 haul road operations

| Receiver location | Period | Predicted noise impact $L_{Aeq, 15min}$ |
|-------------------|-----------------|---|
| Skelly Road | Peak operations | 39 |
| | Day time | 31.5 |
| | Evening | 31 |
| Neubeck Street | Peak operations | 39 |
| | Day time | 31.5 |
| | Evening | 31 |
| Wolgan Road | Peak operations | 30 |
| | Day time | 22 |
| | Evening | 21.5 |
| Maddox Lane | Peak operations | 26 |
| | Day time | 18.5 |
| | Evening | 18 |

Note: All noise levels in dB(A) to nearest 0.5 dB

L_{Aeq} = equivalent continuous (energy average) A-weighted sound pressure level

Reference; KVAR EA, PB April 2008

Where ash trucks operate at a peak operational frequency of 6 trucks per 15 minute period; 12 ash truck movements for loaded / unloaded cycle, the received operational noise impact at the nearest receivers is predicted to be less than 40 dB(A) $L_{Aeq, 15min}$.

Stage 2 ash placement works were assumed to be undertaken as existing for Stage 1 operations. An indicative worst case scenario was adopted where plant is operational at the nearest potentially affected receivers.

Ash repository activity and ash haulage operations may occur concurrently. Adopting predicted operational noise impacts for ash placement and haul road operations, potential

cumulative operational noise impacts at nearest affected receptors are detailed in Table 5-2 for neutral meteorological conditions.

Table 5-2 Predicted operational noise impact for ash placement and ash haulage

| Receiver location | Period | Predicted noise impact $L_{Aeq, 15min}$ | | |
|-------------------|-----------------|---|----------------|------------|
| | | Haul road† | Ash placement† | Cumulative |
| Skelly Road | Peak operations | 39 | 33 | 40 |
| | Day time | 31.5 | | 35.5 |
| | Evening | 31 | | 35 |
| Neubeck Street | Peak operations | 39 | 33 | 40 |
| | Day time | 31.5 | | 35.5 |
| | Evening | 31 | | 35 |
| Wolgan Road | Peak operations | 30 | 31 | 33.5 |
| | Day time | 22 | | 31.5 |
| | Evening | 21.5 | | 31.5 |
| Maddox Lane | Peak operations | 26 | 29.5 | 31 |
| | Day time | 18.5 | | 30 |
| | Evening | 18 | | 29.5 |

Note: All noise levels in dB(A) to nearest 0.5 dB

L_{Aeq} = equivalent continuous (energy average) A-weighted sound pressure level

† = Reference; KVAR EA, PB April 2008

Predicted concurrent ash placement and ash haulage operations have been predicted to be compliant with the COA 40 dB(A) $L_{Aeq, 15min}$ operational noise criterion.

Confirmation of the predicted received noise levels in Table 5-1 and Table 5-2 shall be required considerate of COA 3.2 and 3.3 pertaining to operational noise monitoring.

6. Noise management measures

This chapter provides noise management and mitigation measures for implementation during ash placement and ash haulage operations, designed to achieve compliance with the 40 dB(A) $L_{Aeq,15min}$ noise criterion (CoA 2.15), compliance with DoP conditions and to minimise adverse community responses or complaints to operations.

Adopting principles of Best Management Practice and Best Available Technology Economically Achievable, management measures have been proposed indicative of normal operations and likely noise influence within the surrounding ambient environment.

Noise management and mitigation measures have been developed considerate of the predicted operational noise levels from the KVAR EA and the existing influence to ambient noise environs.

It has been considered that noise reduction measures requiring changes to operational performance, such as limiting truck volumes, are not feasible for implementation considerate of operational demands.

Table 6-1 details the noise management and mitigation measures that will be adopted for the operation of the project, with reference to the relevant COAs.

6.1 Sensitive receiver locations

The residential community of Lidsdale is located to the west of the private haul road and ash repository site. The residential properties have been identified as the nearest potentially affected sensitive receivers to noise from the Project.

The KVAR EA has been adopted in the identification of the following sensitive receivers, located 200 - 500 meters from the haul road and repository site:

- Skelly Road
- Maddox Lane
- Neubeck Street
- Wolgan Road.

Operational noise management and mitigation measures have been developed considerate of the sensitive receiver locations. Where the 40 dB(A) $L_{Aeq,15min}$ noise criterion is met at the sensitive receiver locations, compliance for the Lidsdale community would be expected to be achieved.

Table 6-1 Stage 2 operational noise management and mitigation measures

| Aspect / impact | Management / Mitigation measures | Source of requirement | Frequency | Relevant records | Responsibility |
|------------------------------------|--|-----------------------|-----------|---|----------------|
| Ash placement hours of operation | <ul style="list-style-type: none"> Ash placement works to only operate between 7am to 10pm Monday to Sunday under Normal Operations. The last truck returning to WPS is required to be off the haul road by 10pm. | CoA 2.15 | On going | Periodic noise monitoring and reporting | Delta |
| Ash placement works | <ul style="list-style-type: none"> Adopt best management practices (BMP) and best available technology economically achievable (BATEA) principles to reduce noise emissions. All plant and equipment to be selected after considering noise emissions from the item. Maximise the distance between noisy plant and equipment and sensitive receptors where possible. Identify noise intensive works and schedule these activities at times to minimise impact on sensitive receivers (typically the mid-day period) and peak hours (where transportation noise dominates). No engines to be started, or onsite activities (including entry or departure from the site) be undertaken prior to the start times specified. Ensure that all equipment and plant used on site meets the typical noise levels presented in AS 2436 All equipment to be adequately maintained and kept in good operating order. All equipment to be operated in appropriate and efficient manner. Any unusually noisy equipment will be investigated and rectified | OEMP noise Sub-plan | On going | Site Inspection Checklist | Contractor |
| Ash haulage plant reversing alarms | <ul style="list-style-type: none"> Use of reactive reversing alarms shall be required during the 7am - 10pm periods The use of alternate warning devices on plant machinery shall be used during emergency operations (subject to OHS requirements) | OEMP noise Sub-plan | On going | N/A | Contractor |

| Aspect / impact | Management / Mitigation measures | Source of requirement | Frequency | Relevant records | Responsibility |
|--|--|-----------------------|--|---|----------------------|
| Ash placement plant source noise control | <ul style="list-style-type: none"> The quietest available construction plant and equipment that can economically carry out the work will be selected. Where appropriate, silencers and acoustic screens (or similar ameliorative measures) will be utilised to minimise potential cumulative noise emissions and reduce total site-related noise emissions. Noise issues would be addressed as part of routine 'tool box' talks to keep staff aware of current operations and potential noise issues | OEMP noise Sub-plan | On going | N/A | Contractor |
| Ash truck noise attenuation | <ul style="list-style-type: none"> Ash trucks shall be fitted with residential class mufflers Ash trucks may also be fitted with engine shrouds, body dampening and rubber stoppers on tail gates prior to operation, where feasible. Drivers shall obey the existing haul road speed limit of 80km/hr and be instructed to avoid using compression braking where feasible. Ash trucks shall operate a one-way system at the ash repository to minimise reversing requirements and queuing of vehicles. Noise reduction techniques applied to ash trucks shall be routinely inspected and maintained to ensure required operational efficiency. | COA 2.16 | <p>Prior to operation on haul road noise mitigation techniques installed.</p> <p>Monthly inspection for maintenance of noise reduction techniques.</p> | Contractor log | Contractor |
| Ash truck log of operations | <ul style="list-style-type: none"> A log of operational ash truck movements to be maintained to record ash truck volumes during peak 15 minute, day time, evening time and stipulated emergency situations. Time of truck movements to be recorded | OEMP noise Sub-plan | On going | Contractor log | Contractor |
| Peak ash truck movements | <ul style="list-style-type: none"> Peak ash truck operations on the private haul road to not exceed 6 trucks (indicative of 12 truck movements) per 15 minute period. The gates for the private haul road shall remain closed between the hours of 10pm and 7am, except when emergency operations or coal deliveries are underway | OEMP noise Sub-plan | On going | Contractor log | Contractor |
| Liaison with Centennial Coal | <ul style="list-style-type: none"> Liaison with Centennial Coal shall be undertaken to develop a co-operative noise management protocol that can be established for the use of the private haul road. | COA 2.17 | On going | Agreed co-operative noise management protocol | Delta and Contractor |

| Aspect / impact | Management / Mitigation measures | Source of requirement | Frequency | Relevant records | Responsibility |
|---|---|-----------------------|-----------|---|----------------|
| Monitoring and assessment of noise compliance | <ul style="list-style-type: none"> A noise risk matrix will be developed to provide response actions to potential noise issues from ash placement and haul road operation activity for proactive determination of potential noise events and immediate response actions. The matrix will include feasible plant control operation controls, plant operator job sheets, required periodic review and walkover assessment of operations with respect to recent and potential noise events. Defined actions in response to noise events will ensure immediate and structured approaches designed to reduce disturbing noise events and minimise adverse comment and complaint potential indicative of required ash placement and haul road operations. An example noise risk matrix has been provided in Appendix B of this Sub-plan | OEMP noise Sub-plan | On going | Noise Risk Matrix | Delta |
| Non compliance with adopted noise criterion | <ul style="list-style-type: none"> Where non compliance with the 40 dB(A) $L_{Aeq, 15min}$ noise criterion is identified through post commissioning or periodic noise monitoring an assessment of feasible source noise management and mitigation measures shall be undertaken. The assessment of feasible noise barrier, alternative ash haulage routes, and alternative methods of ash conveyance to the repository and identification of preferred noise reduction measures shall be included. | COA 2.18 | On going | Operational Noise Review reporting and periodic operational noise monitoring | |
| Additional noise mitigation measures | <ul style="list-style-type: none"> Where, post implementation of all reasonable and feasible noise management and mitigation measures, received operational noise levels at sensitive receptors(s) are determined non compliant with the 40 dB(A) $L_{Aeq, 15min}$ noise criterion at the date of Project Approval or dwellings no later than 6 months after confirmed operational noise levels, additional reasonable and feasible noise mitigation measures at property(s) shall be installed. Noise mitigation measures shall be installed only upon receipt of written request from the landowner(s). A 3 month agreement period between the landowner and Delta shall occur whereby matters of disagreement or dispute are to be settled by the Director General for resolution. Confirmation of operational noise levels refers to conditions 3.2, 2.18 and 3.3b) | COA 2.19 | On going | Operational Noise Review report and periodic operational noise monitoring and landowner written request | Delta |

| Aspect / impact | Management / Mitigation measures | Source of requirement | Frequency | Relevant records | Responsibility |
|---------------------------|---|-----------------------|------------------|---------------------------|----------------|
| Noise incident report log | <ul style="list-style-type: none"> As part of the noise management approach, a log of noise related issues and events shall be kept by Delta. The log is to record any received noise complaints, detailing complaint location, action carried out and outcomes of investigations and implementation of management measures. The log would also detail ash placement and ash haulage operations relating to noise events, findings during routine reviews of operation and DoP requirements. Monitoring data from the periodic assessment of ambient noise levels shall also be provided for cross reference and to form a historical database of measured noise events from ash placement and haul road operations. Periodic review of the incident management log should be undertaken to identify key noise events and referenced operations. | OEMP noise Sub-plan | On going | Noise incident report log | Delta |
| Noise Sub-plan review | <ul style="list-style-type: none"> This noise Sub-plan shall be subject to periodic review on a 2 year frequency. The Sub-plan shall be revised as part of on going Best Management Practice to ensure representative control and management of noise issues. Where necessary the noise management measures would be revised indicative of noise monitoring outcomes. The noise monitoring would also confirm achieved noise reduction performance of noise control measures implemented. | OEMP noise Sub-plan | 2 year frequency | Noise Sub-plan | Delta |
| Noise monitoring | | | | | |

| Aspect / impact | Management / Mitigation measures | Source of requirement | Frequency | Relevant records | Responsibility |
|--|--|---|---|---------------------------------|----------------|
| Post commissioning noise compliance assessment | <ul style="list-style-type: none"> 60 day post commissioning and ongoing operational noise monitoring to confirm compliance status at identified nearest most sensitive receivers. Noise monitoring, assessment and reporting shall be undertaken adopting NSW Industrial Noise Policy (NSW EPA INP, 2000) guidance. Noise monitoring shall be undertaken as per the defined strategy in Section 7 of this Sub-plan. | COA 3.2 DECC noise compliance conditions | Noise reporting submission 60 days post commencement of ash placement and ash haulage Monitoring throughout 60 day post commencement period to be continuous throughout full day of operations for each 15 minute period, including 30 mins prior to and following normal operating hours (7am to 10pm). | Operational Noise Review report | Delta |
| On going Operational Noise Monitoring | <ul style="list-style-type: none"> Noise monitoring of ash placement and ash haulage shall be undertaken at the most affected sensitive receptors. Noise monitoring, assessment and reporting shall be undertaken adopting NSW Industrial Noise Policy (NSW EPA INP, 2000) guidance. Any identified non compliance shall be reported to the Director-General within 14 days of completion of all noise monitoring works. Noise monitoring shall be undertaken as per the defined strategy in Section 7 of this Sub-plan. | COA 3.3 | 3 month frequency or where works change from those defined for Project Approval Application 07_0005 | | |

| Aspect / impact | Management / Mitigation measures | Source of requirement | Frequency | Relevant records | Responsibility |
|-------------------------------|---|-----------------------|--|---|----------------|
| Noise complaint investigation | <ul style="list-style-type: none"> ▪ In the event of received adverse comment or complaint relating to noise from ash placement and/or ash haulage operations, an assessment of received noise influence shall be undertaken. ▪ The investigation shall include noise monitoring at the complainant property or nearest determined representative location. ▪ Noise monitoring, assessment and reporting shall be undertaken considerate of NSW INP guidance. ▪ In the event of non compliance with noise criterion an assessment of source noise management and mitigation measures shall be carried out as per COA 2.18 ▪ Noise monitoring shall be undertaken as per the defined strategy in Section 7 of this Sub-plan. ▪ All complaints to be logged in the Complaints Register. | OEMP noise Sub-plan | In the event of adverse community comment or complaint | Noise complaint investigation reporting | Delta |

7. Noise monitoring strategy

Noise monitoring of ash placement and ash haulage operations is required by Project Approval CoA 3.2 and 3.3. A noise monitoring strategy has been developed to address post commissioning, on going noise monitoring and complaint noise monitoring requirements.

7.1 Noise monitoring locations

The determined existing ambient noise environment and operational noise impact assessment undertaken as part of the KVAR EA (PB, 2008), the following locations have been identified as nearest potentially sensitive receivers to operational noise influence from the Stage 2 ash placement and ash haulage operations.

- Location A: Skelly Road

Skelly Road is indicative of the nearest potentially sensitive receivers to the private haul road gradient and level sections. Residential properties are approximately 200 meters from the haul road.

- Location B: Neubeck Street

Receivers on Neubeck Street are indicative of nearest receptors to the western boundary of the Stage 2 ash repository site. Residential properties are approximately 200 meters from the haul road and the repository.

- Location C: Wolgan Road

Wolgan Road is the primarily residential road in Lidsdale, to the north the road is elevated and can provide a direct line of sight to the haul road. The nearest residential receivers are approximately 500 meters from the haul road.

Noise monitoring for the determination of compliance with the noise criterion as part of the 60 day post commencement assessment and on going operational noise monitoring should be undertaken at the identified receiver locations. Monitoring is to be undertaken for 15 minutes at each location in turn, beginning with the potentially most affected and altering the sequence for each day thereafter.

Noise monitoring as part of complaint investigation should be undertaken at the complainant property or nearest representative location.

7.2 Noise monitoring methodology

Short term operator attended noise monitoring shall be undertaken for the determination of day time, evening and night time noise environs and received noise influence from ash placement and ash haulage operations at the identified sensitive noise monitoring locations.

The attended noise monitoring will enable the determination of influences to measured ambient noise levels including ash placement and ash haulage operational noise.

During the 60 day post commencement phase, the LAF_{eq} , LAF_{10} , LAF_{90} and LAF_{max} parameters shall be measured, and the noise contribution from the monitored activity and other noise sources shall be identified or estimated. The ambient temperature, wind speed/direction, relative humidity and cloud cover shall also be measured or estimated.

The attended noise monitoring instruments shall be set on A-weighted, fast response and noise levels will be logged over fifteen minute statistical intervals. The instrument set shall comply with AS1259 Sound Level Meters.

Pre-measurement and post-measurement calibrations will be carried out to determine any significant variances observed in the reference signal. All instrument sets are to be calibrated by a NATA accredited laboratory within two years of the measurement period.

7.3 Frequency of noise monitoring requirements

As required by CoA 3.3 and as part of due diligence practice, routine monitoring of ambient noise levels will be undertaken in the surrounding environment for the determination of potential operational influence on noise environs and compliance with the adopted 40 dB(A) $L_{Aeq, 15min}$ noise criterion.

Short-term operator attended noise measurements will be undertaken at previously adopted nearest receptor locations to facilitate comparative analysis of noise levels.

Monitoring throughout the 60 day post commencement period shall be continuous throughout the full day of operations for each 15 minute period, including 30 mins prior to and following normal operating hours (7am to 10pm).

Considerate of the ash placement and ash haulage operations and local meteorological conditions, noise monitoring shall occur every 6 months during normal ash placement and haulage operations or more frequent should adverse trends be noted.

7.4 Reporting

In accordance with CoA 3.2, within 60 days of the Project commencement noise monitoring shall be carried out and an Operational Noise Review provided to the Director-General and DECC within one week of monitoring. A statement of compliance for identified key and potentially sensitive receptors will be incorporated into the report.

Throughout the life of the project periodic operational noise monitoring shall be carried out at a 6 monthly frequency. Within 14 days of completing the noise monitoring any non compliance with the noise criterion shall be reported to the DECC and the Director-General.

As required, further noise monitoring shall be undertaken in the event of adverse community comment or complaint from operational noise from the ash placement and ash haulage works.

8. Corrective action

An important aspect in the environmental noise management of the Stage 2 operations includes the adoption of suitable procedures in the event of a complaint or non-conformance.

All noise complaints, noise alarms, observed noise events will be reported in the Complaints Register and investigated and corrected in accordance with noise management and mitigation measures of this sub-plan to ensure effective noise management practices at all times on site.

8.1 Noise and vibration complaints

Specific corrective action items for noise and vibration complaints are provided in Table 8-1.

Standard noise management forms are provided in Appendix C and an example noise incident reporting form provided in Appendix D.

The noise management measures will be reviewed and amended accordingly where a complaint is received (and verified) or a change in work method occurs. All Delta staff will be notified of changes made to the noise management measures.

Table 8-1 Corrective actions for noise and vibration non-conformances

| Trigger | Action | Responsibility |
|---|--|---|
| <ul style="list-style-type: none"> Complaints received from nearby resident/s Complaints received from regulatory authority | <ul style="list-style-type: none"> Record complaint. Investigate and verify complaint and assess if excessive off-site impacts have occurred. Implement corrective measures including modification of construction methods and operational techniques to avoid recurrence or minimise ongoing adverse impacts. Complete monitoring/additional investigations to verify the adequacy of the recommendations (as required). Notify complainant of actions taken. Continue to monitor activity if required. | <ul style="list-style-type: none"> Site Manager and Contract Administrator |

Please refer to Section 3.6 of OEMP for further details on the Complaints Management System that will be implemented for this project.

Appendix A

Glossary of noise terminology

Glossary of noise terminology

A-weighted sound pressure

The human ear is not equally sensitive to sound at different frequencies. People are more sensitive to sound in the range of 1 to 4 kHz (1000 – 4000 vibrations per second) and less sensitive to lower and higher frequency sound. During noise measurement an electronic “*A-weighting*” frequency filter is applied to the measured sound level *dB(A)* to account for these sensitivities. Other frequency weightings (B, C and D) are less commonly used. Sound measured without a filter is denoted as linear weighted *dB(linear)*.

Ambient noise

Tonal noise contains one or more prominent tones (and characterised by a distinct frequency components) and is considered more annoying. A 5 *dB(A)* penalty is typically applied to noise sources with tonal characteristics.

Community annoyance

Includes noise annoyance due to:

- character of the noise (e.g. sound pressure level, tonality, impulsiveness, low-frequency content)
- character of the environment (e.g. very quiet suburban, suburban, urban, near industry)
- miscellaneous circumstances (e.g. noise avoidance possibilities, cognitive noise, unpleasant associations)
- human activity being interrupted (e.g. sleep, communicating, reading, working, listening to radio / TV, recreation).

Compliance

The process of checking that source noise levels meet with the noise limits in a statutory context.

Cumulative noise level

The total level of noise from all sources.

EPA Licence

Environment Protection Authority Licence.

Extraneous noise

Noise resulting from activities that are not typical to the area. Atypical activities may include construction, and traffic generated by holiday periods and by special events such as concerts or sporting events. Normal daily traffic is not considered to be extraneous.

Feasible and reasonable measures

Feasibility relates to engineering considerations and what is practical to build; reasonableness relates to the application of judgement in arriving at a decision, taking into account the following factors:

- noise mitigation benefits (amount of noise reduction provided, number of people protected)
- cost of mitigation (cost of mitigation versus benefit provided)
- community views (aesthetic impacts and community wishes)
- noise levels for affected land uses (existing and future levels, and changes in noise levels).

Impulsiveness

Impulsive noise is noise with a high peak of short duration or a sequence of these peaks. Impulsive noise is also considered annoying.

Low frequency

Noise containing major components in the low-frequency range (20 to 250 Hz) of the frequency spectrum.

Noise criteria

The general set of non-mandatory noise levels for protecting against intrusive noise (for example, background noise plus 5 *dB*) and loss of amenity (e.g. noise levels for various land use).

Noise Level (goal)

A noise level that should be adopted for planning purposes as the highest acceptable noise level for the specific area, land use and time of day.

Noise Limits

Enforceable noise levels that appear in conditions on consents and licences. The noise limits are based on achievable noise levels, which the proponent has predicted can be met during the environmental assessment. Exceedance of the noise limits can result in the requirement for either the development of noise management plans or legal action.

Non-compliance

A development is deemed to be in non-compliance with its noise consent / licence conditions if the monitored noise levels exceed its statutory noise limit by more than 2 *dB*.

NSW DECC

New South Wales Department of Environment and Climate Change.

Performance-based goals

Goals specified in terms of the outcomes/ performance to be achieved, but not in terms of the means of achieving them.

Rating background level

The rating background level is the overall single figure background level representing each day, evening and night time period. The rating background level is the median L_{A90} noise level measured over all day, evening and night time monitoring periods.

Receiver

The noise-sensitive land use at which noise from a development can be heard.

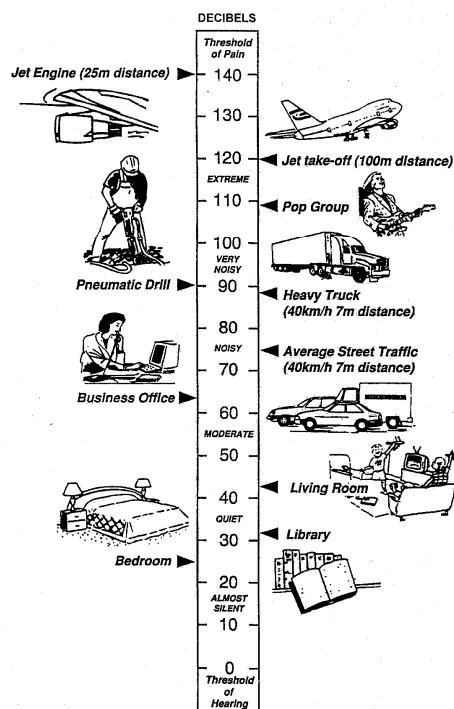
Sleep disturbance

Awakenings and disturbance of sleep stages.

Sound & decibels (dB)

Sound (or noise) is caused by minute changes in atmospheric pressure that are detected by the human ear. The ratio between the quietest noise audible and that which would cause permanent hearing damage is a million times the change in sound pressure. To simplify this range the sound pressures are logarithmically converted to decibels from a reference level of 2×10^{-5} Pa.

The picture below indicates typical noise levels from common noise sources



dB is

the abbreviation for decibel — a unit of sound measurement. It is equivalent to 10 times the logarithm (to base 10) of the ratio of a given sound pressure to a reference pressure.

Sound power level (SWL)

The sound power level of a noise source is the sound energy emitted by the source. Notated as SWL, sound power levels are typically presented in $dB(A)$.

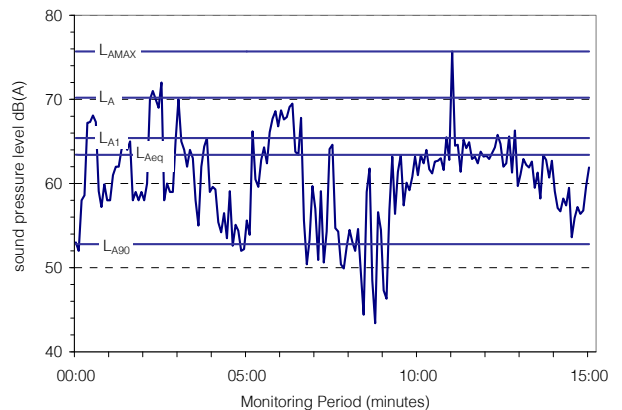
Sound pressure level (SPL)

The level of noise, usually expressed as SPL in $dB(A)$, as measured by a standard sound level meter with a pressure microphone. The sound pressure level in $dB(A)$ gives a close indication of the subjective loudness of the noise.

Statistical noise levels

Noise levels varying over time (e.g. community noise, traffic noise, construction noise) are described in terms of the statistical exceedance level.

A hypothetical example of A weighted noise levels over a 15 minute measurement period is indicated in the following figure:



Key descriptors:

- L_{AMax} Maximum recorded noise level.
- L_{A1} The noise level exceeded for 1% of the 15 minute interval.
- L_{A10} Noise level present for 10% of the 15 minute interval. Commonly referred to the average maximum noise level.
- L_{Aeq} Equivalent continuous (energy average) A-weighted sound pressure level. It is defined as the steady sound level that contains the same amount of acoustic energy as the corresponding time-varying sound.
- L_{A90} Noise level present for 90% of time (background level). The average minimum background sound level (in the absence of the source under consideration).

Steady state noise level

The steady state noise level is the operator observed baseline noise level where sources influencing the statistical results are determined.

Threshold

The lowest sound pressure level that produces a detectable response (in an instrument/person).

Tonality

Tonal noise contains one or more prominent tones (and characterised by a distinct frequency components) and is

considered more annoying. A 5 dB(A) penalty is typically applied to noise sources with tonal characteristics

Appendix B

Example Noise Risk Matrix

| Event | Action | Responsibility | Status |
|---|--|----------------|--------|
| | <ul style="list-style-type: none"> Review current plant operational performance. Identify potential safety valve release events. Initiate survey of Power Station plant operations. | | |
| | <ul style="list-style-type: none"> Daily conveyor walkover for identification of worn rollers and atypical noise sources in conveyor and framework. | | |
| | <ul style="list-style-type: none"> During periods of low coal demand, coal conveyor operational speed reduced to half or three quarter capacity to reduce operational noise. | | |
| | <ul style="list-style-type: none"> Routine inspection to include identification of potential elevated source noise contributions from faulty components. | | |
| | <ul style="list-style-type: none"> Monthly or on as required basis inspection of boiler safety valves to ensure appropriate mounting and operation to minimise potential noise emissions. | | |
| Identification of noise events at site boundary | <ul style="list-style-type: none"> Security staff to include identification of atypical noise events as part of routine patrol reporting. | | |

Appendix C

Example noise checklist

Noise Safeguard Checklist

Instructions:

This checklist is designed for use by Project Manager / designated Environment Representative to undertake inspections of construction sites.

A tick or cross should be placed in either the YES or NO column, as appropriate. If an item is not relevant then indicate by the notation N/A in the **Comments & Actions** column. Where a non-conformance is identified, a brief explanation is to be provided in the corresponding **Comments & Actions** column. If the non-conformance cannot be rectified immediately, the **Required Corrective Action** form (at the end of this checklist) must also be completed. Once completed, the form is to be provided to the Construction Contractor to enable any outstanding issues to be addressed. A copy is also to be provided to Project Manager who is to place a copy on file.

The person completing the inspection is responsible for following up the Construction Contractor to ensure that any significant outstanding issues have been addressed. Once all issues are satisfactorily addressed the form can be closed out.

Weather conditions (tick appropriate boxes):

Fine ☐

Light rain ☐

Heavy rain ☐

Light wind ☐

Strong wind ☐

Other (provide description):

[illegible]

Required Corrective Actions

Site/Project Name: _____

Contract/Job No: _____

Date: _____

Inspected by: _____

Designation: _____

| Check list item | No. | Required Corrective Action |
|-----------------|-----|----------------------------|
| | | |
| | | |
| | | |
| | | |
| | | |

Comments

This information has been provided to the Construction Contractor to enable Corrective Actions to be implemented.

Name of contractor's representative:..... Date:.....

Completed By:..... Date:.....

This form should be completed and a copy provided to the Project Manager.

Appendix D

Example noise incident reporting

Incident Management Report

Instructions:

This form is used to record and report on serious incidents. The form is to be filled out by field supervisors or other construction management personnel. Once completed a copy is to be provided to the Construction Manager who is responsible for following up on any outstanding issues. A copy is also to be provided to the Project Manager.

REPORTED BY:

REPORT NO.:

CONTRACT NO.:

JOB NAME:

MINOR ☐

MAJOR ☐

WHAT HAPPENED:

WHY:

WHEN:

WHERE:

EXTENT OF IMPACT:

STATE ACTUAL AND POTENTIAL:

PARTIES INFORMED:

ACTION TAKEN:

ACTION PLANNED:

TIME TO COMPLETE:

Reported to Construction Manager: YES / NO

Date: _____ Time: _____ Agreed report back: _____

Name: _____ Position: _____

Follow-up by Project Manager

☐ Satisfactory

☐ Not satisfactory, New Incident Management Report

Remarks:

Signature:.....

Date:.....

Noise Incident Management Log

Instructions:

This form is to be used to record Incident Management Reports. Each Incident Management Report is to be provided with a unique number. The Construction Manager is responsible for filling out and maintaining this form. A copy of the log is to be provided to the Project Manager on a monthly basis.

| Report No. | Time & Date | Noise Aspects | Description | Action | Action Complete Date |
|------------|-------------|---------------|-------------|--------|----------------------|
| | | | | | |
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Completed By:.....

Date:.....

This form is to be completed and a copy provided to the Project Manager.

Appendix B

Monitoring Parameters

Appendix B

Table A - Groundwater and surface water monitoring analytical suite

| Category | Analyte |
|------------------|---------------------------------|
| Field parameters | pH |
| | conductivity |
| | Alkalinity (CaCo ₃) |
| | total dissolved solids |
| Anions | chloride |
| | fluoride |
| | sulfate |
| Cations | sodium |
| | potassium |
| | calcium |
| | magnesium |
| Metals | aluminium |
| | arsenic |
| | silver |
| | barium |
| | boron |
| | cadmium |
| | chromium (III) and (VI) |
| | copper |
| | Iron-filtered |
| | Mercury |
| | Manganese-filtered |
| | molybdenum |
| | nickel |
| | lead |
| | selenium |
| | zinc |

Source: *Environmental Assessment* (Appendices E and F) – Kerosene Vale, Stage 2 Ash Repository Area (Parsons Brinckerhoff, April 2008)

Table B – Surface Water Quality Baseline Data

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Table C – Groundwater Quality Baseline Data

| | | Water Level | pH | Conductivity Lab. | MO Alk as CaCO3 | Chloride mg/L | Fluoride mg/L | Sulphate Result mg/L | TDS Result mg/L | Sodium Na mg/L | Potassium K mg/L | Calcium Ca mg/L | Magnesium Mg mg/L | Arsenic As mg/L | Silver Ag mg/L | Barium Ba mg/L | Boron B mg/L | Cadmium Cd mg/L | Chrome Cr mg/L | Chrome 6+ Cr 6+ mg/L | Copper Cu mg/L | Iron Fe f mg/L | Mercury Hg mg/L | Manganese Mn f mg/L | Lead Pb mg/L | Selenium Se mg/L | Zinc Zn mg/L | |
|--|---|---|------|----------------------|--------------------|------------------|------------------|----------------------------|-----------------------|----------------------|------------------------|-----------------------|-------------------------|-----------------------|----------------------|----------------------|--------------------|-----------------------|----------------------|----------------------------|----------------------|----------------------|-----------------------|---------------------------|--------------------|------------------------|--------------------|------|
| | | metres | | uS/m | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| Regional WQ | | | 6.51 | 622.93 | 27.86 | 55.27 | 0.811 | 522 | | 47.27 | 6.45 | 145.12 | 65.4 | | | | | | | | | | | | | | | |
| Guideline (Fresh Water Aquatic Ecosystem) 95% PL | | | | | | 0.003 | | | | | | | | 0.013 | 0.00005 | | 0.37 | 0.0002 | | 0.001 | 0.0014 | | 0.0006 | 1.9 | 0.0034 | 0.011 | 0.008 | |
| Date | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9-Nov-01 | 1 | 4.00 | 5.80 | 13,620 | 22 | 29 | 0.001 | 5 | 116 | 17 | 5 | 5 | 5 | 0.001 | 0.001 | 0.044 | 0.02 | 0.001 | 0.002 | | 0.011 | 3.14 | 0.0002 | 0.144 | 0.007 | 0.001 | 0.03 | |
| 5-Feb-02 | 1 | 4.90 | 5.90 | 12,300 | 31 | 15 | 0.100 | 7 | 302 | 8 | 10 | 9 | 5 | 0.001 | | 0.059 | 0.05 | 0.001 | | 0.01 | 0.055 | 0.9 | | 0.069 | 0.016 | 0.001 | 0.101 | |
| 23-Apr-02 | 1 | 4.50 | 5.90 | 17,000 | 23 | 37 | 0.001 | 5 | 220 | 16 | 7 | 5 | 5 | 0.001 | 0.001 | 0.039 | 0.028 | 0.001 | 0.001 | | 0.019 | 4.5 | 0.0002 | 0.11 | 0.011 | 0.001 | 0.04 | |
| 16-Jan-03 | 1 | Dry | n/a | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8-Apr-03 | 1 | Dry | n/a | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15-Jul-03 | 1 | Dry | n/a | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21-Oct-03 | 1 | Dry | n/a | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8-Jan-04 | 1 | 4.90 | 6.00 | 14,400 | 30 | 25 | <0.1 | 3 | 120 | 19 | 2 | 6.4 | 1.6 | <0.05 | <0.01 | 0.04 | <0.01 | <0.002 | <0.01 | | 0.01 | 2.9 | <0.0001 | 0.21 | <0.01 | <0.006 | 0.24 | |
| 22-Apr-04 | 1 | Bore Not in service, Insufficient Sample Volume | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8-Jul-04 | 1 | No Data Available | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20-Oct-04 | 1 | No Data Available | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18-Jan-05 | 1 | No Data Available | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14-Apr-05 | 1 | No Data Available | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18-Jul-05 | 1 | No Data Available | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 26-Oct-05 | 1 | No Data Available | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18-Jan-06 | 1 | 4.5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28-Apr-06 | 1 | 2.2 | 5.80 | 9,000 | 11 | 13 | 0.050 | 5 | 60 | 11 | 3 | 2.1 | 1.2 | 0.0005 | 0.0005 | 0.04 | 0.02 | 0.0001 | 0.001 | | 0.003 | 0.07 | 0.000025 | 0.16 | 0.003 | 0.001 | 0.15 | |
| 7-Jul-06 | 1 | | 5.60 | 9,700 | 9 | 18 | 0.050 | 5 | 70 | 14 | 4 | 1.6 | 1.4 | 0.0005 | 0.00025 | 0.059 | 0.02 | 0.0001 | 0.002 | | 0.007 | 0.12 | 0.000025 | 0.103 | 0.005 | 0.001 | 0.12 | |
| 19-Oct-06 | 1 | No Data Available | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12-Jan-07 | 1 | 2.8 | 5.50 | 10,100 | 10 | 12 | 0.050 | 8 | 90 | 11 | 5 | 1.8 | 2.4 | 0.001 | 0.0005 | 0.055 | 0.03 | 0.0001 | 0.0005 | | 0.002 | 0.02 | 0.000025 | 0.046 | 0.0005 | 0.001 | 0.08 | |
| 13-Apr-07 | 1 | No Data Available | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9-Nov-01 | 2 | 7.30 | 4.60 | 30,300 | 5 | 41 | 0.001 | 81 | 222 | 27 | 5 | 5 | 16 | 0.001 | 0.001 | 0.091 | 0.005 | 0.001 | 0.001 | | 0.002 | 0.36 | 0.0002 | 0.32 | 0.004 | 0.001 | 0.055 | |
| 5-Feb-02 | 2 | 7.40 | 3.90 | 29,000 | 5 | 48 | 0.100 | 61 | 277 | 36 | 5 | 5 | 11 | 0.001 | | 0.11 | 0.03 | 0.001 | | 0.01 | 0.002 | 0.5 | | 0.287 | 0.005 | 0.001 | 0.055 | |
| 23-Apr-02 | 2 | 7.30 | 4.50 | 30,900 | 5 | 62 | 0.001 | 57 | 189 | 44 | 5 | 5 | 9 | 0.001 | 0.001 | 0.043 | 0.03 | 0.001 | 0.001 | | 0.002 | 1.2 | 0.0002 | 0.336 | 0.002 | 0.001 | 0.048 | |
| 17-Jul-02 | 2 | 8.00 | 3.90 | 29,000 | 5 | 43 | 0.001 | 60 | 315 | 35 | 5 | 5 | 8 | 0.001 | | 0.129 | 0.04 | 0.001 | | 0.001 | 0.003 | 0.39 | | 0.349 | 0.008 | 0.001 | 0.055 | |
| 23-Oct-02 | 2 | 7.50 | 4.20 | 44,536 | 1 | 104 | 0.100 | 61 | 223 | 42 | 5 | 5 | 8 | 0.001 | | 0.07 | 0.005 | 0.001 | 0.001 | | 0.002 | 0.8 | | 0.333 | 0.005 | 0.001 | 0.056 | |
| 16-Jan-03 | 2 | 8.00 | 4.40 | 31,400 | n/a | 46 | <0.1 | 62 | 270 | 43 | 2 | 1.3 | 7.5 | <0.05 | <0.01 | 0.05 | 0.02 | <0.002 | <0.01 | | <0.01 | 0.66 | <0.0001 | 0.33 | <0.01 | <0.006 | 0.06 | |
| 8-Apr-03 | 2 | | 4.30 | 31,200 | 0 | 46 | <0.1 | 60 | 190 | 43 | 0.03 | 1.2 | 7.2 | <0.05 | <0.01 | 0.04 | 0.02 | <0.002 | <0.01 | | <0.01 | 0.34 | <0.0001 | 0.33 | <0.01 | <0.006 | 0.06 | |
| 15-Jul-03 | 2 | | 4.20 | 31,800 | n/a | 40 | <0.1 | 59 | 120 | 38 | 2 | 1.4 | 7.3 | <0.05 | <0.01 | 0.05 | 0.04 | <0.002 | <0.01 | | <0.01 | 0.33 | <0.0001 | 0.37 | <0.01 | <0.006 | 0.07 | |
| 21-Oct-03 | 2 | | 4.70 | 27,800 | <10 | 19 | <0.1 | 89 | 200 | 29 | 3 | 1.4 | 15 | <0.05 | <0.01 | 0.06 | 0.02 | <0.002 | n/a | | <0.01 | 0.11 | <0.0001 | 0.31 | <0.01 | <0.006 | 0.09 | |
| 8-Jan-04 | 2 | 7.80 | 4.60 | 30,200 | <10 | 39 | <0.1 | 68 | 190 | 37 | 3 | 1.1 | 11 | <0.05 | <0.01 | 0.05 | 0.02 | <0.002 | <0.01 | | <0.01 | 0.16 | <0.0001 | 0.3 | <0.01 | <0.006 | 0.06 | |
| 22-Apr-04 | 2 | 8.30 | 4.40 | 31,600 | n/a | 42 | <0.1 | 65 | 240 | 43 | 2 | 1.3 | 8.3 | <0.05 | <0.01 | 0.04 | 0.04 | <0.002 | <0.01 | | <0.01 | 0.2 | <0.0001 | 0.33 | <0.01 | <0.006 | 0.1 | |
| 8-Jul-04 | 2 | | 4.20 | 31,700 | 0 | 39 | 0.050 | 110 | 200 | 39 | 2 | 1.5 | 8.5 | 0.025 | 0.005 | 0.05 | 0.05 | 0.001 | 0.005 | | 0.005 | 0.08 | 0.00005 | 0.39 | 0.005 | 0.003 | 0.12 | |
| 21-Oct-04 | 2 | | 4.10 | 36,300 | 0 | 40 | 0.050 | 85 | 210 | 42 | 2 | 1.6 | 11 | 0.025 | 0.005 | 0.05 | 0.05 | 0.001 | 0.005 | | 0.005 | 0.81 | 0.00005 | 0.4 | 0.005 | 0.003 | 0.13 | |
| 18-Jan-05 | 2 | | 4.40 | 32,400 | 0 | 42 | 0.050 | 75 | 120 | 40 | 3 | 1.4 | 10 | 0.025 | 0.005 | 0.04 | 0.03 | 0.001 | 0.005 | | 0.005 | 0.17 | 0.00005 | 0.34 | 0.005 | 0.003 | 0.1 | |
| 14-Apr-05 | 2 | 8 | 4.20 | 34,300 | 0 | 43 | 0.050 | 110 | 230 | 44 | 3 | 1.5 | 9.2 | 0.025 | 0.005 | 0.06 | 0.05 | 0.001 | 0.005 | | 0.005 | 0.89 | 0.00005 | 0.37 | 0.005 | 0.003 | 0.1 | |
| 19-Jul-05 | 2 | 8 | 4.20 | 36,000 | 0 | 37 | 0.050 | 98 | 160 | 42 | 3 | 2 | 14 | 0.025 | 0.005 | 0.05 | 0.04 | 0.001 | 0.005 | | 0.005 | 0.78 | 0.00005 | 0.46 | 0.005 | 0.003 | 0.1 | |
| 26-Oct-05 | 2 | 3 | 5.10 | 29,000 | 5 | 12 | 0.050 | 110 | 200 | 17 | 5 | 1.3 | 22 | 0.025 | 0.005 | 0.05 | 0.005 | 0.001 | 0.005 | | 0.005 | 0.03 | 0.00005 | 0.3 | 0.005 | 0.003 | 0.09 | |
| 18-Jan-06 | 2 | 7.8 | 4.50 | 34,100 | 5 | 39 | 0.050 | 88 | 210 | 38 | 3 | 1.6 | 13 | 0.025 | 0.005 | 0.05 | 0.02 | 0.001 | 0.005 | | 0.005 | 0.24 | 0.00005 | 0.36 | 0.005 | 0.003 | 0.13 | |
| 28-Apr-06 | 2 | 7.9 | 3.90 | 40,500 | | 41 | 0.050 | 130 | 230 | 46 | 2 | 2.2 | 13 | 0.0005 | 0.0005 | 0.04 | 0.06 | 0.0001 | 0.0005 | | 0.0005 | 2.6 | 0.000025 | 0.52 | 0.002 | 0.001 | 0.13 | |
| 7-Jul-06 | 2 | | 3.80 | 46,200 | | 37 | 0.050 | 140 | 250 | 50 | 3 | 2.4 | 14 | 0.0005 | 0.00025 | 0.041 | 0.11 | 0.0001 | 0.0005 | | 0.001 | 4.5 | 0.000025 | 0.627 | 0.002 | 0.001 | 0.12 | |
| 19-Oct-06 | 2 | 8.2 | 3.70 | 49,500 | | 37 | 0.050 | 180 | 280 | 50 | 2 | 2.8 | 15 | 0.0005 | 0.0005 | 0.04 | 0.12 | 0.0001 | 0.0005 | | 0.002 | 4.2 | 0.000025 | 0.7 | 0.002 | 0.001 | 0.12 | |
| 12-Jan-07 | 2 | 8.1 | 3.70 | 50,200 | | 43 | 0.050 | 130 | 270 | 58 | 2 | 2.2 | 13 | 0.001 | 0.0005 | 0.039 | 0.13 | 0.0001 | 0.0005 | | 0.0005 | 3.1 | 0.000025 | 0.6 | 0.002 | 0.001 | 0.12 | |

Table C – Groundwater Quality Baseline Data Continued

| | | Water | pH | Conductivity | MO Alk | Chloride | Fluoride | Sulphate | TDS | Sodium | Potassium | Calcium | Magnesium | Arsenic | Silver | Barium | Boron | Cadmium | Chromium | Chromium 6+ | Copper | Iron | Mercury | Manganese | Lead | Selenium | Zinc |
|--|---|--------|------|--------------|----------|----------|----------|----------|--------|--------|-----------|---------|-----------|---------|---------|--------|-------|---------|----------|-------------|--------|-------|----------|-----------|--------|----------|-------|
| | | Level | | Lab. | as CaCO3 | | | Result | Result | Na | K | Ca | Mg | As | Ag | Ba | B | Cd | Cr | Cr 6+ | Cu | Fe f | Hg | Mn f | Pb | Se | Zn |
| | | metres | | uS/m | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| Regional WQ | | | 6.51 | 622.93 | 27.86 | 55.27 | 0.811 | 522 | | 47.27 | 6.45 | 145.12 | 65.4 | | | | | | | | | | | | | | |
| Guideline (Fresh Water Aquatic Ecosystem) 95% PL | | | | | | 0.003 | | | | | | | | 0.013 | 0.00005 | | 0.37 | 0.0002 | | 0.001 | 0.0014 | | 0.0006 | 1.9 | 0.0034 | 0.011 | 0.008 |
| 13-Apr-07 | 2 | 8.0 | 3.80 | 45,900 | | 42 | 0.050 | 130 | 250 | 52 | 2 | 2.1 | 12 | | | 0.071 | 0.15 | | | | | 5.7 | | 0.55 | | 0.001 | 0.1 |
| 9-Nov-01 | 3 | 9.50 | 6.10 | 61,300 | 82 | 86 | 0.100 | 102 | 328 | 72 | 11 | 20 | 19 | 0.011 | 0.001 | 0.123 | 0.01 | 0.001 | 0.001 | | 0.006 | 1.78 | 0.0002 | 0.472 | 0.008 | 0.001 | 0.061 |
| 5-Feb-02 | 3 | 9.60 | 5.80 | 52,500 | 76 | 73 | 0.100 | 92 | 238 | 68 | 10 | 15 | 17 | 0.001 | | 0.1 | 0.02 | 0.001 | | 0.01 | 0.004 | 0.7 | | 0.403 | 0.004 | 0.001 | 0.05 |
| 23-Apr-02 | 3 | 9.90 | 5.90 | 71,200 | 110 | 100 | 0.100 | 111 | 410 | 96 | 11 | 24 | 24 | 0.003 | 0.001 | 0.124 | 0.024 | 0.001 | 0.001 | | 0.004 | 4.2 | 0.0002 | 0.573 | 0.006 | 0.001 | 0.043 |
| 17-Jul-02 | 3 | 10.50 | 6.20 | 63,700 | 115 | 98 | 0.100 | 121 | 538 | 85 | 12 | 24 | 24 | 0.002 | | 0.129 | 0.02 | 0.001 | | 0.001 | 0.003 | 1.46 | | 0.47 | 0.002 | 0.001 | 0.046 |
| 23-Oct-02 | 3 | 10.70 | 6.30 | 77,320 | 115 | 140 | 0.200 | 110 | 397 | 86 | 8 | 23 | 24 | 0.002 | | 0.129 | 0.005 | 0.001 | 0.001 | | 0.003 | 2.7 | | 0.435 | 0.004 | 0.001 | 0.043 |
| 16-Jan-03 | 3 | 10.90 | 6.70 | 71,600 | 120 | 83 | <0.1 | 120 | 470 | 89 | 9 | 24 | 26 | <0.05 | <0.01 | 0.13 | <0.01 | <0.002 | <0.01 | | <0.01 | 2.1 | <0.0001 | 0.46 | <0.01 | <0.006 | 0.04 |
| 8-Apr-03 | 3 | | 6.40 | 65,500 | 110 | 74 | <0.1 | 110 | 410 | 85 | 8 | 23 | 23 | <0.05 | <0.01 | 0.12 | <0.01 | <0.002 | <0.01 | | <0.01 | 0.59 | <0.0001 | 0.49 | <0.01 | <0.006 | 0.05 |
| 15-Jul-03 | 3 | | 6.70 | 62,200 | 100 | 69 | <0.1 | 98 | 420 | 68 | 7 | 20 | 20 | <0.05 | <0.01 | 0.11 | 0.02 | <0.002 | <0.01 | | <0.01 | 2.9 | <0.0001 | 0.47 | <0.01 | <0.006 | 0.04 |
| 21-Oct-03 | 3 | | 6.30 | 57,600 | 100 | 70 | <0.1 | 96 | 380 | 83 | 8 | 20 | 22 | <0.05 | <0.01 | 0.11 | 0.02 | <0.002 | n/a | | <0.01 | 0.11 | <0.0001 | 0.69 | <0.01 | <0.006 | 0.06 |
| 8-Jan-04 | 3 | 10.00 | 6.50 | 77,300 | 140 | 82 | <0.1 | 120 | 470 | 87 | 8 | 27 | 30 | <0.05 | <0.01 | 0.13 | <0.01 | <0.002 | <0.01 | | <0.01 | 6.5 | <0.0001 | 0.86 | <0.01 | <0.006 | 0.05 |
| 22-Apr-04 | 3 | 10.50 | 6.40 | 74,800 | 130 | 79 | <0.1 | 120 | 480 | 89 | 8 | 24 | 28 | <0.05 | <0.01 | 0.11 | 0.02 | <0.002 | <0.01 | | <0.01 | 3.3 | <0.0001 | 0.86 | <0.01 | <0.006 | 0.04 |
| 8-Jul-04 | 3 | | 6.40 | 73,600 | 130 | 81 | 0.050 | 120 | 460 | 86 | 8 | 23 | 28 | 0.025 | 0.005 | 0.11 | 0.03 | 0.001 | 0.005 | | 0.005 | 0.04 | 0.00005 | 0.32 | 0.005 | 0.003 | 0.06 |
| 21-Oct-04 | 3 | | 6.20 | 69,000 | 110 | 77 | 0.050 | 110 | 400 | 81 | 7 | 23 | 25 | 0.025 | 0.005 | 0.1 | 0.02 | 0.001 | 0.005 | | 0.005 | 0.91 | 0.00005 | 0.35 | 0.005 | 0.003 | 0.04 |
| 18-Jan-05 | 3 | | 6.50 | 68,200 | 120 | 76 | 0.050 | 110 | 450 | 75 | 7 | 23 | 24 | 0.025 | 0.005 | 0.11 | 0.02 | 0.001 | 0.005 | | 0.005 | 2.2 | 0.00005 | 1.1 | 0.005 | 0.003 | 0.06 |
| 14-Apr-05 | 3 | 11 | 6.30 | 68,400 | 120 | 74 | 0.050 | 100 | 430 | 75 | 8 | 24 | 27 | 0.025 | 0.005 | 0.11 | 0.03 | 0.001 | 0.005 | | 0.005 | 2.5 | 0.00005 | 0.75 | 0.005 | 0.003 | 0.06 |
| 19-Jul-05 | 3 | 11 | 6.60 | 62,500 | 110 | 71 | 0.050 | 100 | 350 | 77 | 8 | 22 | 23 | 0.025 | 0.005 | 0.1 | 0.02 | 0.001 | 0.005 | | 0.005 | 0.58 | 0.00005 | 0.32 | 0.005 | 0.003 | 0.03 |
| 26-Oct-05 | 3 | 11 | 6.10 | 44,000 | 60 | 45 | 0.050 | 69 | 310 | 49 | 6 | 15 | 15 | 0.025 | 0.005 | 0.07 | 0.03 | 0.001 | 0.005 | | 0.005 | 0.84 | 0.00005 | 0.44 | 0.005 | 0.003 | 0.05 |
| 18-Jan-06 | 3 | 10.0 | 5.90 | 33,200 | 50 | 32 | 0.050 | 54 | 270 | 35 | 5 | 11 | 11 | 0.025 | 0.005 | 0.05 | 0.04 | 0.001 | 0.005 | | 0.005 | 1.5 | 0.00005 | 0.59 | 0.005 | 0.003 | 0.05 |
| 28-Apr-06 | 3 | 11.1 | 6.20 | 67,300 | 110 | 78 | 0.050 | 130 | 430 | 73 | 7 | 27 | 27 | 0.0005 | 0.0005 | 0.11 | 0.06 | 0.0001 | 0.0005 | | 0.001 | 4.6 | 0.000025 | 1 | 0.0005 | 0.001 | 0.05 |
| 7-Jul-06 | 3 | | 6.20 | 69,500 | 120 | 82 | 0.050 | 110 | 410 | 82 | 8 | 26 | 27 | 0.0005 | 0.00025 | 0.11 | 0.03 | 0.0001 | 0.0005 | | 0.001 | 0.005 | 0.000025 | 0.243 | 0.002 | 0.001 | 0.04 |
| 19-Oct-06 | 3 | 11.8 | 6.40 | 64,300 | 110 | 77 | 0.050 | 110 | 350 | 70 | 7 | 25 | 26 | 0.0005 | 0.0005 | 0.11 | 0.02 | 0.0001 | 0.0005 | | 0.0005 | 0.69 | 0.000025 | 0.33 | 0.0005 | 0.001 | 0.05 |
| 12-Jan-07 | 3 | 11.6 | 6.10 | 56,000 | 90 | 60 | 0.050 | 84 | 360 | 65 | 7 | 19 | 20 | 0.001 | 0.0005 | 0.089 | 0.03 | 0.0001 | 0.0005 | | 0.001 | 0.45 | 0.000025 | 0.22 | 0.0005 | 0.001 | 0.05 |
| 13-Apr-07 | 3 | 11.2 | 6.00 | 54,200 | 80 | 64 | 0.050 | 82 | 330 | 59 | 6 | 19 | 19 | | | 0.096 | 0.03 | | | | | 0.08 | | 0.23 | | 0.001 | 0.05 |
| 9-Nov-01 | 4 | 1.20 | 6.60 | 71,900 | 33 | 45 | 0.001 | 213 | 358 | 30 | 8 | 43 | 26 | 0.001 | 0.001 | 0.125 | 0.32 | 0.001 | 0.001 | | 0.002 | 55.7 | 0.0002 | 6.88 | 0.004 | 0.001 | 0.033 |
| 5-Feb-02 | 4 | 1.20 | 6.00 | 63,000 | 26 | 43 | 0.100 | 201 | 402 | 27 | 8 | 44 | 27 | 0.004 | | 0.1 | 0.36 | 0.001 | | 0.01 | 0.005 | 45.1 | | 5.99 | 0.01 | 0.001 | 0.044 |
| 23-Apr-02 | 4 | 1.20 | 6.30 | 84,800 | 44 | 50 | 0.001 | 311 | 524 | 42 | 9 | 58 | 37 | 0.002 | 0.001 | 0.054 | 0.536 | 0.001 | 0.001 | | 0.002 | 52.8 | 0.0002 | 10.5 | 0.002 | 0.001 | 0.041 |
| 17-Jul-02 | 4 | 1.30 | 6.40 | 84,000 | 26 | 56 | 0.001 | 305 | 768 | 35 | 9 | 54 | 33 | 0.002 | | 0.081 | 0.5 | 0.001 | | 0.001 | 0.004 | 56.4 | | 10.5 | 0.005 | 0.001 | 0.041 |
| 23-Oct-02 | 4 | 1.20 | 6.20 | 98,969 | 26 | 86 | 0.100 | 311 | 610 | 42 | 6 | 55 | 36 | 0.006 | | 0.054 | 0.5 | 0.001 | 0.001 | | 0.003 | 59.7 | | 11.2 | 0.002 | 0.001 | 0.045 |
| 16-Jan-03 | 4 | 1.40 | 6.20 | 82,300 | 30 | 23 | 0.100 | 350 | 700 | 44 | 7 | 58 | 41 | <0.05 | <0.01 | 0.05 | 0.6 | <0.002 | 0.01 | | <0.01 | 48 | <0.0001 | 12 | <0.01 | <0.006 | 0.05 |
| 8-Apr-03 | 4 | | 6.10 | 80,500 | 50 | 24 | <0.1 | 340 | 570 | 45 | 7 | 56 | 37 | <0.05 | <0.01 | 0.07 | 0.61 | <0.002 | <0.01 | | <0.01 | 30 | <0.0001 | 12 | <0.01 | <0.006 | 0.05 |
| 15-Jul-03 | 4 | | 6.30 | 80,900 | 30 | 22 | <0.1 | 350 | 610 | 41 | 6 | 55 | 38 | <0.05 | <0.01 | 0.05 | 0.59 | <0.002 | <0.01 | | <0.01 | 48 | <0.0001 | 12 | <0.01 | <0.006 | 0.04 |
| 21-Oct-03 | 4 | | 6.50 | 49,200 | 160 | 16 | <0.1 | 77 | 270 | 31 | 5 | 38 | 21 | <0.05 | <0.01 | 0.07 | 0.23 | <0.002 | n/a | | <0.01 | 22 | <0.0001 | 6.1 | <0.01 | <0.006 | 0.02 |
| 8-Jan-04 | 4 | 1.40 | 6.10 | 86,300 | 50 | 27 | <0.1 | 380 | 670 | 44 | 5 | 58 | 40 | <0.05 | <0.01 | 0.06 | 0.6 | <0.002 | <0.01 | | <0.01 | 55 | <0.0001 | 12 | <0.01 | <0.006 | 0.06 |
| 22-Apr-04 | 4 | 1.40 | 5.70 | 93,100 | 13 | 27 | <0.1 | 430 | 750 | 50 | 7 | 63 | 45 | <0.05 | <0.01 | 0.04 | 0.79 | <0.002 | <0.01 | | <0.01 | 54 | <0.0001 | 14 | <0.01 | <0.006 | 0.08 |
| 8-Jul-04 | 4 | | 5.80 | 98,200 | 30 | 24 | 0.050 | 470 | 700 | 49 | 7 | 67 | 47 | 0.025 | 0.005 | 0.04 | 0.86 | 0.001 | 0.005 | | 0.005 | 55 | 0.00005 | 15 | 0.005 | 0.003 | 0.09 |
| 21-Oct-04 | 4 | | 5.90 | 91,300 | 40 | 23 | 0.050 | 400 | 700 | 48 | 6 | 67 | 42 | 0.025 | 0.005 | 0.05 | 0.63 | 0.001 | 0.005 | | 0.005 | 52 | 0.00005 | 12 | 0.005 | 0.003 | 0.06 |
| 18-Jan-05 | 4 | | 5.80 | 99,000 | 20 | 29 | 0.050 | 480 | 830 | 56 | 8 | 67 | 45 | 0.025 | 0.005 | 0.06 | 0.71 | 0.001 | 0.005 | | 0.005 | 60 | 0.00005 | 13 | 0.005 | 0.003 | 0.07 |
| 14-Apr-05 | 4 | 1 | 6.10 | 109,900 | 50 | 26 | 0.050 | 560 | 850 | 61 | 8 | 76 | 54 | 0.025 | 0.005 | 0.04 | 0.9 | 0.001 | 0.005 | | 0.005 | 59 | 0.00005 | 16 | 0.005 | 0.003 | 0.08 |
| 19-Jul-05 | 4 | 2 | 6.00 | 102,500 | 50 | 31 | 0.050 | 530 | 810 | 62 | 7 | 77 | 48 | 0.025 | 0.005 | 0.04 | 0.72 | 0.001 | 0.005 | | 0.005 | 52 | 0.00005 | 13 | 0.005 | 0.003 | 0.07 |
| 26-Oct-05 | 4 | 1 | 6.50 | 67,700 | 140 | 23 | 0.050 | 190 | 460 | 42 | 6 | 45 | 31 | 0.025 | 0.005 | 0.03 | 0.45 | 0.001 | 0.005 | | 0.005 | 32 | 0.00005 | 7.5 | 0.005 | 0.003 | 0.03 |
| 18-Jan-06 | 4 | 1.2 | 6.20 | 87,800 | 50 | 17 | 0.050 | 420 | 710 | 44 | 10 | 73 | 37 | 0.025 | 0.005 | 0.07 | 0.63 | 0.001 | 0.005 | | 0.005 | 29 | 0.00005 | 9.6 | 0.005 | 0.003 | 0.04 |
| 28-Apr-06 | 4 | 1.4 | 5.90 | 120,700 | 40 | 22 | 0.050 | 730 | 1020 | 81 | 8 | 94 | 68 | 0.0005 | 0.0005 | 0.03 | 1.2 | 0.0001 | 0.0005 | | 0.0005 | 71 | 0.000025 | 19 | 0.0005 | 0.001 | 0.08 |
| 7-Jul-06 | 4 | | 5.60 | 119,500 | 20 | 24 | 0.050 | 660 | 1020 | 74 | 8 | 90 | 63 | 0.0005 | 0.00025 | 0.028 | 1.1 | 0.0001 | 0.0005 | | 0.0005 | 43 | 0.000025 | 18.1 | 0.0005 | 0.001 | 0.08 |
| 19-Oct-06 | 4 | 1.3 | 5.60 | 121,000 | 20 | 21 | 0.050 | 740 | 1050 | 76 | 8 | 94 | 70 | 0.001 | 0.0005 | 0.029 | 0.95 | 0.0001 | 0.0005 | | 0.0005 | 59 | 0.000025 | 20 | 0.0005 | 0.001 | 0.09 |
| 12-Jan-07 | 4 | 1.4 | 5.40 | 133,100 | 20 | 21 | 0.050 | 770 | 1210 | 90 | 8 | 96 | 73 | 0.003 | 0.0005 | 0.026 | 1.2 | 0.0001 | 0.0005 | | 0.004 | 44 | 0.00005 | 20 | 0.0005 | 0.001 | 0. |

Table C – Groundwater Quality Baseline Data Continued

| | | Water Level | pH | Conductivity Lab. | MO Alk as CaCO3 | Chloride mg/L | Fluoride mg/L | Sulphate Result mg/L | TDS Result mg/L | Sodium Na mg/L | Potassium K mg/L | Calcium Ca mg/L | Magnesium Mg mg/L | Arsenic As mg/L | Silver Ag mg/L | Barium Ba mg/L | Boron B mg/L | Cadmium Cd mg/L | Chromium Cr mg/L | Chromium 6+ Cr 6+ mg/L | Copper Cu mg/L | Iron Fe mg/L | Mercury Hg mg/L | Manganese Mn mg/L | Lead Pb mg/L | Selenium Se mg/L | Zinc Zn mg/L |
|--|---|---|------|-------------------|-----------------|---------------|---------------|----------------------|-----------------|----------------|------------------|-----------------|-------------------|-----------------|----------------|----------------|--------------|-----------------|------------------|------------------------|----------------|--------------|-----------------|-------------------|--------------|------------------|--------------|
| | | metres | | uS/m | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| Regional WQ | | | 6.51 | 622.93 | 27.86 | 55.27 | 0.811 | 522 | | 47.27 | 6.45 | 145.12 | 65.4 | | | | | | | | | | | | | | |
| Guideline (Fresh Water Aquatic Ecosystem) 95% PL | | | | | | 0.003 | | | | | | | | 0.013 | 0.00005 | | 0.37 | 0.0002 | | 0.001 | 0.0014 | | 0.0006 | 1.9 | 0.0034 | 0.011 | 0.008 |
| 17-Jul-02 | 5 | 8.40 | 4.40 | 54,900 | 5 | 15 | 0.400 | 259 | 1913 | 47 | 17 | 21 | 18 | 0.006 | | 0.046 | 1.1 | 0.031 | | 0.005 | 0.072 | 2.38 | | 1.86 | 0.076 | 0.001 | 1.15 |
| 16-Jan-03 | 5 | 8.80 | Dry | | | | | | | | | | | | | | | | | | | | | | | | |
| 8-Apr-03 | 5 | Dry | n/a | | | | | | | | | | | | | | | | | | | | | | | | |
| 15-Jul-03 | 5 | Dry | n/a | | | | | | | | | | | | | | | | | | | | | | | | |
| 21-Oct-03 | 5 | | 4.10 | 44,800 | n/a | 8 | 0.400 | 210 | 330 | 30 | 10 | 20 | 18 | <0.05 | <0.01 | 0.03 | 0.49 | 0.002 | n/a | | 0.01 | 0.4 | <0.0001 | 1.9 | <0.01 | <0.006 | 0.69 |
| 8-Jan-04 | 5 | Bore Not in service, Insufficient Sample Volume | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22-Apr-04 | 5 | Bore Not in service, Insufficient Sample Volume | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7-Jul-04 | 5 | No Data Available | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21-Oct-04 | 5 | No Data Available | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18-Jan-05 | 5 | No Data Available | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14-Apr-05 | 5 | No Data Available | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19-Jul-05 | 5 | 9 | 0.00 | 0 | 0 | 0 | 0.000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 26-Oct-05 | 5 | No Data Available | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18-Jan-06 | 5 | 4.1 | 3.90 | 22,900 | | 3 | 0.200 | 86 | 170 | 6 | 4 | 12 | 5.1 | 0.025 | 0.005 | 0.02 | 0.09 | 0.001 | 0.005 | | 0.005 | 0.06 | 0.00005 | 0.75 | 0.005 | 0.003 | 0.24 |
| 28-Apr-06 | 5 | No Data Available | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7-Jul-06 | 5 | No Data Available | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19-Oct-06 | 5 | No Data Available | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12-Jan-07 | 5 | No Data Available | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13-Apr-07 | 5 | No Data Available | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9-Nov-01 | 6 | 10.70 | 5.40 | 68,500 | 5 | 59 | 0.001 | 280 | 498 | 35 | 9 | 14 | 26 | 0.015 | 0.001 | 0.058 | 0.51 | 0.001 | 0.003 | | 0.005 | 63.2 | 0.0002 | 2.34 | 0.007 | 0.001 | 0.265 |
| 5-Feb-02 | 6 | 10.60 | 5.40 | 78,900 | 5 | 62 | 0.100 | 312 | 672 | 43 | 9 | 21 | 27 | 0.004 | | 0.074 | 0.75 | 0.001 | | 0.01 | 0.006 | 87.6 | | 3.9 | 0.008 | 0.001 | 0.566 |
| 23-Apr-02 | 6 | 10.90 | 5.40 | 87,700 | 5 | 79 | 0.001 | 336 | 626 | 56 | 9 | 24 | 28 | 0.005 | 0.001 | 0.045 | 0.685 | 0.001 | 0.001 | | 0.002 | 98.7 | 0.0002 | 3.9 | 0.002 | 0.001 | 0.07 |
| 17-Jul-02 | 6 | 11.10 | 5.50 | 81,200 | 5 | 84 | 0.001 | 311 | 902 | 44 | 9 | 22 | 25 | 0.004 | | 0.069 | 0.72 | 0.001 | | 0.002 | 0.009 | 90 | | 3.66 | 0.011 | 0.001 | 0.108 |
| 23-Oct-02 | 6 | 11.10 | 5.50 | 95,876 | 5 | 118 | 0.100 | 341 | 681 | 54 | 7 | 22 | 28 | 0.005 | | 0.044 | 0.8 | 0.001 | 0.001 | | 0.005 | 104 | | 4.02 | 0.007 | 0.001 | 0.361 |
| 16-Jan-03 | 6 | 11.30 | 3.60 | 96,000 | n/a | 64 | <0.1 | 330 | 610 | 58 | 7 | 23 | 29 | <0.05 | <0.01 | 0.04 | 0.82 | <0.002 | 0.02 | | <0.01 | 93 | <0.0001 | 4.2 | <0.01 | <0.006 | 0.22 |
| 8-Apr-03 | 6 | | 3.30 | 101,300 | 0 | 63 | <0.1 | 360 | 690 | 55 | 7 | 23 | 28 | <0.05 | <0.01 | 0.04 | 0.82 | <0.002 | 0.02 | | 0.01 | 56 | <0.0001 | 4.3 | <0.01 | <0.006 | 0.24 |
| 15-Jul-03 | 6 | | 3.10 | 75,600 | n/a | 22 | 0.110 | 210 | 320 | 37 | 5 | 9.8 | 20 | <0.05 | <0.01 | 0.02 | 0.29 | <0.002 | <0.01 | | <0.01 | 38 | <0.0001 | 1.8 | <0.01 | <0.006 | 0.46 |
| 21-Oct-03 | 6 | | 3.70 | 39,000 | n/a | 14 | 0.200 | 130 | 200 | 30 | 4 | 3.7 | 13 | <0.05 | <0.01 | 0.02 | 0.12 | <0.002 | n/a | | <0.01 | 13 | <0.0001 | 0.57 | <0.01 | <0.006 | 0.16 |
| 8-Jan-04 | 6 | 10.90 | 5.30 | 28,300 | <10 | 15 | 0.100 | 89 | 240 | 25 | 4 | 3.9 | 12 | <0.05 | <0.01 | 0.02 | 0.14 | <0.002 | <0.01 | | <0.01 | 21 | <0.0001 | 0.72 | <0.01 | <0.006 | 0.05 |
| 22-Apr-04 | 6 | Bore Not in service, Insufficient Sample Volume | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7-Jul-04 | 6 | No Data Available | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21-Oct-04 | 6 | | 5.30 | 64,200 | 5 | 40 | 0.050 | 240 | 530 | 45 | 6 | 15 | 23 | 0.025 | 0.005 | 0.04 | 0.5 | 0.001 | 0.005 | | 0.005 | 59 | 0.00005 | 2.8 | 0.005 | 0.003 | 0.08 |
| 18-Jan-05 | 6 | No Data Available | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14-Apr-05 | 6 | No Data Available | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19-Jul-05 | 6 | 11 | 0.00 | 0 | 0 | 0 | 0.000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 26-Oct-05 | 6 | No Data Available | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18-Jan-06 | 6 | 11.0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28-Apr-06 | 6 | No Data Available | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7-Jul-06 | 6 | No Data Available | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19-Oct-06 | 6 | No Data Available | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12-Jan-07 | 6 | No Data Available | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13-Apr-07 | 6 | No Data Available | | | | | | | | | | | | | | | | | | | | | | | | | |

Table D - Dust (insoluble solids) monitoring data

| Date | Dust gauge name (see Figure 10-1) (g/m ² /annual average) | | | | |
|--------------|--|------|------|------|------|
| | DG5 | DG27 | DG28 | DG29 | DG30 |
| 2002 | | 1.7 | 2.2 | 1.2 | 0.8 |
| 2003 | | 1.3 | 2.1 | 7.4 | 0.8 |
| 2004 | | 1.8 | 1.3 | 5.3 | 0.7 |
| 2005 | | 5.7 | 2.0 | 4.9 | 1.0 |
| 2006 | 1.2 | 3.2 | 4.9 | 3.0 | 1.0 |
| Jan–Jun 2007 | 1.0 | 3.9 | 1.8 | 3.0 | 1.1 |

Source: *Environmental Assessment* (Appendix H) – Kerosene Vale, Stage 2 Ash Repository Area (Parsons Brinckerhoff, April 2008)

Note: The DECC amenity-based criteria for dust fallout is maximum total dust deposition 4 g/m²/month (annual)

Appendix C

Relevant statutory and regulatory instruments

Notice of Modification

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

As delegate of the Minister for Planning, I modify the project approval referred to in Schedule 1, as set out in Schedule 2.


Mike Young
A/Executive Director
Resource Assessments and Business Systems

Sydney

9 AUGUST

2018

SCHEDULE 1

The Project Approval (PA 07_0005) for the Kerosene Vale Stage 2 Ash Repository Area, granted by the Minister for Planning on 26 November 2008.

SCHEDULE 2

1. In Schedule 1:
 - (a) delete "Delta Electricity", and replace with "EnergyAustralia NSW";
 - (b) delete the description of "Land", and replace with "see APPENDIX 1"; and
 - (c) delete "Kerosene Vale Ash Repository Area", and replace with "Wallerawang Ash Dam Areas".
2. In Schedule 2 DEFINITIONS, delete "Act, the", "AEMR", "Conditions of Approval", "DECC", "Department, the", "Director-General, the", "Director-General's Approval", "DPI", "DWE", "EPA", "Minister, the", "Operation", "Project", "Proponent", "RTA", and "SCA" and insert the following in the definitions in alphabetical order:

| | |
|------------------------|---|
| Capping material | Material used to cap ash repository areas of the project area. |
| Conditions of Approval | The conditions in Schedules 1 and 2. |
| Council | Lithgow City Council. |
| Department | Department of Planning and Environment. |
| EA | <ul style="list-style-type: none">• Project application 07_0005 and supporting documentation:<ul style="list-style-type: none">- <i>Kerosene Vale - Stage 2 Ash Repository Area – Environmental Assessment</i> (two volumes), prepared by Parsons Brinckerhoff and dated 1 April 2008,- <i>Kerosene Vale - Stage 2 Ash Repository Area - Submissions Report</i>, prepared by Parsons Brinckerhoff and dated 30 May 2008;• Modification application 07_0005 Mod 1 and supporting documentation:<ul style="list-style-type: none">- <i>Wallerawang Power Station Capping Project - Environmental assessment of importation of clean fill to Wallerawang Ash Repository</i>, prepared by EnergyAustralia NSW and dated March 2018; and- <i>Wallerawang Power Station Capping Project - Response to Submissions Report</i>, prepared by EnergyAustralia NSW and dated June 2018. |
| EPA | NSW Environment Protection Authority. |
| Fisheries NSW | The Fisheries Division within the Department of Industry. |
| Heavy vehicle | A vehicle that has a combined Gross Vehicle Mass or Aggregate Trailer Mass of more than 4.5 tonnes. |
| OEH | NSW Office of Environment and Heritage. |
| Operation | <p>The operational activities of the project, including:</p> <ul style="list-style-type: none">• ash haulage, placement and management;• on-site water management systems;• capping material haulage, placement and management;• landscaping and revegetation/rehabilitation of the site; and• upgrading and maintaining internal access roads in the project area. |
| Project | The project described in the EA. |
| Project Area | The area shown, and described in the legend, in Figure1 of APPENDIX 2. |
| Proponent | EnergyAustralia NSW Pty Limited, or any person authorised to act on this approval. |
| RMS | Roads and Maritime Services. |
| Secretary | Secretary of the Department of Planning and Environment, or nominee. |
| Secretary's Approval | A written approval from the Secretary. |
| Site | The project area, as shown in Figure 1 of APPENDIX 2. |
| WaterNSW | The State Water Corporation of NSW. |

Revision of Strategies and Plans

6.6 The Proponent must review and, if necessary, revise the plans and programs required under this approval within 2 months of:

- the submission of an audit report in accordance with condition 4.2(c) of this approval;
- the submission of an incident report in accordance with condition 7.1 of this approval; or
- an approved modification to the conditions of approval, to the satisfaction of the Secretary

After Schedule 2, insert the following:

APPENDIX 1: SCHEDULE OF LAND

| Lot | DP |
|-----|---------|
| 2 | 1139982 |
| 5 | 829137 |

APPENDIX 2: PROJECT AREA



Figure 1: Project Area

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.

August 2018 Mod 1 in red type

The Hon. Kristina Keneally MP
Minister for Planning

Signed 26 November 2008
Sydney

2008

File No: S07/00001

SCHEDULE 1

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| Application No: | 07_0005 |
| Proponent: | EnergyAustralia NSW |
| Approval Authority: | Minister for Planning |
| Land: | See APPENDIX 1. |
| Project: | Extension of the existing Wallerawang Ash Dam Areas to permit the continued disposal of ash generated by the Wallerawang Power Station. |
| Part 3A Project: | The proposal is a project to which Part 3A of the Act applies by virtue of an Order made by the Minister for Planning and gazetted on 29 July 2005. |

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SCHEDULE 2

DEFINITIONS

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| Ancillary Facility | Temporary facility for construction. Examples may include an office and amenities compound, construction compound, batch plant, materials storage compound, stockpile areas. |
| Capping material | Material used to cap ash repository areas of the site. |
| Conditions of Approval | Conditions contained in Schedules 1 and 2. |
| Construction | Includes all work in respect of the project other than survey, acquisitions, fencing, investigative drilling or excavation, building/road dilapidation surveys, minor clearing (except where threatened species, populations or ecological communities would be affected), establishing ancillary facilities, or other activities determined by the Environmental Representative to have minimal environmental impact (e.g. minor adjustments to utilities). |
| Council | Lithgow City Council. |
| Department | NSW Department of Planning and Environment. |
| EA | <ul style="list-style-type: none"> • Project application 07_0005 and supporting documentation: <ul style="list-style-type: none"> - <i>Kerosene Vale - Stage 2 Ash Repository Area – Environmental Assessment</i> (two volumes), prepared by Parsons Brinckerhoff and dated 1 April 2008, - <i>Kerosene Vale - Stage 2 Ash Repository Area - Submissions Report</i>, prepared by Parsons Brinckerhoff and dated 30 May 2008; • Modification application 07_0005 Mod 1 and supporting documentation: <ul style="list-style-type: none"> - <i>Wallerawang Power Station Capping Project - Environmental assessment of importation of clean fill to Wallerawang Ash Repository</i>, prepared by EnergyAustralia NSW and dated March 2018; and - <i>Wallerawang Power Station Capping Project - Response to Submissions Report</i>, prepared by EnergyAustralia NSW and dated June 2018. |
| Environment Protection Licence | An Environment Protection Licence issued by the NSW Environment Protection Authority pursuant to the <i>Protection of the Environment Operations Act 1997</i> . |
| Environmental Incident | Any incident with actual or potential significant impacts on the biophysical environment and/or off-site impacts on people. |
| EPA | NSW Environment Protection Authority. |
| Fisheries NSW | The Fisheries Division within the Department of Industry. |
| Heavy Vehicle | A vehicle that has a combined Gross Vehicle Mass or Aggregate Trailer Mass of more than 4.5 tonnes. |
| OEH | NSW Office of Environment and Heritage. |
| Operation | <p>The operational activities of the project, including:</p> <ul style="list-style-type: none"> • ash haulage, placement and management; • management of on-site water systems; • capping material haulage, placement and management; • landscaping and revegetation/rehabilitation of the site; and |

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| | <ul style="list-style-type: none"> upgrading and maintaining internal access roads in the project area. |
| Project | The project as described in the EA. |
| Project area | The area shown and described in the legend in Figure 1 of APPENDIX 2. |
| Proponent | EnergyAustralia NSW Pty Limited or any person authorised to act on this approval. |
| Publicly Available | Available for inspection by a member of the general public (for example, available on an internet site or at a display centre). |
| Reasonable and Feasible | Consideration of best practice taking into account the benefit of proposed measures and their technological and associated operational application in the NSW and Australian context. Feasible relates to engineering considerations and what is practical to build. Reasonable relates to the application of judgement in arriving at a decision, taking into account mitigation benefits, cost of mitigation versus benefits provided, community views, and nature and extent of potential improvements. |
| Rehabilitation | The restoration of land disturbed by the development to a good condition, having regard to its condition prior to commencement of construction, to ensure it is safe, stable and non-polluting. |
| RMS | Roads and Maritime Services. |
| Secretary | Secretary of the Department, or nominee. |
| Secretary's Approval | A written approval from the Secretary. |
| Sensitive Receiver | Residence, educational institution (e.g. school, TAFE college), health care facility (e.g. nursing home, hospital), religious facility (e.g. church), or child care facility. |
| Stages A, B and C placement activities | Staged placement activities as defined in the Placement Strategy described in the document referred to in condition 1.1a) of this approval. |
| WaterNSW | The State Water Corporation of NSW. |

1. ADMINISTRATIVE CONDITIONS

Terms of Approval

- 1.1 The Proponent shall carry out the project in accordance with:
 - a) the EA; and
 - b) 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), the conditions of this approval shall prevail to the extent of the inconsistency; and
 - b) any of the documents listed from condition 1.1a), the most recent document shall prevail to the extent of the inconsistency.
- 1.3 The Proponent shall comply with the reasonable requirements of the Secretary 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 approval shall lapse five years after the date on which it is granted, unless the works that are the subject of this approval are physically commenced on or before that time.

Statutory Requirements

- 1.5 The Proponent shall ensure that all licences, permits and approvals are obtained as required by law and maintained as required with respect to the project. No condition of this approval removes the obligation for the Proponent to obtain, renew or comply with such licences, permits or approvals.

2. SPECIFIC ENVIRONMENTAL CONDITIONS

Ash Management

- 2.1 The Proponent shall prepare a long-term ash management strategy including a program for investigation and assessment of alternative ash management measures with a goal of 40% reuse of ash by 31 December 2013. The report shall be submitted to the **Secretary** within six months of the commencement of operations. The Proponent shall report on the status and outcomes of its investigations to the **Secretary** every two years from the commencement of the operation of the project, unless otherwise agreed by the **Secretary**.
- 2.2 To facilitate assessment of the viability of coal resources in the project area and provide a finite opportunity for their extraction, the Proponent shall undertake revised staging of ash placement activities as described in the document referred to in condition 1.1a) of this approval.

Noise Impacts

Construction Hours

- 2.3 Construction activities associated with the project shall only be undertaken during the following hours:
- a) 7:00 am to 6:00 pm, Mondays to Fridays, inclusive;
 - b) 8:00 am to 1:00 pm on Saturdays; and
 - c) at no time on Sundays or public holidays.
- 2.4 Activities resulting in impulsive or tonal noise emission (such as rock breaking or rock hammering) shall be limited to 8:00 am to 12:00 pm, Monday to Saturday and 2:00 pm to 5:00 pm, Monday to Friday. The Proponent shall not undertake such activities for more than three continuous hours and must provide a minimum one-hour respite period.
- 2.5 Construction outside the hours stipulated in condition 2.3 of this approval is permitted in the following circumstances:
- a) where construction works do not cause audible noise at any sensitive receiver; or
 - b) for the delivery of materials required outside these hours by the Police or other authorities for safety reasons; or
 - c) where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm.
- 2.6 The hours of construction activities specified under condition 2.3 of this approval may be varied with the prior written approval of the **Secretary**. Any request to alter the hours of construction specified under condition 2.3 shall be:
- a) considered on a case-by-case basis;
 - b) accompanied by details of the nature and need for activities to be conducted during the varied construction hours; and
 - c) accompanied by any information necessary for the **Secretary** to reasonably determine that activities undertaken during the varied construction hours will not adversely impact on the acoustic amenity of sensitive receivers in the vicinity of the site.

Construction Noise

- 2.7 The construction noise objective for the project is to manage noise from construction activities (as measured by a L_{A10} (15 minute) descriptor) so as not to exceed the background L_{A90} noise level by more than 10 dB(A) at any sensitive receiver.

Any activities that have the potential for noise emissions that exceed the objective must be identified and managed in accordance with the Construction Noise Management Plan (as referred to under condition 6.3b) of this approval). The Proponent shall implement all reasonable and feasible noise mitigation measures with the aim of achieving the construction noise objective.

Operational Hours

- 2.8 Operational activities associated with the project shall only be undertaken from 7.00 am to 10.00 pm Monday to Sunday.
- 2.9 Within six months of commencement of operation of the project the Proponent shall prepare and submit to the **Secretary** a review of the logistical arrangements for ash haulage and placement to determine the feasibility of reducing the hours of operation. If, as a result of the review, it is determined that ash haulage and placement times can commence later and/or finish earlier, the Proponent shall aim to observe the reduced hours whenever possible.
- 2.10 Operations outside the hours stipulated in condition 2.8 of this approval are only permitted in the following emergency situations:
- a) where it is required to avoid the loss of lives, property and/or to prevent environmental harm; or
 - b) breakdown of plant and/or equipment at the repository or the Wallerawang Power Station with the effect of limiting or preventing ash storage at the power station outside the operating hours defined in condition 2.8; or
 - c) a breakdown of an ash haulage truck(s) preventing haulage during the operating hours stipulated in condition 2.8 combined with insufficient storage capacity at the Wallerawang Power Station to store ash outside of the project operating hours; or
 - d) in the event that the National Electricity Market Management Company (NEMMCO), or a person authorised by NEMMCO, directs the Proponent (as a licensee) under the National Electricity Rules to maintain, increase or be available to increase power generation for system security and there is insufficient ash storage capacity at the Wallerawang Power Station to allow for the ash to be stored.

In the event of conditions 2.10b) or 2.10c) arising, the Proponent is to take all reasonable and feasible measures to repair the breakdown in the shortest time possible.

- 2.11 In the event that an emergency situation as referred to under condition 2.10b) or 2.10c) occurs more than once in any two month period, the Proponent shall prepare and submit to the **Secretary** for approval a report including, but not limited to:
- a) the dates and a description of the emergency situations;
 - b) an assessment of all reasonable and feasible mitigation measures to avoid recurrence of the emergency situations;
 - c) identification of a preferred mitigation measure(s); and
 - d) timing and responsibility for implementation of the mitigation measure(s).

The report is to be submitted to the **Secretary** within 60 days of the second exceedance occurring. The Proponent shall implement all reasonable and feasible mitigation measures in accordance with the requirements of the **Secretary**.

- 2.12 The Proponent shall notify the **EPA** prior to undertaking any emergency ash haulage or placement operations outside of the hours of operation stipulated in condition 2.8 of this approval and keep a log of such operations.
- 2.13 The Proponent shall notify the **Secretary** in writing within seven days of undertaking any emergency ash haulage or placement operations outside of the hours of operation stipulated in condition 2.8 of this approval.
- 2.14 The Proponent shall notify nearby sensitive receivers (as defined in the Operational Noise Management Plan required under condition 6.5a) of this approval) prior to 8.00 pm where it is known that emergency ash haulage or placement operations will be required outside of the hours of operation stipulated in condition 2.8 of this approval.

Operational Noise

- 2.15 The cumulative operational noise from the ash placement area and ash haulage activity shall not exceed an L_{Aeq} (15 minute) of 40 dB(A) at the nearest most affected sensitive receiver during normal operating hours as defined in condition 2.8 of this approval.

This noise criterion applies under the following meteorological conditions:

- a) wind speeds up to 3 m/s at 10 metres above ground; and/or
- b) temperature inversion conditions of up to 3°C/100 m and source to receiver gradient winds of up to 2 m/s at 10 m above ground level.

This criterion does not apply where the Proponent and the affected landowner have reached a negotiated agreement in regard to noise, and a copy of the agreement has been forwarded to the **Secretary** and the **EPA**.

- 2.16 The Proponent shall implement measures to ensure noise attenuation of trucks. These measures may include, but are not necessarily limited to, installation of residential class mufflers, engine shrouds, body dampening, speed limiting, fitting of rubber stoppers to tail gates, limiting the use of compression braking, and ensuring trucks operate in a one-way system at the ash repository where feasible.
- 2.17 The Proponent shall liaise with the owner/operator of Angus Place Coal Mine with the aim of preparing a protocol which provides for a co-operative approach for the management and mitigation of noise impacts associated with coal and ash truck movements along the private haul road.
- 2.18 Where noise monitoring (as required by conditions 3.2 or 3.3 of this approval) identifies any non-compliance with the operational noise criterion specified under condition 2.15 of this approval the Proponent shall prepare and submit to the **Secretary** for approval a report including, but not limited to:
- a) an assessment of all reasonable and feasible physical and other mitigation measures for reducing noise at the source including, but not limited to -
 - i) construction of a noise barrier along the haulage road,
 - ii) alternative ash haulage routes, and
 - iii) alternative methods of ash conveyance to the repository; and
 - b) identification of the preferred measure(s) for reducing noise at the source;
 - c) feedback from directly affected property owners and the **EPA** on the proposed noise mitigation measures; and
 - d) location, type, timing and responsibility for implementation of the noise mitigation measure(s).

The report is to be submitted to the **Secretary** within 60 days of undertaking the noise monitoring which has identified exceedances of the operational noise criterion specified under condition 2.15, unless otherwise agreed to by the **Secretary**. The Proponent shall implement all reasonable and feasible mitigation measures in accordance with the requirements of the **Secretary**.

Additional Noise Mitigation Measures

- 2.19 If, after the implementation of all reasonable and feasible source controls, as identified in the report required by condition 2.18, the noise generated by the project exceeds the criterion stipulated in condition 2.15 at:
- a) any sensitive receiver in existence at the date of this approval; or
 - b) any residential dwelling for which an approval has been sought or obtained under the *Environmental Planning and Assessment Act 1979* no later than six months after the confirmation of operational noise levels;

upon receiving a written request from an affected landowner (unless that landowner has acquisition rights under condition 2.20 of this approval and has requested acquisition) the Proponent shall implement additional noise mitigation measures such as double glazing, insulation, air conditioning and or other building acoustic treatments at any residence on the land, in consultation with the landowner.

For the purpose of this condition and condition 2.20, confirmation of operational noise levels means:

- a) completion of the operational noise review required under condition 3.2 of this approval; and
- b) implementation of any source controls, as required under condition 2.18 of this approval, should the operational noise review indicate noise levels in excess of the operational noise criterion specified in condition 2.15; and
- c) monitoring of operational noise levels, as required under condition 3.3b) of this approval, following the implementation of any source controls.

The additional mitigation measures must be reasonable and feasible. If within three months of receiving this request from the landowner the Proponent and landowner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Director-General for resolution, whose decision shall be final.

Land Acquisition Criteria

2.20 If, after the implementation of all reasonable and feasible source controls, as identified in the report required by condition 2.18, the noise generated by the project exceeds the criterion stipulated in condition 2.15 by more than 5 dB(A):

- a) at a sensitive receiver in existence at the date of this approval; or
- b) at any residential dwelling for which an approval has been sought or obtained under the *Environmental Planning and Assessment Act 1979* prior to the landholder receiving written notification that they are entitled to land acquisition rights, as per condition 2.25 of this approval; or
- c) over 25% or more of the area of a vacant allotment in existence at the date of this approval, and where a dwelling is permissible under the *Environmental Planning and Assessment Act 1979* at that date, with the exception of land that is currently used for industrial or mining purposes;

the Proponent shall, upon receiving a written request for acquisition from the landowner, acquire the land in accordance with the procedures in conditions 2.22 to 2.24 of this approval.

Any landowner that has agreed to, or property that has been the subject of, the application of additional noise mitigation measures under condition 2.19 of this approval waives the right to land acquisition.

2.21 The land acquisition rights under condition 2.20 of this approval do not apply to landowners who have sought approval to subdivide their land after the date of this approval, unless the subdivision is created pursuant to condition 2.24 of this approval.

2.22 Within three months of receiving a written request from a landowner with acquisition rights under condition 2.20 of this approval, the Proponent shall make a binding written offer to the landowner based on:

- (a) the current market value of the landowner's interest in the property at the date of this written request, as if the property was unaffected by the project which is the subject of the project application, having regard to the:
 - i) existing and permissible use of the land, in accordance with the applicable planning instruments at the date of the written request; and
 - ii) presence of improvements on the property and/or any approved building or structure which has been physically commenced at the date of the landowner's

- written request, and is due to be completed subsequent to that date, but excluding any improvements that have resulted from the implementation of condition 2.19 of this approval;
- (b) the reasonable costs associated with:
 - i) relocating within the Lithgow local government area, or to any other local government area determined by the **Secretary**;
 - ii) obtaining legal advice and expert advice for determining the acquisition price of the land, and the terms upon which it is required; and
 - (c) reasonable compensation for any disturbance caused by the land acquisition process.

However, if at the end of this period, the Proponent and landowner cannot agree on the acquisition price of the land, and/or the terms upon which the land is to be acquired, then either party may refer the matter to the **Secretary** for resolution.

Upon receiving such a request, the **Secretary** shall request the President of the NSW Division of the Australian Property Institute to appoint a qualified independent valuer or Fellow of the Institute, to consider submissions from both parties, and determine a fair and reasonable acquisition price for the land, and/or terms upon which the land is to be acquired.

Within 14 days of receiving the independent valuer's determination, the Proponent shall make a written offer to purchase the land at a price not less than the independent valuer's determination.

If the landowner refuses to accept this offer within six months of the date of the Proponent's offer, the Proponent's obligations to acquire the land shall cease, unless otherwise agreed by the **Secretary**.

- 2.23 The Proponent shall bear the costs of any valuation or survey assessment requested by the independent valuer or the **Secretary** and the costs of determination referred to above.
- 2.24 If the Proponent and landowner agree that only part of the land shall be acquired, then the Proponent shall pay all reasonable costs associated with obtaining Council approval for any plan of subdivision (where permissible), and registration of the plan at the Office of the Registrar-General.
- 2.25 The Proponent shall provide written notice to all landowners that are entitled to rights under conditions 2.19 and 2.20 within 21 days of determining the landholdings where additional noise mitigation measures or land acquisition apply. For the purpose of condition 2.20b), this condition only applies where operational noise levels have been confirmed in accordance with the definition in condition 2.19.

Sawyers Swamp Creek Realignment

- 2.26 The Proponent shall prepare and submit to the **Secretary** for approval a **Rehabilitation Plan** addressing the restoration of the in-stream area (i.e. bed and bank) of Sawyers Swamp Creek and the associated riparian corridor at least two months prior to the realignment of the creek, unless otherwise agreed by the **Secretary**. The Plan shall be developed in consultation with, and to the satisfaction of, **Fisheries NSW** and shall include, but not necessarily be limited to:
 - a) the objectives and outcomes that would be sought through the implementation of the Plan;
 - b) performance criteria for the realigned creek and associated riparian zone against which the impact of the project on the ecological health of Sawyers Swamp Creek will be assessed;
 - c) methodology used in developing the realignment planform;

- d) details of the final creek realignment including bank, meander, depth and slope characteristics (including pool-riffle sequences), flow and channel capacity characteristics, scour potential, and in-stream vegetation;
- e) timing of the creek realignment;
- f) a description of the proposed riparian zone and restoration works along the entire length of the creek realignment, including details of plant species to be used in rehabilitation;
- g) details of any proposed riparian and in-stream controls to be implemented in the reach upstream of the alignment to ensure the effectiveness of the proposed creek realignment and rehabilitation;
- h) a description of the initial and ongoing weed control measures;
- i) the methodology and timing of post realignment monitoring of the hydrology and ecological health of the aquatic and riparian vegetation as required under conditions 3.6 and 3.7 of this approval, respectively;
- j) mitigation measures to be implemented in the event of an identified decline in ecosystem health as a direct result of the realignment of the creek or construction or operation of the project, including a timetable for implementation;
- k) program for ongoing maintenance of the realigned creek system and associated riparian zone;
- l) any compensatory measures to offset the impacts of the project on the aquatic habitat and local waterways, if and as required by **Fisheries NSW** and
- m) provisions for periodic reporting of monitoring results to **Fisheries NSW**.

The Proponent shall not commence any construction work that would result in the disturbance of Sawyers Swamp Creek until the **Rehabilitation** Plan has been approved by the **Secretary**.

- 2.27 The rehabilitation and restoration of Sawyers Swamp Creek and associated riparian zone are to be consistent with the *Works and Watercourse Design Guideline* (DWE, April 2007) and *Guidelines for Controlled Activities: Vegetation Management Plans* (DWE, February 2008).
- 2.28 A riparian zone consisting of local native plant species shall be established and maintained in and adjacent to Sawyers Swamp Creek, for the entirety of the site and be a minimum width of 20 m on both sides of the creek. Seed and propagule sources are to be from local botanical provenance and same general habitat.
- 2.29 The riparian zone referred to under condition 2.28 of this approval shall be maintained for a period of at least five years after final planting.

Surface Water Quality

Water Quality

- 2.30 The Proponent shall take all reasonable and feasible measures to prevent discharge of sediments and pollutants from the construction and operation of the project entering waterways.

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| <p>Note: Section 120 of the <i>Protection of the Environment Operations Act 1997</i> prohibits the pollution of water except where expressly provided by an Environment Protection Licence.</p> |
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- 2.31 Earthworks not associated with the realignment of Sawyers Swamp Creek shall not be undertaken within 50 m of the creek where reasonable and feasible.
- 2.32 All equipment, machinery and vehicles associated with the construction and operation of the project shall be operated and maintained in a manner that minimises the potential for oil and grease spills/leaks.

Air Quality Impacts

- 2.33 The Proponent shall construct and operate the project in a manner that minimises dust impacts generated by construction works and operational activities, including wind-blown and traffic-generated dust, on the receiving environment. All activities on the site shall be undertaken with the objective of preventing visible emissions of dust from the site. Should such visible dust emissions occur at any time, the Proponent shall identify and implement all practicable dust mitigation measures, including cessation of relevant works, as appropriate, such that emissions of visible dust cease.
- 2.34 The Proponent shall ensure that the load carrying compartment(s) of all ash haulage trucks are covered at all times except when loading or unloading ash material.

Lighting Emissions

- 2.35 The Proponent shall take all practicable measures to mitigate off-site lighting impacts from the project and ensure all external lighting associated with the project complies with *Australian Standard AS4282 1997 – Control of the Obtrusive Effects of Outdoor Lighting*.

Construction Traffic and Transport Impacts

- 2.36 The Proponent shall ensure that construction vehicles associated with the project:
- minimise the use of local roads (though residential streets and town centres) to gain access to the site;
 - adhere to any nominated haulage routes identified in the Construction Traffic Management Plan as referred to in condition 6.3a) of this approval; and
 - adhere to a Construction Vehicle Code of Conduct prepared to manage driver behaviour along the local road network to address traffic impacts (and associated noise) along nominated haulage routes.

Capping Material Transport Impacts

- 2.36A The Proponent must:
- not import more than 100 heavy vehicle loads of capping material to the site per day;
 - cover all heavy vehicle loads of capping material;
 - not transport capping material on local roads in the Lithgow local government area;
 - notify the Department before commencing the importation of capping material from sources outside of the Lithgow local government area; and
 - not import capping material to the site for more than 2 years following its commencement.
- 2.36B The Proponent must implement warning signage on the Castlereagh Highway on the approaches to the Castlereagh Highway/Wallerawang Power Station Haul Road intersection prior to importing capping material to the site from sources outside of the Lithgow local government area to the satisfaction of RMS.

Heritage Impacts

- 2.37 The Proponent shall ensure that all construction personnel are educated on their obligations in respect of the protection of Aboriginal and non-indigenous heritage sites and items.
- 2.38 If any previously unidentified heritage sites or items (Aboriginal and/or non-indigenous) are discovered during construction works or operational activities, all work likely to affect the heritage sites or item(s) is to cease immediately and the discovery of the objects shall be reported to **OEH** or the Department as relevant.

Waste Management

- 2.39 All waste materials shall be assessed, classified, managed and disposed of in accordance with *Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-liquid Wastes* (EPA, 1999).
- 2.40 All waste materials removed from the site shall only be directed to a waste management facility lawfully permitted to accept the materials.
- 2.41 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.

3. ENVIRONMENTAL MONITORING

Construction Noise Monitoring

- 3.1 The Proponent shall prepare and implement a **Construction Noise Monitoring** Program to confirm the predictions of the noise assessment detailed in the document referred to under condition 1.1 of this approval and assess compliance against the construction noise criterion stipulated in condition 2.7 of this approval. The noise monitoring program shall be prepared in consultation with, and to the satisfaction of, the EPA. The monitoring program shall form part of the Construction Noise Management Plan referred to in condition 6.3b) of this approval and must include monitoring of the construction noise generated during:
- the realignment Sawyers Swamp Creek;
 - construction of the stabilisation berm;
 - excavation of the former pine plantation area;
 - relocation and construction of surface water management structures; and
 - concurrent construction activities.

The Proponent shall forward to the EPA and the Secretary a report containing the results of each noise assessment and describing any non-compliance within 14 days of conducting a noise assessment.

Operational Noise Review

- 3.2 Within 60 days of the commencement of operation of the project, unless otherwise agreed to by the Director-General, the Proponent shall submit for the approval of the Secretary an **Operational Noise Review** to confirm the operational noise impacts of the project. The Operational Noise Review must be prepared in consultation with, and to the satisfaction of, the EPA. The Review shall:
- identify the appropriate operational noise objectives and level for sensitive receivers;
 - describe the methodologies for noise monitoring including the frequency of measurements and location of monitoring sites;
 - document the operational noise levels at sensitive receivers as ascertained by the noise monitoring program;
 - assess the noise performance of the project against the noise criterion specified in condition 2.15 of this approval and the predicted noise levels as detailed in the report referred to under condition 1.1 of this approval; and
 - provide details of any entries in the Complaints Register (as required under condition 5.4 of this approval) relating to noise impacts.

Where monitoring indicates noise levels in excess of the operational noise criterion specified in condition 2.15 of this approval, the Proponent shall prepare a report as required by condition 2.18 of this approval.

Ongoing Operational Noise Monitoring

- 3.3 The Proponent shall prepare and implement an **Operational Noise Monitoring Program** to assess compliance against the operational noise criterion stipulated in condition 2.15 of this approval, throughout the life of the project. The noise monitoring program shall be prepared in consultation with, and to the satisfaction of, the **EPA**.

The noise monitoring program shall be prepared in accordance with the requirements of the *New South Wales Industrial Noise Policy* (EPA, 2000) and must include, but not be limited to:

- a) monitoring during ash placement in the far western area of the site adjacent to the haul road; and
- b) monitoring of the effectiveness of any noise mitigation measures implemented under condition 2.18 of this approval, against the noise criterion specified in condition 2.15 of this approval.

Noise from the project is to be measured at the most affected point on or within the residential boundary, or at the most affected point within 30 metres of a dwelling where the dwelling is more than 30 metres from the boundary, to determine compliance with the noise criterion stipulated in condition 2.15 of this approval. Where it can be demonstrated that direct measurement of noise from the project is impractical, the **EPA** may accept alternative means of determining compliance (see Chapter 11 of the *NSW Industrial Noise Policy*). The modification factors in Section 4 of the *NSW Industrial Noise Policy* shall also be applied to the measured noise levels where applicable.

The Proponent shall forward to the **EPA** and the **Secretary** a report containing the results of any non-compliance within 14 days of conducting a noise assessment.

Where monitoring indicates noise levels in excess of the operational noise criterion specified in condition 2.15 of this approval, approval, the Proponent shall prepare a report as required by condition 2.18 of this approval.

The monitoring program shall form part of the Operational Noise Management Plan referred to in condition 6.5a) of this approval.

Groundwater Monitoring

- 3.4 The Proponent shall prepare and implement a **Groundwater Monitoring Program** to monitor the impacts of ash placement activities on local groundwater quality and hydrology. The Program shall be developed in consultation with, and to the satisfaction of, **WaterNSW**, and shall describe the location, frequency, rationale and procedures and protocols for collecting groundwater samples as well as the parameters analysed and methods of analysis. The monitoring program shall be ongoing for the life of the project and include, but not be limited to:

- a) monitoring at established bore sites (or replacement bore sites in the event that existing sites are damaged or lost) as described in the document referred to under condition 1.1 of this approval; and
- b) a schedule for periodic monitoring of groundwater quality, depth and flow at all monitoring sites, at an initial frequency of no less than once every month for the first 12 months of operation.

The monitoring program shall form part of the Groundwater Management Plan referred to in condition 6.5b) of this approval.

Surface Water Quality Monitoring

- 3.5 The Proponent is to implement a surface water quality monitoring program to monitor the impacts of the ash placement activities on, and the realignment of, Sawyers Swamp Creek. The Program shall be developed in consultation with and to the satisfaction of **Fisheries**

NSW and WaterNSW, and shall describe the location, frequency, rationale and the procedures and protocols for collecting water samples as well as the parameters analysed and methods of analysis. The program shall include, but not necessarily be limited to:

- a) monitoring at the four existing water quality monitoring sites as described in the document referred to under condition 1.1 of this approval;
- b) monitoring downstream of the realigned section of Sawyers Swamp Creek;
- c) monitoring at groundwater discharge points into Sawyers Swamp Creek;
- d) wet weather monitoring with a minimum of two events recorded within the first 12 months of both the operation of the project and post realignment of Sawyers Swamp Creek; and
- e) a schedule for periodic monitoring of surface quality at all sites throughout the life of the project, at an initial frequency of no less than once every month for the first 12 months and must include, but not be limited to, dissolved oxygen, turbidity, total phosphorus and total nitrogen.

The monitoring program shall form part of the Surface Water Management Plan referred to in condition 6.5c) of this approval.

Sawyers Swamp Creek Realignment Monitoring

- 3.6 The Proponent is to implement a **Hydrological Monitoring Program** to assess and quantify the impacts and effectiveness of the realigned section of Sawyers Swamp Creek in consultation with and to the satisfaction of Fisheries NSW. Monitoring is to be undertaken for a period of five (5) years upon completion of the creek realignment and is to include scour and erosion monitoring. The program must include sampling before and after the realignment works and include a sampling site downstream of the realigned section of creek. In the first 12 months following completion of the realignment, monitoring is to be undertaken at least every three (3) months upon completion of the creek realignment and after any wet weather/bankful flow event.

The monitoring program shall form part of the Rehabilitation Plan for the project as referred to in condition 2.26 of this approval.

- 3.7 The Proponent shall prepare an **Ecological Monitoring Program**, in consultation with, and to the satisfaction of, Fisheries NSW, to monitor and quantify the impacts of the realignment of Sawyers Swamp Creek on the ecology and ecosystems of the creek and the associated riparian environment. The Program shall include, but not necessarily be limited to:
- a) a sampling, data collection and assessment regime to establish baseline ecological health and for ongoing monitoring of ecological health of the in-stream environment during construction and throughout the life of the project;
 - b) at least one in-stream sampling period prior to the realignment of Sawyers Swamp Creek and at least two (2) sampling periods following the realignment of Sawyers Swamp Creek; and
 - c) an assessment regime for monitoring the ecological health of the riparian environment for a period of at least five (5) years after final planting.

The monitoring program shall form part of the Rehabilitation Plan for the project as referred to in condition 2.26 of this approval.

Air Quality Monitoring

- 3.8 The Proponent shall prepare an **Air Quality Monitoring Program**, in consultation with, and to the satisfaction of, the EPA. The Program shall include, but not necessarily be limited to, monitoring for dust at the monitoring sites identified in the document referred to under condition 1.1 of this approval. The air quality monitoring program shall be ongoing for the life of the project, including final rehabilitation and stabilisation of the site.

The monitoring program shall form part of the Air Quality Management Plan referred to in condition 6.5d) of this approval.

4. COMPLIANCE MONITORING AND TRACKING

- 4.1 Prior to each of the events listed below, the Proponent shall certify in writing to the satisfaction of the **Secretary** that it has complied with all conditions of this approval applicable prior to that event:
- commencement of any construction works on the land subject of this approval; and
 - commencement of operation of the project.
- 4.2 The Proponent shall develop and implement a **Compliance Tracking Program** for the project, prior to commencing operations, to track compliance with the requirements of this approval and shall include, but not necessarily limited to:
- provisions for periodic review of the compliance status of the project against the requirements of this approval and the Statement of Commitments detailed in the document referred to in condition 1.1a) of this approval;
 - provisions for periodic reporting of the compliance status to the **Secretary**;
 - a program for independent environmental auditing in accordance with *AS/NZ ISO 19011:2003 - Guidelines for Quality and/or Environmental Management Systems Auditing*;
 - procedures for rectifying any non-compliance identified during environmental auditing or review of compliance;
 - mechanisms for recording environmental incidents and actions taken in response to those incidents;
 - provisions for reporting environmental incidents to the **Secretary** during construction and operation; and
 - 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.

The Compliance Tracking Program shall be implemented prior to operation of the project with a copy submitted to the **Secretary** for approval within four weeks of commencement of the project, unless otherwise agreed by the **Secretary**.

- 4.3 Nothing in this approval restricts the Proponent from utilising any existing compliance tracking programs administrated by the Proponent to satisfy the requirements of condition 4.2. In doing so, the Proponent must demonstrate to the **Secretary** how these systems address the requirements and/or have been amended to comply with the requirements of the condition.
- 4.4 The Proponent shall meet the requirements of the **Secretary** in respect of the implementation of any measure necessary to ensure compliance with the conditions of this approval, and general consistency with the documents listed under condition 1.1 of this approval.

5. COMMUNITY INFORMATION AND COMPLAINTS MANAGEMENT

Provision of Information

- 5.1 Prior to the commencement of the project, the Proponent shall establish and maintain a website for the provision of electronic information associated with the project. The Proponent shall, subject to confidentiality, publish and maintain up-to-date information on this website or dedicated pages including, but not necessarily limited to:
- the documents referred to under condition 1.1 of this approval;
 - this project approval, Environment Protection Licence and any other relevant environmental approval, licence or permit required and obtained in relation to the project;
 - all strategies, plans and programs required under this project approval, or details of where this information can be viewed;
 - information on construction and operational progress;

- e) the outcomes of compliance tracking in accordance with the requirements of this project approval.

5.2 The Proponent shall make all documents required to be provided under condition 5.1 of this approval publicly available.

Complaints and Enquiries Procedure

- 5.3 Prior to the commencement of the project, the Proponent shall ensure that the following are available for community complaints and enquiries during construction and operation:
- a) a 24-hour contact number(s) on which complaints and enquiries about construction and operational activities may be registered;
 - b) a postal address to which written complaints and enquiries may be sent; and
 - c) an email address to which electronic complaints and enquiries may be transmitted.

The telephone number, postal address and email address shall be published in a newspaper circulating in the local area prior to the commencement of the project. The above details shall also be provided on the website required by condition 5.1 of this approval.

- 5.4 The Proponent shall record the details of all complaints received through the means listed under condition 5.3 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 of the complaint;
 - b) the means by which the complaint was made (e.g. telephone, email, mail, in person);
 - 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) the time taken to respond to the complaint;
 - f) any investigations and actions taken by the Proponent in relation to the complaint;
 - g) any follow-up contact with, and feedback from, the complainant; and
 - h) 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 **Secretary** upon request.

6. ENVIRONMENTAL MANAGEMENT

Environmental Representative

- 6.1 Prior to the commencement of any construction or operational activities, or as otherwise agreed by the **Secretary**, the Proponent shall nominate for the approval of the **Secretary** 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 **Secretary**. 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 Statement of Commitments **in the EA**;
 - c) oversee the implementation of the environmental auditing of the project in accordance with the requirements of condition 4.2 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

- 6.2 Prior to the commencement of construction work, the Proponent shall prepare and implement a **Construction Environmental Management Plan (CEMP)**. The CEMP shall outline the environmental management practices and procedures to be followed during construction. The CEMP shall be prepared in accordance with *Guideline for the Preparation of Environmental Management Plans* (DIPNR, 2004).

The Construction Environmental Management Plan for the project (or any stage of the project) shall be submitted to the **Secretary** for approval at least four weeks prior to the commencement of any construction work associated with the project (or stage as relevant), unless otherwise agreed by the **Secretary**. Construction shall not commence until written approval has been received from the **Secretary**.

- 6.3 As part of the Construction Environmental Management Plan for the project, the Proponent shall prepare and implement the following plans:

- a) a **Construction Traffic Management Plan**, prepared in consultation with **RMS**, the relevant Council and emergency services to manage the construction traffic impacts of the project, including but not limited to:
 - i) identifying construction vehicle volumes (construction staff vehicles, heavy vehicles and oversized loads) and haulage routes;
 - ii) identifying any road closures and/or traffic detours during the haulage of oversized loads as agreed to by the relevant roads authority;
 - iii) detailing a Construction Vehicle Code of Conduct to set driver behaviour controls to minimise impacts on the land uses along haulage routes (including noise minimisation measures); and
 - iv) complying with the document *Procedures for Use in the Preparation of a Traffic Management Plan* (RTA, 2001).
- b) a **Construction Noise Management Plan** to detail how construction noise impacts would be minimised and managed. The Strategy shall be developed in consultation with, and to the satisfaction of, the **EPA** and shall include, but not necessarily be limited to:
 - i) details of construction activities and an indicative schedule for construction works;
 - ii) identification of construction activities that have the potential to generate noise impacts on sensitive receivers,
 - iii) procedures for assessing noise levels at sensitive receivers and compliance;
 - iv) details of the reasonable and feasible actions and measures to be implemented to minimise noise impacts and, if any noise exceedance is detected, how any non-compliance would be rectified; and
 - v) procedures for notifying sensitive receivers of construction activities that are likely to affect their noise amenity.
- c) an **Erosion and Sediment Control Plan** to detail measures to minimise erosion and the discharge of sediment and other pollutants to land and/or water during construction works. The Plan must include, but not necessarily be limited to:
 - i) identification of the construction activities that could cause soil erosion or discharge sediment or water pollutants from the site;
 - ii) a description of the management methods to minimise soil erosion or discharge of sediment or water pollutants from the site, including a strategy to minimise the area of bare surfaces, stabilise disturbed areas, and minimise bank erosion; and
 - iii) demonstration that the proposed erosion and sediment control measures will conform with, or exceed, the relevant requirements of *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004).

Operational Environmental Management

- 6.4 The Proponent shall prepare and implement an **Operational 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 (including contractors) 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;
 - f) the additional plans listed under condition 6.5 of this approval;
 - g) the environmental monitoring requirements outlined under conditions 3.3 to 3.5 inclusive and 3.8 of this approval.

The Plan shall be submitted for the approval of the **Secretary** no later than four weeks prior to the commencement of operation of the project, unless otherwise agreed by the **Secretary**. Operation shall not commence until written approval has been received from the **Secretary**.

Nothing in this approval precludes the Proponent from incorporating the requirements of the Operational Environmental Management Plan into existing environmental management systems and plans administered by the Proponent.

- 6.5 As part of the Operation Environmental Management Plan for the project, required under condition 6.4 of this approval, the Proponent shall prepare and implement the following Management Plans:
- a) an **Operational Noise Management Plan** to detail measures to mitigate and manage noise during operation of the project. The Plan shall be prepared in consultation with, and to the satisfaction of, the **EPA** and include, but not necessarily be limited to:
 - i) procedures to ensure that all reasonable and feasible noise mitigation measures are applied during operation of the project;
 - ii) identification of all relevant sensitive receivers and the applicable criteria at those receivers commensurate with the noise limit specified under condition 2.15 of this approval;
 - iii) identification of activities that will be carried out in relation to the project and the associated noise sources;
 - iv) noise monitoring procedures (as referred to in condition 3.3 of this approval) for periodic assessment of noise impacts at the relevant receivers against the noise limits specified under this approval and the predicted noise levels as detailed in the report referred to under condition 1.1 of this approval;
 - v) details of all management methods and procedures that will be implemented to control individual and overall noise emissions from the site during operation;
 - vi) procedures and corrective actions to be undertaken if non-compliance against the operational noise criteria is detected; and
 - vii) provisions for periodic reporting of results to **EPA**.
 - b) a **Groundwater Management Plan** to detail measures to mitigate and manage groundwater impacts. The Plan shall be prepared in consultation with, and to the satisfaction of, **WaterNSW** and include, but not necessarily be limited to:

- i) baseline data on groundwater quality, depth and flow in the project area;
 - ii) groundwater objectives and impact assessment criteria;
 - iii) a program to monitor groundwater flows and groundwater quality in the project area as required by condition 3.4 of this approval;
 - iv) a protocol for the investigation of identified exceedances of the groundwater impact assessment criteria;
 - v) a response plan to address potential exceedances and groundwater quality impacts; and
 - vi) provisions for periodic reporting of results to **WaterNSW**.
- c) a **Surface Water Management Plan** to outline measures that will be employed to manage water on the site, to minimise soil erosion and the discharge of sediments and other pollutants to lands and/or waters throughout the life of the project. The Plan shall be based on best environmental practice and shall be prepared in consultation with, and to the satisfaction of, **WaterNSW** and **Fisheries NSW**. The Plan shall include, but not necessarily be limited to:
 - i) baseline data on the water quality and flow in Sawyers Swamp Creek up
 - ii) to the date of this approval;
 - iii) water quality objectives and impact assessment criteria for Sawyers Swamp Creek;
 - iv) a program to monitor surface water quality in Sawyers Swamp Creek as referred to in condition 3.5 of this approval;
 - v) a protocol for the investigation of identified exceedances in the impact assessment criteria;
 - vi) a response plan to address potential adverse surface water quality exceedances;
 - vii) a site water management strategy identifying clean and dirty water areas for Stages A, B and C of the project and the associated water management measures including erosion and sediment controls and provisions for recycling/reuse of water and the procedures for decommissioning water management structures on the site; and
 - viii) provisions for periodic reporting of results to the **Fisheries NSW** and **WaterNSW**.
- d) an **Air Quality Management Plan** to outline measures to minimise impacts from the project on local air quality. The Plan shall be prepared in consultation with, and to the satisfaction of, the **EPA** and include, but not necessarily be limited to:
 - i) baseline data on dust deposition levels;
 - ii) air quality objectives and impact assessment criteria;
 - iii) an air quality monitoring program as referred to in condition 3.8 of this approval;
 - iv) an assessment of alternative methods of ash placement to minimise the exposure of active placement areas to prevailing winds;
 - v) mitigation measures to be incorporated during emplacement activities and haulage of ash;
 - vi) an operating protocol for the repository irrigation system including activation rates, application rates and area of coverage;
 - vii) a protocol for the investigation of visible emissions from the repository area;
 - viii) a response plan to address visible emissions from the repository area; and
 - ix) provisions for periodic reporting of results to the **EPA**.
- e) a **Landscape/Revegetation Plan** to outline measures to minimise the visual impacts of the repository and ensure the long-term stabilisation of the site and compatibility with the surrounding land fabric and land use. The Plan shall include, but not necessarily be limited to:
 - (i) identification of design objectives and standards based on local environmental values, vistas, and land uses;
 - (ii) a description of short- and long-term revegetation measures;
 - (iii) a schedule of species to be used in revegetation;

- (iv) timing and progressive implementation of revegetation works as placement areas are completed, including landscape plans; and
- (v) procedures and methods to monitor and maintain revegetated areas during the establishment phase and long-term.

Revegetation works must incorporate the use of local native species.

- f) an **Operational Transport Management Plan** for the project, which must:
 - (i) be prepared in consultation with RMS and Council, prior to importing capping material from sources outside of the Lithgow local government area;
 - (ii) detail the route to be used to transport capping material;
 - (iii) detail the measures that would be implemented to minimise traffic safety issues for other road users (including cyclists), including:
 - notifying the community about project-related traffic impacts;
 - a procedure to address complaints about project-related traffic;
 - minimising potential traffic conflicts with school buses and during local school drop-off and pick-up times;
 - scheduling heavy vehicle movements to minimise convoy length or platoons;
 - responding to local climate conditions that may affect road safety such as fog, dust, wet weather; and
 - responding to emergency repair or maintenance requirements; and
 - (iv) include a Driver Code of Conduct, which addresses:
 - travelling speeds;
 - driver fatigue;
 - adherence to the designated transport route; and
 - safe driving practices.

6.5A The Proponent shall update the Operation Environment Management Plan (as referred to in condition 6.4 of this approval) and associated monitoring programs (as referred to in conditions 3.4 to 3.8 inclusive) prior to the importation of capping material to the site from sources outside of the Lithgow local government area, to the satisfaction of the Secretary. The updated plan and associated monitoring programs must reflect all operational activities, monitoring and management practices for the Kerosene Vale Ash Dam and the Sawyers Swamp Creek Ash Dam.

Revision of Strategies and Plans

- 6.6 The Proponent must review and, if necessary, revise the plans required under this approval within 2 months of:
- the submission of an audit report in accordance with condition 4.2(c) of this approval;
 - the submission of an incident report in accordance with condition 7.1 of this approval; or
 - an approved modification to the conditions of approval, to the satisfaction of the Secretary.

7. ENVIRONMENTAL REPORTING

Environmental Incident Reporting

- 7.1 The Proponent shall notify the **Secretary** of any environmental incident within 12 hours of becoming aware of the incident. The Proponent shall provide full written details of the incident to the **Secretary** within seven days of the date on which the incident occurred.
- 7.2 The Proponent shall meet the requirements of the **Secretary** to address the cause or impact of any environmental incident, as it relates to this approval, reported in accordance with condition 7.1 of this approval, within such period as the **Secretary** may require.

Annual Performance Reporting

- 7.3 The Proponent shall, throughout the life of the project, prepare and submit for the approval of the **Secretary**, an **Annual Environmental Management Report (AEMR)**. The AEMR shall review the performance of the project against the Operation Environmental Management Plan (refer to condition 6.4 of this approval) and the conditions of this approval. The AEMR shall include, but not necessarily be limited to:
- a) details of compliance with the conditions of this approval;
 - b) a copy of the Complaints Register (refer to condition 5.4 of this approval) for the preceding twelve-month period (exclusive of personal details), and details of how these complaints were addressed and resolved;
 - c) identification of any circumstances in which the environmental impacts and performance of the project during the year have not been generally consistent with the environmental impacts and performance predicted in the documents listed under condition 1.1 of this approval, with details of additional mitigation measures applied to the project to address recurrence of these circumstances;
 - d) results of all environmental monitoring required under conditions 3.3 to 3.8 of this approval, including interpretations and discussion by a suitably qualified person; and
 - e) a list of all occasions in the preceding twelve-month period when environmental goals/objectives/impact assessment criteria for the project have not been achieved, indicating the reason for failure to meet the **criteria** and the action taken to prevent recurrence of that type of failure.

The Proponent shall submit a copy of the AEMR to the **Secretary** every year, with the first AEMR to be submitted no later than twelve months after the commencement of operation of the project. The **Secretary** may require the Proponent to address certain matters in relation to the environmental performance of the project in response to review of the Annual Environmental Report. Any action required to be undertaken shall be completed within such period as the **Secretary** may require. The Proponent shall make copies of each AEMR available for public inspection on request.

APPENDIX 1: SCHEDULE OF LAND

| <i>Lot</i> | <i>DP</i> |
|------------|-----------|
| 2 | 1139982 |
| 5 | 829137 |

APPENDIX 2: PROJECT AREA



Figure 1: Project Area



Environment Protection Licence

Licence - 766

| Licence Details | |
|-------------------|------------|
| Number: | 766 |
| Anniversary Date: | 01-January |

| Licensee |
|-----------------------------|
| ENERGYAUSTRALIA NSW PTY LTD |
| 350 BOULDER RD |
| PORTLAND NSW 2847 |

| Premises |
|---------------------------|
| WALLERAWANG POWER STATION |
| 1 MAIN STREET |
| WALLERAWANG NSW 2845 |

| Scheduled Activity |
|------------------------|
| Electricity generation |

| Fee Based Activity | Scale |
|--|--------------------------------------|
| Generation of electrical power from coal | 0-250 GWh annual generating capacity |

| Region |
|-------------------------------|
| Central West |
| Lvl 2, 203-209 Russell Street |
| BATHURST NSW 2795 |
| Phone: (02) 6332 7600 |
| Fax: (02) 6332 7630 |
| PO Box 1388 |
| BATHURST NSW 2795 |

Environment Protection Licence

Licence - 766

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Environment Protection Licence

Licence - 766



Information about this licence

Dictionary

A definition of terms used in the licence can be found in the dictionary at the end of this licence.

Responsibilities of licensee

Separate to the requirements of this licence, general obligations of licensees are set out in the Protection of the Environment Operations Act 1997 ("the Act") and the Regulations made under the Act. These include obligations to:

- ensure persons associated with you comply with this licence, as set out in section 64 of the Act;
- control the pollution of waters and the pollution of air (see for example sections 120 - 132 of the Act);
- report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the Act.

Variation of licence conditions

The licence holder can apply to vary the conditions of this licence. An application form for this purpose is available from the EPA.

The EPA may also vary the conditions of the licence at any time by written notice without an application being made.

Where a licence has been granted in relation to development which was assessed under the Environmental Planning and Assessment Act 1979 in accordance with the procedures applying to integrated development, the EPA may not impose conditions which are inconsistent with the development consent conditions until the licence is first reviewed under Part 3.6 of the Act.

Duration of licence

This licence will remain in force until the licence is surrendered by the licence holder or until it is suspended or revoked by the EPA or the Minister. A licence may only be surrendered with the written approval of the EPA.

Licence review

The Act requires that the EPA review your licence at least every 5 years after the issue of the licence, as set out in Part 3.6 and Schedule 5 of the Act. You will receive advance notice of the licence review.

Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

- an administrative fee; and
- a load-based fee (if applicable).

Environment Protection Licence

Licence - 766



The EPA publication “A Guide to Licensing” contains information about how to calculate your licence fees. The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

Usually the licence fee period is the same as the reporting period.

Transfer of licence

The licence holder can apply to transfer the licence to another person. An application form for this purpose is available from the EPA.

Public register and access to monitoring data

Part 9.5 of the Act requires the EPA to keep a public register of details and decisions of the EPA in relation to, for example:

- licence applications;
- licence conditions and variations;
- statements of compliance;
- load based licensing information; and
- load reduction agreements.

Under s320 of the Act application can be made to the EPA for access to monitoring data which has been submitted to the EPA by licensees.

This licence is issued to:

| |
|-----------------------------|
| ENERGYAUSTRALIA NSW PTY LTD |
| 350 BOULDER RD |
| PORTLAND NSW 2847 |

subject to the conditions which follow.



Environment Protection Licence

Licence - 766

1 Administrative Conditions

A1 What the licence authorises and regulates

A1.1 This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.

Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.

| Scheduled Activity | Fee Based Activity | Scale |
|------------------------|--|--|
| Electricity generation | Generation of electrical power from coal | 0 - 250 GWh annual generating capacity |

A2 Premises or plant to which this licence applies

A2.1 The licence applies to the following premises:

| Premises Details |
|---|
| WALLERAWANG POWER STATION |
| 1 MAIN STREET |
| WALLERAWANG |
| NSW 2845 |
| LOT 1 DP 213770, LOT 2 DP 213770, LOT E DP 394440, LOT C DP 394440, LOT D DP 394440, LOT 1 DP 443235, LOT 1 DP 568265, LOT 231 DP 622326, LOT 3 DP 717025, LOT 3 DP 778400, LOT 4 DP 778400, LOT 1 DP 790970, LOT 1 DP 790971, LOT 32 DP 827807, LOT 2 DP 829137, LOT 3 DP 829137, LOT 5 DP 829137, LOT 101 DP 829410, LOT 4 DP 1016725, LOT 5 DP 1016725, LOT 6 DP 1016725, LOT 7 DP 1016725, LOT 8 DP 1016725, LOT 1 DP 1018958, LOT 2 DP 1018958, LOT 3 DP 1018958, LOT 4 DP 1018958, LOT 100 DP 1043966, LOT 92 DP 1043967, LOT 1 DP 1087684, LOT 4 DP 1087684, LOT 5 DP 1087684, LOT 171 DP 1131952, LOT 228 DP 1131953, LOT 1 DP 1131955, LOT 2 DP 1131955, LOT 171 DP 1131959, LOT 11 DP 1139978, LOT 2 DP 1139982 |

A3 Other activities

A3.1 This licence applies to all other activities carried on at the premises, including:

| Ancillary Activity |
|-----------------------------|
| Chemical Storage Facilities |
| Coal Works |

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Crushing, Grinding or Separating Works

Energy recovery

Waste storage

A4 Information supplied to the EPA

- A4.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.

In this condition the reference to "the licence application" includes a reference to:

- a) the applications for any licences (including former pollution control approvals) which this licence replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998; and
- b) the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence.

2 Discharges to Air and Water and Applications to Land

P1 Location of monitoring/discharge points and areas

- P1.1 The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or the setting of limits for the emission of pollutants to the air from the point.

| <i>Air</i> | | | |
|------------------------|--|--|---|
| EPA identification no. | Type of Monitoring Point | Type of Discharge Point | Location Description |
| 13 | Air emission monitoring Discharge to air | Air emission monitoring Discharge to air | Wallerawang Power Station Boiler 7, identified as "EPA ID 13" on a map provided to the EPA in a letter dated 18 March 2005 . |
| 14 | Air emissions monitoring Discharge to air | Air emissions monitoring Discharge to air | Wallerawang Power Station Boiler 8, identified as "EPA ID 14" on a map provided to the EPA in a letter dated 18 March 2005 . |
| 15 | Ambient air monitoring | | Blackmans Flat location, identified as "EPA ID 15" on a map provided to the EPA in a letter dated 18 March 2005 . |
| 16 | Ambient air monitoring | | Off Brays Lane Wallerawang location, identified as "EPA ID 16" on a map provided to the EPA in a letter dated 18 March 2005 . |
| 17 | Ambient air monitoring | | Newnes Plateau location, identified as "EPA ID 17" on a map provided to the EPA in a letter dated 18 March 2005 . |

- P1.2 The following utilisation areas referred to in the table below are identified in this licence for the purposes

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of the monitoring and/or the setting of limits for any application of solids or liquids to the utilisation area.

P1.3 The following points referred to in the table are identified in this licence for the purposes of the monitoring and/or the setting of limits for discharges of pollutants to water from the point.

Water and land

| EPA Identification no. | Type of Monitoring Point | Type of Discharge Point | Location Description |
|------------------------|---|---|---|
| 1 | Volume monitoring Effluent quality monitoring Discharge to waters | Volume monitoring Effluent quality monitoring Discharge to waters | Discharge to Coxs River from Unit 7 cooling tower identified as "EPA ID 1" on a map provided to the EPA in a letter dated 18 March 2005 . |
| 3 | Volume monitoring Effluent quality monitoring Discharge to waters | Volume monitoring Effluent quality monitoring Discharge to waters | Caustic injection plant discharge to Coxs River, identified as "EPA ID 3" on a map provided to the EPA in a letter dated 18 March 2005 . |
| 4 | Volume monitoring Effluent quality monitoring Discharge to waters | Volume monitoring Effluent quality monitoring Discharge to waters | Discharge to Coxs River from Unit 7 & 8 cooling tower blowdown, identified as "EPA ID 4" on a map provided to the EPA in a letter dated 18 March 2005. |
| 5 | Discharge quality monitoring Discharge to waters | Discharge quality monitoring Discharge to waters | Overflow drain from southern retention basin to Coxs River, identified as "EPA ID 5" on a map provided to the EPA in a letter dated 18 March 2005 . |
| 7 | Ambient water monitoring. | | Main Street Road Main Street Road Bridge upstream of all discharge points in the Wallerawang Power Station, identified as "EPA ID 7" on a map provided to the EPA in a letter dated 18 March 2005. |
| 8 | Ambient water monitoring. | | Railway Bridge downstream of points 1, 3 and 5 at Wallerawang Power Station, identified as "EPA ID 8" on a map provided to the EPA in a letter dated 18 March 2005. |
| 18 | Volume monitoring Discharge quality monitoring Discharge to water | Volume monitoring Discharge quality monitoring Discharge to water | Combined overflow drains from the coal stockpile settling basins at Wallerawang Power Station to Coxs River, identified as "EPA ID 18" on a map provided to the EPA in a letter dated 18 March 2005 . |
| 21 | Emergency discharge point | Emergency discharge point | Emergency discharge point just north of railway bridge and just upstream of ambient monitoring point LDP8. |

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| | | |
|----|---------------------------|---|
| 22 | Ambient water monitoring. | WX13 Coss River below Lake Wallace upstream of Rocky Waterhole Road Bridge, identified as "WX13" on the map provided to the EPA attached in a letter (DOC12/43881) dated 19 October 2012. |
| 23 | Ambient water monitoring. | COX4 Coss River approximately 100 metres downstream of the confluence of Licensed Discharge Point 4, identified as "Cox4" on a map provided to the EPA in a letter (DOC12/43881) dated 19 October 2012. |

3 Limit Conditions

L1 Pollution of waters

- L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.

L2 Concentration limits

- L2.1 For each monitoring/discharge point or utilisation area specified in the table\ below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.
- L2.2 Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges.
- L2.3 To avoid any doubt, this condition does not authorise the pollution of waters by any pollutant other than those specified in the table\.
- L2.4 Air Concentration Limits

POINT 13

| Pollutant | Units of measure | 100 percentile concentration limit | Reference conditions | Oxygen correction | Averaging period |
|--|----------------------------|------------------------------------|--|-------------------|------------------|
| Sulfuric acid mist and sulfur trioxide (as SO ₃) | milligrams per cubic metre | 100 | Dry, 273 K, 101.3 kPa, 7% O ₂ | | |

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| | | | |
|---|----------------------------|------|--|
| Hydrogen chloride | milligrams per cubic metre | 100 | Dry, 273 K, 101.3 kPa, 7% O ₂ |
| Chlorine | milligrams per cubic metre | 200 | Dry, 273 K, 101.3 kPa, 7% O ₂ |
| Mercury | milligrams per cubic metre | 1.0 | Dry, 273 K, 101.3 kPa, 7% O ₂ |
| Nitrogen Oxides | milligrams per cubic metre | 1500 | Dry, 273 K, 101.3 kPa, 7% O ₂ |
| Solid Particles | milligrams per cubic metre | 250 | Dry, 273 K, 101.3 kPa, 7% O ₂ |
| Total Fluoride | milligrams per cubic metre | 50 | Dry, 273 K, 101.3 kPa, 7% O ₂ |
| Type 1 and Type 2 substances in aggregate | milligrams per cubic metre | 5.0 | Dry, 273 K, 101.3 kPa, 7% O ₂ |
| Cadmium | milligrams per cubic metre | 1.0 | Dry, 273 K, 101.3 kPa, 7% O ₂ |

POINT 14

| Pollutant | Units of measure | 100 percentile concentration limit | Reference conditions | Oxygen correction | Averaging period |
|--|----------------------------|------------------------------------|--|-------------------|------------------|
| Sulfuric acid mist and sulfur trioxide (as SO ₃) | milligrams per cubic metre | 100 | Dry, 273 K, 101.3 kPa, 7% O ₂ | | |
| Cadmium | milligrams per cubic metre | 1.0 | Dry, 273 K, 101.3 kPa, 7% O ₂ | | |
| Type 1 and Type 2 substances in aggregate | milligrams per cubic metre | 5.0 | Dry, 273 K, 101.3 kPa, 7% O ₂ | | |
| Total Fluoride | milligrams per cubic metre | 50 | Dry, 273 K, 101.3 kPa, 7% O ₂ | | |
| Solid Particles | milligrams per cubic metre | 250 | Dry, 273 K, 101.3 kPa, 7% O ₂ | | |
| Chlorine | milligrams per cubic metre | 200 | Dry, 273 K, 101.3 kPa, 7% O ₂ | | |

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| | | | |
|-------------------|----------------------------|------|--|
| Hydrogen chloride | milligrams per cubic metre | 100 | Dry, 273 K, 101.3 kPa, 7% O ₂ |
| Nitrogen Oxides | milligrams per cubic metre | 1500 | Dry, 273 K, 101.3 kPa, 7% O ₂ |
| Mercury | milligrams per cubic metre | 1.0 | Dry, 273 K, 101.3 kPa, 7% O ₂ |

L2.5 For the purpose of Clause 35 of the *Protection of the Environment Operations (Clean Air) Regulation 2010*:

- (a) the activity of electricity generation, and
- (b) the Wallerawang Power Station Boiler 7 and Boiler 8, as identified as "EPA ID 13" and "EPA ID 14" on a map provided to the EPA in a letter dated 18 March 2005,

are taken to belong to Group 2.

Note: This condition will expire on 30 June 2017 in accordance with licence conditions U1.1 and U2.1.

L2.6 Water and/or Land Concentration Limits

POINT 1

| Pollutant | Units of Measure | 50 percentile concentration limit | 90 percentile concentration limit | 3DGM concentration limit | 100 percentile concentration limit |
|-------------------------|-----------------------------|-----------------------------------|-----------------------------------|--------------------------|------------------------------------|
| Aluminium (dissolved) | milligrams per litre | | 0.055 | | |
| Arsenic (dissolved) | milligrams per litre | | 0.020 | | 0.024 |
| Boron | milligrams per litre | | 0.8 | | 1.0 |
| Copper (dissolved) | milligrams per litre | | 0.15 | | |
| Electrical conductivity | microsiemens per centimetre | | 2,500 | | 2,900 |
| Fluoride | milligrams per litre | | 2.5 | | 3.0 |
| Nickel (dissolved) | milligrams per litre | | 0.05 | | 0.06 |

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| | | | |
|------------------|----------------------|------|---------|
| pH | pH | | 6.5-9.0 |
| Sulfate | milligrams per litre | 1200 | 1600 |
| Zinc (dissolved) | milligrams per litre | 0.1 | |

POINT 3

| Pollutant | Units of Measure | 50 percentile concentration limit | 90 percentile concentration limit | 3DGM concentration limit | 100 percentile concentration limit |
|------------------------|----------------------|-----------------------------------|-----------------------------------|--------------------------|------------------------------------|
| pH | pH | | | | 6.5-8.5 |
| Sulfate | milligrams per litre | | | | 1200 |
| Total suspended solids | milligrams per litre | | | | 30 |

POINT 4

| Pollutant | Units of Measure | 50 percentile concentration limit | 90 percentile concentration limit | 3DGM concentration limit | 100 percentile concentration limit |
|-------------------------|-----------------------------|-----------------------------------|-----------------------------------|--------------------------|------------------------------------|
| Aluminium (dissolved) | milligrams per litre | | 0.055 | | |
| Arsenic (dissolved) | milligrams per litre | | 0.02 | | 0.024 |
| Boron | milligrams per litre | | 0.8 | | 1.0 |
| Copper (dissolved) | milligrams per litre | | 0.15 | | |
| Electrical conductivity | microsiemens per centimetre | | 2,500 | | 2,900 |
| Fluoride | milligrams per litre | | 2.5 | | 3.0 |
| Nickel (dissolved) | milligrams per litre | | 0.05 | | 0.06 |
| pH | pH | | | | 6.5-9.0 |
| Sulfate | milligrams per litre | | 1200 | | 1600 |

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| | | |
|------------------------|-------------------------------|------|
| Total suspended solids | milligrams per litre | 30 |
| Turbidity | nephelometric turbidity units | 25 |
| Zinc (dissolved) | milligrams per litre | 0.10 |

POINT 5

| Pollutant | Units of Measure | 50 percentile concentration limit | 90 percentile concentration limit | 3DGM concentration limit | 100 percentile concentration limit |
|----------------|----------------------|-----------------------------------|-----------------------------------|--------------------------|------------------------------------|
| Oil and Grease | milligrams per litre | | | | 10 |
| pH | pH | | | | 6.5-8.5 |

POINT 18

| Pollutant | Units of Measure | 50 percentile concentration limit | 90 percentile concentration limit | 3DGM concentration limit | 100 percentile concentration limit |
|------------------------|----------------------|-----------------------------------|-----------------------------------|--------------------------|------------------------------------|
| Oil and Grease | milligrams per litre | | | | 10 |
| pH | pH | | | | 6.5-8.5 |
| Total suspended solids | milligrams per litre | | | | 30 |

POINT 21

| Pollutant | Units of Measure | 50 percentile concentration limit | 90 percentile concentration limit | 3DGM concentration limit | 100 percentile concentration limit |
|-------------------------|-----------------------------|-----------------------------------|-----------------------------------|--------------------------|------------------------------------|
| Aluminium (dissolved) | milligrams per litre | | 0.055 | | |
| Arsenic (dissolved) | milligrams per litre | | 0.02 | | 0.024 |
| Boron | milligrams per litre | | 0.8 | | 1.0 |
| Copper (dissolved) | milligrams per litre | | 0.15 | | |
| Electrical conductivity | microsiemens per centimetre | | 2,500 | | 2,900 |

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| | | | |
|--------------------|----------------------|------|---------|
| Fluoride | milligrams per litre | 2.5 | 3.0 |
| Nickel (dissolved) | milligrams per litre | 0.05 | 0.06 |
| pH | pH | | 6.5-9.0 |
| Sulfate | milligrams per litre | 1200 | 1600 |
| Zinc (dissolved) | milligrams per litre | 0.10 | |

L2.7 The concentration limits stipulated by condition L2.6 for EPA identification point 3 and 18 are deemed not to apply when the discharge from the stormwater control structures (sediment dams) occurs solely as a result of rainfall measured at the premises which exceeds:

a) a total of 56 millimetres of rainfall over any consecutive 5 day period.

Note: *A 56mm rainfall event is defined by the EPA endorsed publication "Managing urban stormwater: soils and construction" (Landcom 2004; 6-24) as the rainfall depth in millimetres for a 95th percentile 5 day rainfall event for "Lithgow" which is also consistent with the storage capacity (recommended minimum design criteria) for Type D sediment basins for mines and quarries (see "Managing urban stormwater: soils and construction, Volume 2E, mines and quarries" (DECC, 2008).*

L2.8 The concentration limit for total suspended solids stipulated by condition L2.6 for EPA identification point 3 and 18 is deemed not to have been breached where:

a) the water discharged is covered by condition L2.7; or

b) when not covered by condition L2.7, the water discharged (in accordance with licence conditions O5.7 and O5.8) is within the pH range 6.5-8.5 and has a turbidity of no more than 25 NTU at the time of the discharge; and

c) the EPA is advised within 3 working days of the completion of the sample testing and analysis as required by condition M2.3 of any results above the licence limit.

Note: *The purpose of condition L2.8 is to expediate the assessment and subsequent discharge of the clarified water from the stormwater control structures (sediment basins).*

L2.9 Results from monitoring carried out in accordance with conditions M2 and M3 can be used to determine compliance with the 90th and 100th percentile concentration limits specified in condition L2.

L2.10 Compliance with 90th percentile limits specified in condition L2.6 for Licensed Discharge Points (LDP) 1, 4 and 21, except for aluminium, copper and zinc (for which the 90th percentile limit applies at all times), is to be calculated using all monitoring data collected at these discharge points in accordance with condition M2.3 during each annual reporting period, with the exception of monitoring samples collected when the following events are occurring:

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- 1. The State Water Corporation has imposed a restriction level on extractions in accordance with clause 5.2 of the Water Management Licence number 10WM000004 issued for the Fish River Scheme under the Water Act 1912; and/or
- 2. Lake Wallace exceeds 750 microsiemens per centimetre Electrical Conductivity for more than 7 days in any one month.

L2.11 Compliance with the dissolved aluminium 90th percentile concentration limit for Licensed Discharge Points 1, 4 and 21, is to be determined using all monitoring data collected at these discharge points in accordance with condition M2.3 during each annual reporting period, with the exception of sample results that are collected when the dissolved aluminium concentrations of any of the cooling water sources/make-up supply exceeds 0.055 mg/L.

L2.12 The concentration of an impurity contained in the solid alternative fuel must not exceed the concentration specified for that impurity in the table below:

| Impurity | Units of measure | 100 percentile Concentration Limit |
|---|--------------------------|------------------------------------|
| Type 1 and Type 2 substances in aggregate | milligrams per kilograms | 350 |

L3 Volume and mass limits

- L3.1 For each discharge point or utilisation area specified below (by a point number), the volume/mass of:
- a) liquids discharged to water; or;
 - b) solids or liquids applied to the area;
- must not exceed the volume/mass limit specified for that discharge point or area.

| Point | Unit of Measure | Volume/Mass Limit |
|-------|---------------------|-------------------|
| 1 | kilolitres per week | 210000 |
| 4 | kilolitres per week | 105000 |
| 21 | kilolitres per week | 105000 |

- L3.2 Notwithstanding the volume limits specified in condition L3.1, the combined volume discharged from point(s) \$Parameter1\$ shall not exceed \$Parameter2\$.
- L3.3 The volume/mass limits for point(s) \$Parameter1\$ specified in condition L3.1 apply for dry weather conditions only.

L4 Waste

- L4.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled “Waste” and meeting the definition, if any, in the column titled

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"Description" in the table below.

Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled "Activity" in the table below.

Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled "Other Limits" in the table below.

This condition does not limit any other conditions in this licence.

| Code | Waste | Description | Activity | Other Limits |
|------|-----------------------------------|--|--------------------|--|
| NA | Excavated natural material | To be used for the rehabilitation of the Kerosene Vale Ash Repository, Sawyers Swamp Creek Ash Repository, associated infrastructure and progressive landforming of these sites. | Capping of Ash Dam | Material to be generated from within the Bathurst and Lithgow local government areas only, or from other locations in New South Wales with approval from the relevant consent authority. |
| NA | Virgin excavated natural material | To be used for the rehabilitation of the Kerosene Vale Ash Repository, Sawyers Swamp Creek Ash Repository, associated infrastructure and progressive landforming of these sites. | Capping of Ash Dam | Material to be generated from within the Bathurst and Lithgow local government areas only, or from other locations in New South Wales with approval from the relevant consent authority. |

L4.2 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

L4.3 Only the following types of waste may be disposed of at the premises:

- a) Ash
- b) Asbestos
- c) Mill pyrites
- d) Demineralisation and polisher plant effluents
- e) Chemical clean solutions
- f) Cooling tower sediments
- g) Ion exchange resins
- h) Fabric filter bags
- i) Brine conditioned fly ash

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- j) Biomass co-firing ash
- k) Settling pond sediments (including from the settling ponds of the Springvale Water Transfer Scheme)
- l) Oil and grit trap sediments.

L4.4 The wastes listed in condition L4.2 must only be disposed of to the Kerosene Vale Ash Repository and Sawyers Swamp Creek Ash Dam at Wallerawang Power Station except asbestos which may only be disposed of at the approved asbestos burial site.

L5 Noise limits

L5.1 Operational noise from the Kerosene Vale Ash Repository area must not exceed:

40dB(A) LAeq(15 minute) , at the nearest most affected noise sensitive location.

Note: LAeq means the equivalent continuous noise level – the level of noise equivalent to the energy-average of noise levels occurring over a measurement period.

L5.2 To determine compliance with condition(s) L5.1 noise must be measured at, or computed for, the nearest affected noise sensitive locations (such as a residence, school or hospital). A modifying factor correction must be applied for tonal, impulsive or intermittent noise in accordance with the "Environmental Noise Management - NSW Industrial Noise Policy (January 2000)".

L5.3 The noise emission limits identified in this licence apply under the following meteorological conditions:
a) wind speeds up to 3 m/s at 10 metres height above ground; and/or
b) temperature inversion conditions of up to 30C/100m and source to receiver gradient winds of up to 2 m/s at 10 metres height above ground.

Note: The noise emission limits identified in this licence do not apply at a noise sensitive location, where the licensee and the affected noise sensitive location have reached a negotiated agreement in regards to noise, and a copy of that agreement has been provided to the Environment Protection Authority.

L6 Hours of operation

L6.1 Operational activities associated with the Kerosene Vale Ash Repository must only be carried out between the hours of 0700 and 2200 Monday to Sunday.

L6.2 Operational activities at the Kerosene Vale Ash Repository outside the hours stipulated by condition L6.1 are only permitted in the following situations;

- a) for the delivery of material, if that delivery is required by police or other authorities for safety reasons; and/or the operation or personnel or equipment are endangered.
- b) Where it is required to avoid the loss of lives, property and/or to prevent environmental harm,
- c) Where there is insufficient ash storage capacity at the Wallerawang Power Station outside the licence operating hours due to:

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- i) a breakdown of plant and/or equipment, including ash haulage trucks,
- ii) a direction given to the licensee from the National Electricity Market Management Company under the National Electricity Rules to maintain, increase, or be available to increase power generation for system security.
- d) In such circumstances, prior notification must be provided to the EPA and affected residents as soon as possible or within a reasonable period in the case of emergency.

L7 Potentially offensive odour

- L7.1 No condition of this licence identifies a potentially offensive odour for the purposes of section 129 of the Protection of the Environment Operations Act 1997.

Note: Section 129 of the Protection of the Environment Operations Act 1997, provides that the licensee must not cause or permit the emission of any offensive odour from the premises but provides a defence if the emission is identified in the relevant environment protection licence as a potentially offensive odour and the odour was emitted in accordance with the conditions of a licence directed at minimising odour.

4 Operating Conditions

O1 Activities must be carried out in a competent manner

- O1.1 Licensed activities must be carried out in a competent manner.
This includes:
- a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
 - b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

O2 Maintenance of plant and equipment

- O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:
- a) must be maintained in a proper and efficient condition; and
 - b) must be operated in a proper and efficient manner.

O3 Dust

- O3.1 The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.

O4 Waste management

- O4.1 The licensee may only dispose of asbestos that has been generated on-site, and disposal of asbestos

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must be undertaken in accordance with Clause 42 of the Protection of the Environment Operations (Waste) Regulation 2005. Any requirements relating to off site disposal specified under Clause 42, also apply to on site disposal.

Note: The requirement under section 4(a) of Clause 42 has been met in that Lithgow City Council has confirmed that disposal of asbestos within the licensed premises is permissible.

O4.2 The asbestos disposal area(s) must be clearly delineated on a map and reported to Lithgow City Council so as to prevent incompatible use of this land in future.

O5 Other operating conditions

O5.1 The licensee must use an average of 15 Megalitres per day (ML/day) in any 7 consecutive day period when both Units 7 and 8 are in operation, with a minimum of 12 ML to be used on any one day, of water from the Fish River Scheme in the cooling process to minimise the pollutant concentrations contained in blowdown wastewater discharged from Licensed Discharge Points (LDP) 1, 4 and 21 except:

1. where the State Water Corporation has imposed a restriction level on extractions under the Water Management Licence number 10WM000004 issued for the Fish River Scheme under the Water Act 1912; or
2. when an outage occurs and electricity continues to be generated at the premises, in which case the licensee must use a minimum of 7.5 ML/day of water from the Fish River Scheme in the cooling process of the unit generating electricity.

O5.2 In the circumstances described by condition O5.1.2 the licensee must notify and provide the EPA with a statement specifying:

1. the maximum daily volume of water from the Fish River Scheme that is able to be used in the cooling process for the duration of the outage; and,
2. the reasons for this volume being the maximum daily volume that can practically be used in the cooling tower process for the duration of the outage.

O5.3 Notwithstanding condition O5.1, the licensee is not required to use water from the Fish River Scheme when one or both units are out of service and there is no discharge of cooling tower water from Licensed Discharge Points (LDP) 1, 4 and 21.

Note: No discharge from LDP4 includes an allowance for a minor discharge of less than 1ML/day to maintain the health of the watercourse leading to LDP4.

O5.4 When either Unit 7 and/or Unit 8 are in operation, the licensee must notify and provide documentary evidence to the EPA when any of the following events occur:

1. The State Water Corporation has imposed a restriction level on extractions in accordance with the

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Water Management Licence number 10WM000004 issued to the licensee for the Fish River Scheme under the Water Act 1912.

2. Outages and periods of peak load generation occur which require the licensee to use water from the Fish River Scheme within the ranges specified in conditions O5.1.2 and O5.2.2.
3. Lake Wallace exceeds 750 microsiemens per centimetre Electrical Conductivity for more than 7 days in any one month.
4. Conductivity of discharges from Licence Discharge Points (LDP) 1, 4 and 21 exceeds the 90th percentile for 2 consecutive weeks.
5. The dissolved aluminium concentration of cooling tower water sources exceed 0.055 mg/L.

O5.5 The licensee must undertake the following actions when any sample result for aluminium, copper, and zinc required by M2.3 exceeds the respective 90th percentile limits for these pollutants at Licensed Discharge Points (LDP) 1, 4 or 21:

1. investigate the cause of the sample result; and
2. within 7 days of receiving the sample result, advise the EPA in writing of (a) the cause of the sample result; and (b) practical measures that will be taken to prevent or minimise the potential for a recurrence of a discharge in exceedance of the respective 90th percentile limits for aluminium, copper and zinc.

O5.6 In circumstances where the State Water Corporation has imposed a restriction level on extractions under the Water Management Licence number 10WM000004 issued for the Fish River Scheme under the Water Act 1912, the licensee must take all practical measures, taking into account the requirements of the Springvale Transfer Agreement, to use source water that minimises water pollution.

O5.7 The stormwater control structures (sediment dams) identified at condition L2.7 EPA identification point 3 and 18 must be drained or pumped out as necessary to maintain each basins design storage capacity within 5 days following rainfall.

O5.8 Water discharged to comply with condition O5.7 may only be discharged to waters from those stormwater control structures (sediment dams) identified at EPA identification point 3 and 18 where the discharged water complies with the discharge limits stipulated at condition L2.6 (and taking into consideration condition L2.8).

5 Monitoring and Recording Conditions

M1 Monitoring records

- M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.
- M1.2 All records required to be kept by this licence must be:
- a) in a legible form, or in a form that can readily be reduced to a legible form;

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- b) kept for at least 4 years after the monitoring or event to which they relate took place; and
- c) produced in a legible form to any authorised officer of the EPA who asks to see them.

M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:

- a) the date(s) on which the sample was taken;
- b) the time(s) at which the sample was collected;
- c) the point at which the sample was taken; and
- d) the name of the person who collected the sample.

M2 Requirement to monitor concentration of pollutants discharged

M2.1 Air Monitoring Requirements

POINT 13

| Pollutant | Units of measure | Frequency | Sampling Method |
|--|----------------------------|----------------------------|----------------------|
| Cadmium | milligrams per cubic metre | Yearly during discharge | TM-12 |
| Carbon dioxide | percent | Yearly during discharge | TM-24 |
| Chlorine | milligrams per cubic metre | Yearly during discharge | TM-7 & TM-8 |
| Copper | milligrams per cubic metre | Yearly during discharge | TM-12, TM-13 & TM-14 |
| Dry gas density | kilograms per cubic metre | Quarterly during discharge | TM-23 |
| Hydrogen chloride | milligrams per cubic metre | Yearly during discharge | TM-7 & TM-8 |
| Mercury | milligrams per cubic metre | Yearly during discharge | TM-12 |
| Moisture content | percent | Quarterly during discharge | TM-22 |
| Molecular weight of stack gases | grams per gram mole | Quarterly during discharge | TM-23 |
| Nitrogen Oxides | grams per cubic metre | Quarterly during discharge | Special Method 2 |
| Oxygen (O ₂) | percent | Quarterly during discharge | CEM-3 |
| Solid Particles | milligrams per cubic metre | Quarterly during discharge | TM-15 |
| Sulfuric acid mist and sulfur trioxide (as SO ₃) | milligrams per cubic metre | Yearly during discharge | TM-3 |
| Sulphur dioxide | milligrams per cubic metre | Quarterly during discharge | TM-4 |
| Temperature | degrees Celsius | Quarterly during discharge | TM-2 |
| Total Fluoride | milligrams per cubic metre | Yearly during discharge | TM-9 |

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| | | | |
|---|----------------------------|----------------------------|----------------------|
| Type 1 and Type 2 substances in aggregate | milligrams per cubic metre | Yearly during discharge | TM-12, TM-13 & TM-14 |
| Velocity | metres per second | Quarterly during discharge | TM-2 |
| Volumetric flowrate | cubic metres per second | Quarterly during discharge | TM-2 |

POINT 14

| Pollutant | Units of measure | Frequency | Sampling Method |
|--|----------------------------|----------------------------|----------------------|
| Cadmium | milligrams per cubic metre | Yearly during discharge | TM-12 |
| Carbon dioxide | percent | Yearly during discharge | TM-24 |
| Chlorine | milligrams per cubic metre | Yearly during discharge | TM-7 & TM-8 |
| Copper | milligrams per cubic metre | Yearly during discharge | TM-12, TM-13 & TM-14 |
| Dry gas density | kilograms per cubic metre | Quarterly during discharge | TM-23 |
| Hydrogen chloride | milligrams per cubic metre | Yearly during discharge | TM-7 & TM-8 |
| Mercury | milligrams per cubic metre | Yearly during discharge | TM-12 |
| Moisture content | percent | Quarterly during discharge | TM-22 |
| Molecular weight of stack gases | grams per gram mole | Quarterly during discharge | TM-23 |
| Nitrogen Oxides | grams per cubic metre | Quarterly during discharge | Special Method 2 |
| Oxygen (O ₂) | percent | Quarterly during discharge | CEM-3 |
| Solid Particles | milligrams per cubic metre | Quarterly during discharge | TM-15 |
| Sulfuric acid mist and sulfur trioxide (as SO ₃) | milligrams per cubic metre | Yearly during discharge | TM-3 |
| Sulphur dioxide | milligrams per cubic metre | Quarterly during discharge | TM-4 |
| Temperature | degrees Celsius | Quarterly during discharge | TM-2 |
| Total Fluoride | milligrams per cubic metre | Yearly during discharge | TM-9 |
| Type 1 and Type 2 substances in aggregate | milligrams per cubic metre | Yearly during discharge | TM-12, TM-13 & TM-14 |
| Velocity | metres per second | Quarterly during discharge | TM-2 |
| Volumetric flowrate | cubic metres per second | Quarterly during discharge | TM-2 |

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POINT 15,16

| Pollutant | Units of measure | Frequency | Sampling Method |
|------------------|---------------------------|------------|-----------------|
| Nitrogen dioxide | parts per hundred million | Continuous | AM-12 |
| Sulphur dioxide | parts per hundred million | Continuous | AM-20 |

POINT 17

| Pollutant | Units of measure | Frequency | Sampling Method |
|------------------|---------------------------|-----------|------------------|
| Nitrogen dioxide | parts per hundred million | Monthly | Special Method 1 |
| Sulphur dioxide | parts per hundred million | Monthly | Special Method 1 |

Note: For condition M2.2, the frequency of monitoring "quarterly or yearly during discharge" means that when quarterly monitoring is scheduled for Point 13 (Unit 7) and/or Point 14 (Unit 8), monitoring of either Point 7 or 8 is not required if the generating unit associated with that Point is not operating and not discharging at that time.

M2.2 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

M2.3 Water and/ or Land Monitoring Requirements**POINT 1**

| Pollutant | Units of measure | Frequency | Sampling Method |
|-------------------------|-----------------------------|-----------------------------|-----------------------|
| Aluminium (dissolved) | milligrams per litre | Monthly during discharge | Representative sample |
| Arsenic (dissolved) | milligrams per litre | Monthly during discharge | Representative sample |
| Boron | milligrams per litre | Monthly during discharge | Representative sample |
| Copper (dissolved) | milligrams per litre | Monthly during discharge | Representative sample |
| Electrical conductivity | microsiemens per centimetre | Weekly during any discharge | Representative sample |
| Fluoride | milligrams per litre | Monthly during discharge | Representative sample |
| Nickel (dissolved) | milligrams per litre | Monthly during discharge | Representative sample |
| pH | pH | Weekly during any discharge | Representative sample |

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|------------------|----------------------|-----------------------------|-----------------------|
| Selenium | milligrams per litre | Monthly during discharge | Representative sample |
| Sulfate | milligrams per litre | Weekly during any discharge | Representative sample |
| Zinc (dissolved) | milligrams per litre | Monthly during discharge | Representative sample |

POINT 3

| Pollutant | Units of measure | Frequency | Sampling Method |
|-------------------------|-----------------------------|-----------------------------|-----------------------|
| Boron | milligrams per litre | Monthly during discharge | Representative sample |
| Electrical conductivity | microsiemens per centimetre | Weekly during any discharge | Representative sample |
| Filterable iron | milligrams per litre | Monthly during discharge | Representative sample |
| Filterable manganese | milligrams per litre | Monthly during discharge | Representative sample |
| Fluoride | milligrams per litre | Weekly during any discharge | Representative sample |
| pH | pH | Weekly during any discharge | Representative sample |
| Selenium | milligrams per litre | Monthly during discharge | Representative sample |
| Sulfate | milligrams per litre | Weekly during any discharge | Representative sample |
| Total suspended solids | milligrams per litre | Weekly during any discharge | Representative sample |

POINT 4

| Pollutant | Units of measure | Frequency | Sampling Method |
|-------------------------|-----------------------------|-----------------------------|-----------------------|
| Aluminium (dissolved) | milligrams per litre | Monthly during discharge | Representative sample |
| Arsenic (dissolved) | milligrams per litre | Monthly during discharge | Representative sample |
| Boron | milligrams per litre | Monthly during discharge | Representative sample |
| Copper (dissolved) | milligrams per litre | Monthly during discharge | Representative sample |
| Electrical conductivity | microsiemens per centimetre | Weekly during any discharge | Representative sample |
| Fluoride | milligrams per litre | Monthly during discharge | Representative sample |
| Nickel (dissolved) | milligrams per litre | Monthly during discharge | Representative sample |
| pH | pH | Weekly during any discharge | Representative sample |
| Selenium | milligrams per litre | Monthly during discharge | Representative sample |

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| | | | |
|------------------------|-------------------------------|-----------------------------|-----------------------|
| Sulfate | milligrams per litre | Weekly during any discharge | Representative sample |
| Total suspended solids | milligrams per litre | Monthly during discharge | Representative sample |
| Turbidity | nephelometric turbidity units | Monthly during discharge | Representative sample |
| Zinc (dissolved) | milligrams per litre | Monthly during discharge | Representative sample |

POINT 5

| Pollutant | Units of measure | Frequency | Sampling Method |
|------------------------|-----------------------------|--------------------------|-----------------------|
| Conductivity | microsiemens per centimetre | Monthly during discharge | Representative sample |
| Oil and Grease | milligrams per litre | Monthly during discharge | Representative sample |
| pH | pH | Monthly during discharge | Representative sample |
| Total suspended solids | milligrams per litre | Monthly during discharge | Representative sample |

POINT 7,8,22,23

| Pollutant | Units of measure | Frequency | Sampling Method |
|-------------------------|-----------------------------|-----------|-----------------------|
| Aluminium (dissolved) | milligrams per litre | Monthly | Representative sample |
| Aluminium (total) | milligrams per litre | Monthly | Representative sample |
| Arsenic (total) | milligrams per litre | Monthly | Representative sample |
| Boron | milligrams per litre | Monthly | Representative sample |
| Copper (dissolved) | milligrams per litre | Monthly | Representative sample |
| Copper (total) | milligrams per litre | Monthly | Representative sample |
| Electrical conductivity | microsiemens per centimetre | Weekly | Representative sample |
| Fluoride | milligrams per litre | Monthly | Representative sample |
| Nickel (dissolved) | milligrams per litre | Monthly | Representative sample |
| Nickel (total) | milligrams per litre | Monthly | Representative sample |
| pH | pH | Weekly | Representative sample |
| Selenium | milligrams per litre | Monthly | Representative sample |
| Sulfate | milligrams per litre | Weekly | Representative sample |
| Zinc (dissolved) | milligrams per litre | Monthly | Representative sample |
| Zinc (total) | milligrams per litre | Monthly | Representative sample |

POINT 18

| Pollutant | Units of measure | Frequency | Sampling Method |
|-------------------------|-----------------------------|--------------------------|-----------------------|
| Electrical conductivity | microsiemens per centimetre | Monthly during discharge | Representative sample |

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| | | | |
|------------------------|----------------------|--------------------------|-----------------------|
| Oil and Grease | milligrams per litre | Monthly during discharge | Representative sample |
| pH | pH | Monthly during discharge | Representative sample |
| Total suspended solids | milligrams per litre | Monthly during discharge | Representative sample |

POINT 21

| Pollutant | Units of measure | Frequency | Sampling Method |
|-------------------------|-----------------------------|-----------------------------|-----------------------|
| Aluminium (dissolved) | milligrams per litre | Monthly during discharge | Representative sample |
| Arsenic (dissolved) | milligrams per litre | Monthly during discharge | Representative sample |
| Boron | milligrams per litre | Monthly during discharge | Representative sample |
| Copper (dissolved) | milligrams per litre | Monthly during discharge | Representative sample |
| Electrical conductivity | microsiemens per centimetre | Weekly during any discharge | Representative sample |
| Fluoride | milligrams per litre | Monthly during discharge | Representative sample |
| Nickel (dissolved) | milligrams per litre | Monthly during discharge | Representative sample |
| pH | pH | Weekly during any discharge | Representative sample |
| Sulfate | milligrams per litre | Weekly during any discharge | Representative sample |
| Total suspended solids | milligrams per litre | Monthly during discharge | Representative sample |
| Zinc (dissolved) | milligrams per litre | Monthly during discharge | Representative sample |

M2.4 For the purposes of the tables above;

Special Method 1 means the CSIRO diffusion tube method.

Special Method 2 means sampling in accordance with TM-11 and include recording of the respective boiler MW Load at time of sampling, to enable reporting under condition R1.10.

For Point 1 and 4 above, where the licensee is utilising Metaflex EP in the cooling water system, the licensee must undertake the additional monitoring specified under Special Condition E2 of this licence.

M2.5 For the purposes of the tables above, a requirement to monitor for arsenic (points 1, 4 and 21) means a requirement to monitor for, and report, arsenic as the total and only differentiate the species of arsenic if the total exceeds 0.024 mg/L.

M2.6 For the purposes of the tables above;

For ambient air monitoring of pollutants, the recording of results and reporting for Annual Return purposes shall include “averaging periods” as stipulated in the National Environmental Protection (Ambient Air

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Quality) Measure (eg: Nitrogen Dioxide averaging periods of one hour and one year, and Sulphur Dioxide averaging periods of one hour, one day and one year).

- M2.7 Samples taken pursuant to a requirement in this licence to monitor the volume, mass or concentration of pollutants, must be analysed and reported in accordance with the laboratory accreditation requirements set out in section 2.1.3 of the Load Calculation Protocol.

The Load Calculation Protocol is the Protocol referred to in clause 15 of the Protection of the Environment Operations (General) Regulation 2009. A copy of the Protocol was published in the Government Gazette on 25 June 1999 and can be purchased from the EPA or viewed at <http://www.environment.nsw.gov.au>.

- M2.8 Monitoring at points 13 and 14 must be reported using the references bases set out in the tables in condition L3.4 in the column headed "Reference conditions".

M3 Testing methods - concentration limits

- M3.1 Monitoring for the concentration of a pollutant emitted to the air required to be conducted by this licence must be done in accordance with:
- any methodology which is required by or under the Act to be used for the testing of the concentration of the pollutant; or
 - if no such requirement is imposed by or under the Act, any methodology which a condition of this licence requires to be used for that testing; or
 - if no such requirement is imposed by or under the Act or by a condition of this licence, any methodology approved in writing by the EPA for the purposes of that testing prior to the testing taking place.

Note: The *Protection of the Environment Operations (Clean Air) Regulation 2010* requires testing for certain purposes to be conducted in accordance with test methods contained in the publication "Approved Methods for the Sampling and Analysis of Air Pollutants in NSW".

- M3.2 Subject to any express provision to the contrary in this licence, monitoring for the concentration of a pollutant discharged to waters or applied to a utilisation area must be done in accordance with the Approved Methods Publication unless another method has been approved by the EPA in writing before any tests are conducted.

M4 Recording of pollution complaints

- M4.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.
- M4.2 The record must include details of the following:
- the date and time of the complaint;
 - the method by which the complaint was made;
 - any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
 - the nature of the complaint;

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- e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
- f) if no action was taken by the licensee, the reasons why no action was taken.

M4.3 The record must be produced to any authorised officer of the EPA who asks to see them.

M4.4 The record of a complaint must be kept for at least 4 years after the complaint was made.

M5 Telephone complaints line

- M5.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.
- M5.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.
- M5.3 The preceding two conditions do not apply until 3 months after: the date of the issue of this licence.

M6 Requirement to monitor volume or mass

- M6.1 For each discharge point or utilisation area specified below, the licensee must monitor:
 - a) the volume of liquids discharged to water or applied to the area;
 - b) the mass of solids applied to the area;
 - c) the mass of pollutants emitted to the air;
 at the frequency and using the method and units of measure, specified below.

POINT 1

| Frequency | Unit of Measure | Sampling Method |
|-----------------------------|--------------------|---------------------------------|
| Continuous during discharge | kilolitres per day | Weir structure and level sensor |

POINT 3

| Frequency | Unit of Measure | Sampling Method |
|-----------------------------|--------------------|----------------------------------|
| Continuous during discharge | kilolitres per day | Flow meter and continuous logger |

POINT 4

| Frequency | Unit of Measure | Sampling Method |
|-----------------------------|--------------------|----------------------------------|
| Continuous during discharge | kilolitres per day | Flow meter and continuous logger |

POINT 5

| Frequency | Unit of Measure | Sampling Method |
|-----------------------------|--------------------|---------------------------------|
| Continuous during discharge | kilolitres per day | Weir structure and level sensor |

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POINT 21

| Frequency | Unit of Measure | Sampling Method |
|-----------------------------|--------------------|---------------------------------|
| Continuous during discharge | kilolitres per day | Weir structure and level sensor |

M7 Other monitoring and recording conditions

M7.1 The licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1 contained in any solid alternative fuel, and the Calorific Value (Mj/kg) of the fuel. The licensee must use the units of measure, and sample at the frequency specified opposite in the other columns:

| Parameter | Unit of measure | Frequency |
|---------------------|-----------------|-------------------------|
| Antimony (Sb) | mg/kg | Per batch, as processed |
| Arsenic (As) | mg/kg | Per batch, as processed |
| Beryllium (Be) | mg/kg | Per batch, as processed |
| Cadmium (Cd) | mg/kg | Per batch, as processed |
| Chlorine (Cl) | % | Per batch, as processed |
| Chromium (Cr) total | mg/kg | Per batch, as processed |
| Cobalt (Co) | mg/kg | Per batch, as processed |
| Copper (Cu) | mg/kg | Per batch, as processed |
| Flourine (F) | % | Per batch, as processed |
| Lead (Pb) | mg/kg | Per batch, as processed |
| Manganese (Mn) | mg/kg | Per batch, as processed |
| Mercury (Hg) | mg/kg | Per batch, as processed |
| Nickel (Ni) | mg/kg | Per batch, as processed |
| Selenium (Se) | mg/kg | Per batch, as processed |
| Sulfur (S) | % | Per batch, as processed |
| Tin (Sn) | mg/kg | Per batch, as processed |
| Vanadium (V) | mg/kg | Per batch, as processed |

M7.2 To determine compliance with condition L6.1, monitoring of noise from the Kerosene Vale Ash Repository must be carried out at locations identified by and in accordance with, the Kerosene Vale Stage 2 Ash Repository Operational Environmental Management Plan 2008.

6 Reporting Conditions

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R1 Annual return documents

R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:

1. a Statement of Compliance,
2. a Monitoring and Complaints Summary,
3. a Statement of Compliance - Licence Conditions,
4. a Statement of Compliance - Load based Fee,
5. a Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan,
6. a Statement of Compliance - Requirement to Publish Pollution Monitoring Data; and
7. a Statement of Compliance - Environmental Management Systems and Practices.

At the end of each reporting period, the EPA will provide to the licensee a copy of the form that must be completed and returned to the EPA.

R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

R1.3 Where this licence is transferred from the licensee to a new licensee:

- a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
- b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:

- a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
- b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

R1.5 The Annual Return for the reporting period must be supplied to the EPA via eConnect *EPA* or by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').

R1.6 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.

R1.7 Within the Annual Return, the Statements of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:

- a) the licence holder; or
- b) by a person approved in writing by the EPA to sign on behalf of the licence holder.

R1.8 The Annual Return must include the following information:

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a) To validate the SSEF-PEMS for Nitrogen oxides approved by the EPA on 27 February 2008, the licensee must provide a report that plots the quarterly Nitrogen oxide concentration sampling results required by condition M2.1, against the historical Nitrogen oxide CEMS data curves for boiler units 7 and 8 at Wallerawang Power Station.

b) The licensee must report any exceedance of any discharge limit, standard, or concentration set by a condition of this licence. The report must include the sample results of the exceedance and indicate the name of the testing laboratory, parameter(s) monitored, the limit, standard, or concentration exceeded, the date of any exceedance and the result of any analysis.

R2 Notification of environmental harm

Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.

R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.

R3 Written report

R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:

- a) where this licence applies to premises, an event has occurred at the premises; or
 - b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence,
- and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.

R3.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.

R3.3 The request may require a report which includes any or all of the following information:

- a) the cause, time and duration of the event;
- b) the type, volume and concentration of every pollutant discharged as a result of the event;
- c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;
- d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
- e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
- f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and

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g) any other relevant matters.

- R3.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.

R4 Other reporting conditions

- R4.1 In the event where circumstances outlined in O5.1.2 occur, in addition to the provision of monitoring data required by the licence, the licensee must report the results of the monitoring of discharges from Licensed Discharge Points (LDP) 1, 4 and 21 as a separate dataset.

7 General Conditions

G1 Copy of licence kept at the premises or plant

- G1.1 A copy of this licence must be kept at the premises to which the licence applies.
- G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.
- G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the premises.

G2 Signage

- G2.1 The location of EPA point number(s) 1 to 19 must be clearly marked by signs that indicate the point identification number used in this licence and be located as close as practical to the point.

8 Special Conditions

E1 Solid alternative fuel

- E1.1 For the purposes of this Licence, solid alternative fuel means timber products that are either:-
- a) Biomass that is sustainably harvested as defined in "Greenhouse Gas Emissions from Electricity Supplied in NSW: Emissions Workbook, October 2000, Ministry of Energy and Utilities"; or
 - b) Recycled timber products obtained from manufacturing, construction and demolition sources that comply with the alternate fuel air impurity specification for hazardous substances under condition L3.10; or
 - c) In accordance with Regulation 8 (Special requirements – wood wastes) of Division 2.2 (Eligible renewable energy sources) in Part 2 of the Renewable Energy (Electricity) Regulations 2001 and Renewable Energy (Electricity) Act 2000.

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- E1.2 Solid alternative fuel may only be fed to the boiler during coal firing.
- E1.3 Solid alternative fuel may only be fed to the boiler at a feed rate of less than or equal to 5 % weight of the coal feed rate.

E2 Use of Metaflex EP Corrosion Inhibitor

- E2.1 At all times when the licensee is adding Metaflex EP corrosion inhibitor product to the power station cooling water system;
 - 1. the utilisation of Metaflex EP must be undertaken in the prescribed manner that facilitates the removal of excess Metaflex EP product (as total dithiocarbamates) in accordance with the procedures specified by the manufacturer.
 - 2. for licensed discharge/monitoring point 1 and 4 , the concentration of the pollutant discharged at the point must not exceed the concentration limits specified for that pollutant in the table below:

| Pollutant | Unit of Measure | 100 percentile concentration limit |
|--|----------------------|------------------------------------|
| Metaflex EP total dithiocarbamates ingredients and derivatives | milligrams per litre | 0.02 |

- E2.2 For licensed discharge/monitoring points 1 and 4, the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1 of the table below. The licensee must use the sampling method, unit of measure, and sample at the frequency specified in the other columns of the table:

| Pollutant | Unit of Measure | Frequency | Sampling Method |
|--|-----------------|-------------------------|-----------------------|
| Metaflex EP total dithiocarbamates ingredients | mg/L | Weekly during discharge | Representative sample |

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Dictionary

General Dictionary

| | |
|--|--|
| 3DGM [in relation to a concentration limit] | Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples |
| Act | Means the Protection of the Environment Operations Act 1997 |
| activity | Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997 |
| actual load | Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009 |
| AM | Together with a number, means an ambient air monitoring method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> . |
| AMG | Australian Map Grid |
| anniversary date | The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act. |
| annual return | Is defined in R1.1 |
| Approved Methods Publication | Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009 |
| assessable pollutants | Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009 |
| BOD | Means biochemical oxygen demand |
| CEM | Together with a number, means a continuous emission monitoring method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> . |
| COD | Means chemical oxygen demand |
| composite sample | Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume. |
| cond. | Means conductivity |
| environment | Has the same meaning as in the Protection of the Environment Operations Act 1997 |
| environment protection legislation | Has the same meaning as in the Protection of the Environment Administration Act 1991 |
| EPA | Means Environment Protection Authority of New South Wales. |
| fee-based activity classification | Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 2009. |
| general solid waste (non-putrescible) | Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997 |

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| flow weighted composite sample | Means a sample whose composites are sized in proportion to the flow at each composites time of collection. |
| general solid waste (putrescible) | Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997 |
| grab sample | Means a single sample taken at a point at a single time |
| hazardous waste | Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997 |
| licensee | Means the licence holder described at the front of this licence |
| load calculation protocol | Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009 |
| local authority | Has the same meaning as in the Protection of the Environment Operations Act 1997 |
| material harm | Has the same meaning as in section 147 Protection of the Environment Operations Act 1997 |
| MBAS | Means methylene blue active substances |
| Minister | Means the Minister administering the Protection of the Environment Operations Act 1997 |
| mobile plant | Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997 |
| motor vehicle | Has the same meaning as in the Protection of the Environment Operations Act 1997 |
| O&G | Means oil and grease |
| percentile [in relation to a concentration limit of a sample] | Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence. |
| plant | Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles. |
| pollution of waters [or water pollution] | Has the same meaning as in the Protection of the Environment Operations Act 1997 |
| premises | Means the premises described in condition A2.1 |
| public authority | Has the same meaning as in the Protection of the Environment Operations Act 1997 |
| regional office | Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence |
| reporting period | For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 months. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act. |
| restricted solid waste | Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997 |
| scheduled activity | Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997 |
| special waste | Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997 |
| TM | Together with a number, means a test method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> . |

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| | |
|-------------------------|---|
| TSP | Means total suspended particles |
| TSS | Means total suspended solids |
| Type 1 substance | Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements |
| Type 2 substance | Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements |
| utilisation area | Means any area shown as a utilisation area on a map submitted with the application for this licence |
| waste | Has the same meaning as in the Protection of the Environment Operations Act 1997 |
| waste type | Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non - putrescible), special waste or hazardous waste |

Mr Jim Clarence

Environment Protection Authority

(By Delegation)

Date of this edition: 29-September-2000

Environment Protection Licence

Licence - 766

End Notes

- 1 Licence varied by notice 1002514, issued on 15-Mar-2001, which came into effect on 30-Mar-2001.
- 2 Licence varied by notice 1006913, issued on 25-May-2001, which came into effect on 19-Jun-2001.
- 3 Licence varied by notice 1011875, issued on 12-Nov-2001, which came into effect on 12-Nov-2001.
- 4 Licence varied by notice 1014355, issued on 20-Mar-2002, which came into effect on 22-Mar-2002.
- 5 Licence varied by notice 1033370, issued on 13-May-2005, which came into effect on 07-Jun-2005.
- 6 Licence varied by notice 1053427, issued on 12-Dec-2005, which came into effect on 06-Jan-2006.
- 7 Licence varied by notice 1056197, issued on 04-Apr-2006, which came into effect on 04-Apr-2006.
- 8 Licence varied by notice 1060314, issued on 21-Jul-2006, which came into effect on 21-Jul-2006.
- 9 Licence varied by notice 1067372, issued on 22-Dec-2006, which came into effect on 22-Dec-2006.
- 10 Licence varied by notice 1077138, issued on 28-Sep-2007, which came into effect on 28-Sep-2007.
- 11 Licence varied by notice 1080218, issued on 16-Nov-2007, which came into effect on 16-Nov-2007.
- 12 Licence varied by notice 1083863, issued on 30-Jul-2008, which came into effect on 30-Jul-2008.
- 13 Condition A1.3 Not applicable varied by notice issued on <issue date> which came into effect on <effective date>
- 14 Licence varied by notice 1095281, issued on 01-Jan-2009, which came into effect on 01-Jan-2009.
- 15 Licence varied by notice 1099554, issued on 24-Apr-2009, which came into effect on 24-Apr-2009.
- 16 Licence varied by notice 1102924, issued on 27-Jul-2009, which came into effect on 27-Jul-2009.
- 17 Licence varied by notice 1104582, issued on 01-Feb-2010, which came into effect on 01-Feb-2010.

Environment Protection Licence

Licence - 766

- | | |
|----|---|
| 18 | Licence varied by notice 1112729, issued on 20-Apr-2010, which came into effect on 20-Apr-2010. |
| 19 | Licence varied by notice 1113579, issued on 05-May-2010, which came into effect on 05-May-2010. |
| 20 | Licence varied by notice 1114466, issued on 18-Jun-2010, which came into effect on 18-Jun-2010. |
| 21 | Licence varied by notice 1119263, issued on 16-Sep-2010, which came into effect on 16-Sep-2010. |
| 22 | Licence varied by notice 1125896, issued on 23-Jun-2011, which came into effect on 23-Jun-2011. |
| 23 | Licence varied by notice 1501292 issued on 14-Nov-2011 |
| 24 | Licence varied by notice 1502871 issued on 22-Nov-2011 |
| 25 | Licence varied by notice 1505157 issued on 02-Aug-2012 |
| 26 | Licence varied by notice 1508429 issued on 30-Nov-2012 |
| 27 | Licence varied by notice 1510807 issued on 28-Dec-2012 |
| 28 | Licence varied by notice 1512499 issued on 23-Apr-2013 |
| 29 | Licence transferred through application 1516747 approved on 29-Aug-2013 , which came into effect on 02-Sep-2013 |
| 30 | Licence varied by notice 1518490 issued on 10-Jan-2014 |
| 31 | Licence format updated on 09-Jan-2015 |
| 32 | Licence varied by notice 1529425 issued on 19-Jun-2015 |
| 33 | Licence varied by notice 1535746 issued on 04-Jan-2016 |
| 34 | Licence format updated on 11-Jan-2016 |
| 35 | Licence varied by notice 1543079 issued on 20-Dec-2016 |
| 36 | Licence varied by notice 1556434 issued on 20-Dec-2017 |

Appendix D

Site Inspection Checklists

Daily Lend Lease Checklist

ENERGYAUSTRALIA NSW

RFT C5131 PERIODIC INSPECTION REPORT

Week Commencing / /

Wallerawang Power Station

| | | Weather Conditions | | | | |
|------------------------|--|---------------------------|-------------------|-----------|----------|--------|
| | | Monday | Tuesday | Wednesday | Thursday | Friday |
| Environment Assessment | Criteria | | | | | |
| | Time HH:MM | | | | | |
| | Temp Deg C | | | | | |
| | Rank | | | | | |
| | Humidity % | | | | | |
| | Rank | | | | | |
| | Wind Speed Kph | | | | | |
| | Rank | | | | | |
| | | | | | | |
| | Sprinklers period of operation | Hrs / Day | | | | |
| Conditional Assessment | People & Safety | | | | | |
| | PPE being worn | Correct PPE and | | | | |
| | Risk Assessments in Place | Risk Assessments signed & | | | | |
| | Dust Suppression | | | | | |
| | Water Cart Operating (Enter YES, if not required) | | | | | |
| | Req'd Avg flow from sprinklers | | | | | |
| | Non-Working Area - Hectares | | | | | |
| | Sprinklers (Bank) | Number Required | | | | |
| | | Number Running | | | | |
| | | Faulty items | | | | |
| | Cumulative Flow Required | Litres | | | | |
| | Meter Reading | m ³ | | | | |
| | Sprinkler Assessment | | Water Delivered L | | | |
| | Temporary Capping Area marked | | | | | |
| | Non-Working Areas have sufficient Sprinklers | | | | | |
| | Compaction | | | | | |
| | DCP Blows @ 0.7 m to achieve further 100mm penetration | Require :: 3 | | | | |
| | Overall Assessment | | | | | |
| | Dust Deposition | | | | | |
| | Defined as Less than or equal to (mg/m ³) | Require ♦ 0.090 | | | | |
| | Overall Assessment | | | | | |
| | Surface Water Run-off | | | | | |
| | Batters in use & above ash placement | | | | | |
| | Drains on Repository in place and maintained (ie no erosion) | | | | | |
| | Batters and Roads sloped correctly | | | | | |
| | Pondage in place and maintained | | | | | |

| | | |
|--|--|------------------------------|
| Monday Corrective Action For any N Result | | Completion date crtv actn |
| Tuesday Corrective Action For any N Result | | Completion date crtv actn |
| Wednesday Corrective Action For any N Result | | Completion date crtv actn |
| Thursday Corrective Action For any N Result | | Completion date crtv actn |
| Friday Corrective Action For any N Result | | Completion date crtv actn |

Monthly EnergyAustralia NSW Checklist

| Date ____ / ____ / ____ | | | ENV037 W/O _____ | | | Action Taken ENVRN D W/O # | |
|--|-------------------|--------------------|----------------------------------|--------|------|-------------------------------------|--|
| | | | | | | | |
| 1. Springvale Creek | Flow: | High Low Nil | Clear | Cloudy | Oily | | |
| 2. Dry Ash Handling Facility | Truck movements: | Yes No | Ash present on Road: Yes No | | | | |
| 3. Lidsdale Cut | Level: | | Seepage: Present Absent | | | | |
| 4. Kerosene Vale Ash Repository | Air Borne Dust: | Yes No | | | | | |
| - Haul Road | Air Borne Dust: | Yes No | Maintenance Required: Yes No | | | | |
| - Western Batter | Vegetation: | Minimal Reasonable | Erosion: Minimal Reasonable | | | | |
| - Northern Batter | Vegetation: | Minimal Reasonable | Erosion: Minimal Reasonable | | | | |
| - Dump Valve Pond | OK | Ash Debris | Water Level: Low Med High | | | | |
| - Working Face | Air Borne Dust: | Yes No | Water Tanker: Present Absent | | | | |
| - Dust Suppression | Sprinklers: | I/S O/S | | | | | |
| - Southern Batter | Vegetation: | Minimal Reasonable | Erosion: Minimal Reasonable | | | | |
| - Dirty Water Pond | OK | Ash Debris | Water Level: Low Med High | | | | |
| - Catch Ponds | Clear | Cloudy Oily | Water Level: Low Med High | | | | |
| - Drainage | Return Canal: | OK Ash Debris | Perimeter Drain: OK Ash Debris | | | | |
| 5. Ash & Dust Pipeline | I/S | O/S | | | | | |
| 6. Sawyers Swamp Creek Ash Dam | Exposed Ash: | Yes No | Level: | | | | |
| | Ash Return Water: | Clear Cloudy | Sprinkler System Working: Yes No | | | | |
| 7. Sawyers Swamp Creek By-Pass Channel | Debris Present: | Yes No | | | | | |
| 8. Sawyers Swamp Creek Freshwater Dam | Clear | Cloudy Oily | Inlet: Clear Blocked | | | | |
| 9. Springvale Pipeline | I/S | O/S | | | | | |

| Lake Wallace Area (Quarterly) | | | | | | |
|--------------------------------------|--------------------|---------|--------|----------------|----------|------|
| 10. Coxs River Boom 1 | OK | Oil | Debris | I/S | O/S | |
| 11. Coxs River Boom 2 | OK | Oil | Debris | I/S | O/S | |
| 12. Barton Park Cemetery | Area Clean: | Yes | No | Cattle Damage: | Yes | No |
| | Slashing Required: | No | Yes | | | |
| 13. Tortuous Course | Flow | No Flow | | Clear | Cloudy | Oily |
| 14. Lake Wallace Park Area | Oil | No Oil | | Algae | No Algae | |

Comments:

Spill kits are to be checked (refer to attached map) and their status noted below.

Completed By:

Signature:

Date:

STD JOB: ENVRND

Phone Environment Specialist- (905) 350

Appendix E

Stakeholder Consultation

Agency response to OEMP

DPI – Fisheries comments

DPI-Fisheries have reviewed the OEMP and advised as the works are primarily about management of capping of the sites, the Department has no objection to the works proceeding.

EnergyAustralia Response

Thank you for your response in regards to the Wallerawang Ash Repositories Operations Environmental Management Plan.

WaterNSW comments

WaterNSW have reviewed the OEMP and considers it provides a comprehensive overview of the key environmental issues for the site since the previous review of the care and maintenance OEMP in July 2017. WaterNSW has the following minor comments for consideration by EANSW.

| Ref | Comment by WaterNSW | EnergyAustralia NSW Response |
|-----|---|---|
| 1 | <i>The environmental management sub plan (Section 6.2) had incorrect section referencing for the surface water quality monitoring plan and the groundwater quality monitoring plan.</i> | Editing has been undertaken to correct referencing in the environmental management sub plan. |
| 2 | <i>The surface water sub plan (Section 6.4) refers to a wet weather event that would activate additional surface water monitoring in the first 12 months of operation. The definition for a wet weather event was not included. Incorrect section referencing of Appendix C whereas Appendix B is the actual location for the monitoring analytes.</i> | <p>The additional monitoring to be undertaken during a wet weather event related to the first 12 months of operation under the OEMP that occurred in 2009. Therefore no further refinement of the wet weather clause has been made in the OEMP.</p> <p>Editing has been undertaken to correct referencing in the surface water sub plan.</p> |
| 3 | <i>The baseline surface and groundwater quality data that was not included in the OEMP that was referenced in the surface and groundwater quality plans.</i> | The baseline surface and groundwater quality data has been included in Appendix B of the OEMP. |
| 4 | <i>The surface water quality plan (Section 6.4) should include the impacts of potentially contaminated water from the ponds within KVAR being dewatered and discharged from the site to allow capping and rehabilitation of the site. This should include details of required monitoring of specific pollutants and the level of treatment required to ensure surface water quality within receiving waters is not negatively affected. In this regard the current treatment is ph adjustment. Further it does not reflect potential impacts at the closure and rehabilitation stage.</i> | <p>There is no intention to discharge water from KVAR directly to receiving waters. Surplus water from KVAR is transferred, stored and managed in SSCAD as described in the OEMP.</p> <p>Discharge of water from SSCAD will continue to occur under existing licencing arrangements. To manage dam water levels in SSCAD water will be transferred to WWPS for pH adjustment and released through Licensed Discharge Point 3 (LDP 3). The surface water quality plan (Section 6.4) has been updated with the parameters monitored at LDP 3 as required under Environmental Protection Licence 766.</p> <p>The final landform including any reconfiguration of ponds at KVAR will be detailed in the Closure & Rehabilitation Plan</p> |

| | | |
|---|--|---|
| | | <p>that is currently being developed for the Wallerawang Ash Repositories.</p> <p>Detailed environmental assessments are currently being undertaken including geotechnical, groundwater, surface water and landform design which will assist in the development of the Plan. Water NSW will be consulted during the preparation of the Closure and Rehabilitation Plan.</p> <p>The Closure and Rehabilitation Plan has not been finalised or approved. As such potential impacts from the closure and rehabilitation activities need further assessment and consultation prior to inclusion in the OEMP.</p> <p>The OEMP has been updated to include the capping project. The closure and rehabilitation activities did not form part of the scope of the approved Modification 1.</p> <p>Impacts to receiving waters for the Closure and Rehabilitation activities will be considered when the extent of works required is finalised and assessed. It is understood that this may require a further Modification to the existing Project Approval.</p> |
| 5 | <i>WaterNSW are not highlighted as an agency to notify environmental incidents to throughout the OEMP. WaterNSW requestes that it be listed as an agency to be notified of water quality incidents.</i> | EA notifies regulatory authorities of environmental incidents as required under the POEO Act and EP&A Act. The notification requirements are adequate under these existing arrangements. |
| 6 | <i>WaterNSW looks forward to being consulted in the future on the closure and rehabilitation plan for the Wallerawang power station (which we understand will include the Wallerawang Ash Repository).</i> | EA acknowledge that WaterNSW is a key stakeholder in the preparation of the closure and rehabilitation plan for the Wallarawang Ash Repositoyrs and will be consulted accordingly. |

EPA comments

The Environment Protection Authority (EPA) is aware that Energy Australia is required by the Department of Planning and Environment (DPE) to consult with the EPA when preparing, or making changes to the Operation Environment Management Plan (OEMP) in accordance with Project Approval 07_0005.

The EPA encourages the development of Environmental Management Plans/Programs to ensure that proponents have determined how they will meet their statutory obligations and environmental objectives as specified by any project/development approval and/or the conditions as specified by any project/development approval and/or conditions of an environment protection licence (EPL).

With reference to the OEMP, the EPA has read the document and has no comments. The EPA welcomes being consulted on the preparation of any future management plans, and if deemed necessary may provide comment for your consideration. However, It should be noted that the EPA does not approve or endorse management plans as the role of the EPA is to set conditions/criteria for environment protection and management, and not to be directly involved in the development of strategies to comply with such conditions/criteria.

EnergyAustralia Response

Thank you for your response in regards to the Wallerawang Ash Repositories Operations Environmental Management Plan.