Lamberts North Ash Placement Project

Operational Environmental Management Plan 2019

EnergyAustralia NSW

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Lamberts North Ash Placement Project - Operational Environment Management Plan

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Document History and Status

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Executive Summary

Lamberts North ash repository (Lamberts North) lies immediately to the east of the existing ash placement repository for Mount Piper Power Station, known as the Mount Piper Ash Repository, described in the Environmental Assessment (EA) as 'Area 1' (Figure 2). It is located in an area characterised by both rural and industrial influences, with a number of coal mines in relatively close proximity (SKM, 2010).

The construction and operation of the Lamberts South and Lamberts North ash placement areas was approved on 16 February 2012 under delegated authority by the Department of Planning and Environment (DP&E) by Project Approval 09_0186 (Project Approval) under the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Project Approval was issued subject to a number of Conditions of Approval (CoA). Many of the CoA refer to the development of plans to manage various environmental and other aspects of the operation of the Project and are required to be implemented prior to the commencement of the operation of the Project as an ash repository.

Accordingly, this Operational Environmental Management Plan (OEMP) has been developed to satisfy CoA D2 for Lamberts North and provide a framework to manage environmental aspects associated with the operation of Lamberts North.

The OEMP outlines the requirements associated with Lamberts North as stipulated in the Project Approval, Mt Pipers Environmental Protection Licence 13007 (EPL), statement of comments (SoC) presented in the submission report (SKM 2011) and the original Environmental Assessment.

It has been prepared by CDM Smith for EnergyAustralia NSW (then Delta Electricity) in consultation with the relevant government agencies identified in the CoA.

The Mount Piper Power Station, including Lamberts North, was acquired by EnergyAustralia NSW Pty Limited (EnergyAustralia) from the state-owned Delta Electricity in September 2013. Project Approval was granted for providing new ash placement facilities at both Lamberts North and Lamberts South, described in the EA for the Project (SKM, 2010) and the Submissions Report (SKM, 2011). However, due to the proposed staging of ash placement, with Lamberts North to be developed first followed by Lamberts South, the CoA allowed for separate OEMP's to be prepared for each. Accordingly, this OEMP applies to Lamberts North only and meets the requirements of Conditions D2 & D3 of the Project Approval. A separate OEMP will be prepared and implemented for Lamberts South prior to the commencement of operation of Lamberts South.

Lamberts North will be filled with ash using the same dry placement technique as has been used in Mount Piper Ash Repository (Area 1) for the last twenty years.

As described in this OEMP, operational activities at Lamberts North will include:

- Ash delivery;
- Ash placement;
- Capping;
- Rehabilitation; and
- Water management.

Potential environmental impacts from the Project were outlined in the EA prepared for the Project Application (09_0186) for Lamberts North and Lamberts South including those potentially resulting from operational activities. The resulting environmental requirements in the CoA are specifically addressed in this OEMP and associated Environmental Management Sub-Plans for noise, groundwater, soil and surface water, air quality, landscape revegetation and site rehabilitation (Section 6).

The principal environmental management matters to address during project operation relate to surface and groundwater. As part of the preparation of this OEMP and designs for ash placement at the Project site, CDM Smith undertook a comprehensive groundwater modelling program. The outcomes of the modelling undertaken by CDM Smith at the time indicated that it would be unlikely that ash deposited in Lamberts

North would adversely affect the underlying groundwater. Based on the evidence found through the modelling program, CDM Smith modified the Project design with the intention of limiting potential groundwater contamination from occurring, including a designed separation between maximum groundwater level and the ash placement level.

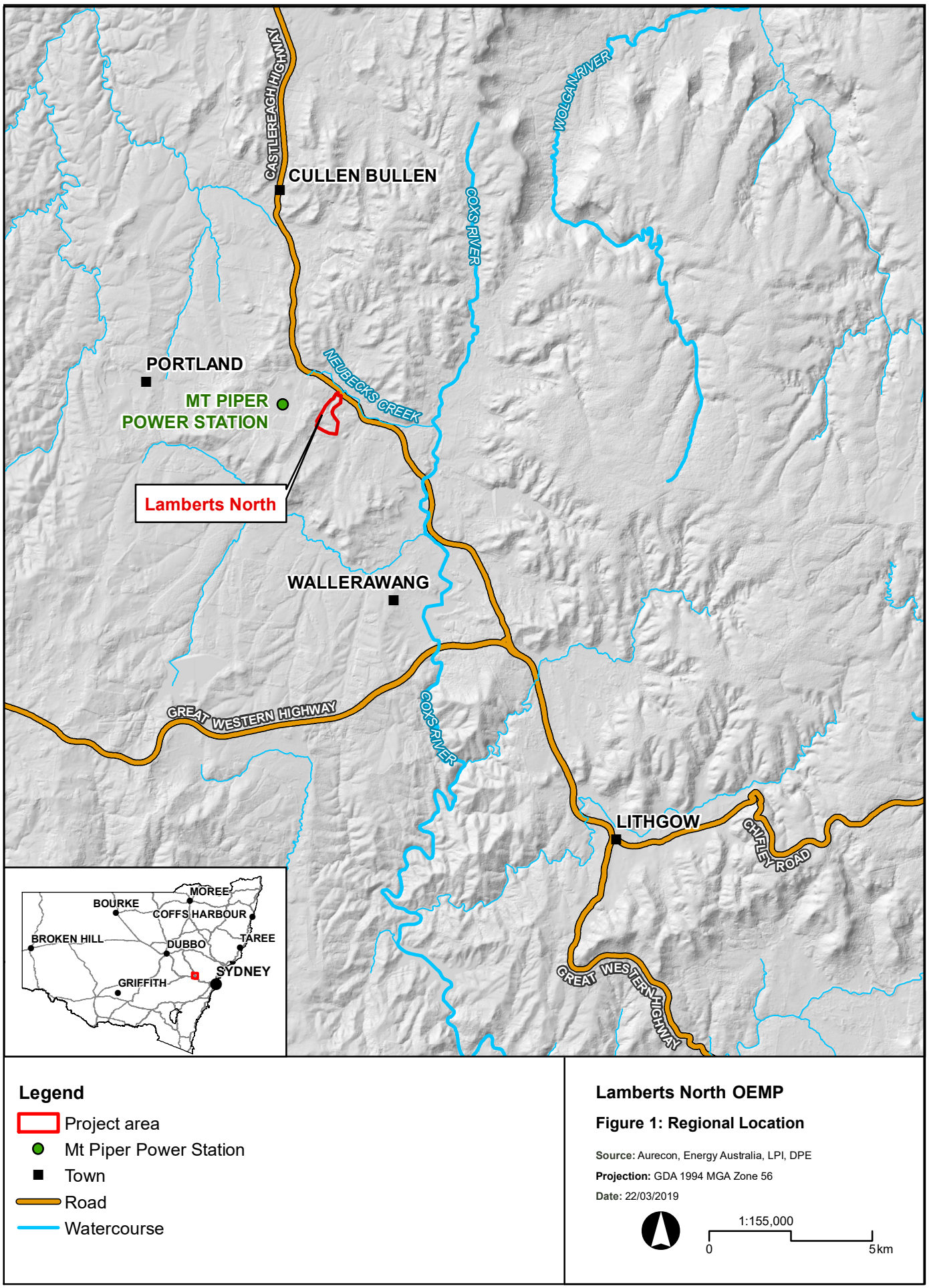
The design intent of the Project is to limit potential adverse effects on Neubecks Creek from Lamberts North, through the incorporation of measures to restrict water leaving the site. EnergyAustralia NSW will continue to undertake water quality testing and creek health monitoring in accordance with the Soil and Surface Water Management Plan (Section 6.5Soil and Surface Water Management Plan). Groundwater sampling will also take place in accordance with the Groundwater Management and Monitoring Plan (Section 6.4), using the allocated groundwater bores strategically placed in and around the site.

Since the modelling undertaken by CDM Smith in 2012, Environmental Resources Management Australia Pty Ltd (ERM) have been engaged to carry out further assessment and modelling of surface and groundwater and update the conceptual site model (CSM), along with groundwater modelling assessment and updates (ERM Assessment). The ERM Assessment is currently underway and the model is anticipated to be completed by the end of 2019. It is proposed that, once the ERM Assessment is complete, if required this OEMP will be further updated to reflect relevant outcomes.

Noise and dust will be maintained within the limits set in the CoA, managed in part by the embankments formed by the existing repository and new embankments created for Lamberts North during the construction period. A Contractor will be engaged to operate and maintain the Lamberts North ash repository on behalf of EnergyAustralia NSW. The Contractor will be required to implement the OEMP as the overarching management document for the Project and obtain approval from EnergyAustralia NSW for its Environmental Management Systems (EMS) and Occupational Health and Safety (OH&S) to ensure consistency with the OEMP.

The OEMP will be underpinned by a hierarchical system of management plans, work procedures, and instructions prepared by the Contractor for site-specific conditions and requirements, including its EMS and OH&S, policies and procedures. The key document prepared to support the implementation of the OEMP is the Repository Management Plan (RMP), prepared annually by the Contractor to address what operational work will be carried out over the following 12-month period. The RMP references specific work procedures covering such areas as site planning, quality, sprinklers and pumps, testing, survey, mobile plant, site and emergency. The document will be reviewed every 12 months and will provide a record of how activities associated with the Project may be improved.

In summary, it is anticipated that, together with the reporting and monitoring regime and Contractor obligations, the environmental requirements outlined in the CoA which apply to Lamberts North will be met through the implementation of the mitigation measures set out in this OEMP and the incorporated sub-plans.



Legend

- Project area
- Mt Piper Power Station
- Town
- Road
- Watercourse

Lamberts North OEMP

Figure 1: Regional Location

Source: Aurecon, Energy Australia, LPI, DPE

Projection: GDA 1994 MGA Zone 56

Date: 22/03/2019

1:155,000

0 5km

Section 1 Introduction

CDM Smith was engaged by EnergyAustralia NSW (as Delta Electricity) to develop an Operational Environmental Management Plan (OEMP) for the operation of Lamberts North, at Mount Piper Power Station near Lithgow, NSW.

1.1 Introduction

On 16 February 2012, Project Approval was granted to Delta Electricity (Delta) for the construction and operation of the Lamberts South and Lamberts North ash placement areas. The Project Approval was granted subject to CoA (see Appendix D for a copy of the instrument). EnergyAustralia NSW acquired Mt Piper Power Station, along with its associated land holdings, infrastructure and project approvals from Delta in September 2013,

Part D Condition D2 of the Project Approval requires that the proponent prepare and submit an OEMP to the Department of Planning and Environment (DP&E) to detail an environmental management framework, practices and procedures that would be followed throughout the operational life of the project.

The Project Approval gave consent to develop both Lamberts North and South sites. The Approval also allows the project to be staged with separate OEMPs being required for Lamberts North (the first to be developed) and Lamberts South. In February 2012, acquired the Mount Piper Power Station, including Lamberts North. This OEMP only covers the Lamberts North site. A cross-reference to where the relevant CoA are met in the document is provided in Appendix C.

The Project Approval authorises the placement of both ash and brine conditioned ash within Lamberts North. To date, no brine conditioned ash has been placed within Lamberts North. However, it is currently anticipated that brine conditioned ash will be placed within Lamberts North once the repository height reaches reduced level (RL) 946. Based on the July 2019 survey of the repository, Lamberts North shall reach RL 946 in approximately three months of ash placement under normal operating conditions. However, no ash placement has occurred within Lamberts North Ash Repository since February 2019 due to low coal availability.

1.2 Background to the Project

Lamberts North is located to the immediate east of EnergyAustralia NSW existing Mount Piper Power Station Ash Repository, which is described in the Environmental Assessment (EA) as Area 1 (SKM, 2010), approximately 17 km North West of Lithgow.

Historically, the Lamberts North site has been highly disturbed as a result of extensive mining activities including, underground working (from the 1950s to the early 1990s) and recent open-cut mining activities being carried out by Centennial Coal.

Prior to construction works, a series of environmental, hydrological, geotechnical and engineering assessments were carried out on Lamberts North. The CoA requires a Construction Environmental Management plan (CEMP). The CEMP outlined the environmental practices and procedures to be followed during the construction phase of the project. The CEMP was approved by the Secretary of DP&E on the 12 December 2012.

Construction works commenced at Lamberts North on the 14 January 2013 and the first ash placement commenced on the 2 September 2013. Historically, EnergyAustralia NSW has engaged a principle contractor (Lend Lease) to manage and operate Ash repositories at both Wallerawang and Mt Piper Power stations. To ensure consistency and that operational tasks were covered, EnergyAustralia NSW consulted with Lend Lease throughout the development of this document.

1.3 Scope of OEMP

The scope of the OEMP covers operations involving transport and placement of ash from Mount Piper Power Station to the Lamberts North area as marked on *Figure 2* (Project site).

As required by CoA D2 (h), the OEMP has been prepared with specific consideration of relevant measures to address requirements outlined in the following documents:

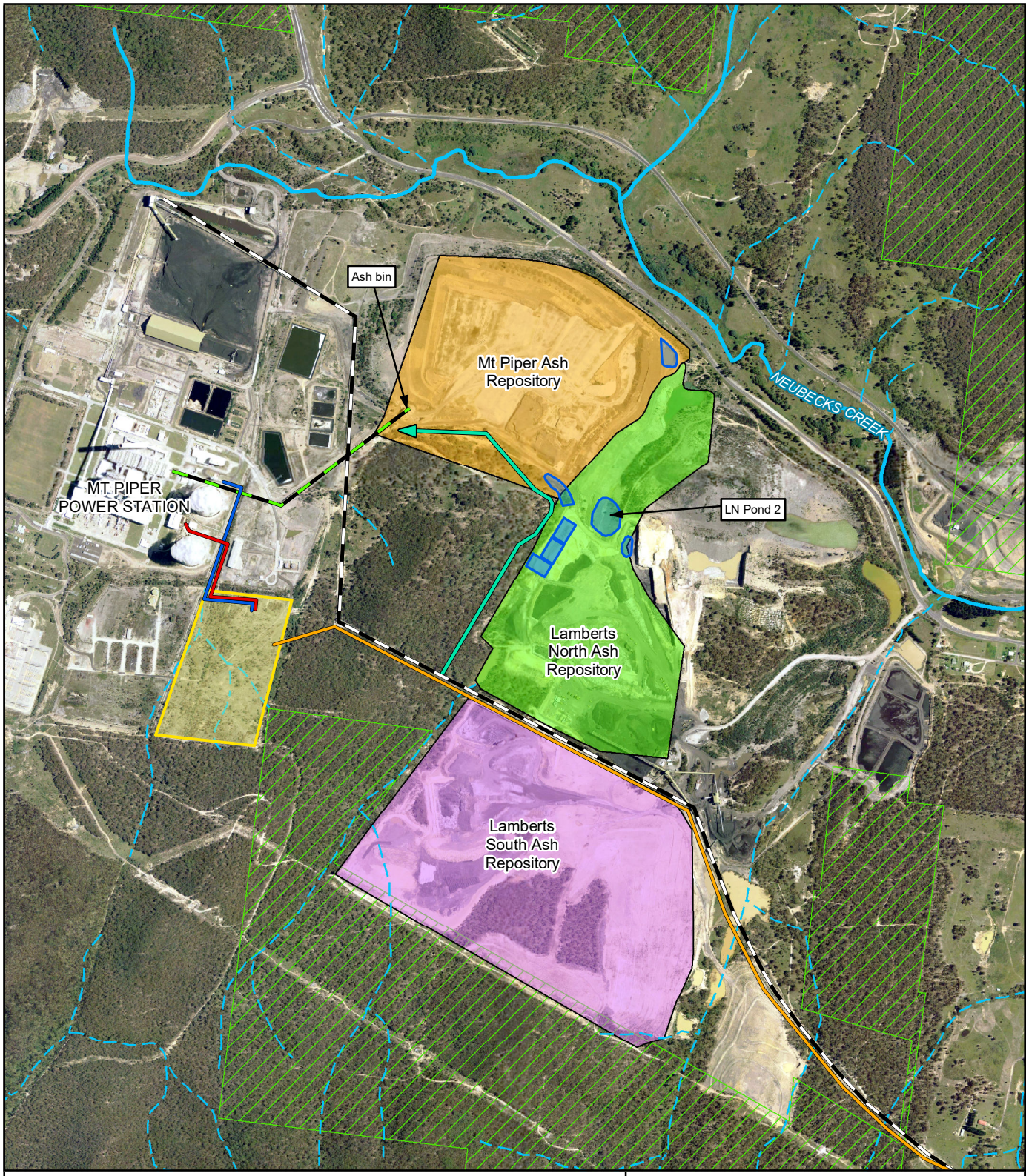
- Project Approval (09_0186) (issued by NSW Minister of Planning);
- Mount Piper Ash Placement Project Environmental Assessment (SKM, 2010 – two volumes); and
- Mount Piper Ash Placement Project Submissions Report (SKM, 2011).

The OEMP has also been prepared to address:

- Relevant stipulations and commitments in the Mount Piper Ash Placement Project Consistency Report – Project Approval 09_0186, June 2012 (SKM 2012);
- Relevant clauses of the Environment Protection Licence (EPL) 13007; and
- Relevant legislation, guidelines and Australian Standards.

1.4 Objectives of the OEMP

- Provide an operational framework to conduct operational activities in a manner that reduce, avoid or offset potential environmental, social, biological and physical consequences of development activities;
- Highlight and manage potential environmental impacts identified at the planning stage;
- Ensure EnergyAustralia NSW and its associated contractors are fully aware of their environmental responsibilities and are proactive in their approach to environmental management;
- Comply with relevant legislation; and
- Strive for continuous improvement in aspects of the project to enable new technologies and innovations to be implemented where practicable and feasible.



Legend

- Approved Lamberts North Ash Repository
- Approved Lamberts South Ash Repository
- Approved Mt Piper Ash Repository
- Water storage pond
- Water treatment plant
- Ash conveyor
- Coal conveyor
- Raw water pipeline
- Treated water pipeline
- Brine transfer pipeline
- Diversion drain
- Ben Bullen State Forest
- Road
- Watercourse
- Non-perennial watercourse

Lamberts North OEMP

Figure 2: Project Site and Surrounds

Source: Aurecon, Energy Australia, LPI, Forestry Corporation NSW

Projection: GDA 1994 MGA Zone 56

Date: 26/03/2019

1:18,000

0 500 m

1.5 Site Settings and Location

Figure 1 locates the Project site within the Lithgow Local Government Area (LGA) and indicates the nearest settlements to Lamberts North, surrounding infrastructure and natural features.

The Project site is predominately surrounded by Ben Bullen State Forest, which lies to the north-east and south-east of Mount Piper Power Station, together with open-cut coal mines and coal washeries. The closed Wallerawang Power Station, which is also owned by EnergyAustralia NSW, lies to the south east of the Project site, approximately 5 km away.

The nearest townships to the Project site are:

- Blackmans Flat, approximately 1 km from the eastern boundary of the Project site;
- Portland, approximately 4 km from the western boundary of the Project site;
- Lidsdale, approximately 4.5 km to the south east of the eastern boundary of the Project site; and
- Wallerawang, approximately 5km south east of the eastern boundary of the Project site.

Lamberts North is approximately 53ha. Figure 1 indicates the site's location in the context of Mount Piper Power Station and Area 1 (the existing Mount Piper Ash Repository). It also shows the Lot numbers for each of the parcels of land to which this OEMP and its sub-plans apply, together with Lot numbers for adjoining parcels of land, including Lamberts South, land owned by Lithgow City Council and other Lots owned by EnergyAustralia NSW and used for the operation of Mount Piper Power Station. Lamberts North is located on land within Lot 9 DP804929 and Lot 15 DP804929.

Lamberts North consists of former coal workings, and has a history of underground and open-cut coal mining. Centennial Coal undertook coal mining and washery operations within the Lamberts North site prior to its purchase by EnergyAustralia NSW in February 2012. A portion of the approved Lamberts North Ash Repository is currently leased to Centennial Coal and will be resumed by EnergyAustralia when required for future ash disposal. The Lamberts North Ash Repository area primarily consists of the former Western Coal Services Mining void, overburden material and washery reject. This material was beneficially re-used in the construction of the ash repository and shall be re-used during the operational phase of Lamberts North. Centennial Coal continue to use a section of the Lamberts North area for their approved mining related activities, including the co-disposal of washery reject material.

1.6 Structure of the OEMP

The structure of the OEMP has been developed in accordance with the following guidelines:

- AS/NZS ISO 14001 Guideline to Environmental Management Systems
- Guidelines for the Preparation of Environmental Managements Plans (NSW DIPNR, 2004).

The OEMP has been designed to be used as a baseline document for the operation of Lamberts North. The OEMP is to be reviewed every three years to ensure continual improvement of the design and environmental mitigation measures.

The OEMP structure is as follows:

Section 1 – Describes the Project background, the OEMP purpose and format and lists the key reference documents for the OEMP.

Section 2 – Describes the key operational 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 Project, including:

- A summary of statutory approval requirements and associated environmental legislation and regulations;
- An outline of the risk assessment undertaken; and
- A summary of the Project's environmental aspects, impacts and associated mitigation measures outlined in the relevant management plans.

Section 5 - Addresses environmental monitoring specifications and responsibilities.

Section 6 - Outlines the implementation framework through the management sub-plans and associated environmental targets and key indicators. The management sub-plans contain a higher level of detail about the surrounding environment; predicted impacts and mitigation measures related to surface water, groundwater, air quality, noise, landscape revegetation and site rehabilitation, and waste management.

Appendix A – Water Quality Monitoring Parameters.

Appendix B – Baseline Water Quality – Surface and Groundwater.

Appendix C – Conditions of Approval Cross-reference Table.

Appendix D – Project Approval Instrument.

Appendix E – Stakeholder Consultation.

1.7 Abbreviations

Abbreviations used throughout this document are described in Table 1-1.

Table 1-1 Abbreviations

Abbreviation	Description
AEMO	Australian Energy Market Operator
ANZECC	Australian and New Zealand Environment and Conservation Council
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
BLALC	Bathurst Local Aboriginal Land Council
AQMP	Air Quality Management Plan
CEMP	Construction Environmental Management Plan
CSM	Conceptual Site Model
SSWMP	Soil and Surface Water Management Plan
NMP	Noise Management and Monitoring Plan
CoA	Conditions of Approval
dB	Decibel
dB(A)	Measure of A-weighted sound; approximation of response of human ear
DEC	Former Department of Environment and Conservation
DECC	Former Department of Environment and Climate Change
DECCW	Former Department of Environment and Climate Change and Water
DP&E	Department of Planning and Infrastructure
EA	Environmental Assessment (SKM August 2010)
EMS	Environmental Management System
ENM	Excavated Natural Material
EPA	Environment Protection Authority
EP&A Act	Environmental Planning and Assessment Act 1979
ER	Environmental Representative
ESC	Erosion and Sediment Control
ESCMP	Erosion and Sediment Control Management Plan
GMMP	Groundwater Management and Monitoring Plan
IECA	International Erosion Control Association
LCC	Lithgow City Council
LGA	Local Government Area
NOW	NSW Office of Water
NPW Act	National Parks and Wildlife Act 1973
OEH	Office of Environment and Heritage
OEMP	Operation Environmental Management Plan
RMP	Repository Management Plan
SCA	Sydney Catchment Authority
TEOM	Tapered Element Oscillating Microbalance
TSP	Total Suspended Particulates
VENM	Virgin Excavated Natural Material

Section 2 Operational Activities

2.1 Overview

This section provides an overview of the extent of operations relating to the Lamberts North ash repository, the site setting and location, and the operational methods and procedures. These aspects have been used as the basis for developing the environmental management strategies and sub plans contained in this OEMP.

EnergyAustralia NSW understands the significance of the environmental risks associated with the operation of the Lamberts North ash repository. Through its experience in constructing and operating coal-fired power stations and ash repositories in NSW for many years, EnergyAustralia NSW has thorough management systems and contractual requirements in place to ensure its ash repositories are operated and maintained within a manner consistent with relevant provisions of the Project Approval and EPL.

EnergyAustralia NSW works closely with its contractors to ensure high standards of operation are maintained, with particular attention to the monitoring and reporting of surface and groundwater, air quality, and noise management. Landscape revegetation, site rehabilitation and waste management are also reviewed and monitored to provide Project stakeholders with assurance that potential environmental impacts have been recognised and are being managed effectively.

2.2 Operational Activities

2.2.1 Hours of Operation

Normal operating hours

Under normal conditions, the operation of the ash placement area at Lamberts North will occur during the following hours:

- Monday to Friday: 6am – 8pm; and
- Saturday to Sunday: 6am – 5pm.

Outside these hours, operational activities can only be undertaken in emergency situations. These situations are subject to specific requirements, as described below.

Abnormal or Emergency operating conditions

CoA E2 states that operations outside the normal operation hours are only permitted in the following emergency situations:

a) Where it is required to avoid the loss of lives, property and or/prevent environmental harm; or

b) Breakdown of plant and/or equipment at the ash placement areas or the Mount Piper Power Station with the effect of limiting or preventing ash storage at the power station outside the normal operating hours defined above; or

c) A breakdown of an ash haulage truck(s) preventing haulage during the normal operating hours combined with insufficient storage capacity at the Mount Piper Power Station to store ash outside of the project operating hours; or

d) In the event that the Australian Energy Market Operator (AEMO), or a person authorised by AEMO, directs EnergyAustralia NSW (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 Mount Piper Power Station to allow for the ash to be stored.

In the event of plant and/or equipment breakdown, EnergyAustralia NSW and its associated contractors will take reasonable and feasible measures to repair the breakdown in the shortest time possible.

In the event that an emergency situation as referred to in E2 (b) and E2 (c) occurs more than once in any two-month period, EnergyAustralia NSW will prepare and submit to the Secretary for approval a report including, but not limited to:

- The dates and a description of the emergency situations;
- An assessment of reasonable and feasible mitigation measures to avoid recurrence of the emergency situations;
- Identification of a preferred mitigation measure(s); and
- Timing and responsibility for implementation of the mitigation measure(s).

The report will be submitted to the Secretary within 60 days of the second emergency situation occurring. EnergyAustralia NSW will implement reasonable and feasible mitigation measures in accordance with the requirements of the Secretary.

EnergyAustralia NSW will notify the EPA and nearby sensitive receivers prior to undertaking any emergency ash haulage or placement operations outside of the hours of normal operation and keep a log of such operations. EnergyAustralia NSW will also notify the Secretary in writing within seven days of undertaking any emergency ash haulage or placement operations outside of the hours of normal operation.

2.2.2 Ash Delivery

The current system of ash transport will be maintained for Lamberts North. Ash placement and will be serviced from a combination of ash conveyance from Mount Piper Power Station to RL 937m at Area 1, part of existing operations, and heavy haulage vehicles from RL 937 into Lamberts North.

One to two trucks will be required to transport ash into Lamberts North from the hopper in the existing ash repository via the southern boundary haulage road in the existing ash repository. During peak periods an additional truck may be added to deliver the ash.

Typically, ash placement occurs by delivering ash to the work face via truck and dumping it into position. The ash is then spread and shaped by a dozer, and then compacted using a controlled number of passes with a dozer and roller to achieve the required compaction.

Vehicle movements are expected to be consistent with the current operations at Area 1. The vehicle movements will continue to be confined to the internal roads within the site boundary and will not use the public road network surrounding the site.

2.2.3 Ash Placement

Ash placement at Lamberts North will include the handling of water-conditioned and brine-conditioned fly ash and furnace bottom ash. Ash placement will be defined within the perimeter embankment along the northern and eastern boundary of the site, prepared during the construction phase. Brine-conditioned ash will be placed above RL 946 unless further groundwater modelling indicates it can be placed at a lower level. As outlined above, to date, no brine conditioned ash has been placed within Lamberts North. Methods for the placement of ash materials to optimise compaction and stability of the emplacement areas include target moisture content, compaction density, and progressive capping and revegetation. Ongoing monitoring and assessment of specifications are undertaken to optimise placement and moisture conditioning requirements (SKM, 2010). These aspects are further described in the sub-plans (see Section 6).

Ash will be placed to the desired height (0.5m to 1m lifts) in pads, with materials that have been moisture-conditioned with water placed in the lower layers to an elevation as specified in approved design drawings, with corresponding heights of 10m.

The sequence of ash placement will work by initially placing ash across the site starting from the most northerly part of the Project site once construction is completed, then towards the east and south of Lamberts North.

The ash is treated to an average compaction of 95%, relative to its maximum standard compaction, through a controlled combination of water addition and machine compacting with the use of rollers and rubber-tyred vehicles.

Ash is placed in layers and stepped to produce an overall batter slope of approximately 1(V):4(H), with benches added every 10m in vertical height change (SKM, 2010). This process of ash placement produces an average batter length of 40m.

As each part of the ash repository meets its proposed RL level, this area is capped, and ash will then continue to be placed beside the capped area. The process is repeated until Lamberts North is filled to its maximum permissible height and extent.

2.2.4 Ash Management

As described in Section 2.2.3 ash is carefully managed to control moisture content, compaction, and dust impacts. Dust is controlled during placement by the use of sprinklers, water carts, and artificial dust suppressants to minimise the generation of dust from prepared and working areas, haul roads, stockpiles and working surfaces, and ultimately by capping (SKM, 2010). Testing and monitoring is also routinely undertaken, including:

- Ash moisture content;
- Rainfall and evaporation;
- Water quality and volume;
- Compaction of ash;
- Dust;
- Ash placement levels;
- Rehabilitation and revegetation;
- Engineering and geotechnical considerations (compaction and stability); and
- Environmental monitoring is described in the Management Plans (Section 6).

2.2.5 Water Management

Water management is an integral part of the operations at Mount Piper Power Station. A water management system will be implemented at Lamberts North to limit potential adverse effects on existing surface water or groundwater conditions within and surrounding the Project site which result from the activities conducted within Lamberts North (refer to Soil and Surface Water sub plan for more information).

The operational activities at Lamberts North will require water for compaction, irrigation, and dust suppression purposes. Rainwater that falls on the site is captured and stored in retention ponds and used on site. Water required for the placement of ash will be sourced from either site retention basins at Lamberts North, or from water available at Mount Piper Power Station. Management and mitigation measures for water have been developed for the Project to address the potential for run-off from exposed ash surfaces entering Neubecks Creek. These measures include:

- The ash repository has been designed to contain water onsite, by diverting water into the centre of the site to on-site retention and sediment basins;
- Excess runoff from the surrounding hillside during a large rain event will be captured in the drain on the south-western side boundary of the site and drained west to Mount Piper Power Station;
- Re-use of runoff from within Project site;
- Recycling/water reuse;
- Capping and revegetation of completed areas to enable diversion of clean water to site drainage systems; and
- Sediment and erosion controls.

Leachate generation from ash storage activities is intended to be reduced via the implementation of a range of mitigation measures. These include:

- Recycling and reuse of runoff from the ash placement area;
- Recycling of water from the water-retention basin and perimeter drains; and
- Design and location of basins.

An outline of the water management system, monitoring requirements and management measures of surface water within the Project site are addressed within the OEMP's Soil and Surface Water Management Sub-Plan (Section 6.5). Monitoring of potential groundwater impacts will also be undertaken routinely throughout the operation life of Lamberts North, as described in the Groundwater Management and Monitoring Sub-Plan of this OEMP Section 6.4).

Section 3 Environmental Planning Framework

3.1 Environmental Management System

EnergyAustralia NSW works under an ISO 140001 Environmental Management System (EMS). To ensure EnergyAustralia NSW systems are reflected in on-site practices implemented by the Contractor, the Contractor engaged to operate Lamberts North shall also manage its process responsibilities under the framework of an EMS. Contractual arrangements will be put in place to meet the performance criteria and objectives set out by this OEMP.

The Project EMS will be based on the Plan, Do, Monitor and Review philosophy. Importantly, in this system, the operations are supported with a hierarchy of planning, instruction, monitoring and review that incorporates shorter term review cycles, with longer review and planning cycles. In this framework, every aspect of site practice is captured in documents such as the OEMP, the works Contract, and documents prepared by the Contractor such as a Repository Management Plan (RMP) which will detail aspects of operation of the ash repository, monthly work instructions, technical specifications, and work procedures.

The RMP is updated each year to meet the criteria set out by the OEMP, while at the same time improving the design and environmental mitigation measures through a process of continuous improvement. This provides the contractor a guiding document for its operational plans over the following 12 months to ensure the ash repository continues to run sustainability.

3.2 Responsibilities and Authorities

There are several roles and responsibilities relevant to the implementation of the OEMP, as described in **Table 3-1.**

Table 3-1 Summary of Project roles and responsibilities

Roles and Responsibilities
1. Owner (EnergyAustralia NSW)
EnergyAustralia NSW is the owner of the Project and ultimately responsible for Lamberts North. EnergyAustralia NSW is represented in this role by the Contractor Administrator.
2. Assets Manager/ Production Manager/ Commercial Manager (EnergyAustralia NSW)
EnergyAustralia NSW Managers are responsible for their area of business to ensure: ▪ The Project (contract) has safety assessments at key milestones (including project initiation, contractor selection, site establishment, project completion); ▪ EnergyAustralia NSW contract administration staff comply with EnergyAustralia NSW Electricity procedures; ▪ The training programmes are implemented to train contract administration staff in the technical and commercial aspects of contract administration; ▪ Contract reviews are performed to ascertain contractor and project performance; and ▪ Contract cash flows are monitored.
3. Contractor Administrator (EnergyAustralia NSW)
EnergyAustralia NSW Contractor Administrator is responsible for the following tasks ▪ Manage the contractor's relationship with EnergyAustralia NSW; ▪ Monitor the contractor's performance (quality, cost & time); ▪ Ensure EnergyAustralia NSW Electricity's obligations are met; ▪ Document contract performance (workshop delivery process); ▪ Provide co-ordination between contractor and EnergyAustralia NSW; ▪ Filing and storage of information; ▪ Ensure contractor staff receive site access induction; ▪ All works comply with EnergyAustralia NSW safety rules and with the condition of working on site specified on the order and in site procedures. Any unsafe practices are to be raised with the contractor and, where appropriate, work stopped until the work practices are corrected; ▪ The contractor (and its employees, sub-contractors or agents) are provided with, and understand the known hazards associated with work, safety and the environmental requirements and the scope of work; ▪ There is compliance with statutory requirements, EPA Licence and conditions of planning approval; ▪ The contractor's payment claims are of duly authorised including ensuring there are adequate funds on the approved order.
4. Environmental Representative (Independent) /NSW Environment Leader (EnergyAustralia)
The Environmental Representative was appointed by EnergyAustralia NSW and approved by DP&E as required by CoA B1. The Environmental Representative's responsibilities include: ▪ Overseeing the implementation of environmental management plans and monitoring programs required under the Project Approval; ▪ Review Contractor's EMS prior to Contractor engagement; ▪ Advising EnergyAustralia NSW and the CPM (see below) about how to achieve these implementation outcomes during construction; ▪ Having the authority and independence to recommend to EnergyAustralia NSW reasonable steps to be taken to avoid or minimise unintended or adverse environmental impacts; ▪ Failing the effectiveness of such steps, recommending to EnergyAustralia NSW that relevant activities are to be ceased as soon as practicable, so that controls can be put in place to minimise environmental risk; ▪ Considering and advising when appropriate on EnergyAustralia NSW compliance obligations relating to the CoA and Statement of Commitments; ▪ Delegate responsibility for preparation of Annual Environment Management Report.

5. Project Manager/ Site Manager (Contractor)

The contractor's Project Manager/ Site Manager roles and responsibilities include:

- Manages implements and ensures compliance against the contract administered by EnergyAustralia NSW and reports back to the Contract administrator (EnergyAustralia NSW) about any non-conformances or non-compliances or matters concerning the operation of the ash repository;
- Oversees Environmental and operational activities and provides direction;
- Controls and manages overall contractual budget for the Project;
- Ensuring environmental risk management is incorporated into project processes;
- Establishing lines of control and assigning environmental responsibilities and accountabilities to EnergyAustralia NSW project personnel;
- Ensuring overarching systems are provided for risk management, health, safety and emergency measures;
- Ensuring Environmental Management aspects are incorporated into Project design, procurement, contracts management, planning/ scheduling and construction;
- Ensuring environmental requirements are acknowledged and implemented for relevant Project operations;
- Ensuring audits are carried out and outcomes are reviewed and actioned where required;
- Procedures are implemented to manage contractor performance;
- Ensuring community consultation and complaints handling occurs in accordance with relevant procedures and complaints are resolved satisfactorily;
- Ensuring environmental incidents are recorded in accordance with procedures and mitigation measures are implemented to minimise the possibility of the same incident happening again;
- Report on environmental incidents to relevant government authorities;
- Contract reviews are performed to ascertain contractor and project performance;
- Notify the Contract Administrator if a complaint has been received.

6. Team Leader Environmental (Contractor)

The Environmental Team Leader is responsible for the day to day duties of the environmental team and is also responsible for:

- Responsible for carrying out environmental monitoring within the boundaries of the ash repository including Air quality, surface and groundwater monitoring, recording findings and reporting any issues;
- Responsible for implementing OEMP as part of their overall operations including familiarising staff with its mitigation measures.;
- Responsible for developing an Annual/bi annual Repository Management Plan as part of the internal EMS;
- Responsible for updating the Monthly report with environmental results from the previous month and report on any trends;
- Responsible for environmental staff training;
- Responsible for day to day activities to do with environmental aspects of the ash repository in accordance with the contractors own Environmental Management System;
- Researches ash utilisation and how it can be applied in industry in conjunction with EnergyAustralia NSW and other professionals' organisations including the Australian Ash Development Association (AADA) of Australia and CSIRO;
- Responsible for guiding, training and delivering information to the rest of the environmental team to ensure day to day operations are carried out in accordance with OEMP, Environmental Licences, contracts and the internal environmental management system;
- Working in conjunction with the operations team, environmental team and the project manager to ensure Environmental Management aspects are incorporated into Project design, procurement, contracts management, planning/ scheduling and construction;
- Oversee safety of the team;
- Reporting back to Project Manager

7. Team Leader – Operations (Contractor)
The Contractors Operations Team leader is responsible for supervising the day to day operations of a team of people that work on the ash repository. Their additional roles are: ▪ Responsible for overseeing, guiding and training any new staff in day to day ash placement activities ; ▪ Managing the operations personnel; ▪ Liaising and co-ordinating work on the ash repository in conjunction with other group's i.e. environmental team; ▪ Responsible for overseeing compaction and ensuring that is completed correctly; ▪ Deals with day to day issues on the ash repository including traffic movements; ▪ Implements and oversee safety; ▪ Working in conjunction with the environmental team and the project manager to ensure Environmental Management aspects are incorporated into Project design, procurement, contracts management, planning/ scheduling and construction; ▪ Reports back to the Project Manager.
8. Project foreman (Contractor)
The contractor's project foreman responsibilities include: ▪ Co-ordinates machinery and plant operator's onsite and in accordance with the team leader's requirements; ▪ Liaises with team leaders and project manager on a daily basis ; ▪ Ensures correct mitigation measures are being carried out in accordance with OEMP and contractual arrangements.
9. Operators – mobile and fixed plant
The Contractor's plant operators' responsibilities include: • Driving and / or operating machinery and/or plant on the ash repository in accordance with work place procedures and safety requirements; • Hauling, placing and compacting ash and operating water carts for dust suppression ; • Operating and maintaining the sprinkler systems across the ash repository for dust suppression and revegetation; • Operating and maintaining sediment control structures and water pumping systems; • Pegging out ash placement benches and batters, and conducting ash compaction tests and water sampling

3.3 Project Communications

3.3.1 Project team communications

Effective project communications are essential to the transfer of information between parties that are involved in the Project.

A Project Team will be formed, comprising EnergyAustralia NSW staff involved in the Project's operation and the site staff working under the Contractor. Although the Environmental Representative is independent from the Project Team, that person is still considered to be part of the Project Team in terms of project communications, as this person will need to be present during scheduled activities (e.g. periodic audits) or as required by the Project Team and agencies.

Communications and interfaces between key internal stakeholders (owner, sub-contractors and suppliers, employee representatives etc) in relation to environmental performance, incidents, project information, contractual matters, procurement, design queries, and customer feedback are detailed in Table 3-2Table 3-2 Methods of internal communication

Weekly Project meetings will be held to communicate the current status of the Project to Project Team staff, including the opportunity to discuss specific issues and concerns about the Project and forthcoming activities.

Table 3-2 Methods of internal communication

Method / Medium	Frequency	Participants	Record
Project meetings	Weekly	Contractor and Project team staff	Minutes
Tool box meeting and/or daily work team briefing	Where relevant to a particular work activity	Contractor – relevant Project personnel and sub-contractors	Toolbox meetings and/or site diary
Site meeting	Daily	Contractor	Minutes
Monthly environmental compliance report	Monthly	Contractor/Contractor Administrator/ Environmental Representative	Report/minutes

3.3.2 External Communications

External communications will be managed by EnergyAustralia NSW in line with the complaints management and community information procedures.

3.3.2.1 Agency communications

The Project Approval requires consultation and periodic reporting to be undertaken with relevant agencies. Key regulatory agencies for the Project are the DP&E and the Office of Environment and Heritage (OEH). Other key agencies include Water NSW, Department of Primary Industries (Fisheries) (DPI Fisheries), NSW Health and Lithgow City Council. Consultation with government agencies has been undertaken during the preparation of the OEMP, and changes made to the OEMP and its sub-plans as required. Agency consultation is described in more detail in Appendix E.

The requirements for agency compliance and ongoing reporting of progress are provided in each of the Environmental Management Sub-Plans (Section 6).

EnergyAustralia NSW is responsible for ensuring that reporting to the relevant agencies is achieved as per the CoA, the EPL and this OEMP.

3.3.2.2 Community and stakeholder communications

Community consultation will be undertaken if works are to be conducted outside the standard working times specified for the Project. There will be one-to-one communication with landholders and local residents, and distribution of project fact sheets within the vicinity of the Project as necessary. Continued communication will be maintained with the broader community for the duration of the Project, and complaints will be handled in accordance with the procedures as outlined in Section 3.5.

As the owner and operator of Mount Piper Power Station, EnergyAustralia NSW is responsible for communicating with various stakeholders and members of the community. EnergyAustralia NSW is pro-active in delivering key messages and information in relation to its operations, and has prepared a Project Community Information Plan for implementation in accordance with the terms of CoA B13 (which covers both the construction and operation of the Project).

EnergyAustralia NSW will also comply with the terms of CoA B10 in respect of community information and complaints management. The Community Information Plan identifies key stakeholders, communication tools, channels and timetable for provision of information. Complaints management is discussed in Section 3.5.

In addition to the Community Information Plan, EnergyAustralia NSW Management Team regularly meets on a quarterly basis, with a local community group, the EnergyAustralia NSW Lithgow Regional Community Consultative Committee. This group consists of members of local organisations including rotarians, environmental groups, bush care, volunteers and interested parties. EnergyAustralia NSW management is able to provide the community with information regarding new and upcoming projects. In addition, it is also able to provide any feedback that may be of concern to the community. EnergyAustralia NSW has consulted with the group regarding Lamberts North and to date no material matters have arisen.

EnergyAustralia NSW has a project webpage available on its website:
https://www.energyaustralia.com.au/about-us/energy-generation/mt-piper-power-station

relating to the Mount Piper Ash Placement Project, which will be updated prior to operation with the suitable phone numbers, including after-hours contact details. This provides an additional avenue for community members to make a formal complaint. Portals for community complaints and enquiries include:

- A 24-hour contact number;
- A postal address to which written complaints and enquiries may be sent; and
- An email address to which electronic complaints and enquiries may be transmitted.

3.3.3 Stakeholder consultation

The key stakeholders actively involved in the implementation of this Project include:

- Department of Planning and Environment
- Department of Primary Industries (Fisheries)
- WaterNSW
- Environmental Protection Authority
- Lithgow City Council

A summary of stakeholder consultation dates have been provided in Table 3-3 on the next page. See Appendix E for information about stakeholder comments and feedback.

Please note: In response to Lithgow City Council request, EnergyAustralia NSW will ensure to extend an invitation to Council to participate in future consultation meeting relating to Lambert North.

Table 3-3 Summary of stakeholder consultation and relevant contacts

Stakeholder	Nature of involvement	Condition of approval	Relevant stakeholder contact	When consulted	Person(s) responsible for consultation	Reference to Comments
Department of Primary Industries (Fisheries) (DPI Fisheries)	OEMP Soil and Surface Water,	D3 (c)	(02) 49163931	4/04/2019-15/04/2019	Scott Carter Senior Fisheries Manager	Appendix E
WaterNSW	OEMP, Groundwater, Surface Water Management Plan	D2, D2 (b) (c)	(02) 98652501	4/04/2019-17/04/2019	Dr Girja Sharma Catchment Assessment Manager	Appendix E
Environmental Protection Authority (EPA)	Air Quality,	D2 (d)	(02) 63333800	4/04/ 2019 – 16/04/2019	Darryl Clift Head of Regional Operations- Bathurst	Appendix E
Lithgow City Council (LCC)	OEMP	D2	(02) 63549999	5/03/2019-11/04/2019	Jessica Ramsden Development Planner	Appendix E
NSW Health	OEMP Air quality	E2 (d)	(02) 47342000	4/04/2019-15/04/2019	Bradley Forssman Acting Professor Director Public Health Nepean Blue Mountains	Appendix E

3.4 Environmental Awareness Training and Site Induction

Prior to commencing operation works, EnergyAustralia NSW will induct personnel working on Lamberts North. The Contractor will also implement its own approved OH&S and Environment management systems and personnel requiring access to Lamberts North will also be inducted into these procedures.

The site induction process will include environmental topics relating to Project operations, with the purpose of providing sufficient education so that personnel:

- Understand their environmental obligations;
- Understand and comply with the OEMP and sub-plans;
- Understand how their role interacts with the environment and local community;
- Can identify potential environmental incidents and be aware of communication pathways to report such events; and
- Can identify the requirement to implement appropriate control measures and corrective actions.

The site induction will cover general environmental issues and measures relating to the Project, such as:

- Requirements for environmental management and identification and management of environmental issues for the Project;
- Outline of the OEMP and sub-plans including project environmental issues and significant risks;
- Responsibilities of project staff, sub-contractors and suppliers;
- Reporting of potential or actual environmental incidents;
- Spill kit types and their locations;
- Hours of operation;
- Site hazards;
- Community communication protocols and procedures; and
- Contacts for environmental incidents and emergencies.

In addition to the Site Induction, Project staff associated with certain activities shall undergo more specific workplace training such as toolbox talks prior to work commencement and during the performance of work. Topics will relate to tasks or activities being carried out in the relevant work areas.

The Contractor will identify resources for the following environmental activities:

- Monitoring and inspecting site environmental controls;
- Developing any site-specific environmental procedures and plans (such as erosion and sediment control plans), work instructions, inspection and test plans (ITPs) and checklists;
- Controlling and filing documents relating to legislation, standards and environmental records; and
- Auditing environmental practices and controls.

Changes will be communicated to Project team members as appropriate and incorporated in the annual update of the RMP as necessary.

3.5 Complaints Management

EnergyAustralia NSW has an existing complaints handling procedure as part of its EMS, which will be implemented during the operational phase of the Project, in accordance with the terms of CoA B11 and B12 (refer to Section 3.1 for EMS information). As part of this procedure, details of complaints will be recorded in a complaints register, which will include as a minimum:

- Date and time of the complaint;
- Means by which the complaint was made;
- Personal details of the complainant that were provided, or if no details were provided a note to that effect;
- The nature of the complaint;
- Time taking to respond to the complaint;
- Any investigations and actions taken by EnergyAustralia NSW in relation to the complaint;
- Any follow up contact with, and feedback from the complainant; and
- If no action was taken by EnergyAustralia NSW in relation to the complaint, the reason/s why no action was taken.

On receipt of an environmentally-related complaint from the public, the complaint will be investigated in accordance with the above-mentioned procedure. The Contract Administrator will be informed of any complaints relating to the Project. The Monthly Environmental Compliance Report will document any complaints, actions and outcomes made in the reporting period. Details of complaints received in association with the Project will be included within the Annual Environment Management Report (AEMR) pursuant to Condition E21.

3.6 Environmental Inspection Program

Environmental site inspections using a Weekly Environmental Inspection Checklist will be undertaken in accordance with the program outlined in and as outlined in the sub-plans. These measures will ensure that operational activities are undertaken in compliance with the regulatory requirements of the OEMP. The inspections shall identify areas where improvements to the environmental performance of the Project may be achieved.

Daily observational monitoring of site environmental conditions and impact control measures will be undertaken by the Contractor. The Contractor will record these and take action in accordance with the requirements set out in this OEMP.

Any non-conformances will be recorded on the Checklist, with follow-up action taken as specified in Section 3.8. Completed Checklists will be placed on the Project file and kept for auditing purposes.

Table 3-4 Environmental Inspection Programme

Potential impact	Parameters	Frequency	Reporting	Responsibility
General environmental impacts	Potential impacts listed in environmental plans and the environmental risk assessment	Daily	Site inspection report	Contractor
		Weekly	Weekly environmental inspection checklist and monthly reports	Contractor
Erosion and sedimentation	Potential erosion, surface water pollution	After a significant rainfall event (e.g. >25mm in 24 hours)	Site inspection report	Contractor
Air, noise and water	Various	As specified in plans	Weekly environmental inspection checklist and periodic monitoring reports	Contractor EnergyAustralia NSW/ specialist consultant

3.7 Auditing of the OEMP

3.7.1 External audits

In accordance with CoA E22 and as part of the EMS, EnergyAustralia NSW commissioned Aurecon in 2014 and SLR Consulting in 2018 to conduct an independent environmental audit of operations. The audit reviewed Contractor compliance with project environmental commitments specified in this OEMP and sub-plans, and any other licences or approvals that are obtained for the Project.

The audit findings and EnergyAustralia NSW response are detailed in the Annual Environmental Management Report for the respective reporting periods.

3.7.2 Internal audits

Annual internal audits of the Contractors performance will also be undertaken in accordance with the Contractor's EMS. Internal audits will review the implementation of the OEMP and effectiveness of the management measures, and results will be reported to the Contract Administrator. An audit summary shall also be incorporated into the Monthly Environmental Compliance Report.

3.8 Non-compliances and Corrective Actions

Non-conformances may occur when required management activities related to Lamberts North identified in this OEMP or in the CoA and other relevant legislation are not adhered to and could subsequently cause adverse environmental impacts. Non-conformances may also result from unforeseen circumstances relating to unlikely weather or natural events.

Environmental aspects where goals or thresholds could potentially be exceeded during operation are predominantly related to:

- Erosion and sediment control;
- Noise and vibration;
- Surface water and groundwater quality; and
- Air quality.

Potential or actual non-compliant activities (non-conformances) must be brought to the attention of the Contract Administrator and the Environment Representative. Non-conformances may be identified through the following means:

- Site inspections;
- Environmental monitoring;
- Audits; and
- Following a complaint or incident.

Non-conformances will be recorded in the appropriate report, form, checklist, or complaints register. Corrective actions will be recorded, and the Contractor is responsible for ensuring that the necessary corrective actions are satisfactorily completed.

In the event of non-conformance, the Environment Representative will be informed by the Contract Administrator, who may recommend to EnergyAustralia NSW reasonable steps to avoid or minimise unintended or adverse environmental impacts. EnergyAustralia NSW may be consulted as to whether the works should cease to avoid or minimise environmental impacts until the situation is rectified.

Non-conformances must be documented, and corrective actions implemented where required. Corrective actions are listed in the Response Plan and Corrective Action table of each sub-plan. Tracking of environmental non-conformances and associated corrective actions will be the responsibility of the Contractor. This process will be tracked through the Contractor's EMS. The Contract Administrator will ensure that repaired and reworked controls are re-inspected and verified.

3.9 Environmental Incident Management

3.9.1 Types of environmental incidents

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

- Discharge of sediment or polluted water into Neubecks Creek;
- Spills of hazardous substances such as chemicals, oil or fuel; and
- Failure of an embankment causing ash spillage from the site;
- An exceedance or non-compliance.

3.9.2 Environmental incident response procedure

The Contractor must communicate any environmental incident that occurs during Lamberts North 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 3-5.

Table 3-5 Incident categories

Incident Type	Incident Characteristics	Action Required
Near-miss*	▪ Potential for but no actual pollution ▪ General environmental hazards (such as hazardous substances not stored in secured locations) ▪ Handling mishaps with fuel, 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 immediately, who will notify the Contract Administrator. 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*	A minor environmental incident has occurred when material has been spilled or released to the environment (land, air, water, people affected), causing **no** actual or potential: ▪ harm to the health or safety of human beings or to ecosystems that is not trivial; or ▪ loss or property damage of an amount, or amounts in aggregate, exceeding $10,000. Its consequence/impact are measured as minor or important and includes some of the following aspects: ▪ 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).	Contractor staff must report incident to the Site Manager immediately, who will notify the Contract Administrator. The Shift Leader shall assess the incident facts using the Pollution Incident Response Management Plan. Contractor must advise suitable controls to be implemented in future situations to prevent recurrence.
Major*	Material spilt or released to the environment where its consequences/impacts result in actual or potential: ▪ harm to the health or safety of human beings or to ecosystems that is not trivial; or ▪ loss or property damage of an amount, or amounts in aggregate, exceeding $10,000.	Contractor staff must report incident to the Site Manager immediately. The Site Manager will report immediately to the Contract Administrator. The Shift Leader shall assess the incident facts using the Pollution Incident Response Management Plan and if required, initiate the notification process and incident response as outlined in the plan. EnergyAustralia NSW must provide incident report to the Secretary within 7 days of the incident occurring.
*In accordance with Condition E19, 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.		

EnergyAustralia NSW may engage and coordinate external service providers, such as the State Emergency Services, to assist in the response. In the event of a release of contaminant, spill or leak of hazardous material the general procedure.

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 existing emergency response system (see Section 3.9.4).

3.9.3 Incident investigation

Incidents will be documented, investigations conducted, and action plans established in order that the event does not occur again. Where appropriate, incident investigations will be commissioned by legal advisors to enable legal advice to be provided in relation to the incident. Any environmental investigation will include the following basic elements:

- Identifying the cause, extent and responsibility of the incident;
- Identifying and implementing the necessary corrective action;
- Identifying the personnel responsible for carrying out the corrective action;
- Implementing or modifying controls necessary to avoid a repeat occurrence of the incident;
- Recording any changes in written procedures required; and

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.

It is the responsibility of the Contractor to ensure environmental incidents are reported to Management, documented in an Incident Report Form and provided to the Contract Administrator for filing.

3.9.4 Emergency preparedness

Potential environmental emergency situations could arise from a variety of causes, directly or indirectly related to Project operations, which could affect Project operations. Possible Project hazards/emergency situations include events such as bushfires, floods, hazardous material spill, explosion, industrial accident, or storm and tempest.

EnergyAustralia NSW has an established Emergency Response Plan and Pollution Incident Response Management Plan (PIRMP) for Mount Piper. The Emergency Response Plan will be followed in case of an emergency at Mount Piper. Any emergency procedures developed by the Contractor will follow the EnergyAustralia NSW Emergency Response Plan. The Emergency Response Plan will be included in Project inductions, specifying the steps to be taken and the persons to contact will be highlighted in the site induction. Any personnel identifying an emergency should dial 555 or 6354 8316 for a mobile phone to alert the EnergyAustralia NSW Emergency Response team.

The PIRMP sets out the requirements for the notification, response and management of pollution incidents as defined in the Protection of the Environment Operations Act 1997 at Mt Piper.

A pollution incident is required to be notified and the PIRMP implemented if there is a risk of 'material harm to the environment', which is defined in Section 147 of the POEO Act:

Harm to the environment is material if:

(i) it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or

(ii) it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000 (or such other amount as is prescribed by the regulations). For this purpose, "loss" includes the reasonable costs and expenses that would be incurred in taking reasonable and practicable measures to prevent, mitigate or make good harm to the environment.

EnergyAustralia NSW is required to immediately notify each relevant regulatory authorities as follows where a pollution incident has or is likely to occur with the risk of material harm to the environment:

• NSW EPA;

• NSW Health (local Public Health Unit);

• WorkCover NSW;

• Local Council; and

• Fire and Rescue NSW

In the event that contaminants are released, the Contract Administrator should be called by the Contractor in the first instance. The Environmental Representative will be responsible for calling the EPA if deemed necessary.

Access to Materials Safety Data Sheet (MSDS) information will be made available at the main site office: and, where appropriate, at specific locations where specified substances are being used.

3.10 Document Control

Project 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; and
- Environmental inspection checklists and audit reports.

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

3.11 Continuous Improvement and Adaptive Management

To ensure the measures being implemented on site are relevant and effective in their implementation, management review meetings will be undertaken on a regular basis (where required). This review meeting may address the following matters:

- Performance against Project aims and objectives;
- Results of audits, inspections, environmental monitoring and incidents, including any trends;
- Identification of requirements for any further mitigation measures;
- Review of mitigation measures in response to monitoring results (where non-compliance is identified);
- Outcomes of community consultation;
- Review of the OEMP every three years; and
- New objectives and targets to promote continual improvement, where required.

Meeting attendees will include (as a minimum) Contract Administrator, and nominated personnel from the Contractor. The Environmental Representative may also attend. A record of the meeting will be documented as minutes and maintained by the Contractor.

Section 4 Environmental Legislative Framework

4.1 Statutory Requirements

4.1.1 Project approval

The Project Approval incorporates by reference a number of principal documents in the CoA. These are set out in detail in Section 1.3. In addition, a Consistency Report (SKM, 2012) was prepared to confirm the consistency of two design changes to the Project related to improvements to the storage capacity of Lamberts North by utilising the capacity of Huon Void and a change to the alignment of the drainage line to take clean off-site storm water away from the south western boundary of Lamberts North and into an existing clean water drain adjacent to Area 1.

This OEMP for Lamberts North has been developed specifically to respond to both the Project Approval CoA and the approved Consistency Report design changes, together with other relevant documents incorporated by reference into the Project Approval.

EnergyAustralia NSW Mt Piper Power Station operates under an Environmental Protection Licence 13007 (EPL) granted under the *Protection of the Environmental Operations Act 1997* by the Environmental Protection Authority.

EnergyAustralia NSW and its associated contractors must abide by the EPL at times within the EPL premises, including Lamberts North.

The EPL is formally reviewed every 5 years.

4.1.2 Relevant legislation, regulation and guidelines

Legislation and guidelines relevant to the Project are listed in **Table 4-1** Relevant legislation, guidelines and standards

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 the Contractor to ensure the applicable provisions of the following legislation and guidelines are complied with when carrying out work for the Project.

Table 4-1 Relevant legislation, guidelines and standards

Relevant legislation (Administering Authority	Summary of legislation	General Requirements
Commonwealth legislation		
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) [Commonwealth Department of Sustainability, Environment, Water, Population and Communities (SEWPaC)]	The EPBC Act is triggered by developments that will have a significant impact on Matters of National Environment Significance (MNES), including Threatened Ecological Communities (TEC), threatened species and migratory species. The Mount Piper Power Station Ash Placement Project (including the Lamberts North ash placement area) was referred to SEWPaC on 21 May 2010 (EPBC 2010/5506). On 16 July 2010 the Project was determined to not be a controlled action and therefore only required assessment under New South Wales legislation.	The Project is not a controlled action and so is not regulated by the EPBC Act.
New South Wales legislation		
Contaminated Land Management Act 1997 (CLM Act) (Office of Environment and Heritage)	Establishes a process regulating contaminated land where appropriate.	The Mount Piper Power Station has been notified under the CLM Act and the EPA has determined that regulation under the CLM Act is not required.
NSW Environmental Planning and Assessment Act 1979 (EP&A Act) (NSW Department of Planning and Infrastructure)	Establishes a framework to control development in NSW. The legislation also details the process by which approval can be gained.	The construction and operation of the new ash placement areas at Lamberts North was approved under the Project Approval on 16 February 2012 (Application No. 09-0186). The Project Approval includes COA for the entire Project life, from pre-construction to post-operation.
Environmentally Hazardous Chemicals Act 1985 (EHC Act) (NSW Office of Environment and Heritage)	The EHC Act regulates chemicals, or groups of chemicals, of environmental concern. These requirements are set out in chemical control orders (CCOs). CCOs are typically made where chemical controls are required beyond those set under existing pollution laws and set controls on activities throughout the chemical's lifecycle through general specific requirements.	No environmentally hazardous chemicals are to be placed inside the Lamberts North repository. There are no components in the ash that are listed in Schedule A of the Scheduled Chemical Wastes CCO 2004. No requirement for permits, licences or approvals under the EHC Act have been identified for the Project.

Relevant legislation (Administering Authority	Summary of legislation	General Requirements
Heritage Act 1977 (Heritage Act) (NSW Office of Environment and Heritage- National Parks and Wildlife	Protects items of environmental heritage (natural and cultural) in New South Wales. The Heritage Act does not apply to Aboriginal "relics". Applies if any heritage items are identified during operation works.	No requirements for permits, licenses or approvals have been identified for the Project. However, if during construction of the Project relics (as defined in the Heritage Act) are uncovered the appropriate authorities are to be notified (procedures are identified in the approved CEMP). Note – relics under the Heritage Act do not include Aboriginal Heritage items or artefacts.
NSW Industrial Noise Policy 2000 (INP) (NSW Department of Environment and Heritage)	This Policy is set in place to establish noise criteria that would protect the community from excessive industrial noise and preserve amenity for specific land uses.	The Policy is applicable to the operation of the Project. Refer to the Noise Management and Monitoring for further details (Section 6.3).
National Parks and Wildlife Act 1974 (NPW Act) (NSW Department of Environment and Heritage)	The NPW Act provides for the care, control and management of national parks, historic sites, nature reserves, reserves, Aboriginal areas and state game reserves. Under the NPW Act, most fauna and flora species, as well as indigenous heritage, is protected in New South Wales. In relation to protected flora and fauna, restrictions on the harming flora and fauna under are generally not applicable to *"development in accordance with a development consent within the meaning of the Environmental Planning and Assessment Act 1979"* [Fauna – s98 (5)(a), Flora – s117(3)(f)(i)]. The Project approval (under the EP&A Act) requires a Flora and Fauna Management Sub-Plan for the construction period. The sub-plan outlines measures to protect and minimise loss of native vegetation and fauna. A sub-plan is not required for the OEMP.	No requirements for permits, licences or approvals have been identified for the operation phase of the Project.
Biodiversity Conservation Act 2016 and *Local Land Services Act 2013* (NSW Office of Environment and Heritage)	These Acts regulates the clearing of native vegetation on land in NSW. Native vegetation is any species of vegetation that existed in NSW before European settlement including trees, saplings, shrubs, scrub, understory, groundcover or plants in a wetland. The clearing of native vegetation is subject to differing requirements depending on how the vegetation and the land is classified under these Acts.	No mapped vegetation listed under the *Biodiversity Conservation Act 2016* is required to be removed for the Project. No requirement for permits, licences or approvals have been identified for the Project.

Relevant legislation (Administering Authority	Summary of legislation	General Requirements
Noxious Weeds Act 1993 (NW Act) (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, licences or approvals have been identified for the Project. However, the ongoing operation must comply with the control and disposal requirement under the NW Act, including notification to the local control authority if noxious weeds are identified on site. The CEMP (CDM Smith, 2012a) contains mitigation measures for noxious weeds.
Protection of the Environment Operations Act 1997 (POEO Act) (EPA)	The POEO Act controls how activities should be undertaken in consideration of environmental protection for aspects, including air, water, soil, and noise pollution, as well as waste. The main features and subordinate legislation of the POEO Act are: ▪ Integrated Environmental Protection Licensing – The POEO Act provides a single licensing arrangement addressing to air pollution, water pollution, noise pollution and waste management for scheduled activities; and ▪ Creation of a range of environmental offences. Under the POEO Act, scheduled activities are required to obtain an Environmental Protection Licences to operate from the EPA.	The provisions of the EPL apply to the operation of Lamberts North. The EPL includes conditions that regulate the treatment and disposal of waste ash.
Water Act 1912 (Water Act) (WaterNSW))	The Water Act regulates the influence of impacts on waterways, outlining control and remedial measures (i.e. groundwater wells), licensing and offences.	Apart from the licencing of monitoring bores, no requirements for approvals have been identified for the Project.
Water Management Act 2010 (WM Act) (WaterNSW)	The WM Act controls the allocation, use and sharing of water within certain management areas. The Project is located on the western boundary of the Greater Metropolitan Region Unregulated River area.	EnergyAustralia NSW will not be seeking any further allocations of water under the WM Act for Lamberts North.
Protection of the Environment Operations (Noise Control) Regulation 2008	This Regulation controls noise from motor vehicles and marine vessels and sets community standards on acceptable noise intrusion in homes from such appliances as intruder alarms, music amplifiers, air conditioners and powered garden tools	The Noise Management and Monitoring Plan has been prepared to ensure noise is managed in accordance with requirements. No additional licence is required.

Relevant legislation (Administering Authority	Summary of legislation	General Requirements
Interim Noise Construction Guideline 2017	The guideline is designed to manage noise from construction works regulated by the EPA under the POEO Act, by setting conditions in licences or other regulatory instruments. This can be used by acoustic engineers in assessing noise and reporting and the contractors and landowners in understanding noise legislation.	EnergyAustralia NSW will be carrying out noise monitoring during the life of Lamberts North.

Relevant legislation (Administering Authority	Summary of legislation	General Requirements
Policies, guidelines and standards		
Australian Standard 1055:2018 – Acoustics Description and Measurement of Environmental Noise	This Standard sets out general procedures for the description and measurement of environmental noise including repetitive impulsive noise. This Standard defines the basic quantities to be used for the description of noise in community environments and describes basic procedures for the determination of these quantities. It excludes the setting of environmental noise criteria. Such levels are set by regulations or organisational policy, not by Standards Australia.	The standard is not a regulatory document and only provides a guide to description and measurement of noise. The standards have been incorporated into the Operational Noise Management Plan (Section 6.3)
Australian Standard 2436 :2010 – Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites	The Standard provides guidance in noise and vibration control as well as the investigation and identification of sources, measurements of sound and vibration, and guidance in assessment. The Standard is applicable to a wide range of different activities associated with construction, demolition and maintenance works.	The standard is not a regulatory document and only provides a guide to description and measurement of noise. The standards have been incorporated into the Operational Noise Management Plan (Section 6.3).
Waste Classification Guidelines Part 1 NSW EPA	This part of the Waste Classification Guidelines (the Guidelines) covers the classification of wastes into groups that pose similar risks to the environment and human health.	The guidelines are relevant when ash is diverted from the ash repository and sold to consumers.

Relevant legislation (Administering Authority	Summary of legislation	General Requirements
State environmental Planning Policy (Sydney Drinking Water Catchment) 2011 (replacing the *Drinking Water Catchments Regional Environmental Plan No. 1)*	The State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011 (the SEPP) commenced on 1 March 2011, and replaced the *Drinking Water Catchments Regional Environmental Plan No. 1* The SEPP aims to: ▪ provide for healthy water catchments that will deliver high quality water while permitting development that is compatible with that goal, and ▪ provide that a consent authority must not grant consent to a proposed development unless it is satisfied that the proposed development will have a neutral or beneficial effect on water quality, and ▪ support the maintenance or achievement of the water quality objectives for the Sydney 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. The project has been planned and designed so that the requirements of both the SEPP and *Drinking Water Catchments Regional Environmental Plan No. 1* would be met.
NSW Industrial Noise Policy *(Office of Environment and Heritage)*	The policy seeks to prevent and minimise noise. It provides the framework and process for delivering noise limit conditions for consents and licences that enable the EPA to regulate premises that as scheduled under the POEO Act.	The Project's Environmental Protection Licence, issued under the POEO Act, does not set any noise limits for the Project. Nevertheless, the Project Approval includes noise level restrictions that need to be complied with during construction and operation.
The excavated natural material order 2014	Imposes the requirements that must be met by suppliers of excavated natural material to which 'the excavated natural material exemption 2014' applies. The requirements in this order apply in relation to the supply of excavated natural material for application to land as engineering fill or for use in earthworks.	The requirements in this order apply, as relevant, to any person who supplies excavated natural material, that has been generated, processed or recovered by the person.
The excavated natural material exemption 2014	Exempts a consumer of excavated natural material from certain requirements under the *Protection of the Environment Operations Act 1997* (POEO Act) and the Waste Regulation in relation to the application of that waste to land,	The importation of capping material to cover the ash repository must meet the definition of excavated natural material detailed in the excavated natural material order.

4.2 Environmental Risk Assessment

The contractor, in consultation with EnergyAustralia, will review the potential for an impact to cause harm on a three-yearly basis, and maintain a current risk assessment register. The assessments are undertaken in accordance with the criteria outlined in AS/NZS ISO31000 and the New South Wales Department of Planning *Hazardous Industry Planning Advisory Paper 6 – Hazard Analysis* (July 2008).

The risk assessment process is undertaken on both unmitigated risks and residual (mitigated) risk and consider the following:

- The likely frequency of the potential hazard occurring;
- Indication of the cumulative impacts to surrounding land uses;
- The duration of any identified hazard;
- The affects and rate of usage of hazardous substances to be used, stored, processed or produced by the Project;
- Processes, types of machinery and equipment used within the Project that relate to hazard and impact; and
- Mitigation measures to minimise the potential for harm, including incorporation of natural hazard management.

The risk assessment criteria in AS/NZS ISO31000 establishes a method for identifying risk profiles through combining the "likelihood" of a hazard or impact occurring with the "consequences" of a hazard or impact occurring, in terms of its effect on the environment associated with the operation of the ash repository.

Definitions applicable to the risk assessment process as described in this chapter are outlined in Table 4-2 .

Table 4-2 Definitions for assessment of hazard and risk

Term	Definition
Hazard	Something with the potential to cause harm. This can include hazardous substances, plant and equipment, work processes or other aspects of the surrounding environment.
Likelihood	The chance or probability of an event resulting in an impact occurring.
Consequence	How much harm the impact could have, how many people it could affect and the duration of the harm.
Unmitigated risk	The likelihood that a harmful consequence might result when exposed to the hazard without implementation of the proposed mitigation measures.
Residual risk	The likelihood that a harmful consequence might result when exposed to the hazard with the effective implementation of the proposed mitigation measures.
"Major Accident Event (MAE)"	Sudden occurrence (including major emission, loss of containment, fire, explosion or release of energy) leading to serious danger or harm to persons, property, both the built or natural environment, whether immediately or delayed.

Likelihood Assessment

A qualitative assessment of the possible event frequency is to be undertaken to assess the likelihood of an impact occurring, based on the ratings included in Table 4-3.

Table 4-3 Ratings for likelihood of occurrence

Probability Rank	Occurrence (likelihood)	Description
5	Almost certain	Will almost certainly occur. Has a 95% or greater chance of occurring within the 12-month period.
4	Likely	Probably will occur Has a 70% to 95% chance of occurring within a 12-month period
3	Possible	May possibly occur Has a 30% to 70% chance of occurring within a 12-month period
2	Unlikely	Could possibly occur Has a 5% to 30% chance of occurring within a 12-month period
1	Rare	Only likely to occur in exceptional circumstances Has a 0% to 5% chance of occurring within a 12-month period

Consequence Assessment

The potential level of consequence of an impact is to be assessed in accordance with the definitions provided in Table 4-4 .

Table 4-4 Consequence ratings

Score	Maximum Potential Consequence (realistic)	
	Description	Environment, legal and/or reputation impact
1	Catastrophic	Environment – Offsite impact with permanent severe harm/loss Reputation – Potential to cause a severe level of impact
2	Major	Environment – Offsite impact with severe harm/loss Reputation – Potential to cause a high level of impact
3	Moderate	Environment – Offsite impact with localised harm/loss Reputation – Potential to cause a medium level of impact
4	Minor	Environment – Onsite event with recoverable harm/loss Reputation – Potential to cause a low level of impact
5	Insignificant	Environment – Single onsite event with negligible harm/loss Reputation – Potential to cause a negligible level of impact

Risk Matrix

The risk matrix to be adopted for the assessment is included in Table 4-5 . The colour shading refers to the qualitative bands of risk level. The risk assessment tables are structured to show the results of the unmitigated risk profile and residual risk profile. The table presents the results in the following order:

- The hazard that may impact on health and safety;
- The impact that could arise from the hazardous event;
- The consequence (C), likelihood (L) and risk (R) that may impact on the environment;
- The strategy or strategies established to address the risk; and
- The consequence (C), likelihood (L) and risk (R) that may impact on the environment after mitigation measures are implemented.

For the purposes of this risk assessment, risk levels are defined as follows:

- Extreme – works must not proceed until suitable mitigation measures have been adopted to minimise the risk;
- High – works should not proceed without consideration of alternative options or additional controls to minimise the risk. A documented action plan is required;
- Medium – acceptable with formal review. A documented action plan is required; and
- Low – acceptable with review.

Table 4-5 Risk assessment matrix

Likelihood	Consequence				
	Catastrophic 5	Major 4	Moderate 3	Minor 2	Insignificant 1
Almost Certain 5	Extreme	Extreme	Extreme	High	Medium
Likely 4	Extreme	Extreme	High	Medium	Medium
Possible 3	Extreme	High	High	Medium	Low
Unlikely 2	High	High	Medium	Low	Low
Rare 1	Medium	Medium	Low	Low	Low

4.3 Aspects and Impacts Register

The contractor will develop and reference an Environmental Aspects and Impacts register. Controls identified to minimise and mitigate risk shall be implemented in association with the Repository Management Plan. The high-risk outcomes from the Environmental Aspects and Impacts Register are detailed in **Table *4-6***.

Table 4-6 High-risk outcomes from Environmental Aspects and Impacts Register

Hazard	Likelihood	Consequence	Controls	Residual Risk	Section/s addressed within OEMP
Noise	Possible	Moderate	Buffer zones; Community Consultation; Noise reduction equipment; Noise monitoring	Low	6.3

Hazard	Likelihood	Consequence	Controls	Residual Risk	Section/s addressed within OEMP
Groundwater contamination	Possible	Major	Water management plans; Drainage; Containment/retention ponds; Surface water diversion; Water Quality Monitoring; Landform design / shaping; Development Approval; OEMP	Medium	6.4
Surface water runoff	Likely	Moderate	Water management plans; Drainage; Containment/retention ponds; Surface water diversion; Water Quality Monitoring; Landform design / shaping; Development Approval; OEMP	Low	2.2.5; 6.5
Erosion/ sedimentation	Possible	Minor	Emergency Response Plan; OEMP; Water Management; Bund wall; Compaction; Site Inspections; Sediment trap; Landform design / shaping; Capping	Low	6.5
Fugitive Dust/Ash	Unlikely	Moderate	Compaction; Sprinklers; Water cart; Ash conditioning; Moisture content monitoring; Dust monitoring; Capping	Low	2.2.4; 6.6
Revegetation / Rehabilitation	Possible	Minor	OEMP; Landform design / shaping	Low	6.7

Hazard	Likelihood	Consequence	Controls	Residual Risk	Section/s addressed within OEMP
Waste	Almost certain	Minor	Waste Management Plan; OEMP	Low	6.8

Section 5 Environmental Monitoring

5.1 Overview

Environmental monitoring is designed to comply with regulatory requirements and the CoA, and provide an ongoing analysis of the condition of the environment during operations. Monitoring results will be used as indicators of the effectiveness of mitigation measures and controls implemented on the site, and to provide a vehicle for regulatory reporting, demonstrating compliance, and as a chronicle for environmental investigations and complaints.

Specific monitoring requirements for noise, air, surface water, groundwater, revegetation and rehabilitation matters are outlined in the sub-plans of this OEMP (Section 6). Monitoring locations are shown in Figure 3. Monitoring of environmental impacts will be carried out in accordance with this OEMP and relevant environmental guidelines and legislation. Any non-compliance will be recorded and reported to the Contract Administrator.

As stated in each sub-plan, authorised personnel will perform monitoring and testing during the operations. When carrying out monitoring or testing, the nominated personnel will ensure that the specific operation functions are being performed in accordance with the referenced sub-plan, instruction, regulation and/or specification.

Monitoring will be sampled by qualified personnel and analysis undertaken in a NATA-accredited laboratory.

5.2 Environmental Monitoring Plan

Table 5-1 provides a summary of the routine Environmental Monitoring designed to assess potential for adverse impacts on the surrounding environments related to the Lamberts North operations. Sample locations are provided in Figure 3. Further detail has been provided in the sub-plans.

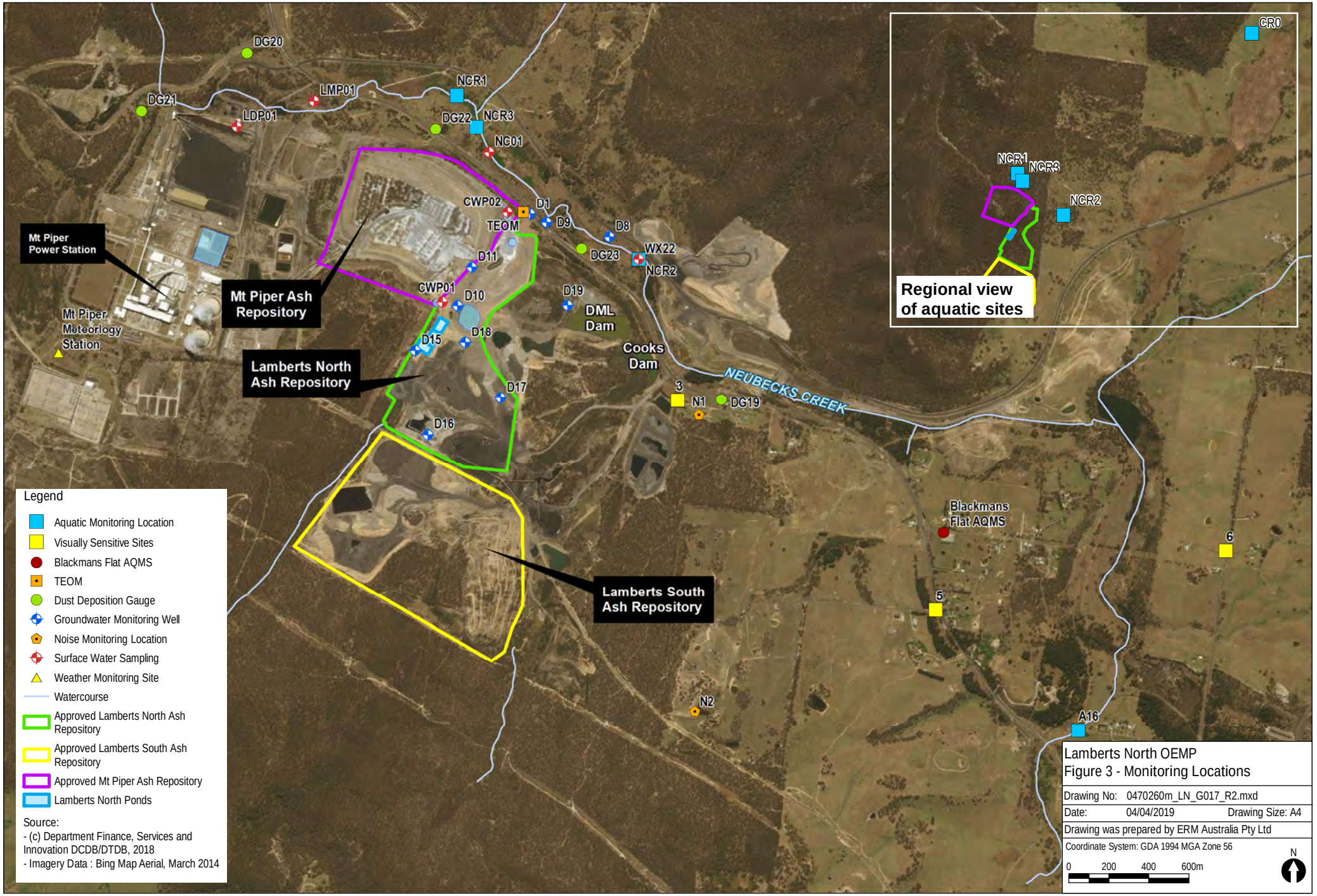
Table 5-1 Environmental monitoring program

CoA/ Source	Description	Parameters	Location	Frequency	Reporting	Responsibility	Reference
Noise Monitoring							
E11 & E7	Operational Noise review	LAeq, LA10, Aa90 and LA_{Max} Noise levels shall not exceed criteria stipulated in CoA E7.	**2 locations** ▪ Blackmans flat – Dwelling Noon Street ▪ Wallerawang Refer to Figure 3	Once	Report to be to be submitted to DP&E within 60 days of commencement of operation	Specialist Consultant on behalf of EnergyAustralia NSW Electricity	OEMP Noise Sub Plan
E11 & E12	Implement ongoing noise monitoring program for project	LAeq, LA10, La90 and LA_{Max}	**2 locations** ▪ Blackmans flat – Dwelling ▪ Noon Street - Wallerawang Refer to Figure 3	12 monthly	Report will be produced at the end of each sampling period.	Specialist Consultant on behalf of EnergyAustralia NSW Electricity	OEMP Noise Sub Plan
Groundwater Monitoring							
E15 (a) (B)	Schedule for Periodic monitoring for groundwater quality monitoring	Refer to Appendix A for the groundwater quality monitoring parameters Depth and Flow[1]	Refer to Figure 3 MPGM4 Series for Lamberts North	Monthly for first 12 months from commencement of operations to establish baseline data, then every 3 months thereafter	Data collected monthly for first 12 months of operations than 3 monthly thereafter. Groundwater Review report (annually)	NATA accredited Laboratory and specialists	OEMP Groundwater Sub Plan

[1] Flow will be recorded using a qualitative approach, unless there is any significant change in groundwater level as measured by monthly depth measurements, then flow calculations will be undertaken and a rerun of the groundwater model considered

Surface water monitoring							
E16 (a)	Schedule for periodic monitoring of surface quality monitoring	Refer to Appendix A for the surface water quality monitoring parameters. Depth and Flow[2]	Refer to Figure 3 Neubecks Creek ▪ **LDP1**- at upstream Discharge point ▪ **NC1** – mid stream ▪ **WX22**Downstream	▪ **LDP1-** Monthly (Year 1 of operations) including two rainfall events ▪ Quarterly thereafter ▪ **NC1** Monthly (Year 1 of operations) ▪ Quarterly thereafter for remaining life of the project ▪ **WX22** Monthly (Year 1 of operations) Including two rainfall events ▪ Quarterly thereafter for remaining life of the project.	Data Collected monthly for first 12 months of operations, then quarterly thereafter. Surface Water Quality will be reported as part of the Ecological Monitoring Program.	NATA Accredited Laboratory and specialist.	OEMP Surface sub plan and Ecological Monitoring Program

[2] Flow will be recorded using a qualitative approach, unless there is any significant change in groundwater level as measured by monthly depth measurements, then flow calculations will be undertaken and a rerun of the groundwater model considered.


DG20
DG21
LMP01
LDP01
NCR1
DG22
NCR3
NC01
CWP02
D1
TEOM
D9
D8
DG23
WX22
NCR2
D11
CWP01
D10
D19
DML Dam
D15
D18
Cooks Dam
D17
3
N1
DG19
D16
NEUBECKS CREEK
Mt Piper Power Station
Mt Piper Ash Repository
Mt Piper Meteorlogy Station
Lamberts North Ash Repository
Lamberts South Ash Repository
Blackmans Flat AQMS
6
5
N2
A16
CR0
NCR1
NCR3
NCR2
Regional view of aquatic sites
Legend
Aquatic Monitoring Location
Visually Sensitive Sites
Blackmans Flat AQMS
TEOM
Dust Deposition Gauge
Groundwater Monitoring Well
Noise Monitoring Location
Surface Water Sampling
Weather Monitoring Site
Watercourse
Approved Lamberts North Ash Repository
Approved Lamberts South Ash Repository
Approved Mt Piper Ash Repository
Lamberts North Ponds
Source:
- (c) Department Finance, Services and Innovation DCDB/DTDB, 2018
- Imagery Data : Bing Map Aerial, March 2014
Lamberts North OEMP
Figure 3 - Monitoring Locations
Drawing No: 0470260m_LN_G017_R2.mxd
Date: 04/04/2019
Drawing Size: A4
Drawing was prepared by ERM Australia Pty Ltd
Coordinate System: GDA 1994 MGA Zone 56
0 200 400 600m
N

CoA/ Source	Description	Parameters	Location	Frequency	Reporting	Responsibility	Reference
Ecological monitoring program							
B7	Aquatic Ecology – Macro-invertebrates Aquatic Habitat	▪ Macro invertebrate Families ▪ EPT index ▪ SIGNAL2 Index ▪ Habitat and Riparian Assessment	Neubecks Creek – refer to Figure 3 ▪ **NCR1** downstream of surface water discharge point (adjacent to Bore D7) ▪ **NCR2** Downstream of gauging site	▪ Autumn and Spring (Year 1) ▪ Spring only (Years 2,3,4 & 5)	Report will be produced for: ▪ Autumn and Spring (Year 1) ▪ Spring only for remaining 4 years.	EnergyAustralia NSW and qualified ecologist specialist	Ecological Monitoring Program November 2012
Air quality monitoring program							
D3 (d) E18	Dust impacts	▪ DECC ***Amenity based Criteria for dust Fallout is a maximum total Dust Deposition of 4mg/m2/month (annual) ▪ TEOM – for measuring PM_{10} ▪ Ambient monitor AQMS measures PM_{10} and PM 2.5 ▪ TSP- calculated from dust bottles.	Refer to Figure 3 **No# 19, 22, 23 –** Castlereagh Highway between Boulder road and Blackmans flat Village **No # 20**- Cnr Boulder Rd/ Castlereagh Highway **No# 21-** MP Entrance on Boulder Road **Other resources** ▪ Blackmans Flat AQMS* ▪ TEOM** ▪ Mt Piper Metrological Station	Monthly as part of EnergyAustralia NSW existing monitoring program	Monthly data collection Air quality review Report (annually)	EnergyAustralia NSW and qualified specialist	OEMP Air Quality sub Plan.

Section 6 Implementation

6.1 Environmental Targets and Performance Indicators

The following environmental performance indicators (see Table 6-1) will be used to assess the performance of the Lamberts North Ash Placement project operations. If adverse trends arising from Lamberts North 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 and achieve acceptable performance.

Table 6-1 Environmental Targets and Performance Indicators

Environmental Issue	Performance targets	Performance indicators	Reference in OEMP
Groundwater quality	▪ The quality of water underlying the site is not impacted by the Lambert's North Ash Placement operations.	▪ There will be no significant long-term variation in groundwater quality from historical baseline quality values (provided in Appendix B Table 7-3) that are attributable to ash placement operations at Lamberts North ▪ Groundwater Water Quality Monitoring will be analysed at a NATA Accredited Laboratory by a qualified professional	Groundwater management and monitoring sub-plan
Soil & surface water quality	▪ The water quality in Neubecks Creek is not impacted by the Lambert's North Ash Placement operations. ▪ Zero environmental incidents that relate to the pollution of waters at Neubecks Creek. ▪ Erosion does not have any influence and/or impact on surrounding lands outside the boundary of Lamberts North	▪ Water Quality Results at Neubecks Creek will indicate no significant variations from historical baseline data as a result of Lambert's North Ash Placement operations (Appendix B, Table 7-5) ▪ Ecological results at Neubecks Creek will indicate no significant variations from historical baseline data as a result of Lambert's North Ash Placement operations ▪ No visual evidence of erosion and sedimentation impacts resulting from Lambert's North Ash Placement operations on Neubecks Creek following significant rain events	Soil and surface water Sub-Plan

Environmental Issue	Performance targets	Performance indicators	Reference in OEMP
Air quality	▪ The local air quality in the vicinity of Sensitive Receivers identified in the EA will not impacted by the Lambert's North Ash Placement operations ▪ Zero incidence of dust related complaints for Lamberts North Ash Repository	▪ Evidence of Continuous improvement of dust suppression systems (including monitoring) in accordance with operational demands and meteorological conditions. ▪ Complaints register demonstrating zero incidences of dust related complaints. ▪ That operational results are below the criteria of: ○ Increase in Total Suspended Particulates (TSP) by > 2g/m^2/month to a maximum of 3.5g/m^2/month at dust deposition gauges outside the ash placement area; and ○ PM10 annual average is <30µg/ m^3 and 24-hour maximum does not exceed 50µg/m^3	Air quality management and monitoring Sub-Plan
Landscape, revegetation and rehabilitation	▪ Develop and reconstruct landscape to minimise the visual impacts of ash placement area by ensuring long- term stabilisation of the site and compatibility with surrounding landscapes through revegetation	▪ Site inspections records to confirm ash placement and compaction targets are being achieved; ▪ Evidence of a long-term water management plan that integrates the concepts of landscape revegetation and rehabilitation ▪ Evidence of an established revegetation and monitoring program to meet short and long-term goals. ▪ Physical coverage of exposed ash on external batters and boundaries capped with suitable materials.	Landscape, revegetation and rehabilitation Sub-Plan
Waste	▪ To ensure waste at the Lamberts North Ash Repository is managed in accordance with the conditions of the EPL ▪ To ensure waste generated on site is recycled or disposed of in accordance with the OEMP Waste Management Plan	▪ Records showing waste disposed of in accordance with Mt Piper EPL and the OEMP waste management sub plan. ▪ Evidence of recycling system in use and site-generated waste being disposed of to an appropriate facility.	Waste management sub-plan
Noise impacts at sensitive receptors	▪ Achieve compliance with the noise criterion stated in the CoA E7. ▪ Zero noise complaints relating to the Lamberts North project.	▪ Results of Noise testing carried out in accordance with Noise management sub plan, demonstrating compliance. ▪ Complaints register demonstrating zero incidence of noise related complained relating to Lamberts North Operations.	Noise management and monitoring sub-plan

Environmental Issue	Performance targets	Performance indicators	Reference in OEMP
Ash management	▪ Achieve Placement within normal hours of operation for at least 98% of the year (stretch target = 100%) ▪ Achieve compliance with the ash placement and compaction procedures stipulated by this OEMP ▪ Integrate within the concept of ash management a market development program of alternative uses for coal combustion products other than repository storage.	▪ Operator logs and control system data indicating hours of operation are being met. ▪ Site inspections demonstrate truck movements are confined to approved work zone boundaries ▪ Daily equipment, machinery and vehicle inspections checklists are completed, ensuring no vehicles are operational unless in compliance with checklist. ▪ Site inspections check sheets that confirm ash handling and compaction procedures are targets are being complied with. ▪ Participation with industry and research organisations, for project development and collaboration ▪ Undertaking an ash utilisation program with its management based on a program of characterisation of ash materials ▪ Fostering knowledge and an understanding of the CCP materials with relevant communities of practice.	Reference: Ash Management Strategy report which will be continuously updated.

6.2 Environmental Sub-Plans

The following sub-plans are included in subsequent sections:

- Operational Noise Management and Monitoring Plan
- Groundwater Management Plan
- Soil and Surface Water Management Plan
- Air Quality Management Plan
- Landscape Revegetation and Rehabilitation Sub-plan
- Waste Management Plan

6.3 Noise Management and Monitoring Plan

6.3.1 Introduction

This Operational Noise Management and Monitoring Plan (ONMMP) is a sub-plan of the OEMP. It seeks to address the specific requirements of the Projects CoA for Lamberts North relating to noise and vibration during operation. These conditions include CoA D3 (a) and E7 to E14 (provided in Appendix C). It provides a framework for EnergyAustralia NSW, its Contractors and vendors to manage operational noise emissions and minimise potential adverse impacts to sensitive receivers during the operation of the Project.

This ONMMP identifies in Table 6-1 the performance targets (and performance criteria), reference documents, key issues, constraints and strategies and the mitigation measures that comply with the conditions of approval D3 (a), E6, E7, E8, E9, E1, E11,E12, E13, E14.

6.3.2 Sensitive Receptors

The term 'sensitive receiver' used in this plan refers to nearby receivers, such as residents and businesses that may potentially be affected by noise emissions identified for the project. In the Environmental Assessment (EA), two sensitive receivers were identified as locations 1 and 2. Location 1 is located in Blackmans Flat approximately 1.1km east of the project. Location 2 is located on a rural property 1.1km west of Castlereagh Highway (SKM, 2010). Refer to Figure 3 for more detail.

6.3.3 Noise generating activities

6.3.3.1 Approved operational conditions

Operational hours associated with the project shall be undertake during the following hours (CoA E1):

- Monday to Friday: 6am – 8pm
- Saturday to Sunday: 6am – 5pm.

6.3.3.2 Key potential noise impacts

Key potential noise impacts during operational activities are anticipated to include those listed below:

- Transporting fly ash and bottom ash to the ash repository using haulage trucks along the designated haul roads;
- Placing ash in stockpiles in designated areas before being spread out by a dozer;
- Compacting the ash using a dozer and roller;
- Maintenance on the haulage roads using a grader, roller, dozers and water carts;
- Dust suppression across the site using a series of techniques including but not limited to water carts and sprinklers systems;
- Developing and maintaining water management structures (containments, drains and sumps) using an excavator;
- Using variously sized pumps on site to pump water from various water sources;
- Using light vehicles on occasion to inspect the ash repository and carry out environmental monitoring;

  The machinery & plant generate noise from the engine & drive line, hydraulics and reverse warning devices

6.3.4 Management and Mitigation Measures

Table 6-2 Targets, Indicators, References and Key Issues

Performance Targets		
▪ Achieve compliance with the noise criterion stated in the Projects Conditions of Approval E7. ▪ Zero substantiated noise complaints relating to the Lamberts North project		
Performance Indicators		
▪ Results of noise testing carried out in accordance with this sub plan demonstrate compliance. ▪ Number of substantiated noise related complaints relating to Lamberts North Operations.		
References		
State legislation	**Standards /Codes**	**Other documentation**
▪ *Environmental Planning and Assessment Act 1979* (EP&A Act). ▪ *Protection of the Environment Operations Act 1997* (POEO Act). ▪ Project Conditions of Approval – D3 (a) and E7, E8, E9 and E10, E11, E12, E13, E14 ▪ Protection of Environmental (noise Control) regulation 2008	▪ Australian Standard 1055:1997– Acoustics - Description and Measurement of Environmental Noise (AS, 1997). ▪ Noise Policy for Industry (EPA, 2017). ▪ Australian Standard AS 2436 – Guide to noise and vibration control on construction, maintenance and demolition sites	▪ Mount Piper Power Station Ash Placement Environmental Assessment Report, Chapter 6 – Noise (SKM, 2010b). ▪ Mount Piper Station Ash Placement Project Environmental Assessment, Appendix C – Noise Report (SKM, 2010). ▪ Mount Piper Ash Placement Project, Submissions Report (SKM, 2011). ▪ Mt Piper Ash Placement Project, Consistency Repost (SKM 2012)
Key issues/ constraint/ strategies		
▪ By building a profile of the noise generated by Lamberts North, the controls implemented to mitigate impacts on the sensitive receivers can be assessed and improved as the project progresses. ▪ Other operations that contribute to noise emissions within 1km of the Lamberts North include: Pinedale mining (open cut) opposite Blackmans Flat), Springvale Mine (predominately underground with some working above ground to the south of Lamberts North), Castlereagh Highway located to the north of the project site, Mt Piper Power Station Operations to the west, EnergyAustralia NSW Private Haulage road which runs north east from Mt Piper Power Station across to Wallerawang.		

Table 6-3 Mitigation measures

<table>
<tr><th>No.</th><th>Management of mitigation measures</th><th>Source of requirements</th><th>Frequency</th><th>Source</th><th>Responsibility</th></tr>
<tr><td colspan="6">General operational noise requirements</td></tr>
<tr><td>1.</td><td>Operational noise levels shall not exceed the following at the private receivers at Blackmans flat or any other sensitive receiver between the hours of:
<table><tr><th>Day (7am- 6pm)</th><th>Evening (6pm- 10pm)</th><th>Night (10pm- 7am)</th></tr><tr><td>42 *</td><td>38*</td><td>35*</td></tr></table>*L LAeq (15 minutes) db(A)
The noise conditions above applies under metrological conditions expect for the following:
▪ Wind speed greater than 3 metres/ second at 10 metres above ground level;
▪ Stability Category F temperature inversion conditions and wind speed greater than 2 metres/second at 10 metres above ground level; and
▪ Stability Category G temperature inversion conditions.

The criterion does not apply where the Proponent and an affected landowner have reached a negotiation agreement in regard to noise, and a copy of the agreement has been forwarded to the Secretary and the EPA.</td><td>E7
D3a (ii)</td><td>As required</td><td>Noise monitoring records</td><td>EnergyAustralia NSW</td></tr>
<tr><td>2.</td><td>Operational activities associated with the project shall only be undertaken during the following hours (unless otherwise approved by the Secretary):
▪ 6.00 am to 8.00 pm, Mondays to Fridays, inclusive; and
▪ 6.00 am to 5.00 pm on Saturdays, Sundays and public holidays</td><td>D3(a) (iv)
E1,, E3, E4, E5, E6, E7
OEMP Section 2.3.1</td><td>As required</td><td>Noise monitoring records</td><td>Contractor</td></tr>
<tr><td>3.</td><td>Plant and equipment used on the Project shall meet the typical sound power levels as per its manufacturing standard. This will be checked following receipt of any ongoing noise complaints.</td><td>E10
D3(a)(iii)</td><td>Following complaint</td><td>Manufacturing standard</td><td>Contractor</td></tr>
<tr><td>4.</td><td>Ongoing noise monitoring shall be conducted from commencement of operation by a qualified noise specialist in accordance with Conditions of Approval E7, E8 & E9 and the EPA approved Operational Noise monitoring program.</td><td>E12
D3(a) (iii)</td><td>Annual</td><td>Noise monitoring Program</td><td>EnergyAustralia NSW</td></tr>
<tr><td>5.</td><td>Operation logs and control system data shall be kept to indicate hours of ash haulage.</td><td>D3(a) (v)
E1</td><td>Daily</td><td>Operation Logs and control system data</td><td>Contractor</td></tr>
<tr><td>6.</td><td>Site inductions and ongoing training shall include information on potential noise issues of current operations.</td><td>D3(a) (v)</td><td>As required.</td><td>Induction and training program</td><td>Contractor</td></tr>
<tr><td>7.</td><td>A complaints register including noise shall be maintained</td><td>B11</td><td>When necessary and practicable</td><td>As required</td><td>EnergyAustralia NSW</td></tr>
</table>

No.	Management of mitigation measures	Source of requirements	Frequency	Source	Responsibility
8.	Where possible, noise barriers will be used to reduce noise impacts to sensitive receivers this may include but not limited to noise reducing benching.	D3 (a) iv	Where practicable	As required	Contractor
Plant and equipment					
9.	All equipment shall be adequately maintained and kept in good operating order.	D3(a) (v)	Ongoing	Noise monitoring records	Contractor
10.	All equipment shall be operated in an appropriate and efficient manner.	D3(a) (v) , E10	Ongoing	Noise monitoring records	Contractor
11.	Use of rubber-tyred equipment where appropriate.	D3(a) (v), E10	As required	Noise monitoring records	Contractor
12.	Maintenance of plant reversing alarms at the minimum safe level	D3(a) (v), E10	As required	Noise monitoring records Australian Standard AS 2436	Contractor
13.	Noise reduction equipment will be applied to ash trucks where necessary as described in AS 2436, Section 4.5.3.	D3(a) (v), E10	As required	Noise monitoring records Australian Standard AS 2436	Contractor
14.	Drivers shall obey existing haul road speed limits enforceable by either the principle contractor or EnergyAustralia NSW.	D3(a) (v)	Ongoing	Noise monitoring records	Contractor
15.	In the unlikely event of a noise complaint, trucks will be tested to ensure the operational efficiency and implement reasonable and feasible noise control measures if applicable.	D3(a)(v), E10	As required	Noise monitoring records	Contractor
Reporting					
16.	An Operational Noise Review, shall be carried out to confirm the operational impacts of the project in consultation with the EPA. This shall be carried out in accordance with the Condition E11.	E11	Within 60 days of commencement of operations	Noise monitoring records	Noise Specialist on behalf of EnergyAustralia NSW.
17.	A noise report shall be provided by a qualified noise specialist to identify results of noise monitoring survey	E12	Ongoing	Noise Monitoring Program	Noise specialist on behalf of EnergyAustralia NSW.

No.	Management of mitigation measures	Source of requirements	Frequency	Source	Responsibility
18.	EnergyAustralia NSW shall forward to the NSW EPA and the Secretary a report containing any non-compliance in relation to noise within 14 days of conducting the noise assessment.	E12	Within 14 days of a non-compliance	Noise survey report applicable to non-compliance	EnergyAustralia NSW.
Emergency – the event of an emergency the following shall be carried out					
19.	EnergyAustralia NSW shall notify the EPA prior to undertaking any emergency ash haulage or placement operations outside the hours of operation (stipulated in section 1.3.1 of this plan). A log must be recorded and kept for any emergency ash haulage or ash placement activities.	E4	Prior to undertaking Emergency Ash Haulage	Project Conditions of Approval	EnergyAustralia NSW
20.	EnergyAustralia NSW shall notify the Secretary in writing within seven days or undertaking any emergency ash haulage or operation stipulated in the condition E1 and Point #2 of this table	E5	Within 7 days of Emergency	Project Conditions of Approval	EnergyAustralia NSW
21.	EnergyAustralia NSW shall notify the nearby sensitive receivers as defined by this plan, prior to 8.00pm where it known that emergency ash haulage or placement operations will be required outside the hours of operation.	E6	Prior to 8.00pm on the day of emergency event	Project Conditions Of approval	EnergyAustralia NSW
22.	In an emergency situation that involves a breakdown of plant and/or equipment in the ash placement areas, that will limit or prevent ash storage from Mt Piper power station, EnergyAustralia NSW shall then notify the Secretary in writing within seven days of undertaking any emergency haulage or placement operations outside the hours of operation stipulated in condition E1.	E5	Within 7 day of Emergency breakdown	Project Conditions of Approval	EnergyAustralia NSW

6.3.5 Operational Noise Monitoring Program

This section provides the requirements for the ongoing noise monitoring program and operational noise review in accordance with CoA E8, E9, E11 E12, E13, and E14.

Table 6-5 provides the details of the noise monitoring program.

Table 6-6 provides the standards and requirements that shall be considered during monitoring. The meteorological data recorded at the Mount Piper Power Station weather station will be used in the investigation of any recorded exceedance exceedances of approved noise criteria or noise complaints (Figure 3).

The reporting requirements and corrective actions required in the event of non-compliance are listed in Table 6-7 and Table 6-8 , respectively. The source or reference for measures is the OEMP and the CoA.

6.3.5.1 Guidelines

All operator-attended and unattended noise monitoring will be conducted in accordance with the following guidelines:

- Environmental Noise Control Manual (EPA, 1994);
- Noise Policy for Industry (EPA, 2017), and
- AS 1055: 1997 *Acoustics – Description and Measurement of Environmental Noise.*

6.3.5.2 Noise Criteria

As specified in CoA E7, the cumulative operational noise from the ash placement area and ash haulage activity shall not exceed the LAeq (15 minute) dB(A) identified in Table 6-4 .

Table 6-4 Operational Noise criterion (LAeq(15 minute) dB(A))

Location	Day (7am – 6pm)	Evening (6pm – 10pm)	Night (10pm to 7am)
All private sensitive receptors within the township of Blackmans Flat	42	38	35
All other sensitive receivers	42	38	35

These criteria do not apply where the Proponent and an affected landowner have reached a negotiated agreement in regard to noise, and a copy of that agreement has been forwarded to the Secretary and the NSW EPA.

6.3.5.3 Meteorological Conditions

The noise criteria identified in Table 6-4 above applies under meteorological conditions except for any of the following:

- Wind speed greater than 3 m/second at 10 m above ground level;
- Stability category F temperature inversion conditions and wind speed greater than 2 m/second at 10 m above ground level; and
- Stability category G temperature inversion conditions.

6.3.5.4 Determining Compliance

To determine compliance with noise criteria from premises such as a sensitive receiver, the following monitoring requirements should be implemented:

- For LAeq (15 minute) noise limits the noise monitoring equipment must be located at the most affected point: within 30 metres of the dwelling façade where any dwelling on the property is situated more than 30 metres from the property boundary that is closest to the premises;
- Where any dwelling is situated 30 metres or less from the property boundary that is closest to the premises, noise monitoring equipment shall be located approximately on the boundary;
- Class 1 or 2 noise monitoring equipment as defined by AS IEC61672.1 – 2004 and ASIEC61672.2-2004, or other noise monitoring equipment accepted by the EPA in writing, must be used;
- The modification factors in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment;
- Reference the data recorded by the meteorological weather station at the premises (Mount Piper Power Station for determining meteorological conditions; and
- Stability category temperature inversion conditions are to be determined by methods referred to in Part E4 of Appendix E to the NSW Industrial Noise Policy.

6.3.5.5 Monitoring

The Noise Monitoring Program, including the Noise Monitoring Review, is provided below in Table 6-5. Table 6-6 provides the standards and requirements that shall be considered during monitoring.

Table 6-5 Noise monitoring program

Potential impact	Location	Parameters	Frequency	Technique	Reporting	Responsibility	CoA and OEMP reference
Operational Noise Review	Two most affected sensitive receivers: • Blackmans Flat • Wallerawang (Refer to Figure 3)	LAeq, LA10, LA90 and LAMax. Noise levels shall not exceed criterion stipulated in Table 6-4	One-off survey that includes: Four separate days – 3-week days and a Sunday, within the first 60 days of operation.	Attended and unattended noise monitoring technique shall be undertaken adopting the following guidelines; ▪ NSW industrial Noise policy; ▪ AS 1055: 1997 *Acoustics – Description and Measurement of Environmental Noise;* ▪ *Environmental noise control manual (EPA 2004)* Ongoing attended monitoring using Class 1 or 2 noise monitoring equipment as defined by AS IEC61672.1-2004 and ASEIC61672.2-2004, or other noise monitoring equipment accepted by the NSW EPA in writing.	An Operational Noise Review within the 60 days of commencement of operation.	Specialist consultant on behalf of EnergyAustralia NSW.	D3(a) (ii) D3(a) (iii), E7, E8, E9, E11
Ongoing Noise monitoring	Two most affected sensitive receivers: Blackmans Flat Wallerawang	LAeq, LA10, LA90 and LAMax. Noise levels shall	Annual or following a complaint as required	Attended and unattended noise monitoring technique shall be undertaken adopting the following guidelines;	Annual monitoring report. Non-compliances:	Noise Specialist	D3(a) (ii) D3(a) (iii), E7, E8, E9, E12

Potential impact	Location	Parameters	Frequency	Technique	Reporting	Responsibility	CoA and OEMP reference
	(refer to Figure 3) Other locations as required, in response to a substantiated complaint.	not exceed the noise criteria (Table 6-4) at the nearest most affected receiver.	Annual	▪ NSW industrial Noise policy; ▪ AS 1055: 1997 *Acoustics – Description and Measurement of Environmental Noise;* ▪ *Environmental noise control manual (EPA 2004)* Ongoing attended monitoring using Class 1 or 2 noise monitoring equipment as defined by AS IEC61672.1-2004 and ASEIC61672.2-2004, or other noise monitoring equipment accepted by the NSW EPA in writing.	1. If noise monitoring survey indicates non-compliance against compliance criteria, then EnergyAustralia NSW is required to forward a report containing the results to the NSW EPA and the Secretary within 14 days of conducting a noise assessment. 2. An additional investigation report shall be submitted to the Secretary within 60 days of undertaking noise monitoring and must include the criteria specified in CoA E13 within 60 days of undertaking the noise monitoring.	EnergyAustralia NSW EnergyAustralia NSW	Environmental Noise Control Manual Industrial Noise Policy (EPA 2000) AS1055 CoA E12 CoA E13

Table 6-6 Monitoring requirements

No.	Monitoring measures	Responsibility	Timing	Source/ Reference
1.	All operator-attended and unattended noise monitoring will be conducted in accordance with the Environmental Noise Control Manual (EPA, 1994), Noise Policy for industry (EPA, 2017), and AS 1055: 1997 *Acoustics – Description and Measurement of Environmental Noise.*	Specialist Consultant/ EnergyAustralia NSW	As identified in this plan	D3(a) (iii) D3(a) (v)
2.	To determine compliance with the LAeq(15 minute) noise limits at identified sensitive receivers, the noise monitoring equipment must be located at the most affected point: ▪ Within 30 m of a dwelling façade where any dwelling on the property is situated more than 30 m from the property boundary that is closest to the premises; or ▪ Within close proximity to the boundary where any dwelling is situated 30 m or less from the property boundary that is closest to the premises.	Specialist Consultant/EnergyAustralia NSW	During monitoring	E8
3.	The Operation Noise Management and Monitoring Plan shall be reviewed every 3 years as part of the OEMP review to determine effectiveness of mitigation measurement and the monitoring commitments.	EnergyAustralia NSW	Every 3 years	D3(a)(v) E12

Table 6-7 Reporting requirements

No.	Reporting requirements	Responsibility	Timing	Source/ Reference
1.	Any noise related complaints will be registered in EnergyAustralia NSW complaints register for Lamberts North. Complaints will be thoroughly investigated to determine and mitigate the cause.	EnergyAustralia/ Contractor	Ongoing	D3 (a)(v) OEMP Section 3.5
2.	EnergyAustralia NSW shall review the periodic noise monitoring reports and implement recommendations where feasible and practicable. In addition, EnergyAustralia NSW shall report any results and recommendations to the Ash repository contractor as part of their monthly meeting.	EnergyAustralia/Contractor	Whenever a noise report has been received	D3 (a)(v) E14
3.	All complaints/incidents regarding noise will be reported to the Contract Administrator.	Contractor	As required	D3(a) (iv) D3(a) (v) OEMP Sections 3.5 & 3.9
4.	Operational Noise Review will be completed within 60 days of the commencement of Lambert North Ash Placement operations. The review shall be prepared in consultation with the NSW EPA and shall meet the requirement of CoA E11	EnergyAustralia NSW	Within 60 days of commencement of operations	D3 (a)(v) E11

No.	Reporting requirements	Responsibility	Timing	Source/ Reference
5.	EnergyAustralia NSW shall submit a noise report to the NSW EPA, upon their request at any time during the project.	EnergyAustralia NSW	As required	D3(a) (v) D3(a) (vi) E21
6.	The Proponent shall forward to the NSW EPA and the Secretary a report containing the results of any non-compliance within 14 days of conducting a noise assessment.	EnergyAustralia NSW	As required	D3 (a)(v) E12
7.	In addition, a separate investigation report (to report specified in #6) shall be submitted to the Secretary and must include the criteria specified in CoA E13 within 60 days of undertaking the noise monitoring which has identified the exceedance of the operational noise criteria.	EnergyAustralia NSW and Contractor	Within 60 days of conducting a noise assessment	D3 (a)(v) E12, E13
8.	The Annual Environmental Management Report (AEMR) shall be submitted to the Secretary complete with a summary of monitoring results of noise assessment reports carried out during that reporting year.	EnergyAustralia NSW	At least annually	D3(a) (v) D3(a) (vi) E21

Table 6-8 Response Plan and Corrective Actions

No.	Corrective Actions	Responsibility	Timing	Source/ Reference
1.	Where non-compliance with the noise goals are identified through noise monitoring, a further assessment of feasible noise management and mitigation measure shall be undertaken and implemented.	Contractor/ EnergyAustralia NSW	As required	D3 (a)(v)
2.	If after the implementation of reasonable and feasible source controls, as identified in the report required by condition E13, the noise generated by the project continues to exceed the project noise criteria (see Table 6-4) EnergyAustralia NSW shall implement at the receiver reasonable and feasible noise mitigation measures, such as double glazing, insulation, air conditioning and or other building acoustic treatments, in consultation with and with the agreement of the affected landowner.	EnergyAustralia NSW	As required	E14
3.	Any unusually noisy equipment will be investigated and rectified as soon as possible.	Contractor	As required and practicable	D3 (a)(v)
4.	In the unlikely event of a noise complaint being received, investigations shall take place to find the source and mitigate noise emissions as soon as possible.	Contractor	As required	D3(a)(v)
5.	Any noise issue identified as a concern shall be discussed as part of routine tool box talks to keep staff aware of operational activities and potential issues.	Contractor	As required	D3(a)(v)

6.4 Groundwater Management and Monitoring Plan

6.4.1 Introduction

This Groundwater Management and Monitoring Plan (GMMP) is a sub-plan of the OEMP. It seeks to address the specific requirements of the CoA D3 (b), E15 and E17 attached to the Project Approval for Lamberts North, insofar as they relate to groundwater quality. The following points give a brief summary of what is required under each condition:

- CoA D3 (b) stipulates that the proponent must provide detailed measures to mitigate and manage groundwater impacts.
- CoA E15 stipulates that the proponent must develop a monitoring program that will evaluate the impacts of ash placement activities on the local groundwater hydrology.
- CoA D3 (b) (i) & B2 stipulates that the proponent must update the groundwater model prior to the construction of Lamberts South;
- CoA E17- requires the preparation of a hydrological program for Huons drain (also referred to as Huons Creek) before and after is been covered.

Section 6.4.1.2 and 6.4.1.4 addresses conditions B2b (ii), (iii) (v). These conditions refer to the groundwater monitoring locations and baseline data for the site, identification of the potential pollution sources (that were identified in the groundwater model), and a contingency plan for events that have a potential to pollute or contaminated groundwater. Also included in this section are mitigation tables.

Section 6.4.2 address Condition D2 (vi) groundwater monitoring program for groundwater connectivity, water levels, groundwater flows and water quality over a short term and long-term that includes upstream and downstream locations.

The hydrological monitoring program has been incorporated in this GMMP because of the change in design of Lamberts North (see the Consistency Report dated June 2012 by SKM). Groundwater modelling (see CEMP dated Dec 2012 by CDM-Smith) infers that the water in Huons drain is largely groundwater from the intersection of Huon Void with the groundwater table.

Since the modelling undertaken by CDM Smith, Environmental Resources Management Australia Pty Ltd (ERM) have been engaged to carry out further assessment and modelling of surface and groundwater and update the conceptual site model (CSM), along with groundwater modelling assessment and updates (ERM Assessment). The ERM Assessment is currently underway and it is proposed that, once the ERM Assessment is complete, this OEMP will be further updated to reflect relevant outcomes.

Groundwater monitoring bores MPGM4 D10 and D11 provide historical data on the water quality flowing into Huon Drain prior to the covering of Huons Void and Huons Drain as part of the construction of Lamberts North ash repository in the first quarter of 2013. As part of the hydrological monitoring program, groundwater monitoring bores MPGM4 D10, D11 and D1 will be monitored at monthly intervals and after any heavy wet weather event for the first twelve months from the beginning of operation. This monitoring will continue as part of the groundwater monitoring program.

Should monitoring of groundwater bore D1 establish there is substantial groundwater flow as a result of covering Huons Void and Huons Drain (inferred by a rise in groundwater level at this monitoring location), then this will be further investigated. It is noted that the CDM Smith (2012b) groundwater model indicates that there should be little or no flow from Huons Drain.

6.4.1.1 Existing Environment

As indicated in *Figure 2* Lamberts North lies immediately east of the existing ash repository for Mount Piper Power Station. This is known as Mount Piper ash repository (Area 1). The site is located in an area characterised by both rural and industrial influences, with a number of coal mines in close proximity. The project site is a highly disturbed area located within a large void created from recent open-cut mining by Centennial Coal and then partly filled with mine spoil.

Construction of the site commenced in January 2013 to make the site suitable for ash placement. The existing Huons Void (groundwater collection basin) was dewatered and filled with rocks and mine spoil. As indicated in the Consistency Report (SKM, June 2012), this enabled the site to substantially increase its capacity within the original allotments and so extend its life. As Huons Void also intersected the groundwater, covering it mitigated the risk of groundwater contamination.

Historically bores MPGM4 D1, D8, D10 and D11 have been used for groundwater monitoring since the start of the Mt Piper Ash repository. D1 & D8 are seepage bores, installed historically for the purposes of sampling groundwater flowing towards Neubecks Creek to detect any brine leachate in Area 1 (Aurecon 2011).

These bores, as indicated on Figure 3 are located around the north western boundary of the site (highlighted in blue), and D8 is located in close proximity to Neubecks Creek.

Prior to construction, an additional 5 bores were installed along the boundary of Lamberts North (D15, D16, D17, D18, D19). These bores were installed for the purpose of establishing a groundwater model for the site and are used as part of EnergyAustralia NSW comprehensive groundwater quality and hydrological monitoring programs. During the development of the Environmental Assessment (EA) in the early stages of the project, groundwater sensitive receivers were identified:

1. Neubecks Creek, located north east of the Project site; and
2. Three private bores (GW101146, GW53071 and GW50996) located within a 3 km radius from the Project site, which are used for stock and domestic purposes.

Mitigation measures to manage any potential groundwater impacts on the surrounding environment associated with ash emplacement activities within Lamberts North are provided below in Table 6-11 .

6.4.1.2 Groundwater Modelling

EnergyAustralia NSW engaged CDM Smith (2012b) to carry out groundwater modelling within the Lamberts North area. The CDM Smith model provided an assessment regarding future Lamberts North operational activities and potential to impacts on groundwater.

The CSM used by CDM Smith in development of the groundwater model identified the presence of two groundwater aquifers (one shallow, one deeper) under the Lamberts North site, with groundwater flows in a north easterly direction across the site. CDM Smith (2012b) report that the shallow aquifer level varies across the site, and that groundwater flow does not occur in the same direction as the existing or design surface levels (the shallow aquifer is located 4 m below the base of the proposed ash repository area). At the southern end of Lamberts North, groundwater has been identified in an unconfined perched aquifer, flowing through a sandstone formation. CDM Smith (2012b) report that the deeper aquifer is 35 m below ash placement and that the two aquifers are not connected.

CDM Smith (2012b) report that groundwater levels across the site were at maximum levels during monitoring due to wet weather patterns. Evidence from the CDM Smith (2012b) model suggests that groundwater levels will not rise any further than predicted, so will remain at least 4 m below the base of the ash repository. Therefore, impact to groundwater flow or levels from ash placement at Lamberts North is not predicted in the CDM Smith (2012b) report.

CDM Smith (2012b) groundwater modelling and monitoring also reported that:

- Recent high chloride concentrations detected in a borehole (Bore D10) are likely to be due to upstream coal reject ponds (now abandoned) in the south west corner of Lamberts North.
- There is no evidence of chloride contamination in the groundwater from the existing Mount Piper Ash and/or Lamberts North area.

To date, no brine conditioned ash has been placed within Lamberts North and, accordingly it is considered that the chloride levels detected are not attributable to activities within Lamberts North.

The ERM Assessment is currently underway and includes the development of a revised CSM and groundwater model, which will extend to cover Lamberts North. The revised CSM is anticipated to be completed by the end of 2019. Once the ERM Assessment is complete, if required this OEMP will be further updated to reflect relevant outcomes.

6.4.1.3 Potential sources of water pollutants

In terms of potential sources of contamination, as described in the EA (SKM, 2010), previous groundwater monitoring studies for the existing ash placement area (Area 1) located adjacent to Lamberts North have shown:

- Naturally elevated levels of sulphate, boron, nickel, manganese and iron from the local mineralisation associated with groundwater from the coal mining workings.
- Elevated concentrations of trace elements, which were particularly evident at sites adjacent to areas of mine coal pillars (goaf).
- The effect of underground mining was reflected in the water quality from the Huons Void, which acted as a groundwater collection basin. Sulphate, boron, nickel and zinc were found to be elevated in these areas.

A groundwater quality data assessment undertaken in 2011 at the existing Stage 1 brine co-placement area (associated with the Mt Piper Ash Repository), found the locally derived and ANZECC (2000) guideline trigger values were not exceeded in receiving waters (Aurecon, 2011). The 2011 assessment reported that the brine co-placement system at the Mount Piper Ash Repository has effectively contained brine leachates in the ash pores, which was indicated by the lack of significant effects on water quality and trace metals at:

- Bore MPGM4/D11, inside the ash placement area;
- Groundwater collection basin (Huons Void); and
- Seepage detection bores.

The Aurecon 2011 findings indicate that whilst there may be a source of trace elements from historical mining areas, current management practices at the existing Area 1 associated with the Mount Piper Ash Repository are effective in preventing elevated trace metal and salinity levels of locally derived and ANZECC (2000) guideline trigger values in Neubecks Creek.

Elevated chloride levels have been identified previously in Bore MPGM4 D10. Groundwater modelling undertaken by CDM Smith (2102b) reported that there is no evidence of chloride contamination in the groundwater from the existing Area 1 or Lamberts North area. CDM Smith (2102b) also state that the most likely source of chloride was from upstream coal reject ponds. The reject ponds have been decommissioned by Centennial Coal and it is expected that chloride levels in the groundwater will decrease as a result.

In addition, the Project area has been designed and constructed with the intention that ash placement is at least 4m above the shallow groundwater aquifer. Containment ponds, which are subject to infiltration, shall be managed in accordance with the Soil and Surface Water Management Plan (SSWMP).

As noted above, the ERM Assessment is currently underway and includes the development of a revised CSM and groundwater model, which will extend to cover Lamberts North. Once the ERM Assessment is complete, if required this OEMP will be further updated to reflect relevant key outcomes.

Groundwater water quality criteria, depth and water flows, have been provided in Appendix B (Table 7-3 and Table 7-4 respectively).

6.4.1.4 Contingency Planning

The contingency plan below can be used in addition to the mitigation measures outlined in the plan to identify what to do in the event that operational activities at Lamberts North are found to have resulted in an adverse environmental impact on the quality of groundwater.

Aurecon (2011) developed a contingency plan for EnergyAustralia NSW to detect early warning signs of water quality changes as part of its Mount Piper conditioned ash co-placement annual water quality monitoring investigations. The plan focused on the risk of brine co-placement located in Mount Piper Ash Area 1 infiltrating the groundwater table. Similar principles can be applied at Lamberts North to detect early trigger levels and manage them accordingly to prevent incidents and pollution events associated with activities in Lamberts North.

Early warning signs of changes in water quality may be detected by comparing testing data against the ANZECC (2000) guidelines 90th percentile for a given parameter. In addition, the data should be also compared against the 90th percentile groundwater quality data provided in Appendix B of this plan. If the data exceeds these 90th percentile limits, then investigations shall occur to determine the cause.

The aim of a contingency investigation will be targeted to assess whether changes in groundwater quality may be due to Lamberts North operational activities or some other cause. If it is considered that groundwater quality is adversely affected as a result of Lamberts North operational activities, then management plans shall be implemented to mitigate any impacts arising.

Additional mitigation measures regarding a contingency plan are given in the following sub-section in Table 6-15 .

6.4.1.5 Investigations protocol

Investigations shall include but are not limited to the activities listed in Table 6-9.

Table 6-9 Investigation protocol

Trigger for Investigation	Investigation required	Action
Exceedance against the ANZECC (2000) or baseline data available in Appendix B Table 7-3	▪ Analyse water quality data, outside the criteria; ▪ Review site operations within the timeframe of detected exceedances; ▪ Review Metrological conditions; ▪ Review any activities that maybe occurring on neighbouring sites; ▪ If considered necessary, rerun the groundwater model to identify trends or changes in groundwater flow, quality or depth; and ▪ Investigate other potential factors that may have led to the exceedance.	▪ Once potential source is found, implement corrective actions as soon as practicable. ▪ Implement management actions as appropriate.

6.4.2 Management and mitigation measures

The following management strategies and mitigation measures have been designed to ensure that potential impacts to groundwater are maintained within ANZECC guidelines. This section also includes the objectives, performance criteria, legislation and guidelines relevant to groundwater management.

Table 6-10 Objectives, References and Performance Criteria

Performance Targets		
▪ The quality of water underlying the site is not impacted by the Lambert's North Ash Placement operations.		
Performance Indicators		
▪ There will be no significant long-term variation in groundwater quality from historical baseline quality values (as measured from existing monitoring wells on site) that are attributable to ash placement operations at Lamberts North (data available in Appendix B Table 7-4). ▪ Groundwater Water Quality Monitoring will be analysed at a NATA Accredited Laboratory by a qualified professional.		
References		
State legislation	**Standards /Codes**	**Other Documentation**
▪ *Environmental Planning and Assessment Act 1979* (EP&A Act). ▪ *Protection of the Environment Operations Act 1997* (POEO Act). ▪ *Water Act 1912.* ▪ *Water Management Act 2000*. ▪ *Water Management (General) Regulation 2011*. ▪ Project Conditions of Approval (09_0186) B2, D 3 (b), E15 ▪ Contaminated Lands Management Act	▪ AS/NZS 1289.5.1.1 –Determination of Dry Density/Moisture Content Relation of a Soil Using Standard Compactive Effort. ▪ AS/NZS 5667.1:1998 - Water quality–- Sampling - Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples. ▪ Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales (EPA, 2004) ▪ Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC, 2000). ▪ Australian Drinking Water Guidelines (NHMRC, NRMMC 2011). Guidelines for the Assessment and Management of Groundwater Contamination (DEC, 2007).	▪ EnergyAustralia NSW Electricity Water Management Licence. ▪ Mount Piper Power Station Environment Protection Licence Number 13007 ▪ Mount Piper Power Station Ash Placement Environmental Assessment, Chapter 7 – Water Management (SKM, August 2010). ▪ Mount Piper Station Ash Placement Project Environmental Assessment, Appendix D – Hydrology and Water Quality (SKM, August 2010). ▪ Mount Piper Power Station Ash Placement Submissions Report (SKM, March 2011). ▪ Mount Piper Power Station Ash Placement Consistency Report (SKM, June 2012). ▪ Lamberts North Ash Placement Project CEMP (CDM-Smith, December 2012)

Key issues/ Constraints/ standards
▪ While an accurate and effective monitoring system is essential to provide ongoing analytical data, the ability to adequately manage environmental controls is a key component of groundwater management. ▪ The CSM used by CDM Smith in development of the groundwater model identified the presence of two groundwater aquifers (one shallow, one deeper) under the Lamberts North site, with groundwater flows in a north easterly direction across the site. The mitigation measures outlined in this plan are intended to protect both aquifers from potential adverse impacts from Lamberts North operations. ▪ All sampling, monitoring and analysis will be carried out by a specialist.

Table 6-11 Mitigation Measures

No.	Mitigation Measure	Source of Requirements	Frequency	Source/ Reference	Role/responsibility
1.	Groundwater quality will be managed by the containment of surface water. Control of surface water flows, drainage and erosion will be managed by the implementation of the Soil and Surface Water Management Plan (SSWMP).	D3 (b) (iii) SSWMP	Ongoing	Site inspection checklist	Contractor
2.	The potential for changed groundwater levels and quality due to infiltration from exposed ash to the groundwater system shall be controlled by: ▪ Limiting the area of the ash face exposed at any one time. ▪ Control of rainfall runoff away from possible accession location of groundwater levels ▪ Ensuring appropriate compaction is undertaken. Placement and compaction of fly ash will be targeted to have an in-place dry density of 95% of its maximum dry density and at moisture content within 0% to -4% of the optimum moisture content in accordance with AS 1289.5.1.1. ▪ Capping and rehabilitation of completed sections is undertaken as soon as practicable.	D3 (b) (iii) AS 1289.5.1.1.	As required	AS/NZS 1289.5.1.1	Contractor
3.	All hazardous chemicals shall be stored in designated covered storage areas outside Lamberts North, underlain with concrete floor and away from concentrated stormwater flow. They should also be appropriately bunded or contained in accordance with AS 1940-2004 Storage and handling of flammable and combustible liquids.	D3 (b) (iii)	As required	Site inspection checklist	Contractor
4.	Loading of chemicals and refuelling shall be undertaken in a designated area away from concentrated stormwater flow and outside drainage paths	D3 (b) (iii)	Ongoing	Site inspection checklist	Contractor
5.	Waste shall be managed in accordance with the Waste Management sub plan (WMP).	WMP	Ongoing	Site Inspection Checklist	Contractor
6.	Sediment ponds shall be managed in accordance with the Soil and Surface Water Management Plan (SSWMP) to prevent infiltration into groundwater.	D3 (b) (iii) CEMP SSWMP	Ongoing	Site inspection checklist	Contractor

No.	Mitigation Measure	Source of Requirements	Frequency	Source/ Reference	Role/responsibility
7.	Groundwater monitoring shall be undertaken in accordance with the Groundwater Monitoring Program in 6.4 of this plan. Assessment on trends and results shall be undertaken as part of a site management review process. The procedure for exceedances is as identified in Section 6.4.1.4.	D3 (b) (iii) E15 Groundwater monitoring program (Section 3)	Periodic monitoring shall occur at a frequency of no less than once every month for the first 12 months. The frequency then be undertaken quarterly.	Groundwater Monitoring Program	EnergyAustralia NSW/ contractor
8.	An annual groundwater (and surface water) quality report shall be undertaken to review and consolidate data obtained throughout the year. A summary of this information shall be included in the Annual Environmental Management Review (AEMR)	D3 (b), E15, E21	Annual	Groundwater Monitoring Program	EnergyAustralia NSW/groundwater contractor
9.	EnergyAustralia NSW shall issue the latest monitoring data to the WaterNSW upon their request, at any time during the life of the project.	B8, D3 (b) (viii)	As required	Groundwater Monitoring Program	EnergyAustralia NSW
10.	In the unlikely event that the Environmental Representative directs the contract administrator to cease operations due to a potentially adverse environmental threat to groundwater associated with Lamberts North, EnergyAustralia NSW shall notify and seek advice (if necessary) from the WaterNSW.	B1 (c)	As required	Groundwater Monitoring Program	EnergyAustralia NSW
11.	If D1 is found to have a significant increase in the depth of groundwater, then an investigation will be carried out that may include but is not limited to rerunning the groundwater model to include updates to the CSM.	E17	As required	Section 6.4.1	EnergyAustralia NSW and Contractor

6.4.3 Groundwater Monitoring Program

This section provides the requirements for the ongoing groundwater monitoring program in accordance with CoA E15.

Groundwater monitoring has been undertaken at Bores MPGM4 D1, D8, D10 and D11 since the ash placement commenced at Mount Piper Power Station. An additional five bores (D15 – D19) have been included in the existing bore sampling network to provide data for the Lamberts North ash placement area.

A groundwater monitoring program for Lamberts North operations was established and implemented in October 2012, prior to construction activities (in addition to EnergyAustralia NSW original monitoring as reported on in the EA). This program will continue throughout the life of the project and 5 years following the completion of the project. A summary of the monitoring program has been provided in Table 6-12 .

Table 6-12 Groundwater monitoring summary for Lamberts North

Parameters	Location	Frequency	Reporting	Responsibility
Refer to Appendix A for the list of monitoring parameters depth to water	Refer to Figure 3 in this plan MPGM4 Series for Lamberts North	Monthly for first 12 months post operation to establish baseline data, then every 3 months thereafter.	Groundwater data will be collected and analysed for exceedances. Annual review will be completed as part of the AEMR	EnergyAustralia NSW. Sampling to be completed in accordance with the Australian Standard for groundwater sampling. Analysis to be completed at a NATA Accredited laboratory.

The CDM Smith (2012b) inferred that groundwater flow is in a north easterly direction beneath Lamberts North. If there is any significant change in the groundwater level as measured by monthly depth measurements, then flow calculations will be undertaken and a rerun of the model considered. The formula is available in Table 7-1 Appendix A.

As noted above, the ERM Assessment currently underway includes updates to the CSM and, once the ERM Assessment is complete, if required this OEMP will be further updated to address relevant key outcomes.

6.4.3.1 Guidelines

All groundwater monitoring will be undertaken in accordance with the following guidelines:

- AS/NZS 5667.1:1998 Water quality – Sampling: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples
- ASTM D4448 - 01(2007) Standard Guide for Sampling Ground-Water Monitoring Wells Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales (NSW EPA, 2004)
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC, 2000)
- Guidelines for the Assessment and Management of Groundwater Contamination (NSW DEC, 2007)

6.4.3.2 Water quality criteria

In accordance with the *Protection of the Environmental Operations Act 1997*, the ANZECC (2000) guidelines shall be considered when assessing potential effects on water quality in receiving waters. The guideline trigger values apply to receiving waters of the groundwater flow outside the Lamberts North ash placement area. Neubecks Creek at WX22, Figure 3), remains the final surface water monitoring location for the Mt Piper Power Station.

Water quality criteria applicable to Lamberts North are derived from ANZECC (2000) guidelines generally for the protection of freshwater aquatic life. Where required, other guidelines used may include protection of livestock, irrigation water or drinking water. The local guideline is based upon the 90th percentile pre-ash placement water quality results, as measured at surface water quality point WX22 (Table 7-3, Appendix B).

The ANZECC (2000) guidelines were used in the development of several of the surface water and groundwater Environmental Goals for the Lamberts North Ash Repository. ANZECC (2000) guidelines have since been updated for several constituents, as indicated in the 2018 update to the Australian and New Zealand Guidelines for fresh and marine water quality (ANZG, 2018). ERM has advised that where a current Environmental Goal for Lamberts North Ash Repository can be tracked to the default guideline values (DGVs) for toxicants presented in ANZECC (2000), comparison with the ANZG (2018) DGVs indicates that these values have not changed.

While the ANZG (2018) default guideline values have been considered in this revision of the OEMP, the reference to ANZECC (2000) remains valid as the most complete reference source for the currently approved Environmental Goals.

The current Environmental Goals are sourced from multiple references based on protection of ecosystems, stock watering, irrigation, drinking water and background concentrations. Currently, the ANZG (2018) guidelines relate to ecosystem protection and do not provide values for physical stressors (e.g. pH and conductivity), for drinking water quality and primary industries for stock water and irrigation.

Environmental Resources Management Australia Pty Ltd (ERM) have been engaged to carry out further assessment and modelling of surface and groundwater and update the conceptual site model (CSM), along with groundwater modelling assessment and updates (ERM Assessment). The ERM Assessment is currently underway and it is proposed that, once the ERM Assessment is complete, if required this OEMP will be further updated to reflect relevant outcomes

6.4.4 Monitoring

The Groundwater Monitoring Program in Table 6-13 and Table 6-14 provides the procedures and protocols that apply to monitoring and testing of water quality. Table 6-15 provides the contingency plan for events that have the potential to pollute or contaminate groundwater. Table 6-16 provides a protocol for the investigation of identified exceedances of the groundwater impact criteria, and Table 6-17 provides the reporting requirements.

Table 6-13 Monitoring Schedule

No.	Monitoring Measures	Role/Responsibility	Timing	Source/ Reference
1.	Groundwater quality for the analytes listed in Appendix A will be monitored using a network of nine MPGM4-series groundwater wells, as shown in Figure 3. This network includes the following wells from the MPGM4 series: D1, D8, D9, D10, D11, D15, D16, D17, and D19	EnergyAustralia NSW/Groundwater contractor	Once per month for the first 12 months of operation Every 3 months thereafter, continuing for five years following final capping and landscaping (until this timeframe is otherwise agreed with the WaterNSW)	D3 (b) (vi) E15 Groundwater monitoring wells shown on Figure 3
2.	The groundwater monitoring shall be carried out in accordance with Table 6-14 in this plan.	EnergyAustralia NSW/Groundwater contractor	During monitoring	D3 (b) (vi) E15
3.	Water quality monitoring results shall be assessed in conjunction with local baseline data (90th percentile) and with the ANZECC (2000) Irrigation and Ecosystem Protection Guidelines, presented in Table 7-3, Appendix B.	EnergyAustralia NSW/Groundwater contractor	After monitoring when results are received	CoA D3 (b) a) vi)

Table 6-14 Procedures and Protocols for Monitoring

No.	Monitoring Measures	Role/Responsibility	Timing	Source/ Reference
Procedures and Protocols for Sampling				
1.	Lamberts North monitoring program shall be ongoing for the operation of project and for a minimum of 5 years following project completion. Monitoring shall be carried out at each of the identified established bores in Figure 3. (or replacement bore sites, in the event that the existing sites are damaged or lost).	EnergyAustralia NSW / Groundwater Specialist/ NATA Laboratory	Throughout the life of the project and for a minimum of 5 years after final capping and landscaping	E15
2.	Sampling and analysis will be undertaken in accordance with approved methods (EPA 2004).	Groundwater contractor/Laboratory	During sampling and analysis of groundwater	E15
3.	Groundwater sampling shall be undertaken by a qualified professional and analysed in a NATA accredited laboratory for parameters.	Groundwater contractor	During sampling and analysis of groundwater	E15
4.	EnergyAustralia NSW shall implement a schedule for periodic monitoring of groundwater quality and depth at monitoring sites, at an initial frequency of no less than once every month for the first 12 months of operation.	EnergyAustralia NSW	Once per month for first 12 months of operation and then as per monitoring program thereafter	E15
Methods of analysis				
5.	Laboratory methods shall be based upon Standard Methods (APHA, 1998) in a NATA accredited laboratory.	Laboratory	Ongoing	E15
6.	Detection limits will be set so that accurate measurements can be obtained at a level relevant to specific guidelines.	Laboratory	As required	E15
7.	In the event that any bore at Lamberts North needs to be decommissioned in future, an analysis by a qualified water specialist shall be undertaken to determine if replacement bores are needed and identify a new location.	EnergyAustralia NSW	Decommission of any bores at Lamberts North	E15

Table 6-15 Contingency plan for events at Lamberts North that have the potential to pollute or contaminate groundwater sources of water.

No.	Actions	Responsibility	Timing	Source/ Reference
1.	Groundwater pollution events attributed to Lamberts North operations shall be investigated and managed with reference to the DECC Guidelines for the Assessment and Management of Groundwater Contamination (2007) and other regulatory requirements.	EnergyAustralia NSW/Groundwater contractor/ Contractor	Following any incident at Lamberts North which results in groundwater pollution	D3(b) (v) NSW DEC, 2007
2.	In the event of a pollution or contamination event, owners of any nearby potentially affected bores (other than monitoring bores only) shall be notified within 12 hours of confirmation of impact. It is noted that there are currently no registered users of groundwater other than for monitoring purposes within a 2km radius from the Lamberts North site.	EnergyAustralia NSW	Within 12 hours of confirmation of impact	D3(b) (v) Community Information Plan OEMP 3.9.4
3.	The contingency plan shall be carried out in accordance with 6.4.1.4 of the plan and the Pollution Incident Response Management Plan activated as required.	EnergyAustralia NSW / Contractor	Immediately following a pollution event	E19 Table 6-16

Table 6-16 Investigation protocol

No.	Actions	Responsibility	Timing	Source/ Reference
1.	In the event that monitoring indicates the 90th percentile local background baseline data have been exceeded in accordance with section 6.4.1.4 contingency plan, investigation shall be undertaken in accordance with Section 6.4.1.5 which will include consideration as to whether operations at Lamberts North are impacting groundwater. As noted above, the ERM Assessment is currently underway and if required this OEMP will be further updated once the ERM Assessment is complete.	EnergyAustralia NSW	In the event elevated concentrations in water quality are observed	D3(b) (v)
2.	If groundwater is identified as being affected by operations at Lamberts North and the affected groundwater is likely to have an adverse effect on Neubecks Creek, then management actions should be undertaken to limit potential adverse impacts on the receiving surface water.	EnergyAustralia NSW	As required	D3 (b)(v)
3.	Further monitoring will be undertaken until it is confirmed that monitoring results have returned to acceptable levels.	EnergyAustralia NSW / Groundwater contractor	Following an exceedance, or contamination or pollution event.	D3 (b)(v)
4.	Where monitoring bores are damaged, advice will be sought from the water consultant on the need for replacement bores.	EnergyAustralia NSW / Groundwater contractor	As required	D3(b)

Table 6-17 Reporting Requirements

No.	Reporting requirements	Responsibility	Timing	Source/ Reference
1.	In the event of a pollution incident relating the groundwater, an Environmental Incident Report form will be completed and forwarded to the Contract Administrator. For pollution incidents that have the potential to result in harm to the health or safety of human beings or to ecosystems that is not trivial, EnergyAustralia NSW will activate the Pollution Incident Response Management Plan where required.	Staff who witnessed or reported the environmental incident/ EnergyAustralia NSW	Following a pollution incident	D3(b) (vi) E19
2.	An annual groundwater (and surface water) quality report shall be undertaken to review and consolidate data obtained in relation to Lamberts North throughout the year. This information shall be included in the Annual Environmental Management Report (AEMR).	EnergyAustralia NSW	Annually	B8 D3(b) (viii) E21
3.	EnergyAustralia NSW shall issue the latest monitoring data to the WaterNSW upon their request, at any time during the life of the project.	EnergyAustralia NSW	As required	D3(b)

6.5 Soil and Surface Water Management Plan

This Soil and Surface Water Management Plan (SSWMP) is a sub-plan of the OEMP. It seeks to address the specific requirements of the Project's CoA for Lamberts North, relating to soil and surface water. These conditions include CoA D3 (c) and E16 (provided in Appendix D).

This SSWMP addresses soil and water cycle management on the site, including a surface water monitoring program at receiving waters.

6.5.1 Background

The Lamberts North project is located within the catchment of Wangcol/Neubecks Creek, a tributary of the Coxs River. Wangcol/Neubecks Creek is the nearest watercourse to Lamberts North. The hydrology of the Project site itself has been greatly disturbed by past mining activities with physical changes to its landform and geology. As a result, the former Lamberts Gully Creek, located to the east of Lamberts North no longer represents a 'natural' hydrological system (SKM, 2010).

As indicated in the Consistency Report (SKM, 2012) and the CEMP (CDM-Smith, 2012), the Lamberts North project design has been modified to divert surface water north and west away from Lamberts Gully Creek, rather than being diverted via Lamberts Gully Creek as indicated in the EA, with the intent of minimising any impact of operations at Lamberts North on Lamberts Gully.

Groundwater modelling undertaken for the construction phase of the project has established that Huons Void (also referred to as Huons Dam) intersects the groundwater, and as a result, most of the water in Huons Void is groundwater that has risen as a result of hydrostatic pressure being released when the void was constructed presumably some decades ago. The breaking of the drought over the 2011 – 2013 period resulted in a rise in groundwater level, increasing the depth of Huon Void and backing up to fill Huon Drain (referred to as Huons Creek in Condition E17). The only surface water that has flowed into Huon Drain and Huon Void is from the relatively very small footprint of Lamberts North to the immediate north of groundwater bores D10 and D18. As such, there has been no real flow in a northerly direction along Huon Drain. Rather, Huon Drain has largely received groundwater backing up from Huon Void.

Also, as indicated in the Consistency Report (SKM, 2012), Huons Drain and Huons Void have been covered with 4 metres of site-won material above the Maximum Ground Level (MGL). As a consequence, when the OEMP is implemented Huon Void and Huon Drain will no longer exist and the groundwater will have found its original levels. The Hydrological Monitoring Program required by Condition E17 has been included as part of the Groundwater Monitoring Program rather than the SSWMP.

6.5.2 Operational Activities

Operational activities have the potential to increase sedimentation throughout the site. These operational activities may include:

- Continuous use of haulage and axillary roads that can cause soil movement if not maintained regularly;
- Heavy rainfall events that can collect uncompacted ash as it flows through drainage lines if not maintained regularly;
- Use of plant and machinery on site that can cause ash movement and erosion if not operated correctly in accordance with the methodology for ash placement;
- Overwatering of the ash if application rates are not adjusted to current metrological conditions, causing the ash to become slurry
- Leaving exposed surfaces uncapped for prolonged periods which has the potential to increase erosion and sedimentation.

In addition to the Mitigation measures that have been provided in Section 6.5.4, 6.5.5 and 6.5.6 to control the above, Lamberts North ash operational activities will have the following strategic principles applied:

- All final batters will be consistent with the design for the Area 1 Mount Piper Ash repository site with working grade 1 in 4. The Ash Repository Management Plan will confirm the batter length and width and any addition water controls measures that maybe required throughout the project.
- Any batters that are parallel to the Castlereagh Highway in the north will be designed and constructed in a way that mitigates uncontrolled water flows.

The site operations will also have the following water management aspects:

- Clean water collected from permanently capped batters or laybacks, will be collected in a strategically located pond and either utilised for dust suppression and/or released to Neubecks Creek when required;
- Dirty water will be collected in sediment ponds strategically located within the ash placement site including the construction of three 25ML lined ponds in addition to the existing lined ponds and water management features;
- Sediment from clean water detainments will be removed, when necessary as a part of standard maintenance practice;
- Dust suppression and irrigation water will be sourced from dirty and clean water ponds respectively, and various ponds available from Mount Piper Power Station to facilitate water reuse where possible;
- Sediment control techniques such as sediment control fences will be installed in areas prone to erosion;
- Slopes and batters will be properly engineered to control surface water runoff including the management and maintenance of surface drainage lines; and
- The project design will incorporate detainment and containment of surface water and erosion control.

The Project will have strict controls in place to mitigate against impacts to the surrounding environment. A concept Erosion and Sediment Control Plan (ESCP) has been developed as part of the Water Management System (WMS) for the Project. The Plan will ensure appropriate controls are implemented to keep clean stormwater separate from water that has come into contact with ash on site during the operation period. Water falling on ash-exposed areas will be directed toward containment systems within the site and reused.

Consequently, surface water containment within the ash repository site will be engineered to ensure their location and size is appropriate and their operations are risk assessed.

6.5.3 Water Management System

The site water management system involves the separation of clean and dirty water generated during the operation of the site. These can be defined as:

- Clean water – water that has not come into contact with ash such as runoff from permanent capped or revegetated areas or stormwater from surrounding areas that is diverted away: and
- Dirty water – water collected within disturbed areas within Lamberts North. This includes run-off from the exposed ash face, work areas and haul roads that is contained onsite within sediment ponds for reuse.

Each of the above actions in outlined in the following four sub sections.

6.5.3.1 Stormwater run-off into Lamberts North

Stormwater run-off from the west and south-west of Lamberts North is drained to the west and into the clean water systems of Mount Piper Power Station. Stormwater to the south of Lamberts North falls onto the existing mining operations of Centennial Coal and is managed by Centennial through a series of ponds in the vicinity of the old Lamberts Gully Creek, well to the east of Lamberts North. Stormwater falling on areas to the east and north of Lamberts North largely drain naturally to the east into Neubecks Creek following the general lay of the land away from Lamberts North (EA, SKM 2010).

As a consequence of the above, little stormwater falling in areas around Lamberts North runs onto the site. As established in the CEMP, it is not necessary to carry out studies or monitoring of Lamberts Gully Creek as it is not affected by the operations of Lamberts North.

6.5.3.2 Containment of water at Lamberts North

Surface water is contained within Lamberts North ash placement area by ensuring gradients and batters drain inwards to clean and dirty water sediment ponds most of which are established, as an ongoing process over the life of the project (EA, 2010).

Geotechnical analysis will be performed on the constructed dam to test for permeability, with recommendations provided to determine suitability for surrounding or lining. Pond lining materials that may be used but are not limited to may include:

- polyethylene lining systems;
- geofabric such as a geosynthetic clay liner or natural clay; and/or
- bentonite or soils that proven (by a specialist) to have low permeability rate.

A high-density polyethylene (HDPE) lining material will only be used for permanent ponds with a design life of greater than 10 years.

It is not necessary to line clean water ponds as they only contain local clean water run-off from capped and revegetated areas. Any soil sediment that builds up shall be removed and used for topsoil over the capped areas (Lend Lease, 2013).

6.5.3.3 Measures to mitigate erosion, external run-off and infiltration

The repository catchment area uses external batters and laybacks to stabilise the ash placement and reduce erosion and run-off. The trucks deliver ash to the working face and create a number of piles next to each other, prior to final placement. The piles of ash allow for any runoff to be directed to the dirty water sediment pond(s). The ash is then graded into its final position and compacted by rollers to specific compaction criteria to mitigate erosion and infiltration (Lend Lease, 2012).

Water that falls on external, permanently capped and revegetated batters is channelled to clean water ponds and released to Neubecks Creek.

Ash placement benches are used as a first level of detainment, with the outside of the bench approximately 5% higher than the inside, it is used to divert water to a swale parallel to the batter. The swale directs the water towards a controlled point, being an off-flow structure placed approximately every 100m along the batter. The off-flow structure, which is typically a rock-lined chute, directs the water to a containment pond (Lend Lease, 2012).

Measures to minimise the opportunity for surface water infiltration within the ash placement area follows simple structural principles including:

- Compaction of ash when it is placed. Where ash is compacted, the likelihood of infiltration during a rainfall event is minimised;
- The ash repository design will include a series of batters and laybacks. This will be further defined in the RMP;
- Standard construction practices consist of face normally 80m wide with a placement bench length of 200m x 200m, however the repository management plan can define another method if this is found to be more effective;
- The ash repository will be designed accordingly, to mitigate any long or short -term effects of stormwater;
- Design of pond sizes on the basis of catchment areas and where possible sized to a target of minimum 50-year ARI event; and
- Erosion on permanent batters is best mitigated by applying shrubs and/or grasses and then applying mulch.

Erosion of final batters is mitigated through mulches and revegetation (Lend Lease, 2012).

6.5.3.4 Water re-use at Lamberts North

Water falling on Lamberts North is contained in clean and dirty water sediment ponds strategically located within Lamberts North as outlined above. This forms the primary source of water for dust suppression on exposed ash and capped areas, as well as irrigation of the revegetated areas.

The secondary water sources for use at Lamberts North for dust suppression and irrigation are obtained from various ponds available within Mount Piper Power Station which may include, but not limited to the following:

- Coal Plant Settling ponds;
- Ash Settling and washdown ponds located adjacent to the cooling towers which contain water from stormwater and run off areas ; and
- Blowdown water normally sourced straight from the cooling towers.

Since commissioning of Mount Piper Power Station in 1993, it has not run out of water for dust suppression and irrigation for revegetation on its existing ash repository despite up to ten years of one of the worst droughts on record. As the operation of Lambert North builds on the experience in successfully operating the existing repository for over twenty years, the techniques and measures identified in this sub plan should ensure there is sufficient water for the successful operation of Lamberts North over its planned life.

6.5.3.5 Contingency Planning

The contingency plan below can be used in addition to the mitigation measures outlined in the surface water plan to identify what to do in the event that operational activities at Lamberts North are found to have an adverse environmental impact on the quality of surface water.

The groundwater contingency plan discussed earlier in Section 6.4.1.4 can also be applied to surface water quality within Neubecks Creek to detect changes and act upon them prior to a potential adverse environmental impact occurring. This has been explained in more detail below.

Surface water quality monitoring locations were established at Neubecks Creek before dry Ash placement began in Area 1, to establish baseline water quality characteristics for the catchment. The monitoring locations at Neubecks Creek are further explained below.

Early warning signs of changes in water quality can be detected by comparing testing data against the ANZECC (2000) guidelines for the protection of aquatic life (chapter 3) 90th percentile for a given parameter. In addition, the data should be also compared against the 90th percentile surface quality data provided in Appendix B Table 7-6 of this plan. If the data exceeds these 90th percentile limits, then investigations shall occur to assess the potential cause.

The aim of a contingency investigation should be targeted to assess whether changes in surface water quality may be due to Lamberts North operational activities or some other cause. If it is considered that surface water quality is adversely affected as a result of Lamberts North operational activities, then corrective actions shall be implemented to mitigate any impacts arising.

6.5.3.6 Investigations protocol

Investigations shall include but are not limited to the activities listed in Table 6-9 .

Table 6-18 Investigation protocol

Trigger for Investigation	Investigation required	Action
Exceedance against the ANZECC Guidelines or Baseline data available in Appendix B Table 7-5	▪ Analyse water quality data, outside the criteria; ▪ Review site operations at Lamberts North within the timeframe of detected exceedances; ▪ Review Metrological conditions; ▪ Review any activities that maybe occurring on neighbouring sites; ▪ Investigate other potential factors that may have led to the exceedance. As noted above, the ERM Assessment is currently underway and this OEMP will be further updated once the ERM Assessment is complete.	▪ Once potential source is found, implement corrective actions as soon as practicable. ▪ Implement management actions as appropriate.

6.5.4 Management, mitigation and monitoring measures

The management and mitigation measures, monitoring, reporting requirements, and response plan/corrective actions for this sub-plan are outlined in Table 6-19 and Table 6-20.

Table 6-19 Objectives, References and Performance Criteria

Performance Targets		
▪ The water quality in Neubecks Creek is not impacted by the Lamberts North Ash Placement operations (criteria available in Appendix B, Table 7-3). ▪ Zero Environmental incidents at Lamberts North that result in pollution of water at Neubecks Creek. ▪ Erosion to be effectively managed on site and not to have an influence and/or impact on surrounding lands outside the boundary of Lamberts North.		
Performance Criteria		
▪ Water quality results at Neubecks Creek will indicate no significant variations from historical baseline data as a result of Lamberts North operations. ▪ Ecological results at Neubecks creek will indicate no significant variation from historical baseline data as a result of Lamberts North operations. ▪ No visual evidence of erosion and sedimentation impacts on Neubecks Creek as a result of Lamberts North operations following significant rainfall events. ▪ Establishment of procedures for maintenance of temporary and permanent silt and sediment control structures within the site.		
References		
State legislation	**Standards /Codes**	**Other Documentation**
▪ *Contaminated Land Management Act 1997;* ▪ *Environmental Planning and Assessment Act 1979* (EP&A Act); ▪ *Protection of the Environment Operations Act 1997* (POEO Act); ▪ *Water Management Act 2000*; ▪ CoA D3(c) and E16.	▪ The Australian and New Zealand Environment Conservation Council (ANZECC) / Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) (2000) threshold values for the protection of upland river aquatic systems. ▪ Best Practice Guidelines for Erosion and Sediment Control, published by the International Erosion Control Association (IECA – 2008). ▪ Managing Urban Stormwater: Soils and Construction (Landcom 2004). ▪ Methods of Soils and Construction, Volume 1 (Landcom, 2004).	▪ Water Management, Chapter 7 of the Mount Piper Power Station Ash Placement Environmental Assessment Report, August 2010 (SKM, 2010). ▪ Mount Piper Station Ash Placement Project Hydrology and Water Quality Report, Appendix D to the Mount Piper Station Ash Placement Project Environmental Assessment Report, August 2010 (SKM, 2010). ▪ Submissions Report (SKM, 2011) ▪ Consistency Report (SKM, 2012) ▪ CEMP (CDM-Smith 2012)
Key issues/ constraints/ strategies		
Key issues/strategies ▪ Clean water is defined as runoff from undisturbed areas including those that have not come into direct contact with ash i.e. capped areas, revegetated areas. ▪ Dirty water comprises of water collected within disturbed areas including exposed ash face, un- vegetated capped areas, work areas, stockpiles and haulage roads. Within these parameters and using appropriate surface water controls, the impact of lamberts north operations on the surrounding catchment will be minimised. ▪ Surface water quality and ecological monitoring will be carried out in accordance with this plan and the EnergyAustralia NSW Ecological Monitoring Plan for Neubecks Creek.		

Constraints

- LDP01 at Mt Piper is part of the creek and receives water from the uncontaminated stormwater drains and power station stack run off. Neubecks Creek water quality is also influenced by local coal mining seepage and surface water. This should be considered when undertaking water quality monitoring at the Neubecks Creeks sites as indicated in this plan.

Table 6-20 Mitigation measures

No.	Mitigation measures	Responsibility	Timing	Source/Reference
General Measures				
1.	All surface water contaminant ponds including the three 25 ML lined ponds shall be engineered to ensure their location and size is designed in accordance with the geotechnical specifications for the site.	Contractor	Ongoing	
2.	The ash repository will be designed accordingly, to mitigate any long -term effects of stormwater.	Contractor	Ongoing	D (c) (iv)
3.	Locations and sizes of ponds shall be included in the Repository Management Plan (RMP).	Contractor	During revisions of the RMP	D (c) (ix)
4.	This water-retention system shall be established to ensure that site run-off is captured for further treatment and re-use on site.	Contractor	During operations	D3 (c) (iv)
5.	Once the ash surface area has been capped this area shall be rehabilitated, as soon as practical to minimise erosion.	Contractor	Ongoing	Landscape Rehabilitation and Revegetation Plan
6.	Geotechnical analysis will be performed on constructed dam to test for permeability, any recommendations will determine suitability for surrounding or lining.	Contractor	As required	D3 (c)(viii)
7.	Erosion and sediment control measures will conform with, or exceed the relevant requirements of the Managing urban stormwater; soils and construction (Landcom 2004).	EnergyAustralia NSW and Contractor	Ongoing	D3 (c) (V)
Erosion and Sediment Control				
8.	Establish and implement procedures for the maintenance of temporary and permanent silt and sediment control structures.	Contractor	During operations	D3 (iii)
9.	Erosion of batters will be minimised by compaction, design length and finally mulching and vegetation.	Contractor	After Final capping	D3 (c) (iii)
10.	The contractor shall implement protocols and procedures to access the effectiveness of erosion and sediment control on site during operations. Once implemented any negative findings shall be correctly managed to avoid any future problems.	Contractor	During Operations	D3 (c) (iv)
11.	The contractor shall establish an erosion and sediment emergency procedure that can be used during an unlikely major erosion event.	Contractor	During operations	D3 (c) (xi)

6.5.5 Monitoring and Reporting

Water quality and associated mitigation measures will be monitored at a range of scales and with a range of techniques as described in Table 6-21. Reporting requirements are provided in Table 6-22.

Table 6-21 Monitoring measures

No.	Monitoring measures	Responsibility	Timing	Source/Reference
Erosion and sediment controls				
1.	Site inspections with regards to surface water shall be recorded daily. Areas of concern shall be appropriately actioned, and a completion date recorded.	Contractor	Daily	D3(c) (xi)
2.	Visual monitoring of the Project site shall be undertaken for evidence of soil erosion. Indicators include: ▪ Degradation of surface water quality on site. ▪ Scouring in drains. ▪ Build-up of sediment in sediment and erosion control devices. ▪ Uncontrolled discharge from the site. ▪ Damaged or failed erosion control devices.	Contractor	Daily	D3 (xi)
Surface Water Quality Monitoring				
3.	Flow and water quality monitoring shall be undertaken at the three monitoring locations in Neubecks Creek: at LDP01, WX22, and NC01 as per Figure 3. Parameters to be measured are provided in Appendix A, Table 7-2	EnergyAustralia NSW	Monthly for first 12 months of operation and then quarterly thereafter.	D3 (c)(x) E16 Figure 3 Appendix A, Table 7-2
4.	Water quality results obtained in Neubecks creek shall be compared against long-term baseline values and ANZECC guidelines (upland river aquatic ecosystem) (Table 7-5Appendix B).	EnergyAustralia NSW	Monthly	D3 (c)(x) E16
5.	Wet weather monitoring with a minimum of two events recorded within the first 12 months operation of the project shall be undertaken.	EnergyAustralia NSW	Two rounds within first 12 months of operation	E16(D)
6.	Ecological Monitoring will be undertaken in accordance with EnergyAustralia NSW Ecological Monitoring program at Neubecks Creek to quantify the impacts of ecology of Neubecks creek and the associated riparian environment. Testing will be carried out Spring and Autumn for the first 12 months of operation and then Spring of each year thereafter (up to 5 years from beginning of operation). The results will be analysed against the baseline data carried out in Spring 2012.	EnergyAustralia NSW	Spring and Autumn in first 12 month of operation then spring each year thereafter (5 years in total from beginning of operation)	D3 (c) (x)

Table 6-22 Reporting

No.	Corrective Actions	Responsibility	Timing	Source/ Reference
1.	Surface water and erosion related incidents associated with Lamberts North shall be recorded in daily diaries and reported in the monthly report.	Contractor	Daily and monthly	D3(c) (xi)
2.	EnergyAustralia NSW shall issue the latest monitoring data for surface water to WaterNSW and (DPI) Fisheries upon their request, at any time during the life of the project.	EnergyAustralia NSW and Contractor	As required	B8
3.	All complaints/incidents regarding surface water and erosion associated with Lamberts North shall be reported to the Contract Administrator.	Contractor/ EnergyAustralia NSW	As required	D3(c) (xi) OEMP Section 3.9.2
4.	In the unlikely event, that the Environmental Representative directs the contractor administer to cease operations, due to a potentially adverse environmental threat to Neubecks Creek associated with Lamberts North, EnergyAustralia NSW shall notify and seek advice (if necessary) from the WaterNSW or DPI-Fisheries.	EnergyAustralia NSW	Following an incident	D3(c) (xi) E19 and E20 OEMP Section 3.9.2
5.	An annual Surface water (and groundwater) quality monitoring review shall be carried out to monitor and consolidate data retrieved during surface (and groundwater) monitoring throughout the year. This report shall be included in the Annual Environmental Management Report (AEMR).	EnergyAustralia NSW and specialist consultant	Annually	B8, D3 (c) (v)

6.5.6 Corrective actions

Table 6-23 Response plan and corrective actions

No.	Corrective Actions	Responsibility	Timing	Source/ Reference
1.	Surface water and erosion related incidents associated with Lamberts North shall be recorded in daily diaries and reported in the monthly report.	Contractor	Weekly	D3 (xi)
2.	EnergyAustralia shall issue the latest monitoring data for surface water to the WaterNSW (DPI) Fisheries upon their request, at any time during the life of the project.	EnergyAustralia NSW and Contractor	As required	B8
3.	All complaints/incidents regarding surface water and erosion associated with Lamberts North shall be reported to the Contract Administrator.	Contractor	As required	D3(c) (xi)
4.	In the event that monitoring indicates the 90th percentile local background baseline data have been exceeded in accordance with Section 6.5.3.5 contingency plan, investigation shall be undertaken in accordance with Section 6.5.3.6. As noted above, the ERM Assessment is currently underway and if required this OEMP will be further updated once the ERM Assessment is complete.	EnergyAustralia NSW	In the event elevated concentrations in water quality are observed	D2 (c) (xi)
5.	The contingency plan shall be carried out in accordance with Section 6.5.3.5of the plan.	EnergyAustralia NSW / Contractor	Immediately following a pollution incident	D2 (c) (xi)
6.	In the unlikely event, that the Environmental Representative directs the contractor administer to cease operations, due to a potentially adverse environmental threat to Neubecks Creek associated with Lamberts North, EnergyAustralia NSW shall notify and seek advice (if necessary) from WaterNSW or DPI-Fisheries.	EnergyAustralia NSW	Following a pollution incident	D3(c) (xi) E19 and E20

6.6 Air Quality Management Plan

6.6.1 Introduction

This Air Quality Management and Monitoring Plan (AQMMP) is a sub-plan of the OEMP. It seeks to address the specific requirements of the CoA attached to the Project Approval relating to air quality. These conditions include CoA D3 (d) and E18. It also provides a framework for EnergyAustralia NSW, its contractors and vendors to manage air quality and to minimise the potential for adverse impacts to sensitive receivers during the operation of the Project.

This AQMPP identifies in Table 6-24 the performance targets (otherwise known as air quality objectives), performance criteria, reference documents, key issues, constraints and strategies and the mitigation measures that comply with the conditions of approval D3 (d) and E18. In essence, the AQMMP manages potential dust and vehicle/machinery emissions from the Lamberts North ash repository to keep them within licence limits. There are no other emissions from the operation of the Lamberts North ash repository that have the potential for material impact on air quality.

6.6.2 Sensitive receivers

The term 'sensitive receiver' used in this plan refers to nearby receivers, such as residents and businesses that may potentially be affected by dust emissions, both now and in the future from the operation of Lamberts North ash repository. The nearest sensitive receivers identified for the Project, known as Sensitive Receiver No.1 and No.2, are located at Blackmans Flat, approximately 1.1 km to the east of the site (Refer to Figure 3). The air quality monitoring program includes these locations.

6.6.3 Operation activities and predicted impacts

6.6.3.1 Dust sources

Air quality, including dust and particulate matter, will be managed during the operation of the Project to minimise and mitigate any environmental and health impacts. Key potential dust sources during operation activities are anticipated to include those listed below.

- Loading ash to trucks;
- Placement of ash into the repository;
- Vehicles hauling ash from the conveyor-fed silo in the existing ash repository or from the power station directly. This involves travelling on unpaved areas;
- Shaping the emplaced ash using dozers;
- Wind erosion from the ash repository; and
- Placement of topsoil for rehabilitation and windblown dust prior to revegetation.

More detail on general operation activities is provided in Section 2 of the OEMP.

6.6.3.2 Predicted impacts

The EA provides information on the dust dispersion modelling undertaken during the assessment of the Project (SKM, 2010). This was based on a worst-case scenario with controls or mitigation measure to minimise on-site dust emissions. The EA concluded that the Project is unlikely to cause exceedances of annual PM_{10}, Total Suspended Particulates (TSP) with the Department of Environment and Conservation criterion (DEC, 2005) at the nearest sensitive receptor locations.

The Consistency Report (SKM, 2012) describes the environmental review, which included air quality, undertaken for an alteration to the Project's original design as outlined in the EA (SKM, 2010). The alteration involves an extension of ash placement within the area of the Lamberts North. As described in the Consistency Report, operational activities at the north-eastern end of Lamberts North will extend approximately 150 m further to the north east, filling Huons Void at the northern end of the site. The extension will result in operations occurring approximately 150m closer to Castlereagh Highway; however, as they will be no closer to Blackmans Flat or any other likely sensitive receiver, no significant change to the air quality impacts is expected at the nearby sensitive receivers (SKM, 2012).

Overall, air quality impacts resulting from Lamberts North operations are predicted to be low. Management practices detailed in this plan are designed to minimise potential for dust emissions.

6.6.4 Management and mitigation measures

6.6.4.1 Ash management overview and dust suppression techniques

The residue from coal combustion is an inert ash product that is separated from the flue gases exiting the furnace as two streams, furnace bottom ash and flyash. The furnace bottom ash has a larger particle size, and reports to the ash hopper. Furnace bottom ash at Mount Piper is collected in the Submerged Scraper Chain Conveyor hopper that is located beneath the boiler. The very small particles of ash in the flue gas are the fly ash. The fly ash is carried through the boiler and is collected via a Fabric Filter Dust Collection Plant. At Mount Piper the fly ash is pneumatically conveyed via an air slide into a dust collection vessel and is periodically conveyed into a 1,600 m^3 fly ash silo. The fly ash silo has been sized to provide a surge capacity of one day. This allows the operation of the Fabric Filter Dust Collection Plant on a 24-hour basis whilst the conditioning and placement of fly ash can proceed on dayshift during daylight hours.

Placement of flyash within the repository site uses a dry ash system, with ash conditioned after leaving the Fabric Filter Dust Collection Plant to controlled moisture content. The conditioned ash is transported on a covered conveyor from the power station to a silo at the south-west end of the existing ash repository know as Area 1. The flyash is trucked from this silo and tipped for final placement within a designated placement area by dozers. The ash conditioning provides for placement and compaction and initial dust suppression during the truck loading and unloading process and the final positioning by dozers. Furnace bottom ash is a wet product and is transported and dewatered at a designated location within the existing ash repository.

Air quality can be adversely impacted if the ash conditioning process, the compaction process or direct dust suppression measures have not been implemented as part of the placement and management operations on the exposed ash areas.

The above ash placement techniques have been successfully applied on the existing ash repository since Mount Piper Power Station became operational in 1992. These techniques will be applied at Lamberts North ash repository.

6.6.4.2 Water application on site

Dust suppression techniques applied on the ash repository are subject to a number of factors that include, but are not limited to:

- Meteorological conditions for example rainfall, temperature, wind speed direction and strength and humidity;
- Capping materials used, for example weight of material and type;
- Balancing water application rates with meteorological conditions;
- Availability of water suppression equipment such as water trucks or sprinklers;
- Where the water is being applied and how effective it is; and
- Contingency plans for equipment maintenance or break down.

By understanding the factors above, dust can be mitigated on site more effectively.

To successfully control dust on the site, water application rates must not exceed evaporation rates, which means that monitoring meteorological conditions is an essential part of daily operations.

The two most common types of water application techniques historically used on site for dust suppression are water trucks and sprinkler systems. Wherever possible sprinkler systems have been used and the water application rates have been adjusted daily to suit the meteorological conditions. Where sprinklers cannot be applied, water carts are commonly used.

Water is applied across the entire exposed area (uncapped areas) of the ash repository and the water will be sourced primarily from the containment ponds available at Lamberts North. If water in these containment ponds is not sufficient, EnergyAustralia NSW is able to use the comprehensive series of ponds within Mount Piper Power Station's water reuse and recycling system, or alternatively blowdown water from the Cooling Towers.

6.6.4.3 Alternative methods of ash placement to reduce dust emissions

The working area of the ash repository in normal circumstances is approximately 80m (W) x 200m (L). The working face is approximately 80m in length. The trucks deliver ash to the working area and create a number of piles, prior to it being strategically placed, shaped and compacted on the site (Lend Lease, 2012).

During times of extreme temperature and/or high winds, alternative methods can be applied to reduce dust, for example:

- the size of the working area can be reviewed and reduced. By reducing the working face, water can be applied more regularly thereby reducing airborne dust (Lend Lease, 2013).

The method described above has been successfully used on EnergyAustralia NSW Ash repositories for several years, however it is noted that EnergyAustralia NSW as part of their continuous improvement strategy encourages its ash management team and contractors to work towards new and effective techniques for dust suppression.

6.6.5 Performance, operations and management mitigation measures

This section provides the details of the AQMMP objectives, performance criteria and the mitigation measures to achieve an environmentally sustainable operation in relation to air quality arising from the operations of the Lamberts North ash repository.

Table 6-24 Objectives, References and Performance Criteria

Performance Targets		
▪ The local air quality in the vicinity of Sensitive Receivers identified in the EA will not be impacted by the Lamberts North Ash Placement operations. ▪ Zero incidence of dust related complaints for Lamberts North Ash Repository.		
Performance Indicators		
▪ Evidence of continuous improvement of dust suppression systems (including monitoring) in accordance with operational demands and meteorological conditions. ▪ Complaints register demonstrating zero incidences of dust related complaints. ▪ That operational results are below the criteria of: o Increase in Total Suspended Particulates (TSP) by > 2g/m^2/month to a maximum of 3.5g/m^2/month at dust deposition gauges outside the ash placement area; and o PM_{10} annual average is <30µg/ m^3 and 24-hour maximum does not exceed 50µg/m^3		
References		
State legislation	**Standards /Codes**	**Other documentation**
▪ *Environmental Planning and Assessment Act 1979 (EP&A Act);* ▪ *Protection of the Environment Operations Act 1997 (POEO Act);* ▪ *Protection of the Environment Operations (Clean Air) Regulations 2001;* and ▪ Project Conditions of Approval (09_0186) D3 (d) and E18.	▪ NSW Approved Methods for the Modeling and Assessment of Air Pollution in NSW (DEC 2005). ▪ AS3580.10.1-2003 Methods for sampling and analysis of ambient air – Determination of particulate matter – deposited matter- gravimetric method.	▪ Mount Piper Power Station Ash Placement Environmental Assessment, Chapter 5 – Air Quality (SKM, August 2010). ▪ Mount Piper Station Ash Placement Project Environmental Assessment, Appendix B – Air Quality Report (SKM, August 2010). ▪ Mount Piper Power Station Ash Placement Submissions Report (SKM, March 2011). ▪ Mount Piper Power Station Ash Placement Project Consistency Report (SKM, June 2012).
Key issues/constraints/standards		
Key Issues ▪ The key objective of the air quality system is to manage resources effectively to ensure the prevention of conditions that may lead to visible dust emissions or exceedance of EnergyAustralia NSW Licence limits. Through the use of dust suppression equipment and implementation of air quality management procedures, dust events can be controlled. ▪ In the event of fugitive emissions, an effective system for dust suppression will be implemented by the contractor to ensure any adverse impacts on the surrounding environment is minimal. ▪ A specialist consultant on behalf of EnergyAustralia NSW will take samples from the existing permanent air quality sites indicated in this plan. **Constraints** Weather events such as dust storms events (similar to that of the NSW 2009 dust storm that swept across NSW and Queensland for a period of 2 days) may evidently effect air quality results, beyond the criterion of 3.5 g/m2/month.		

Table 6-25 Mitigation measures

No.	Mitigation measures	Responsibility	Timing	Source/ Reference
General work practices				
1.	Water shall be primarily sourced from Lamberts North sediment or catchment ponds. Secondary water supplies maybe sourced from Mt Pipers Power Station's existing water ponds located throughout the station precinct.	Contractor	As required	D3 (d) (v)
2.	Adequate dust suppression shall be conducted as required, even outside operational hours.	Contractor	Ongoing	D3 (d) (iv)
3.	The contractor shall use suitable dust suppression equipment/machinery onsite. This equipment/ machinery shall be regularly serviced and maintained. The Contractor shall develop an irrigation operating protocol as detailed below in **Table 6-26**.	Contractor	Ongoing	D3 (d) (iv) D3 (d) (vi) Irrigation operating protocol (in this plan)
4.	Haul road and auxiliary roads shall be regularly watered to ensure dust suppression is maintained.	Contractor	As required	D3 (d) (iv)
5.	In the event of meteorological conditions which increase the risk of a dust episode, additional suppression techniques will be used as per Section 6.6.4.3 of this plan.	Contractor	As required	D3 (d) (iv)
6.	In the event of visible dust emissions, personnel shall notify the Contractor immediately, who will direct the water cart to spray the area and review the location and application rate of the sprinkler system.	All staff	As required	D3 (d) (iv) and (viii)

No.	Mitigation measures	Responsibility	Timing	Source/ Reference
7.	In the event of dust complaint, the contractor shall provide site activity log of their daily/ weekly operations as part of EnergyAustralia NSW investigations. The log shall include, but is not limited to; sprinkler management, daily water application rates, daily climatic conditions, haulage truck movements and hours of operation.	Contractor	As required	D3 (d) (iv)
8.	In the event of exceeded dust levels at the sensitive receiver locations, EnergyAustralia NSW shall carry out an investigation of TSP and/or PM_{10} to determine whether operations at Lamberts North were the potential cause of this exceedance. Specific criterion for PM_{10} and TSP has been provided in Table 6-24 performance indicators	EnergyAustralia NSW	As required	D3 (d) (iv)
Vehicle and machinery operations				
9.	The contractor will ensure that vehicles are regularly serviced, inspected and cleaned.	Contractor	As required	
Diesel exhaust emissions				
10.	Where necessary, the effect of diesel emissions should be considered as part of air quality. Consequently, Diesel fueled equipment will be regularly serviced and cleaned to ensure compliance with appropriate design emission standards for in-service vehicles.	Contractor	As required	D3 (d) (iv)
11.	Diesel powered stationary plant will be serviced maintained and upgraded as required to minimize air emissions as far as possible and to ensure Licensed levels of air emissions are not exceeded.	Contractor	As required	D3 (d) (iv)
Ash placement				
12.	Ash will be placed in layers and the conditioning of fly ash with water shall be undertaken, ensuring that the moisture content sits at a target rate of 15-20% (or as otherwise determined by climatic conditions and compaction requirements).	Contractor	As required	D3 (d) (iv) D3 (d) (vi)
13.	Optimal moisture content (OMC) for compaction will be maintained to achieve the target compaction ratio.	Contractor	Ongoing	D3 (d) (iv)
14.	Records of ash moisture content at placement and water usage for ash conditioning will be maintained.	Contractor	Weekly	D3 (d) (iv) D3 (d) (vi)
Capping and Rehabilitation				
15.	To achieve permanent dust suppression on external batters, a permanent capping layer of no less than 0.75m shall be applied. Consequently, capping will occur progressively as each area reaches its design height in accordance with the ash placement strategy.	Contractor	As required	D3 (d) (iv) and Landscape and Rehabilitation Plan
16.	Dust suppression techniques shall be maintained after capping until vegetation has been adequately established.	Contractor	As required	D3 (d) (iv)

Table 6-26 Irrigation operating protocol

No.	Mitigation measures	Responsibility	Timing	Source/ Reference
1.	The Contractor shall develop an Irrigation Operating Protocol that includes, but is not limited to the following: Sprinklers systems: ▪ Establish an optimum irrigation rate; and ▪ Monitor sprinkler application and irrigation to access achievement of the optimum irrigation rate. Sprinkler application may be determined using the following calculations: ▪ Quantity of sprinklers required per hectare Area (m^2) (non-working face) divided by the individual coverage of each sprinkler (m^2). Other actions include: ▪ Designate areas for dust suppression, and assess and apply suitable dust suppression techniques that will achieve optimal results; ▪ Monitor climatic conditions daily and adjust water application rates so they exceed evaporation rates; ▪ Undertake daily risk assessment of predicted meteorological conditions in the early hours of the morning to provide a risk ranking i.e. low, medium or high. This shall be used to determine the application rates required for the day ahead;	Contractor	Ongoing	D3 (d) (iv) D3 (d) (vi)

No.	Mitigation measures	Responsibility	Timing	Source/ Reference
	▪ Visual inspections of the ash repository shall be undertaken daily (mid-morning) and assessed against the predicted meteorological climatic conditions. Water application rates shall be modified where necessary and records maintained; ▪ Ensure that protocols relating to the layout and spacing of the sprinklers across the site have been implemented; ▪ Establish monitoring procedures for water use; ▪ Establish operational procedures for abnormal conditions relating to water application, for example, maintaining adequate dust suppression in the event of a pipe break impacting sprinkler systems.			

6.6.6 Air Quality Monitoring Program

This section provides the requirements for the ongoing air quality monitoring program in accordance with CoA D3 (d) (x) and E18.

Table 6-28 provides the details of the air quality monitoring program, and the standards and requirements that shall be considered during monitoring.

The response plan and corrective actions to address visible emissions or exceedances, and reporting requirements required in the event of non-compliance are listed in Table 6-29 and Table 6-30 below, respectively. The source or reference for measures is the OEMP and the CoA.

6.6.6.1 Air Quality Criteria

Air quality criteria set by the NSW EPA (formerly NSW Department of Environment and Climate Change (DECC)) for amenity-based criteria for dust fallout, and the background dust deposition data as measured at the Mount Piper Power Station, will be used to compare air quality monitoring results obtained during operation, as described below.

Baseline dust deposition levels

Dust deposition data collected during monitoring at Mount Piper between January 2010 to September 2012 at dust gauges 19, 20, 21 22, 23 and 24 provides baseline dust deposition levels as required by CoA D3 (d) (i). Refer to Figure 3 for the location of the monitoring locations.

An average of 1.5 g/m^2/month for dust deposition was calculated from the data obtained from the six dust gauges around the site. This baseline level will be used for compliance assessment purposes during the operation of the Project.

The operation of the Project shall aim to achieve compliance with this limit. In the event of exceedances of 2 g/m^2/month (or more) above the baseline average of 1.5 g/m^2/month, investigation will be undertaken to determine the likely cause (see Table 6-29).

Assessment criteria

Air quality assessment criteria for deposited dust is set by the Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (DEC, 2005), and is used to compare ambient monitoring results recorded at Mount Piper.

The DEC amenity-based criterion for dust fallout is a maximum total dust deposition of 4 g/m^2/month (annual) and 2g/m^2/month (maximum increase)[3].

The DEC guidelines recommend the 2g/m^2/month criteria is used when baseline data on deposited dust levels exist, while the 4g/m^2/month criteria is used when no baseline data exists. As baseline data is available for dust deposition at Mount Piper as described above, the 2g/m^2/month (maximum increase) will be used in compliance assessments, along with the baseline dust deposition level of 1.5 g/m^2/month.

Based on the information above, Table 6-27 provides the dust deposition criteria to be used for project.

[3] Dust is assessed as insoluble solids as defined by AS3580.10.1-2003 *Methods for sampling and analysis of ambient air – Determination of particulate matter – deposited matter- gravimetric method*.

Table 6-27 Dust deposition criteria to be used for compliance assessment on the Project

Averaging Period	Maximum increase in deposited dust level	Baseline dust deposited dust
Annual	2g/m²/month	1.5g/m²/month

Table 6-28 Air quality Monitoring Program

Objectives
▪ To undertake monitoring in accordance with the Air Quality Monitoring Program.
Performance Criteria
▪ To not exceed DEC assessment criteria of total dust deposition of 2 g/m^2/month (maximum increase from baseline levels of 1.5 g/m^2/month) and the PM10 Criterion.
Relevant Standards
▪ NSW Approved Methods for the Modeling and Assessment of Air Pollution in NSW (DEC 2005). ▪ AS3580.10.1-2003 Methods for sampling and analysis of ambient air – Determination of particulate matter – deposited matter- gravimetric method.

No.	Monitoring measures	Responsibility	Timing	Source/ Reference
Air Quality Monitoring Program				
1.	Air quality monitoring will be undertaken during of the life of the Project and include the following: ▪ Air quality monitoring stations and dust gauges indicated in Figure 3 of this plan, shall be used to monitor dust emissions at the perimeter of the Lamberts North; and	EnergyAustralia NSW	Monthly First 12 months of operation.	D3 (d) (x) and E18 Air quality and meteorology stations shown in Figure 3.

No.	Monitoring measures	Responsibility	Timing	Source/ Reference
2.	Dust deposition and TSP will be measured using existing dust deposition gauges situated along the Castlereagh Highway, Boulder Road and at Blackmans Flat, and adjacent to residential properties at Blackmans Flat. The results from these gauges will be used during the operation phase to monitor dust emissions (TSP and dust deposition). TSP will be calculated from dust deposition bottles.	EnergyAustralia NSW	Monthly	D3 (d) (x) and E18 Figure 3.
3.	Samples will be removed from the dust deposition gauges on a monthly basis by a NATA approved laboratory and compared to baseline dust deposition monitoring records from Mount Piper, and the DECC amenity-based criteria for dust deposition of 3.5 g/m^2/month (annual).	EnergyAustralia NSW	Monthly	D3 (d) (x) and E18
4.	PM_{10} will be measured using one Tapered Element Oscillating Microbalance (TEOM) automated continuous particle monitor. The TEOM is located within the Mount Piper Power Station.	EnergyAustralia NSW	Monthly	Figure 3
5.	PM_{10} and $PM_{2.5}$ will be measured using a beta attenuation monitoring station. The Air Quality Monitoring Station (AQMS) is located at Blackmans Flat.	EnergyAustralia NSW	Monthly	Figure 3
6.	Seasonal weather monitoring will be also used as a means to verify any project related air quality impacts.	Contractor/ EnergyAustralia NSW	As required	D3 (d) (x) and E18
7.	Regional climatic conditions will be accessed in the early hours of the morning including but not limited to, temperature, humidity, wind speed and rainfall. This will determine water use for the day. Visual inspection of the site throughout the day, will determine if water application rates need adjusting to suit the climatic conditions occurring on site.	Contractor	Daily	
General monitoring practices				
8.	Visual monitoring of the site, haul roads and stockpiles for dust generation will be undertaken during operation activities to identify excessive dust generation.	Contractor All staff	Daily	D3 (d) (x) and E18
9.	Site water used for irrigation, and local evaporation, will be monitored on a monthly basis. Results will be included in the Monthly Environmental Report.	Contractor	Monthly	

Table 6-29 Response Plan and Corrective Actions

No.	Actions	Responsibility	Timing	Source/ Reference
1.	If air quality-related complaints are received, or if elevated levels of measured parameters are identified, an investigation will be undertaken to determine to source of the dust. The investigation will include an assessment of meteorological aspects such as prevailing winds to determine the likelihood that activities outside of Lamberts North operations are the cause of the issue.	Contractor and EnergyAustralia NSW	Ongoing	D3 (d) (viii) Air quality monitoring report
2.	If the average dust deposition baseline of 1.5g/m^2/month is exceeded by more than 2g/m^2/month Investigations will be carried out to determine their cause. If the cause can be controlled, then the correct action will be implemented as soon as possible.	Contractor	Ongoing	D3 (d) (xi) D3 d (iii) Air quality monitoring report
3.	Working placement areas will be sized appropriately, particularly during summer, to ensure they do not become unmanageable during adverse climatic conditions such as high winds and evaporation rates.	Contractor	As required	D3 (d) (vii) D3 d (iii)
4.	In the event whereby PM_{10} exceeded the 24-hour criterion of 50 µg or the annual average of 30µg/m^3 an internal plant failure investigation report shall be undertaken to determine if operations were likely to be the cause.	Contractor and EnergyAustralia NSW	As required	D3 (d) (ix)
5.	In the case of pumps breaking down, an alternative system shall be made available for use such as water carts.	Contractor	As required	D3 (d) (v) D3 d (iii)
6.	In the event of an air quality-related complaint, the Complaints Management procedure outlined in the OEMP will be implemented.	EnergyAustralia NSW	In response to community complaints	OEMP Section 3.5
7.	In the event of visible dust emissions from the repository area, personnel shall notify the Contractor's Site Manager immediately, who will take corrective action such as directing the water cart operator to spray the area and review the location and application rate of the sprinkler system.	Contractor	In the event of visible dust emissions	D3 (d) (ix)

Table 6-30 Reporting Requirements

No.	Requirements	Responsibility	Timing	Source/ Reference
1.	Air quality observations will be recorded in the Weekly Environmental Checklist.	EnergyAustralia NSW	Weekly	D3 (d) (xi)
2.	Environmental Incident report forms will be completed and forwarded to the Contract Administrator as/when required.	EnergyAustralia NSW	As required	D3 (d) (xi)
3.	Details of any air quality/dust management, monitoring and any complaints will be provided in a Monthly Environmental Report.	Contractor	Monthly	D3 (d) (xi) Monthly Environmental Compliance Reports
4.	An Annual Air Quality review will be undertaken to review the past year's air quality data, analysis of any trends and make recommendations based on investigations. This report will include a review of annual PM10 exceeds 20.5 µ/ m^3 which is predicted at sensitive receiver 1 as described in the EA- Table 7-3 of Appendix A (SKM, 2010). This report will be made available to NSW Public Health Unit and the EPA upon request, unless received as part of the Annual Environmental Management Report (AEMR) for the project.	EnergyAustralia NSW	As required	D3 (d) (xi)
5.	The AEMR will be submitted to the Secretary complete with a summary of the Annual Air Quality data.	EnergyAustralia NSW	Annual	E21 D3 (d) (xi)

6.7 Landscape Revegetation and Rehabilitation

6.7.1 Introduction

This Landscape Rehabilitation and Revegetation Plan (LRRP) is a sub-plan of the OEMP. It addresses the CoA attached to the Project Approval for Lamberts North, relating to landscape revegetation and site rehabilitation management, conditions CoA D3 (e) and (f) respectively. These have been incorporated into one plan (this LRRP) because of the overlap and potential synergies in planning and implementing a Landscape Revegetation Plan and a Site Rehabilitation Plan. The plan provides:

- An outline of measures to minimise the visual impacts of the ash placement areas and ensure long-term stabilisation of the site and compatibility with the surrounding landscape and land use; and
- An outline of measures to stabilise and rehabilitate the site.

6.7.2 Local Environmental Values, Vistas and Land Uses

6.7.2.1 Existing Soil Resources

Prior to construction works the Lamberts North site area comprised former coal workings. The spoil from underground and open-cut mining remains as an unconsolidated mixture of sand, silt, clay and rock fragments varying from gravel to boulder sized. Coal fines also occur either mixed into the matrix, or in homogeneous deposits. This spoil and overburden material will be used during construction to create ash placement foundations, berms and drainage systems.

Excess material will be stockpiled and used for permanent capping of batter and laybacks and to construct water detention and sediment containment structures. These activities will include the use of organic matter, topic soil with seedbank and mine spoil. Once capped, these areas will be revegetated with various species listed in Section 6.7.4.2.

6.7.2.2 Vegetation and Habitat

The objective for the rehabilitation and revegetation of the final landscape is to:

- Establish plant species and vegetation communities that are typical of the surrounding landscape and soil types; and
- Establish habitat for native animals.

Eight native vegetation communities have been mapped within a 10km of Lamberts North (Table 6-31). None of these communities are considered endangered. Community distribution is influenced by the underlying geology and soils.

Table 6-31 Vegetation communities mapped within 10km of Lamberts North (SKM, 2010)

The vegetation communities on Triassic Sandstone	The vegetation communities on the Permian sediment (Illawarra Coal Measures)
Silvertop ash Open Forest	Brittle Gum / Red Stringybark / Scribbly Gum Open Woodland
Sydney Peppermint Open Forest	Snow Gum Grassy Open Woodland
Brown Stringybark Open Forest	Ribbon Gum / Apple Box / Snow Gum Open Woodland
Scribbly Gum Open Woodland / Forest	
Thin-leaved Stringybark Open Forest	

Vegetation communities have also been mapped on the local soils of Cullen Bullen (King, 1992[4]). Vegetation associated with the Cullen Bullen landscape occurs as extensively cleared open-woodland.

Plant species are also typical of regional climates. The region generally has warm summers, cool to cold winters, and generally steady precipitation year-round. The mean annual rainfall at the nearest weather station (Lithgow) is 858 mm, with a maximum of 1346 mm (BoM). Onsite weather stations located on the ash placement areas and those within the power station confirm these regional climate data with a rainfall gradient between Lithgow and Lamberts North.

Original vegetation occurs as patches, with the most common tree species being Scribbly Gum (*Eucalyptus rossii*), Snow Gum (*Eucalyptus pauciflora* ssp. *pauciflora*), Brittle Gum (*Eucalyptus mannifera* ssp. *mannifera*), Broad-Leaved Peppermint (*Eucalyptus dives*), and Red Stringybark (*Eucalyptus macrorhyncha* ssp. *macrorhyncha*) (King 1992).

Shrubs of Wattle (*Acacia* spp.), Guinea flower (*Hibbertia* spp.) and Tea-tree (*Leptospermum* spp.) are also present.

Common species in the grass understorey include Tussock grass (*Poa labillardieri*), Blown grass (*Agrosits avenacea*), Wallaby grass (*Danthonia* spp.) and Kangaroo grass (*Themeda australis*).

Native vegetation has been cleared and re-seeded with radiata pine (*Pinus radiata*) over parts of the landscape.

Twenty-four threatened plant species have been recorded within a 10 km radius of the Lamberts North site, although none of these species have been recorded within the site itself (SKM, 2010).The vulnerable Capertee Stringybark (*Eucalyptus cannonii*), scheduled under the *Threatened Species Conservation Act 1995* (TSC Act) and the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) is locally abundant in the surrounding area (SKM, 2007).

No threatened, endangered or vulnerable animal species listed under the NSW *Threatened Species Conservation Act 199*5 (TSC 1995) have been recorded within Lamberts North. However, the EA (SKM, 2010) did identify several listed species within a 10km radius of the area. Some of these include the Spotted-tailed Quoll (*Dasyurus maculata maculata*) (also listed under EPBC Act), Eastern False Pipistrelle (*Falsistrellus tasmaniensis*), Eastern Bentwing Bat (*Miniopterus schreibersii*), Gang Cockatoo (*Callocephalon fimbriatum*), Painted Honeyeater (*Grantiella picta*), Brown Treecreeper (eastern ssp. *Climacteris picumnus victoriae*) and Glossy Black Cockatoo (*Calyptorhynchus lathami*).

[4] King, D.P 1992. *Soils Landscapes of the Wallerawang 1:100 000 Sheet* Report, Department of Conservation and Land Management ISBN No. 0 7305 9881 0

6.7.2.3 Visual Amenity

The site of the proposed ash placement areas is predominantly surrounded by forest, rural land and mined land, with Ben Bullen State Forest to the north and south, rural residential and village areas to the south east and Mount Piper Power Station located to the west of the proposed ash placement areas. The nearest town is at Blackmans Flat, approximately 1 km from the eastern boundary of the proposed Lamberts North site. Portland and Lidsdale are also located approximately 5 km west and 3 km south-east, respectively, from the proposed ash placement areas (SKM, 2010).

The topographic character of the surrounding area is undulating. It is expected that the placement areas would not be a dominant visual feature in the rehabilitated landscape as the majority of the ash placement areas would be hidden from view by the topography and vegetation screening (SKM, 2010).

From the line of sight analyses conducted –for the EA (SKM, 2010), it was found that:

- Areas to the west, south - west and south are likely to be screened by topography and dense vegetation;
- The proposed development is likely to be screened by topography and dense vegetation when viewing from sites along the Castlereagh Highway and major roads to the north; and
- The proposed development is likely to be viewed wholly or partially from sites located to the east and south-east of the proposed development.

The EA reported that the height of Lamberts North would be RL 980 m, and at various heights the ash placement areas would be visible from three locations in the surrounding area (known as sites 3, 5 and 6). The detailed design prepared for the Project shows a maximum RL of 960m. With the 20 m reduction in design height, the maximum height of the proposed ash placement areas that would likely be visible from the road at sites 5 and 6, would be 10m. Lamberts North is not predicted to be visible from site 3. Sites 5 and 6 are shown in relation to Lamberts North in Figure 3 and noted in Table 6-32

The Mount Piper Power Station is currently visible from both locations.

Table 6-32 Sensitive receivers with views to maximum levels of Lamberts North (SKM, 2010)

Location	Description	Distance from sensitive viewpoint to ash placement area	Comment
3	View from residential area at Blackmans Flat	1.2km from Lamberts North	Maximum Height of ash that would be visible from this location would be 10m of Lamberts North site. Mount Piper Power Station is also visible from this location
5	View from local road/Castlereagh Highway	2.6km from Lamberts North	Ash placement would be highly visible in the middle ground from the road. The area would protrude above the existing vegetation due to the undulating topography. Drivers traversing along Castlereagh Highway near this location would observe views of the ash placement areas to the west, however, road usage from local road is anticipated to be low. Mount Piper Power Station is visible from the middle ground from this location. Maximum height location visible from this location would be 30m
6	View from Wolgan Road	4km from Lamberts North	Maximum height of ash would be visible at this location would be 10m. Mt Piper Power Station is also visible from this location.

As part of the monitoring program for site rehabilitation at Lamberts North, monitoring will include visual observations from sites 3, 5 and 6 in the mid to later stages of the rehabilitation process, when trees have had a chance to become more established.

The monitoring program is further described in Section 6.7.5.

6.7.3 Rehabilitation of Lamberts North

6.7.3.1 Lamberts North Ash Repository

Revegetation and rehabilitation of Lamberts North will be undertaken once a final boundary of the ash formation has been established. The Lamberts North ash placement area will be structurally connected to the existing Area 1 ash repository. The structural connections will be based on dominant features developed to ensure a geotechnically stable land-formation, during the ash placement process and a structurally stable land formation post ash placement.

The dominant structural features used for ash placement are the batters of 1 in 4 slope and laybacks of 10 m so that at 10 m height intervals the batter lengths remain at 40 m. These structural features are then incorporated as baseline components for water management to the external form, whereby the layback performs with a permanent soil capping material as part of the surface water runoff design.

Successful site landscaping and rehabilitation is largely dependent upon several factors, such as soils, climate and the surrounding vegetation, which can provide a seed source for natural regeneration.

Rehabilitation is required to ensure that the ash placement site is integrated aesthetically and ecologically within the surrounding landscape following project completion. Lamberts North rehabilitation methods will take into consideration previous revegetation trials and include but not be limited to:

- Suitable species that can tolerate low soil fertility rates;
- Climatic conditions;
- Gradient of slope that enables rainfall to runoff safely;
- Successful planting during early establishment phase;
- Surface water management of site; and
- Species selection and plan establishment.

Native species endemic to the region will be used where practicable. Monitoring the results of site rehabilitation practices will represent a basic scientific revegetation trial that will to continue, to ensure both optimal cover and the long-term sustainability of the ash repository areas is achieved.

6.7.4 Management and Mitigation Measures

Objectives and scope for mitigation measures, responsibilities and implementation timeframes for rehabilitation measures are defined in this section of the plan. Table 6-33 provides performance objectives and performance criteria. The operation aspects are summarised in Table 6-34 .

6.7.4.1 Progressive rehabilitation

It is intended that rehabilitation will be progressive and will be initiated as soon as practicable, i.e. when it is safe and operations have ceased in the specific area. This will usually be upon the completion of the perimeter berms, batters and capping of each layer. Revegetation trials at existing Mount Piper Power Station (Area 1) will inform management practices at Lamberts North. Successful revegetation will require ongoing experimentation and adaptive management. Lessons learnt from elsewhere (e.g. DITR 2006) are recommended for trialling at Lamberts North with the best options subsequently applied.

The priority area for rehabilitation and revegetation to screen the works and final landscape is the east – north-east face of the ash placement. Rehabilitation and revegetation will be required on the other aspects to control erosion and initiate the growth of native species but is non-essential for screening. Revegetation through planting of native tube stock at the perimeter of Lamberts North may start from the commencement of operation.

6.7.4.2 Species selection and provenance

Preference will be given to pioneer or colonising species endemic to the region. Large growing or deep-rooted species will be avoided. Shrubs used on other sites for rehabilitation include species that may be direct seeded or planted such as:

- Australian blackthorn (*Bursaria spinosa*)
- White kunzia (*Kunzea ambigua*)
- Tea tree (*Leptospermum grandifolium, L. macrocarpum, L. myrtifolium, L. obovatum, L. polygalifolium*)
- Mountain mirbelia (*Mirbelia oxylobioides*)
- Box-leaf Wattle (*A. buxifolia*)

- Peach Heath (*Lissanthe strigosa*)
- Ploughshare Wattle (*A. gunni*)
- Showy Parrot-pea (*Dillwynia sericea*)
- Silver Wattle (*Acacia dealbata*)

Ground cover species may include:

- Blueberry flax lily (*Dianella revoluta*)
- Short hair plume grass (*Dichelachne micrantha*)
- Silvertop (Joycea *pallida*)
- Slender sword-sedge (*Lepidosperma gunnii*)
- Lomandra (*Lomandra confertifolia, L. glauca, L. fililformis, L. longifolia*)
- Bush rice grass (*Microlaena stipoides*)

Seed, cuttings, or slash will be collected from local sources.

6.7.4.3 Revegetation Strategy Plan

The revegetation strategy plan shall be developed using the following principles and recommendations:

The revegetation strategy would be based upon a successional approach utilising a variety of grasses and native shrub species. The functional approach to grass cover and tree planting and reduces the need to deep rip, sow trees on high batters and improve the quality of the capping material. The plan would provide an alternative to compost addition as a soil improver by using a staged method for increasing soil organic matter by planting annual grass species.

The aim of the revegetation plan is to establish a method (including procedures) is to achieve a permanent ground cover that conserves the soil and is sustained with minimal management intervention. To satisfy these aims the following primary factors are to be considered:

- Ground preparation and soil management;
- Surface water management; and
- Species selection (using a qualified expert) and plant establishment

Once the Primary Factors have been quantified, a strategy is prepared to;

- Develop a broad acre planting strategy on slopes at 1 to 4
- Use tree planting as a contour break on slopes
- Plant grasses to develop soil organic matter
- Establish native perennial grass species to facilitate for long term soil function (erosion control, soil health, nutrient cycling.

Management and mitigation measures are summarised below in Table 6-33.

Table 6-33 Objectives, References and Performance Criteria

Performance Target		
▪ Develop and reconstruct landscape to minimise the visual impacts of ash placement area by ensuring long term stabilisation of the site and compatibility with surrounding landscapes through revegetation.		
Performance Indicators		
▪ Site inspection records to confirm ash placement and compaction targets are being achieved; ▪ Evidence of a long-term water management plan that integrates the concepts of landscape revegetation and rehabilitation; ▪ Evidence of an established revegetation and monitoring program to meet short and long-term goals; and ▪ Physical coverage of exposed ash on all external batters and boundaries capped with suitable materials.		
References		
State legislation	**Standards /Codes**	**Other documentation**
▪ *Environmental Planning and Assessment Act 1979* (EP&A Act). ▪ *Protection of the Environment Operations Act 1997* (POEO Act). ▪ Project Conditions of Approval (09_0186) – D3 (e) and (f).	▪ Guidelines for using compost in Land Rehabilitation and Catchment Management. (DECC 2007).	▪ Mount Piper–Power Station Ash Placement Environmental Assessment Report, Chapter 8 - Ecology (SKM, August 2010) ▪ Mount Piper Station Ash Placement Project Environmental Assessment, Appendix E – Ecology (SKM, August 2010). ▪ Mine rehabilitation. Leading practice sustainable development program for the mining industry (DITR 2006) ▪ Recycled organics in mine site rehabilitation (Kelly 2006) ▪ Mount Piper Power Station Ash Placement Submissions Report (SKM, March 2011) ▪ Mount Piper Power Station Ash Placement Consistency Report (SKM, June 2012) ▪ Lamberts North Ash Placement Project CEMP (CDM-Smith, December 2012)
Key issues/ constraints/standards		
▪ The key issues include the visual impacts on nearby residents (Blackmans flat). ▪ The revegetation is designed to improve the visual amenity of finished surfaces, while binding the capping layer and preventing fugitive dust emissions from occurring. ▪ Effective placement will result in the development of a secure foundation that will provide long-term stability from landscaping and vegetation cover.		

Performance Target
The final landform generally blends in with the surrounding landscape and is stable

Table 6-34 Rehabilitation and revegetation measures

Aspect	Management and mitigation measures	Responsibility	Timing	Source/reference
1.	Landscape rehabilitation and revegetation shall be progressive, and will be initiated as soon as practicable and/or as after final capping.	Contractor	After completion of each area and final capping	D3 e (ii) (iv)
2.	Areas that have been capped will be defined on a plan in preparation for revegetation.	Contractor	Prior to revegetation in each area	D3 (f) (ii) (iv)
3.	The ash will be capped with a minimum of 0.75m mine overburden or other. 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.	Contractor	During capping	D3 (i) (ii)
4.	Erosion and sediment control measures will generally conform with, or exceed the relevant requirements of managing urban stormwater, soils and construction (Landcom, 2004).	Contractor	During capping	D3(i)(ii)
5.	Works, rehabilitation and revegetation will be concentrated on the north east face during the initial ash placement stages in order to screen operations and establish growing vegetation as quickly as possible.	Contractor	Initial placement activities	D3 (e) (i) D3 (f) (ii)
6.	Experimentation and adaptation of successful practices will be key strategies to manage the successful establishment of primary vegetation on batters and benches.	Contractor	As required	D3 (f) (ii)
7.	A revegetation strategy plan will be developed to establish a method to achieve permanent groundcover that conserves the soil and is sustained with minimal intervention. This will be Strategy will follow the principles and recommendations provided in Section 6.7.4.3 of this plan. Note: The revegetation strategy shall ensure that locally native species endemic to the Lithgow Local Government Area are used in revegetated areas (where possible and feasible depending on soil conditions). Species selection shall be carried out using a qualified expert i.e. Ecologist, botanist or agronomist.	Contractor	Within 12 first months of operation or prior to carrying out the first rehabilitation phase on Lamberts North, whichever comes first	D3 (e) (iii) (iv)
8.	New batters shall be rehabilitated as soon as practically possible using capping material sourced from onsite materials and stockpiles.	Contractor	After completion of each area and final capping	D3 (e) (ii)
9.	Concave slope profiles will be developed where possible to mimic natural slopes and minimise erosion.	Contractor	As part of slope and batter construction	D3 (i) (ii) D3 (f) (i) (ii)

Aspect	Management and mitigation measures	Responsibility	Timing	Source/reference
10.	The benches will be sloped inwards to minimise down slope run off and will have a rough surface to slow and spread water movement.	Contractor	As part of slope and batter construction	D3 f) (i), ii), iii)

6.7.5 Monitoring and Reporting

Landscape rehabilitation and revegetation will be monitored at a range of scales and with a range of techniques as described in Table 6-35. Reporting requirements are provided in Table 6-36.

Table 6-35 Monitoring requirements

No.	Monitoring measures	Responsibility	Timing	Source/ Reference
1.	A monitoring program will be developed in conjunction with the revegetation procedure (Table 6-33 #6) commence once the first revegetation area has been planted.	Contractor or Specialist consultant on behalf of EnergyAustralia NSW	After vegetation has been planted.	D3 (e) Iv), D3 (f) Iv, Revegetation procedure

Table 6-36 Reporting Requirements

No.	Reporting Requirement(s)	Responsibility	Timing	Source/Reference
1.	Revegetation and rehabilitation activities and progress will be included in the Monthly Environment Report once revegetation has been established.	Contractor	Monthly	OEMP Section 3.4
2.	The Annual Environmental Management Report will be submitted to the Secretary complete with landscape and revegetation progress assessed throughout the year where applicable.	EnergyAustralia NSW	Annually	E21

6.8 Waste Management Plan

6.8.1 Introduction

This Waste Management Plan is a Sub Plan of the OEMP. It seeks to address the specific requirements of the CoA relating to waste, and the Environmental Protection Licence (EPL) 13007 for the Mount Piper Power Station. The relevant CoA include D2 (g), E23, E24 and E25. It provides a framework for EnergyAustralia NSW, its contractors and vendors to manage waste and to minimise the potential for adverse impacts to sensitive receivers during the operation of the Project.

6.8.2 Overview

The waste hierarchy is a set of priorities for the efficient use of resources that under pins the Waste Avoidance and Resource Recovery Act 2001. The principals of waste avoidance, waste re-use, or waste recycling shall be adopted during the operational phases of the Project. The waste hierarchy recognises that some types of waste, such as hazardous chemicals cannot be safely recycled, and direct treatment or disposal is the most appropriate management option.

The EPL for the Mount Piper Power Station governs the waste that can be received, stored, treated, processed, reprocessed or disposed of at the Lamberts North Ash Repository.

- Waste generated from the operation of the ash placement activities may include:
- Used oils, tyres, rags, packaging, oil drums and discarded components associated with on-site vehicle maintenance; and
- Paper and associated stationery waste associated with office activity.

6.8.3 Management, mitigation and monitoring measures

This section provides waste objectives, performance criteria, legislation, and management and mitigation measures for implementation during operation. The following measures have been designed to ensure that potential impacts to the environment are minimised. Responsibilities are assigned for each mitigation measure to EnergyAustralia NSW and/or the Contractor.

Table 6-37 Objectives, References, and Performance Criteria

Objectives		
▪ To ensure waste at the Lamberts North Ash Repository is managed in accordance with the conditions of Environmental Protection Licence (EPL) 13007. ▪ To ensure waste generated on site is recycled or disposed of in accordance with this Sub Plan.		
Performance Criteria		
▪ No waste generated outside the premises (Mount Piper Power Station) is received at the premises for storage, processing, reprocessing or disposal, except as permitted by the licence. ▪ Evidence of a recycling system in use and site-generated waste being disposed of to an appropriate facility. ▪ Waste management details are recorded in the monthly environmental report.		
References		
State legislation	**Standards /Codes**	**Other Documentation**
▪ *Protection of the Environment Operations Act 1997 (POEO Act);* ▪ *Protection of the Environment Operations (Waste) Regulation 2005;* ▪ *Waste Avoidance and Resource Recovery Act 2001* ▪ *Contaminated Land Management Act 1997;* ▪ Mt Piper Environmental Protection Licence 13007; and ▪ CoA D2 (g), E23, E24, E25.	▪ Waste Classification Guidelines (DECC, 2008)	▪ *Mount Piper Station Ash Placement Project* Environmental Assessment Report Chapter 11- Assessment of other issues , August 2010 (SKM, 2010) ▪ *Mount Piper Station Ash Placement Submissions Report (SKM, March 2011)* ▪ *Mount Piper Station Ash Placement Consistency Report (SKM, June 2012)*
Key issue/ constraints ▪ Staff involved in Lamberts North operations shall be made aware of the waste management procedures outlined in the sub plan. Waste related documents and records are to reflect adherence to these protocols, thereby providing the foundations for the transparent approach to waste management. ▪ The Environmental Protection Licence (EPL) 13007 for Mount Piper Power Station is reviewed every 5 years or as required and updated accordingly. Mitigation measures provided in the following tables should be implemented in accordance with the most up to date EPL for that year. ▪ In addition, EnergyAustralia NSW may change, update or modify their existing Waste Management programs to suit current trends; in this case the contractor shall be notified of these changes if their existing practices are to be affected.		

Table 6-38 Mitigation and management measures

No.	Environmental measure	Responsibility	Timing	Source/Reference
1.	Unless authorised by EPL 13007, 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 13007.	EnergyAustralia NSW and its contractors	Ongoing	EPL - L5.1 E24
2.	EnergyAustralia NSW and the Contractor shall ensure that only wastes which are authorised under EPL 13007 are disposed of in at the ash repository. As at the date of this report, this includes: • 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 Virgin Excavated Natural Material (VENM) and Excavated Natural Material(ENM) shall be generated from within the Bathurst and Lithgow local government areas only or from other locations in New South Wales with approval from the consent authority.	EnergyAustralia NSW and its contractors	As required	E23
3.	Materials such as scrap metal, paper, cardboard generated on site, shall be processed within EnergyAustralia NSW existing waste regime which includes recycling.	Contractor/ EnergyAustralia NSW	As required	D2 (g)
4.	All cleared vegetation shall be mulched, chipped or re-used on-site for sediment filter fences, site rehabilitation or other uses, where appropriate.	Contractor/ EnergyAustralia NSW	As required	D2 (g)

Table 6-39 Reporting measures

No.	Monitoring measures	Responsibility	Timing	Source/Reference
1.	The Annual Environmental Management Report will outline waste streams placed in the Lamberts North Ash Repository.	EnergyAustralia NSW	Annually	E21

Section 7 References

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Appendix A – Water Quality Monitoring Parameters

Groundwater analytical schedule

Groundwater quality will be monitored for the parameters listed in Table 7-1 . Surface water quality will be monitored for the parameters listed in Table 7-2.

Table 7-1 Groundwater field parameters and analytical schedule

Description	Parameters
Groundwater Quality monitoring	Metals: As, Ba, B, Cd, Ca, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, K, Se, Ag, Na, Zn, Anions: fluoride (F), Cl, SO4, Physical: total alkalinity, Phenolphthalein Alkalinity, conductivity, pH, TDS , depth
Groundwater flow	This can be used as an alternative method to the groundwater model, for calculating the flow rates of the two aquifers: Groundwater level contours and seepage velocity using the equation: v=ki/n where: k = hydraulic conductivity i = hydraulic gradient n = effective porosity
Groundwater connectivity	Measure: ▪ total bore depth ▪ recharge during sampling

Surface water analytical schedule

Table 7-2. Surface water quality monitoring parameters

Category	Analyte
Field /physical parameters	▪ Total Alkalinity ▪ Phenolphthalein Alkalinity ▪ pH ▪ Total Dissolved Solids ▪ Bicarbonate alkalinity ▪ Total Phosphorous ▪ Turbidity ▪ Dissolved Oxygen ▪ Nitrogen ▪ Total Kjeldahl Nitrogen (TKN)
Anions	▪ Fluoride ▪ Chloride ▪ Sulfate (SO_4) ▪ Nitrite and Nitrate
Metals	▪ Aluminium ▪ Arsenic ▪ Barium ▪ Boron ▪ Cadmium ▪ Chromium ▪ Copper ▪ Iron ▪ Lead ▪ Magnesium ▪ Manganese ▪ Mercury ▪ Molybdenum ▪ Nickel ▪ Potassium ▪ Selenium ▪ Silver ▪ Sodium ▪ Zinc

Appendix B - Baseline Water Quality

Baseline data – groundwater

The existing baseline groundwater quality criteria approved for the existing Mount Piper Ash Repository has also been adopted for proposed ash placement works at the site. This criteria is based on locally derived monitoring data from Neubecks Creek (WX22) and the Groundwater Collection Basin (Huons Void), and ANZECC (2000) guideline trigger values for the protection of freshwater aquatic ecosystems, and apply as assessment criteria to the receiving waters (Table 7-3) (Aurecon, 2011). Other baseline parameters are provided in Table 7-4 .

Table 7-3: Assessment Criteria – Local baseline and ANZECC (2000) Trigger values for Groundwater receiving waters and Neubecks Creek (Aurecon, 2011)

Element	Groundwater Collection Basin Pre-placement 90th Percentile	Groundwater ANZECC or Local Guidelines #	Neubecks Creek at WX22 Pre-placement 90th Percentile	Surface Water ANZECC or Local Guidelines #
General Water Quality (mg/L)				
pH		6.5 – 8.0	6.7-7.8	6.5 – 8.0
Cond/ (uS/cm)	1576	2600^	894	2200
TDS	1306	2000	580	1500^
CI	31.5	350	22	350+
SO4	824	1000	332	1000 ++
Trace Metals (mg/L)				
As	0.001	0.024	<0.001	0.024
Ag	<0.001	0.00005	-	0.00005
Ba	0.037	0.7	0.029	0.7+++
Be	0.001	0.1	<0.001	0.1
B	0.244	0.37	0.09	0.37
Cd	0.002	0.002	<0.001	0.00085
Cr	0.001	0.005	<0.001	0.002
Cu	0.001	0.005	<0.001	0.0035
F	0.435	1.5	0.338	1.5+++
Fe	0.664	0.664	0.281	0.3+++
Hg	<0.0001	0.00006	-	0.00006
Mn	5.704	5.704	0.72	1.9
Mo	0.001	0.01	<0.001	0.01+
Ni	0.356	**0.5509**	0.005	0.017
Pb	0.001	0.005	<0.001	0.005
Se	0.002	0.005	<0.001	0.005
Zn	0.908	**0.908**	0.061	**0.116**

Notes: * High detection limits used when determining the baseline concentrations. ^ 2000 mg/L TDS/0.77 for groundwater; 0.68 x 2200 uS/cm low land river conductivity protection of aquatic life. # ANZECC (2000) guidelines for protection of freshwaters, livestock, irrigation water or drinking water. Local guideline based upon 90th percentile pre-brine placement (**shown in bold**). Cadmium, Chromium, Copper, lead, nickel and zinc adjusted for effects of hardness: Current Ca, Mg in GCB 147, 113 mg/L: in Neubecks Creek 19.7, 11.8 mg/L, respectively. + Irrigation water moderately tolerant crops; irrigation. Note: Molybdenum drinking is 0.05 mg/L ++ Livestock +++ drinking water.

In accordance with CoA D (b) (ii), the location of groundwater monitoring wells, and depth in the project area is provided in Table 7-4 .

Table 7-4 Groundwater monitoring bore data: location, water depth and available flow

Well ID	Easting	Northing	Ground Elevation (m AHD)	Top of Casing (m AHD)	Date Gauged	Gauged Well Depth (m BTOC#)	Gauged SWL* (m BTOC#)	SWL* (m AHD)
D1	225603.983	6305355.12	911.97	912.40	1/05/1989	11.20	5.1	907.3
D8	226000.54	6305241.889	No information available for 1989					
D10	225241.45	6304897.79	923.90	924.32	28/9/1989	22.2	16.0	907.90
D11	225312.6	6305090.05	929.03	929.48	28/9/1989	27.0	21.76	907.72
D15	225029.6	6304670.2	940.27	940.9	20/07/2012	31.35	26.25	914.65
					28/07/2012	30.44	26.61	914.29
					12/11/2012	30.85	26.01	914.89
D16	225092.4	6304252.6	921.17	921.88	20/07/2012	35.33	12.17	909.71
					28/07/2012	34.98	12.01	909.87
					12/11/2012	35.58	12.26	909.62
D17	225456.9	6304437.8	935.8	936.55	20/07/2012	34.89	26.77	909.79
					28/07/2012	34.50	26.75	909.80
					12/11/2012	34.88	26.93	909.62
D18	225280.0	6304710.6	932.26	932.86	20/07/2012	-	27.26	905.60
					28/07/2012	44.16	32.66	900.20
D19	225791.4	6304901.0	916.95	917.62	20/07/2012	12.64	7.81	909.81
					24/07/2012	12.62	7.90	909.72
					13/11/2012	12.74	7.84	909.78

Baseline data - surface water

Table 7-5.Baseline local/ ANZECC (2000) trigger values for groundwater receiving waters and Neubecks Creek that have been compared LDP01 and WX22

Indicator	ANZECC / ARMCANZ trigger value *90% level of protection[5]	LMP01 (EnergyAustralia NSW Licenced Monitoring Point)[1]	WX22 (Downstream of Mt Piper Ash Repository and Huon Gully)[1]
pH	6.5 – 8.0	7.39	7.26
Conductivity (µS.cm-1)	30 - 350	404.56	333.86
Alkalinity (as CaCO3 mg/L)		70.71	47.55
Chloride (mg/L)[6]		17.51	12.78
Sulphate (mg/L)		106.40	90.02
Fluoride (mg/L)		0.220	0.22
Sodium (mg/L)		21.30	19.37
Potassium (mg/L)		6.61	5.42
Calcium (mg/L)		30.35	24.08
Magnesium (mg/L)		16.38	13.40
Arsenic (mg/L)	0.0013	0.008	0.006
Silver (mg/L)	0.00005	0.002	0.002
Barium (mg/L)		0.032	0.030
Boron (mg/L)	0.37	0.066	0.080
Cadmium (mg/L)	0.0002	0.001	0.001
Chromium (mg/L)	0.001	0.003	0.007
Copper (mg/L)	0.0014	0.008	0.004
Iron (mg/L)		0.105	0.117
Mercury (mg/L)	0.00006	0.000	0.001
Manganese (mg/L)	1.9	0.102	0.513
Molybdenum (mg/L)		0.004	0.001
Nickel (mg/L)	0.011	0.005	0.004
Lead (mg/L)	0.0034	0.002	0.002
Selenium (mg/L)	0.005	0.001	0.001
Zinc (mg/L)	0.008	0.039	0.042

[1] Data obtained from Environmental Assessment Appendix D- Hydrology and Water Quality technical report, (SKM 2010b).

Note LMP01 was removed from the Environmental Protection Licence 13007 in January 2019 as part of a licence review conducted by the EPA. EnergyAustralia NSW will continue to monitor LMP01 as part of the Groundwater Management and Monitoring Plan.

[5] Trigger values derived from the 'slightly - moderately disturbed' category in ANZECC (2000), chapter 3.

[6] Chloride Ion does not have any trigger values in the ANZECC Guidelines; however, it is regarded as an indicator of brine leachates.

Appendix C - Conditions of Approval Cross Reference Table & Statement of Commitments

Table 7-6. OEMP Conditions of Approval cross-reference table demonstrating where each CoA has been addressed.

CoA Ref	Condition	Section Reference
	Operational Environmental Management Plan	
D2.	The Proponent shall prepare and implement an Operational Environmental Management Plan (OEMP) to detail an environmental management framework, practices and procedures to be followed during operation of the project. The Plan shall be prepared in consultation with Lithgow City Council and relevant government agencies, and shall be consistent with the Guideline for the Preparation of Environmental Management Plans (DIPNR 2004) and shall include, but not necessarily be limited to:	This OEMP document
a)	identification of statutory and other obligations that the Proponent is required to fulfil in relation to operation of the project, including approvals, licences, approvals and consultations;	Section 4
b)	a description of the roles and responsibilities for relevant employees (including contractors) involved in the operation of the project;	Section 3.2
c)	overall environmental policies and principles to be applied to the operation of the project;	Section 3.1 describes the EMS for the project. The EMS includes an Environmental Policy which can be provided upon request. Environmental objectives, performance criteria, targets and legislation and guidelines are provided in each Sub Plan.
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;	See Section 6.1 Each sub plan (Section 6) provides objectives, performance indicators, and monitoring measures by which environmental performance can be measured, reviewed, and improved if required.

e)	management policies to ensure that environmental performance goals are met and to comply with the conditions of this approval;	As described in Section 3.1, an EMS will be implemented throughout the life of the project. The EMS shall include the minimum requirements as outlined in this plan, plus a suite of Contractor processes, procedures and plans for project aspects, prepared to ensure compliance with the Project Approval. EMS aspects such as those described in Section 3 'Environmental Planning Framework' will ensure environmental performance goals are met through the implementation of the following policies: project inductions, training, monitoring, inspections, audits, management of non-conformances, incidents and complaints.
f)	the environmental monitoring requirements outlined under conditions E12 to E18 inclusive;	Each sub plan provides monitoring requirements, as follows: ▪ Noise –Section 6.3 ▪ Groundwater - Section 6.4 ▪ Soil and Surface Water - Section 6.5 ▪ Air quality - Section 6.6 ▪ Landscape rehabilitation - Section 6.7 ▪ Waste- Section 6.8 ▪ Section 5 outlines the Environmental Monitoring program
g)	details of waste management including reuse and/or recycling of waste material, to minimise the need for treatment or disposal of those materials outside the site;	Waste management sub plan (Section 6.8)
h)	specific consideration of relevant measures to address any requirements identified in the documents referred to under conditions A1(b) and A1(d) of this approval; and	This OEMP. Reference documents considered during the preparation of this document are provided in Section 1.3 and referenced throughout the document.
i)	the additional requirements of this approval.	Through-out this OEMP document.
	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.	This plan shall be submitted no later than 29 March 2013
	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.	Noted

D3	As part of the OEMP for the project, required under condition D2 of this approval, the Proponent shall prepare and implement the following Management Plans:	
D3 (a)	**Operational Noise Management Plan**	
D3 (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 the EPA and include, but not necessarily be limited to	Section 6.3 Noise Management and Monitoring Plan Evidence of consultation with EPA provided in Appendix E and Table 3-3
I	identification of activities that will be carried out in relation to the project and the associated noise sources;	Section 6.3.3
ii	identification of relevant sensitive receivers and the applicable criteria at those receivers commensurate with the noise limit specified under condition E7 of this approval;	Table 6-4 (1) Section 6.3.2 Figure 3 Sensitive receiver locations
iii	noise monitoring procedures (as referred to in condition E12 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 EA;	Table 6-5 Table 6-6
iv	details of management methods and procedures that will be implemented to control individual and overall noise emissions from the site during operation, including the feasibility of noise reducing benching;	Table 6-3 Table 6-8
v	procedures to ensure that reasonable and feasible noise mitigation measures are applied during operation of the project and procedures and corrective actions to be undertaken if non-compliance against the operational noise criteria as detailed in condition E7 is detected at the sensitive receivers; and	Table 6-3 Table 6-8
vi	provisions for periodic reporting of results to the EPA as per condition B8.	Table 6-7
D3 (b)	**Groundwater Management Plan**	
D3 (b)	A Groundwater Management Plan to detail measures to mitigate and manage groundwater impacts. The Plan shall be prepared in consultation with WaterNSW and include, but not necessarily be limited to:	Section 16.4 Groundwater Management and Monitoring Plan Evidence of consultation with EPA provided in Appendix E and Section 3.3.3 Table 6-33
i)	consideration of the revised updated groundwater model as per condition B2;	Section 6.4.1.2 Groundwater Modelling Condition B2 refers to updating the groundwater model for Lamberts South. This will be a separate project to Lamberts North, therefore is not applicable to this project.
ii)	baseline data on groundwater quality (including Huons Creek), Location of groundwater monitoring wells, depth and available flow of groundwater in the project area;	Appendix B, Table 7-5, Figure 3 and Appendix B, Table 7-4

iii)	identification of potential sources of water pollutants and management measures;	Potential contaminant sources – Section 6.4.1.3 Management measures - Table 6-11 Reporting - Table 6-17
iv)	groundwater assessment criteria including trigger levels for remedial measures;	Section 6.4.3.2 Section 6.4.1.4 Contingency Plan Appendix A, Table 7-3
v)	a contingency plan for events that have the potential to pollute or contaminate groundwater sources of water. The plan shall include remediation actions and communication strategies (including notification of potentially affected nearby bore users) for the effective management of such an event to prevent discharge of these pollutants from sources within the project area;	Table 6-15 Section 6.4.1.4 Contingency Planning Table 6-16 Investigation protocol
vi)	a monitoring program as per condition E15 for groundwater connectivity, water levels, groundwater flow and water quality over the short and long term that includes upstream and downstream locations. The program shall continue for a minimum of five years following final capping and landscaping;	Section6.4.3 and Appendix B Section 5- Table 5-1 Environmental Monitoring
vii)	a protocol for the investigation of identified exceedances of the groundwater impact assessment criteria; and	Table 6-16 Section 6.4.3 Table 6-11 and 6-13 Groundwater monitoring program
viii)	provisions for periodic reporting of results to the WaterNSW as per condition B8.	Table 6-17
D3 (c)	**Soil and Surface Water Management Plan**	**Section 6.5** Soil and Surface Water Management Plan
D3 (c)	As part of the OEMP for the project, the Proponent will prepare a Soil and 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 WaterNSW and DPI (Fisheries). The Plan shall include, but not necessarily be limited to:	Section 6.5 Soil and Surface Water Management Plan Evidence of consultation with NOW DPI(fisheries) and EPA provided in Appendix E and Section 3.3.3
i.	baseline data on the surface water quality and available flow in Neubecks Creek and Lamberts Gully Creek;	*Neubecks Creek*: Table 7-5 Appendix B - Baseline Water Quality of the OEMP. *Lamberts Gull*y: No longer exists refer to submission report June 2012 for updated information
ii.	water quality objectives and impact assessment criteria for Neubecks Creek and Lamberts Gully Creek;	Appendix A, Table 7-2, Table 6-18 objectives, references and monitoring measures

iii.	identification of the operation activities that could cause soil erosion or discharge sediment or water pollutants from the site;	Section 6.5.2, 6.5.3 Table 6-19
iv.	a description of the management controls 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;	Table 6-20
v.	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);	Table 6-20 (8)
vi.	details of the water management system including separation of clean and contaminated/polluted water flows, provisions for the treatment, recycling/reuse and/or discharge of flows;	Section 6.5.3.3
vii.	site water balance including water usage for ash placement, sources of water and quantity of run-off generated;	Section 6.5.3.1, 6.5.3.2, 6.5.3.3
viii	details of the lining for the surface water collection ponds;	Section 6.5.3.2 Table 6-20 (6)
ix	measures to minimise potential surface water infiltration;	Section 6.5.3.3
x	a flow and water quality monitoring program for Neubecks Creek and Lamberts Gully Creek that includes discharge points, upstream and downstream locations as per condition E16 and limits for identified pollutants;	Table 6-21
xi	specified remedial actions and contingency plans to mitigate any water quality exceedances on receiving waters including identified trigger levels for remedial measures or the activation of contingency plans; and	Table 6-23 Section 6.5.3.5
xii	Provisions for periodic reporting of results to the DPI (Fisheries) and WaterNSW as per condition B8	Table 6-23
D3 (d)	**Air Quality Management Plan**	
D3 (d)	As part of the OEMP for the project, required under condition D2 of this approval, the Proponent shall prepare and implement 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 NSW Health and the EPA and include, but not necessarily be limited to:	Section 6.6.6 Air Quality Management Plan Evidence of consultation with EPA provided in Appendix E and Section 3.3.3, Table 3-3
i.	baseline data on dust deposition levels;	Section 6.6.6.1 AQMMP
ii.	air quality objectives and impact assessment criteria;	Section 6.6.6.1 and Table 6-27 Section 6.6.6 AQMP
iii.	an assessment of alternative methods of ash placement to minimise the exposure of active placement areas to prevailing winds;	Table 6-29 (3) (7) AQMMP
iv.	mitigation measures to be incorporated during ash placement activities, haulage, etc;	Table 6-25 and Table 6-26 AQMMP
v.	an operating protocol for the ash placement irrigation system including activation rates, application rates and area of coverage and means of dealing with water shortages;	Section 6.6.4.1 Table 6-25 , (1) **Table 6-26** AQMMP

vi.	detail how ash placement moisture levels will be maintained;	Section 6.6.4.1 and Table 6-25 (13-15) AQMMP
vii.	a contingency plan to deal with high winds and dust suppression;	Table 6-25 (5,6) and Table 6-29 (1-7) AQMMP
viii.	a protocol for the investigation of visible emissions from the ash placement area;	Table 6-25 (7, 8) and Table 6-29 (6) (1-7) Table 6-29 (3) AQMMP
ix.	a response plan to address exceedances in visible emissions including PM10, TSP and deposited dust from the ash placement areas;	Table 6-29 (4) AQMMP
x.	an air quality monitoring program as referred to in condition E18 of this approval including identified air quality monitoring locations (including monitoring at sensitive receivers) and meteorological monitoring to predict high wind speed events;	Section 6.6.6, Figure 3 Table 6-28 AQMMP
xi.	provisions for periodic reporting of results to the EPA as per condition B8; and	Table 6-30 (4) AQMMP
xii.	a protocol for suppressing dust emissions within licence limits under normal and adverse weather conditions at stages of the ash placement process.	Table 6-26 AQMMP
D3 e)	**Landscape and Revegetation and Site Rehabilitation**	
D3 e)	A Landscape/Revegetation Plan to outline measures to minimise the visual impacts of the ash placement areas and ensure the long-term stabilisation of the site and compatibility with the surrounding landscape and land use. The Plan shall include, but not necessarily be limited to:	Section 6.7 Landscape Revegetation and Rehabilitation combined reports.
i.	identification of design objectives and standards based on local environmental values, vistas, and land uses;	Section 6.7.2 Table 6-33
ii.	identification of the timing and progressive implementation of revegetation works for ash placement areas as they are completed, including short-term and long-term goals including landscape plans;	Section 6.7.4.1 Table 6-34
iii.	A schedule of species to be used in revegetation, including the use of local native species in revegetation works selected by a qualified expert to ensure the rehabilitation works do not compromise the long-term integrity of the capping; and	Section 6.7.4.2 Table 6-30
iv.	Procedures and methods to monitor and maintain revegetated areas during the establishment phase and long-term.	Section 6.7.5 Table 6-35
D3 f)	**Site Rehabilitation Management Plan**	
D3f	A Site Rehabilitation Management Plan to outline measures to stabilise and rehabilitate the site following project completion. The Plan shall be prepared in consultation with the SCA.	Section 6.7 Landscape, revegetation and rehabilitation plan Evidence of consultation with WaterNSW provided in Appendix E and Section 3.4 Table 3-3
i.	Reinstatement of geomorphologic stable drainage lines on the rehabilitated areas and a timeframe for rehabilitation;	Section 6.7.4.1 Table 6-33
ii.	Restoration, rehabilitation and revegetation of the project's site;	Section 6.7.3 Section 6.7.4 Table 6-34

iii.	Measures to control water pollutants from rehabilitated areas; and	Section 6.7.4 Table 6-33
iv.	A program and timeframe for monitoring rehabilitated areas.	Section 6.7.5 Table 6-35 Table 6-33 Table 6-36
D2 g)	**Waste Management**	
D2 g)	Details of waste management including reuse and/or recycling of waste material, to minimise the need for treatment or disposal of those materials outside the site;	Section 6.8 Waste Management Plan Table 6-37 . Table 6-37 , Table 6-38 , Table 6-39 .
	During operations	
	Operational Hours	
E1	Operational activities associated with the project shall only be undertaken from 6.00 am to 8.00 pm Monday to Friday and 6.00am to 5.00pm Saturday and Sunday.	Section 2.2.1
E2.	Operations outside the hours stipulated in condition E1 of this approval are only permitted in the following emergency situations:	As above
a)	where it is required to avoid the loss of lives, property and/or to prevent environmental harm; or	As above
b)	breakdown of plant and/or equipment at the ash placement areas or the Mount Piper Power Station and the proposed Mount Piper Power Station Extension project with the effect of limiting or preventing ash storage at the power station outside the operating hours defined in condition E1; or	As above
c)	a breakdown of an ash haulage truck(s) or the conveyor preventing haulage during the operating hours stipulated in condition E1 combined with insufficient storage capacity at the Mount Piper Power Station including the proposed Mount Piper Power Station Extension to store ash outside of the project operating hours; or	As above
d)	in the event that the Australian Energy Market Operator (AEMO), or a person authorised by AEMO, directs the Proponent (as a Licencee) 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 Mount Piper Power Station to allow for the ash to be stored.	As above
	In the event of conditions E2b) or E2c) arising, the Proponent is to take reasonable and feasible measures to repair the breakdown in the shortest time possible.	As above
E3	In the event that an emergency situation as referred to under condition E2b) or E2c) 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:	Section 2.2.1
a)	the dates and a description of the emergency situations;	As above
b)	an assessment of reasonable and feasible mitigation measures to avoid recurrence of the emergency situations;	As above
c)	identification of a preferred mitigation measure(s); and	As above
d)	timing and responsibility for implementation of the mitigation measure(s).	As above
	The report is to be submitted to the Secretary within 60 days of the second emergency situation occurring. The Proponent shall implement reasonable and feasible mitigation measures in accordance with the requirements of the Secretary.	As above

<table>
<tr><td>E4.</td><td>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 E1 of this approval and keep a log of such operations.</td><td>As above</td></tr>
<tr><td>E5</td><td>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 E1 of this approval.</td><td>As above</td></tr>
<tr><td>E6</td><td>The Proponent shall notify: nearby sensitive receivers (as defined in the Operational Noise Management Plan required under condition D3(a) 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 E1 of this approval.</td><td>Section 2.2.1

Table 6-3 (22)</td></tr>
<tr><td>E7</td><td>The cumulative operational noise from the ash placement area and ash haulage activity shall not exceed the following $L_{Aeq\ (15\ minute)}$ dB(A):
<table>
<tr><th>Location</th><th>Day (7am to 6pm)</th><th>Evening (6pm to 10pm)</th><th>Night (10pm to 7am)</th></tr>
<tr><td>All private sensitive receivers within the township of Blackmans Flat</td><td>42</td><td>38</td><td>35</td></tr>
<tr><td>All other sensitive receivers</td><td>42</td><td>38</td><td>35</td></tr>
</table>
This noise criteria set out above applies under meteorological conditions except for any of the following:
(a) wind speed greater than 3 meter/second at 10 meters above ground level;
(b) stability category F temperature inversion conditions and wind speed greater than 2 meters /second at 10 meters above ground level; and
(c) stability category G temperature inversion conditions.

This criteria does not apply where the proponent and an affected landowner have reached a negotiated agreement in regard to noise and a copy of that agreement has been forwarded to the Secretary and the EPA.</td><td>Section 6.3.5.2 and
Table 6-4

Section 6.3.5.3

Section 6.3.5.2</td></tr>
<tr><td>E8</td><td>To determine compliance with the $\mathbf{L_{Aeq\ (15\ minute)}}$ noise limits the noise monitoring equipment must be located at the most affected point:
(a) within 30 meters of a dwelling facade where any dwelling on the property is situated more than 30 meters from the property boundary that is closest to the premises; or
(b) approximately on the boundary where any dwelling is situated 30 meters or less from the property boundary that is closest to the premises.</td><td>Section 6.3.5.4

Table 6-5</td></tr>
</table>

E9	For the purposes of monitoring noise from the premises to determine compliance with the noise limits: ▪ Class 1 or 2 noise monitoring equipment as defined by AS IEC61672.1- 2004 and ASIEC61672.2-2004, or other noise monitoring equipment accepted by the EPA in writing, must be used; ▪ the modification factors in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment; ▪ the meteorological data to be used for determining meteorological conditions is the data recorded by the meteorological weather station at the premises; and ▪ stability category temperature inversion conditions are to be determined by the sigma-theta method referred to in Part E4 of Appendix E to the NSW Industrial Noise Policy.	Section 6.3.5.4 Table 6-5
E10	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 placement areas where feasible.	Table 6-3
	Operational Noise Review	Section 6.3.5
E11	Within 60 days of the commencement of operation of the project, unless otherwise agreed to by the Secretary, the Proponent shall submit to the Secretary and **Operational Noise Review** to confirm the operational noise impacts of the project. The Operational Noise Review shall be prepared in consultation with the EPA. The review shall: (a) identify the appropriate operational noise objectives and levels for sensitive receivers; (b) describe the methodologies for noise monitoring, including the frequency of measurements and location of monitoring sites; (c) document the operational noise levels at sensitive receivers as ascertained by the noise monitoring program; (d) assess the noise performance of the project against the noise criteria specified in E7 of this approval and predicted noise levels as detailed in the report referred to under condition A1(b) of this approval; and (e) provide details of any entries in the Complaints Register relating to noise impacts. Where monitoring indicates noise levels in excess of the operational noise criteria specified in condition E7 of this approval, the Proponent shall prepare a report as required by condition E13 of this approval.	This commitment has been included in the OEMP and will be complied with in accordance with the CoA. See Table 6-5
	Ongoing Operational Noise Monitoring	Section 6.3.5
E12	The Proponent shall prepare and implement an Operational Noise Monitoring Program to assess compliance against the operational noise criteria stipulated in condition E7 of this approval, throughout the life of the project. The noise monitoring program shall be prepared in consultation with the EPA and must include the proposed frequency of monitoring and as a minimum must include monitoring when there are any significant changes in work locations or processes.	Section 6.3 Noise Management and Monitoring Plan Table 6-5 Evidence of consultation with EPA provided in Section 3.3.3 (Table 6-33) and Appendix E
	The noise monitoring program shall be prepared in accordance with the requirements of the New South Wales Industrial Noise Policy (EPA, 2000) and shall include, but not be limited to:	Section 6.3.5.1

a)	monitoring at Lamberts North, Lamberts South and Blackmans Flat during ash placement activities; and	Table 6-5 Lamberts South is a separate project and will have a separate OEMP, refer to submissions report June 2012
b)	monitoring of the effectiveness of any noise mitigation measures implemented under condition D3(a) of this approval, against the noise criteria specified in condition E7 of this approval.	Table 6-5
	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. The monitoring program shall form part of the Operational Noise Management Plan referred to in condition D3 (a) of this approval.	Table 6-7
E13.	Where noise monitoring including as required by condition E11 and E12 of this approval identifies any non-compliance with the operational noise criteria specified under condition E7 of this approval the Proponent shall prepare and submit to the Secretary a report including, but not limited to: a) an assessment of reasonable and feasible physical and other mitigation measures for reducing noise at the source; 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). e) 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 criteria specified under condition E7, unless otherwise agreed to by the Secretary. The Proponent shall implement reasonable and feasible mitigation measures in accordance with the requirements of the Secretary.	See Table 6-5 for reporting to be undertaken in the event of a non-compliance
E14.	If after the implementation of reasonable and feasible source controls, as identified in the report required by condition E13, the noise generated by the project continues to exceed the criteria stipulated in condition E7 the Proponent shall implement at the receiver reasonable and feasible noise mitigation measures, such as double glazing, insulation, air conditioning and or other building acoustic treatments, in consultation with and with the agreement of the affected landowner.	Table 6-8
E15	**Groundwater Monitoring**	

E15.	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 the 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 operation of the project and for a minimum of 5 years following project completion and include, but not be limited to:	Section 6.4 Groundwater Management and Monitoring Plan Groundwater Monitoring program - Section 6.4.3 Evidence of consultation with WaterNSW provided in Appendix E and Section 3.3.3 Table 3-3 Procedures and protocols – Table 6-14 Monitoring Parameters – Appendix A Methods of analysis- Table 6-14
a)	monitoring at established bore sites (or replacement bore sites in the event that existing sites are damaged or lost) as described in the Groundwater Management Plan as per condition D3(b); and	Table 6-13 Monitoring Schedule Table 6-4 (1) Replacement bore sites - Table 6-16
b)	a schedule for periodic monitoring of groundwater quality, depth and flow at monitoring sites, at an initial frequency of no less than once every month for the first 12 months of operation.	Groundwater Monitoring program (Table 6-13) Table 6-14 (4)
	The monitoring program shall form part of the Groundwater Management Plan referred to in condition D3(b) of this approval.	Section 6.4 Groundwater Management and Monitoring Plan
	Surface Water Quality Monitoring	Section 6.5 Soil and Surface Water Management Plan
E16.	The Proponent shall prepare and implement a surface water quality monitoring program to monitor the impacts of the ash placement activities on Neubecks Creek and Lamberts Gully. The Program shall be developed in consultation with the DPI (Fisheries) 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:	Surface water Monitoring program has been provided in Section 5 Table 5-1 Evidence of consultation with DPI (Fisheries) and WaterNSW provided in Appendix E and 3.3.3 (Table 3-3)
a)	monitoring at the existing water quality monitoring sites as described in the document referred to under condition A1b);	Section 6.5.5 Table 6-21 (3-4)
b)	monitoring at surface water discharge points from Lamberts Gully Creek;	N/A refer to Submission Report dated June 2012
c)	monitoring at surface water discharge points into Neubecks Creek;	Table 6-21
d)	wet weather monitoring with a minimum of two events recorded within the first 12 months operation of the project; and	Table 6-21

e)	a schedule for periodic monitoring of surface quality at 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, monitoring of dissolved oxygen, turbidity, sulphates, salinity, boron, manganese, iron chloride, total phosphorus and total nitrogen.	Table 6-21 Table 5-1
E17	**Hydrological Monitoring Program**	
E17	A Hydrological Monitoring Program to assess and quantify the impacts and effectiveness of the transformed section of Huons Creek into a sub-surface drainage line in consultation with the DPI (Fisheries). Monitoring is to be undertaken for a period of five (5) years upon completion of the creek transformation. The program must include sampling for identified pollutants before and after the transformation works and include a sampling site downstream of the sub-surface section of Huons Creek. In the first 12 months following completion of the transformation, monitoring is to be undertaken at least every three (3) months upon completion of the creek transformation and after any heavy wet weather event. The monitoring program shall form part of the Soil and Surface Water Management Plan referred to in condition D3(c) of this approval.	Hydrological monitoring has been incorporated into the groundwater model and has been included in the groundwater management plan for reasons stated in the last three paragraphs of Section 6.4.1. Table 6-14 (1)
E18	**Air Quality Monitoring**	6.6 Air Quality Management Plan
E18	The Proponent shall prepare an Air Quality Monitoring Program, in consultation with the EPA and NSW Health. The Program shall include, but not necessarily be limited to, monitoring for dust. Monitoring sites shall be identified as per condition D3 (d). The air quality monitoring program shall be ongoing for the life of the project, and during final rehabilitation and stabilisation of the site.	Section 6.6.6 Air Quality Monitoring Program. Evidence of consultation with EPA and NSW Health has been provided in Appendix E and Section 3.3.3 Table 3-3 Table 6-28 AQMMP
	Environmental Incident Reporting	
E19	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.	Section 3.9.2
E20	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 E19 of this approval, within such period as the Director- General may require.	Section 3.9.3
E21	**Annual Performance Reporting**	
E21.	The Proponent shall, throughout the life of the project, prepare and submit to the Secretary, an Annual Environmental Management Report (AEMR). The AEMR shall review the performance of the project against the Operational Environmental Management Plan (refer to condition D2 of this approval) and the conditions of this approval.	The AEMR has been addressed in each sub plan "Reporting" table (section 6)
E22	**Independent Environmental Auditing**	
E22	Within 12 months of commencement of operation of Lamberts North and Lamberts South and then as may be directed by the Secretary, the Proponent shall commission an independent person or team to undertake an Environmental Audit of the project. The independent person or team shall be approved by the Director-General prior to the commencement of the Audit. The Audit shall:	Section 3.7.1
a)	be carried out in accordance with ISO 19011:2002 - Guidelines for Quality and or Environmental Management Systems Auditing;	Section 3.7.1

b)	assess compliance with the requirements of this approval, and other licences and approvals that apply to the project;	Section 3.7.1
c)	assess the environmental performance of the project against the predictions made and conclusions drawn in the documents referred to under condition A1 of this approval;	Section 3.7.1
d)	review the effectiveness of the environmental management of the project, including any environmental impact mitigation works; and	Section 3.7.1
e)	review the adequacy of the Proponent's response to any complaints made about the project identified in the Complaints Register.	Section 3.7.1
	The Environmental Audit Report shall be submitted to the Secretary within two months of the completion of the Audit, detailing the findings and recommendations of the Audit and including a detailed response from the Proponent to any of the recommendations contained in the Report.	Section 3.7.1
	Waste Generation and Management	
E23	Waste materials removed from the site shall only be directed to a waste management facility lawfully permitted to accept the materials.	Table 6-37
E24	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.	Table 6-37
E25	The Proponent shall ensure that liquid and / or non-liquid waste generated and / or stored on the site is assessed and classified in accordance with the Waste Classification Guidelines (DECC, 2008), or any future guideline that may supersede that document.	Table 6-37
	Project Completion Management Plan	To be prepared no later than one month prior to decommissioning
F1	No later than one month prior to the decommissioning of the project, or as otherwise agreed by the Secretary, the Proponent is to prepare a Project Completion Management Plan, in consultation with the WaterNSW, for the approval of the Director- General. The Plan is to include but not necessarily be limited to:	As above
a)	identification of structures to be removed and how they will be removed;	As above
b)	measures to reduce impacts on the environment and surrounding sensitive land uses;	As above
c)	details of components to be recycled;	As above
d)	details of rehabilitation and revegetation with reference to the biodiversity offset required under condition B6;	As above
e)	groundwater assessment criteria including trigger levels for remedial measures;	As above
f)	a groundwater monitoring program as per condition E15 for groundwater connectivity, water levels, groundwater flow and water quality over the short and long term that includes upstream and downstream locations. The program shall continue for a minimum of five years following final capping and landscaping;	As above
g)	a contingency plan to address potential exceedances and mitigation measures in groundwater and groundwater quality impacts and if exceedances continue, implementation of further measures and groundwater monitoring to demonstrate compliance;	As above
h)	surface water assessment criteria including trigger levels for remedial measures;	As above

i)	available flow and water quality monitoring program for Neubecks Creek and Lamberts Gully Creek that includes discharge points, upstream and downstream locations as per condition E16 and limits for identified pollutants. The program shall continue for a minimum of five years following final capping and landscaping; and	As above
j)	a contingency plan to address potential exceedances and mitigation measures in surface water and surface water quality impacts and if exceedances continue, implementation of further measures and surface water monitoring to demonstrate compliance.	As above

4. Statement of Commitments

4.1 Construction Environmental Management and Mitigation

Environmental management commitments proposed during the construction phase are shown in **Table 4-1** below. Where commitments have been added as a result of submissions made these are shown as underlined.

The commitments for the concept approval sites would often be the same as those for the project approval sites. Where they differ the sites to which they apply are shown in the table.

Table 4-1: Environmental Management Measures - Construction

Objective	Action	Sites
Environmental Management		
Manage hours of construction work	Proposed hours of construction are 7.00am – 6.00pm Monday to Friday, 8:00am – 1:00pm Saturday, with no construction work on Sundays or public holidays. The construction EMP will outline protocols for notifying relevant authorities and local residents prior to any works occurring out of normal construction hours. Out of hours work may be required under certain circumstances e.g. to minimise impacts on active operational services (e.g. due to the need to respond to emergencies and unavoidable construction constraints.	All
Minimise impact of construction on surrounding area	A Construction Environmental Management Plan (CEMP) would be prepared and implemented to guide construction activities as outlined below in the following commitments: ■ Air Quality ■ Water Quality ■ Noise & Vibration ■ Heritage ■ Flora & Fauna ■ European Heritage ■ Waste Management ■ Communication. All plans and strategies would be developed as part of the CEMP, in consultation with the relevant agencies.	All
Air quality		
Minimise dust generation during construction	Develop and implement a Dust Management Plan (DMP) as part of the CEMP. The DMP would include the following mitigation measures and controls: ■ Undertake regular watering of active work areas to reduce wind blown dust emissions; ■ Minimise and stabilise the area of disturbed / exposed land at any one time.	All
Water quality		
No increased sedimentation of nearby	■ A Soil and Water Management Plan (SWMP) will be prepared and implemented to reduce the potential water quality impacts from the site during construction.	All

Objective	Action	Sites
waterways	General measures to control erosion of soil and sedimentation would be implemented prior to construction works. These measures would be prepared in accordance with the principles and practices in *Soils and Construction* (Landcom, 2004) and would be maintained and monitored during the construction phase.	
Noise and vibration		
Minimise construction noise impact on surrounding residences	■ An Environmental Noise Management Plan (ENMP) would be prepared and implemented prior to the commencement of works to achieve compliance with DECCW criteria where reasonable and feasible. This Plan would include: ■ Application of physical noise controls to construction equipment, equipment maintenance and utilising appropriate technology to achieve low levels of construction noise emissions ■ Noise compliance monitoring for all major equipment and activities on site ■ Communication between the community and the construction management to be provided at the start of the works and maintained during the works ■ Investigative monitoring of noise in response to specific complaints.	All
Indigenous heritage		
Protection of Indigenous Heritage relics if uncovered	■ Avoidance of sites in Lamberts South study area subject to Cultural Heritage Management Plan (CHMP) prepared prior to coal mining. ■ <u>The existing CHMP for the Centennial mine areas will be re-developed so as to continue the preservation of cultural heritage sites near the ash placement areas.</u> ■ In the event that artefacts of indigenous heritage significance are uncovered during the course of construction, works in the immediate area would cease, DECCW would be notified and expert advice would be sought from an appropriately qualified professional.	Lamberts South <u>Lamberts South</u> All
Flora and fauna		
Minimise likelihood of direct impacts on quality habitat areas and to threatened species	■ <u>Prior to construction beginning at Lamberts South develop and implement a biodiversity offset in consultation with, and to the approval of, DECCW to compensate for the loss of 8.9 ha of vegetation</u> ■ Prior to construction beginning and where appropriate: ■ Preclearing surveys to identify habitat trees. ■ Removal of habitat features to be supervised by	<u>Lamberts South</u> All

Objective	Action	Sites
	an ecologist ■ Threatened plant species in the area of the proposed works to be identified and tagged to ensure protection ■ Felled timber to be stockpiled to be used for habitat in rehabilitation areas ■ Topsoil stockpiled to be used for revegetation areas ■ Weed management to be implemented.	
Waste Management		
Minimise waste generated and maximise re-use and recycling. Waste disposal to be undertaken when re-use and recycle is not possible	■ A Waste Management Plan (WMP) would be prepared and implemented. This would include: ■ Measures to minimise waste ■ Investigate the use of recycled materials and other construction materials ■ Waste for disposal would be removed by a licensed waste contractor and disposed of at a licensed landfill facility	All
Communication		
Establish effective communication with community and relevant agencies	■ A Communications Plan would be prepared and implemented. This would include: ■ Continuation of liaison with Community Reference Group to deal with project construction issues ■ Maintenance of phone line/fax/website to provide opportunity for community input ■ An effective complaints handling procedure to address and respond to issues raised by the community.	All

4.2 Operational Environmental Management and Mitigation

Mitigation and other environmental management measures identified in the EA and relevant to the operational phase of the project are summarised in **Table 4-2**.

Table 4-2: Environmental Management Measures – Operational

Objective	Action	Sites
Environmental Management		
Minimise impact of operations on surrounding area	An Operational Environmental Management Plan (OEMP) would be prepared and implemented to guide operational activities. It would include: ■ Environmental Management ■ Air Quality ■ Hydrology and Water Quality ■ Noise & Vibration ■ Landscape ■ Waste Management ■ Community Liaison All plans and strategies would be developed in consultation with the relevant agencies.	All
General	■ The OEMP would provide for regular monitoring and periodic performance reviews of the key performance criteria for air, noise, water management established for the operation of the ash placement. Air, noise and water management performance parameters would be established in the Environment Protection Licence (EPL) for the site and be described in OEMP.	All
Rehabilitation	■ Rehabilitation of the site will occur progressively throughout the life of the placement areas once capping is completed. ■ A Rehabilitation Plan would be prepared for the sites addressing revegetation, landform, surface water management and monitoring and will be periodically updated during the progressive rehabilitation of the sites.	All
Air quality		
Minimise dust emissions from ash placement areas	■ The site operational plan would include management practices to be implemented to minimise potential for dust emissions. These would include: ■ Conditioning of ash with water or brine ■ Application of sprays ■ Use of water trucks ■ Equipment maintenance ■ Response to complaints. ■ An appropriate air quality monitoring program would be established to monitor ongoing operational air quality parameters. Any air quality monitoring program will be developed in accordance with relevant guidelines and policies and in consultation with DECCW prior to construction commencing.	All All

Objective	Action	Sites
Hydrology and water quality		
Maintain water quality in receiving waterways	▪ Manage water quality runoff by development of water management systems which: ▪ separate clean water from undisturbed catchments and clean water on the site ▪ Manage water generated on site using dirty water area and sedimentation dams ▪ Allowing no regular controlled releases ▪ Using water generated on site for rehabilitation and dust control ▪ Allowing releases from sedimentation dams only in large rainfall events following treatment in dams. Any releases would be subject to licence requirements. ▪ All sediment dams will be cleaned out as required to control run-off, or filled in when no longer required ▪ Manage groundwater quality by: ▪ Design of ash placement areas to provide buffer to groundwater and to place brine treated ash more than 30m above groundwater (RL 948m AHD) ▪ Undertaking borehole water quality monitoring program through a Water Monitoring program and provide annual monitoring report ▪ Monitor receiving water quality through a Water Monitoring Program and provision of an annual monitoring report.	All
Noise and vibration		
Minimise operational noise impact on surrounding residences	▪ An Environmental Noise Management Sub-Plan (ENMP) would be prepared and implemented and would detail methods available to mitigate noise during the operation of the proposal. The ENMP will include: ▪ More detailed noise modelling as design is developed to test the mitigation effects of using the benched ash mound as a noise barrier. ▪ More detailed modelling during detailed design, when a full inventory of operational plant is available, to ensure noise criteria are met. ▪ Investigative monitoring of noise in response to specific complaints. Appropriate complaints procedures and means of responding to complaints will be established.	All
Waste Management		
Reduce the generation of waste	▪ Ensure that initiatives for the sustainable management of waste are given due consideration. Such measures would include reduction of materials being brought onto the site, reuse of wastes where practicable and recycling.	All

Objective	Action	Sites
Landscape and visual		
Improve and manage landscaping	■ A Landscape Management Plan (LMP) will be prepared during detailed design of the project and implemented during and after the ash placement period. The plan would include: ■ Processes for the management of on-site weeds ■ Use of native vegetation for rehabilitation of the sites once ash placement is finished ■ Monitoring of vegetation to ensure it becomes established and to identify any further management requirements ■ Use of screening vegetation to protect views from sensitive viewpoints	All
Community liaison		
Establish effective communication with community	■ Liaise with the community about the operation of the proposed ash placement areas via the existing community relations program - eg consultation with community forum and meetings with stakeholder groups. Provide avenues for community feedback.	All

Appendix D - Project Approval Instrument

Project Approval

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

As delegate of the Minister for Planning and Infrastructure under delegation from the Minister enforced from 1 October 2011, I approve the project application 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.

Richard Pearson
Deputy Director-General
Development Assessment and Systems Performance

Sydney 16 February 2012

SCHEDULE 1

Application No.:	09_0186
Proponent:	Delta Electricity
Approval Authority:	Minister for Planning and Infrastructure
Land:	The project site is located in the central-west of NSW, at 350 Boulder Road, Portland and located within Lot 9 DP804929, Lot 15 DP804929, Lot 501 DP 825541, Lot 13 DP 751651, Lot 357 DP751651.
Project:	The construction and operation of new ash placement areas at the Lamberts South and Lamberts North sites to cater for the ash generated from the existing Mt Piper Power Station and the proposed Mt Piper Power Station Extension.

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DEFINITIONS

Act, the	Environmental Planning and Assessment Act 1979
Ancillary Facility	Temporary facility for construction. Examples may include an office and amenities compound, construction compound, batch plant, materials storage compound and stockpile areas.
Conditions of Approval	The Minister's Conditions of Approval for the project.
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).
Department, the	NSW Department of Planning and Infrastructure
Director-General, the	Director-General of the NSW Department of Planning and Infrastructure (or delegate)
Director-General's Approval	A written approval from the Director-General (or delegate). Where the Director-General's approval is required by a condition, the Director-General will endeavour to provide a response within one month of receiving an approval request. The Director-General may ask for additional information if the approval request is considered incomplete. When further information is requested the time taken for the Proponent to respond in writing will be added to the one month period.
DPI	Department of Primary Industries
EA	Environmental Assessment
EPA	Environment Protection Authority
Environment Protection Licence	An Environment Protection Licence issued by the NSW Environment Protection Authority pursuant to the Protection of the Environment Operations Act 1997.
Environmental Incident	Any incident with actual or potential significant impacts on the biophysical environment and/or off-site impacts on people.
Minister, the	Minister for Planning and Infrastructure
NOW	NSW Office of Water
OEH	The Office of Environment and Heritage

Operation	Means the Operation of the Project, including ash haulage, ash truck movements, ash placement and management, operation of on-site water management systems, landscaping and revegetation/rehabilitation of the site but does not include commissioning trials of equipment or temporary use of parts of the project during construction.
Project	The project that is the subject of Major Project Application 09_0186.
Project Area	Lamberts North and Lamberts South ash disposal areas as identified in the Proponent's Environmental Assessment, August 2010.
Proponent	Delta Electricity
Publicly Available	Available for inspection by a member of the general public (for example, available on an internet site)
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.
SCA	Sydney Catchment Authority
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.
Waste	For the purpose of this project, ash and brine are not considered waste.

SCHEDULE 2
PART A - ADMINISTRATIVE CONDITIONS

Terms of Approval

A1. The Proponent shall carry out the project generally in accordance with the:
   (a) Major Project Application 09_0186;
   (b) Mt Piper Ash Placement (two volumes) – Environmental Assessment (EA), prepared by Sinclair Knight Merz, August 2010;
   (c) Mt Piper Ash Placement – Submissions Report, prepared by Sinclair Knight Merz, March 2011;
   (d) Delta's Letter to the Department – Submissions Report Response to the Department and Agency Issues (dated 22 June 2011); and
   (e) the conditions of this approval.

A2. In the event of an inconsistency between:
   (a) the conditions of this approval and any document listed from condition A1a) to A1(d) inclusive, the conditions of this approval shall prevail to the extent of the inconsistency; and
   (b) any of the documents listed from conditions A1a) to A1(d) inclusive, the most recent document shall prevail to the extent of inconsistency.

A3. The Proponent shall comply with the reasonable requirements of the Director-General arising from the Department's assessment of:
   (a) any reports, plans or correspondence that are submitted in accordance with this approval; and
   (b) the implementation of any actions or measures contained in these reports, plans or correspondence.

A4. The Proponent shall meet the requirements of the Director-General 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 A1 of this approval.

Limits of Approval

A5. 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

A6. The Proponent shall ensure that all licences, permits and approvals are updated and/or 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.

Staging

A7. Where the Proponent intends to construct and operate the project in discrete stages (i.e Lamberts North and Lamberts South) it may comply with the requirements in conditions B4, B5, D2, D3 and D4 separately for each stage.

PART B – PRIOR TO CONSTRUCTION

Environmental Representative

B1. Prior to the commencement of any construction activities, or as otherwise agreed by the Director-General, the Proponent shall nominate for the approval of the Director-General a suitably qualified and experienced Environmental Representative(s). The Proponent shall engage the Environmental Representative(s) during any construction activities, and throughout the life of the project, or as otherwise agreed by the Director-General. The Environmental Representative(s) shall:

(a) oversee the implementation of all environmental management plans and monitoring programs required under this approval, and advise the Proponent upon the achievement of these plans/programs;

(b) consider and advise the Proponent on its compliance obligations against all matters specified in the conditions of this approval and the Statement of Commitments; and

(c) have 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.

Groundwater Modelling

B2. The Proponent shall undertake groundwater modelling by either adapting the existing UTS (2007) groundwater model to Lamberts North or developing a new groundwater model for Lamberts North. The updated model should be calibrated to site-specific data. In either case, the model shall incorporate the findings of groundwater monitoring of the existing ash placement areas. The Proponent shall consult with the SCA in the preparation of the groundwater model and the model shall be provided to the SCA within five months of project approval, unless otherwise agreed by the Director-General. The model shall address but not necessarily be limited to the following:

(a) the findings of the groundwater monitoring of existing ash placement areas and be based on average groundwater quality data;

(b) updated predictions of the long term behaviour, fate and impacts of ash placement, in particular for water quality parameters such as sulphates, chlorides, boron, manganese, nickel, zinc, molybdenum copper, arsenic and barium;

(c) updated risk assessment for ground and surface water quality impacts under a range of rainfall events of differing duration and intensities (including up to a 100 year ARI event);

(d) calibration to site-specific data; and

(e) identification of appropriate surface and groundwater management measures required in order to achieve a neutral or beneficial effect on water quality.

Prior to construction of Lamberts South, the Lamberts North groundwater model is to be updated as set out above in items (a) - (e) in consultation with the SCA, to apply to Lamberts South.

Groundwater Monitoring

B3. Baseline groundwater monitoring data, including groundwater quality, location of groundwater monitoring wells, depth and flow of groundwater in the project area should be obtained for a minimum of two sampling events prior to construction and a minimum of two sampling events after construction and prior to ash placement commencing. The baseline monitoring data along with the modelling predictions in B2 should be used in the consideration of the design of the ash placement facilities. The location of groundwater monitoring wells and parameters to be monitored should be undertaken in consultation with the SCA.

Prior to construction of Lamberts South the Proponent shall conduct baseline groundwater data collection as set out above, and use the results and the modelling predictions in B2 in the consideration of the design of the ash placement facilities.

Construction Environmental Management Plan

B4. The Proponent shall prepare and implement a Construction Environmental Management Plan (CEMP) to outline environmental management practices and procedures to be followed during construction of the project. The Plan shall be prepared in consultation with Lithgow City Council and relevant government agencies, and be consistent with the Guideline for the Preparation of Environmental Management Plans (DIPNR, 2004 or its latest revision) and shall include, but not necessarily be limited to:

(a) a description of all relevant activities to be undertaken on the site during construction including an indication of stages of construction, where relevant;
(b) identification of the potential for cumulative impacts with other construction activities occurring in the vicinity and how such impacts would be managed;
(c) details of any site compounds and mitigation, monitoring, management and rehabilitation measures specific to the site compound(s) that would be implemented;
(d) statutory and other obligations that the Proponent is required to fulfil during construction including all relevant approvals, consultations and agreements required from authorities and other stakeholders, and key legislation and policies;
(e) evidence of consultation with relevant government agencies required under this condition and how issues raised by the agencies have been addressed in the plan;
(f) a description of the roles and responsibilities for all relevant employees involved in the construction of the project including relevant training and induction provisions for ensuring that all employees, contractors and sub-contractors are aware of their environmental and compliance obligations under these conditions of approval;
(g) details of how the environmental performance of construction will be managed and monitored, and what actions will be taken to address identified potential adverse environmental impacts;
(h) specific consideration of relevant measures to address any requirements identified in the documents referred to under conditions A1(b) and A1(d);
(i) a complaints handling procedure during construction;
(j) emergency management measures including measures to control bushfires;
(k) details of waste management including reuse and/or recycling of waste material, to minimise the need for treatment or disposal of those materials outside the site; and
(l) the additional requirements of this approval.

The CEMP for the project (or any stage of the project) shall be submitted to the Director-General 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 Director-General. Construction shall not commence until written approval has been received from the Director-General.

B5. As part of the CEMP for the project, the Proponent shall prepare and implement the following plans:

a) a **Construction Noise Management Plan** to detail how construction noise impacts would be minimised and managed. The Plan shall be developed in consultation with 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) identification of noise criteria and procedures for assessing noise levels at sensitive receivers;
iv) details of reasonable and feasible actions and measures to be implemented to minimise noise impacts;
v) details of noise monitoring and if any noise exceedance is detected, how any non-compliance would be rectified; and
vi) procedures for notifying sensitive receivers of construction activities that are likely to affect their noise amenity.

b) a **Groundwater Management Plan** to detail measures to manage groundwater impacts. The Plan shall be prepared in consultation with the NOW and the SCA and include, but not necessarily be limited to:
i) identification of the construction activities that could affect groundwater at the site, including groundwater interference and impacts to groundwater users and dependent species;
ii) a description of the management controls to minimise impacts to groundwater during construction;
iii) methods for monitoring groundwater during construction including a program to monitor groundwater flows and groundwater quality in the project area;
iv) a response program to address indentified exceedances of existing groundwater quality criteria approved for Area 1 (the existing ash placement area); and
v) provisions for periodic reporting of results to the SCA during construction.

c) a **Soil and 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 construction period. The Plan shall be based on best environmental practice and shall be prepared in consultation with the SCA and the NOW and any other relevant government agency. The Plan shall include, but not necessarily be limited to:
i) baseline data on the water quality and available flow data in Huons Creek, Lamberts Gully Creek and Neubecks Creek;
ii) water quality objectives and impact assessment criteria for Huons Creek, Lamberts Gully Creek and Neubecks Creek;
iii) a geomorphic assessment of the capacity of Lamberts Gully Creek to accommodate additional flow under a range of rainfall events and duration, prior to commencement of construction works;
iv) identification of the construction activities that could cause soil erosion or discharge sediment or water pollutants from the site;
v) description of stockpile locations and disposal methods;
vi) 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;
vii) 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);
viii) a site water management strategy identifying drainage design including the separation of clean and dirty water areas for the project, details of the lining of surface water collection ponds 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

consideration to the treatment of water prior to discharge to the environment;

ix) measures to monitor and manage soil and water impacts in consultation with NOW and DPI (Fisheries) including: control measures for works close to or involving waterway crossings (including rehabilitation measures following disturbance and monitoring measures and completion criteria to determine rehabilitation success);

x) measures to monitor and manage flood impacts in consultation with NOW and shall include, but not necessarily be limited to a flood model for predicted water levels and contingency measures for the site during potential floods;

xi) a program to monitor surface water quality, including Lamberts Gully Creek and Neubecks Creek;

xii) a protocol for the investigation of identified exceedances in the impact assessment criteria;

xiii) a response plan to address potential adverse surface water quality exceedances; and

xiv) provisions for periodic reporting of results to the DPI (Fisheries), NOW and the SCA as per condition B8.

d) a **Air Quality Management Plan**, to provide details of dust control measures to be implemented during the construction of the project. The Plan shall be prepared in consultation with the EPA and should include, but not necessarily be limited to:

i) identification of sources of dust deposition including, truck movements, regrading, backfilling, stockpiles and other exposed surfaces;

ii) identification of criteria, monitoring and mitigation measures for the above sources; and

iii) a reactive management programme detailing how and when construction operations are to be modified to minimise the potential for dust emissions, should emissions exceed the relevant criteria.

e) a **Flora and Fauna Management Plan**, to outline measures to protect and minimise loss of native vegetation and native fauna habitat as a result of construction of the project. The Plan shall be prepared in consultation with the EPA and shall include, but not necessarily be limited to:

i) plans showing terrestrial vegetation communities; important flora and fauna habitat areas; locations of threatened flora and fauna and areas to be cleared. The plans shall also identify vegetation adjoining the site where this contains important habitat areas and/or threatened species, populations or ecological communities;

ii) procedures to accurately determine the total area, type and condition of vegetation community to be cleared;

iii) methods to manage impacts on flora and fauna species and their habitat which may be directly or indirectly affected by the project, procedures for vegetation clearing or soil removal/stockpiling and procedures for identifying and re-locating hollows, installing nesting boxes and managing weeds; and

iv) a procedure to review management methods where they are found to be ineffective.

f) an **Aboriginal Heritage Plan** to monitor and manage Aboriginal heritage impacts in consultation with registered Aboriginal stakeholders and prepared in consultation with the EPA. The plan should include but not necessarily limited to:

i) an updated Cultural Heritage Management Plan to cover the protection of sites previously recorded in the 2005 Aboriginal heritage assessment;
ii) procedures for the management of unidentified objects and/or human remains, including ceasing work;
iii) Aboriginal cultural heritage induction processes for construction personnel; and
iv) procedures for ongoing Aboriginal consultation and involvement should Aboriginal heritage sites or objects be found during construction.

g) an **Ash Transportation Plan** to provide details on the preferred option for the transportation of ash from the Mt Piper Power Station to the ash placement areas. The Plan shall include but not necessarily limited to:
i) justification of the proposed option for ash transportation (either haulage access roads and/or conveyor) for ash transportation;
ii) details of the proposed option, including construction requirements, impacts and mitigation measures;
iii) plans showing the location of the chosen option; and
iv) provision of mitigation measures should the conveyor breakdown.

Biodiversity Offsets

B6. The Proponent shall develop and submit for the approval of the Director-General, a Biodiversity Offset Management Plan. The Biodiversity Offset Management Plan is to be submitted within 12 months of the project approval, unless otherwise agreed to by the Director-General. The Plan shall be developed in consultation with the EPA and shall:
a) identify the objectives and outcomes to be met by the Biodiversity Offset Management Plan;
b) describe the size and quality of the habitat/vegetation communities of the offset;
c) identify biodiversity impacts, including impacts related to the loss of impacted flora and fauna including threatened Capertee Stringybark (*Eucalyptus cannonii*), nine (9) hectares of remnant vegetation (including, Red Stringy Bark Woodland, Scribbly Gum Woodland, Ribbon Gum Woodland), habitat for microbat and woodland bird species and the 31 ha of rehabilitated vegetation to be removed;
d) describe the decision-making framework used in selecting the priority ranking of compensatory habitat options available in the region. Where possible, this should include purchase of land, development of agreements with identified land management authorities (e.g EPA, local Council) for long term management and funding of offsets and mitigation measures, and installation of identified mitigation measures;
e) include an offset for direct and indirect impacts of the proposal which maintains or improves biodiversity values;
f) identify the mechanisms for securing the biodiversity values of the offset measures in perpetuity and identify a monitoring regime, responsibilities, timeframes and performance criteria; and
g) detail contingency measures to be undertaken should monitoring against performance criteria indicate that the offset/ rehabilitation measures have not achieved performance outcomes. Rehabilitation measures are required to be implemented to ensure that the biodiversity impacts are consistent with a maintain or improve biodiversity outcome.

Ecological Monitoring Program

B7. The Proponent shall prepare and implement an **Ecological Monitoring Program** prior to construction, in consultation with the NOW and the DPI (Fisheries), to monitor and quantify the impacts on the ecology of Neubecks 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 (including operation);
b) at least one in-stream sampling period prior to ash placement at Neubecks Creek and at least two (2) sampling periods following ash placement at each of Lamberts North and Lamberts South;
c) an assessment regime for monitoring the ecological health of the riparian environment for a period of at least five (5) years after final capping; and
d) management measures to address any adverse ecological impacts.

Compliance Monitoring and Tracking

B8. The Proponent shall develop and implement a Compliance Tracking Program for the project, prior to commencing construction, to track compliance with the requirements of this approval and shall include, but not necessarily be limited to:

a) 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 A1c) of this approval;
b) provisions for periodic reporting of the compliance status to the Director-General;
c) a program for independent environmental auditing in accordance with AS/NZ ISO 19011:2003 - Guidelines for Quality and/or Environmental Management Systems Auditing;
d) procedures for rectifying any non-compliance identified during environmental auditing or review of compliance;
e) mechanisms for recording environmental incidents and actions taken in response to those incidents;
f) provisions for reporting environmental incidents to the Director-General during construction and operation; and
g) provisions for ensuring all employees, contractors and sub-contractors are aware of, and comply with, the conditions of this approval relevant to their respective activities.

The Compliance Tracking Program shall be implemented prior to construction of the project with a copy submitted to the Director-General for approval at least four weeks prior to the commencement of the project, unless otherwise agreed by the Director-General.

B9. Nothing in this approval restricts the Proponent from utilising any existing compliance tracking programs administrated by the Proponent to satisfy the requirements of condition B8. In doing so, the Proponent must demonstrate to the Director-General how these systems address the requirements and/or have been amended to comply with the requirements of the condition.

Community Information and Complaints Management Provision of Information

B10. Prior to the construction 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:

a) the documents referred to under condition A1 of this approval;
b) this project approval, Environment Protection Licence and any other relevant environmental approval, licence or permit required and obtained in relation to the project;
c) all strategies, plans and programs required under this project approval, or details of where this information can be viewed;

d) information on construction and operational progress; and
e) the outcomes of compliance tracking in accordance with the requirements of this project approval.

Complaints and Enquiries Procedure

B11. Prior to the construction 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 B11 of this approval.

B12. The Proponent shall record the details of complaints received through the means listed under condition B11 of this approval in a 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 Director-General upon request.

Community Information Plan

B13. Prior to the commencement of construction of the project, the Proponent shall prepare and implement a Community Information Plan which sets out the community communications and consultation processes to be undertaken during construction and operation of the project. The Plan shall include but not be limited to:

a) measures for disseminating information on the development status of the project and methods for actively engaging with surrounding landowners, including Forests NSW and affected stakeholders regarding issues that would be of interest/ concern to them during the construction and operation of the project; and
b) procedures to inform the community where work has been approved to be undertaken outside the normal Construction hours, in particular noisy activities.

A copy of the Plan shall be provided to the Director-General one month prior to the commencement of construction.

Design

B14. The ash placement areas shall be designed by a suitably qualified expert to ensure structural stability of the ash placement areas.

PART C – DURING CONSTRUCTION

Environmental Incident Reporting

C1. The Proponent shall notify the Director-General 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 Director-General within seven days of the date on which the incident occurred.

C2. The Proponent shall meet the requirements of the Director-General to address the cause or impact of any environmental incident, as it relates to this approval, reported in accordance with condition C1 of this approval, within such period as the Director-General may require.

Construction Hours

C3. 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.

C4. Construction outside the hours stipulated in condition C3 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.

C5. The hours of construction activities specified under condition C3 of this approval may be varied with the prior written approval of the Director-General. Any request to alter the hours of construction specified under condition C3 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 information necessary for the Director-General to reasonably determine that activities undertaken during the varied construction hours will not adversely impact on the acoustic amenity of sensitive receivers in the vicinity of the site.

Construction Noise

C6. The construction noise objective for the project is to manage noise from construction activities (as measured by $L_{Aeq\ (15\ minute)}$ descriptor) so as not to exceed:

Location	Day ($L_{Aeq\ (15\ minute)}$) dB(A)
All private receivers within the township of Blackmans Flat	46
All other residences	43

The Proponent shall implement reasonable and feasible noise mitigation measures with the aim of achieving the construction noise objective consistent with the requirements of the Interim Construction Noise Guideline (DECC, July 2009), including noise generated by heavy vehicle haulage and other construction traffic associated with the project. 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 B5a) of this approval).

Dust Generation

C7. The Proponent shall construct the project in a manner that minimises dust emissions from the site, including wind-blown from earth works and stockpiles 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, 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.

Heritage Impacts

C8. If during the course of construction the Proponent becomes aware of any previously unidentified Aboriginal object(s), all work likely to affect the object(s) shall cease immediately and the EPA (OEH) informed in accordance with the *National Parks and Wildlife Act 1974*. In addition, registered Aboriginal stakeholders shall be informed of the finds. Works shall not recommence until an appropriate strategy for managing the objects has been determined in consultation with the EPA (OEH) and the registered Aboriginal stakeholders and written authorisation from the EPA (OEH) is received by the Proponent.

C9. If during the course of construction the Proponent becomes aware of any unexpected historical relic(s), all work likely to affect the relic(s) shall cease immediately and the EPA (OEH (Heritage Branch)) notified in accordance with the *Heritage Act 1977*. Works shall not recommence until the Proponent receives written authorisation from the EPA (OEH (Heritage Branch)).

Soil and Water Quality Impacts

C10. The Proponent shall comply with section 120 of the Protection of the Environment Operations Act 1997 which prohibits the pollution of waters.

C11. Soil and water management controls shall be employed to minimise soil erosion and the discharge of sediment and other pollutants to lands and/or waters during construction activities, in accordance with:

(a) Managing Urban Stormwater: Soils and Conservation (Landcom, 2004);
(b) Managing Stormwater: Urban Soils and Construction 2A Installation of Services (DECC 2008); and
(c) Managing Stormwater: Urban Soils and Construction Vol 2C Unsealed Roads (DECC 2008).

C12. During construction, the Proponent shall maintain a buffer of 50 metres from the construction work to Neubecks Creek.

C13. Surface water drainage must be appropriately engineered and stabilised to convey run off without collapse or erosion. Surface water run off collection ponds are to be lined.

Waste Generation and Management

C14. All waste materials removed from the site shall only be directed to a waste management facility lawfully permitted to accept the materials.

C15. 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.

C16. The Proponent shall ensure that all liquid and / or non-liquid waste generated and / or stored on the site is assessed and classified in accordance with the Waste Classification Guidelines (DECC, 2008), or any future guideline that may supersede that document.

PART D – PRIOR TO OPERATION

Ash Management

D1. 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 2020. The report shall be submitted to the Director-General six months prior to the commencement of operations. The Proponent shall report on the status and outcomes of its investigations to the Director-General every two years from the commencement of the operation of the project, unless otherwise agreed by the Director-General.

Operational Environmental Management Plan

D2. The Proponent shall prepare and implement an Operational Environmental Management Plan (OEMP) to detail an environmental management framework, practices and procedures to be followed during operation of the project. The Plan shall be prepared in consultation with Lithgow City Council and relevant government agencies, and shall be consistent with the 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 environmental monitoring requirements outlined under conditions E12 to E18 inclusive;
g) details of waste management including reuse and/or recycling of waste material, to minimise the need for treatment or disposal of those materials outside the site;
h) specific consideration of relevant measures to address any requirements identified in the documents referred to under conditions A1(b) and A1(d) of this approval; and
i) the additional requirements of this approval.

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

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.

D3. As part of the OEMP for the project, required under condition D2 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 the EPA and include, but not necessarily be limited to:
    i) identification of activities that will be carried out in relation to the project and the associated noise sources;

ii) identification of all relevant sensitive receivers and the applicable criteria at those receivers commensurate with the noise limit specified under condition E7 of this approval;
iii) noise monitoring procedures (as referred to in condition E12 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 EA;
iv) details of all management methods and procedures that will be implemented to control individual and overall noise emissions from the site during operation, including the feasibility of noise reducing benching;
v) procedures to ensure that all reasonable and feasible noise mitigation measures are applied during operation of the project and procedures and corrective actions to be undertaken if non-compliance against the operational noise criteria as detailed in condition E7 is detected at the sensitive receivers; and
vi) provisions for periodic reporting of results to the EPA as per condition B8.

b) a **Groundwater Management Plan** to detail measures to mitigate and manage groundwater impacts. The Plan shall be prepared in consultation with the NOW and the SCA and include, but not necessarily be limited to:
i) consideration of the revised updated groundwater model as per condition B2;
ii) baseline data on groundwater quality (including Huons Creek), location of groundwater monitoring wells, depth and available flow of groundwater in the project area;
iii) identification of potential sources of water pollutants and management measures;
iv) groundwater assessment criteria including trigger levels for remedial measures;
v) a contingency plan for events that have the potential to pollute or contaminate groundwater sources of water. The plan shall include remediation actions and communication strategies (including notification of potentially affected nearby bore users) for the effective management of such an event to prevent discharge of these pollutants from all sources within the project area;
vi) a monitoring program as per condition E15 for groundwater connectivity, water levels, groundwater flow and water quality over the short and long term that includes upstream and downstream locations. The program shall continue for a minimum of five years following final capping and landscaping;
vii) a protocol for the investigation of identified exceedances of the groundwater impact assessment criteria; and
viii) provisions for periodic reporting of results to the SCA as per condition B8.

c) a **Soil and 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 the NOW and the SCA and DPI (Fisheries). The Plan shall include, but not necessarily be limited to:
i) baseline data on the surface water quality and available flow in Neubecks Creek and Lamberts Gully Creek;
ii) water quality objectives and impact assessment criteria for Neubecks Creek and Lamberts Gully Creek;

iii) identification of the operation activities that could cause soil erosion or discharge sediment or water pollutants from the site;
iv) a description of the management controls 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;
v) 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);
vi) details of the water management system including separation of clean and contaminated/polluted water flows, provisions for the treatment, recycling/reuse and/or discharge of flows;
vii) site water balance including water usage for ash placement, sources of water and quantity of run-off generated;
viii) details of the lining for the surface water collection ponds;
ix) measures to minimise potential surface water infiltration;;
x) a flow and water quality monitoring program for Neubecks Creek and Lamberts Gully Creek that includes discharge points, upstream and downstream locations as per condition E16 and limits for identified pollutants;
xi) specified remedial actions and contingency plans to mitigate any water quality exceedances on receiving waters including identified trigger levels for remedial measures or the activation of contingency plans; and
xii) provisions for periodic reporting of results to the DPI (Fisheries) and the SCA as per condition B8.

d) a **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 NSW Health and 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 assessment of alternative methods of ash placement to minimise the exposure of active placement areas to prevailing winds;
iv) mitigation measures to be incorporated during ash placement activities, haulage, etc;
v) an operating protocol for the ash placement irrigation system including activation rates, application rates and area of coverage and means of dealing with water shortages;
vi) detail how ash placement moisture levels will be maintained;
vii) a contingency plan to deal with high winds and dust suppression;
viii) a protocol for the investigation of visible emissions from the ash placement area;
ix) a response plan to address exceedances in visible emissions including $PM_{10,}$ TSP and deposited dust from the ash placement areas; and
x) an air quality monitoring program as referred to in condition E18 of this approval including identified air quality monitoring locations (including monitoring at sensitive receivers) and meteorological monitoring to predict high wind speed events;
xi) provisions for periodic reporting of results to the EPA as per condition B8; and
xii) a protocol for suppressing dust emissions within licence limits under normal and adverse weather conditions at all stages of the ash placement process.

e) a **Landscape/Revegetation Plan** to outline measures to minimise the visual impacts of the ash placement areas and ensure the long-term stabilisation of

the site and compatibility with the surrounding landscape 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) identification of the timing and progressive implementation of revegetation works for ash placement areas as they are completed, including short-term and long term goals including landscape plans;
iii) a schedule of species to be used in revegetation, including the use of local native species in revegetation works selected by a qualified expert to ensure the rehabilitation works do not compromise the long term integrity of the capping; and
iv) procedures and methods to monitor and maintain revegetated areas during the establishment phase and long-term.

f) a **Site Rehabilitation Management Plan** to outline measures to stabilise and rehabilitate the site following project completion. The Plan shall be prepared in consultation with the SCA. The Plan shall include, but not necessarily be limited to:

i) reinstatement of geomorphologic stable drainage lines on the rehabilitated areas and a timeframe for rehabilitation;
ii) restoration, rehabilitation and revegetation of the project's site;
iii) measures to control water pollutants from rehabilitated areas; and
iv) a program and timeframe for monitoring rehabilitated areas.

Groundwater Quality and Geotechnical Impacts

D4. Prior to commencement of operation the Proponent shall submit a geotechnical report prepared by a suitably qualified expert that demonstrates the site has been engineered as being suitable for ash placement. The report must also provide an evaluation of groundwater levels once re-profiling has been completed.

PART E – DURING OPERATIONS

Operational Hours

E1. Operational activities associated with the project shall only be undertaken from 6.00 am to 8.00 pm Monday to Friday and 6.00am to 5.00pm Saturday and Sunday.

E2. Operations outside the hours stipulated in condition E1 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 ash placement areas or the Mt Piper Power Station and the proposed Mt Piper Power Station Extension project with the effect of limiting or preventing ash storage at the power station outside the operating hours defined in condition E1; or
c) a breakdown of an ash haulage truck(s) or the conveyor preventing haulage during the operating hours stipulated in condition E1 combined with insufficient storage capacity at the Mt Piper Power Station including the proposed Mt Piper Power Station Extension to store ash outside of the project operating hours; or
d) in the event that the Australian Energy Market Operator (AEMO), or a person authorised by AEMO, 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 Mt Piper Power Station to allow for the ash to be stored.

In the event of conditions E2b) or E2c) arising, the Proponent is to take all reasonable and feasible measures to repair the breakdown in the shortest time possible.

E3. In the event that an emergency situation as referred to under condition E2b) or E2c) occurs more than once in any two month period, the Proponent shall prepare and submit to the Director-General 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 Director-General within 60 days of the second emergency situation occurring. The Proponent shall implement all reasonable and feasible mitigation measures in accordance with the requirements of the Director-General.

E4. 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 E1 of this approval and keep a log of such operations.

E5. The Proponent shall notify the Director-General in writing within seven days of undertaking any emergency ash haulage or placement operations outside of the hours of operation stipulated in condition E1 of this approval.

E6. The Proponent shall notify nearby sensitive receivers (as defined in the Operational Noise Management Plan required under condition D3(a) 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 E1 of this approval.

Operational Noise

E7. The cumulative operational noise from the ash placement area and ash haulage activity shall not exceed the following $L_{Aeq(15\ minute)}$ dB(A):

Location	Day (7am to 6pm)	Evening (6pm to 10pm)	Night (10pm to 7am)
All private sensitive receivers within the township of Blackmans Flat	42	38	35
All other sensitive receivers	42	38	35

This noise criteria set out above applies under all meteorological conditions except for any of the following:

(a) wind speed greater than 3 metres/second at 10 metres above ground level;
(b) stability category F temperature inversion conditions and wind speed greater than 2 metres/second at 10 metres above ground level; and
(c) stability category G temperature inversion conditions.

This criteria does not apply where the Proponent and an affected landowner have reached a negotiated agreement in regard to noise, and a copy of the agreement has been forwarded to the Director-General and the EPA.

E8. To determine compliance with the $L_{Aeq(15\ minute)}$ noise limits, the noise monitoring equipment must be located at the most affected point:

a) within 30 metres of a dwelling façade where any dwelling on the property is situated more than 30 metres from the property boundary that is closest to the premises; or
b) approximately on the boundary where any dwelling is situated 30 metres or less from the property boundary that is closest to the premises.

E9. For the purposes of monitoring noise from the premises to determine compliance with the noise limits:

a) Class 1 or 2 noise monitoring equipment as defined by AS IEC61672.1-2004 and ASIEC61672.2-2004, or other noise monitoring equipment accepted by the EPA in writing, must be used;
b) the modification factors in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment;
c) the meteorological data to be used for determining meteorological conditions is the data recorded by the meteorological weather station at the premises; and
d) stability category temperature inversion conditions are to be determined by the sigmatheta method referred to in Part E4 of Appendix E to the NSW Industrial Noise Policy.

E10. 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 placement areas where feasible.

Operational Noise Review

E11. Within 60 days of the commencement of operation of the project, unless otherwise agreed to by the Director-General, the Proponent shall submit to the Director-

General an **Operational Noise Review** to confirm the operational noise impacts of the project. The Operational Noise Review shall be prepared in consultation with the EPA. The Review shall:

a) identify the appropriate operational noise objectives and levels for sensitive receivers;
b) describe the methodologies for noise monitoring, including the frequency of measurements and location of monitoring sites;
c) document the operational noise levels at sensitive receivers as ascertained by the noise monitoring program;
d) assess the noise performance of the project against the noise criteria specified in condition E7 of this approval and the predicted noise levels as detailed in the report referred to under condition A1(b) of this approval; and
e) provide details of any entries in the Complaints Register relating to noise impacts.

Where monitoring indicates noise levels in excess of the operational noise criteria specified in condition E7 of this approval, the Proponent shall prepare a report as required by condition E13 of this approval.

Ongoing Operational Noise Monitoring

E12. The Proponent shall prepare and implement an **Operational Noise Monitoring Program** to assess compliance against the operational noise criteria stipulated in condition E7 of this approval, throughout the life of the project. The noise monitoring program shall be prepared in consultation with the EPA and must include the proposed frequency of monitoring and as a minimum must include monitoring when there are any significant changes in work locations or processes.

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

a) monitoring at Lamberts North, Lamberts South and Blackmans Flat during ash placement activities; and
b) monitoring of the effectiveness of any noise mitigation measures implemented under condition D3(a) of this approval, against the noise criteria specified in condition E7 of this approval.

The Proponent shall forward to the EPA and the Director-General a report containing the results of any non-compliance within 14 days of conducting a noise assessment. The monitoring program shall form part of the Operational Noise Management Plan referred to in condition D3 (a) of this approval.

E13. Where noise monitoring including as required by condition E11 and E12 of this approval identifies any non-compliance with the operational noise criteria specified under condition E7 of this approval the Proponent shall prepare and submit to the Director-General 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;
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 Director-General within 60 days of undertaking the noise monitoring which has identified exceedances of the operational noise criteria specified under condition E7, unless otherwise agreed to by the Director-

General. The Proponent shall implement all reasonable and feasible mitigation measures in accordance with the requirements of the Director-General.

E14. If after the implementation of all reasonable and feasible source controls, as identified in the report required by condition E13, the noise generated by the project continues to exceed the criteria stipulated in condition E7 the Proponent shall implement at the receiver reasonable and feasible noise mitigation measures, such as double glazing, insulation, air conditioning and or other building acoustic treatments, in consultation with and with the agreement of the affected landowner.

Groundwater Monitoring

E15. 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 the SCA, 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 operation of the project and for a minimum of 5 years following project completion 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 Groundwater Management Plan as per condition D3(b); 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 D3(b) of this approval.

Surface Water Quality Monitoring

E16. The Proponent shall prepare and implement a surface water quality monitoring program to monitor the impacts of the ash placement activities on Neubecks Creek and Lamberts Gully. The Program shall be developed in consultation with the DPI (Fisheries) and the SCA, 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 existing water quality monitoring sites as described in the document referred to under condition A1b);
b) monitoring at surface water discharge points from Lamberts Gully Creek;
c) monitoring at surface water discharge points into Neubecks Creek;
d) wet weather monitoring with a minimum of two events recorded within the first 12 months operation of the project; 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, monitoring of dissolved oxygen, turbidity, sulphates, salinity, boron, manganese, iron chloride, total phosphorus and total nitrogen.

Hydrological Monitoring Program

E17. A Hydrological Monitoring Program to assess and quantify the impacts and effectiveness of the transformed section of Huons Creek into a sub-surface drainage line in consultation with the DPI (Fisheries). Monitoring is to be undertaken for a period of five (5) years upon completion of the creek transformation. The program must include sampling for identified pollutants before and after the transformation works and include a sampling site downstream of the sub-surface section of Huons Creek. In the first 12 months following completion of the transformation, monitoring

is to be undertaken at least every three (3) months upon completion of the creek transformation and after any heavy wet weather event.

The monitoring program shall form part of the Soil and Surface Water Management Plan referred to in condition D3(c) of this approval.

Air Quality Monitoring

E18. The Proponent shall prepare an Air Quality Monitoring Program, in consultation with the EPA and NSW Health. The Program shall include, but not necessarily be limited to, monitoring for dust. Monitoring sites shall be identified as per condition D3 (d). The air quality monitoring program shall be ongoing for the life of the project, and during final rehabilitation and stabilisation of the site.

The monitoring program shall form part of the Air Quality Management Plan referred to in condition D3(d) of this approval.

Environmental Incident Reporting

E19. The Proponent shall notify the Director-General 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 Director-General within seven days of the date on which the incident occurred.

E20. The Proponent shall meet the requirements of the Director-General to address the cause or impact of any environmental incident, as it relates to this approval, reported in accordance with condition E19 of this approval, within such period as the Director-General may require.

Annual Performance Reporting

E21. The Proponent shall, throughout the life of the project, prepare and submit to the Director-General, an Annual Environmental Management Report (AEMR). The AEMR shall review the performance of the project against the Operation Environmental Management Plan (refer to condition D2 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 B11 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 twelve month period have not been generally consistent with the environmental impacts and performance predicted in the documents listed under condition A1 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 of this approval, including interpretations and discussion by a suitably qualified person; and
e) a list of occasions in the 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 Director-General every year, with the first AEMR to be submitted no later than fourteen months after the commencement of operation of the project unless otherwise agreed by the Director-General. The Director-General may require the Proponent to address certain matters in relation to the environmental performance of the project in response to the Director-General's review of the Annual Environmental Management Report. Any action

required to be undertaken shall be completed within such period as the Director-General may require. The Proponent shall make copies of each AEMR available for public inspection on request. Copies of the AEMR shall be sent to the EPA and the SCA.

Independent Environmental Auditing

E22. Within 12 months of commencement of operation of Lamberts North and Lamberts South and then as may be directed by the Director-General, the Proponent shall commission an independent person or team to undertake an Environmental Audit of the project. The independent person or team shall be approved by the Director-General prior to the commencement of the Audit. The Audit shall:

a) be carried out in accordance with ISO 19011:2002 - Guidelines for Quality and or Environmental Management Systems Auditing;
b) assess compliance with the requirements of this approval, and other licences and approvals that apply to the project;
c) assess the environmental performance of the project against the predictions made and conclusions drawn in the documents referred to under condition A1 of this approval;
d) review the effectiveness of the environmental management of the project, including any environmental impact mitigation works; and
e) review the adequacy of the Proponent's response to any complaints made about the project identified in the Complaints Register.

The Environmental Audit Report shall be submitted to the Director-General within two months of the completion of the Audit, detailing the findings and recommendations of the Audit and including a detailed response from the Proponent to any of the recommendations contained in the Report.

Waste Generation and Management

E23. All waste materials removed from the site shall only be directed to a waste management facility lawfully permitted to accept the materials.

E24. 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.

E25. The Proponent shall ensure that all liquid and / or non-liquid waste generated and / or stored on the site is assessed and classified in accordance with the Waste Classification Guidelines (DECC, 2008), or any future guideline that may supersede that document.

PART F – POST OPERATIONS

Project Completion Management Plan

F1. No later than one month prior to the decommissioning of the project, or as otherwise agreed by the Director-General, the Proponent is to prepare a Project Completion Management Plan, in consultation with the SCA, for the approval of the Director-General. The Plan is to include but not necessarily be limited to:

(a) identification of structures to be removed and how they will be removed;
(b) measures to reduce impacts on the environment and surrounding sensitive land uses;
(c) details of components to be recycled;
(d) details of rehabilitation and revegetation with reference to the biodiversity offset required under condition B6;
(e) groundwater assessment criteria including trigger levels for remedial measures;
(f) a groundwater monitoring program as per condition E15 for groundwater connectivity, water levels, groundwater flow and water quality over the short and long term that includes upstream and downstream locations. The program shall continue for a minimum of five years following final capping and landscaping;
(g) a contingency plan to address potential exceedances and mitigation measures in groundwater and groundwater quality impacts and if exceedances continue, implementation of further measures and groundwater monitoring to demonstrate compliance;
(h) surface water assessment criteria including trigger levels for remedial measures;
(i) available flow and water quality monitoring program for Neubecks Creek and Lamberts Gully Creek that includes discharge points, upstream and downstream locations as per condition E16 and limits for identified pollutants. The program shall continue for a minimum of five years following final capping and landscaping; and
(j) a contingency plan to address potential exceedances and mitigation measures in surface water and surface water quality impacts and if exceedances continue, implementation of further measures and surface water monitoring to demonstrate compliance.

Appendix E - Stakeholder Consultation

Agency response to sub plans 2019

WaterNSW comments

I refer to your email (dated on 4 April 2019) requesting WaterNSW's comments on Lamberts North OEMP.

WaterNSW notes that the OEMP including sub-plans for management of groundwater, soil and surface water, and rehabilitation plan incorporates appropriate management, mitigation measures and monitoring plans.

WaterNSW also notes that the impact of Lambert North ash repository on groundwater and surface water will be identified by comparing with 90 percentile of baseline monitoring values along with ANZECC's default guideline values (DGV) (2000). WaterNSW recommends that the DGVs be used from updated version that was published in 2018 by ANZECC.

It is also noted that ERM's investigation results may result in changes in the OEMP for groundwater, and soil and surface water and rehabilitation plans. WaterNSW requests that any changes of the OEMP after ERM's investigation be reported and/or in consultation with WaterNSW.

EnergyAustralia NSW response

Thank you for your response. The consideration of the 2018 update to the Australian and New Zealand Guidelines for fresh and marine water quality (ANZG, 2018) is discussed in section 6.4.3.2.

EPA comments

I refer to your letter of 4 April 2019 advising that in accordance with Project Approval 09_0186 conditions D2 & D3, Energy Australia NSW is required to consult with the EPA regarding changes to the OEMP.

Having reviewed conditions D2 & D3 of Project Approval 09_0186, the EPA is of the view that consultation should be with the NOW and the SCA rather than EPA as the changes to the OEMP relate to groundwater and surface water management.

I have however reviewed the updated OEMP (the Plan) and am satisfied that the updated Plan suitably addresses actions arising from recent investigations into Chloride levels under the Ash Emplacement Area that resulted in the establishment of the 3 new water storages. ERM (on behalf of Energy Australia) are continuing to investigate the impact of the Mt Piper Ash emplacement area on groundwater and surface waters (Neubecks Creek) which is raised throughout the update Plan being that, "the ERM Assessment is currently underway and if required this OEMP will be further updated once the ERM Assessment is complete".

As such the EPA is satisfied that the updated Plan correctly reflects the current state of play.

EnergyAustralia NSW response

Thank you for your response.

DPI (Fisheries) comments

Thank you for contacting the Department in relation to the proposed modification of the OEMP.

I have reviewed the documentation provided and have no objections to the proposed changes.

EnergyAustralia NSW response

Thank you for your response.

NSW Health

Thank you for your request for a response from Nepean Blue Mountains Local Health District (NBMLHD) regarding your recently revised OEMP for Lamberts North Ash Repository.

Nepean Blue Mountains Local Health District has the following comments:

The OEMP refers to limiting environmental harms, rather than preventing environmental harms. This is a significant difference in approach and the OEMP as it is written does not provide measures which seek to ensure that environmental harm is not caused from the activity.

The public health impacts of such limits include the potential for contamination of the adjacent natural Neubecks creek, and the contamination of groundwater supplies which may be utilised for other purposes such as irrigation. There is also a potential for catchment vulnerability which is not addressed in the OEMP. Surface and sub surface water should not be contaminated by effluent or materials stored on site.

Table 3.3 should be amended to identify the Director Public Health Nepean Blue Mountains Local Health District as the appropriate liaison from NSW Health. This role is held by A/Prof Bradley Forssman. The Manager, Environmental Health for Nepean Blue Mountains Local Health District is James Plant. The contact detail for Nepean Blue Mountains Local Health District is 02 4734 2000, or NBMLHD-PUBLICHEALTH@health.nsw.gov.au .

Table 3.5. Clarification on who is determining health effects and severity ("triviality" under POEO definitions) should be made clear.

Section 3.7.1 Audits indicates a 'general' compliance with the conditions of approvals. It should be identified where compliance with approvals has failed or has not achieved compliance, along with a rationale and rectification to ensure that all approvals are fully complied with.

Dust and noise suppression as referred to in Section 6.3 should not be exceeded. Water returned to Neubecks Creek in accordance with 6.5.2 should be in the same condition as existing water in the creek, and not cause environmental degradation which may harm public health.

EnergyAustralia NSW response

Thank you for your response. The consideration of potential impacts to groundwater is outlined in sections 6.4.1.4, 6.4.3.2 and to surface water in section 6.5.3.5. Contact details for the Public Health Nepean Blue Mountains Health District have been updated in Table 3.3. The responsible person required to assess and initiate the Pollution Incident Response Management Plan is outlined in section 3.9.2. Audit findings and compliance reporting for noise and air quality criteria is published in the Lamberts North Annual Environmental Management Report.

Lithgow City Council

Council has no comments on the amended documents

EnergyAustralia NSW response

Thank you for your response.