Mt Piper Ash Placement Project Lamberts North Annual Environmental Management Report September 2013 – August 2014

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Annual Environmental Management Report (AEMR) Approvals:

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EXECUTIVE SUMMARY

On 16 February 2012, the NSW Department of Planning and Infrastructure (DP&I) approved the Mount Piper Ash Repository Project for the construction and operation of a new ash placement area at Lamberts Gully. In September 2013, ash placement began at Lamberts North with fresh fly ash placement commencing from the north-western corner, placed directly onto the soil base which was constructed at RL 917 m.

Condition E21 of the Minister's Conditions of Approval for the Project states that EnergyAustralia NSW must prepare and submit an Annual Environmental Management Report. Accordingly, the Annual Environment Management Report (AEMR) has been developed to satisfy the relevant Conditions of Approval for the project. Information in the AEMR is provided for the twelve month period from September 2013 to August 2014. The AEMR includes, but not necessarily limited to:

- Review of project performance against the Operation Environmental Management Plan (OEMP) and the Conditions of Approval (CoA);
- Details of compliance with CoAs;
- Reference to the Complaints Register for the twelve-month period and details of how these complaints were addressed and resolved;
- Identification of any circumstances in which the environmental impacts and performance of the project during the 12 month period have not been generally consistent with the environmental impacts and performance predicted in the documents listed under CoA A1, with details of additional mitigation measures applied to the project to address recurrence of these circumstances;
- Results of all environmental monitoring required under CoA, including interpretations and discussion by a suitably qualified person; and
- A list of all occasions in the preceding twelve-month period when environmental goals/objectives/impact assessment criteria for the project have not been achieved, indicating the reason for failure to meet the criteria and the action taken to prevent recurrence of that type of failure.

The Conditions of Approval and environmental requirements of the Operation Environmental Management Plan were found to be complied with the exception of B6 and B10 which were partially compliant and will be addressed in the 2014/15 period.

1. Introduction

1.1 Background

1.1.1 Mt Piper Ash Repository

The Mt Piper Power Station comprises two 700 MW coal-fired steam turbine generators, built over two stages in 1992 and 1993. The power station is located approximately 17 km northwest of Lithgow and five and kilometres east of Portland (Figure 1). In 1990 Lithgow City Council granted Delta Electricity (now EnergyAustralia NSW) consent for ash placement in the former Western Main open cut mine void adjacent to the power station. The ash placement area is in close proximity to the Mt Piper Power Station and is identified as Area 1 (Figure 2) in the Mt Piper Power Station Ash Placement Project Environment Assessment (August 2010), prepared by SKM. EnergyAustralia acquired Mount Piper Power Station and associated land holdings and infrastructure from the state owned Delta Electricity in September 2013.

Ash from the power station is placed in a dry ash repository, and approximately 680,000 m^3 of ash is placed in this area on an annual basis. Based on the rate of ash emplacement, it was anticipated that this area would reach capacity by 2015. A proposal to create a new ash placement area in the Lamberts Gully area was submitted to the Department of Planning and Infrastructure (now Department of Planning and Environment) in 2009 and was approved in February 2012. The approved emplacement area includes former coal workings, and was also used for coal washery operations by the previous landholder.

Subsequent to Project Approval, Delta Electricity proposed to increase the area of ash placement within the Northern section of the Lamberts Gully site and to change the direction and location of the drainage line proposed to take clean water from the south west boundary (Consistency Report, SKM, 2012). At this point the Project was essentially divided into two parts - Lamberts North and Lamberts South; this was in response to the uncertainty of Lamberts South becoming available in the future for ash placement due to land ownership issues outside Delta Electricity's control.

The Project Approval contains a number of conditions that need to be complied with by EnergyAustralia NSW, as the proponent, at different stages of the Project (Section 2). Condition E21 of the Project Approval (NSW DPE, 2012) requires that EnergyAustralia NSW prepare and submit an Annual Environmental Management Report (AEMR) for the approval of the Director-General, Department of Planning and Infrastructure (DPE).

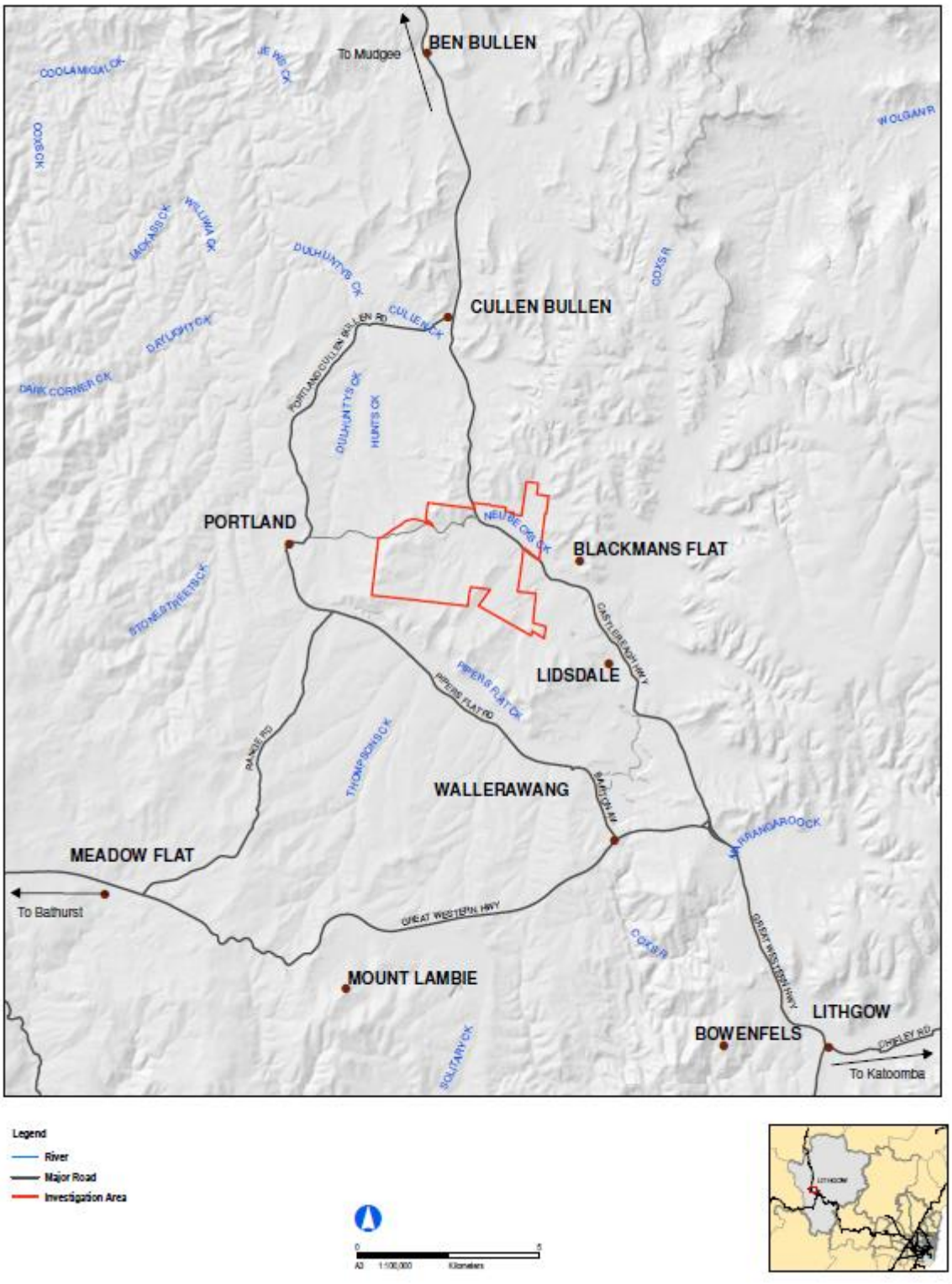

Figure 1: Regional context map

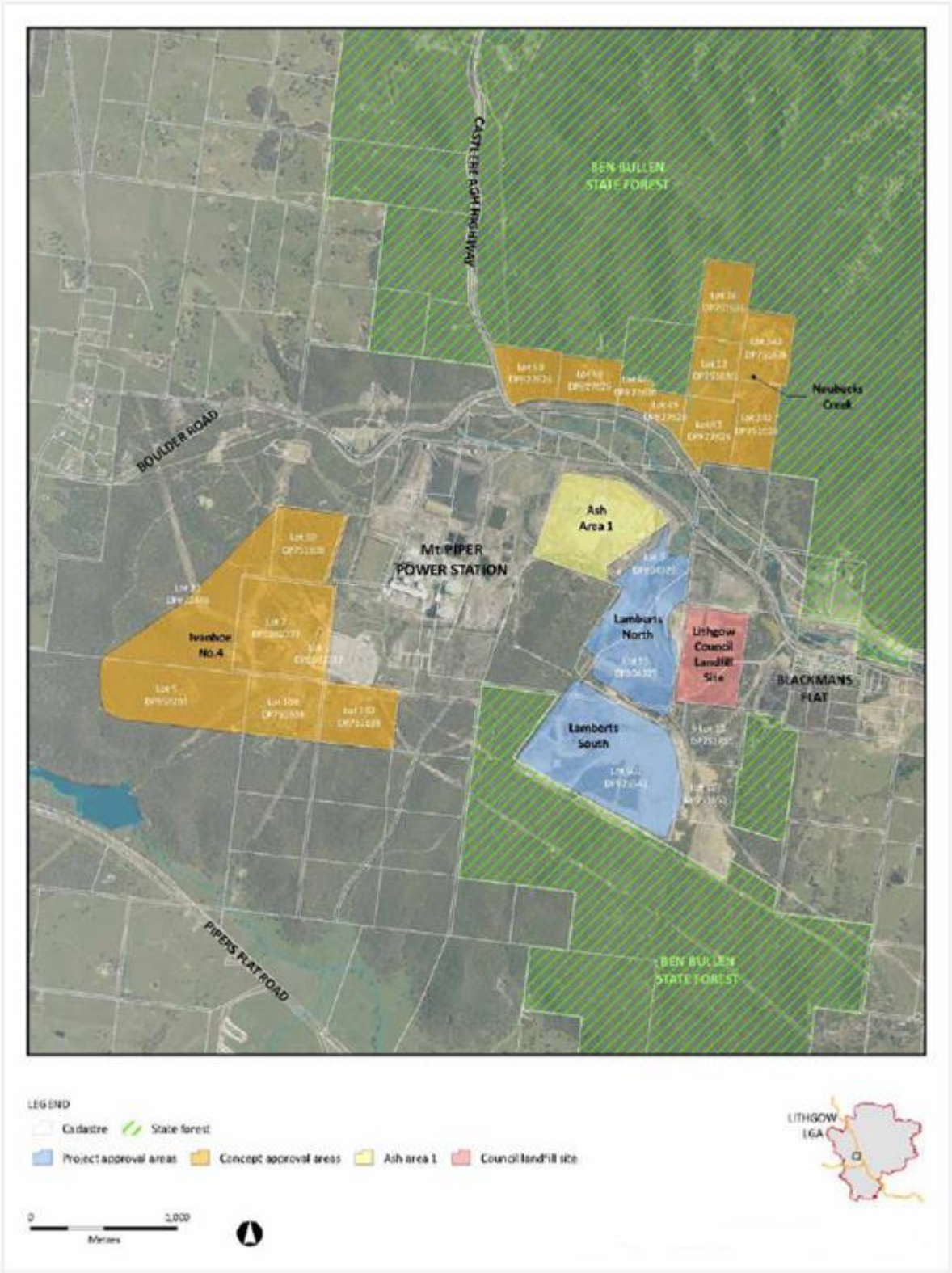

Figure 2 Site location and land tenure

1.2 Current Project Setting

Lamberts North incorporates an additional 19.7 ha of ash placement with a design that will extend the existing Mt Piper Area 1 structure at the completion of placement to Area 1. In September 2013, ash placement began at Lamberts North with fresh fly ash placement commencing from the north-western corner, placed directly onto the soil base which was constructed at RL 917 m in compliance with the Construction Environment Management Plan (CEMP). Furnace bottom ash was used for the development of haul access roads and for drainage layers (Lend Lease, 2014).

1.3 Purpose of the AEMR

This Annual Environmental Management Report has been prepared in order to satisfy Condition E21 of the Project Approval (DPE, 2012). The AEMR is to include, but not necessarily by limited to:

- Review of project performance against the Operation Environmental Management Plan (OEMP) (Conditions of Approval (CoA) D2) and the Conditions of this Approval;
- Details of compliance with CoAs;
- A copy of the Complaints Register (refer to CoA B11) for the preceding twelve-month period (exclusive of personal details), and details of how these complaints were addressed and resolved;
- Identification of any circumstances in which the environmental impacts and performance of the project during the 12 month period have not been generally consistent with the environmental impacts and performance predicted in the documents listed under CoA A1, with details of additional mitigation measures applied to the project to address recurrence of these circumstances;
- Results of all environmental monitoring required under CoA, including interpretations and discussion by a suitably qualified person; and
- A list of all occasions in the preceding twelve-month period when environmental goals/objectives/impact assessment criteria for the project have not been achieved, indicating the reason for failure to meet the criteria and the action taken to prevent recurrence of that type of failure.

2. Consents, Leases and Licences

This AEMR has been prepared to address the relevant conditions of the Project approval and the Statement of Commitments which have been triggered during the reporting period. The operation of the Lamberts North project must comply with the following statutory requirements (Table 1):

Table 1 Key Consents, Leases, Licences and Permits

Approval/Lease/Licence	Issue Date	Expiry Date	Details/Comments
Project Approval 09_0186	16 February 2012	-	Detailed summary provided in Appendix A
Environment Protection Licence (EPL) No. 13007	21 November 2013	01 Jan 2018 (Review Date)	Detailed summary provided in Appendix A
Mt Piper Ash Repository Area – Submissions Report	March 2011	-	-
Mt Piper Power Station Ash Placement Project– Environmental Assessment. Consistency Report.	August 2010 May 2012	-	-
Other licences, permits and approvals	-	-	Detailed summary within Section 4.1.2 of the OEMP
Other relevant legislation, guidelines and approvals	-	-	Detailed summary within Section 4.1.3 of the OEMP (Appendix B)

A summary of compliance against the applicable statutory requirements is provided in the sections below (Section 2.1).

2.1 Assessment of compliance with conditions of approval

The Project Approval contains a number of conditions that need to be complied with by EnergyAustralia NSW, as the proponent, at different stages of the Project. A summary of the compliance assessment findings against the Conditions of Approval (CoAs) for the management period (September 2013 to August 2014) is provided in Table 2

Summary of compliance assessment findings for the management period

Compliance Category	Number of Findings
Compliance findings	56
Non applicable findings	9
Partial compliance findings	2
Non-compliance findings	0
Total	67

Partial Compliance

CoA B6 -The *Proponent shall develop and submit for 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 on 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;

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

Detail contingency measures to be undertaken should monitoring against performance outcomes. Rehabilitation measures are required to be implemented to ensure that the biodiversity impacts are consistent with a maintain or improve biodiversity outcome.

and outlined below. A detailed review of compliance with the CoA is presented in Appendix A.

In assessing compliance with CoAs the following compliance categories were used:

- Compliance;
- Partial compliance;
- Non-compliance; and
- Not applicable.

Table 2 Summary of compliance assessment findings for the management period

Compliance Category	Number of Findings
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Partial Compliance

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g) Identify the objectives and outcomes to be met by the Biodiversity Offset Management Plan;

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i) Identify biodiversity impacts, including impacts related to the loss of impacted flora and fauna including threatened Capertee Stringybark (Eucalyptus cannonii), nine (9) hectares on 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;

j) 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;

k) Include an offset for direct and indirect impacts of the proposal which maintains or improves biodiversity values;

l) 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

Detail contingency measures to be undertaken should monitoring against performance outcomes. Rehabilitation measures are required to be implemented to ensure that the biodiversity impacts are consistent with a maintain or improve biodiversity outcome.

A Biodiversity Offset Management Plan (BOMP) for Lamberts North was prepared in consultation with OEH and was submitted 14 May 2013 to DPE. The BOMP was not approved by DPE (18/6/2013) and EnergyAustralia NSW were requested to revise the BOMP to include an offset of 1:1 to the existing rehabilitation site. The BOMP is progressing and it is expected that after consultation with OEH will be available for approval to the DPE by mid-2015. A Biodiversity Offset Strategic Outline (BOSO) was prepared for Lamberts South and was considered appropriate by the Department.

CoA B10 - *Prior to 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

The outcomes of compliance tracking in accordance with the requirements of this project approval.

A project website is available for the Lamberts North Project:
http://www.energyaustralia.com.au/about-us/what-we-do/projects/mt-piper-and-wallerawang
A link to the DPE website, which hosts the Environmental Assessment, Submissions report and approvals is available.

A more comprehensive approach to non-confidential project related documents such as OEMP and outcomes of compliance tracking relating to project progress will be added to the website.

2.1.1 Compliance with other licences, permits and approvals that apply to the project

Environment Protection Licence

The project area is located within the operating area of EnergyAustralia NSW's Mt Piper Power Station, which holds an Environment Protection Licence (EPL) No. 13007. The licence regulates the operation of the Mt Piper Power Station, including the operation of associated ash repositories.

The following sections of the EPL are relevant with respect to the operations of Lamberts North (See Table 3):

- **L1 Pollution of waters:** Except as may be expressly provided in any other condition of the Licence (EPL 13007) the licensee must comply with Section 120 of the Protection of the Environment Operations Act 1997 (POEO Act): Prohibition of pollution of waters;
- **L4 Waste:** The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence;

Table 3 EPL compliance assessment

EPL requirements	Finding	Relevant Section of AEMR
L1 Pollution of waters	Compliant	Section 5.5 (Groundwater monitoring) and Section 5.6 (Surface Water Quality Monitoring)
L4 Waste	Compliant	Section 4.12 Waste management
O1 Activities must be carried out in a competent manner	Compliant	Section 5.3 (Operational activities)
O2 Maintenance of plant equipment	Compliant	Section 5.3 (Operational activities)
O3 Dust	Complaint	Section 5.9 (Air Quality)

2.2 Construction Environmental Management Plan

A Construction Environmental Management Plan (CEMP) for Lamberts North was developed in consultation with EnergyAustralia NSW's Western Environment Section and approved by the then DPI in November 2012. The CEMP meets the requirements of CoA B4, providing the framework to manage the environmental aspects associated with construction works during Lamberts North operations. The CEMP has been written to address the requirements associated with the project as stipulated in the relevant provisions of the Project Approval 09_0186 issued by the DPI.

2.3 Operations Environmental Management Plan

The Operations Environmental Management Plant (OEMP) provides the framework to manage the environmental aspects associated with the operation of Lamberts North. The OEMP outlines the requirements associated with the project as stipulated in the relevant provisions of the Project Approval 09_0186 issued by the DPI, the Environment Protection Licence 13007 (EPL) issued by the NSW Department of Environment and Climate Change (DECC), and the Statement of Commitments (SoC) presented in the Submissions Report (SKM 2011).

The scope of the OEMP covers all operations involving the movement and placement of ash from Mt Piper Power Station (MTPPS) to Lamberts North Ash Repository. Performance against the OEMP is provided generally in Section 4.1.

3. Environmental monitoring

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 are 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, and revegetation and rehabilitation matters are outlined in the sub-plans of the OEMP (Section 6 of OEMP). Sample locations are shown in Figure 3. Monitoring of environmental impacts are carried out in accordance with the OEMP and relevant environmental guidelines and legislation. Any noncompliance 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. All monitoring samples have been collected by qualified personnel and analysed in a NATA accredited laboratory.

The associated Environment Monitoring Program can be found in Appendix C. The specific environmental requirements of Environment Monitoring Program will be addressed in the subsequent sections.

Figure 3 Environmental monitoring locations

4. Operations during the reporting period

All ash placement operations for Mt Piper Power Station, including Lamberts North, are undertaken by a contracted specialist in ash placement. Lend Lease is the current service provider for EnergyAustralia NSW in all aspects of ash and dust management. The Lamberts North ash repository is managed under an 'operate and maintain' contract.

4.1 Normal operating hours

The normal hours of operation for the Project are between 6 am and 8 pm Monday to Friday, and 6 am to 5 pm Saturday and Sunday in accordance with Condition E1. Operations outside these hours are defined as abnormal or emergency operating conditions and are subject to specific requirements in accordance with E2 (Section 4.2 OEMP).

4.2 Abnormal or emergency operating conditions

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

- Where it is required to avoid the loss of lives, property and/or to prevent environmental harm; or
- Where a breakdown of plant and/or equipment at the repository 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 normal operating hours Condition E1 (Section 3.1 OEMP).
- Where a breakdown of an ash haulage truck(s) or the conveyor belts prevents haulage during the operating hours stipulated under Condition E1 combined with insufficient storage capacity at Mt Piper Power Station to store ash outside of the normal operating hours; or
- In the event that the National Electricity Market Management Company (NEMMCO), or a person authorised by NEMMCO, 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 Mt Piper Power Station to allow for the ash to be stored.

Under these circumstances, EnergyAustralia NSW is required to notify the EPA, formerly DECC, and nearby sensitive receivers prior to any emergency ash haulage or placement operations outside of the '*normal operation*' hours, and the Director-General of the DPI within 7 days after the emergency operations have occurred.

No operating conditions have occurred at the Lamberts North ash repository outside the normal operating hours during the reporting period.

4.3 Ash delivery and placement

4.3.1 Environmental Management

Ash generated as a by-product from the operation of Mt Piper Power Station is transported by conveyer from the Station to RL 937 m at the Mount Piper Ash Repository as part of the existing operations. Ash is then transported by heavy haulage vehicles (generally one to two trucks) from RL 937m to either the previously established Mt Piper Ash Repository (Area 1), or to Lamberts North. Transport to Lamberts North is facilitated via the southern boundary haulage road in the existing ash repository. On delivery to the Lamberts North ash repository area, the water conditioned ash is deposited at the working face where compactors and bulldozers are then used to place the ash in stable landforms and to establish adequate and appropriate drainage. Ash placement can be broadly described as including the following processes:

- Identifying the current operational location for placement of ash.
- Placing ash at the existing face using truck and shaping of ash with a bulldozer.
- The ash is treated to achieve and average compaction of 95%, relative to its maximum standard compaction, through 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. This process of ash placement produces an average batter length of 40m.
- The sequence of ash placement will entail initially placing ash across the site starting from the most northerly part, then towards the east and south of Lamberts North, working to reach a final design height of 960 m AHD through abutment with Mount Piper Area 1 ash placement.
- Boundary faces are sequentially covered with material to be sourced from locally available material and commence replanting and restoration activities. The process is repeated until Lamberts North is filled to its maximum permissible height and extent.
- 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.
- Methods for the placement of ash materials to optimise compaction and stability of the emplacement areas include target moisture contact, compaction density, and progressive capping and vegetation.

Capping of exposed ash areas will be undertaken progressively as Lamberts North reaches the design height of 940 metres AHD. Progressive revegetation will occur on the batters and laybacks as required as ash placement commences. Lend Lease has commenced rehabilitation on the north east embankment with the current rehabilitation practices effective with no evidence of major erosion issues on the embankments and laybacks

(Aurecon, 2014b). On completion of ash placement in the Lamberts North the site will be and revegetated as outlined in the revegetation plan (section 6.8).

4.3.2 Environmental Performance

Operations of Lamberts North are considered to have met the following targets of the Ash Delivery and Placement Sub Plan of the OEMP:

- Compliance with the normal hours of operation condition for at least 98% of the year and its stretch target of 100% of the year-
    - Operation records show the Stretch Target has been achieved, i.e. 100% within normal hours;
- Integrate within the concept of ash management a market development program of alternative uses for coal combustion products other than repository storage.
- Compliance with the ash placement and compaction procedures - target of 95% dry density ratio exceeded at monthly testing.
    - Compaction testing is done on a monthly basis. The Lend Lease July monthly review to EnergyAustralia NSW show compaction test results for January to July 2014. Average compaction of at least 95% was achieved for all the months, also sighted was the compaction report for August (dated 26/08/2014) which showed an ash compaction of 96.2%.

All management and mitigation measures specified in the approved OEMP were found to be complied with.

4.3.3 Reportable Incidents

No reportable incidents have been recorded against ash delivery and placement for the reporting period.

4.3.4 Further Improvements

Further improvements have been identified for the next reporting period:

- The compaction rate of an average of 95% needs to be reviewed in the OEMP because it should be a target not and absolute.

4.4 Operational Noise Monitoring

4.4.1 Environmental Management

The Lamberts North Operations, Operational Noise Management Plan (ONMMP) has been developed to address the specific requirements of the Conditions of Approval (CoA) D3 9a) and E7 to E14 for the Project.

The ONMMP provides the framework to manage operational noise emissions and minimise potential noise impacts to sensitive receivers during the operation of the Project. The level of noise generated during the proposed works program will depend on the location of the receiver, the type and duration of works and intervening topography, and existing building structures between the noise emission source and receiver.

The residential community of Blackmans Flat is located to the east of the private haul road and ash repository site. The following residential properties, located within 1100m meters from Lamberts North, have been identified as the nearest potentially affected sensitive receivers to noise from the repository site:

Table 4 Representative noise measurement locations

Sensitive Receiver	Distance to Haulage Road (m)
1.Blackmans Flat (east of Lamberts North)	1100
2.Blackmans Flat (west of Castlereagh Highway)	1100

During the reporting period compliance monitoring was conducted during the early morning and evening periods as per the requirements outlined in the ONMMP. The applicable operational noise criteria are outlined in the Project Approval (No. 09_0186), the OEMP and the ONMMP. The criteria are summarised as follows:

> *The cumulative operational noise from the ash placement area and ash haulage activity shall not exceed a $L_{Aeq\ (15\ minute)}$ dBA as defined in condition E7 and identified in Table 5.*

Table 5 Operational Noise Criterion (LAeq(15 minutes) dB(A))

Location	Day (7am - 6pm)	Evening (6pm - 10pm)	Night (10pm – 7am)
All sensitive receivers within the township of Blackmans Flat	42	38	35
2.Blackmans Flat (west of Castlereagh Highway)	42	38	35

> *This criterion applies under all meteorological conditions except for any of the following:*
>
> *a) Wind speeds greater than 3 m/s at 10 meters above ground;*
>
> *b) Stability category F temperature inversion conditions and wind speed greater than 2m/second at 10m above ground level; and*
>
> *c) Stability category G temperature inversion conditions.*

4.4.2 Environmental Performance

The Lamberts North Operational Noise Review in 2014 was carried out within 60 days of the commencement of the operation of the Project in consultation with the EPA and submitted to the Director-General in accordance with CoA E11. The Noise review indicated that the relevant requirements of CoA E11 of the Minister's approval had been met. The following recommendations as outlined in Section 6 of the Operational Noise Review (Appendix D) to minimise noise emissions and ensure ongoing noise compliance were endorsed by the EPA and are as follows:

- Avoid the coincidence of noisy plant/machine working simultaneously close together.
- Construction trucks and other heavy machinery to use loop tracks as much as possible on the site to minimise the amount of reversing activities, i.e. managed through the Construction Traffic and Transport Management Plan.
- Consider the use of alternative warning system to the conventional single tone reversing alarm, such as broadband sound reversing alarm (e.g. BBS-TEK Backalarms) and warning lights.
- Installation of appropriate silencer/muffler on the engine exhaust for each truck working at Lamberts North.
- The use of light machinery (e.g. smaller excavators and dozers) during operation when working close to eastern site boundaries.
- Periodic operational noise monitoring shall be carried out at a minimum 6 monthly frequency. Within 14 days of completing the noise monitoring any non-compliance with the noise criterion shall be reported to the EPA and the Director-General;
- These recommendations were addressed in the Site Management Plan (Lend Lease, 2014).

The operational noise review was to be prepared in consultation with the EPA. The EPA offered the following comments in regard to the noise assessment and the response provided by the acoustic specialist is addressed in Table 6 below:

Table 6 Operational Noise response to EPA comments in regard to Lamberts North Operational Noise Review 2013

Comments by EPA	Response provided to EnergyAustralia NSW by external acoustic specialist
Results of noise monitoring exceeded the project criteria for day, evening, night	Noise monitoring results (LAeq) did exceed the noise criteria, but LAeq is not representative of noise from Lamberts North, it is contributed predominantly from traffic on road. Noise prediction was conducted in Section 5 to assess “worst case noise” noise from Lamberts North. It complies with day, evening and night time periods.
Operations of Lamberts North repository were inaudible at location 1/ 2	Correct. That is the reason why the noise monitoring results are not representative of the noise from Lamberts North (point above).
Noise meter was not paused to exclude road traffic	NSW INP does mention procedure to pause noise meter in case of “extraneous noise”. Traffic noise which is feature of the noise monitoring location is “not” considered as extraneous noise, therefore has to be included in the measurement.
The resulting predicted noise are in excess of the	Incorrect. Reference from the report “As there were no activities during evening and night time periods” noise

evening and night time criteria	levels will automatically comply with evening and night time periods. Measurements conducted in the evening and night times were merely background noise measurements.
..Worst case scenario does not consider any modifying factors.	Our worst case assessment considers modifying factors as per NSW INP Section 4, and other environmental factors mentioned in NSW INP.

No comment to date has been received from the DPE.

Results of the initial noise monitoring as submitted to the Director-General are summarised in Table 7 below. Detailed results of continuous noise measurements over the 15-minute are shown in Appendix D.

The September 2013 Lamberts North Operational Noise Review report noted the following:

1. Residential premise - Location 1 (Blackmans Flat)

The noise was dominated by the noise resulting from the traffic along Castlereagh Highway and activities at Mt Piper Power Station. There was no audible noise from the western direction (i.e., Centennial coal, Springvale Mine, etc. during the site attendance. Instantaneous noise level was measured in the range of LAF 55-59 dBA when a vehicle was passing on Castlereagh Highway. LAmax of 69-72 dBA was due to local domestic noise and birds.

2. Residential premise - Location 2 (Wallerawang)

The background noise level at the rural residential location 2 (i.e. Wallerawang) was relatively low compared to Location 1 during the day time measurements. Noise contribution during the evening and night time period included noise predominantly from insects at this location. The main sources of ambient sound at the site include: natural sounds (from wind noise, insects, bird/wildlife, etc.), slight hum from Mt Piper Power Station and distant vehicle traffic noise. Noise from distant operational activities at Lamberts North was inaudible during the entire survey period. Given the vast buffer distance of at least 2.5 Km between Location 2 rural residential dwelling and the Lamberts North, and the intervening topography, the operational noise impact at this location to be minimal or insignificant.

3. Lamberts North eastern boundary - Location 3 (Eastern Boundary of Lamberts North)

At the eastern site boundary of Lamberts North, noise emissions from operational equipment (clearly visible) on Mt Piper site, was clearly audible. The noise varied and included sources such as engine noise from dump truck, reverse beeps from excavator, bucket bangs of excavator, loading and unloading of ash in the dump truck.

Table 7 Summary of predicted noise level against the noise criteria (dBA)– March 2014

Location	Predicted Noise	Day limit 42 dBA (07:00-18:00)	Day limit 38 dBA (18:00-22:00)	Night limit 35 dBA (22:00-07:00)
1.Blackman's Flat	41	✓	-	-
2. Wallerawang	36	✓	-	-

Note - No operational activity during evening and night time periods.

Based on Table 7, noise associated with the operational activities at Lamberts North complied with the day time noise criteria at both representative locations. Site observations and information reviewed potential noise impacts from the operation of the Lamberts North Ash Repository are considered to have been effectively mitigated and managed, with no noise complaints received in relation to Lamberts North during the reporting period.

Aurecon was also engaged by EnergyAustralia NSW to carry out ongoing operational noise monitoring for the Lamberts North repository in accordance with CoA E12. The noise measurements were carried out on one occasion additional to the initial operational noise review. The ongoing operational attended noise monitoring at Lamberts North was carried out by Aurecon from 2 - 3 March 2014 (Appendix E). Environmental survey results revealed that the ambient noise at Location 1 (i.e. Blackman flat) was relatively high compared to Location 2 (i.e. Wallerawang) and the maximum equivalent continuous sound pressure level over 15 minutes at Location 1 was measured at LAeq (15minute) 52 dB(A). The measured noise levels were dominated by the intermittent road traffic along Castlereagh Highway and slight activities from the Mt Piper Power Station. Noise from other sites (i.e. Lamberts North, Centennial Coal, and Springvale Mine) was not audible during Aurecon's site attendance. The maximum predicted noise contribution resulting from the operation of all equipment plant at the Lamberts North site at Location 1 was determined as 38 dB(A).

The background noise level at the rural residential Location 2 (i.e. Wallerawang) was relatively low compared to Location 1. The main sources of ambient sound at Location 2 are the natural sounds from wind noise, insects, bird/wildlife, etc., distant vehicle traffic noise and hum from engine. Noise from distant operational activities at Lamberts North was inaudible during the entire noise survey, equivalent continuous noise over 15 minutes at Location 2 was measured at LAeq (15minute) 46 dB(A).

The maximum predicted noise contribution resulting from the operation of five equipment plant at the Lamberts North site at Location 2 was determined as 33 dB(A).Noise contribution from the operational activities at Lamberts North site could not be conclusively measured due the presence of other surrounding simultaneous noise sources and activities such as Pinedale coal mine, Springvale coal mine, KVAR site, road traffic, insects, etc. Based on the noise survey conducted at the predetermined locations between 2 and 3 March 2014 and noise prediction, the operational noise resulting from the operation of equipment and mobile plant at the Lamberts North site comply with the *OEMP* Lamberts North Ash Placement Project – Operational Environmental Management Plan (May 2013) at the representative residential receivers at Location 1 and Location 2.

Detailed results and comments are available in Appendix D and E. Based on noise assessments and zero noise complaints during the first year of operation of the Lamberts North Ash Repository potential impacts have been effectively mitigated and managed.

4.4.3 Reportable Incidents

No reportable incidents or complaints have been recorded against operation noise management for the reporting period.

4.4.4 Further Improvements

No further improvements have been identified for the next reporting period:

4.5 Groundwater Monitoring

4.5.1 Environmental Management

The Groundwater Management and Monitoring Plan (GMMP) is a sub-plan of the OEMP and seeks to address the specific requirements of the CoA D3 (b), E15 and E17. The hydrological monitoring program was incorporated into the GMMP because of the change in design to Lamberts North addressed in the Consistency Report (SKM, June 2012). Groundwater modelling (CEMP, CDM-Smith, June, 2012) demonstrated that the water in Huons drain is largely groundwater from the intersection of Huons Void with the groundwater table. The groundwater model was able to determine that groundwater flows in a north easterly direction across the site. The GMMP is comprised of the following targets:

- The quality of water underlying the site is not impacted by the Lambert's North Ash Placement operations.

Performance criteria:

- 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 OEMP Appendix B Table 7-4).
- Groundwater Water Quality Monitoring will be analysed at a NATA Accredited Laboratory by a qualified professional.

The GMMP provides for the requirements for the ongoing groundwater monitoring program in accordance with CoA E15. The GMMP was established and implemented in October 2012 prior to construction activities and in addition to the existing monitoring regime for Mt Piper ash repository. Water samples taken at the bores-MPGM4/D1, D8, D9, D10, D11, D15, D16, D17, D18 and D19 provide information about groundwater flow under Lamberts North ash placement area within the Mt Piper ash repository (Figure 3). The GMMP provides the procedures and protocols that apply to the monitoring and testing of water quality and involves monthly sampling of existing long-term bores associated with Mt Piper ash repository and new bores located south of Huon Gully.

Bore D9 is found outside the ash placement area and east of Huon Gully and south of Neubecks Creek and bore D8, north of Neubecks Creek. The Mt Piper ash placement area bores (MPGM/D10 and D11) on the western side of the ash placement area are used to monitor inflows from Mt Piper to the Lamberts North placement in Huon Gully. Bore D1 is north of Huon Gully and is used to detect seepage from the north-eastern Mt Piper brine placement. The groundwater bores D1, D8 and D9 are used to detect and warn of leachates that may enter Neubecks Creek. The GMMP also provides a contingency plan for events that have the potential to pollute or contaminate groundwater.

4.5.2 Environmental Performance

The Aurecon Water Quality Monitoring Report for October 2012 to August 2013 (pre-placement) and September 2013 to August 2014 (post-placement) aimed to:

- Report on the potential effects on receiving surface waters and groundwater.
- Review the consultant report on the aquatic life changes in Neubecks Creek.

Key observations in changes and water quality characteristics during the pre- to post- placement period of groundwater in relation to Lamberts North predominately refer to effects that are surmised to be due to groundwater inflows from sources unrelated to the Lamberts North site. Any effects on local surface and groundwater from the Lamberts North water conditioned ash site could not be distinguished from these alternate effects. Accordingly no adverse effects of the Lamberts North site could be identified.

The assessment of surface and groundwater quality found that:

- No adverse effects of the Lamberts North site could be identified and no ameliorative measures are indicated.
- Changes were identified in a range of monitoring bores adjacent to Lamberts North, which appeared to have originated from an external source to Lamberts North.
- The water quality and trace metal concentrations met the local and ANZECC (2000) guidelines in the receiving waters .The groundwater level changes at MPGM/D1 are unlikely to indicate groundwater level changes inside the ash placement area.

On site water management has mainly involved limiting rainfall infiltration and reducing seepage from Lamberts North into the local groundwater.

Detailed results and comments are available in Appendix F. Based on site observations and information reviewed potential groundwater impacts from the operation of the Lamberts North Ash Repository have been effectively mitigated and managed.

4.5.3 Reportable Incidents

No reportable incidents have been recorded against groundwater managed for the reporting period.

4.5.4 Further Improvements

Further improvements have been identified for the next reporting period and are as follow:

- Installation of two internal piezometers in or near ash placement embankment for sampling the groundwater height and water quality within the Lamberts North site.
- Installation of a background monitoring bore for the Lamberts North site to sample underground coal mine water inflows through Huon Gully.
- Investigate the need to re-drill bores MPGM4D15, D16, D17 and D18 to determine if current bores are effective in sampling the groundwater in the coal washery waste/mine spoil in the area of Huon Gully.
- Installation of monitoring bore between bores D15 and D18 to sample the effects of coal mine and washery working (now abandoned) on the water quality and trace metals in Huon Gully.

4.6 Soil and Surface Water Quality Monitoring

4.6.1 Environmental Management

The Soil and Surface water quality Plan (SSWMP) is a sub-plan as outlined in the OEMP and addresses the specific requirements of the CoA D3 (c) and E16. The SSWMP addresses soil and water cycle management on site, including a surface water monitoring program at receiving waters is comprised of the following targets:

- The water quality at Neubecks Creek is not impacted by Lamberts North ash placement operations;
- Zero environmental incidents that relate to pollution of waters at Neubecks Creek.
- Erosion to be effectively managed on site and not have an influence and/or impact on surrounding lands outside the boundary of Lamberts North.

Performance criteria:

- Surface water monitoring results at Neubecks Creek will indicate no significant variations from historical baseline data.
- Ecological results at Neubecks Creek will indicate no significant variation from historical baseline data.
- No visual evidence of erosion and sedimentation impacts on Neubecks Creek following significant rainfall events.

All runoff water falling on Lamberts North is contained in clean and dirty water sediment ponds and forms the primary source of water for dust suppression on exposed ash and capped areas as well as irrigation of the revegetated areas. The CoAs stipulate that a monitoring program must be implemented to record and observe

water quality and potential impacts from repository operations on regional surface waters. The Operational Environment Management Plan for Lamberts North requires sampling at three locations (Figure 3)- Mt Piper licenced monitoring point LDP01, Neubecks Creek (WX22) and upper Neubecks Creek (NC01), to ensure operations are not impacting on catchment surface waters, and to comply with Section 120 of the *Protection of the Environment Operations Act 1997* and subsequently Mt Piper's EPL.

As the aquatic life in Neubecks Creek is required to be monitored, turbidity, nutrients, dissolved oxygen and temperature are included in the monitoring program. Changes in the water quality and trace metals at Neubecks Creek receiving water site (WX22), from pre- to post- placement were examined in the Aurecon Water Quality Monitoring Report.

4.6.2 Environmental Performance

The Aurecon Water Quality Monitoring Report for October 2012 to August 2013 (pre-placement) and September 2013 to August 2014 (post-placement) aimed to:

- Report on the potential effects on receiving surface waters and groundwater.
- Review the consultant report on the aquatic life changes in Neubecks Creek.

Any effects on local surface water from the Lamberts North water conditioned ash site could not be distinguished from the current Mt Piper effects. Accordingly no adverse effects of the Lamberts North site could be identified.

The assessment of surface water quality can be found in Appendix F.

The changes shown during the relatively short pre- to post-placement period demonstrate that the complexity and intermixing makes it difficult to differentiate between impacts of Lamberts North to other sites and whether or not the Lamberts North ash placement has affected the local groundwater or Neubecks Creek.

Based on site observations and information reviewed potential surface water impacts from the operation of the Lamberts North Ash Repository have been effectively mitigated and managed.

4.6.3 Reportable Incidents

No reportable incidents have been recorded against surface water management for the reporting period.

4.6.4 Further Improvements

Further improvements have been identified for the next reporting period as:

- Review and update OEMP to align with the current monitoring undertaken.

4.7 Hydrological Monitoring

The hydrological monitoring program was incorporated into the GMMP because of the change in design to Lamberts North addressed in the Consistency Report (SKM, June 2012), as indicated in Section 5.5.

4.8 Ecological Monitoring

4.8.1 Environmental Management

The Ecological Monitoring Program (EMP) of the OEMP and seeks to address the specific requirements of the CoA. The EMP provides for the requirements for the monitoring of aquatic ecology, in particular macro-invertebrates aquatic habitat in accordance with CoA B7. The ecological monitoring program was implemented in November 2012 prior to construction activities and then during construction in April 2013. Two sample sites were included in the program, NCR1 downstream of surface water discharge point and NCR2 which is downstream of the gauging site (WX22). The EMP aims to monitor and quantify the impacts on the ecology of Neubecks Creek and the associated riparian environment. The initial two reports included background information on the aquatic ecology of Neubecks Creek including the results of AUSRIVAS sampling and the assessment of aquatic habitat at both sampling sites. The reports assessed whether impacts to the aquatic ecology of Neubecks Creek may have occurred following the baseline study. The program also provides a contingency plan for events that have the potential to pollute or contaminate groundwater.

The Ecological Monitoring Program is comprised of the following performance targets:

- The water quality at Neubecks Creek is not impacted by Lamberts North ash placement operations.
- Zero environmental incidents that relate to pollution of waters at Neubecks Creek.
- Erosion to be effectively managed on site and not have an influence and/or impact on surrounding lands outside the boundary of Lamberts North.

Performance criteria:

- Surface water monitoring results at Neubecks Creek will indicate no significant variations from historical baseline data.
- Ecological results at Neubecks Creek will indicate no significant variation from historical baseline data.
- No visual evidence of erosion and sedimentation impacts on Neubecks Creek following significant rainfall events.

4.8.2 Environmental Performance

As the aquatic life in Neubecks Creek is required to be monitored, changes in the water quality and trace metals at Neubecks Creek receiving water site (WX22), from pre- to post- placement were examined in the Aurecon Water Quality Monitoring Report (Appendix F) .The Aurecon Water Quality Monitoring Report for October 2012 to August 2013 (pre-placement) and September 2013 to August 2014 (post-placement) aimed to:

- Review the consultant reports Neubecks Creek-Ecological Monitoring Program Aquatic Ecosystem Baseline Survey (GHD 2012 and 2013) on the aquatic life changes in Neubecks Creek.

The study found that the water quality in the creek was such that the AUSRIVAS model predicted the macroinvertebrate community to be in 'reference condition' (Band A). This indicated the water quality had not been degraded by land use change within the catchment or inputs from Mt Piper or the Lamberts North site. These findings are consistent with the water quality and trace metal concentrations meeting the local and ANZECC trigger values at NC01 and at the receiving water site, WX22. Although AUSRIVAS model predicted the macroinvertebrate community should be in good condition, the riffle habitat monitoring showed that they varied from 'severely' (Band C), or 'significantly impaired' (Band B) to 'reference condition' (Band A). The lower ratings were due to the effects of low stream flows in the creek causing limited riffle habitat to be present at both sites. Due to this effect, the macroinvertebrates were reduced to taxa tolerant of physical and chemical stressors, similar to those experienced by waterways in impacted, urban catchments.

Sampling at the edge habitat showed similar variability at both sites, ranging from 'reference condition' (Band A) to 'significantly impaired' (Band B). This was caused by erosion of the banks during high flows following significant rainfall events in the catchment, as well as possible flushing of the macroinvertebrates out of the sampling sites by the high flows unrelated to operations at Lamberts North.

Due to the prevailing conditions in the creek, no significant difference in macroinvertebrate community composition was found between the upstream and downstream sites. The need for this monitoring is suggested to be reviewed after the groundwater levels inside the ash placement area are known and the potential effects on receiving waters are better understood.

Based on site observations and information reviewed potential impacts from the operation of the Lamberts North Ash Repository have been effectively mitigated and managed.

4.8.3 Reportable Incidents

No reportable incidents have been recorded against surface water management for the reporting period.

4.8.4 Further Improvements

Further improvements as recommended in a critical review of the Neubecks Creek EMP (Cardno, 2014) have been identified for the next reporting period as:

- Based on its location with respect to Project activities, Site NCR1 on Neubecks Creek could be reclassified as a control site. Site NCR2 could remain a potential impact site and Site A16 would remain a 'control' site, however, Site A16 would more accurately be referred to as a 'downstream reference site' due to it being located downstream of the Project.
- If suitable habitat exists, an additional potential impact site could be established on Neubecks Creek downstream of the Project site and the confluence with Lamberts Gully, which may drain surface water off the Project site, and, if possible upstream of any potential impacts that could be associated with other nearby users of Neubecks Creek. While no baseline data would be available for such a site, it would still provide useful information on the extent and severity of any potential impacts if they were to occur.
- Future monitoring reports and assessments should include results of analysis of the ongoing *in situ* and *ex situ* water quality monitoring program and use this information to assist in the interpretation of macroinvertebrate data and the detection of potential impacts due to the Project.
- Data from the autumn 2013 sampling event should be treated as post-baseline data during all future comparisons and data analyses. As construction activities commenced in February 2013, which was prior to the autumn 2013 sampling event (May 2013), the autumn 2013 sampling event provides post baseline, rather than baseline data. This would require that all future monitoring be undertaken in spring to allow valid comparisons of all post-baseline data, collected from mid-2013 onwards, with true baseline data, which exist only in the form of a single baseline sampling event in spring 2012.
- Data from aquatic ecology monitoring sites on un-regulated sections of rivers sampled as part of the Coxs River Biological Monitoring Program should be used to assist in the interpretation of macroinvertebrate data collected from Neubecks Creek. Data from these sites are available from before and during the commencement of Project activities and would help place data collected from Neubecks Creek in a wider spatial context. However, these data are available from autumn months only and could not be compared directly with any data collected from Neubecks Creek in spring.
- The statistical approach should be revised to take into consideration the reclassification of Site NCR1 as a control site and the confirmation that the autumn 2013 sampling event provides post-baseline data. This would include a review of the statistical techniques and design of the analyses to ensure that they are amenable to the detection of impacts. It should be noted that

the availability of data from only one baseline sampling event would reduce the power of the statistical analyses used to detect an impact.

4.9 Air Quality Monitoring

4.9.1 Environmental Management

The Air Quality Management Plan (AQMP) is a sub-plan of the OEMP and seeks to address the specific requirements of the CoA relating to air quality. The AQMP provides for the requirements for the air quality monitoring program in accordance with D3 (d) and E18.

The Repository Site Management Plan (Lend Lease, 2014) for Lamberts North operations proposes an Implementation Strategy in accordance with the Air Quality Monitoring Program, as required under the Projects CoAs and as outlined in the OEMP. The strategy includes specific site management pertaining to the transport and emplacement of ash, managing dust within the ash repository using an extensive sprinkler system and water cart applications, and continuous monitoring for dust/airborne particulates. Sprinklers and compaction are used to minimise fugitive dust from the Lamberts North ash placement area. Water trucks are used to manage fugitive dust from the haul roads.

Dust management within the site is also included in the responsibilities of all operations, including:

- Daily monitoring from weather station.
- Fly ash conditioning.
- Irrigation- sprinkler use. Water use target 54m^3/ha per day as 1800 litres per sprinkler per day.
- Water cart- wash-down of security roadways, haul road/s and vehicle access roads.
- Static dust monitors (4 g m^{-2} $month^{-1}$ trigger level for site Units: g m^{-2} $month^{-1}$).
- Ash placement operations
- Final and temporary capping of ash; and
- General maintenance of the ash placement area (Lend Lease 2014).

Dust suppression is a primary performance objective for ash placement activities. Dust suppression concerns all aspects of exposed ash and ancillary aspects of vehicular traffic during permanent capping and other activities. The primary dust suppression method on exposed ash is the use of sprinklers with water sourced from wash down ponds and the blow down towers. Sprinklers are also used for haul roads. Water source, volumes and sprinkler numbers are monitored daily by Lend Lease and reported to EnergyAustralia NSW on a monthly basis.

Areas without sprinkler coverage are managed using a water cart. Water cart coverage is also used for auxiliary roads. Water cart work procedures are defined in Lend Lease documentation (MP-WW-PC-712.6.6) as a plan and work procedure.

4.9.1.1 Sprinklers and Pumps

Details of methods associated with sprinklers and pumps are provided by work procedures *Sprinkler Technician Duties* MP-PC-712.3.1 and *Sprinkler System Operation* MP-PC-712.3.2 and in the Lend Lease monthly instructions. The primary performance objective for sprinklers and pumps are their availability and their use, together with appropriate application rates for the aspect of infiltration in order to mitigate an environmental incident. Records of use keep by staff undertaking environmental duties. This is done on a daily basis.

Dust suppression – Lamberts North sprinkler system

Water application (measured in sprinkler hours) is based on wind velocity, humidity and temperature. The water used for dust suppression in Lamberts North is sourced from the Mt Piper cooling water system- no clean water is used in this application.

The Repository Management Plan (Lend Lease 2014) provides a guide for sprinkler hours at an optimum of 4 hours per day during low evaporation at less than 3 mm per day to ensure that a target of 5 mm by irrigation application is not exceeded (Table 8).

Table 8 Guide for sprinkler hours

Water use guidelines	Water use guidelines
>25^{o} >20km/hr (10hrs/day)	15^{o} <20km/hr (<4 hours/day)
15-24^{o} <20km/hr (8 hrs/day)	
15^{o} <20km/hr (4 hours/day)	
Evaporation 3-7 mm per day	**Evaporation < 3 mm per day**
Oct, Nov, Dec, Jan, Feb, Mar,	April, May, June, July, Aug, Sept

* Operation of sprinklers in extreme hot and dry conditions requires extended irrigation hours

4.9.1.2 Air quality monitoring

Air quality monitoring is undertaken on a continuous basis. A Tapered Element Oscillating Microbalance (TEOM) (TSP/PM_{10}) is located in the northern end of Lamberts North and five dust gauges are located at various locations around the Mt Piper site and near Lamberts North. PM10 and PM2.5 are measured using one ambient monitor (high volume) Air Quality Monitoring Station (AQMS). The AQMS is located at Blackmans Flat. Dust monitoring results are recorded monthly with colour and textural observations.

Data from these depositional dust gauges, TEOM and AQMS provide a comprehensive assessment of potential dust impacts from Lamberts North Ash Repository.

4.9.2 Environmental Performance

4.9.2.1 Dust suppression – Lamberts North sprinkler system

Figure 4 reflects a relationship between sprinkler application and evaporation to identify that the target or maximum application rates for irrigation at 5 mm / day was achieved. Net irrigation was calculated by subtracting the daily evaporation from the daily sprinkler irrigation rate.

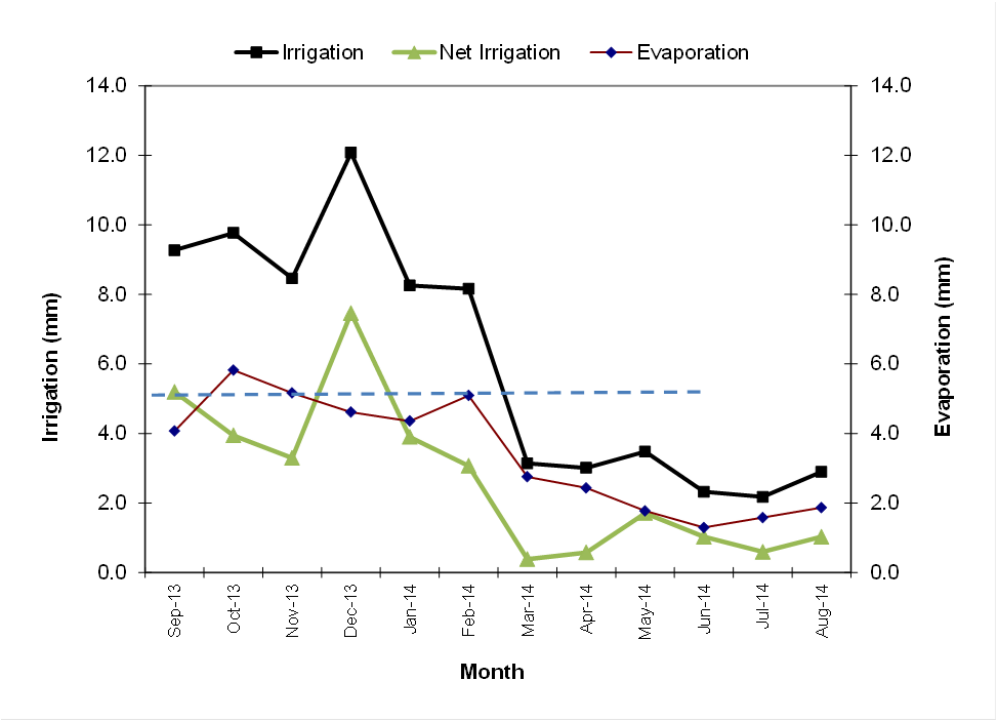

Figure 4 Efficacy of irrigation operations September 2013 – August 2014

4.9.2.2 Air Quality monitoring

EnergyAustralia NSW undertakes dust monitoring using a series of ambient dust deposition gauges outside the Mt Piper Ash Repository including Lamberts North area, closer to residential areas. An assessment of dust deposition gauge results has been undertaken in the annual Air Quality Report - Appendix G All results for the 2013-14 year for total insoluble solids were less than the DECC assessment criteria total dust deposition of 3.5 g/m^2/month with the exception of three readings. The locations of these offsite dust monitors are depicted in Figure 5 below.

Performance indicators recommended in the OEMP are as follows:

- Increase in Total Suspended Particulates (TSP) by > 2g/m2/month to a maximum of 3.5g/m2/month at dust deposition gauges outside the ash placement area; and
- PM10 annual average is <30µg/ m3 and 24 hour maximum does not exceed 50µg/m3

Data from these depositional dust gauges provide a comprehensive assessment of potential dust impacts from Lamberts North Ash Repository. Dust gauge data from the 2013-2014 period of Lamberts North operations indicate that Lamberts North operations have resulted in dust deposition above the OEMP levels that trigger the requirement to implement additional control measures.

The Lamberts North OEMP includes an Air Quality Management Plan, which contains monitoring and reporting requirements, including the operation of five dust deposition gauges in the vicinity.

The current Mt Piper Ash Repository Lamberts North Air Quality Report (Appendix G) presents the dust data collected in the first year of operations of Lamberts North, from September 2013 to August 2014, and similarly reviews the results against the requirements of the OEMP. The Annual Air Quality report also reviews of the annual PM10 and PM2.5 data. Conclusions and recommendations arising from the review of the air quality monitoring data collected during the first year of Lamberts North operations appear below. In undertaking this data review some comments and observations are made on the operation of the air quality management plan.

1. Annual average dust deposition results in the first year of the Mt Piper Ash Repository Lamberts North operations were below the criterion of 3.5 g/m2/month at 5 of the 5 Operation Environmental Management Plan (OEMP) gauges.
2. The dust gauge data from the first year of Lamberts North operations does not indicate that Lamberts North operations have resulted in dust deposition above the OEMP levels that trigger the requirement to implement additional control measures.
3. The TEOM at Mt Piper PM10 annual average maximum of 30µg/m^3 has not been exceeded in the reporting period of September 2013 to August 2014. The PM10 24 hour maximum of 50µg/m^3 has been greater on 5 days since September 2013. After investigations the likely source of PM10 on these days is not from ash placement at Lamberts North but due to other unrelated source/s as discussed in the Mt Piper Ash Repository Lamberts North Air Quality Report.
4. The AQMS at Blackmans Flat PM10 annual average maximum of 30µg/m^3 has not been exceeded in the reporting period of September 2013 to August 2014. The PM10 24 hour maximum of 50µg/m^3 has been greater on 3 days since September 2013. After investigations the likely source of PM10 on these days is not from ash placement at Lamberts North but due to other unrelated source/s as discussed in the Mt Piper Ash Repository Lamberts North Air Quality Report.
5. The guideline PM2.5 annual average maximum of 8µg/m^3 has not been exceeded in the reporting period of September 2013 to August 2014. The PM2.5 24 hour maximum guideline of 25µg/m^3 has been greater on 5 days since September 2013. After investigations the likely source of PM2.5 on these days is not

from ash placement at Lamberts North but due to other unrelated source/s as discussed in the Mt Piper Ash Repository Lamberts North Air Quality Report.

6. No complaints regarding dust emissions from Lamberts North were received by either EnergyAustralia NSW or the Lamberts North site contractor during the first year of Lamberts North operations.
7. It is considered that the monitoring and reporting requirements of the OEMP are being met.

Ambient air quality monitoring data has shown that the particulate emissions are generally well within the average TSP concentrations of 90µg/m^3 predicted in the Environmental Assessment. The daily and monthly data suggest that the actual impact on the sensitive receivers is no more than what was predicted. This is applicable to both the TEOM (TSP/PM_{10} data) and the dust disposition gauges. These results indicate that Lamberts North is managed effectively for dust and as such is in compliance with CoA D3 (d) and E18. Having reviewed all available information/data and from site inspections, the requirements of the OEMP were found to be complied with for 2013-2014. No complaints related to air quality issues arising from Lamberts North operation have been received during the first year of operation.

Based on site observations and information reviewed potential impacts from the operation of the Lamberts North Ash Repository have been effectively mitigated and managed.

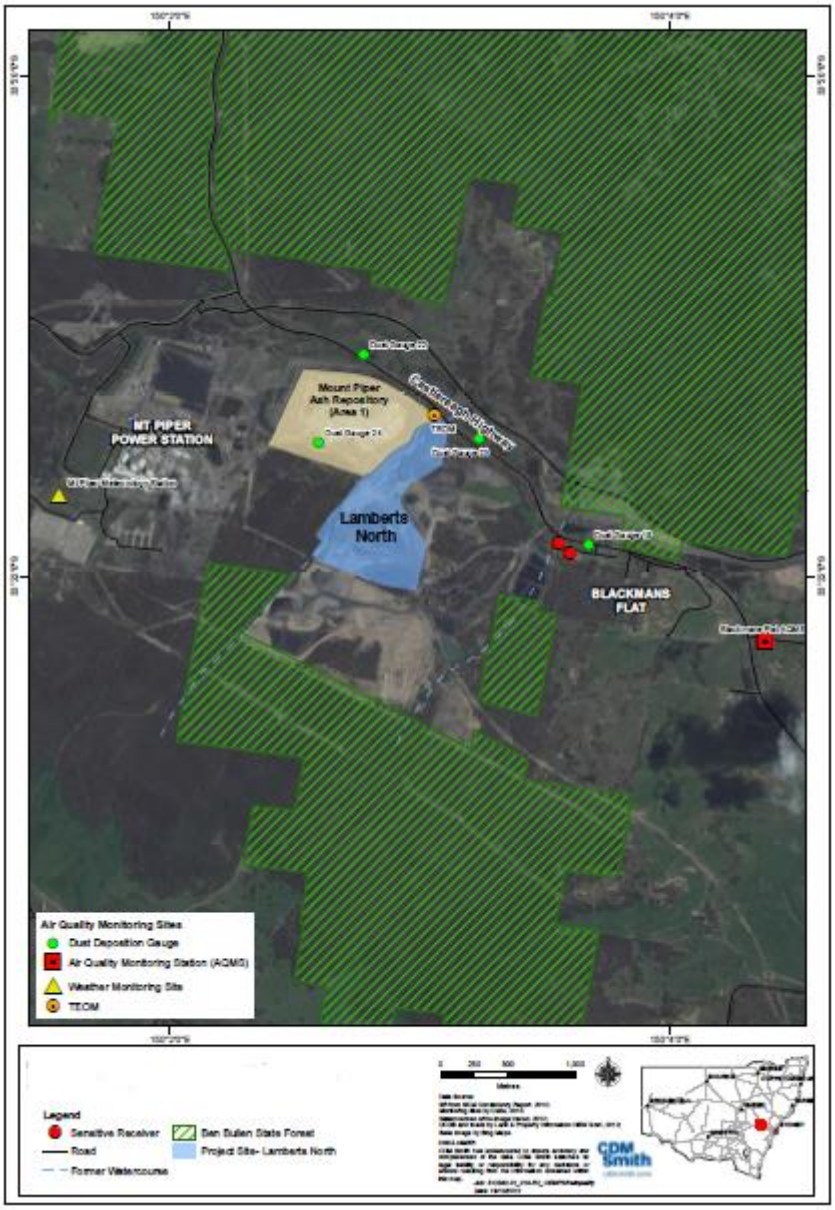

Figure 5 Location of Lamberts North dust gauges

4.9.3 Reportable Incidents

No reportable incidents have been recorded against air quality management for the reporting period.

4.9.4 Further Improvements

No further improvements have been identified for the next reporting period and any additional monitoring gauges deemed not necessary.

4.10 Landscape and Revegetation

4.10.1 Environmental Management

The statement for landscape environmental management is provided in the Lend Lease Site MP-PL-701 Ash and Dust Repository and Brine Management Plan Mt Piper Power Station and Lamberts North Version 08, dated August 2014. This document has been developed in accordance with CoA D3e) and Section 6.7 of the OEMP.

The Mt Piper Ash Repository, including Lamberts North, has a series of comprehensive water management processes. All these affect the progress of Landscape and Revegetation.

- clean water (free of ash) off permanently capped batters and laybacks
- surface water from exposed ash
- groundwater inflows from the catchment
- irrigation and dust suppression water sources
- ash conditioning water sources
- groundwater outflows from the repository site.

The principle management aim is to mitigate risk against storm damage and the potential for uncontrolled flow patterns. Several basic operational objectives are involved:

1) detainment and containment

2) mitigation of all runoff over batters (internal or external)

3) control of slope to mitigate erosion

4) water reuse and recycling

The first a level of detainment is initially derived using the ash placement benches, with off-flow-structures subsequently placed at intervals down-slope. Management structures include the use of grades at 1%, sumps or pond detentions. Items 1-3 (detainment, mitigation and control) provide for our primary principle of catchment management – that is to detain water high in the landscape. This applies to all areas, including completed and capped areas and it is necessary to develop a staged or cascade system with retention from the highest elevation. This has been our environmental operational policy since 2006 and detainment, mitigation and slope control are now a normal practice for the repository teams. Calculations indicate this control measure of integrated slopes and detentions built into the exposed ash placement benches will provide a buffer of up to 70 mm rainfall before this water when detained will need to flow across to runoff collection infrastructure.

Prior to 2006, the containments across the Mt Piper site were traditionally located at the base of the ash pads, to the east of the site and in basins naturally available. A lack of design management ultimately resulted in significant damage to benches and pads due to uncontrolled water flows. Since implementing the policy of detainment, mitigation and slope control the losses of ash form due to wash-out damage has been reduced significantly. Consequently, there is a difference in management with ash movement is regarded as erosion and water movement is regarded as flow. Ultimately the principle for management is to promote controlled water flow rather than movement of ash or sediment with the latter associated with erosion.

The current management principle for water management is to construct ash benches so that water flow is directed (controlled) and that no water flows over or breaks a batter. Exit flows are solved by using each ash bench to contain water with where possible a controlled exit. Implementation of this principle has been successful

since 2008 for the brine benches at RL 963 m covering the B1-B4 area of 5.2 ha. Retention is via a lined sump that can control and retain 70 mm rainfall duration without damage downslope with use of piped outflow.

4.10.2 Environmental Performance

A high level strategic plan is in place for future capping and rehabilitation of Lamberts North and will be reviewed as required. A more detailed Revegetation Strategy Plan for Lamberts North is not likely to be required for two to three years, when Lamberts North has reached a level where it can be contoured in with the batters on Mt Piper Area 1.

Lend Lease has commenced rehabilitation on the north east embankment of Lamberts North. Progressive revegetation will occur on the batters and laybacks as required as ash placement commences. The current rehabilitation practices appear to be effective with no evidence of major erosion issues on the embankments and laybacks.

Performance targets:

- 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 inspections records to confirm ash placement and compaction targets are being achieved.
- Evidence of long-term water management plan that integrates the concepts of land revegetation mad rehabilitation
- Evidence of established revegetation and monitoring program to meet short and long-term goals
- Physical coverage of exposed ash on all external batters and boundaries capped with suitable material.

The majority of the OEMP requirements with respect to landscaping/revegetation were found to be not applicable given ash has yet to reach the design RL (940 m AHD). However, the interim landscaping/revegetation activities undertaken are considered to be in line with the relevant OEMP target, given the project's progress to date.

Based on site observations and information reviewed potential impacts from the operation of the Lamberts North Ash Repository have been effectively mitigated and managed.

4.10.3 Reportable Incidents

No reportable incidents have been recorded against landscape and revegetation management for the reporting period.

4.10.4 Further Improvements

No further improvements have been identified for the next reporting period.

4.11 Erosion and Sediment Control

4.11.1 Environmental Management

The Soil and Surface water quality Plan (SSWMP) is a sub-plan as outlined in the OEMP and addresses the specific requirements of the CoA D3 (c) and E16. The SSWMP addresses soil and water cycle management on site, including a sediment and erosion control plan and is comprised of the following targets:

- 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:

- No visual evidence of erosion and sedimentation impacts on Neubecks Creek following significant rainfall events.
- Establishment of procedures for maintenance of temporary and permanent silt and sediment control structures within the site.

Operational activities have the potential to increase sedimentation throughout the site. The OEMP details the mitigation measures to control sedimentation. The Project has strict controls in place to mitigate against impacts to the surrounding environment. A concept Erosion and Sediment Control Plan (ESCP) was developed as part of the Water Management System (WMS) for the Project. The Plan ensures appropriate controls are implemented to keep clean stormwater separate from water that has come into contact with ash on site during the operation period. All water falling on ash-exposed areas will be directed toward containment systems within the site, and reused.

Lamberts North ash operational activities 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;
- 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 Mt 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.

Consequently, all 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.

4.11.2 Environmental Performance

Operations of Lamberts North are considered to have met the following targets of the SSWMP including a sediment and erosion control plan as outlined in the OEMP. The following observations were made during the Independent Environmental Audit performed in September 2014 by Aurecon (Aurecon, 2014):

- Drainage channels separating clean and dirty water and the presence of surface water collection ponds.
- Design and management of the slopes and batters appeared to be effective with minimal erosion impacts evident.
- Rehabilitation on the embankments had commenced using mulch and tree planting with no evidence of excessive erosion during the inspection.
- Lend Lease are experimenting with contouring batters on Mt Piper Area 1 embankments to reduce flow of water to minimise potential sheet wash and for better slope control
- Daily, weekly and monthly inspections were being undertaken.
- Wet weather inspection checksheets (MP-SF-729A) for a 10.5ml wet weather event on 26/07/2014 and a 5.5 ml wet weather event on 18/08/2014 were sighted.

Based on site observations and information reviewed potential impacts from the operation of the Lamberts North Ash Repository have been effectively mitigated and managed.

4.11.3 Reportable Incidents

No reportable incidents have been recorded against erosion and sediment control for the reporting period.

4.11.4 Further Improvements

No further improvements have been identified for the next reporting period.

4.12 Waste Management

4.12.1 Environmental Management

The Waste Management Plan (WMP) 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 WMP addresses waste management on site, including CoA 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 and is comprised of the following targets:

- 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.

Waste management is guided by the principle that waste shall not be disposed of at the ash repository, unless expressly permitted by the Environmental Protection Licence 13007. In addition, all waste materials are assessed, classified, managed and disposed of in accordance with Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-liquid Wastes (EPA, 1999). Waste generated by site personnel (including maintenance wastes such as oils and greases) are collected on a regular basis by a specialist contractor to be recycled or disposed of at an appropriate offsite facility.

All employees including contracted staff involved in the Lamberts North operations are made aware of the waste management procedures as outlined in the OEMP sub-plan during their site induction and project specific briefings. Waste-related documents and records are developed to reflect adherence to these protocols, thereby providing the foundations for a transparent approach to waste management. The OEMP provides further guidance and detail on specific waste streams and applicable management measures (OEMP Section 6.8).

4.12.2 Environmental Performance

Based on the Lend Lease Monthly Client Reports, information reviewed (including discussion with site security and the Security Manager) and site observations made, the operations of Lamberts North have met the OEMP targets for waste management for the 2013-14 year. OEMP requirements with respect to waste management were found to be complied with. No non-conformances were identified.

The OEMP requirements for waste management have found to be compliant.

4.12.3 Reportable Incidents

No reportable incidents have been recorded against waste management for the reporting period.

4.12.4 Further Improvements

No further improvements have been identified for the next reporting period.

4.13 Heritage Management

4.13.1 Environmental Management

The CEMP provides guidance surrounding the management methods required to comply with CoA's .

4.13.2 Environmental Performance

No additional Aboriginal and non-indigenous heritage sites were identified during the reporting period.

4.13.3 Reportable Incidents

No reportable incidents have been recorded against heritage management for the reporting period.

4.13.4 Further Improvements

Further improvements have been identified for the next reporting period:

- The Independent Environment Audit (2014) recommended that the EnergyAustralia NSW Land Management Plan be updated with the current record of the AHIMS sites.

5. Inspections and Audits

As stated in the OEMP, Environmental inspections will be undertaken by the Environmental representative and Site Manager, in accordance with the program outlined in Table 9. The inspections assist to identify areas where improvements to the environmental performance of Lamberts North operations can be achieved. Further detail is provided in section 3.6 of the OEMP. Reports from inspections undertaken are submitted to and reviewed by EnergyAustralia NSW monthly, with all areas discussed in detail during regular client/contractor meetings.

Table 9 Environmental inspection program

Potential impact	Locations	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 report	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 EA NSW/specialist consultant

Six monthly audits will be undertaken by the Environmental Representative in accordance with the AS/NZ ISO 19011:2003 - *Guidelines for Quality and/or Environmental Management Systems Auditing*. The audits will incorporate procedures for rectifying any non-compliance issues, and will provide mechanisms for recording environmental incidents and the subsequent actions taken.

5.1.1 Environmental Management

In addition to the six monthly auditing undertaken by the Environmental Representative, an independent Environmental Compliance audit will be undertaken by a specialist consultancy following the first twelve months of operation in accordance with CoA E22. The independent specialist's report will detail actions proposed in relation to EnergyAustralia NSW's operational schedule and on-site activities, and include a review of compliance with all requirements under the Project Approval and the OEMP.

5.1.2 Environmental Performance

5.1.2.1 Independent environmental audit

The independent environmental audit was carried out generally in accordance with the requirements of ISO 19011:2002 Guidelines for Quality and or Environmental Management Systems Auditing (Appendix H). The audit found that the operation of Lamberts North was generally in compliance with the requirements of the approval and with the other licences and approvals that are applicable to the project. Two partial compliances were identified. These indicate that EnergyAustralia NSW is generally compliant with Conditions of Approval, but requires some modification to ensure full compliance is obtained. The partial compliances can be characterised as administrative issues which can be easily rectified. It was acknowledged that EnergyAustralia NSW is still transitioning the website and documents which were prepared when Delta Electricity was the proponent.

While the environmental performance of the project against the predictions made in the Environmental Assessment were found to be generally in agreement for most aspects, ie with impacts being no worse than what was predicted, it is noted that given the interactions between the Lamberts North ash placement activities, Mt Piper Area 1 ash placement and mining activities, it may be challenging to determine the actual impacts on groundwater, surface water and air quality as a result of ash placement in Lamberts North, as well as assessing the effectiveness of the environmental management measures to minimise potential impacts on groundwater and surface water.

However, the environmental management of the project, including environmental impact mitigation works were generally found to be effective. No complaints or incidents related to the Lambert North ash placement have been reported during the first year of operation. Lend Lease has commenced rehabilitation of the northern embankment and minimal erosion of the embankments were sighted. The audit found that both Lend Lease and EnergyAustralia NSW have well established inspection schedules and the information was readily available during the audit. Monitoring programs as required by the OEMP and Conditions of Approval are in place and monitoring data is available.

EnergyAustralia NSW has an effective tool for recording complaints and incidents. Although no complaints or incidents related to the operation of Lamberts North were recorded during the first year of operation. The audit did review the adequacy of EnergyAustralia NSW's response to other complaints and incidents recorded in the Complaints Register. The responses and the timing to close out the complaint or incident were found to be adequate.

The detailed Internal Audit can be found in Appendix H.

5.1.2.2 Environment Representative audit

An internal audit was also performed by the Environmental Representative for the Project and was undertaken throughout the operational phase within the Lamberts North Project area. Auditing was undertaken in accordance with the requirements of the Environmental Management System, and in compliance with Condition B8 of the Project approval and the Operational Environmental Management Plan (OEMP) approved by the DPE.

The audit was carried in July 2014. Audits were conducted as interviews on the following dates, with follow up documentation reviews as and when required:

- 03/07/2014: Interview with Contract Administrator and Contractor Environment Manager.

The scope of the audit was to assess the standard of compliance with documented requirements / procedure(s) and to make recommendations, where appropriate, to enable improved environmental performance. This internal audit was conducted as part of the internal audit program specified for EMSAP-16 Internal Audit.

Completion of the audit, using the Audit Checklist to record the audit findings following:

- Interviews with EnergyAustralia NSW personnel / contractors / suppliers;
- Examination of data, records, reports and checklists;
- Review of procedures and processes used;
- Field Inspections.

The Environmental Representative found a high level of environmental compliance was observed throughout the Lamberts North Project. This was evidenced not only during environmental reviews undertaken by the

Environmental Representative, but also via the environmental management system maintained by the Lend Lease. This was reflected in the fact that there were no significant environmental incidents or issues identified throughout the life of the project. There has also been no public concern or monitoring exceedance identified to date.

Several observations, opportunities for improvement (OIs) and potential non-compliances identified were resolved with the provision of additional information and documentation. Minor issues involving housekeeping, storage of chemicals and bunding were identified and were rectified within the required timeframes.

The detailed Internal Audit can be found in Appendix I.

6. Complaints Register

EnergyAustralia NSW maintains a 24 hour hotline and email address for the public to report incidents, complaints or enquiries with contact details available on the EnergyAustralia website.

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

- The date and time of the complaint.
- The means by which the complaint was made (e.g. telephone, email, mail, in person).
- Any personal details of the complainant that were provided.
- The nature of the complaint.
- The time taken to respond to the complaint
- Any investigations and actions taken in relation to the complaint.
- If no action was taken in relation to the complaint, the reason(s) why no action was taken.
- Any follow-up contact with, and feedback from, the complainant.

The Contract Administrator, Site Manager and the Environmental Representative ensure that the community relations protocols are communicated to all project personnel involved in the complaints process and that appropriate training covering the protocols is established in site inductions.

The key elements of the on-site complaints management protocol are outlined below:

- All persons wishing to register a complaint to operations personnel will be directed to the Commercial Manager, in line with EnergyAustralia NSW's existing complaints procedure.
- The Commercial Manager will deal with the complaint and take down particulars of the complaint as per the criteria listed on the complaints register. Details will be referred to the Environment Manager or other appropriate authority depending on the nature of the complaint, and action will then be taken to resolve the issue whilst ensuring that all correspondence relating to the issue is documented. All attempts will be made to resolve the issue on the same day, however if this is not possible, the complainant will be updated regularly on the progress of the matter.

Written and phone complaints will be directed to the Commercial Manager who will take down the particulars of the complaint as per the criteria listed on the complaints register, and will ensure that the complaint is actioned as quickly as possible.

There is a community reference forum that consists of representative from key surrounding areas to Mt Piper Power Station are invited and provided with updates. There are regular attendees from both Blackmans Flat and Pipers Flat, adjacent to the Lamberts North ash placement area. Minutes of these meetings are published on the EnergyAustralia website.

6.1 Community complaints

No complaints were recorded against operations at Lamberts North in the period from September 2013 to August 2014.

7. Activities Proposed in the Next AEMR Period

- *September 2014 to March 2015.* Fresh water conditioned ash placement and furnace bottom ash placement. Furnace bottom ash to drainage lines. Ash placement with compaction and with water management directed to containment ponds.
- *November 2014 to December 2014.* Definition of a southern boundary to the Lamberts North area, by placement of an internal earth bund wall. Installation of pipe drainage lines.
- *April 2015 to May 2015.* Furnace bottom ash placement only (due to brine placement into Mount Piper Area 1).
- *June 2015 to August 2015.* Fresh water conditioned ash placement and furnace bottom ash placement. Furnace bottom ash to drainage lines, particularly on for the newly constructed stability wall and define the external boundary with a 1:4 batter profile finished with capping material
- Sprinkler operations and sprinkler rotation for dust suppression on exposed ash areas.
- Environmental monitoring, dust, weather, surface water, groundwater levels.
- Water management to contain water flows into containment ponds.

7.1 Environmental Management Targets and Strategies for the Next Year

- Review existing sampling points
- Investigate existing bores
- Changes to Environmental Representative
- Update currency of OEMP

8. Conclusions

All of Conditions of Approval for the 2013-2014 reporting period were complied with, or were found to be not applicable to the project, with the exception of two partial non-compliances. EnergyAustralia NSW has been determined to comply partially with Condition of Approval B6 and B10. However, the Biodiversity Offset Management Plan (BOMP) for Lamberts North is progressing and it is expected that after consultation with OEH will be available for approval to the DPE by mid-2015.

In regard to Condition B10 a project website is available for the Lamberts North Project:

http://www.energyaustralia.com.au/about-us/what-we-do/projects/mt-piper-and-wallerawang

A link to the DPE website, which hosts the Environmental Assessment, Submissions report and approvals is available. A more comprehensive approach to non-confidential project related documents such as OEMP and outcomes of compliance tracking relating to project progress will be added to the website.

The Conditions of Approval and environmental requirements of the Operation Environmental Management Plan were found to be complied with the exception of B6 and B10 which were partially compliant and will be addressed in the 2014/15 period.

9. References

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10. Glossary of Terms

AEMR	Annual Environmental Management Report
CEMP	Construction Environmental Management Plan
CoA	Condition of Approval (also known as MCoA – Minister's CoA)
CPM	Construction Project Manager
CSM	Construction Site Manager
DE	Delta Electricity
DECC	Department of Environment & Climate Change
DPE	Department of Planning and Environment
DPI	Department of Planning and Infrastructure
EPL	Environment Protection Licence
LN	Lamberts North
mAHD	Metres Australian Height Datum
NEMMCO	National Electricity Market Management Company
OEH	Office of Environment & Heritage
OEMP	Operation Environmental Management Plan
ONVMP	Operational Noise and Vibration Management Plan
RL	Relative Level

Appendix A
Detailed review checklist for Conditions of Approval

Appendix B
OEMP – Table 4-1: Licences, permits and approvals required for the Project

Appendix C
Environmental Monitoring Program

Appendix D
Lamberts North Operational Noise assessment

Appendix E
Lamberts North Operational Noise assessment

Appendix F
Lamberts North Ash repository Water Quality Report 2013 - 2014

Appendix G
Mt Piper Ash Repository Lamberts North Air Quality Report 2013 - 2014

Appendix H
Lamberts North Independent Environmental Audit Report September 2014

Appendix I
Lamberts North Environmental Internal Audit July 2014

Appendix J
Nalco Laboratory QA and QC 2013-14