EnergyAustralia

ENERGY AUSTRALIA NSW
Lamberts North Ash Repository

Operational Environmental Management Plan

May 2022

Revision 6

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Acknowledgements

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Cover photography: 'Mt Piper Power Station*, EnergyAustralia NSW 2020.*

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Abbreviations

Abbreviations used throughout this document are described in the below table.

Abbreviation	Description
AEMO	**Australian Energy Market Operator**
AEMR	**Annual Environmental Management Report**
ANZECC	**Australian and New Zealand Environment and Conservation Council**
ARMCANZ	**Agriculture and Resource Management Council of Australia and New Zealand**
AQMMP	**Air Quality Management and Monitoring Plan**
AQMS	**Air Quality Monitoring Station**
BCA	**brine conditioned ash**
BCD	**DPE Biodiversity and Conservation Division**
BLALC	**Bathurst Local Aboriginal Land Council**
CEEC	**Critically Endangered Ecological Community**
CCC	**Community Consultative Committee**
CCOs	**chemical control orders**
CEMP	**Construction Environmental Management Plan**
CLM Act	***Contaminated Land Management Act 1997***
CoA	**Conditions of Approval**
CSM	**Conceptual Site Model**
dB	**Decibel**
dB(A)	**Measure of A-weighted sound; approximation of response of human ear**
DAWE	**Commonwealth Department Agriculture, Water and the Environment**
DEC	**Former Department of Environment and Conservation**
DECC	**Former Department of Environment and Climate Change**

Abbreviation	Description
DECCW	**Former Department of Environment and Climate Change and Water**
DPE	**Department of Planning and Environment**
DPIE	**Department of Planning, Industry and Environment (now known as 'Department of Planning and Environment'**
DPI Fisheries	**Department of Primary Industries (Fisheries)**
DP&E	**Department of Planning and Infrastructure**
EA	**Energy Australia NSW**
EHC Act	***Environmentally Hazardous Chemicals Act 1985***
EMS	**Environmental Management System**
ENM	**Excavated Natural Material**
EPA	**Environment Protection Authority**
EPBC Act	***Environment Protection and Biodiversity Conservation Act 1999***
EPL	**Environmental Protection License**
EP&A Act	***Environmental Planning and Assessment Act 1979***
ER	**Environmental Representative**
ESD	**Ecologically Sustainable Development**
ESC	**Erosion and Sediment Control**
ESCP	**Erosion and Sediment Control Plan**
GCL	**Geocomposite liner**
GMMP	**Groundwater Management and Monitoring Plan**
HDPE	**high-density polyethylene**
Heritage Act	***Heritage Act 1977***
IECA	**International Erosion Control Association**
ITPs	**instructions, inspection and test plans**
LCC	**Lithgow City Council**
LLDPE	**linear low density polyethylene**
LGA	**Local Government Area**
LNAR	**Lamberts North Ash Repository**
LRRP	**Landscape Rehabilitation and Revegetation Plan**
LSAR	**Lamberts South Ash Repository**
MGL	**Maximum Ground Level**
MNES	**Matters of National Environment Significance**
MOD 1	***Mt Piper Ash Placement Project – Lamberts North Ash Repository Modification Report – Modification 1*****, dated May 2021 and prepared by ERM**
MPAR	**Mount Piper Ash Repository**
MPPS	**Mt Piper Power Station**
MSDS	**Materials Safety Data Sheet**
NATA	**National Association of Testing Authorities**
NMP	**Noise Management and Monitoring Plan**
NOW	**NSW Office of Water**
NPI	***NSW Noise Policy for Industry 2017***
NPW Act	***National Parks and Wildlife Act 1973***
NRAR	**Natural Resources Access Regulator**
OEH	**Office of Environment and Heritage**

Abbreviation	Description
OEMP	**Operation Environmental Management Plan**
OH&S	**Occupational Health and Safety**
OMC	**Optimal moisture content**
ONMMP	**Operational Noise Management and Monitoring Plan**
PIRMP	**Pollution Incident Response Management Plan**
POEO Act	***Protection of the Environment Operations Act 1997***
ROP	**Repository Operation Plan**
SCA	**Sydney Catchment Authority**
SEWPaC	**Department of Sustainability, Environment, Water, Population and Communities**
SoC	**statement of comments**
SSWMP	**Soil and Surface Water Management Plan**
TEC	**Threatened Ecological Community**
TEOM	**Tapered Element Oscillating Microbalance**
TfNSW	**Transport for NSW**
TSP	**Total Suspended Particulates**
VENM	**Virgin Excavated Natural Material**
WCA	W**ater conditioned ash**
WM Act	***Water Management Act 2000***
WMP	**Waste Management sub plan**
WMS	**Water Management System**

Document History and Status

Revision	Date Issued	Reviewed By	Approved By	Date Approved	Revision Type
Draft 1	18 Dec 2012	Simon Witney			
Rev0	22 Dec 2012	Simon Witney	Simon Witney	22 Dec 2012	
Rev1	14 March 2013	Michelle Cooke	Michelle Cooke	14 March 2013	
Rev 2	26 March 2013	Miranda Weston	Michelle Cooke	27 March 2013	
Rev 3	8 May 2013	Kristy Sawtell	Steve Marshall	8 May 2013	
Rev 4	30 April 2019	Antony Nolan	Ben Eastwood	30 April 2019	
Rev 5	2 Sept 2019	Alicia de Vos	Ben Eastwood	2 Sept 2019	General updates
Rev 6.1 (DRAFT – pending feedback from relevant Regulators)	22 October 2021	Edwina White	Ben Eastwood	For consultation	Updates to incorporate MOD 1 commitments and CoA. Distribution to EPA, NSW Health, Water NSW, BCS, DPE-Water, NRAR
Rev 6.2 (DRAFT – pending approval from DPE)	10 December 2021	Edwina White	Ben Eastwood	For approval	Updates to incorporate feedback from EPA, NSW Health, Water NSW, BCS, DPE-Water
Rev 6.3 Final draft	29 April 2022	Ben Eastwood	Ben Eastwood	For approval	Updates to incorporate feedback from DPE
Rev 6.4 Final draft	24 May 2022	Ben Eastwood	Ben Eastwood	For approval	Updates to incorporate further feedback from DPE

Executive Summary

The Mount Piper Ash Placement Project (approved under Project Approval (**PA**) 09_0186) consists of two separate approved ash repositories known as the Lamberts North Ash Repository (**LNAR**) and the Lamberts South Ash Repository (**LSAR**). The LNAR lies immediately to the east of the existing ash placement repository for Mount Piper Power Station, known as the Mount Piper Ash Repository (**MPAR**), described in the 2010 Environmental Assessment as 'Area 1'. The LSAR is located immediately to the south of the LNAR. Collectively the LNAR and the LSAR are referred to as the Repositories. They are located in an area characterised by both rural and industrial influences, with a number of coal mines in relatively close proximity (SKM, 2010).

The construction and operation of the Repositories were originally approved on 16 February 2012 under delegated authority by the then Department of Planning and Environment (**DP&E**) by PA 09_0186 under the Environmental Planning and Assessment Act 1979 (**EP&A Act**). In September 2021, PA 09_0186 was modified to authorise amendments to the design and operations of the LNAR (**LNAR MOD 1**), principally, the installation of a leachate barrier and leachate management system.

MOD 1 was issued subject to a number of Conditions of Approval (**CoA**). Many of the CoA refer to the development of plans to manage various environmental and other aspects associated with the operation of the Repositories and are required to be implemented prior to the commencement of ash placement activities at the Repositories.

This Operational Environmental Management Plan (**OEMP**) has been developed to satisfy CoA D2 and provides a framework to manage environmental aspects associated with operations. This OEMP is currently specific to LNAR as LSAR is yet to be constructed. A separate OEMP will be prepared and implemented for LSAR prior to its commencement of operations.

The OEMP outlines the environmental management requirements as stipulated in PA 09_0186 MOD 1, Mt Pipers Environmental Protection Licence 13007 (**EPL**), statement of comments (**SoC**) presented in the submission report (SKM 2011), the 2010 Environmental Assessment and the Modification Report (**MOD 1 Report**).

As described in this OEMP, broad operational activities at the LNAR will include:

- Leachate barrier and leachate management systems;
- Ash delivery;
- Ash placement;
- Capping;
- Rehabilitation; and
- Water management.

The principal environmental management matters to be addressed during operations relate to surface and groundwater. Other environmental management matters include air quality, noise, rehabilitation and landscaping. Section 5 contains a number of sub-plans which set out the principle controls to manage potential environmental impacts.

A Contractor will be engaged to operate and maintain the LNAR on behalf of EnergyAustralia NSW (**EA**). The Contractor will be required to implement the OEMP as the overarching management document for the Project and obtain approval from EA for its Environmental Management Systems (**EMS**) and Occupational Health and Safety (**OH&S**) to ensure consistency with the OEMP.

The OEMP is underpinned by a hierarchical system of management plans, work procedures, and instructions prepared by the Contractor for site-specific conditions and requirements, including its EMS and OH&S, policies and procedures. The key document prepared to support the implementation of the OEMP is the Repository Operation Plan (**ROP**), prepared annually by the Contractor to address forward operational work. The ROP references specific work procedures covering (amongst others) site planning, quality, sprinklers and pumps, ash placement testing, survey and mobile plant. The ROP will be reviewed every 12 months for improvement opportunities. Separate technical specifications and installation requirements for the leachate barrier system (liner) will be provided to the Contractor by the approved designer/engineer. Emergency response and management is covered under a separate plan.

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

1. Introduction

1.1 Introduction

The Mount Piper Ash Placement Project (Approved under Project Approval (**PA**) 09_0186), consists of two separate approved ash repositories known as the Lamberts North Ash Repository (**LNAR**) and the Lamberts South Ash Repository (**LSAR**). The LNAR and LSAR (collectively the Ash Repositories) are located in the Lithgow Local Government Area **(Figure 1)**. PA 09_0186 was originally approved on 16 February 2012, authorising the construction and operation of the Repositories. In September 2013, EnergyAustralia NSW (**EA**) acquired Mt Piper Power Station (**MPPS**), along with its associated land holdings, infrastructure and project approvals.

PA 09_0186 was modified on 21 September 2021 to allow for installation of a leachate barrier system (using very low permeability liners) within LNAR below RL 946 Australian Height Datum (AHD) to capture and subsequently treat leachate moving through the ash placed above the liner (**LNAR MOD 1**). This was to improve environmental outcomes, including minimising the risk of impact from the LNAR to the Wangcol Creek catchment, located within the Sydney Drinking Water Catchment.

Condition D2 of PA 09_0186 requires that the proponent prepare and submit an Operational Environmental Management Plan (**OEMP**) to the Department of Planning and Environment (**DPE**) to detail an environmental management framework, practices and procedures that would be followed throughout the operational life of the Repositories. PA 09_0186 authorises the development of the Repositories and allows the project to be staged with separate OEMPs. This OEMP is specific to LNAR.

PA 09_0186 authorises conditioning and placement of both water conditioned ash (**WCA**) and brine conditioned ash (**BCA**) along with other authorised wastes (as per the Environment Protection Licence (**EPL**) 13007) within the LNAR. The placement of BCA can only occur above a leachate barrier system (or low permeability liner) which must be installed prior to BCA placement. The intent of the liner is to intercept leachate moving through the BCA to mitigate its escape into the groundwater system (**Section 5.11**).

1.2 Background to the Project

The LNAR lies immediately to the east of the existing ash placement repository for MPPS known as the Mount Piper Ash Repository (**MPAR**), described in the original Environmental Assessment as Area 1 (**Figure 2**).

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

Construction works commenced at Lamberts North on the 14 January 2013 and the first ash placement commenced on the 2 September 2013. Historically, EA has engaged a principle contractor to manage and operate ash repositories at MPPS. To ensure consistency and that operational tasks are covered, EA consulted with the principle contractor throughout the development of this document.

1.3 Scope of OEMP

In accordance with CoA A1, EA will carry out the project:

- In accordance with Project Approval (09_0186) (issued by NSW Minister of Planning);
- In accordance with relevant written direction of the Secretary; and
- Generally, in accordance with the Environment Assessment.

The scope of the OEMP covers operations involving transport and placement of ash from MPPS to and at the LNAR as presented on **Figure 2**.

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

- Project Approval (09_0186) (issued by NSW Minister of Planning);
- Mt Piper Ash Placement (two volumes) – Environmental Assessment, dated August 2010 and prepared by Sinclair Knight Merz, as amended by:
    - Mt Piper Ash Placement – Submissions Report, prepared by Sinclair Knight Merz, March 2011 and Delta's Letter to the Department – Submissions Report Response to the Department and Agency Issues (dated 22 June 2011); and
    - Modification application (**MOD 1**) – Mt Piper Ash Placement Project – Lamberts North Ash Repository Modification Report – Modification 1, dated May 2021 and prepared by ERM (2021a) and associated Mt Piper Ash Placement Project – Lamberts North Ash Repository Submissions Report – Modification 1, dated July 2021 and prepared by ERM, and additional information provided by EA to support the modification application and included in Appendix E of the Department's assessment report on Modification 1.

The OEMP has also been prepared to address:

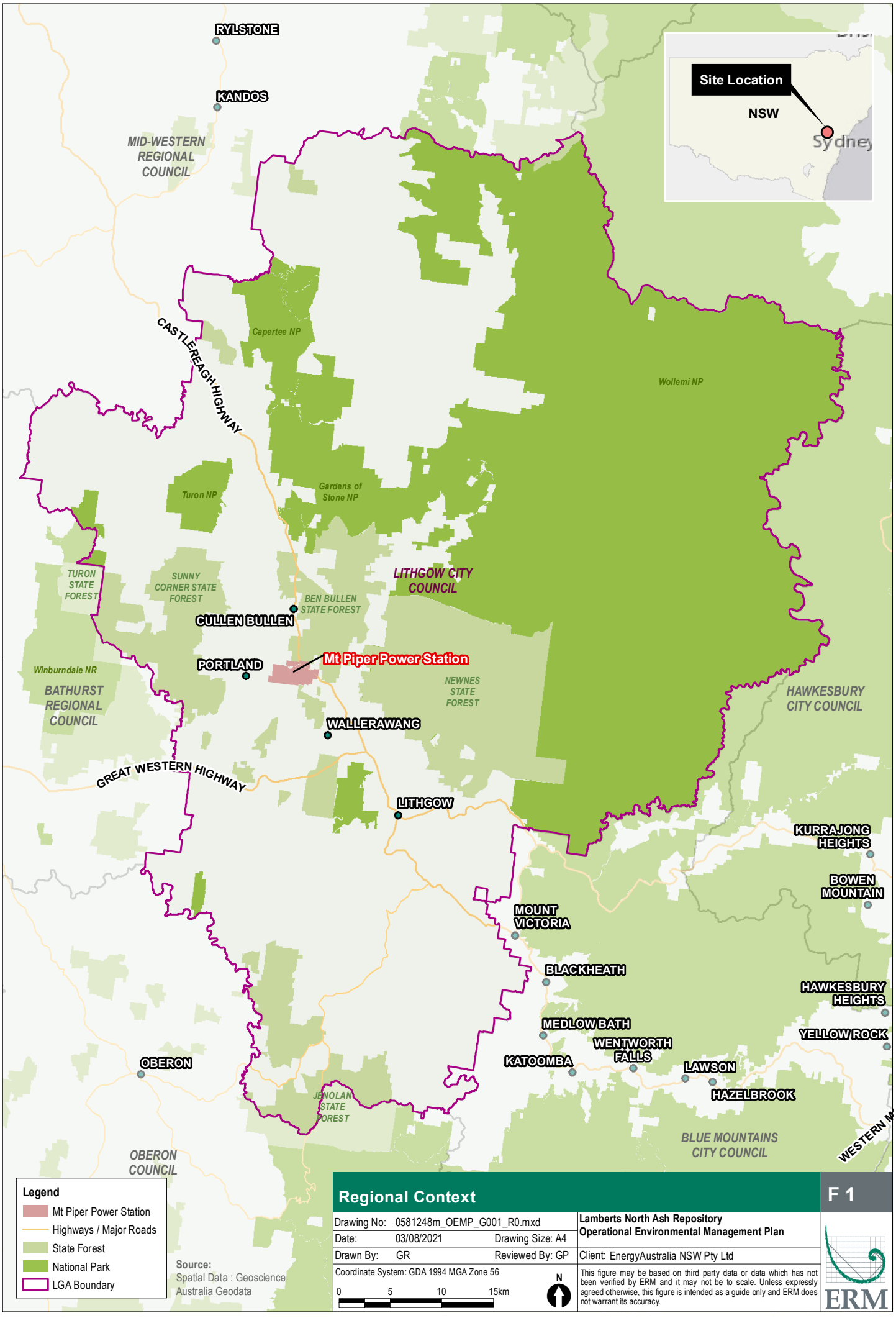
- Relevant stipulations and commitments in the Mount Piper Ash Placement Project Consistency Report – Project Approval 09_0186, June 2012 (SKM 2012);
- Relevant clauses of the EPL 13007; and
- Relevant legislation, guidelines and Australian Standards.

In accordance with CoA D3A, EA will implement the OEMP as approved by the Secretary.

1.4 Objectives of the OEMP

- Provide a framework to conduct operational activities in a manner that reduces, avoids or offsets potential environmental, social, biological and physical consequences of ash placement activities;
- Identify potential environmental impacts and outline a framework intended to control and manage potential environmental risks identified at the planning stage;
- Ensure EA and its associated contractors are fully aware of their environmental responsibilities and are proactive in their approach to environmental management;
- Comply with relevant legislation; and

Strive for continuous improvement in aspects of the project to enable new technologies and innovations to be implemented where practicable and feasible.


RYLSTONE
KANDOS
MID-WESTERN REGIONAL COUNCIL
Site Location
NSW
Sydney
CASTLEREAGH HIGHWAY
Capertee NP
Wollemi NP
Turon NP
Gardens of Stone NP
TURON STATE FOREST
SUNNY CORNER STATE FOREST
BEN BULLEN STATE FOREST
LITHGOW CITY COUNCIL
CULLEN BULLEN
PORTLAND
Mt Piper Power Station
Winburndale NR
BATHURST REGIONAL COUNCIL
NEWNES STATE FOREST
HAWKESBURY CITY COUNCIL
WALLERAWANG
GREAT WESTERN HIGHWAY
LITHGOW
KURRAJONG HEIGHTS
BOWEN MOUNTAIN
MOUNT VICTORIA
BLACKHEATH
HAWKESBURY HEIGHTS
MEDLOW BATH
YELLOW ROCK
WENTWORTH FALLS
KATOOMBA
LAWSON
HAZELBROOK
OBERON
JENOLAN STATE FOREST
BLUE MOUNTAINS CITY COUNCIL
OBERON COUNCIL
Legend
Mt Piper Power Station
Highways / Major Roads
State Forest
National Park
LGA Boundary
Source:
Spatial Data : Geoscience Australia Geodata
Regional Context
F 1
Drawing No: 0581248m_OEMP_G001_R0.mxd
Date: 03/08/2021
Drawing Size: A4
Drawn By: GR
Reviewed By: GP
Coordinate System: GDA 1994 MGA Zone 56
0 5 10 15km
N
Lamberts North Ash Repository
Operational Environmental Management Plan
Client: EnergyAustralia NSW Pty Ltd
This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.
ERM

Final Holding Pond
Coal Settling Pond
Mine Water Buffer Pond
Settling Pond D
Blowdown Pond A
Brine Waste Pond B
Brine Waste Pond A
Clean Water Pond
MPPS Brine Concentrators
Ash Conditioning Plant
Transfer Point 2
Settling Pond A
Settling Pond B
Settling Pond C
Contaminated Water Pond
Ash Conveyor
Repository Silos
CWP01
Pond BWA
Pond BWB
Pond BWC
CWP02
Unlined Internal Detention Basin
LN Pond 2
H-Pit East
Council Pit
DML Dam (Managed by Centennial)
Cooks Dam (Managed by Centennial)
WANGCOL CREEK
CASTLEREAGH HIGHWAY
Blackmans Flat
Closest private residence
Springvale Water Treatment Project
SHG1
H-Pit West

Notes:
Unlined water storages are denoted with blue labels ; all other water storages are lined

Legend

- Modified LNAR (Lamberts North Ash Repository) Footprint
- Approved LSAR (Lamberts South Ash Repository)
- Mt Piper Ash Repository
- Existing Clean Water Flow Path
- Creek / River
- EPL 13007 Licenced Premises Boundary
- Not Part of Licenced Premises

Source:
Spatial Data : DFSI, DCDB/DTDB
Water Management : Western Coal Services, Water Management Plan, GHD, Sept 2017
Imagery: Nearmap Jan 2021

Lamberts North Ash Repository and Surrounds

F 2

Drawing No:	0581248m_OEMP_G002_R2.mxd		**Lamberts North Ash Repository Operational Environmental Management Plan**
Date:	05/08/2021	Drawing Size: A3	
Drawn By:	GR	Reviewed By: GP	Client: EnergyAustralia NSW Pty Ltd

Coordinate System: GDA 1994 MGA Zone 56

0 100 200 300m

N

ERM

1.5 Site Settings and Location

Figure 1 locates the LNAR within the Lithgow Local Government Area. **Figure 2** shows the LNAR near surrounds including the nearest sensitive receptors, surrounding infrastructure and natural features.

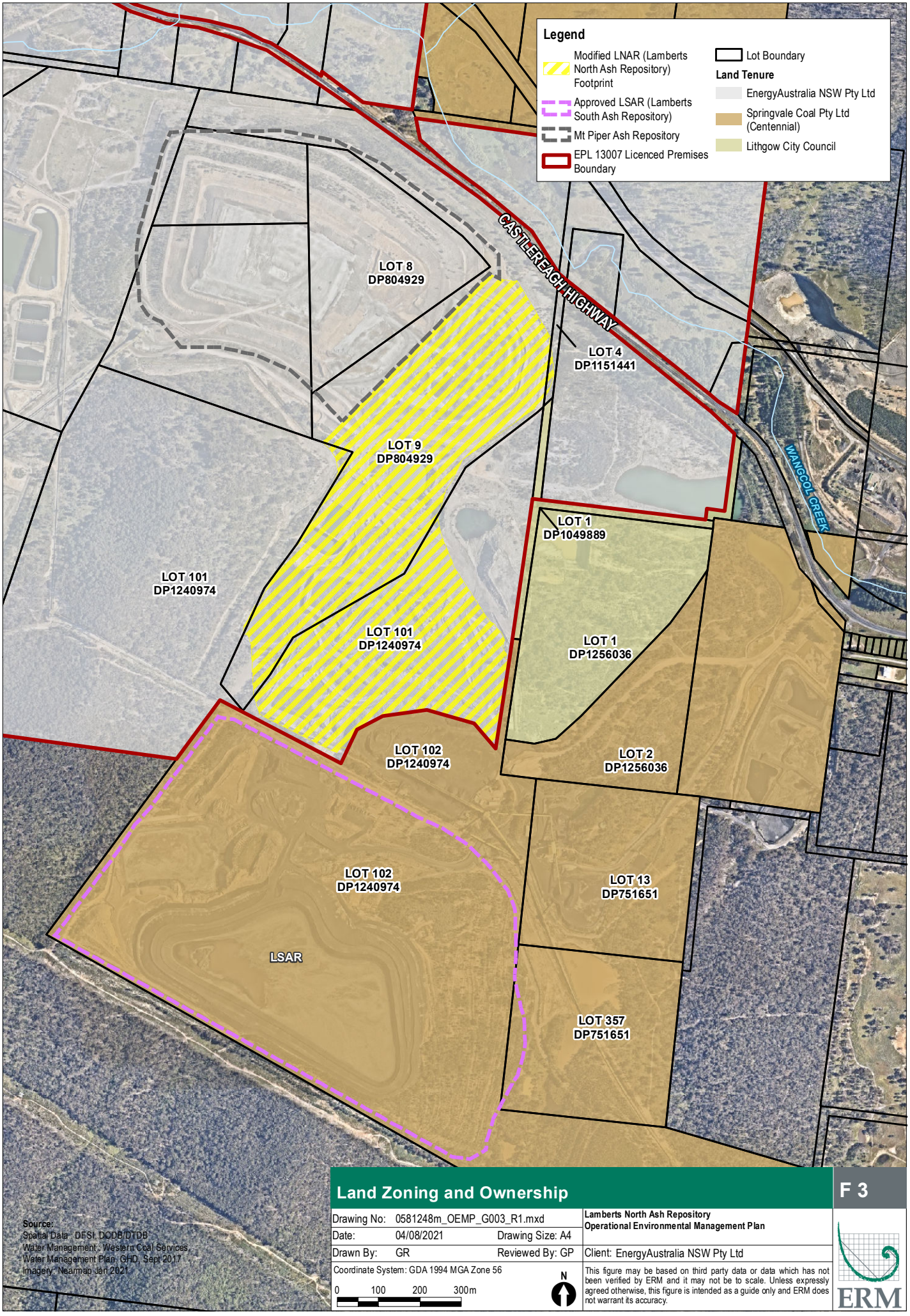
The LNAR is predominately surrounded by Ben Bullen State Forest, which lies to the north- east and south-east of MPPS, together with open-cut coal mines and coal washeries. The closed Wallerawang Power Station lies to the south east of the LNAR, approximately 5 km away.

The nearest townships to the Project site are:

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

The LNAR footprint is approximately 44.5 hectares (**ha**) with the land being wholly owned by EA. **Figure 3** presents land ownership within and adjacent to the LNAR footprint.

The LNAR is set within an historically cleared landscape that has been subject to extensive open cut and underground mining activities from at least 1940. Historic open cut mining operations removed the Bunnyong sandstone (part of the Illawarra Coal measures) (SKM, 2010) with mining activities targeting the Lidsdale and Lithgow Coal Seams. Underground mining in the vicinity of the LNAR began in 1942 and continued until the 1990's; however, details regarding the timing and progression of underground mining in this area are not clear (RPS, 2014). An overview of the historical mining disturbance in the vicinity of the LNAR is presented in **Figure 4.**



Land Zoning and Ownership

F 3

Drawing No:	0581248m_OEMP_G003_R1.mxd		Lamberts North Ash Repository Operational Environmental Management Plan
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Drawn By:	GR	Reviewed By: GP	Client: EnergyAustralia NSW Pty Ltd

Coordinate System: GDA 1994 MGA Zone 56

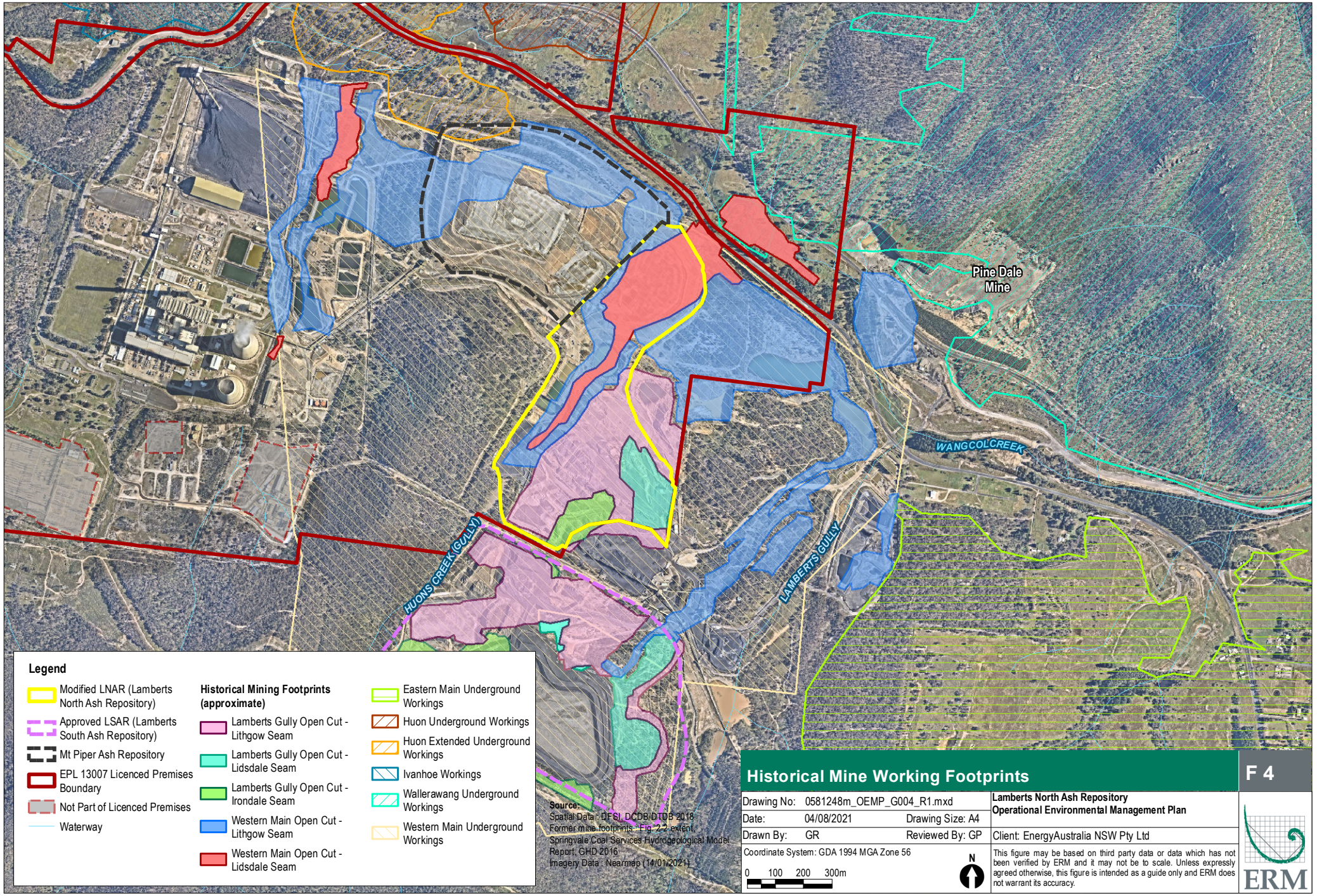
0 100 200 300m

N

This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

Source:
Spatial Data: DFSI, DODB/DTDB
Water Management: Western Coal Services, Water Management Plan, GHD, Sept 2017
Imagery: Nearmap Jan 2021

ERM


Pine Dale Mine
WANGCOL CREEK
HUONS CREEK (GULLY)
LAMBERTS GULLY
Legend
Modified LNAR (Lamberts North Ash Repository)
Approved LSAR (Lamberts South Ash Repository)
Mt Piper Ash Repository
EPL 13007 Licenced Premises Boundary
Not Part of Licenced Premises
Waterway
Historical Mining Footprints (approximate)
Lamberts Gully Open Cut - Lithgow Seam
Lamberts Gully Open Cut - Lidsdale Seam
Lamberts Gully Open Cut - Irondale Seam
Western Main Open Cut - Lithgow Seam
Western Main Open Cut - Lidsdale Seam
Eastern Main Underground Workings
Huon Underground Workings
Huon Extended Underground Workings
Ivanhoe Workings
Wallerawang Underground Workings
Western Main Underground Workings
Source:
Spatial Data : DFSI_DCDB/DTDB 2018
Former mine footprints : Fig 2.2 extent, Springvale Coal Services Hydrogeological Model Report, GHD 2016
Imagery Data : Nearmap (14/01/2021)
Historical Mine Working Footprints
F 4
Drawing No: 0581248m_OEMP_G004_R1.mxd
Date: 04/08/2021
Drawing Size: A4
Drawn By: GR
Reviewed By: GP
Coordinate System: GDA 1994 MGA Zone 56
0 100 200 300m
N
Lamberts North Ash Repository
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1.6 Structure of the OEMP

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

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

The OEMP has been designed to be used as a baseline document for the operation of LNAR. The OEMP is to be reviewed, and if necessary revised in accordance with CoA E26 to ensure continual improvement of the design and environmental mitigation measures.

The OEMP structure is as follows:

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

Section 2 Describes the key operational activities.

Section 3 Establishes the environmental management framework for implementing the OEMP including roles and responsibilities for managing operations and adhering to environmental regulations.

Section 4 Describes the environmental controls applicable to the Project, including:

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

Section 5 Addresses environmental monitoring specifications and responsibilities. Outlines the implementation framework through the management sub-plans and associated environmental targets and key indicators. The management sub-plans contain a higher level of detail about the surrounding environment; predicted impacts and mitigation measures related to surface water, groundwater, air quality, noise, landscape revegetation and site rehabilitation, and waste management.

Appendix A Water Quality Monitoring Parameters.

Appendix B Baseline Water Quality – Surface and Groundwater.

Appendix C Conditions of Approval Cross-reference Table.

Appendix D Project Approval Instrument.

Appendix E Stakeholder Consultation.

Appendix F Drivers Code of Conduct.

Appendix G DPE endorsement of the Environmental Representative.

2. Operational Activities

2.1 Overview

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

EA will operate the LNAR in accordance with the Project Approval and approved OEMP. In the instance EA intends to construct and operate the project in discrete stages it may comply with the requirements in CoA B4, B5, D2, D3, D4, D5 and D6 separately for each stage.

2.2 Operational Activities

2.2.1 Hours of Operation

Normal operating hours

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

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

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

Abnormal or Emergency operating conditions

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

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

or

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

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

d) In the event that the Australian Energy Market Operator (**AEMO**), or a person authorised by AEMO, directs EA (as a licensee) under the National Electricity Rules to maintain, increase or be available to increase power generation for system security and there is insufficient ash storage capacity at the Mount Piper Power Station to allow for the ash to be stored.

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

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

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

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

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

2.2.2 Ash Delivery

The current system of ash transport will be maintained for LNAR. Ash placement will be serviced from a combination of ash conveyance and heavy vehicle haulage from MPPS. Conditioned fly ash is conveyed to the repository silos at the MPAR. From the silos, the ash is loaded into trucks and transported to the ash placement area(s) or working face. From time to time, conditioned ash is hauled to the ash placement area when the conveyor is out of service. Furnace bottom ash is delivered to the LNAR via heavy vehicle haulage.

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

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

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

2.2.3 Delivery of Other Wastes

EPL 13007 authorises the delivery of other wastes to the LNAR. These include (amongst others as set out in the EPL):

- Liquid brine and Solid brine (also referred to as Solid Mixed Salts);
- Mill pyrites;

- Demineralisation and polisher plant effluents;
- Chemical clean solutions;
- Cooling tower sediments;
- Ion exchange resins;
- Fabric filter bags;
- Biomass co-firing ash;
- Settling ponds sediments; and
- Soils and grit trap sediments.

Most of these wastes are delivered to the LNAR via heavy vehicle. They are either placed in specifically managed areas at the LNAR or are mixed and co-placed with BCA or WCA as required. The placement of liquid brine and Solid Mixed Salts are only co-placed with BCA.

The Solid Mixed Salts are produced at the Springvale Water Treatment Project (**SWTP**) facility. They are trickle fed onto the same overland conveyor that transfers the conditioned fly ash from the MPPS to the repository silos at Transfer Point 2 (**Figure 2**) when BCA is produced. From time to time, the Solid Mixed Salts are also delivered directly by heavy haulage vehicle when the conveyor feed at Transfer Point 2 is out of service.

2.2.4 Leachate Barrier System

A leachate barrier system will be installed in the LNAR. The leachate barrier system (or liner) will include staged installation of a single high-density polyethylene (**HDPE**) or linear low-density polyethylene (**LLDPE**) liner, geocomposite or equivalent (liner) to suitable design specifications based on EPA (2016) Solid Waste Landfill Guidelines. The leachate barrier system will be supported by a leachate management system to capture, store and transfer leachate generated from the lined areas. The leachate management system will also be operated in accordance with standards presented by NSW Environmental Protection Authority (NSW EPA) (2016), as described in **Section 5.11**.

2.2.5 Ash Placement

Ash placement at the LNAR will include the handling of WCA and BCA and furnace bottom ash. Ash placement will be defined within the perimeter embankment along the northern and eastern boundary of the site, prepared during the construction phase. As set out in **Section 2.2.3**, other wastes can also be incorporated into the ash placement procedure as required.

BCA and Solid Mixed Salts will be co-placed above an installed liner. As and when required, WCA will also be placed within lined areas, noting that the volumes are likely to be limited. Methods for the placement of ash materials optimise compaction and stability of the emplacement areas, targeting moisture content, compaction density, and progressive capping and revegetation. Ongoing monitoring and assessment of specifications are undertaken to optimise placement and moisture conditioning requirements (SKM, 2010). These aspects are further described in the sub-plans (see **Section 5**).

Ash will be placed to the desired height (0.5 - 1m lifts, or less) in pads, with materials that have been moisture-conditioned placed in the lower layers to an elevation as specified in approved design drawings, with corresponding heights of 10m. The sequence of ash placement will work by initially placing ash across the site starting from the most northerly part of the LNAR, then towards the east and south.

The ash is treated to an average compaction of 95%, relative to its maximum standard compaction, through a controlled combination of moisture addition and machine compacting with the use of rollers, compactors and rubber-tyred vehicles. Moisture, referred to above, will generally be water. However, within lined areas, collected leachate from the leachate management system will be used to increase moisture content as required.

Ash is placed in layers and stepped to produce an overall maximum batter slope of approximately 1(V):4(H), with benches added up to every 10m in vertical height change (SKM, 2010). This process of ash placement produces an average batter length of up to 40m. As each part of the ash repository meets its proposed RL for ash placement, the placed ash will be capped with a welded low permeability liner and suitable soil cover layer, including revegetation media as described in the Modification Report. Ash will then continue to be placed beside the capped area. The process is repeated until the LNAR is filled to its maximum permissible height and extent.

2.2.6 Ash Management

As described in **Section 2.2.6** ash is carefully managed to control moisture content, compaction, and dust impacts. Dust is controlled during placement by the use of sprinklers, water carts, and artificial dust suppressants to minimise the generation of dust from prepared and working areas, haul roads, stockpiles and working surfaces, and ultimately by capping (SKM, 2010). Testing and monitoring is also routinely undertaken, including:

- Ash moisture content;
- Rainfall and evaporation
- Water quality and volume;
- Compaction of ash;
- Dust;
- Ash placement levels;
- Rehabilitation and revegetation;
- Engineering and geotechnical considerations (compaction and stability); and
- Environmental monitoring is described in the Management Plans (**Section 5**).

2.2.7 Water Management

A water management system will be implemented at the LNAR to limit potential adverse effects on existing surface water or groundwater conditions within and surrounding the LNAR which result from ash placement activities (refer to Soil and Surface Water Management, Groundwater Management and Leachate Management sub plans for more information).

The operational activities at LNAR will require water for compaction, irrigation, and dust suppression purposes. There will be three sources of water available for these purposes including:

- Site retention basins (dirty water) at LNAR - rainwater that falls on the site is captured and stored in retention ponds and used on site;
- Fresh (non-potable) water (including fresh water stored in multiuse storage ponds, Settling Ponds A – Settling Ponds D, treated water from the SWTP facility and inputs form the Coal Settling Pond) sourced directly from MPPS; and
- Leachate collection ponds – water leaching through BCA placement areas will be captured and stored in purpose built and double lined leachate collection ponds. Leachate will only be used on ash contained in lined areas.

Management and mitigation measures for water have been developed for the LNAR to address the potential for run-off from exposed ash surfaces entering Wangcol Creek. These measures include:

- Diversion of clean water from external areas (i.e. areas not exposed to ash placement activities) around the LNAR to avoid interaction with ash materials (refer to **Figure 2**);
    - Stormwater runoff from the west and south-west of the LNAR is captured by the existing drain and is diverted into the clean water system;
    - Stormwater from the south of the LNAR falls onto the existing mining operations of Centennial Coal and is managed by Centennial through a series of ponds and drains in the vicinity of the Lamberts Gully Creek; and
    - Stormwater falling on areas to the east and north of the LNAR largely drain naturally to the west into Wangcol Creek following the general lay of the land away from the LNAR.
- The ash repository has been designed to contain water onsite, by diverting water to on-site retention and sediment basins;
- Re-use of runoff from within LNAR;
- Recycling/water reuse;
- Capping and revegetation of completed areas to enable diversion of clean water to site drainage systems;
- Leachate collection system and storage ponds (leachate management system); and
- Sediment and erosion controls.

The leachate management system includes double HDPE lined multipurpose storage ponds to manage leachate from BCA placement as well as surface water run-off from active ash placement surfaces. The ponds will be adequately sized to provide suitable storage volume for leachate and surface run-off derived from the BCA and Solid Mixed Salts lined areas. Where possible, leachate and run off from active ash placement surfaces will be recycled for dust suppression within the lined areas or transferred to MPPS for treatment (if of a suitable quality) and used in electricity generation.

In accordance with CoA D5, prior to the commencement of operation of each stage of the ash placement process, EA will consult with the EPA regarding the design of the leachate management system, which shall be generally consistent with the Environmental Guidelines, Solid Waste Landfills (EPA, 2016). Important elements to be considered include:

- The leachate barrier system, including liner and leachate collection system;
- The leachate storage dam/s including freeboard, appropriate sizing based on site water balance modelling and liner; and
- The ability to monitor the operational integrity of the leachate barrier system and leachate management system. This will include monitoring of leachate levels in lined areas and storage ponds (with alarm triggers), monitoring volume (via totaliser meter) and operational integrity of the leachate extraction and transfer pipelines, monitoring for leachate within the space between pond liners and within sumps underlying lined features. Monitoring of the operation integrity of the leachate barrier system and leachate management system will serve as an early warning for potential environmental impacts that may result as a result if a component of the system loses operational integrity.

An outline of the water management system, monitoring requirements and management measures of surface water within the LNAR are addressed within the OEMP's Soil and Surface Water Management Sub-Plan (**Section 5.6**). Monitoring of potential groundwater impacts will be undertaken routinely throughout the operation life of LNAR, as described in the Groundwater Management and Monitoring Sub-Plan of this OEMP (**Section 5.5**). Management and monitoring of leachate will be conducted in accordance with the Leachate Management Sub-Plan (**Section 5.11**).

Figure 5 provides an overview of the environmental monitoring Locations outlined in this OEMP.

Figure 6 presents the indicative ash placement stages proposed for the LNAR.

Figure 7a to Figure 7f provides an overview of the general surface water management arrangements that are likely to be implemented throughout the operational stages of the LNAR.

Figure 8a to Figure 8f provides an overview of the general leachate management arrangements that are likely to be implemented throughout the operational stages of the LNAR.

3. Environmental Planning Framework

3.1 Environmental Management System

EA works under an ISO 140001 Environmental Management System (**EMS**). To ensure EA systems are reflected in on-site practices implemented by the Contractor, the Contractor engaged to operate LNAR shall also manage its process responsibilities under the framework of a Repository Operation Plan (**ROP**) prepared annually by the Contractor to address forward operational work. Contractual arrangements will be put in place to meet the performance criteria and objectives set out by this OEMP.

The ROP is the key document prepared to support the implementation of the OEMP. The ROP references specific work procedures covering (amongst others) site planning, quality, sprinklers and pumps, ash placement testing, survey and mobile plant. The ROP will contain an operating protocol for the ash placement irrigation system, including activation rates, application rates and the area of coverage and means of dealing with water shortages. The ROP will be reviewed every 12 months for improvement opportunities. Separate technical specifications and installation requirements for the leachate barrier system (liner) will be provided to the Contractor by the approved designer/engineer.

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

3.2 Responsibilities and Authorities

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

Table 3-1 Summary of Project Roles and Responsibilities

Roles and Responsibilities
1. Owner (EA)
EA is the owner of and ultimately responsible for the LNAR. EA is represented in this role by the Contractor Administrator.
2. Assets and Production Leaders (EA)
EA Leaders are responsible for their area of business to ensure: ▪ Provision of adequate resourcing to meet Regulatory requirements; ▪ The LNAR (contract) has safety assessments at key milestones (including project initiation, contractor selection, site establishment, project completion); ▪ EA contract administration staff comply with EA procedures; ▪ Adequate training and competencies are established and maintained; ▪ Contract reviews are performed to ascertain contractor and ash placement performance; and ▪ Operational imperatives are communicated to monitor potential repository capacity constraints. ▪ Overall responsibility to maintain a safe work place. ▪ Overall responsibility for compliance with Regulatory approvals.
3. Contractor Administrator / Plant Asset Owner (EA)
EA Contractor Administrator is responsible for the following tasks ▪ Contractor Administrator for the LNAR. ▪ Manage the contractor's relationship and obligations with EA are met. ▪ Monitor the contractor's performance (quality, cost & time). ▪ Review contract performance (workshop delivery process). ▪ Provide co-ordination between contractor and EA. ▪ Filing and storage of information, records, designs, contractor reports, as built details and surveys. ▪ Ensure contractor staff receive site access induction and relevant training for EA land areas (i.e. Contractor manages LNAR in this regard). ▪ All works comply with EA safety rules and site procedures (noting that the Contractor have a site specific Safety Management Manual for the Ash Repositories that is approved by EA). ▪ The contractor (and its employees, sub-contractors or agents) are provided with, and understand the known hazards associated with work, safety and the environmental requirements and the scope of work. ▪ Approve use of a sub-contractor by the Contractor; ▪ There is compliance with statutory requirements, EPL 13007 and PA 09_0186. ▪ Contract reviews are performed to ascertain contractor and project performance; ▪ Responsible for communicating environmental obligations set out in this OEMP, Environmental Licences, contracts and the ROP. ▪ Working in conjunction with the operations team, environmental team and the project manager to ensure Environmental Management aspects are incorporated into Project design, procurement, contracts management, planning/ scheduling and construction. ▪ Carry out and/or participate in investigations of environmental incidents or environmental near misses as required. ▪ Procuring and communicating leachate barrier system (liner) and associated leachate management system detailed designs ▪ Procuring suitable materials for installation of the leachate barrier system (liner) and associated leachate management system. ▪ Engaging a suitably qualified, experienced and independent person to ensure structural stability of the ash placement area in accordance with CoA B14

Roles and Responsibilities
4. Environmental Representative (ER) / NSW Environment Leader (EA)

The Environmental Representative was appointed by EA and approved by DPE (see Appendix G) as required by CoA B1. The Environmental Representative's responsibilities include:

- Overseeing the development and implementation of environmental management plans and monitoring programs required under PA 09_0186 and EPL 13007, and advise the Proponent upon the achievement of these plans/programs
- Consider and advise the Proponent on its compliance obligations against all matters specified in the conditions of this approval and the Statement of Commitments, as referred to under CoA A1(c)
- Review Contractor's ROP prior to Contractor engagement.
- Advising EA and the Contractor (see below) about how to achieve environmental implementation outcomes during construction and operation.
- Having the authority and independence to recommend to EA reasonable steps to be taken to avoid or minimise unintended or adverse environmental impacts. In failing such steps outlined by the CoA B1, the ER will recommend to the Proponent that relevant activities are to be ceased as soon as reasonably practicable if there is a significant risk that an adverse impact on the environment will be likely to occur.
- Identification and implementation of controls to minimise environmental risk.
- Scheduling monitoring and management activities, and analysis of data in accordance with the sub-plans presented in **Section 5**.
- Scheduling annual environmental audits of the Ash Repositories.
- Preparation and timely submission of the Annual Report and/or Compliance Reports as required by CoA A10.
- Ensuring public access to information as required by CoA A11.
- Undertaking community consultation and managing complaints and/or enquiries in accordance with EA protocols, procedures and CoA B11.
- Ensuring complaints are resolved satisfactorily;
- Report on environmental incidents and/or non compliances to relevant government authorities in accordance with CoA A8, A9, E19, E20 and as set out in Appendix 2 of PA 09_0186;
- Responsible for carrying out environmental monitoring associated with the LNAR as required by the relevant Regulatory approvals, licences and this OEMP;
- Participate and/or lead investigations into environmental incidents;
- Ensure the MPPS Pollution Incident Response Management Plan is maintained and applicable to the LNAR;
- Undertaking regular environmental inspections and as required.
- Review, updating and communicating this OEMP as necessary and in accordance with CoA E26
- Ensuring that the suitably qualified, experienced and independent person engaged to design the ash placement areas are approved by the Secretary in accordance with CoA B14
- Tracking of environmental non-conformances and associated corrective actions as required

Roles and Responsibilities
5. Project Manager/ Site Manager (Contractor Manager)
The contractor's Project Manager/ Site Manager (or their delegate) roles and responsibilities include: ▪ Responsible for environmental staff training ▪ Responsible for preparing and updating the ROP as necessary ▪ Responsible for updating the Monthly Client Report (to EA) with environmental results from the previous month and report on any trends ▪ Responsible for implementing OEMP as part of their overall operations including familiarising staff with its mitigation measures ▪ Manages, implements and ensures compliance against the contract administered by EA and reports back to the Contract administrator (EA) about any non-conformances or non- compliances or matters concerning the operation of the ash repository; ▪ Oversees Environmental and operational activities and provides direction; ▪ Controls and manages overall contractual budget for the Project; ▪ Ensuring environmental risk management is incorporated into project processes; ▪ Establishing lines of control and assigning environmental responsibilities and accountabilities to EA project personnel (the Contract Administrator); ▪ Ensuring overarching systems are provided for risk management, health, safety and emergency measures; ▪ Ensuring Environmental Management aspects are incorporated into day to day operations of the Ash Repositories, planning/ scheduling and construction; ▪ Ensuring environmental requirements are acknowledged and implemented for relevant Project operations; ▪ Ensuring quality assurance inspections audits are carried out and documented, and outcomes are reviewed actioned where required; ▪ Procedures are implemented to manage sub-contractor performance; ▪ Ensuring environmental incidents are recorded and reported as soon as practicable to EA in accordance with procedures and mitigation measures are implemented to minimise the possibility of the same incident happening again; ▪ Notify the Contract Administrator if a complaint has been received. ▪ Identification and implementation of controls to minimise environmental risk ▪ Notify the Contract Administrator if an environmental incident or environmental near miss has occurred, including the outcomes of any investigations ▪ Carry out and/or participate in investigations of environmental incidents or environmental near misses as required ▪ Ensuring adequate dust management controls are implemented ▪ Managing and monitoring pond levels associated with the leachate management system ▪ Supervise, monitor and maintain adequate QA/QC records during the installation and commissioning of the leachate barrier and leachate management systems ▪ Daily observational monitoring of site environmental conditions and impact control measures ▪ Implementation of the Drivers Code of Conduct (Appendix F) ▪ Ensuring that the installation of the Leachate Management System is carried out in accordance with the Technical Specifications and drawings prepared by the approved (CoA B14) design expert ▪ Tracking of environmental non-conformances and associated corrective actions (as required)

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

3.3 Project Communications

3.3.1 Project Team Communications

Effective project communications are essential for the transfer of information between parties that are involved in managing activities at the LNAR.

A Project Team will be formed, comprising EA staff involved in LNARs operation and the site staff working under the Contractor.

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

Table 3-2 Methods of Internal Communication

Method / Medium	Frequency	Participants	Record
Project meetings	Weekly	Contractor and EA Contractor Administrator	Minutes
Tool box meeting and/or daily work team briefing	Where relevant to a particular work activity	Contractor – relevant Project personnel and sub-contractors	Toolbox meetings and/or site diary
Site meeting	Daily	Contractor	Minutes
Monthly Contractor environmental compliance report	Monthly	Contractor/ EA Contractor Administrator	Report/minutes
Environmental data management system (Monitor Pro)	Daily when data becomes available	Environment Leader	Monitor Pro Database
Quarterly environmental Compliance Meeting	Quarterly	EA Contractor Administrator / Asset Leader / Production Leader / Environment Leader and delegates	Minutes
AEMR / Annual Compliance Report	Annual	EA Contractor Administrator / Asset Leader / Production Leader / Environment Leader / Head of Mt Piper and delegates	Report and memo

3.3.2 External Communications

External communications will be managed by EA in line with the complaints management and community information procedures and as set out in **Section 3.5**.

3.3.3 Stakeholder Consultation

3.3.3.1 Agency Communications

The key stakeholders actively involved in the approval and implementation of the LNAR include:

- DPE;
- DPE Water / Natural Resources Access Regulator (**NRAR**);
- Department of Primary Industries (**Fisheries**);
- WaterNSW;
- NSW Health;
- NSW EPA; and
- Lithgow City Council.

EA has consulted with the relevant Government Departments regarding the development and review of this OEMP. A summary of stakeholder consultation dates is provided in **Table 3-3**. **Appendix E** contains further details around stakeholder comments and feedback.

3.3.3.2 Community and Stakeholder Communications

Community consultation will be undertaken if works are to be conducted outside the standard working times specified for the LNAR. There will be one-to-one communication with landholders and local residents within the vicinity of the LNAR, including distribution of project fact sheets as necessary. Continued communication will be maintained with the broader community via the EA website (https://www.energyaustralia.com.au/about-us/energy-generation/mt-piper-power-station) for the life of the LNAR, and complaints will be handled in accordance with the procedures as outlined in **Section 3.5**.

EA has prepared a Community Information Plan for implementation in accordance with the terms of CoA B13 (which covers both the construction and operation of the LNAR). The Community Information Plan identifies key stakeholders, communication tools, channels and timetable for provision of information. In addition to the Community Information Plan, EA Management Team regularly meets three times a year, with the MPPS Community Consultative Committee (**CCC**).

EA will also comply with the terms of CoA B10 in respect of community information and complaints management. Portals for community complaints and enquiries (as provided on the EA website (https://www.energyaustralia.com.au/about-us/energy-generation/mt-piper-power-station)) include:

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

3.3.3.3 Access to Information

In accordance with CoA A11, until the completion of all rehabilitation required under the CoA, EA will make the following information and documents (as they are obtained, approved or as otherwise stipulated within the CoA) publicly available on the EA website (https://www.energyaustralia.com.au/about-

us/energy-generation/lamberts-north-ash-repository), and will keep the information up to date, to the satisfaction of the Secretary:

- the environmental assessment (refer **Section 1.3**);
- all current statutory approvals for the project;
- all approved strategies, plans and programs required under the CoA, including the Construction Environmental Management Plan, the Ash Management Strategy, Biodiversity Offset Management Plan 2019, Lamberts North Community Information Plan, this OEMP, Annual Environmental Management Reports, and Compliance Tracking.
- staging plans for the project if the construction, operation or decommissioning of the project is to be staged (as indicated in Figure 6);
- regular reporting on the environmental performance of the project in accordance with the reporting requirements in any plans or programs approved under the CoA;
- a comprehensive summary of the monitoring results of the project, reported in accordance with the specifications in any CoA, or any approved plans and programs;
- a summary of the current phase and progress of the project;
- contact details to enquire about the project or to make a complaint;
- a Complaints Register, updated monthly;
- audit reports prepared as part of any Independent Environmental Audit of the project and the Proponent's response to the recommendations in any audit report; and
- any other matter required by the Secretary.

Table 3-3 Summary of regulatory stakeholder consultation

Stakeholder	Nature of involvement	Condition of approval	When consulted	Reference to Comments
DPE	OEMP	Whole CoA	22 October 2021	Appendix E
DPE Water / NRAR	OEMP, Groundwater, Soil and Surface Water, Site rehabilitation, hydrological monitoring	D2, D3 (b) (c) (f) E17	22 October 2021 – 10 December 2021	Appendix E
WaterNSW	OEMP, Groundwater, Surface Water, Site rehabilitation, hydrological monitoring	D2, D3 (b) (c) (f) E17	22 October 2021	Appendix E
Environmental Protection Authority (NSW EPA)	Air Quality	D2 (d), D3, D5, E4, E12, E13, E18	22 October 2021 – 10 December 2021	Appendix E
Lithgow City Council (LCC)	OEMP	D2	22 October 2021	Appendix E
NSW Health	OEMP Air quality	D2, E2 (d), E18	22 October 2021 – 10 December 2021	Appendix E
DPE BCS	OEMP	B7	22 October 2021	Appendix E

3.4 Environmental Awareness Training and Site Induction

Personnel working at the LNAR will need to successfully complete an induction prior to commencing works. The Contractor will also induct personnel so they are familiar with the approved Contractor OH&S and Environment Management Systems (Site Induction).

The Site Induction process will include environmental topics relating to LNAR operations, with the purpose of providing sufficient education so that personnel:

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

The Site Induction will cover general environmental issues and measures relating to LNAR, such as:

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

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

The Contractor will identify resources for the following environmental activities:

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

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

3.5 Complaints Management

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

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

3.6 Environmental Inspection Program

Environmental site inspections are conducted by the Contractor on routine basis in accordance with the ROP. The ROP inspections are supplemented by monitoring scheduled by EA, which generally align with the program outlined in **Table 3-4**, as further detailed in the relevant sub-plans. These measures will ensure that operational activities are undertaken in compliance with the regulatory requirements of the OEMP. The inspections shall identify areas where improvements to the environmental performance of the LNAR may be achieved. Further, routine monitoring will serve as an early warning for potential environmental impacts that may result if a component of the environmental management system loses operational integrity.

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

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

The Environmental Inspection Program implemented at the LNAR is presented in **Table 3-4**.

Table 3-4 Environmental Inspection Program

Potential Impact	Parameters	Frequency	Reporting	Responsibility
General environmental impacts	Potential impacts listed in environmental plans and the environmental risk assessment	Daily	Site inspection report	Contractor
		Weekly	Weekly environmental inspection checklist and monthly reports	Contractor
Erosion and sedimentation	Potential erosion, surface water pollution	After a significant rainfall event (e.g.>25mm in 24 hours)	Site inspection report	Contractor
Air, noise and water	Various	As specified in sub-plans	Weekly environmental inspection checklist and periodic monitoring reports	Contractor EA / specialist consultant
Leachate Ponds (levels and leak detection)	Leachate storage volume and available freeboard volume in storage ponds. Leachate level monitoring in base of lined areas. Monitoring volume (via totaliser meter) and operational integrity for leachate extraction and transfer pipelines. Monitoring for leachate within the space between pond liners and within sumps underlying lined features. Water level and quality monitoring in groundwater monitoring bores.	As specified in sub-plan	Site inspection report	Contractor EA / specialist consultant

3.7 Auditing of the OEMP

3.7.1 External Audits

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

The audit findings and EA response have been detailed in Annual Environmental Management Report's for the respective reporting periods.

EA will develop a program for independent environmental auditing in accordance with the Departments Independent Audit Post Approval Requirements (2020) as set out in CoA B8(c).

Reports prepared as part of any independent environmental audit of the Project and EA's response to the recommendations in any audit report will be made publically available on the EA website in accordance with CoA A11(x) (refer **Section 3.3.3.3**).

3.7.2 Internal Audits

Annual internal audits of the Contractors performance will also be undertaken in accordance with the Contractor's EMS. Internal audits will review the implementation of the OEMP and effectiveness of the management measures, and results will be reported to the Contract Administrator.

3.8 Non-compliances and Corrective Actions

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

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

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

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

In the event of non-conformance, the Environment Representative will be informed by the Contract Administrator, who may recommend reasonable steps to avoid or minimise unintended or adverse environmental impacts. This may include the cessation of the related activities at the LNAR or other measures to avoid or minimise environmental impacts until the situation is rectified.

Non-conformances must be documented, and corrective actions implemented where required. Corrective actions are managed through EA's incident/non-conformance database and are generally assigned to the Contract Administrator for action. This includes the verification that required controls have been implemented and are effective. Tracking of environmental non-conformances and associated corrective actions will be the responsibility of the Contractor, Contract Administrator and/or the Environmental Representative depending on the circumstance.

3.9 Environmental Incident Management

3.9.1 Types of environmental incidents

- Discharge of sediment or polluted water in a manner that adversely impacts the quality of groundwater or surface water of Wangcol Creek;
- Spills of hazardous substances such as chemicals, oil or fuel; and
- Failure of an embankment causing ash spillage from the site;
- A non-compliance of PA 09_0186;
- An exceedance or non-compliance, such as with performance criteria outlined in sub-plans (**Section 5**).

3.9.2 Environmental procedure

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

A list of the incident categories and appropriate actions is provided in **Table 3-5.**

Table 3-5 Incident Categories

Incident Type	Incident Characteristics	Action Required
Near-miss*	▪ Potential for but no actual pollution ▪ General environmental hazards (such as hazardous substances not stored in secured locations) ▪ Handling mishaps with fuel, oil, lubricants and/or hazardous substances not resulting in spillage ▪ Loss of control of equipment not resulting in damage to vegetation or property ▪ Inefficient or lacking traffic and	Contractor staff must report incident to the Site Manager immediately, who will notify the Contract Administrator. EA must then be notified within 24 hours and be provided with an incident notification record. Contractor must advise suitable controls to be implemented in future situations to prevent recurrence.

Incident Type	Incident Characteristics	Action Required
Minor	A minor environmental incident has occurred when material has been spilled or released to the environment (land, air, water, people affected), causing **no** actual or potential: ▪ harm to the health or safety of human beings or to ecosystems that is not trivial; or ▪ loss or property damage of an amount, or amounts in aggregate, exceeding $10,000. Its consequence/impact are measured as minor or not important and includes some of the following aspects: ▪ Material easily contained and recovered ▪ Is confined to work site boundaries ▪ Involves minimal or minor interruption to work activities ▪ Complaints easily handled at the work site ▪ Has no external or regulatory involvement (community, Council, emergency services, media, other relevant authorities).	Contractor staff must report incident to the Site Manager immediately, who will notify the Contract Administrator. The Shift Leader shall assess the incident facts using the Pollution Incident Response Management Plan (**PIRMP**). Contractor must advise suitable controls to be implemented in future situations to prevent recurrence.
Major	Material spilt or released to the environment where its consequences/impacts result in actual or potential harm to the environment (see **Section 3.9.4**)	Contractor staff must report incident to the Site Manager immediately. The Site Manager will report immediately to the Contract Administrator. The Shift Leader shall assess the incident facts using the PIRMP and if required, initiate the notification process and incident response as outlined in the PIRMP and/or EPL. EA shall notify the Secretary (via the Major Projects website) of any environmental incident within 12 hours of becoming aware of the incident. EA shall provide full written details (via the Major Projects website) of the incident to the Secretary within seven days of the date on which the incident occurred. The notification will identify the project (including the application number) and set out the location and nature of the incident. Subsequent notification requirements must be given, and reports submitted in accordance with the requirements set out in Appendix 2 of the CoA (noting that these include the Written Incident Notification Requirements and Incident Report Requirements detailed in **Section 0**).

Incident Type	Incident Characteristics	Action Required
Non-compliance	A non-compliance with the conditions of consent as set out in PA 09_0186	The Secretary will be notified in writing by EA via the Major Projects website within seven days after EA becomes aware of any non-compliance. A non-compliance notification must identify the project and the application number for it, set out the condition of approval that the project is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance. Compliance Reports of the project will be carried out in accordance with the Compliance Reporting Requirements outlined in the Compliance Reporting Post Approval Requirements (2020). Compliance Reports will be prepared and submitted to the Department via the Major Projects portal at intervals, no greater than 52 weeks from the date of commencement of operation (annually) or if in care & maintenance, from the commencement date of care and maintenance (annually).

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

The Environmental Representative must be notified as soon as possible in order to address the cause or impact of the environmental incident and to ensure procedures are undertaken in accordance with this OEMP and the EA emergency response system and PIRMP (see **Section 3.9.4**).

Notification of an incident to the EPA must be made initially to the EPA Environment Line, and then in writing, in accordance with the EPL requirements.

In accordance with CoA C2, EA will meet the requirements of the Secretary to address the cause or impact of any environmental incident, as it relates to this approval, reported in accordance with CoA C1 of this approval, within such period as the Secretary may require.

3.9.3 Incident Investigation

Incidents will be documented, investigations conducted, and action plans established to prevent reoccurrence. In accordance with CoA E20, EA commits to meeting the requirements of the Secretary to address the cause or impact of any environmental incident, as it relates to the CoA, reported in accordance with CoA E19, within such period as the Secretary may require.

3.9.3.1 Written Incident Notification Requirements

Appendix 2 of the CoA outlines written incident notification requirements which will be followed by EA in the event of an incident. A written incident notification addressing the requirements set out below will be submitted to the Secretary via the Major Projects website within seven days after EA becomes aware of an incident.

Written notification of an incident will:

- identify the project and application number;
- provide details of the incident (date, time, location, a brief description of what occurred and why it is classified as an incident;
- identify how the incident was detected;
- identify when EA became aware of the incident;
- identify any actual or potential non-compliance with the CoA;
- describe what immediate steps were taken in relation to the incident;
- identify further action(s) that will be taken in relation to the incident; and
- identify a project contact for further communication regarding the incident.

3.9.3.2 Incident Report Requirements

In accordance with Appendix 2 of the CoA, within 30 days of the date on which the incident occurred or as otherwise agreed to by the Secretary, EA will provide the Secretary and any relevant public authorities (as determined by the Secretary) with a detailed report on the incident addressing all requirements below, and such further reports as may be requested.

The Incident Report will include:

- summary of the incident;
- outcomes of an incident investigation, including identification of the cause of the incident;
- details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence; and
- details of any communication with other stakeholders regarding the incident.

Where appropriate, incident investigations will be commissioned by legal advisors to enable the provision of legal advice regarding the incident. In addition to the above requirements, any environmental investigation will further include the following:

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

3.9.4 Emergency Preparedness

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

EA has an established Emergency Response Plan and Pollution Incident Response Management Plan (**PIRMP**) for MPPS. The Emergency Response Plan and the PIRMP will be followed in case of an emergency at MPPS. Any emergency procedures developed by the Contractor will follow the EA Emergency Response Plan. Familiarisation with The Emergency Response Plan will be included in LNAR inductions, specifying the steps to be taken and the persons to contact in the event of an emergency. Any personnel identifying an emergency should dial 555 (from a landline) or 6354 8316 (from a mobile phone) to alert the EA Emergency Response team.

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

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

Harm to the environment is material if:

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

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

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

- NSW EPA;
- NSW Health (local Public Health Unit);
- WorkCover NSW;
- Local Council; and
- Fire and Rescue NSW

In the event that contaminants are released, the Emergency Response Plan and supporting PIRMP will be implemented by the Shift Leader.

3.10 Document Control

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

- Correspondence to/from stakeholders and interested parties;
- Permits, licences and approvals;
- Induction training records;

- Environmental complaints/enquiries registers;
- Non-compliance reports;
- Environmental incident reports; and
- Environmental inspection checklists and audit reports.

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

3.11 Continuous Improvement and Adaptive Management

3.11.1 Contractor Review Meetings

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

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

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

3.11.2 Revision of Strategies, Plans and Programs

In accordance with CoA E26 of Schedule 2, within 3 months, unless the Secretary agrees otherwise, of:

- the submission of an incident report or independent audit report under CoA B8 or B9; and
- the approval of any modification to the CoA; or
- a direction of the Secretary under CoA A1 of Schedule 2;

EA will review and, if necessary, revise the studies, strategies or plans required under the CoA to the satisfaction of the Secretary. Where this review leads to revisions in any document, within 4 weeks of the review the revised document will be submitted to the Secretary for approval, unless otherwise agreed with the Secretary.

4. Environmental Legislative Framework

4.1 Statutory Requirements

4.1.1 Project Approval

The construction and operation of the LNAR was approved under PA 09_0186 on 16 February 2012 and was modified on 21 September 2021 (PA 09_0186 MOD 1) under Section 4.55 of the EP&A Act.

PA 09_0186 MOD 1 incorporates environmental management and mitigation measures developed via the environmental assessment documents referred to in the CoA (**Section 1.3**). In addition, a Consistency Report (SKM, 2012) was prepared to confirm the consistency of two design changes to the LNAR, relating to improvements to the storage capacity of LNAR by utilising the capacity of Huon Void and a change to the alignment of the drainage line to divert clean off-site storm water away from the south western boundary of the LNAR and into an existing clean water drain adjacent to the MPAR.

EA also operates under EPL 13007 granted under the *Protection of the Environmental Operations Act 1997* by the Environmental Protection Authority. EA and its associated contractors must abide by the EPL at all times within the EPL premises.

4.1.2 Relevant legislation, regulation and guidelines

In addition to the EP&A Act, legislation, guidelines and standards relevant to the Project are listed in **Table 4-1** . This table also lists the regulatory authorities responsible to regulate the various legislation. The Contractor is responsible to ensure compliance with the applicable provisions of relevant legislation and guidelines when carrying out work.

A number of sub plans exist as part of the OEMP (**Sections 5.3– 5.11**). **Table 4-1** references the sub plans that address relevant requirements as set out in the regulatory requirements.

Table 4-1 Relevant Legislation, Guidelines and Standards

Legislation / Guideline / Standard (Administering Authority)	Summary	General Requirements	Related sub-plan
Commonwealth Legislation			
Environment Protection and Biodiversity Conservation Act 1999 [Commonwealth Department Agriculture, Water and the Environment (DAWE)]	The EPBC Act is triggered by developments that will have a significant impact on Matters of National Environment Significance (**MNES**), including Threatened Ecological Communities (**TEC**), threatened species and migratory species.	The Mount Piper Power Station Ash Placement Project (including the LNAR) was referred to SEWPaC (now known as DAWE) on 21 May 2010 (EPBC 2010/5506). On 16 July 2010 the Project was determined to not be a controlled action and therefore only required assessment under NSW legislation. The Project is not a controlled action and so is not regulated by the EPBC Act.	Weed Management Plan (**Section 5.10**)
NSW Legislation			
Contaminated Land Management Act 1997 (EPA)	The CLM Act provides powers for the NSW EPA to deal with site contamination that is significant enough to warrant regulation under the Act given a site's current or approved use.	The MPPS has been notified under the CLM Act and the EPA has determined that regulation under the CLM Act is not required.	Groundwater Management and Monitoring Plan (**Section 5.5**) Soil and Surface Water Management Plan (**Section 5.6**). Leachate Management Plan (**Section 5.11**)

Legislation / Guideline / Standard (Administering Authority)	Summary	General Requirements	Related sub-plan
Environmentally Hazardous Chemicals Act 1985 (EPA)	The EHC Act regulates chemicals, or groups of chemicals, of environmental concern. These requirements are set out in chemical control orders (**CCOs**). CCOs are typically made where chemical controls are required beyond those set under existing pollution laws and set controls on activities throughout the chemical's lifecycle through general specific requirements.	No environmentally hazardous chemicals are to be placed inside the LNAR. There are no components in the ash that are listed in Schedule A of the Scheduled Chemical Wastes CCO 2004. No requirement for permits, licences or approvals under the EHC Act have been identified for the LNAR.	Nil
Heritage Act 1977 (Heritage NSW)	Protects items of environmental heritage (natural and cultural) in New South Wales. The Heritage Act does not apply to Aboriginal "relics". Applies if any heritage items are identified during operation works.	No requirements for permits, licenses or approvals have been identified for the Project. However, if during construction of the Project relics (as defined in the Heritage Act) are uncovered the appropriate authorities are to be notified (procedures are identified in the approved CEMP). Note – relics under the Heritage Act do not include Aboriginal Heritage items or artefacts.	Nil
National Parks and Wildlife Act 1974 (Heritage NSW / DPE Biodiversity and Conservation Division)	The NPW Act provides for the care, control and management of national parks, historic sites, nature reserves, reserves, Aboriginal areas and state game reserves. Under the NPW Act, most fauna and flora species, as well as indigenous heritage, is protected in NSW	No requirements for permits, licences or approvals have been identified for the operation phase of the Project. The Weed Management Plan outlines measures to protect and minimise loss of native vegetation and fauna.	Weed Management Plan (**Section 5.10**)

Legislation / Guideline / Standard (Administering Authority)	Summary	General Requirements	Related sub-plan
Biodiversity Conservation Act 2016 *Local Land Services Act 2013* (DPE Environment, Energy and Science Group, Local Land Services and the NSW Biodiversity Conservation Trust).	These Acts regulates the clearing of native vegetation on land in NSW. Native vegetation is any species of vegetation that existed in NSW before European settlement including trees, saplings, shrubs, scrub, understory, groundcover or plants in a wetland. The clearing of native vegetation is subject to differing requirements depending on how the vegetation and the land is classified under these Acts.	The LNAR has been previously cleared of native vegetation by mining related activities and no significant habitat is currently available for any of the threatened flora and fauna recorded within the locality. There is potential that the BC Act listed Critically Endangered Ecological Community **(CEEC)** Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion - South Eastern Highlands occurs within surrounding vegetated lands to the west and south of the LNAR. Mitigation measures within the Weed Management Plan will minimise any indirect impacts to surrounding habitats. No additional requirements for permits, licences or approvals have been identified for the operation phase of the Project.	Weed Management Plan (**Section 5.10**)

Legislation / Guideline / Standard (Administering Authority)	Summary	General Requirements	Related sub-plan
Protection of the Environment Operations Act 1997 *Protection of the Environment Operations (noise control) Regulation 2017* *Protection of the Environment Operations (clean air) Regulation 2010* *Protection of the Environment Operations (waste) Regulation 2014* *Protection of the Environment Operations (general) Regulation 2020* *Waste Avoidance and Resource Recovery Act 2001* (EPA)	The POEO Act controls how activities should be undertaken in consideration of environmental protection for aspects, including air, water, soil, and noise pollution, as well as waste. The main features and subordinate legislation of the POEO Act are: ▪ Integrated Environmental Protection Licensing – The POEO Act provides a single licensing arrangement addressing air pollution, water pollution, noise pollution and waste management for scheduled activities; and ▪ Creation of a range of environmental offences. Under the POEO Act, scheduled activities are required to obtain an Environmental Protection Licences to operate from the EPA.	The provisions of the EPL 13007 apply to the operation of LNAR. The EPL includes conditions that regulate the treatment and disposal of ash and other co-placed wastes.	Noise Management and Monitoring Plan (**Section 5.4**) Groundwater Management and Monitoring Plan (**Section 5.5**) Soil and Surface Water Management Plan (**Section 5.6**) Air Quality Management Plan (**Section 5.7**) Waste Management Plan (**Section 5.9**) Leachate Management Plan (**Section 5.11**)
*Water Management Act 2000 (WM Act) (*WaterNSW)	The WM Act controls the allocation, use and sharing of water within certain management areas. The LNAR is located on the western boundary of the Greater Metropolitan Region Unregulated River area.	EA will not be seeking any further allocations of water under the WM Act for LNAR. Refer to Soil and Surface Water Management Plan (**Section 5.6**) for further information	Groundwater Management and Monitoring Plan (**Section 5.5**)

Legislation / Guideline / Standard (Administering Authority)	Summary	General Requirements	Related sub-plan
Biosecurity Act 2015 (DPI)	The *NSW Biosecurity Act 2015* came into effect on 1 July 2017, effectively replaced the *Noxious Weeds Act 1993*, and 13 other Acts, with a single Act. Under the Part 3 of the Biosecurity Act everyone has a general biosecurity duty, meaning anyone who deals with a biosecurity matter is required to prevent, eliminate or minimise any biosecurity risks they encounter. The general biosecurity duty applies to all weeds listed in Schedule 3 of the Biosecurity Act (also included as Weeds of National Significance).	A Weed Management Plan has been prepared as part of this OEMP.	Weed Management Plan (**Section 5.10**)
State Environmental Planning Policies			
State environmental Planning Policy (Sydney Drinking Water Catchment) 2011 (replacing the Drinking Water Catchments Regional Environmental Plan No. 1) (WaterNSW)	The State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011 (the SEPP) commenced on 1 March 2011, and replaced the *Drinking Water Catchments Regional Environmental Plan No. 1* The SEPP aims to: ▪ provide for healthy water catchments that will deliver high quality water while permitting development that is compatible with that goal, ▪ provide that a consent authority must not grant consent to a proposed development unless it is satisfied that the proposed development will have a neutral or beneficial effect on water quality, and	The 2010 EA indicated that the water quality as defined by the *Drinking Water Catchments Regional Environmental Plan No. 1* would be adequately managed. Improved environmental outcomes for Wangcol Creek was achieved through PA 09_0186 Mod 1, in which the Water Assessment concluded that the Modification incorporates Water NSW's current recommended practices and standards, and will have a neutral or beneficial effect on water quality. Therefore, the project has been planned and designed so that the requirements of both the SEPP and *Drinking Water Catchments Regional Environmental Plan No. 1* would be met.	Groundwater Management and Monitoring Plan (**Section 5.5**) Soil and Surface Water Management Plan (**Section 5.6**) Leachate Management Plan (**Section 5.11**)

Legislation / Guideline / Standard (Administering Authority)	Summary	General Requirements	Related sub-plan
	▪ support the maintenance or achievement of the water quality objectives for the Sydney drinking water catchment.		
Policies, guidelines and standards			
NSW Noise Policy for Industry 2017 (NPI) (EPA)	This Policy is set in place to establish noise criteria that would protect the community from excessive industrial noise and preserve amenity for specific land uses.	The Policy is applicable to the operation of the Project. The Project's Environmental Protection Licence, issued under the POEO Act, does not set any noise limits for the Project. Nevertheless, PA 09_0186 includes noise level restrictions that need to be complied with during construction and operation.	Noise Management and Monitoring Plan (**Section 5.4**)
Interim Noise Construction Guideline 2009 (EPA)	The guideline is designed to manage noise from construction works regulated by the EPA under the POEO Act, by setting conditions in licences or other regulatory instruments. This can be used by acoustic engineers in assessing noise and reporting and the contractors and landowners in understanding noise legislation.	EA will be carrying out noise monitoring during the life of Lamberts North.	Noise Management and Monitoring Plan (**Section 5.4**)
Waste Classification Guidelines Part 1 NSW (EPA)	This part of the Waste Classification Guidelines (the Guidelines) covers the classification of wastes into groups that pose similar risks to the environment and human health.	The guidelines are relevant when ash is diverted from the ash repository and sold to consumers.	Waste Management Plan (**Section 5.9**)

Legislation / Guideline / Standard (Administering Authority)	Summary	General Requirements	Related sub-plan
Environmental Guidelines: Solid Waste Landfills 2016 (EPA)	The guideline provides guidance for the environmental management of landfills in NSW by specifying a series of 'Minimum Standards'. The NSW EPA will use this guideline to assess applications for new or varied landfill licences under the POEO Act and to assess issues that arise during the operational and post-closure periods of landfills.	CoA D3(b)(iii) and (c)(iv) of PA 09_0186 MOD 1 requires that leachate management system must be designed and constructed in general accordance with this guideline. Prior to the commencement of operation of each stage of the ash placement process, EA must demonstrate to the satisfaction of the Secretary, in consultation with the EPA, that the design of the leachate management system is generally consistent with this guideline in accordance with CoA D5.	Waste Management Plan (**Section 5.9**)
Australian Standard 1055:2018 – Acoustics Description and Measurement of Environmental Noise	This Standard sets out general procedures for the description and measurement of environmental noise including repetitive impulsive noise. This Standard defines the basic quantities to be used for the description of noise in community environments and describes basic procedures for the determination of these quantities. It excludes the setting of environmental noise criteria. Such levels are set by regulations or organisational policy, not by Standards Australia.	The standard is not a regulatory document and only provides a guide to description and measurement of noise. The standards have been incorporated into the Operational Noise Management and Monitoring Plan.	Noise Management and Monitoring Plan (**Section 5.4**)

Legislation / Guideline / Standard (Administering Authority)	Summary	General Requirements	Related sub-plan
Australian Standard 2436 :2010 – Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites	The Standard provides guidance in noise and vibration control as well as the investigation and identification of sources, measurements of sound and vibration, and guidance in assessment. The Standard is applicable to a wide range of different activities associated with construction, demolition and maintenance works.	The standard is not a regulatory document but have been incorporated into the Operational Noise Management and Monitoring Plan.	Noise Management and Monitoring Plan (**Section 5.4**)
Australian Standard 1289.5.1.1: 2017 – Methods of testing soils for engineering purposes Soil compaction and density tests—Determination of the dry density/moisture content relation of a soil using standard compactive effort	This Standard sets out a method for the determination of the relationship between the moisture content and the dry density of a soil, when compacted, using standard compactive effort.	The standard is not a regulatory document but been incorporated into the Groundwater Management and Monitoring Plan.	Groundwater Management and Monitoring Plan (**Section 5.5**)
Australian Standard 5667.1:1998 - Water quality-- Sampling - Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples.	This Standard provides general principles to be applied in the design of sampling programs, general guidance on sampling techniques and guidance on the procedures to be taken to preserve and transport samples.	The standard is not a regulatory document but have been incorporated into the Groundwater Management and Monitoring Plan.	Groundwater Management and Monitoring Plan (**Section 5.5**)

Legislation / Guideline / Standard (Administering Authority)	Summary	General Requirements	Related sub-plan
Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales (EPA) 2021 Draft for Consultation	This document provides the sampling and analysis methods to be used when complying with a requirement by, or under, the environment protection legislation, or a licence or notice under that legislation, to test for the presence or concentration of matter in water and the volume, depth and flow of water or wastewater.	This document is referred to in clause 60 of the *POEO General Regulation and the Load Calculation Protocol* (DECC, 2009). The document may be referred to in conditions attached to statutory instruments (such as licences or notices) issued by the EPA under environment protection legislation, as defined in the POEO Act 1997. This document may also be referred to by other regulatory authorities in planning documents and development consents and approvals where sampling and analysis of analytes are required.	Groundwater Management and Monitoring Plan (**Section 5.5**)
Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018 Revision)	Provide guidance on the management of water quality in Australia and New Zealand. Includes setting water quality and sediment quality objectives designed to sustain current, or likely future, community values for natural and semi-natural water resources.	The standard is not a regulatory document but have been incorporated into the Groundwater Management and Monitoring Plan.	Groundwater Management and Monitoring Plan (**Section 5.5**)
Australian Drinking Water Guidelines Version 3.6 Updated March 2021 (NHMRC, NRMMC 2011)	Provide a framework for good management of drinking water supplies and provide a basis for determining the quality of water to be supplied to consumers.	The standard is not a regulatory document but have been incorporated into the Groundwater Management and Monitoring Plan.	Groundwater Management and Monitoring Plan (**Section 5.5**)

Legislation / Guideline / Standard (Administering Authority)	Summary	General Requirements	Related sub-plan
Guidelines for the Assessment and Management of Groundwater Contamination (DEC, 2007)	Outline a best-practice framework for assessing and managing contaminated groundwater in NSW.	While the guidelines do not articulate legislative requirements, they are made under section 105 of the Contaminated Land Management Act 1997 (CLM Act). The guideline has been incorporated into the Groundwater Management and Monitoring Plan.	Groundwater Management and Monitoring Plan (**Section 5.5**)
Best Practice Guidelines for Erosion and Sediment Control, published by the International Erosion Control Association (IECA – 2008).	Provides strategies and techniques assist erosion and sediment control practitioners to reduce the degradation of land and water from uncontrolled erosion and sedimentation.	The guideline is not a regulatory document but have been incorporated into the Soil and Surface Water Management Plan.	Soil and Surface Water Management Plan (**Section 5.6**)
Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom 2004)	This guideline will help mitigate the impacts of land disturbance activities on soils, landforms and receiving waters by focussing on erosion and sediment control. This includes reducing pollution to downstream areas and receiving waters; reduce land degradation; raise an awareness of ecologically sustainable development **(ESD)** principles and their application to development.	The guideline is not a regulatory document but have been incorporated into the Soil and Surface Water Management Plan.	Soil and Surface Water Management Plan (**Section 5.6**)

Legislation / Guideline / Standard (Administering Authority)	Summary	General Requirements	Related sub-plan
NSW Approved Methods for the Modelling and Assessment of Air Pollution in NSW (EPA 2016).	Lists the statutory methods for modelling and assessing emissions of air pollutants from stationary sources in the state.	It is referred to in Part 5: Air Impurities Emitted from Activities and Plant in the *Protection of the Environment Operations (Clean Air) Regulation 2010* (the Regulation). Industry has an obligation to ensure compliance with the requirements specified in the Regulation. This document may also be referred to in conditions attached to statutory instruments, such as: ▪ licences or notices issued under the *Protection of the Environment Operations Act 1997*; ▪ environmental assessment requirements under Part 4 of the EP&A Act The guideline has been incorporated into the Air Quality Management Plan.	Air Quality Management Plan (**Section 5.7**)
Australian Standard 3580.10.1-2016 Methods for sampling and analysis of ambient air – Determination of particulate matter – deposited matter- gravimetric method.	This Standard sets out a method for the sampling of particulate matter that is deposited from the atmosphere, and procedures for the gravimetric determination of the mass deposition rate of insoluble solids, ash, combustible matter, soluble solids and total solids from ambient air.	The guideline is not a regulatory document but has been incorporated into the Air Quality Management Plan.	Air Quality Management Plan (**Section 5.7**)

Legislation / Guideline / Standard (Administering Authority)	Summary	General Requirements	Related sub-plan
Guidelines for using compost in Land Rehabilitation and Catchment Management. (DECC 2007).	The guidelines are intended to promote best management practices with respect to applying composted soil conditioners and mulches prepared from garden organics in catchment and land rehabilitation projects.	The guideline is not a regulatory document but has been incorporated into the Landscape Revegetation and Rehabilitation Plan.	Landscape Revegetation and Rehabilitation Plan (**Section 5.8**)
The excavated natural material order 2014	Imposes the requirements that must be met by suppliers of excavated natural material to which 'the excavated natural material exemption 2014' applies. The requirements in this order apply in relation to the supply of excavated natural material for application to land as engineering fill or for use in earthworks.	The requirements in this order apply, as relevant, to any person who supplies excavated natural material that has been generated, processed or recovered by the person.	Landscape Revegetation and Rehabilitation Plan (**Section 5.8**)
The excavated natural material exemption 2014	Exempts a consumer of excavated natural material from certain requirements under the POEO Act and the Waste Regulation in relation to the application of that waste to land.	The importation of capping material to cover the ash repository must meet the definition of excavated natural material detailed in the excavated natural material order.	Landscape Revegetation and Rehabilitation Plan (**Section 5.8**)

4.2 Environmental Risk Assessment

The Contractor, in consultation with EA, will review environmental aspects at LNAR and maintain a current risk assessment register. The assessments are undertaken in accordance with the criteria outlined in AS/NZS ISO31000 and EAs risk management process.

4.3 Aspects and Impacts Register

The Contractor will develop and reference an Environmental Aspects and Impacts register. Controls identified to minimise and mitigate risk shall be implemented in association with the ROP. The high-risk outcomes from the Environmental Aspects and Impacts Register are detailed in **Table 4-2.**

Table 4-2 High-Risk Outcomes from Environmental Aspects and Impacts Register

Hazard	Likelihood	Consequence	Controls	Residual Risk	OEMP Section where addressed
Noise	Possible	Moderate	▪ Buffer zones; ▪ Community Consultation; ▪ Noise reduction equipment; ▪ Noise monitoring	Low	**Section 5.4**
Groundwater contamination	Possible	Major	▪ Water management plans; ▪ Drainage; ▪ Leachate management system; ▪ Leachate barrier system; ▪ Containment/retention ponds; ▪ Surface water diversion; ▪ Water Quality Monitoring; Landform design / shaping; ▪ PA 09_0186; ▪ OEMP	Medium	**Section 5.5**
Surface water runoff	Likely	Moderate	▪ Water management plans; ▪ Drainage; ▪ Containment/retention ponds; ▪ Leachate management system; ▪ Leachate barrier system; ▪ Surface water diversion; ▪ Water Quality Monitoring; ▪ Landform design / shaping; ▪ PA 09_0186; ▪ OEMP	Low	**Section 2.2.5;** **Section 5.6**
Erosion/ sedimentation	Possible	Minor	▪ Emergency Response Plan; ▪ OEMP; ▪ Water Management; ▪ Bund wall; ▪ Compaction; ▪ Site Inspections; ▪ Sediment trap; ▪ Landform design / shaping; ▪ Capping	Low	**Section 5.6**

Hazard	Likelihood	Consequence	Controls	Residual Risk	OEMP Section where addressed
Fugitive Dust/Ash	Unlikely	Moderate	▪ Compaction; ▪ Sprinklers; ▪ Water cart; ▪ Ash conditioning; ▪ Moisture content monitoring; ▪ Dust monitoring; ▪ Capping	Low	**Section 2.2.5, Section 2.2.6; Section 5.7**
Revegetation/ Rehabilitation	Possible	Minor	▪ OEMP; ▪ Landform design /shaping	Low	**Section 5.8**
Waste	Almost certain	Minor	▪ Waste Management Plan; ▪ OEMP	Low	**Section 5.9**
Biodiversity	Rare	Moderate	▪ Weed Management Plan	Low	**Section 5.10**
Loss of leachate containment	Rare	Moderate	▪ Leachate management plan; ▪ Water management plans; ▪ Drainage; ▪ Leachate management system; ▪ Leachate barrier system; ▪ Containment/retention ponds; ▪ Surface water diversion; ▪ Water Quality Monitoring; ▪ Landform design /shaping; ▪ PA 09_0186;	Low	**Section 2.2.4; Section 5.11**

5. Environmental Management and Monitoring

5.1 Overview

Environmental monitoring is designed to comply with regulatory requirements and the CoA, and provide an ongoing basis to measure the performance of environmental controls during operations. Monitoring results will be used to measure the effectiveness of mitigation measures and controls implemented at the LNAR, and to provide a vehicle for regulatory reporting, demonstrating compliance, and as a chronicle for environmental investigations and complaints.

Specific monitoring requirements for noise, air, surface water, groundwater, revegetation and rehabilitation matters, and leachate are outlined in the sub-plans of this OEMP (**Section 5**). Monitoring locations are shown in **Figure 5**. Monitoring of environmental impacts will be carried out in accordance with this OEMP and relevant environmental guidelines and legislation. Any non-compliance will be recorded and reported to the Contract Administrator.

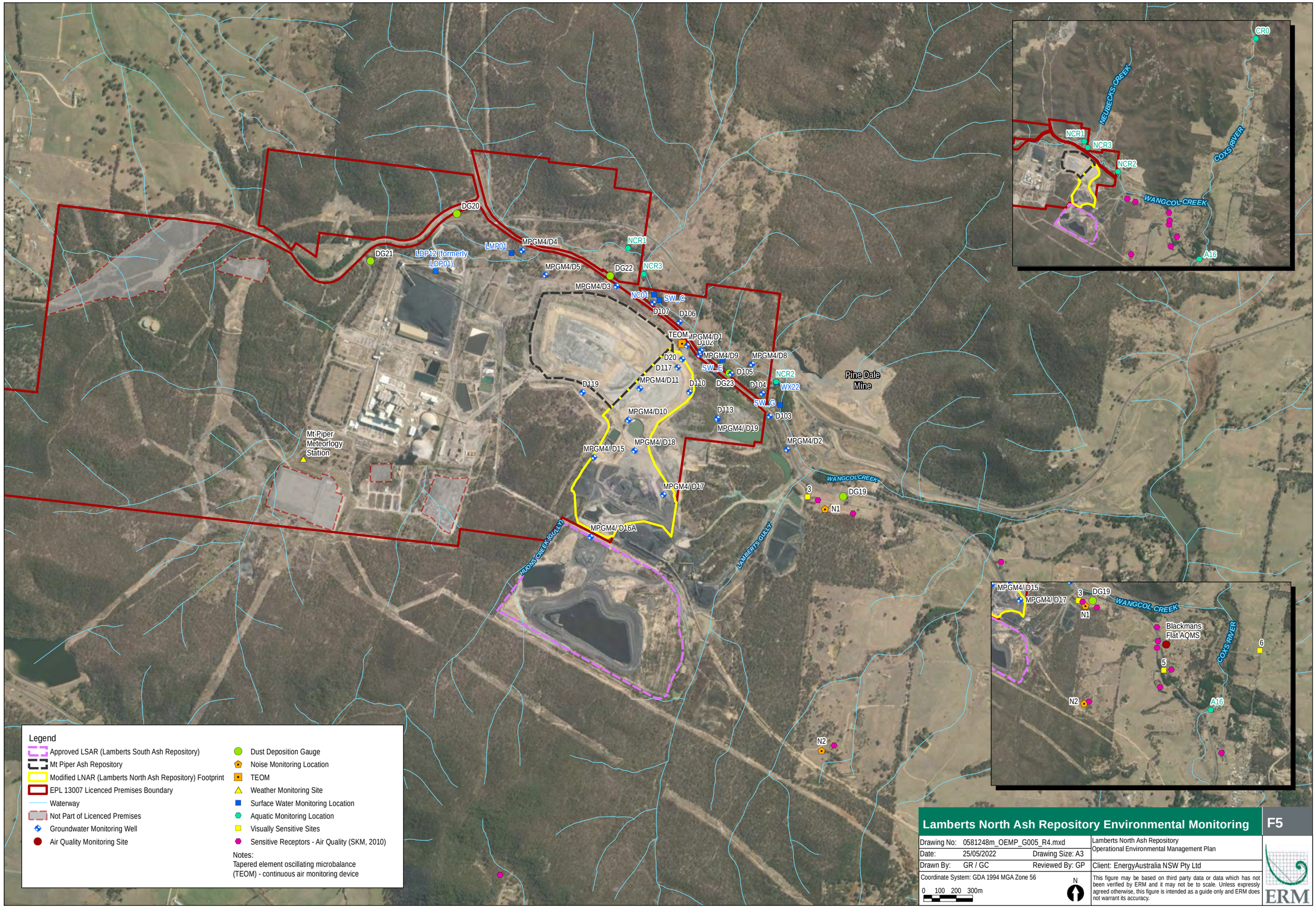
As stated in each sub-plan, authorised personnel will perform monitoring and testing during the operations. When carrying out monitoring or testing, the nominated personnel shall perform their tasks in accordance with the referenced sub-plan, instruction, regulation and/or specification.

Monitoring will be conducted by qualified personnel and laboratory analysis (where required) will be undertaken using a National Association of Testing Authorities (**NATA**) accredited laboratory.

5.2 Environmental Monitoring Plan

Environmental Monitoring is designed to assess potential impacts on the surrounding environment related to the LNAR. Monitoring locations identified in the sub-plans are provided in **Figure 5**. A summary of designated Environmental Monitoring locations for the LNAR is provided below:

- Noise Monitoring at two locations being N1 and N2 (see Noise Management and Monitoring Program (**Section 5.4** for further details);
- Groundwater monitoring (see Groundwater Management and Monitoring Program (**Section 5.5** for further details);
- Surface water monitoring at six sites along Wangcol Creek (see Soil and Surface Water Management Plan (**Section 5.6** for further details). Surface water monitoring is also conducted at LDP12 in accordance with EPL 13007;
- Aquatic ecology at five sites (NCR1, NCR2, NCR3, CR0 and A16 - in accordance with the Ecological Monitoring Program, which is separate to this OEMP)
- Air quality monitoring at seven sites, being five dust deposition gauges (DG19 – DG23), one Air Quality Monitoring Site (**AQMS**) located at Blackmans Flat, and Tapered Element Oscillating Microbalance (**TEOM**). See **Figure 5** and the Air Quality Management Plan (**Section 5.7**) for further details;
    - Leachate monitoring (see **Section 5.11** for further details).



Legend

- Approved LSAR (Lamberts South Ash Repository)
- Mt Piper Ash Repository
- Modified LNAR (Lamberts North Ash Repository) Footprint
- EPL 13007 Licenced Premises Boundary
- Waterway
- Not Part of Licenced Premises
- Groundwater Monitoring Well
- Air Quality Monitoring Site
- Dust Deposition Gauge
- Noise Monitoring Location
- TEOM
- Weather Monitoring Site
- Surface Water Monitoring Location
- Aquatic Monitoring Location
- Visually Sensitive Sites
- Sensitive Receptors - Air Quality (SKM, 2010)

Notes:
Tapered element oscillating microbalance (TEOM) - continuous air monitoring device

Lamberts North Ash Repository Environmental Monitoring

F5

Drawing No: 0581248m_OEMP_G005_R4.mxd	Lamberts North Ash Repository Operational Environmental Management Plan
Date: 25/05/2022 Drawing Size: A3	
Drawn By: GR / GC Reviewed By: GP	Client: EnergyAustralia NSW Pty Ltd
Coordinate System: GDA 1994 MGA Zone 56	This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

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5.3 Environmental Sub-Plans

The following sub-plans are included in subsequent sections:

- Operational Noise Management and Monitoring Plan;
- Groundwater Management and Monitoring Plan;
- Soil and Surface Water Management Plan;
- Air Quality Management Plan;
- Landscape Revegetation and Rehabilitation Plan;
- Waste Management Plan;
- Weed Management Plan; and
- Leachate Management Plan.

5.4 Operational Noise Management and Monitoring Plan

5.4.1 Introduction

This Operational Noise Management and Monitoring Plan **(ONMMP)** seeks to address the specific requirements of PA 09_0186 CoA relating to noise and vibration during operation. These conditions include CoA D3 (a), E6 and E7 - E14 (provided in Appendix C). It provides a framework for EA, its Contractors and vendors to manage operational noise emissions and minimise potential adverse impacts to sensitive receivers during the operation of the Project.

This ONMMP identifies in **Table 5-1** the performance targets (and performance criteria), reference documents, key issues, constraints and strategies and the mitigation measures that comply with the conditions of approval D3 (a), E6, E7, E8, E9, E10, E11,E12, E13, E14. **Table 5-2** sets out mitigation measures to manage potential noise impacts.

EA have prepared, and will implement the ONMMP to assess compliance against the operational noise criteria stipulated in CoA E7, throughout the life of the project.

5.4.2 Sensitive Receptors

The term 'sensitive receiver' used in this plan refers to nearby receivers, such as residents and businesses that may potentially be affected by noise emissions identified for the project. The Environmental Assessment (Appendix C Construction and Operational Noise Assessment (SKM, 2010)), identified two sensitive receivers which were then selected as noise monitoring locations. They are referred to as Noise Monitoring Locations 1 and 2 and are shown in **Figure 5** . Noise Monitoring Location 1 is located in Blackmans Flat approximately 1.1km east of the project. Noise Monitoring Location 2 is located on a rural property 1.1km west of Castlereagh Highway

5.4.3 Noise generating activity

5.4.3.1 Approved operational conditions

Operational activities shall be undertaken during the following hours (CoA E1):

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

CoA E2 stipulates emergency situations where operations outside these hours are permitted. **Section 2.2.1** of this OEMP lists these emergency situations.

5.4.3.2 Key potential noise impacts

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

- Transporting fly ash and bottom ash to and from the ash repository using haulage trucks along the designated haul roads;
- Placing ash in stockpiles in designated areas before being spread out by a dozer;
- Compacting the ash using a dozer and roller;
- Maintenance on the haulage roads using a grader, roller, dozers and water carts;
- Dust suppression across the site using a series of techniques including but not limited to water carts and sprinklers systems;
- Developing and maintaining water management structures (containments, drains and sumps) using an excavator;
- Using variously sized pumps on site to pump water from various water sources;
- Using light vehicles on occasion to inspect the ash repository and carry out environmental monitoring;
- The machinery & plant generate noise from the engine & drive line, hydraulics and reverse warning devices;
- Preparing for and installing the leachate barrier system;
- Development of various lined ponds including those associated with the leachate management system.

5.4.4 Noise Management and Mitigation Measures

Table 5-1 Targets, Indicators, References and Key Issues - Noise

Performance Targets
▪ Achieve compliance with the noise criterion stated in PA 09_0186 Conditions of Approval E7. ▪ Zero substantiated noise complaints relating to the LNAR activities
Performance Indicators
▪ Results of noise testing carried out in accordance with this sub plan demonstrate compliance. ▪ Complaints register demonstrating zero incidence of noise related complaints relating to LNAR Operations.
References (in addition to legislation as set out in Section 4.1)
▪ Mount Piper Power Station Ash Placement Environmental Assessment Report, Chapter 6 – Noise (SKM, 2010b). ▪ Mount Piper Station Ash Placement Project Environmental Assessment, Appendix C – Noise Report (SKM, 2010). ▪ Mount Piper Ash Placement Project, Submissions Report (SKM, 2011). ▪ Mt Piper Ash Placement Project, Consistency Repost (SKM 2012)
Key issues/ constraint/ strategies
▪ Controls implemented to mitigate impacts on the sensitive receivers can be assessed and improved as the LNAR progresses through monitoring. ▪ Other operations that may contribute to noise emissions within 1km of the LNAR include: Pine Dale Mine (opposite Blackmans Flat), Springvale Mine (predominately underground), Western Coal Services (a coal washery and ancillary facilities located adjacent to LNAR), Castlereagh Highway located to the north of the project site, MPPS Operations to the west, EA Private Haulage road which runs north east from Mt Piper Power Station across to Angus Place Coal Mine.

Table 5-2 Mitigation measures - Noise

<table>
<tr><th>No.</th><th>Management of mitigation measures</th><th>Source of requirements</th><th>Frequency</th><th>Source</th><th>Responsibility</th></tr>
<tr><td colspan="6">General operational noise requirements</td></tr>
<tr><td>1.</td><td>Operational noise levels shall not exceed the following at the sensitive receivers at Blackmans flat or any other sensitive receiver between the hours of:
<table><tr><th>Day (7am-6pm)</th><th>Evening (6pm-10pm)</th><th>Night (10pm-7am)</th></tr><tr><td>42 *</td><td>38*</td><td>35*</td></tr></table>*L LAeq (15 minutes) db(A)
The noise conditions above applies under metrological conditions except for the following:
Wind speed greater than 3 metres/ second at 10 metres above ground level;
Stability Category F temperature inversion conditions and wind speed greater than 2 metres/second at 10 metres above ground level; and
Stability Category G temperature inversion conditions.
The criterion does not apply where the Proponent and an affected landowner have reached a negotiation agreement in regard to noise, and a copy of the agreement has been forwarded to the Secretary and the EPA.</td><td>E7
D3a (vii)</td><td>As required</td><td>Noise monitoring records</td><td>EA</td></tr>
</table>

No.	Management of mitigation measures	Source of requirements	Frequency	Source	Responsibility
2.	Operational activities associated with the LNAR shall only be undertaken during the following hours (unless otherwise approved by the Secretary): ▪ 6.00 am to 8.00 pm, Mondays to Fridays, inclusive; and ▪ 6.00 am to 5.00 pm on Saturdays, Sundays and public holidays	D3(a) (ix) E1, E3, E4, E5, E6, E7 OEMP **Section 2.2.1**	As required	Noise monitoring records	Contractor
3.	Plant and equipment used at LNAR shall meet the typical sound power levels as per its manufacturing standard. This will be checked following receipt of any ongoing noise complaints.	E10 D3(a)(viii)	Following complaint	Manufacturing standard	Contractor
4.	Ongoing noise monitoring shall be conducted from commencement of operation by a qualified noise specialist in accordance with Conditions of Approval E7, E8 & E9 and the EPA approved Operational Noise monitoring program.	E12 D3(a) (viii)	Annual	Noise monitoring Program	EA
5.	Operation logs and control system data shall be kept to indicate hours of ash haulage.	D3(a) (x) E1	Daily	Operation Logs and control system data	Contractor
6.	Site inductions and ongoing training shall include information on potential noise issues of current operations.	D3(a) (x)	As required.	Induction and training program	Contractor
7.	A complaints register including noise shall be maintained.	B11	When necessary and practicable	As required	EA
8.	Where possible, noise barriers will be used to reduce noise impacts to sensitive receivers this may include but not limited to noise reducing benching.	D3 (a) ix	Where practicable	As required	Contractor

No.	Management of mitigation measures	Source of requirements	Frequency	Source	Responsibility
Plant and equipment					
9.	All equipment shall be adequately maintained and kept in good operating order.	D3(a) (x)	Ongoing	Noise monitoring records	Contractor
10.	All equipment shall be operated in an appropriate and efficient manner.	D3(a) (x) , E10	Ongoing	Noise monitoring records	Contractor
11.	Use of rubber-tyred equipment where appropriate.	D3(a) (x), E10	As required	Noise monitoring records	Contractor
12.	Maintenance of plant reversing alarms at the minimum safe level	D3(a) (x), E10	As required	Noise monitoring records Australian Standard AS 2436	Contractor
13.	Noise reduction equipment will be applied to ash trucks where necessary as described in AS 2436, Section 4.5.3.	D3(a) (x), E10	As required following complaint	Noise monitoring records Australian Standard AS 2436	Contractor
14.	Drivers shall obey existing haul road speed limits enforceable by either the Contractor or EA.	D3(a) (x)	Ongoing	Noise monitoring records	Contractor
15.	In the unlikely event of a noise complaint, trucks may be tested to ensure the operational efficiency and implement reasonable and feasible noise control measures if applicable.	D3(a)(x), E10	As required following complaint	Noise monitoring records	Contractor

No.	Management of mitigation measures	Source of requirements	Frequency	Source	Responsibility
Reporting					
16.	An Operational Noise Review, shall be carried out to confirm the operational impacts of the LNAR in consultation with the EPA. This shall be carried out in accordance with the Condition E11.	E11	Completed	Project Conditions of Approval	Noise Specialist on behalf of EA.
17.	A noise report shall be prepared by a qualified noise specialist to identify results of noise monitoring survey.	E12	Ongoing	Noise Monitoring Program	Noise specialist on behalf of EA.
18.	EA shall forward to the NSW EPA and the Secretary a report containing any non- compliance in relation to noise within 14 days of conducting the noise assessment.	E12	Within 14 days of a non- compliance	Project Conditions of Approval	EA
Emergency – the event of an emergency the following shall be carried out					
19.	EA shall notify the EPA prior to undertaking any emergency ash haulage or placement operations outside the hours of operation (stipulated in Section 2.2.1 of this plan). A log must be recorded and kept for any emergency ash haulage or ash placement activities.	E4	Prior to undertaking Emergency Ash Haulage	Project Conditions of Approval	EA
20.	EA shall notify the Secretary in writing within seven days of undertaking any emergency ash haulage or operation stipulated in the condition E1 and Point #2 of this table.	E5	Within 7 days of Emergency	Project Conditions of Approval	EA

No.	Management of mitigation measures	Source of requirements	Frequency	Source	Responsibility
21.	EA shall notify the nearby sensitive receivers as defined by this plan, prior to 8.00pm where it is known that emergency ash haulage or placement operations will be required outside the hours of operation.	E6	Prior to 8.00pm on the day of emergency event	Project Conditions of approval	EA
22.	In an emergency situation that involves a breakdown of plant and/or equipment in the ash placement areas that will limit or prevent ash storage from Mt Piper power station, EA shall then notify the Secretary in writing within seven days of undertaking any emergency haulage or placement operations outside the hours of operation stipulated in condition E1.	E5	Within 7 day of Emergency breakdown	Project Conditions of Approval	EA

5.4.5 Operational Noise Monitoring Program

This section provides the requirements for the ongoing noise monitoring program and operational noise review in accordance with CoA E8, E9, E11 E12, E13, and E14. **Table 5-3** provides the operational noise criterion for LNAR activities. **Table 5-4** provides the details of the noise monitoring program. **Table 5-5** provides the standards and requirements that shall be considered during monitoring. The meteorological data recorded at the MPPS weather station will be used to interpret noise monitoring and investigate noise complaints (**Figure 5**).

The reporting requirements and corrective actions required in the event of non-compliance are listed in **Table 5-6** and **Table 5-7**, respectively.

5.4.5.1 Noise Criteria

EA have prepared, and will implement the ONMMP to assess compliance against the operational noise criteria stipulated in CoA E7, throughout the life of the project.

As specified in CoA E7, the operational noise criteria from LNAR activities shall not exceed the LAeq (15 minute) dB(A) identified in **Table 5-3**.

Table 5-3 Operational Noise Criterion (LAeq(15 minute) dB(A))

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

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

5.4.5.2 Meteorological Conditions

The noise criteria identified in **Table 5-3** applies under meteorological conditions except for any of the following:

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

5.4.5.3 Determining Compliance

EA will engage a suitably qualified and experienced acoustic consultant to undertake noise monitoring of LNAR activities. The acoustic consultant will determine and confirm compliance with the noise criteria as set out in **Table 5-3**.

5.4.5.4 Monitoring

The Noise Monitoring Program, including the Operational Noise Review (as completed), is provided below in **Table 5-4**. **Table 5-5** provides the standards and requirements that shall be considered during monitoring.

Table 5-4 Noise monitoring program

Potential Impact	Location	Parameters	Frequency	Technique	Reporting	Responsibility	CoA and OEMP Reference
Operational Noise Review	Two most affected sensitive receivers: ▪ Blackmans Flat ▪ Wallerawang (Refer to **Figure 5**)	LAeq, LA10, LA90 and LAMax. Noise levels shall not exceed criterion stipulated in **Table 5-3**).	One-off survey that includes: Four separate days – 3-week days and a Sunday, within the first 60 days of operation.	Attended and unattended noise monitoring technique shall be undertaken adopting the following guidelines; ▪ *Noise Policy for Industry* (NSW EPA, 2017), or its latest version; ▪ AS 1055: 1997 *Acoustics – Description and Measurement of Environmental Noise;* ▪ *Approved Methods for the Measurement and Analysis of Environmental Noise in NSW (NSW EPA 2022)* Ongoing attended monitoring using Class 1 or 2 noise monitoring equipment as defined by AS IEC61672.1-2004 and ASEIC61672.2-2004, or other noise monitoring equipment accepted by the NSW EPA in writing.	An Operational Noise Review within the 60 days of commencement of operation. **COMPLETED** The Operation Noise Review Report was prepared in October 2013 by Aurecon. The report was submitted to the DPI on 9th October 2013 and the EPA 10th October 2013. The report concluded that the noise resulting from Lamberts North Ash Repository comply with the criteria specified in condition E7 at the representative residential receivers at Location 1 and Location 2.	Specialist acoustic consultant on behalf of EA.	D3(a) (vii) D3(a) (viii), E7, E8, E9, E11, E12

Potential Impact	Location	Parameters	Frequency	Technique	Reporting	Responsibility	CoA and OEMP Reference
Ongoing Noise Monitoring	Two most affected sensitive receivers: ▪ Blackmans Flat ▪ Wallerawang (refer to **Figure 5**) Lamberts North (in accordance with CoA E12(a). Other locations as required, in response to a substantiated complaint.	LAeq, LA10, LA90 and LAMax. Noise levels shall not exceed the noise criteria (**Table 5-3**) at the nearest most affected receiver.	Annual throughout the life of the project or following a complaint as required Upon significant changes in work locations or processes which affect overall site noise emissions	Attended and unattended noise monitoring technique shall be undertaken adopting the following guidelines; ▪ *Noise Policy for Industry* (NSW EPA, 2017), or its latest version; ▪ AS 1055: 1997 *Acoustics – Description and Measurement of Environmental Noise;* ▪ *Approved Methods for the Measurement and Analysis of Environmental Noise in NSW (NSW EPA 2022)* Ongoing attended monitoring using Class 1 or 2 noise monitoring equipment as defined by AS IEC61672.1-2004 and ASEIC61672.2- 2004, or other noise monitoring equipment accepted by the NSW EPA in writing.	Annual monitoring report. Non-compliances: ▪ If noise monitoring survey indicates non-compliance against compliance criteria, then EA is required to forward a report containing the results to the NSW EPA and the Secretary within 14 days of conducting a noise assessment. ▪ An additional investigation report shall be submitted to the Secretary within 60 days of undertaking noise monitoring and must include the criteria specified in CoA E13 within 60 days of undertaking the noise monitoring.	Acoustic Specialist EA EA	D3(a) (vii) D3(a) (viii), E7, E8, E9, E12 Approved Methods for the Measurement and Analysis of Environmental Noise in NSW (NSW EPA 2022 *Noise Policy for Industry* (NSW EPA, 2017), or its latest version AS1055 CoA E12 CoA E13

Table 5-5 Noise Monitoring requirements

No.	Monitoring measures	Responsibility	Timing	Source/ Referen
1.	All operator-attended and unattended noise monitoring will be conducted in accordance with the Noise Policy for Industry (EPA, 2017), and AS 1055: 1997 Acoustics – Description and Measurement of Environmental Noise.	Specialist Consultant/ EA	As identified in this plan	D3(a) (viii) D3(a) (ix)
2.	To determine compliance with the LAeq(15 minute) noise limits at identified sensitive receivers which are provided in **Table 5-3**, the noise monitoring equipment must be located at the most affected point: ▪ Within 30 m of a dwelling façade where any dwelling on the property is situated more than ▪ 30 m from the property boundary that is closest to the premises; or ▪ Within close proximity to the boundary where any dwelling is situated 30 m or less from the property boundary that is closest to the premises.	Specialist Consultant/EA	During monitoring	E8
3.	The Operation Noise Management and Monitoring Plan shall be reviewed every 3 years as part of the OEMP review to determine effectiveness of mitigation measurement and the monitoring commitments.	EA	Every 3 years	D3(a)(x) E12

Table 5-6 Noise reporting requirements

No.	Reporting requirements	Responsibility	Timing	Source/ Reference
1.	Any noise related complaints will be registered in EA complaints register for Lamberts North. Complaints will be investigated to determine and mitigate the cause.	EA/ Contractor	following noise complaint	D3 (a)(x) OEMP **Section 3.5**
2.	EA shall review the annual noise monitoring reports and implement recommendations where feasible and practicable and shall report any results and recommendations to the Contractor as part of their monthly meeting.	EA/Contractor	Annual	D3 (a)(x) E14
3.	All complaints/incidents regarding noise will be reported to the Contract Administrator.	Contractor	As required	D3(a) (ix) D3(a) (x) OEMP **Section 3.5** & **Section 3.9**
4.	Operational Noise Review will be completed within 60 days of the commencement of Lambert North Ash Placement operations. The review shall be prepared in consultation with the NSW EPA and shall meet the requirement of CoA E11.	EA	Within 60 days of commencement of operations **COMPLETED** The Operation Noise Review Report was prepared in October 2013 by Aurecon. The report was submitted to the DPI on 9th October 2013 and the EPA 10th October 2013. The report concluded that the noise resulting from Lamberts North Ash Repository comply with the criteria specified in condition E7 at the representative residential receivers at Location 1 and Location 2.	D3 (a)(x) E11
5.	EA shall submit a noise report to the NSW EPA, upon their request at any time during the project.	EA	As required	D3(a) (x) D3(a) (xi) A10 and A11

No.	Reporting requirements	Responsibility	Timing	Source/ Reference
6.	The Proponent shall forward to the NSW EPA and the Secretary a report containing the results of any non-compliance within 14 days of conducting a noise assessment.	EA	As required	D3 (a)(x) E12
7.	In addition, a separate investigation report (to report specified in #6) shall be submitted to the Secretary and must include the criteria specified in CoA E13 within 60 days of undertaking the noise monitoring which has identified the exceedance of the operational noise criteria. This report shall include, as a minimum, the following: • an assessment of all reasonable and feasible physical and other mitigation measures for reducing noise at the source; • identification of the preferred measure(s) for reducing noise at the source; • feedback from directly affected property owners and the EPA on the proposed noise mitigation measures; and • location, type, timing and responsibility for	EA and Contractor	Within 60 days of conducting a noise assessment	D3 (a)(x) E12, E13

Table 5-7 Noise Response Plan and Corrective Actions

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

5.5 Groundwater Management and Monitoring Plan

5.5.1 Introduction

This Groundwater Management and Monitoring Plan **(GMMP)** is a sub-plan of the OEMP. It seeks to address the specific requirements of the CoA D3 (b) and E15. It is noted for clarity that CoA E17 requires the preparation of a Hydrological Monitoring Program associated with Huons Creek. This has been completed.

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

In relation to CoA B2 (refer **Section 5.5.1.2**) and CoA B3, groundwater monitoring has routinely been conducted in the vicinity of the Ash Repositories since at least 1993, with the groundwater monitoring network expanding in conjunction with ash placement operations. Components of the baseline dataset have been developed over approximately three decades. The field observations and analytical results have been reported to regulatory stakeholders, including Water NSW, on an annual basis since at least 2007. The baseline water quality data has been used to develop the Environmental Goals, described in **Section 5.5.3.1** and presented in **Appendix B**.

The groundwater monitoring network is surveyed to m AHD. Historical groundwater gauging data (ERM, 2020, 2021b) has recorded the water table elevation ranging from approximately 907 m AHD to 914 m AHD in the vicinity of the LNAR. This, and other groundwater monitoring results indicate that, near the Ash Repositories (ERM, 2021c) the water table occurs variably in the former below ground mined out areas and open cuts and, away from the Ash Repositories it occurs predominantly in the overlying Bunnyong Sandstone.

Groundwater elevation contours indicate primary groundwater flow directions from the LNAR to the east and north-east. The groundwater flow directions have remained relatively consistent throughout the historical reporting periods based on groundwater contour plans prepared for each season (ERM, 2020, 2021b, 2021c).

Section 5.5.1 and **Section 5.5.1.4** addresses conditions D3(b) (ii), (iii) (v). These conditions refer to the groundwater monitoring locations and baseline data for the site, identification of the potential pollution sources (that were identified in the groundwater model), and a contingency plan for events that have a potential to pollute or contaminate groundwater. Also included in this section are mitigation tables.

Groundwater modelling (see CEMP dated Dec 2012 by CDM-Smith) inferred that the water in the former Huons Gully was largely groundwater seepage where the former gully intersected the groundwater table. The former Huon Gully was infilled as part of the approved LNAR development. Therefore, the hydrological monitoring program associated with CoA E17 has been incorporated in this ongoing GMMP because of the change in design of Lamberts North (see the Consistency Report dated June 2012 by SKM).

Since the modelling undertaken by CDM Smith (2012b), ERM were engaged in 2018 to carry out further assessment and modelling of surface and groundwater and update the conceptual site model **(CSM)**, along with groundwater modelling assessment and updates (known as the independent investigation). The independent investigation, and regular surface water and groundwater sampling has identified elevated levels of total dissolved solids (**TDS**) in surface water (at times) and groundwater in the vicinity of the Ash Repositories. The elevated levels of TDS are associated with the placement of BCA in the MPAR. TDS is a marker for solutes that enter the local groundwater via leaching from BCA at the MPAR, including elevated chloride, sulfate and related dissolved metals.

PA 09_0186 was modified on 21 September 2021 to allow for installation of a leachate barrier system (using very low permeability liners) within LNAR below RL 946 AHD to capture and subsequently treat leachate moving through the ash placed above the liner. This modification is intended to limit the risk of leachate from BCA placed in the LNAR migrating into the surrounding environment.

As required under CoA D2b(ii), groundwater management and monitoring will continue on a quarterly basis to assess for changes in groundwater quality.

5.5.1.1 Existing Environment

As indicated in **Figure 2** the LNAR lies immediately east of the existing MPAR. The site is located in an area characterised by both rural and industrial influences, with a number of coal mines in close proximity. The LNAR area is highly disturbed located within a large void created from open-cut mining and then partly filled with mine spoil. The historical mining and related activities have resulted in significant variation to pre-existing natural hydrology, geology and hydrogeology in and around the LNAR.

Groundwater beneath the LNAR is present within the Illawarra Coal Measures, and the regional groundwater flow direction is generally to the east. As a result of historical mining, ash placement and regional background conditions, groundwater in the vicinity of the LNAR is typically elevated in salts and metals, including sulfate, chloride, nickel, and manganese as well as some trace elements such as zinc and boron.

Potential sensitive receivers of groundwater that may be adversely impacted as a result of LNAR operations include:

1. Wangcol Creek, located north east of the Project site; and
2. Registered groundwater users present approximately 2.5 km north-east (industrial use) and south-east (domestic use) from the LNAR.

Mitigation measures to manage any potential groundwater impacts on the surrounding environment associated with ash emplacement activities within Lamberts North are provided below in **Table 5-10.**

5.5.1.2 Groundwater Modelling

CoA B2 requires that EnergyAustralia *"develop and maintain an up to date groundwater model for Lamberts North. The model should be calibrated to site-specific data. The Proponent shall consult with Water NSW in the preparation of the groundwater model and the model shall be provided to Water NSW within five months of project approval, unless otherwise agreed by the Secretary. The model shall address but not necessarily be limited to the following:*

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

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

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

d) calibration to site-specific data; and

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

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

Prior to construction, CDM Smith (2012b) completed groundwater modelling within the Lamberts North area. The CDM Smith model provided an assessment regarding future Lamberts North operational activities and potential to impacts on groundwater.

The previous model was developed to assess the potential impacts of the LNAR, on groundwater and Wangcol Creek, and was constructed based on data or estimates considered appropriate at the time. However, site features and water and ash management practices have changed since this model was prepared (for example, the construction of the LNAR and infilling of the Huon Gully and Huon Void), and further groundwater and surface water monitoring data have been gathered which has led to an increased understanding of site groundwater and surface water conditions.

A numerical groundwater model (**NGM**) has been developed using contemporary site specific data for the Mt Piper Ash Repositories, which includes the LNAR area; the NGM comprises both a groundwater flow model and a solute transport model. The calibrated groundwater flow model was used to provide modelled groundwater flow conditions (groundwater elevations in each model layer) beneath and in the vicinity of both MPAR and LNAR, and in the vicinity of Wangcol Creek. Sensitivity to different recharge rates (rainfall conditions), hydraulic conductivity and surface water boundary conditions. A solute transport model was developed from the calibrated groundwater flow model to predict the migration of sulfate and chloride, considered to be the most mobile of the water quality parameters associated with ash placement.

Surface water modelling that considers surface water flows from the active Stage 1 ash placement area under a range of rainfall conditions was also completed for the LNAR to meet CoA D5 (b).

The NGM has been used to inform potential management and mitigation options through predictions of groundwater flow conditions and the behaviour and fate of sulfate and chloride in groundwater associated with ash placement. The outcomes from review of groundwater and surface water conditions, and the outcomes from the NGM have resulted in the modification of PA 09_0186 to allow for installation of a leachate barrier system (using very low permeability liners) within LNAR. This modification is intended to improve environmental outcomes, including minimising the risk of impact from the LNAR to the Wangcol Creek catchment to achieve a neutral or beneficial effect on water quality.

Results of routine groundwater (and surface water) monitoring are prepared in an annual report, which includes commentary regarding the consistency of observed conditions with the groundwater model predictions. Where material discrepancies are identified between analytical data and modelled predictions, a contingency investigation would be triggered in accordance with the actions outlined in

Section 5.5.1.4 and **Section 5.5.1.5**, to assess the potential cause of the discrepancy. Based on the outcomes of the contingency investigation, and advice from expert consultants, EnergyAustralia would consider further update or development of the groundwater model in consultation with Water NSW if deemed to be warranted.

EnergyAustralia will review the NGM in consultation with Water NSW, with consideration of potential future operations and ash placement methods, prior to the potential expansion of ash placement operations to Lamberts South.

5.5.1.3 Potential sources of water pollutants

Current and former activities in the vicinity of the site that have the potential to act as sources of solutes to groundwater include:

- Mining (i.e. the historical open cut and underground workings);
- Coal washing (i.e. at the neighbouring Centennial Coal Western Coal Services, i.e. the WCS facility);
- Mine water management (i.e. via the SWTP);
- Placement of WCA;
- Placement of BCA; and
- Ash repository water management (i.e. irrigation and storm water management).

Impacted groundwater most likely to be associated with mining activities include sulfate and associated metals, whereas those related to WCA placement would include sulfate, boron, and associated salts and metals. In the case of BCA, potential solutes include chloride as well as those associated with WCA, however, at concentrations up to an order of magnitude higher than those associated with WCA. The LNAR has received only WCA to date.

The legacy impact of leaching from BCA in the MPAR is the justification for the change in ash placement method approved for the modified LNAR, as described in the Modification Report.

A summary table of baseline groundwater monitoring and groundwater water quality criteria (i.e. Environmental Goals) have been provided in **Appendix B**, as described in **Section 5.5.3.1**.

5.5.1.4 Contingency Planning

Elevated levels of TDS are present in groundwater in the vicinity of the Ash Repositories. The elevated levels of TDS are associated with the placement of BCA in the MPAR, and therefore monitoring of the leachate management system as outlined in the Leachate Management Plan will serve as the primary early warning trigger for protection of groundwater from impacts associated with ash placement activities at the LNAR.

Changes in water quality will be reviewed by comparing results with the Environmental Goals for surface water and groundwater. Further early warning monitoring will be conducted by assessment of concentration trends through time at each location, including statistical analysis where appropriate, and assessment of observed groundwater conditions with comparison to the NGM. The requirement for a contingency investigation will be considered based on routine review of the groundwater monitoring data and determined in consultation with Water NSW as part of the annual monitoring reporting process.

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

Additional mitigation measures regarding a contingency plan are given in the following subsection in **Table 5-14**.

5.5.1.5 Investigations protocol

Investigations shall include but are not limited to the activities listed in **Table 5-8**.

Table 5-8 Groundwater investigation protocol

Trigger	Investigation required	Action
Exceedance against the Environmental Goal (**Appendix B**) or Trigger investigation following completion of the early warning assessment.	▪ Analyse water quality data, outside the criteria; ▪ Review site operations within the timeframe of detected exceedances; ▪ Review Metrological conditions; ▪ Review any activities that maybe occurring on neighbouring sites; and ▪ Investigate other potential factors that may have led to the exceedance.	▪ Once potential source is found, implement corrective actions as soon as practicable. ▪ Implement management actions as appropriate. ▪ Consult with independent experts and/or regulatory authorities if deemed necessary, or required as part of the OEMP or EPL requirements. ▪ Exceedances shall be reported to DPE in accordance with CoA A9.

5.5.2 Management and Mitigation Methods

The following management strategies, monitoring and mitigation measures have been designed to ensure that potential impacts to groundwater are maintained within ANZECC guidelines.

Table 5-9 Groundwater Objectives, References and Performance Criteria

Performance Targets
▪ The quality of water underlying the site is not impacted by the Lambert's North Ash Placement operations.
Performance Indicators
▪ There will be no significant long-term variation in groundwater quality from historical baseline quality values (as measured from existing monitoring wells on site) that are attributable to ash placement operations at Lamberts North (data available in Appendix B). ▪ Groundwater Water Quality Monitoring will be analysed at a NATA Accredited Laboratory by a qualified professional.
References (in addition to legislation as set out in Section 4.1)
▪ MPPS EPL 13007 ▪ Mount Piper Power Station Ash Placement Environmental Assessment, Chapter 7 – Water Management (SKM, August 2010). ▪ Mount Piper Station Ash Placement Project Environmental Assessment, Appendix D – Hydrology and Water Quality (SKM, August 2010). ▪ Mount Piper Power Station Ash Placement ▪ Submissions Report (SKM, March 2011). ▪ Mount Piper Power Station Ash Placement Consistency ▪ Report (SKM, June 2012). ▪ Lamberts North Ash Placement Project CEMP (CDM- Smith, December 2012) ▪ Mt Piper Ash Placement Project – Lamberts North Ash Repository Modification 1 Report (ERM, 2021a)
▪ While an accurate and effective monitoring system is essential to provide ongoing analytical data, the ability to adequately manage environmental controls is a key component of groundwater management. ▪ The mitigation measures outlined in this plan are intended to protect groundwater from potential adverse impacts from Lamberts North operations. ▪ All sampling, monitoring and analysis will be carried out by a specialist.

Table 5-10 Groundwater Mitigation Measures

No	Mitigation Measure	Source of Requirements	Frequency	Source/ Reference	Role/ responsibility
1.	Groundwater quality will be managed by the containment of surface water. The leachate management system and controls described in the leachate management plan.	D3 (b) (iii)	Ongoing	Site inspection checklist	Contractor
2.	The potential for changed groundwater levels and quality due to infiltration from exposed ash to the groundwater system shall be controlled by: ▪ Limiting the area of the ash face exposed at any one time. ▪ Control of rainfall runoff away from possible accession location of groundwater levels ▪ Ensuring appropriate compaction is undertaken. Placement and compaction of fly ash will be targeted to have an in-place dry density of 95% of its maximum dry density and at moisture content within 0% to -4% of the optimum moisture content in accordance with AS 1289.5.1.1. ▪ Capping and rehabilitation of completed sections is undertaken as soon as practicable. The leachate barrier and management system and controls described in the leachate management plan that will provide further mitigation for protection of groundwater.	D3 (b) (iii) AS 1289.5.1.1.	As required	AS/NZS	Contractor
3.	All hazardous chemicals shall be stored in designated covered storage areas away from the LNAR Lamberts North,	D3 (b) (iii)	As required	Site inspection checklist	Contractor
4.	Loading of chemicals and refuelling shall be undertaken in a designated area away from concentrated stormwater flow and outside drainage paths	D3 (b) (iii)	Ongoing	Site inspection checklist	Contractor
5.	Waste shall be managed in accordance with the Waste Management sub plan (**WMP**).	WMP	Ongoing	Site Inspection Checklist	Contractor
6.	Sediment ponds shall be managed in accordance with the SSWMP to prevent infiltration into groundwater.	D3 (b) (iii) CEMP SSWMP	Ongoing	Site inspection checklist	Contractor

No	Mitigation Measure	Source of Requirements	Frequency	Source/ Reference	Role/ responsibility
7.	Groundwater monitoring shall be undertaken in accordance with the Groundwater Monitoring Program (**Section 5.5.3**). Assessment on trends and results shall be undertaken as part of a site management review process. The procedure for exceedances is as identified in **Section 5.5.1.4**.	D3 (b) (iii) E15 Groundwater monitoring program	Quarterly	Groundwater Monitoring Program	EA/ contractor
8.	An annual groundwater (and surface water) quality report shall be undertaken to review and consolidate data obtained throughout the year. This report shall confirm compliance and shall be made publicly available.	A10, A11, D3 (b), E15,	Annual	Groundwater Monitoring Program	EA/groundwater contractor
9.	EA shall issue the latest monitoring data to the WaterNSW upon their request.	B8, D3 (b) (viii)	As required	Groundwater Monitoring	EA
10.	In the unlikely event that the Environmental Representative directs the Contract Administrator to cease operations due to a potentially adverse environmental threat to groundwater associated with LNAR, EA shall notify and seek advice (if necessary) from the WaterNSW.	B1 (c)	As required	Groundwater Monitoring Program	EA

5.5.3 Groundwater Monitoring Program

This section provides the requirements for the ongoing groundwater monitoring program in accordance with CoA E15. Groundwater monitoring bores are presented in **Figure 5**. Groundwater monitoring bores selected are considered to be suitable to monitor for potential changes in environmental conditions that may be attributable to the planned stages of LNAR operations. Leak detection monitoring will be conducted in accordance with the Leachate Management Plan.

Some existing monitoring infrastructure (D11, D10, D17 and D18) is likely to be decommissioned as part of the planned stages of LNAR operations as modified, and D16 has been decommissioned (to be replaced by D16A). The existing groundwater monitoring network accounts for the decommissioned monitoring infrastructure and the planned stages of LNAR operations. A loss of monitoring infrastructure will not trigger a requirement for replacement groundwater monitoring infrastructure to be installed, as the groundwater monitoring network (**Figure 5**) is intended to maintain a suitable long term network of approximately 20 monitoring locations, up to the extent of the EA landholding (**Figure 3**), and the leachate management system will function as the primary early warning monitoring for potential impacts associated with LNAR operations. The general layout of the indicative groundwater monitoring network is presented on **Figure 5**, and described in Table B-2, Appendix B.

A groundwater monitoring program for LNAR was established and has been implemented since October 2012, prior to construction activities. The groundwater monitoring program was developed in consultation with WaterNSW (refer **Appendix E**). An augmented version of the groundwater monitoring program will continue throughout the life of the project and 5 years following the completion of the project. A summary of the monitoring program has been provided in **Table 5-11**. Relevant guidelines for the Groundwater Monitoring Program are listed in **Table 4-1**.

Table 5-11 Groundwater monitoring summary for Lamberts North

Parameters	Location	Frequency	Reporting	Responsibility
Refer to Appendix A for the list of monitoring parameters.	Refer to **Figure 5**	Every 3 months	Groundwater data will be collected and analysed for exceedances. Annual review will be completed as part of the requirements set out in CoA A10 and A11.	EA. Sampling to be completed in accordance with the *Approved methods for the sampling and analysis of water pollutants in NSW* (EPA, 2021) Analysis to be completed at a NATA Accredited laboratory.

5.5.3.1 Water quality criteria

The *Protection of the Environmental Operations Act 1997*, outlines that the ANZG (2018) guidelines shall be considered when assessing potential effects on water quality in receiving waters. The guideline trigger values apply to receiving waters of the groundwater flow outside the LNAR. Wangcol Creek at WX22 and SW_G are the final surface water monitoring locations for the Mt Piper Power Station (**Figure 5).**

The 'Environmental Goals' were established for the MPAR by Connell Wagner (2007) using the ANZECC (2000) guidelines to define acceptable ambient water quality, including consideration of guidelines for the protection of aquatic life, livestock, irrigation or drinking water. Adjustments were made to the default ANZECC (2000) guideline values to account for the effects of water hardness, and taking in to account background water quality. Due to weathering of pyrite and similar minerals in the local area, associated with local ore bodies from abandoned underground coal-mine workings, the local water quality (in particular groundwater) was described by Connell Wagner (2007) as being low in pH, elevated in sulfate, boron, nickel, zinc, manganese and iron, with some of these parameters outside the desired range outlined in the ANZECC (2000) guidelines.

Connell Wagner (2007) outlines that the Environmental Goals for groundwater were established using the 90th percentile pre-placement data or available ANZECC (2000) guideline values, whichever was higher. The same approach and values were adopted and approved for the Lamberts North Ash Repository under Project Approval 09_0186, as modified.

The "pre-placement data" refers to water data collected from the former Groundwater Collection Basin on at least a quarterly basis between April 1993 and October 2000. The Environmental Goals for groundwater were developed for the mineralised elements: iron, manganese, nickel and zinc which exceed the ANZECC (2000) guidelines as a result of background conditions. A similar approach was undertaken for surface water using the 90th percentile pre-placement data for WX22, where the majority of monitoring parameters in surface water were below the available ANZECC guideline values. The exception was for zinc for which the 90th percentile pre-placement data was applied as the Environmental Goal. **Appendix B** presents a summary of the approved Environmental Goals.

Where additional analytes have been included as part of the LNAR - Modification 1 OEMP revision, including arsenic III, arsenic V, chromium III. chromium VI, and filterable reactive phosphorus as P, these will be subject to assessment against Environmental Goals provided by ANZG (2018) where available.

Currently, the ANZG (2018) guidelines relate to ecosystem protection and do not provide values for physical stressors (e.g. pH and conductivity), for drinking water quality and primary industries for stock water and irrigation. While the ANZG (2018) default guideline values have been considered in this revision of the OEMP, the reference to ANZECC (2000) remains valid as the most complete reference source for the currently approved Environmental Goals.

5.5.4 Monitoring

The Groundwater Monitoring Program in **Table 5-12** and **Table 5-13** provides the procedures and protocols that apply to monitoring and testing of water quality. **Table 5-14** provides the contingency plan for events that have the potential to pollute or contaminate groundwater. **Table 5-15** provides a protocol for the investigation of identified exceedances of the groundwater impact criteria, and **Table 5-16** provides the reporting requirements.

Table 5-12 Groundwater Monitoring Schedule

No.	Monitoring Measures	Role/Responsibility	Timing	Source/ Reference
1.	Groundwater quality for the analytes listed in Appendix A will be monitored using a network of 25 groundwater wells. This network is presented on **Figure 5** and described in **Table B-2, Appendix B**:	EA/Groundwater contractor	Every 3 months, continuing for five years following final capping and landscaping (until this timeframe is otherwise agreed with WaterNSW)	D3 (b) (vi) E15 Groundwater monitoring wells shown on **Figure 5**
2.	The groundwater monitoring shall be carried out in accordance with **Table 5-13** in this plan.	EA/Groundwater contractor	During monitoring	D3 (b) (vi) E15
3.	Water quality monitoring results shall be assessed in conjunction with the Environmental Goals, presented in Appendix B.	EA/Groundwater contractor	After monitoring when results are received	CoA D3 (b) a) vi)

Table 5-13 Procedures and Protocols for Groundwater Monitoring

No.	Monitoring Measures	Role/Responsibility	Timing	Source/ Reference
Procedures and Protocols for Sampling				
1.	The groundwater monitoring program shall be ongoing for the operation of LNAR and for a minimum of 5 years following its completion. Monitoring shall be carried out at each of the identified established bores in **Figure 5** (or expanded bore sites, in the event that the existing sites are damaged, decommissioned or lost).	EA / Groundwater Specialist/ NATA Laboratory	Throughout the life of the LNAR and for a minimum of 5 years after final capping and landscaping	E15
2.	Sampling and analysis will be undertaken in accordance with approved methods (EPA 2004).	Groundwater contractor/Laboratory	During sampling and analysis of groundwater	E15
3.	Groundwater sampling shall be undertaken by a qualified professional and analysed in a NATA accredited laboratory for parameters.	Groundwater contractor	During sampling and analysis of groundwater	E15
4.	EA shall implement a schedule for periodic monitoring of groundwater quality and depth at monitoring sites, at an initial frequency of no less than every three months	EA	Once every three months	E15
Methods of analysis				
5.	Laboratory methods shall be based upon the EPA Guideline *Approved Methods for the Sampling and Analysis of Water Pollutants in NSW* (2022) in a NATA accredited laboratory.	Laboratory	Ongoing	E15
6.	Detection limits will be set so that accurate measurements can be obtained at a level relevant to specific guidelines.	Laboratory	As required	E15
7.	In the event that any bore at LNAR needs to be decommissioned in future, an analysis by a qualified water specialist shall be undertaken to determine if an expanded bore network is needed and relevant locations/s. Decommissioning will be completed in accordance with the Minimum Construction Requirements for Water Bores in Australia (4th edition) (NUDLC, 2020).	EA	Decommission of any bores at or around LNAR	E15

Table 5-14 Groundwater contamination contingency plan for Lamberts North

No.	Actions	Responsibility	Timing	Source/ Reference
1.	Groundwater pollution events attributed to LNAR operations shall be investigated and managed with reference to the DECC Guidelines for the Assessment and Management of Groundwater Contamination (2007) and other regulatory requirements.	EA/Groundwater contractor/ Contractor	Following any incident at LNAR which results in groundwater pollution	D3(b) (v) NSW DEC, 2007
2.	In the event of a pollution or contamination event, owners of any nearby potentially affected bores (other than monitoring bores only) shall be notified within 12 hours of confirmation of impact. It is noted that there are currently no registered users of groundwater other than for monitoring purposes within a 2km radius from the LNAR.	EA	Within 12 hours of confirmation of impact	D3(b) (v) Community Information Plan OEMP **Section 3.3**
3.	The contingency plan shall be carried out in accordance with **Section 5.5.1.4** of the plan and the Pollution Incident Response Management Plan activated as required.	EA / Contractor	Immediately following a pollution event	E19 **Table 5-14**

Table 5-15 Investigation protocol

No.	Actions	Responsibility	Timing	Source/ Reference
1.	In the event that monitoring indicates the Environmental Goal have been exceeded, in accordance with **Section 5.5.1.4** contingency plan, investigation shall be undertaken in accordance with **Section 5.5.1.5** which will include consideration as to whether operations at the LNAR are impacting groundwater. As noted above, the independent investigation is currently underway. Once the independent investigation is complete, this OEMP may be updated to reflect relevant outcomes, if required. Exceedances shall be reported to DPE in accordance with CoA A9.	EA	In the event elevated concentrations in water quality are observed	D3(b) (v)
2.	If groundwater is identified as being affected by LNAR operations and the affected groundwater is likely to have an adverse effect on Wangcol Creek, then management actions should be undertaken to limit potential adverse impacts on the receiving surface water.	EA	As required	D3 (b)(v)
3.	Further monitoring will be undertaken until it is confirmed that monitoring results have returned to acceptable levels.	EA / Groundwater contractor	Following an exceedance, or contamination or pollution	D3 (b)(v)
4.	Where monitoring bores are damaged, advice will be sought from a qualified water specialist on the need for replacement bores.	EA / Groundwater contractor	As required	D3(b)

Table 5-16 Reporting Requirements

No.	Reporting requirements	Responsibility	Timing	Source/ Reference
1.	In the event of a pollution incident relating to groundwater, an Environmental Incident Report form will be completed and forwarded to the Contract Administrator. For pollution incidents that have the potential to result in harm to the health or safety of human beings or to ecosystems that is not trivial, EA will activate the Pollution Incident Response Management Plan where required.	Staff who witnessed or reported the environmental incident/ EA	Following a pollution incident	D3(b) (vi) E19
2.	An annual groundwater (and surface water) quality report shall be undertaken to review and consolidate data obtained in relation to LNAR throughout the year. This information shall be maintained in accordance with the access to information requirement of the CoA.	EA	Annually	A10 and A11 B8 D3(b) (viii)
3.	EA shall issue the latest monitoring data to the WaterNSW upon their request, at any time during the life of the project.	EA	As required	D3(b)

5.6 Soil and Surface Water Management Plan

This Soil and Surface Water Management Plan (**SSWMP**) is a sub-plan of the OEMP. It seeks to address the specific requirements of the PA 09_0186 CoA for the LNAR, relating to soil and surface water. These conditions include CoA D3 (c) and E16 (provided in **Appendix D**).

This SSWMP addresses soil and water cycle management on the site, including a surface water monitoring program at receiving waters. The SSWMP was developed in consultation with WaterNSW (refer **Appendix E**).

5.6.1 Background

The LNAR is located within the catchment of Wangcol Creek, a tributary of the Coxs River. The Coxs River makes up part of the Warragamba water catchment, the largest of Sydney's five drinking water catchments. Wangcol Creek is the nearest watercourse to LNAR. The hydrology of the area has been disturbed by past mining activities with physical changes to its landform and geology. As a result, the former Huon Gully which has been infilled and was formerly located within the project area, and Lamberts Gully Creek, located to the east of Lamberts North, no longer represent a 'natural' hydrological system (SKM, 2010).

Surface water in Wangcol Creek is characterised by elevated concentrations of sulfate, iron and manganese. Concentrations of other constituents, including chloride, boron and nickel, have been recorded in surface water at the Wangcol Creek.

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

There are no natural water bodies within the LNAR project area, and there are no surface water discharge points from the project area to nearby natural water bodies. The principles of internal clean water (from external batters) and dirty water (from ash placement areas) separation, and separation of water from external areas such that it may flow around the LNAR, form the basis of soil and surface water management for LNAR operations.

As described in the following sub-sections, rainwater that falls onto the LNAR will be contained onsite, by diverting water to on-site retention / sediment ponds which will be strategically located to contain clean water (from external batters) and dirty water (from ash placement areas) within the LNAR. Rainwater that does not fall within the LNAR area will be diverted around the LNAR via existing drainage infrastructure.

5.6.2 Operational Activities

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

- Continuous use of haulage and axillary roads that can cause soil movement if not maintained regularly;
- Heavy rainfall events that can collect uncompacted ash as it flows through drainage lines if not maintained regularly;

- Use of plant and machinery on site that can cause ash movement and erosion if not operated correctly in accordance with the methodology for ash placement;
- Overwatering of the ash if application rates are not adjusted to current metrological conditions, causing the ash to become slurry;
- Leaving exposed surfaces uncapped for prolonged periods which has the potential to increase erosion and sedimentation.

In addition to the mitigation measures that have been provided in **Sections 5.6.4, 5.6.5** and **Section 5.6.6** to control the above, LNAR activities will have the following strategic principles applied:

- All final batters will be consistent with the approved final landform design for the MPAR. The ROP will confirm the batter length and width and any additional water control measures that maybe required throughout the project.
- Any batters that are parallel to the Castlereagh Highway in the north will be designed and constructed in a way that mitigates uncontrolled water flows.

The site operations will generally adhere to the following water management principles:

- 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 transferred to the MPPS water management system when required;
- Dirty water will be collected in sediment ponds strategically located within the LNAR including (but not limited to) the three existing 20 ML lined ponds (Pond BWA to Pond BWC);
- Sediment from clean water detainment ponds will be removed, when necessary as a part of standard maintenance practice in order to maintain sufficient stormwater storage capacity;
- Dust suppression and irrigation water will be sourced from dirty and clean water ponds respectively, and various ponds available from MPPS 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 LNAR design will incorporate detainment and containment of surface water and erosion control

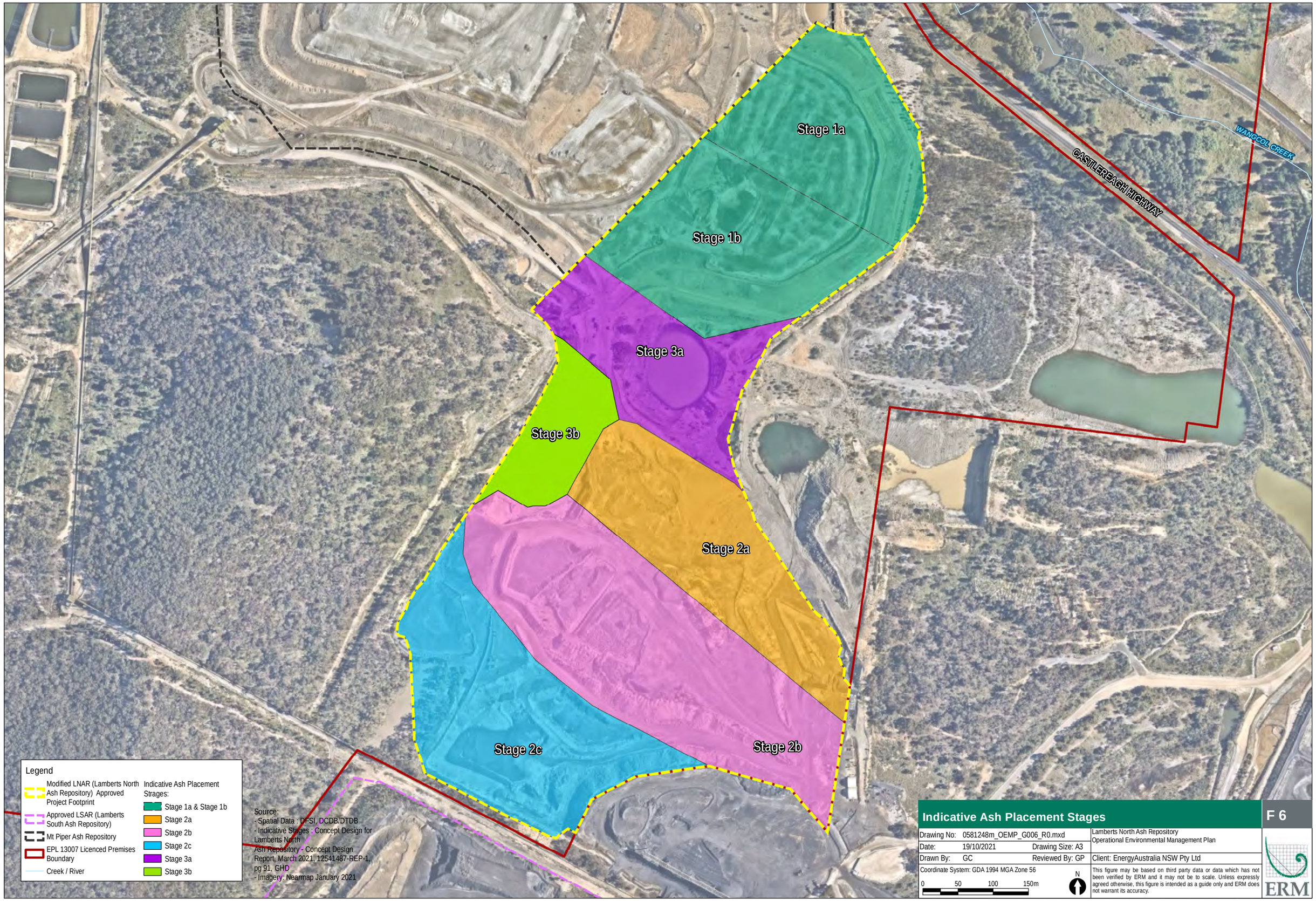
The water management principles listed above provide necessary erosion and sediment mitigations that are outlined further below in this soil and surface water management plan. The soil and surface water management plan is intended to provide the management and mitigation measures that will be implemented by the Contractor during day to day operation of the LNAR, to maintain clean and dirty water separation, and to keep water from external areas out of the LNAR operational area.

5.6.3 Water Management System

Water management will be developed in general accordance with the staged development of the LNAR, as indicated in **Figure 6**. The site water management system involves the separation of clean and dirty water generated during the staged operation of the site. These can be defined as:

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

Each of the above actions is outlined in the following four sub sections. A plan showing the general surface water management arrangements through indicative stages of LNAR operations is provided in **Figure 7a** to **Figure 7f below.**



Indicative Ash Placement Stages

F 6

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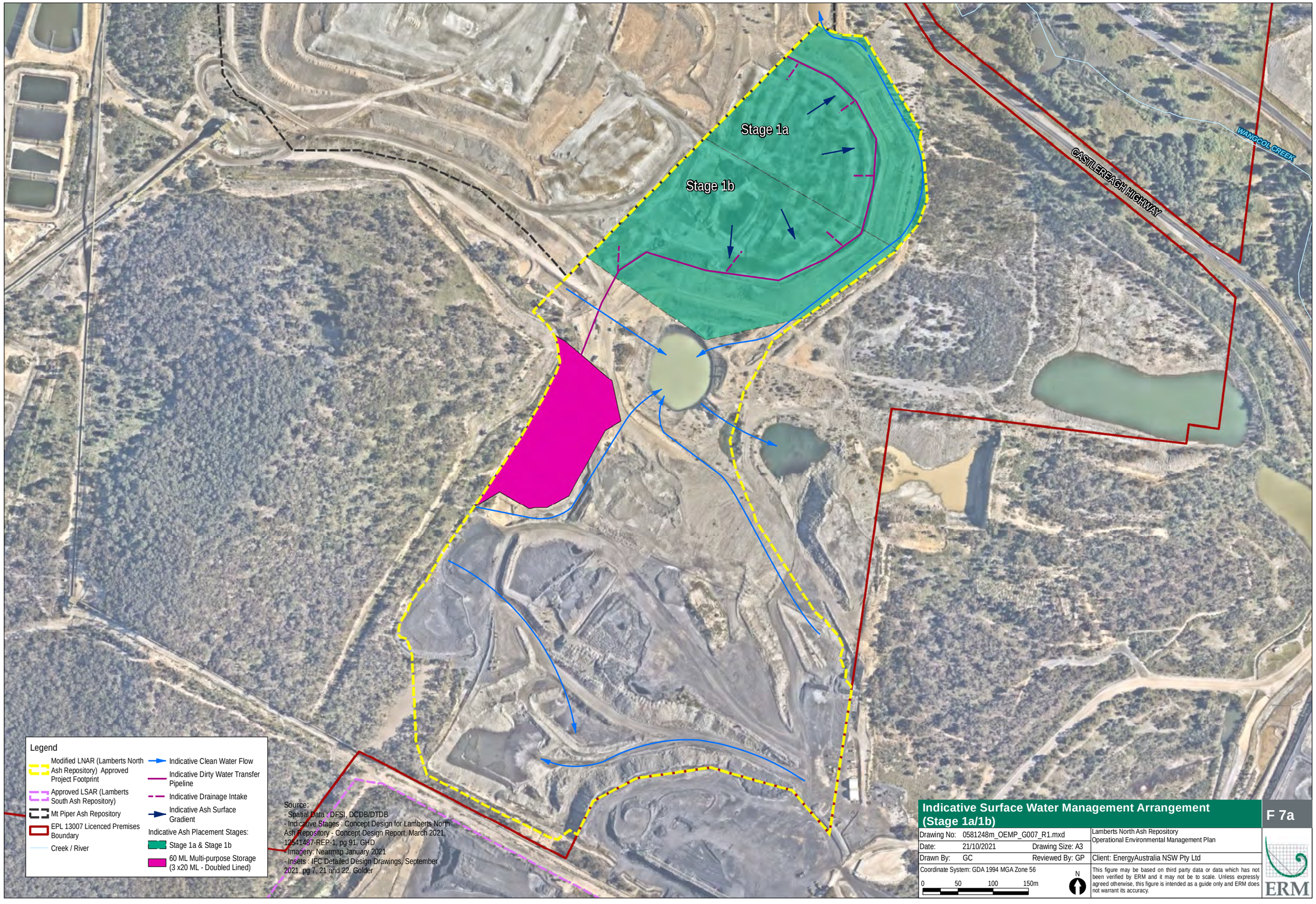
Drawn By:	GC	Reviewed By: GP	Client: EnergyAustralia NSW Pty Ltd
Coordinate System: GDA 1994 MGA Zone 56 0 50 100 150m N			This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

ERM



Indicative Surface Water Management Arrangement (Stage 1a/1b)

F 7a

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Date:	21/10/2021	Drawing Size: A3	
Drawn By:	GC	Reviewed By: GP	Client: EnergyAustralia NSW Pty Ltd

Coordinate System: GDA 1994 MGA Zone 56

0 50 100 150m

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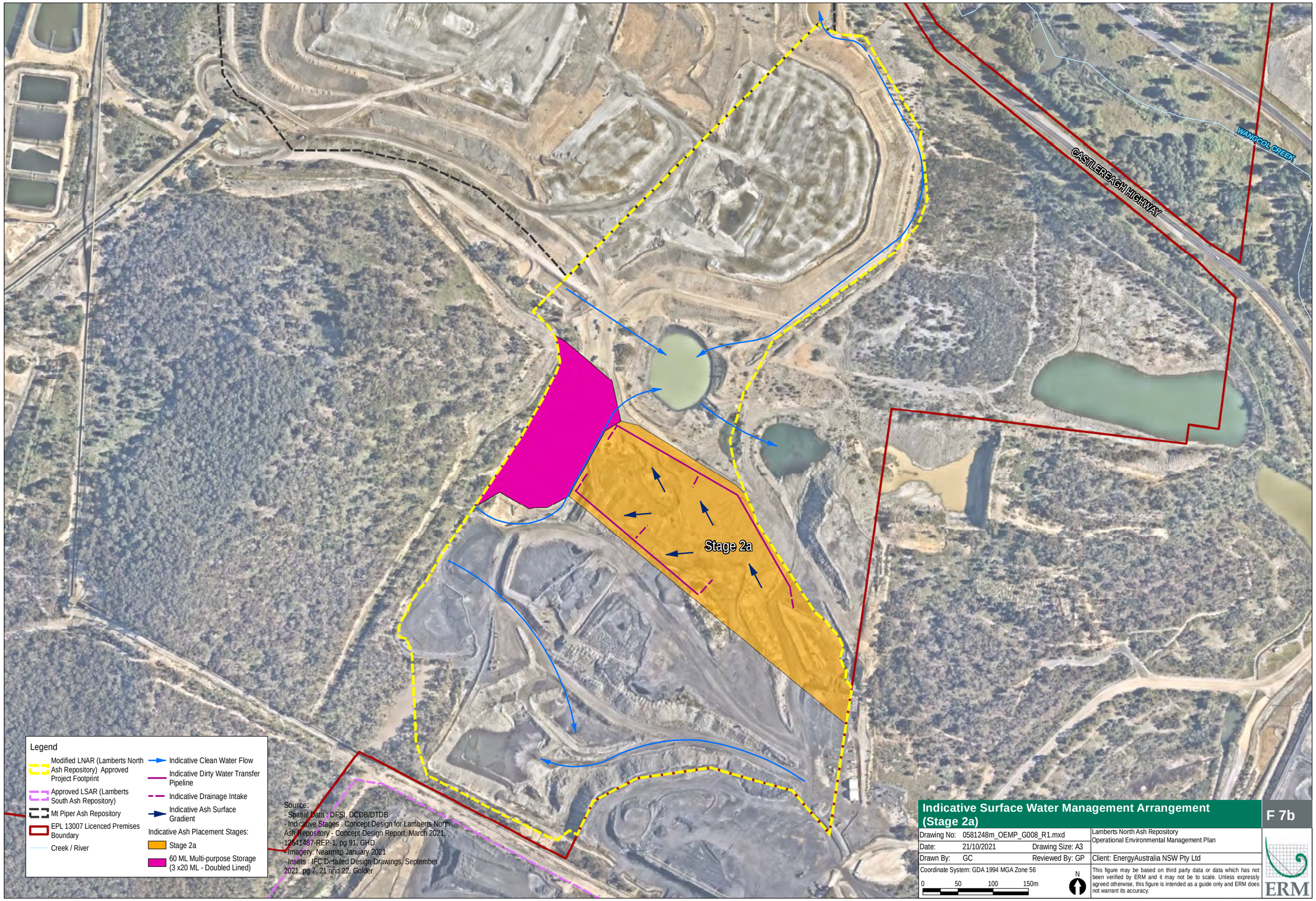
CASTLEREAGH HIGHWAY
WANGCOL CREEK
Stage 2a
Legend
Modified LNAR (Lamberts North Ash Repository) Approved Project Footprint
Approved LSAR (Lamberts South Ash Repository)
Mt Piper Ash Repository
EPL 13007 Licenced Premises Boundary
Creek / River
Indicative Clean Water Flow
Indicative Dirty Water Transfer Pipeline
Indicative Drainage Intake
Indicative Ash Surface Gradient
Indicative Ash Placement Stages:
Stage 2a
60 ML Multi-purpose Storage (3 x20 ML - Doubled Lined)
Source:
- Spatial Data : DFSI, DCDB/DTDB
- Indicative Stages : Concept Design for Lamberts North Ash Repository - Concept Design Report, March 2021, 12541487-REP-1, pg 91, GHD
- Imagery: Nearmap January 2021
- Insets : IFC Detailed Design Drawings, September 2021, pg 7, 21 and 22, Golder
Indicative Surface Water Management Arrangement (Stage 2a)
F 7b
Drawing No: 0581248m_OEMP_G008_R1.mxd
Date: 21/10/2021
Drawing Size: A3
Drawn By: GC
Reviewed By: GP
Coordinate System: GDA 1994 MGA Zone 56
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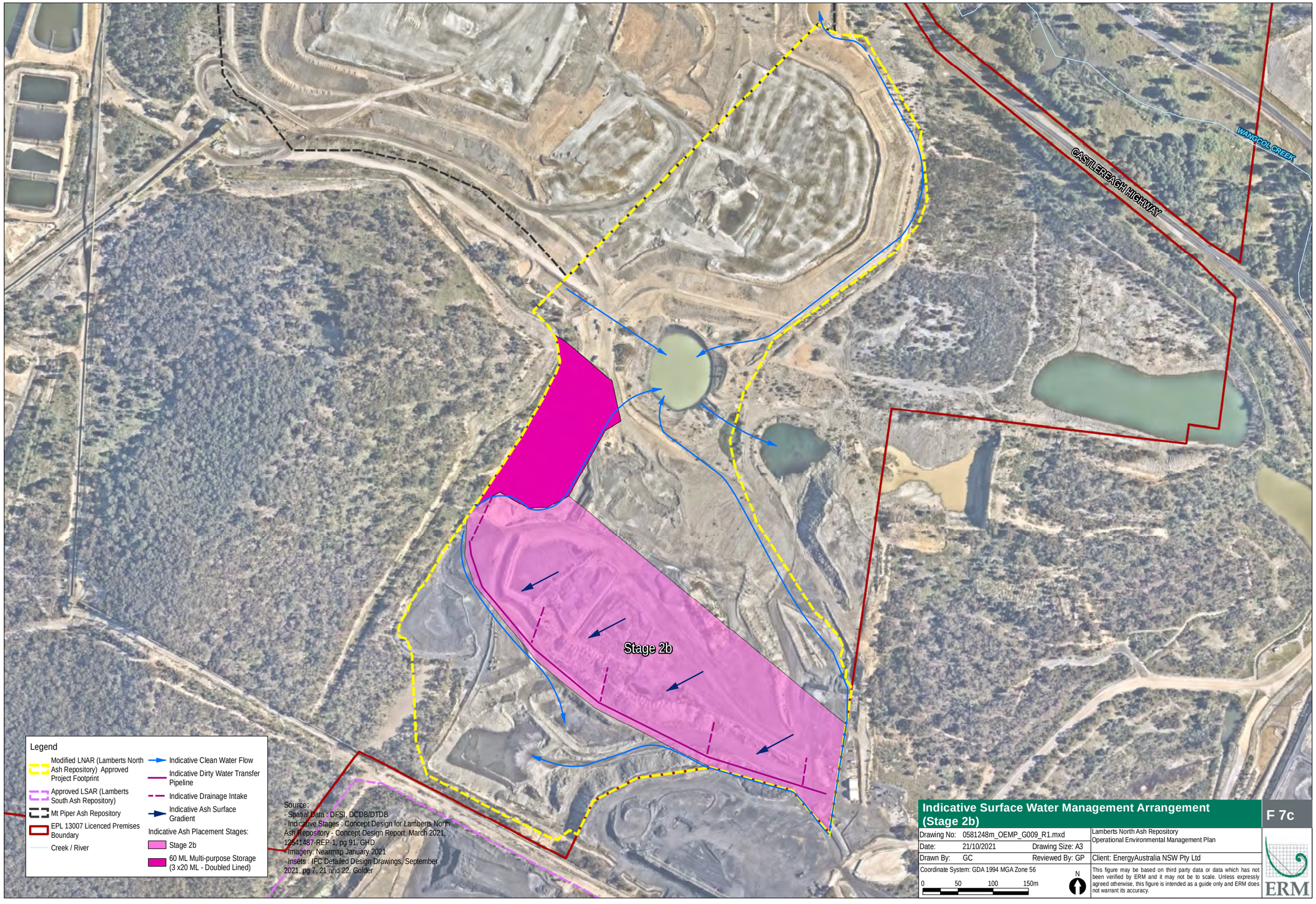
Lamberts North Ash Repository
Operational Environmental Management Plan
Client: EnergyAustralia NSW Pty Ltd
This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.
ERM


WANGCOL CREEK
CASTLEREAGH HIGHWAY
Stage 2b
Legend
Modified LNAR (Lamberts North Ash Repository) Approved Project Footprint
Approved LSAR (Lamberts South Ash Repository)
Mt Piper Ash Repository
EPL 13007 Licenced Premises Boundary
Creek / River
Indicative Clean Water Flow
Indicative Dirty Water Transfer Pipeline
Indicative Drainage Intake
Indicative Ash Surface Gradient
Indicative Ash Placement Stages:
Stage 2b
60 ML Multi-purpose Storage (3 x20 ML - Doubled Lined)
Source:
- Spatial Data : DFSI, DCDB/DTDB
- Indicative Stages : Concept Design for Lamberts North Ash Repository - Concept Design Report, March 2021, 12541487-REP-1, pg 91, GHD
- Imagery: Nearmap January 2021
- Insets : IFC Detailed Design Drawings, September 2021, pg 7, 21 and 22, Golder
Indicative Surface Water Management Arrangement (Stage 2b)
F 7c
Drawing No: 0581248m_OEMP_G009_R1.mxd
Lamberts North Ash Repository
Operational Environmental Management Plan
Date: 21/10/2021
Drawing Size: A3
Drawn By: GC
Reviewed By: GP
Client: EnergyAustralia NSW Pty Ltd
Coordinate System: GDA 1994 MGA Zone 56
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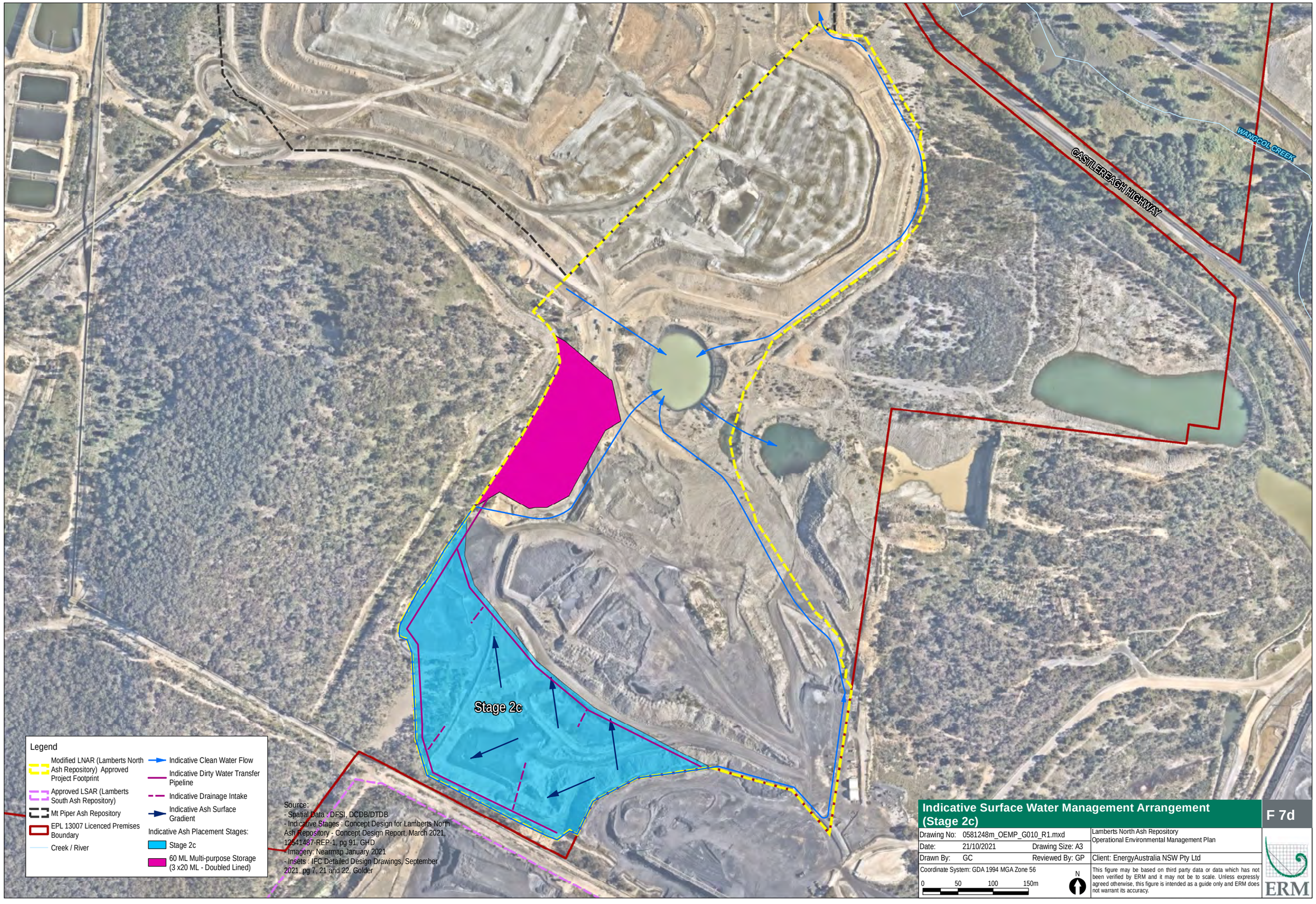
CASTLEREAGH HIGHWAY
WANGCOL CREEK
Stage 2c
Legend
Modified LNAR (Lamberts North Ash Repository) Approved Project Footprint
Approved LSAR (Lamberts South Ash Repository)
Mt Piper Ash Repository
EPL 13007 Licenced Premises Boundary
Creek / River
Indicative Clean Water Flow
Indicative Dirty Water Transfer Pipeline
Indicative Drainage Intake
Indicative Ash Surface Gradient
Indicative Ash Placement Stages:
Stage 2c
60 ML Multi-purpose Storage (3 x20 ML - Doubled Lined)
Source:
- Spatial Data : DFSI, DCDB/DTDB
- Indicative Stages : Concept Design for Lamberts North Ash Repository - Concept Design Report, March 2021, 12541487-REP-1, pg 91, GHD
- Imagery: Nearmap January 2021
- Insets : IFC Detailed Design Drawings, September 2021, pg 7, 21 and 22, Golder
Indicative Surface Water Management Arrangement (Stage 2c)
F 7d
Drawing No: 0581248m_OEMP_G010_R1.mxd
Lamberts North Ash Repository
Operational Environmental Management Plan
Date: 21/10/2021
Drawing Size: A3
Drawn By: GC
Reviewed By: GP
Client: EnergyAustralia NSW Pty Ltd
Coordinate System: GDA 1994 MGA Zone 56
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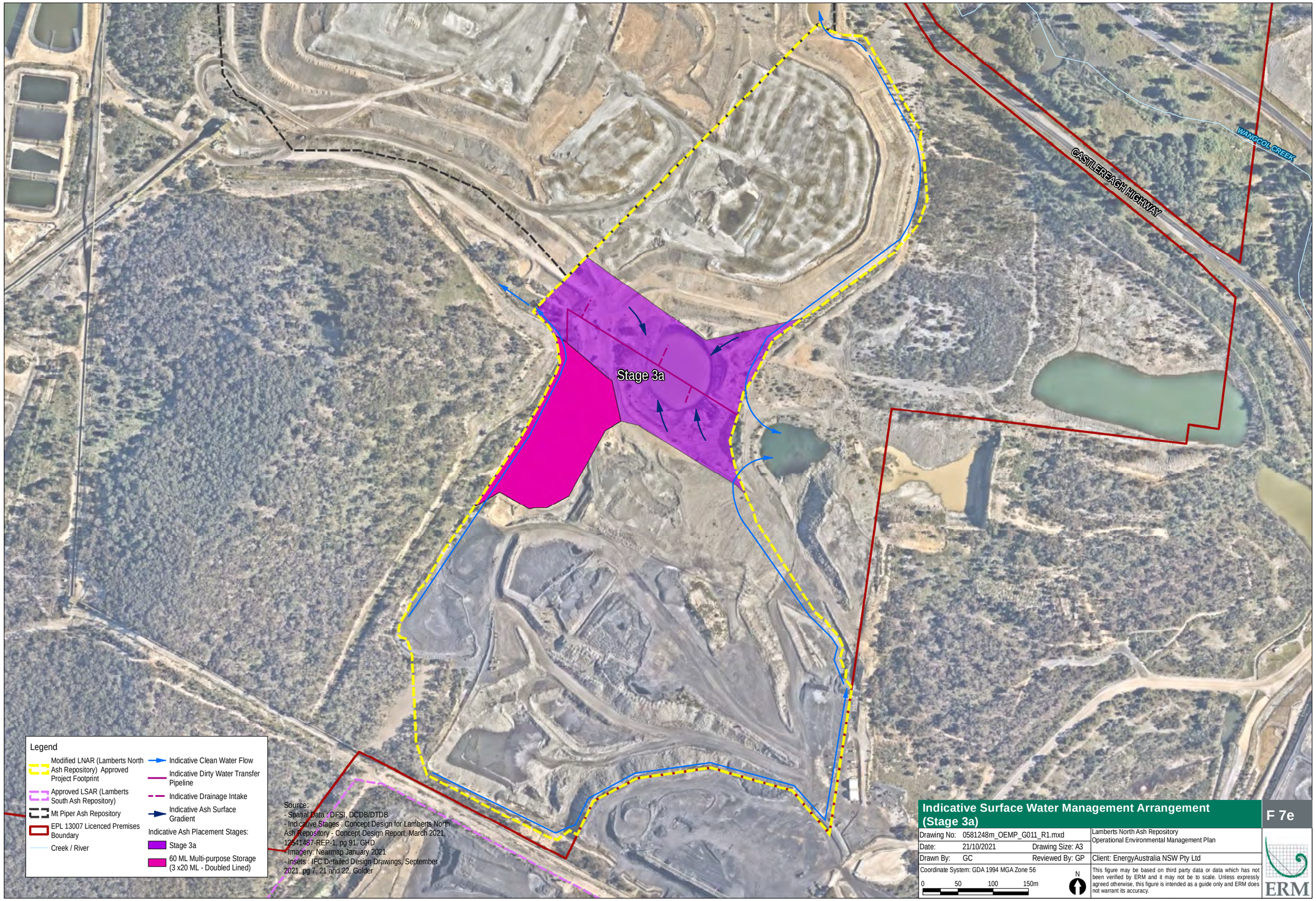
Stage 3a
CASTLEREAGH HIGHWAY
WANGCOOL CREEK
Legend
Modified LNAR (Lamberts North Ash Repository) Approved Project Footprint
Approved LSAR (Lamberts South Ash Repository)
Mt Piper Ash Repository
EPL 13007 Licenced Premises Boundary
Creek / River
Indicative Clean Water Flow
Indicative Dirty Water Transfer Pipeline
Indicative Drainage Intake
Indicative Ash Surface Gradient
Indicative Ash Placement Stages:
Stage 3a
60 ML Multi-purpose Storage (3 x20 ML - Doubled Lined)
Source:
- Spatial Data : DFSI, DCDB/DTDB
- Indicative Stages : Concept Design for Lamberts North Ash Repository - Concept Design Report, March 2021, 12541487-REP-1, pg 91, GHD
- Imagery: Nearmap January 2021
- Insets : IFC Detailed Design Drawings, September 2021, pg 7, 21 and 22, Golder
Indicative Surface Water Management Arrangement (Stage 3a)
F 7e
Drawing No: 0581248m_OEMP_G011_R1.mxd
Lamberts North Ash Repository
Operational Environmental Management Plan
Date: 21/10/2021
Drawing Size: A3
Drawn By: GC
Reviewed By: GP
Client: EnergyAustralia NSW Pty Ltd
Coordinate System: GDA 1994 MGA Zone 56
0 50 100 150m
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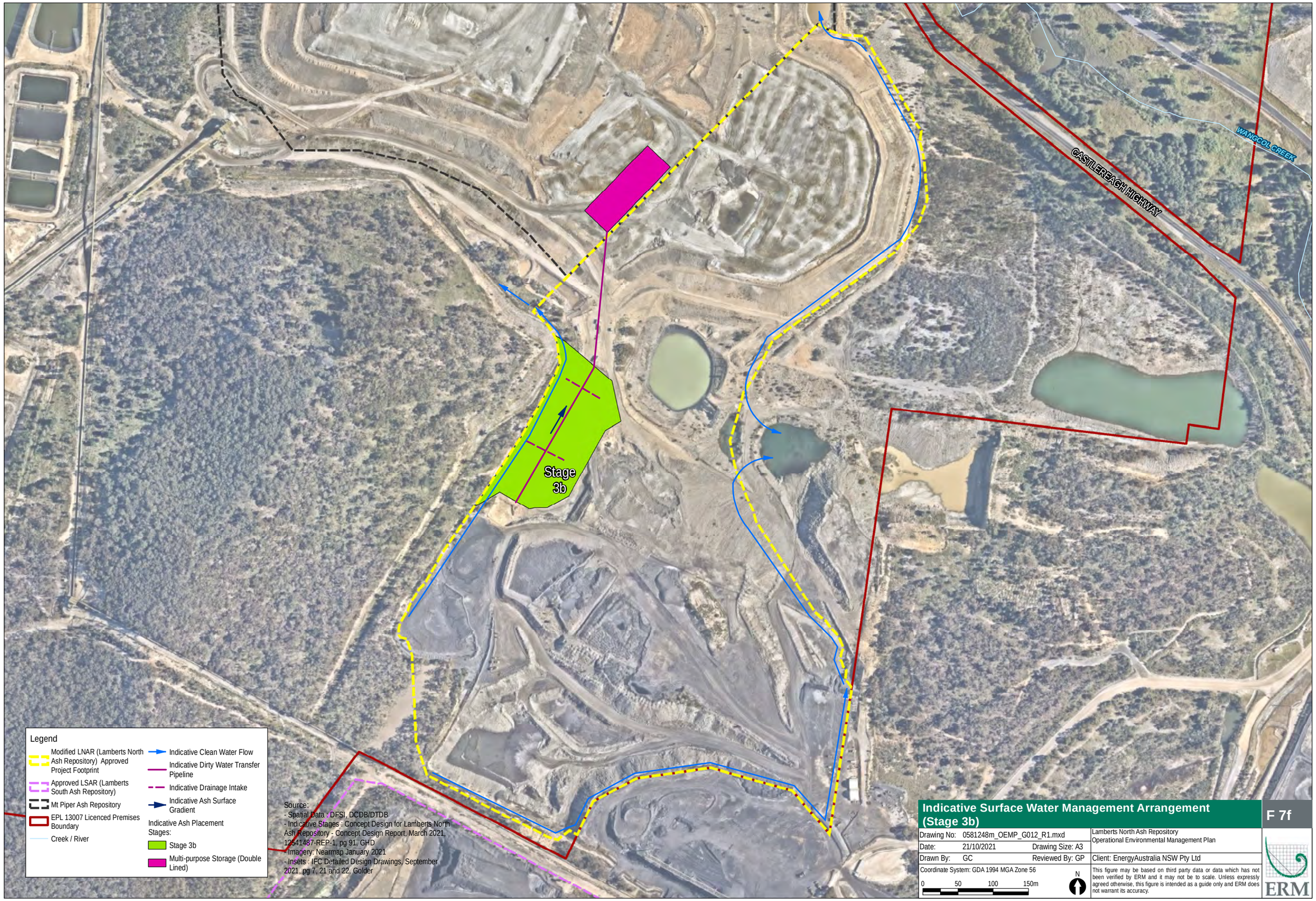
WANGCOL CREEK
CASTLEREAGH HIGHWAY
Stage 3b
Legend
Modified LNAR (Lamberts North Ash Repository) Approved Project Footprint
Approved LSAR (Lamberts South Ash Repository)
Mt Piper Ash Repository
EPL 13007 Licenced Premises Boundary
Creek / River
Indicative Clean Water Flow
Indicative Dirty Water Transfer Pipeline
Indicative Drainage Intake
Indicative Ash Surface Gradient
Indicative Ash Placement Stages:
Stage 3b
Multi-purpose Storage (Double Lined)
Source:
- Spatial Data : DFSI, DCDB/DTDB
- Indicative Stages : Concept Design for Lamberts North Ash Repository - Concept Design Report, March 2021, 12541487-REP-1, pg 91, GHD
- Imagery: Nearmap January 2021
- Insets : IFC Detailed Design Drawings, September 2021, pg 7, 21 and 22, Golder
Indicative Surface Water Management Arrangement (Stage 3b)
F 7f
Drawing No: 0581248m_OEMP_G012_R1.mxd
Date: 21/10/2021
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Drawn By: GC
Reviewed By: GP
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ERM

5.6.3.1 Stormwater run-off around Lamberts North

For external areas, stormwater run-off from the west and south-west of the LNAR is captured by the existing drainage and is diverted into the watercourse that flows to Wangcol Creek. Stormwater to the south of the LNAR falls onto the existing mining operations of the WCS facility and is managed by Centennial through a series of ponds and drains in the vicinity of the old Lamberts Gully Creek, well to the east of the LNAR. Stormwater falling on areas to the east and north of LNAR largely drain naturally to the east into Wangcol Creek following the general lay of the land away from the site.

As a consequence of the above, little stormwater falling in areas around LNAR runs onto the site.

5.6.3.2 Containment of water at Lamberts North

Surface water is diverted from the active ash placement areas of LNAR by surface gradients toward diversion bunds and a pipe inlet. A pipeline is used to transfer surface run-off from active ash placement areas to double HDPE lined holding ponds. This is termed dirty water (Refer to Figure 7 Series). The dirty water storages have the ability to pump water from in between the two liners, along with a sump for leak detection using a dip meter, and the ability to pump out water leaks. The space between the liners and the leak detection sump is checked on a monthly basis by the Contractor.

Surface water run-off from outside the active ash placement areas will be directed via external batters and surface drainages to clean water sediment ponds, most of which are established, as an ongoing process over the life of the project (EA, 2010).

Geotechnical analysis will be performed as needed for new dams to test for permeability, with recommendations provided to determine suitability for and/or requirement for lining. Pond lining materials that may be used but may include, but not limited to:

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

A HDPE lining material will only be used for permanent ponds with a design life of greater than 10 years.

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

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

The repository catchment area uses external batters and laybacks to stabilise the ash placement and reduce erosion and run-off. The trucks deliver ash to the working face and create a number of piles next to each other, prior to final placement. The ongoing grading of the ash surface allows for run-off from the active ash placement area to be directed to the dirty water sediment pond(s), maintaining separation between clean and dirty water. The ash is then graded into its final position and compacted by rollers to specific compaction criteria to mitigate erosion and infiltration (as set out in the ROP).

Water that falls on external, permanently capped and revegetated batters is channelled to clean water ponds for re-use on site (e.g. for dust suppression), or transfer to the MPPS water management system.

Ash placement benches around external batters are used as a first level of detainment, with the outside of the bench approximately 5% higher than the inside, it is used to divert water to a swale parallel to the batter. The swale directs the water towards a controlled point, being an off-flow structure placed approximately every 100m along the batter. The off-flow structure directs the water to a containment pond as set out in the ROP).

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

- Compaction of ash when it is placed. Where ash is compacted, the likelihood of infiltration during a rainfall event is minimised;
- The ash repository design will include a series of batters and laybacks. This will be further defined in the ROP;
- Standard construction practices consist of face normally 80m wide with a placement bench length of 200m x 200m, however the ROP can define another method if this is found to be more effective;
- The ash repository will be designed accordingly, to mitigate any long or short - term effects of stormwater;
- Design of pond sizes on the basis of catchment areas and where possible are sized to a target of minimum 50-year ARI event;
- Leachate storage ponds will be designed, sized and installed with a double low permeability liner in general accordance with the EPA (2016) guidance; and
- Erosion on permanent batters is best mitigated by applying shrubs and/or grasses and then applying mulch.

Erosion of final batters is mitigated through mulches and revegetation (as set out in the ROP)

5.6.3.4 Water re-use at Lamberts North

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

The secondary water sources for use at LNAR for dust suppression and irrigation are obtained from various ponds available within MPPS which may include, but not limited to the following:

- Coal Settling Ponds;
- Settling Pond A to Settling Pond D; and
- Blowdown water normally sourced straight from the cooling towers.

The run-off from active ash placement areas of LNAR will be captured and stored in double-lined storage ponds (Pond BWA to Pond BWC) at the LNAR. This captured run-off may be used for irrigation or conditioning of ash, or may be transferred to the MPPS water management system for treatment prior to use in electricity generation as needed.

The Concept Design (GHD, 2021) presents Hydrologic Evaluation of Landfill Performance (HELP) modelling which estimates potential leachate volumes of up to 9.25 ML/per month may be intercepted and captured. This maximum estimated volume for leachate generation is based on the largest conceptual stage of the future ash placement in LNAR (Stage 2b), assumes a 90th-percentile rainfall year, and is likely to represent January, which historically has the highest average monthly rainfall. Estimates prepared by Service Stream (2021) estimate that Stage 1a/Stage 1b combined may generate up to approximately 6.35 ML surface water run-off per 24 hour period during a 50-year ARI event. Based on the current indicative stages of ash placement at the LNAR (refer Figure 6 series), Stage 2b is approximately 50% larger in area when compared to Stage 1a/Stage 1b. Therefore, it is estimated that the largest active ash placement area currently proposed may generate up to approximately 10 ML surface water run-off per 24 hour period during a 50-year ARI event. Based on the average water usage of the Ash Repositories in January (61.7 ML), the peak leachate generation will be readily utilised via irrigation or conditioning of ash placed in lined areas at the LNAR, or may be transferred to the MPPS water management system for treatment prior to use in electricity generation as needed (Appendix B of ERM, 2021a).

5.6.3.5 Contingency Planning

The groundwater contingency plan discussed earlier in **Section 5.5.1.4** can also be applied to surface water quality within Wangcol Creek to detect changes and act upon them.

Changes in water quality will be reviewed by comparing results with the Environmental Goals for surface water and groundwater. Further early warning monitoring will be conducted by assessment of concentration trends through time at each location, including statistical analysis where appropriate.

The contingency plan below can be used in addition to the mitigation measures outlined in the surface water plan to identify what to do in the event that operational activities at LNAR are found to have an adverse environmental impact on the quality of surface water. The aim of a contingency investigation will be targeted to assess whether changes in surface quality may be due to LNAR activities or some other cause. If it is considered that groundwater quality is adversely affected as a result of LNAR activities, then management plans shall be implemented to mitigate any impacts arising.

5.6.3.6 Investigations protocol

Investigations shall include but are not limited to the activities listed in **Table 5-17**.

Table 5-17 Surface water investigation protocol

Trigger for Investigation	Investigation required	Action
Exceedance against the Environmental Goal (**Appendix B**) or triggering of investigation following completion of the early warning assessment.	▪ Analyse water quality data, outside the criteria; ▪ Review site operations within the timeframe of detected exceedances; ▪ Review Metrological conditions; ▪ Review any activities that maybe occurring on neighbouring sites; and ▪ Investigate other potential factors that may have led to the exceedance.	▪ Once potential source is found, implement corrective actions as soon as practicable. ▪ Implement management actions as appropriate. ▪ Consult with independent experts and/or regulatory authorities if deemed necessary, or required as part of the OEMP or EPL requirements.

5.6.4 Management, Mitigation and Monitoring Measures

This section provides the requirements for the ongoing soil and surface water monitoring program in accordance with CoA E16. Surface water monitoring locations are presented in **Figure 5**. These locations are considered to be suitable to monitor for potential changes in environmental conditions that may be attributable to the planned stages of LNAR operations.

The management and mitigation measures, monitoring, reporting requirements, and response plan/corrective actions for this sub-plan are outlined in **Table 5-18** and **Table 5-19**.

Table 5-18 Soil and Surface Water Objectives, References and Performance Criteria

Performance Targets
▪ The water quality in Wangcol Creek is not impacted by the LNAR operations (criteria available in **Appendix B, Table B-1**). ▪ Zero Environmental incidents at LNAR that result in pollution of water at Wangcol Creek. ▪ Erosion to be effectively managed on site and not to have an influence and/or impact on surrounding lands outside the boundary of LNAR.
Performance Criteria
▪ Water quality results at Wangcol Creek indicate no significant variations from historical baseline data resulting from LNAR operations (**Appendix B, Table B-3**. ▪ Ecological results at Wangcol creek will indicate no significant variation from historical baseline data resulting from LNAR operations. ▪ No visual evidence of erosion and sedimentation impacts on Wangcol Creek resulting from LNAR operations following significant rainfall events. ▪ Establishment of procedures for maintenance of temporary and permanent silt and sediment control structures within the site. ▪ Clean water diversions operate as intended
References (in addition to legislation as set out in Section 4.1)
▪ Water Management, Chapter 7 of the Mount Piper Power Station Ash Placement Environmental Assessment Report, August 2010 (SKM, 2010). ▪ Mount Piper Station Ash Placement Project Hydrology and Water Quality Report, Appendix D to the Mount Piper Station Ash Placement Project ▪ Environmental Assessment Report, August 2010 (SKM, 2010). ▪ Submissions Report (SKM, 2011) ▪ Consistency Report (SKM, 2012) ▪ CEMP (CDM-Smith 2012) ▪ Mt Piper Ash Placement Project – Lamberts North Ash Repository Modification 1 Report (ERM, 2021a)

Key issues/constraints/strategies

- Clean water is defined as runoff from undisturbed areas including those that have not come into direct contact with ash i.e. capped areas, revegetated areas.
- Dirty water comprises of water collected within disturbed areas including exposed ash face, un- vegetated capped areas, work areas, stockpiles and haulage roads. Within these parameters and using appropriate surface water controls, the impact of lamberts north operations on the surrounding catchment will be minimised.
- Surface water quality and ecological monitoring will be carried out in accordance with this plan and the EA Ecological Monitoring Plan for Wangcol Creek.

Constraints

- LDP12 is the licenced discharge point for the MPPS, being from the Coal Settling Pond. LMP01 is located downstream of the Final Holding Pond (an approved pollution control structure), which is located downstream from LDP12. Both LDP12 and LMP01 are located in the upper Wangcol Creek catchment and receive clean stormwater diversions and drainage from the vicinity of operational areas of the MPPS. Therefore, the water quality at these locations has the potential to be influenced by operational activities in the rare occurrence of environmental events. Wangcol Creek water quality, including downstream areas, is also influenced by local coal mining seepage and surface water. These constraints should be considered when undertaking water quality monitoring at the Wangcol Creeks sites as indicated in this plan.
- The LSAR area is currently operated by Centennial as part of the WCS facility. The LSAR falls within the Lamberts Gully catchment area, and the discharge from Lamberts Gully to Wangcol Creek is monitored as part of the operational requirements for the WCS facility, which is entirely located within the Lamberts Gully catchment area. This OEMP may be updated to include monitoring of the Lamberts Gully discharge to Wangcol Creek prior to EA commencing activities related to ash placement within the LSAR area, however monitoring at Lamberts Gully is not considered to be relevant to the planned ash placement activities at the LNAR.

Table 5-19 Soil and Surface Water Mitigation measures

No	Mitigation measures	Responsibility	Timing	Source/Reference
General Measures				
1.	All surface water contaminant ponds including the three 20 ML lined ponds shall be confirmed to be in general accordance with the referenced guidance and geotechnical specifications for the site.	Contractor	Ongoing	NSW EPA (2016) Landcom (2004)
2.	The ash repository will be designed accordingly, to mitigate any long -term effects of stormwater.	Contractor	Ongoing	D3 (c) (iv)
3.	Locations, types and sizes of ponds shall be included in the ROP.	Contractor	During revisions of the ROP	D3 (c) (ix)
4.	This water-retention system shall be established to ensure that site run-off is captured for further treatment and re-use on site.	Contractor	During operations	D3 (c) (iv)
5.	Once the ash surface area has been capped this area shall be rehabilitated, as soon as practical to minimise erosion.	Contractor	Ongoing	Landscape Rehabilitation and Revegetation Plan
6.	Geotechnical analysis will be performed on constructed dam to test for permeability, any recommendations will determine suitability for surrounding or lining.	Contractor	As required	D3 (c)(viii)
7.	Erosion and sediment control measures will conform with, or exceed the relevant requirements of the Managing urban stormwater; soils and construction (Landcom 2004).	EA and Contractor	Ongoing	D3 (c) (V)
8.	Implement surface water run-off controls: ▪ staged use of temporary and permanent cover as needed based on Lamberts North operations; ▪ diversion of run-off from upslope / upper catchment areas as possible; ▪ internal run-off to internal holding basins; and ▪ external run-off around external batters to stormwater holding ponds.	Contractor	During operations	Mt Piper Ash Placement Project – Lamberts North Ash Repository Modification 1 Report

No	Mitigation measures	Responsibility	Timing	Source/Reference
Erosion and Sediment Control				
9.	Establish and implement procedures for the maintenance of temporary and permanent silt and sediment control structures.	Contractor	During operations	D3 (c) (iii)
10.	Erosion of batters will be minimised by compaction, design length and finally mulching and vegetation.	Contractor	After Final capping	D3 (c) (iii)
11.	The Contractor shall implement protocols and procedures to assess the effectiveness of erosion and sediment control on site during operations. Once implemented any negative findings shall be correctly managed to avoid any future problems.	Contractor	During Operations	D3 (c) (iv)
12.	The contractor shall establish an erosion and sediment emergency procedure that can be used during an unlikely major erosion event.	Contractor	During operations	D3 (c) (xi)
Leachate Management Control				
13	Leachate management control to be in accordance with mitigation measures presented in **Table 5-42**.	Contractor	During operations	Mt Piper Ash Placement Project – Lamberts North Ash Repository Modification 1 Report (ERM, 2021a)

5.6.5 Monitoring and Reporting

Water quality and associated mitigation measures will be monitored at a range of scales and with a range of techniques as described in **Table 5-20.** Reporting requirements are provided in **Table 5-21**.

Table 5-20 Soil and Surface Water Monitoring measures

No.	Monitoring measures	Responsibility	Timing	Source/Reference
Erosion and sediment controls				
1.	Site inspections with regards to surface water shall be recorded daily. Areas of concern shall be appropriately actioned, and a completion date recorded.	Contractor	Daily	D3(c) (xi)
2.	Visual monitoring of the Project site shall be undertaken for evidence of soil erosion. Indicators include: ▪ Degradation of surface water quality on site. ▪ Scouring in drains. ▪ Build-up of sediment in sediment and erosion control devices. ▪ Uncontrolled discharge from the site. ▪ Damaged or failed erosion control devices.	Contractor	Daily	D3(c) (xi)
Surface Water Quality Monitoring				
3.	Water quality monitoring shall be undertaken at the six monitoring locations in Wangcol Creek: at LMP01, NC01, SW_C, SW_E, WX22, and SW_G as per **Figure 5** and **Table B-2, Appendix B**. Parameters to be measured are provided in **Appendix A, Table A-2.** Flow monitoring is undertaken at LMP01 by EA, and at WX22 by WaterNSW (ID: 212055). Surface water monitoring shall also be conducted at LDP12 in accordance with EPL 13007	EA	quarterly	D3 (c)(x) E16 Appendix A, Table A-2
4.	Water quality results obtained in Wangcol creek shall be compared against the historical dataset and Environmental Goals (**Table B-1, Appendix B**).	EA	Monthly	D3 (c)(x) E16
5.	Wet weather monitoring with a minimum of two events recorded within the first 12 months operation of the project shall be undertaken.	EA	COMPLETE	E16(D)

No.	Monitoring measures	Responsibility	Timing	Source/Reference
6.	Ecological Monitoring will be undertaken in accordance with EA Ecological Monitoring program at Wangcol Creek to quantify the impacts of ecology of Wangcol creek and the associated riparian environment. Testing was carried out Spring and Autumn for the first 12 months of operation and then Spring of each year thereafter (up to 5 years from beginning of operation). The results will be analysed against the baseline data carried out in Spring 2012.	EA	spring each year (5 years in total from beginning of operation)	D3 (c) (x)
General				
7.	Daily visual inspections of the Project infrastructure (pumps, pipe work, ponds) will be conducted to ensure infrastructure is in working order (e.g. no leaks). Maintenance of Project infrastructure will be conducted as required.	EA / Contractor	Daily visual inspections. Maintenance within 24 hours of identification of issue.	Mt Piper Ash Placement Project – Lamberts North Ash Repository Modification 1 Report

Table 5-21 Soil and Surface Water Reporting

No.	Corrective Actions	Responsibility	Timing	Source/ Reference
1.	Surface water and erosion related incidents associated with LNAR shall be recorded in daily diaries and reported in the monthly report.	Contractor	Daily and monthly	D3(c) (xi)
2.	EA shall issue the latest monitoring data for surface water to WaterNSW upon their request, at any time during the life of the project.	EA and Contractor	As required	D3 (c) (xii)
3.	All complaints/incidents regarding surface water and erosion associated with LNAR shall be reported to the Contract Administrator.	Contractor/ EA	As required	D3(c) (xi) OEMP **Section 3.5** and **3.9**
4.	In the unlikely event, that the Environmental Representative directs the Contractor Administer to cease operations, due to a potentially adverse environmental threat to Wangcol Creek associated with Lamberts North, EA shall notify and seek advice (if necessary) from Water NSW.	EA	Following an incident	D3(c) (xi) E19 and E20 OEMP **Section 3.9**
5.	An annual Surface water (and groundwater) quality monitoring review shall be carried out to monitor and consolidate data retrieved during surface (and groundwater) monitoring throughout the year. The monitoring review shall be made publicly available in accordance with Condition A11(vi).	EA and specialist consultant	Annually	B8, D3 (c) (v) A11

5.6.6 Corrective Action

Table 5-22 Soil and Surface Water Response plan and corrective actions

No.	Corrective Actions	Responsibility	Timing	Source/ Reference
1.	Surface water and erosion related incidents associated with Lamberts North shall be recorded in daily diaries and reported in the monthly report.	Contractor	Weekly	D3 (xi)
2.	EA shall issue the latest monitoring data for surface water to the Water NSW upon their request, at any time during the life of the project.	EA and Contractor	As required	D3 (C) (xii)
4.	In the event that monitoring indicates the Environmental Goal have been exceeded in accordance with **Section 5.6.3.5** contingency plan, investigation shall be undertaken in accordance with **Section 5.6.3.6**. As noted above, the independent investigation is currently underway. Once the independent investigation is complete, this OEMP may be updated to reflect relevant outcomes, if required.	EA	In the event elevated concentrations in water quality are observed	D3 (C) (xi)
5.	The contingency plan shall be carried out in accordance with **Section 5.6.3.5** of the OEMP.	EA / Contractor	Immediately following a pollution incident	D3 (C) (xi)
6.	In the unlikely event, that the Environmental Representative directs the Contractor Administer to cease operations, due to a potentially adverse environmental threat to Wangcol Creek associated with LNAR, EA shall notify and seek advice (if necessary) from Water NSW or DPE Water. Incident notification and/or non compliance notification (where relevant) shall be undertaken in accordance with Conditions A8 and A9 and the PIRMP where necessary.	EA	Following a pollution incident	D3(c) (xi) E19 and E20, A8, A9

5.7 Air Quality Management Plan

5.7.1 Introduction

This Air Quality Management and Monitoring Plan (**AQMMP**) is a sub-plan of the OEMP. It seeks to address the specific requirements of the CoA attached to PA 09_0186 relating to air quality. These conditions include CoA D3 (d) and E18. It also provides a framework for EA, its contractors and vendors to manage air quality and to minimise the potential for adverse impacts to sensitive receivers during the operation of the Project.

This AQMMPP identifies in **Table 5-23** the performance targets (otherwise known as air quality objectives), performance criteria, reference documents, key issues, constraints and strategies and the mitigation measures that comply with the conditions of approval D3 (d) and E18. In essence, the AQMMP manages potential dust and vehicle/machinery emissions from the LNAR to keep them within licence limits. There are no other emissions from the operation of the LNAR that have the potential for material impact on air quality.

5.7.2 Sensitive Receivers

The term 'sensitive receiver' used in this plan refers to nearby receivers, such as residents and businesses that may potentially be affected by dust emissions, both now and in the future from the operation of LNAR. The nearest sensitive receivers identified for the LNAR, known as Sensitive Receiver No.1 and No.2, are located at Blackmans Flat, approximately 1.1 km to the east of the site (Refer to **Figure 5**). The air quality monitoring program includes these locations.

5.7.3 Operation activities and predicted impacts

5.7.3.1 Dust sources

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

- Loading ash to trucks;
- Placement of ash into the repository;
- Vehicles hauling ash from the conveyor-fed silo in the existing ash repository or from the power station directly. This involves travelling on unpaved areas;
- Shaping the emplaced ash using dozers;
- Wind erosion from the ash repository; and
- Placement of topsoil for rehabilitation and windblown dust prior to revegetation. More detail on general operation activities is provided in **Section 2** of the OEMP.

5.7.3.2 Predicted impacts

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

Dust deposition monitoring carried out since 2014 has confirmed that dust emissions from activities at the LNAR are low. The annual average insoluble solids from the five dust gauges installed to monitor dust emissions from LNAR have ranged between 0.7 – 2.7 mg/m^2/month (which includes results impacted by the 2019-2020 drought and bushfires). Furthermore, PM_{10} monitoring has generally remained below $50ug/m^3$ since February 2020.

5.7.4 Management and Mitigation Methods

5.7.4.1 Ash management overview and dust suppression techniques

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

The above ash placement techniques have been successfully applied on the existing ash repository for the last thirty years. These same techniques are applied at the LNAR.

5.7.4.2 Water application on site

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

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

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

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

Water is applied across the entire exposed area (uncapped areas) of the ash repository and the water will be sourced primarily from the containment ponds available at LNAR. If water in these containment ponds is not sufficient, EA is able to use the comprehensive series of ponds within MPPSs water reuse and recycling system, or alternatively blowdown water from the Cooling Towers.

5.7.4.3 Alternative methods of ash placement to reduce dust emissions

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

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

- the size of the working area can be reviewed and reduced. By reducing the working face, water can be applied more regularly thereby reducing airborne dust (as set out in the ROP).

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

5.7.5 Performance, operations and management mitigation measures

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

Table 5-23 Air Quality Objectives, References and Performance Criteria

Performance Targets
▪ The local air quality in the vicinity of Sensitive Receivers identified will not be impacted by the LNAR operations. ▪ Zero incidence of dust related complaints for the LNAR.
Performance Indicators
▪ Evidence of continuous improvement of dust suppression systems (including monitoring) in accordance with operational demands and meteorological conditions. ▪ Complaints register demonstrating zero incidences of dust related complaints. ▪ That operational results are below the criteria of: ▪ Increase in 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
References (in addition to legislation as set out in Section 4.1)
▪ Mount Piper Power Station Ash Placement Environmental Assessment, Chapter 5 – Air Quality (SKM, August 2010). ▪ Mount Piper Station Ash Placement Project Environmental Assessment, Appendix B – Air Quality Report (SKM, August 2010). ▪ Mount Piper Power Station Ash Placement Submissions Report (SKM, March 2011). ▪ Mount Piper Power Station Ash Placement Project Consistency Report (SKM, June 2012).
Key issues/constraints/standards
Key Issues ▪ prevention of conditions that may lead to visible dust emissions or exceedance of EA Licence limits. ▪ In the event of fugitive emissions, an effective system for dust suppression will be implemented by the contractor to ensure any adverse impacts on the surrounding environment is minimal. ▪ A specialist consultant on behalf of EA will take samples from the existing permanent air quality sites indicated in this plan. Constraints ▪ Weather events such as dust storms events and bushfire may evidently effect air quality results, beyond criteria.

Table 5-24 Air Quality Mitigation measures

No.	Mitigation measures	Responsibility	Timing	Source/ Reference
General work practices				
1.	Water shall be primarily sourced from LNAR sediment or catchment ponds. Secondary water supplies maybe sourced from MPPSs existing water ponds located throughout the station precinct.	Contractor	As required	D3 (d) (v)
2.	Adequate dust suppression shall be conducted as required, even outside operational hours.	Contractor	Ongoing	D3 (d) (iv)
3.	The contractor shall use suitable dust suppression equipment/machinery onsite. This equipment/machinery shall be regularly serviced and maintained. The Contractor shall develop an irrigation operating protocol as detailed below in **Table 5-25**.	Contractor	Ongoing	D3 (d) (iv) D3 (d) (vi) Irrigation operating protocol
4.	Haul road and auxiliary roads shall be regularly watered to ensure dust suppression is maintained.	Contractor	As required	D3 (d) (iv)
5.	In the event of meteorological conditions which increase the risk of a dust episode, additional suppression techniques will be used as per **Section 5.7.4.3** of this plan.	Contractor	As required	D3 (d) (iv)
6.	In the event of visible dust emissions that have the potential to leave the site, personnel shall notify the Contractor immediately, who will direct the water cart to spray the area and review the location and application rate of the sprinkler system.	All staff	As required	D3 (d) (iv) and (viii)
7.	In the event of dust complaint, the contractor shall provide site activity log of their daily/ weekly operations as part of EnergyAustralia NSW investigations. The log shall include, but is not limited to; sprinkler management, daily water application rates, daily climatic conditions, haulage truck movements and hours of operation.	Contractor	As required	D3 (d) (iv)
8.	In the event of elevated dust levels at the sensitive receiver locations, EA shall carry out an investigation of TSP and/or PM10 to determine whether operations at LNAR were the primary source of particulate matter. Specific criterion for PM10 and TSP has been provided in **Table 5-23** performance indicators.	EA	As required	D3 (d) (iv)
Vehicle and machinery operations				
9.	The contractor will ensure that vehicles are regularly serviced, inspected and cleaned.	Contractor	As required	

No.	Mitigation measures	Responsibility	Timing	Source/ Reference
Diesel exhaust emissions				
10.	Diesel fuelled equipment will be regularly serviced and cleaned to ensure compliance with appropriate design emission standards for in-service vehicles.	Contractor	As required	D3 (d) (iv)
11.	Diesel powered stationary plant will be serviced maintained and upgraded as required to minimize air emissions as far as possible and to ensure Licensed levels of air emissions are not exceeded.	Contractor	As required	D3 (d) (iv)
Ash placement				
12.	Ash will be placed in layers and the conditioning of fly ash with water shall be undertaken, ensuring that the moisture content sits at a target rate of 15-20% (or as otherwise determined by climatic conditions and compaction requirements).	Contractor	As required	D3 (d) (iv) D3 (d) (vi)
13.	Optimal moisture content **(OMC)** for compaction will be maintained to achieve the target compaction ratio.	Contractor	Ongoing	D3 (d) (iv)
14.	Records of ash moisture content at placement and water usage for ash conditioning will be maintained.	Contractor	Weekly	D3 (d) (iv) D3 (d) (vi)
Capping and Rehabilitation				
15.	To achieve permanent dust suppression on external batters, a permanent capping layer of no less than 0.75m shall be applied. Consequently, capping will occur progressively as each area reaches its design height in accordance with the ash placement strategy.	Contractor	As required	D3 (d) (iv) and Landscape and Rehabilitation Plan
16.	Dust suppression techniques shall be maintained after capping until vegetation has been adequately established.	Contractor	As required	D3 (d) (iv)

Table 5-25 Irrigation operating protocol

No.	Mitigation measures	Responsibility	Timing	Source/ Reference
1.	The Contractor shall develop an Irrigation Operating Protocol that includes, but is not limited to the following: Sprinklers systems: ▪ Establish an optimum irrigation rate; and ▪ Monitor sprinkler application and irrigation to access achievement of the optimum irrigation rate. Sprinkler application may be determined using the following calculations: ▪ Maintain sprinkler infrastructure for operational efficiencies ▪ Quantity of sprinklers required per hectare Area (m^2) (non-working face) divided by the individual coverage of each sprinkler (m^2). Other actions include: ▪ Designate areas for dust suppression, and assess and apply suitable dust suppression techniques that will achieve optimal results; ▪ Monitor climatic conditions daily and adjust water application rates so they exceed evaporation rates; ▪ Undertake daily risk assessment of predicted meteorological conditions in the early hours of the morning to provide a risk ranking i.e. low, medium or high. This shall be used to determine the application rates required for the day ahead; ▪ Visual inspections of the ash repository shall be undertaken daily (mid-morning) and assessed against the predicted meteorological climatic conditions. Water application rates shall be modified where necessary and records maintained; ▪ Ensure that protocols relating to the layout and spacing of the sprinklers across the site have been implemented; ▪ Establish monitoring procedures for water use; ▪ Establish operational procedures for abnormal conditions relating to water application, for example, maintaining adequate dust suppression in the event of a pipe break impacting sprinkler systems.	Contractor	Ongoing	D3 (d) (iv) D3 (d) (vi)

5.7.6 Air Quality Monitoring Program

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

Table 5-25 provides the details of the air quality monitoring program, and the standards and requirements that shall be considered during monitoring. Air quality monitoring program will be ongoing for the life of the Project, and during final rehabilitation and stabilisation of the site.

To provide for proactive management of potential air quality impacts, the ROP will assess alternative methods of ash placement to minimise the exposure of active placement areas to prevailing winds.

Sensitive receivers identified by SKM (2010) have been included in Figure 5, alongside the monitoring locations subject to this Air Quality Monitoring Program.

The existing approved air quality monitoring program is conducted in order to inform potential air quality impacts in the vicinity of sensitive receive locations.

A number of sensitive receiver locations where air quality monitoring were located have been purchased for industrial land use, in particular the Blackmans Flat community.

The air quality monitoring network has proven to be adequate since the inception of the LNAR in identifying regional air quality trends and compliance with the LNAR air quality criteria in relation to sensitive receive locations. The air quality monitoring network is considered to be adequate for the LNAR

The response plan and corrective actions to address visible emissions or exceedances, and reporting requirements required in the event of non-compliance are listed in **Table 5-26** and **Table 5-27** below, respectively.

5.7.6.1 Air Quality Criteria

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

Baseline dust deposition levels

Dust deposition data collected during monitoring at Mount Piper between January 2010 to September 2012 at dust gauges 19, 20, 21 22, 23 and 24 provides baseline dust deposition levels as required by CoA D3 (d) (i). Refer to **Figure 5** for the location of the monitoring locations.

An average of 1.5 g/m²/month for dust deposition was calculated from the data obtained from the six dust gauges around the site. This baseline level will be used for compliance assessment purposes during the operation of the LNAR. In the event of exceedances of 2 g/m²/month (or more) above the baseline average of 1.5 g/m²/month, investigation will be undertaken to determine the likely cause (see **Table 5-26**).

Table 5-26 Air quality Monitoring Program

Objectives				
▪ To undertake monitoring in accordance with the Air Quality Monitoring Program.				
Performance Criteria				
▪ To not exceed assessment criteria of total dust deposition of 2 g/m²/month (maximum increase from baseline levels of 1.5 g/m²/month) and the PM10 Criterion.				
Relevant Standards				
▪ NSW Approved Methods for the Modelling and Assessment of Air Pollution in NSW (DEC 2005). ▪ AS3580.10.1-2003 Methods for sampling and analysis of ambient air – Determination of particulate matter – deposited matter- gravimetric method.				
No.	**Monitoring measures**	**Responsibility**	**Timing**	**Source/ Reference**
Air Quality Monitoring Program				
1.	Air quality monitoring program will be ongoing for the life of the Project, and during final rehabilitation and stabilisation of the site. Air quality monitoring stations and dust gauges, shall be used to monitor dust emissions at the perimeter of the LNAR.	EA	Monthly	D3 (d) (x) and E18 **Figure 5**
2.	Dust deposition and TSP will be measured using existing dust deposition gauges situated along the Castlereagh Highway (DG22 and DG23), Boulder Road (DG20 and DG21) and at Blackmans Flat (DG19). The results from these gauges will be used during the operation phase to monitor dust emissions (TSP and dust deposition). TSP will be calculated from dust deposition bottles.	EA	Monthly	D3 (d) (x) and E18 **Figure 5**
3.	Samples will be removed from the dust deposition gauges on a monthly basis by a NATA approved laboratory and compared to baseline dust deposition monitoring records from Mount Piper, and the DECC amenity-based criteria for dust deposition of 3.5 g/m2/month (annual).	EA	Monthly	D3 (d) (x) and E18
4.	PM10 will be measured using one TEOM automated continuous particle monitor. The TEOM is located on the north western corner of LNAR outside the ash footprint area.	EA	Monthly	**Figure 5**

No.	Monitoring measures	Responsibility	Timing	Source/ Reference
5.	PM10 and PM2.5 will be measured using a beta attenuation monitoring station. The **AQMS** is located at Blackmans Flat.	EA	Monthly	**Figure 5**
6.	Seasonal weather monitoring will be also used as a means to verify any project related air quality impacts. Weather monitoring will be undertaken at the Mt Piper Meteorology Station.	Contractor/ EA	As required	D3 (d) (x) and E18
7.	Regional climatic conditions and forecasts will be accessed daily including but not limited to, temperature, humidity, wind speed and rainfall. This will determine water use for the day. Visual inspection of the site throughout the day, will determine if water application rates need adjusting to suit the climatic conditions occurring on site.	Contractor	Daily	
General monitoring practices				
8.	Visual monitoring of the site, haul roads and stockpiles for dust generation will be undertaken during operation activities to identify excessive dust generation.	Contractor All staff	Daily	D3 (d) (x) and E18
9	Site water used for irrigation, and local evaporation, will be monitored on a monthly basis. Results will be included in the Monthly Environmental Report.	Contractor	Monthly	

Table 5-27 Response Plan and Corrective Actions

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

Table 5-28 Reporting Requirements

No.	Requirements	Responsibility	Timing	Source/Reference
1.	Environmental Incident report forms will be completed and forwarded to the Contract Administrator as/when required.	EA	As required	D3 (d) (xi)
2.	Details of any air quality/dust management, monitoring and any complaints will be provided in a Monthly Environmental Report.	Contractor	Monthly	D3 (d) (xi) Monthly Environmental Compliance Reports
3.	An Annual Air Quality review will be undertaken to review the past year's air quality data from monitoring locations presented in **Figure 5** including analysis of any trends and make recommendations based on investigations. This report will be made available to NSW Public Health Unit and the EPA, with data being made publicly available on the MPPS website.	EA	As required	D3 (d) (xi), A11
4.	Compliance reports will be prepared in accordance with Compliance Reporting Requirements outlined in the Compliance Reporting Post Approval Requirements (2020)	EA	Annual	A10 and A11 D3 (d) (xi)

5.8 Landscape Revegetation and Rehabilitation

5.8.1 Introduction

This Landscape Rehabilitation and Revegetation Plan (**LRRP**) addresses PA 09_0186 CoA D3(e) and (f) relating to landscape revegetation and site rehabilitation management respectively. These have been incorporated into one plan (this LRRP) because of the overlap and potential synergies in planning and implementing a Landscape Revegetation Plan and a Site Rehabilitation Plan. The LRRP provides:

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

5.8.2 Local Environmental Values, Vistas and Land Uses

5.8.2.1 Existing Soil Resources

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

Excess material will be stockpiled and used for permanent capping of batter and laybacks and to construct water detention and sediment containment structures. These activities will include the use of organic matter, topic soil with seedbank and mine spoil. Once capped, these areas will be revegetated with various species listed in **Section 5.8.4.2**.

5.8.2.2 Vegetation and Habitat

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

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

Eight native vegetation communities have been mapped within a 10km of Lamberts North (**Table 5-29**). None of these communities are considered endangered. Community distribution is influenced by the underlying geology and soils.

Table 5-29 Vegetation communities mapped within 10km of LNAR (SKM, 2010)

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

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

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

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

5.8.2.3 Visual Amenity

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

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

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

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

The Project Environmental Assessment (SKM, 2010) reported that the height of the LNAR would be RL 980 m, and at various heights the ash placement areas would be visible from three locations in the surrounding area (known as sites 3, 5 and 6). Sites 3, 5 and 6 are shown in relation to LNAR in **Figure 2** and noted in **Table 5-30**.

Table 5-30 Sensitive receivers with views to maximum levels of LNAR North (SKM, 2010)

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

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

The monitoring program is further described in **Section 5.8.5**.

5.8.3 Rehabilitation of Lamberts North

6.6.3.1 Lamberts North Ash Repository

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

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

The modified LNAR will include a suitable capping liner to encapsulate the emplaced material. The capping liner will be a low permeability synthetic or geo-synthetic material that will be covered by a suitable level of cover material. The cover material will act to protect the capping liner material, and will also act to support revegetation of the final landform.

Successful site landscaping and rehabilitation is largely dependent upon several factors, such as soils, climate and the surrounding vegetation, which can provide a seed source for natural regeneration. LNAR rehabilitation methods will take into consideration the presence of the capping liner by selecting suitable shallow rooted species, the outcomes of previous revegetation trials will also be considered for rehabilitation planning, including but not be limited to:

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

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

5.8.4 Management and Mitigation Measures

Objectives and scope for mitigation measures, responsibilities and implementation timeframes for rehabilitation measures are defined in this section of the plan.

5.8.4.1 Progressive rehabilitation

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

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

Overall, the progressive rehabilitation will be conducted with consideration of both landscape and soil conservation aspects. Along providing for revegetation to screen the works in priority areas, the short-term goal for progressive rehabilitation of the LNAR is to mitigate erosion of the cover layer by controlling surface water run-off and establishment of suitable vegetation species.

The maintenance of the cover layer, is intended to protect for the leachate barrier system and limit the likelihood that ash related impacts may adversely affect the surrounding environment. The rehabilitation is also intended to integrate the LNAR aesthetically and ecologically within the surrounding landscape following project completion. These are the long-term goals for the LNAR rehabilitation.

5.8.4.2 Species selection and provenance

Preference will be given to pioneer or colonising species endemic to the region. Large growing or deep-rooted species will be avoided. Rehabilitation of the LNAR may consider shrubs used on other sites, if they are shallow rooted, and may include direct seeded or planted species such as:

- Australian blackthorn (*Bursaria spinosa*);
- White kunzia (*Kunzea ambigua*);
- Tea tree (*Leptospermum grandifolium*, *L. macrocarpum, L. myrtifolium, L. obovatum, L. polygalifolium*);
- Mountain mirbelia (*Mirbelia oxylobioides*);
- Box-leaf Wattle (*A. buxifolia*);
- Peach Heath (*Lissanthe strigosa*);
- Ploughshare Wattle (*A. gunni*);
- Showy Parrot-pea (*Dillwynia sericea*); and
- Silver Wattle (*Acacia dealbata*).

If they are shallow rooted, ground cover species may include:

- Blueberry flax lily (*Dianella revoluta*);
- Short hair plume grass (*Dichelachne micrantha*);
- Silvertop (*Joycea pallida*);
- Slender sword-sedge (*Lepidosperma gunnii*);
- Lomandra (*Lomandra confertifolia, L. glauca, L. filiformis, L. longifolia*);
- Bush rice grass (*Microlaena stipoides*); and
- Seed, cuttings, or slash will be collected from local sources.

5.8.4.3 Revegetation Strategy Plan

The revegetation strategy would be based upon a successional approach utilising a variety of grasses and native shrub species. The plan would provide an alternative to compost addition as a soil improver by using a staged method for increasing soil organic matter by planting annual grass species.

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

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

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

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

5.8.4.4 Rehabilitation and Revegetation Management and Mitigation

Table 5-31 provides performance objectives and performance criteria. Management and mitigation measures are summarised below in **Table 5-32**.

Table 5-31 Rehabilitation Objectives, References and Performance Criteria

Performance Target
▪ Develop and reconstruct landscape to minimise the visual impacts of ash placement area by ensuring long term stabilisation of the site and compatibility with surrounding landscapes through revegetation. ▪ Placement of sufficient capping materials (including low permeability liners) to encapsulate brine conditioned ash and establish shallow rooting vegetation above the capped areas
Performance Indicators
▪ Site inspection records to confirm ash placement and compaction targets are being achieved; ▪ Evidence of a long-term water management plan that integrates the concepts of landscape revegetation and rehabilitation; ▪ Evidence of an established revegetation and monitoring program to meet short and long-term goals; and ▪ Physical coverage of exposed ash on all external batters and boundaries capped with suitable materials; ▪ Installation of capping liner to encapsulate brine conditioned ash placement areas.
References
▪ Mount Piper–Power Station Ash Placement Environmental Assessment Report, Chapter 8 - Ecology (SKM, August 2010) ▪ Mount Piper Station Ash Placement Project Environmental Assessment, Appendix E – Ecology (SKM, August 2010). ▪ Mine rehabilitation. Leading practice sustainable development program for the mining industry (DITR 2006) ▪ Recycled organics in mine site rehabilitation (Kelly 2006) ▪ Mount Piper Power Station Ash Placement Submissions Report (SKM, March 2011) ▪ Mount Piper Power Station Ash Placement Consistency Report (SKM, June 2012) ▪ Lamberts North Ash Placement Project CEMP (CDM-Smith, December 2012)
Key issues/ constraints/standards
▪ The key issues include the visual impacts on nearby residents (Blackmans flat). ▪ The revegetation is designed to improve the visual amenity of finished surfaces, while binding the capping layer and preventing fugitive dust emissions from occurring. ▪ Effective placement will result in the development of a secure foundation that will provide long-term stability from landscaping and vegetation cover ▪ The final landform generally blends in with the surrounding landscape and is stable.

Table 5-32 Rehabilitation and revegetation measures

Aspect	Management and mitigation measures	Responsibility	Timing	Source/ reference
1.	Landscape rehabilitation and revegetation shall be progressive, and will be initiated as soon as practicable and/or as after final capping.	Contractor	After completion of each area and final capping	D3 e (ii) (iv)
2.	Areas that have been capped will be defined on a plan in preparation for revegetation.	Contractor	Prior to revegetation in each area	D3 (f) (ii) (iv)
3.	Areas of brine conditioned ash will initially be capped with LLDPE (or similar) capping to eliminate rainwater percolating through the ash repository. A capping procedure will be developed to install the liner materials as a component of the LNAR detailed design.	Contractor or Specialist engineer	Before capping	
4.	The liner will be covered with a minimum of 0.75m mine overburden or other. The soil capping shall be conditioned to facilitate revegetation. If capping material does not contain stockpiled topsoil or is inappropriate to foster revegetation, appropriate soil conditioning methods shall be implemented. These may include the addition of organic matter through compost products such as green-waste or a cover crop such as annual grass species. Excavated Natural Material **(ENM)** or Virgin ENM and / or soil amendment products as defined by the EPA waste Classification Guideline dated 2014 may be used if required.	Contractor	During capping	D3 (f) (i) (ii)
5.	Erosion and sediment control measures will generally conform with, or exceed the relevant requirements of managing urban stormwater, soils and construction (Landcom, 2004).	Contractor	During capping	D3(f)(i)(ii)
6.	Works, rehabilitation and revegetation will be concentrated on the north east face during the initial ash placement stages in order to screen operations and establish growing vegetation as quickly as possible.	Contractor	Initial placement activities	D3 (e) (i) D3 (f) (ii)
7.	Experimentation and adaptation of successful practices will be key strategies to manage the successful establishment of primary vegetation on batters and benches.	Contractor	As required	D3 (f) (ii)

Aspect	Management and mitigation measures	Responsibility	Timing	Source/ reference
8.	A revegetation strategy will be adopted to establish a method to achieve permanent groundcover that conserves the soil and is sustained with minimal intervention. This Strategy will follow the principles and recommendations provided in **Section 5.8.4.3** of this plan. Note: The revegetation strategy shall ensure that shallow rooted locally native species endemic to the Lithgow Local Government Area are used in revegetated areas (where possible and feasible depending on soil conditions). Species selection shall be carried out using a qualified expert i.e. Ecologist, botanist or agronomist.	Contractor	Within 12 first months of operation or prior to carrying out the first rehabilitation phase on LNAR, whichever comes first.	D3 (e) (iii) (iv)
9.	New batters shall be rehabilitated as soon as practically possible using capping material sourced from onsite materials and stockpiles.	Contractor	After completion of each area and final capping	D3 (e) (ii)
10.	Concave slope profiles will be developed where possible to mimic natural slopes and minimise erosion.	Contractor	As part of slope and batter construction	D3(e) (i) (ii) D3 (f) (i) (ii)
11.	The benches will be sloped inwards to minimise down slope run off and will have a rough surface to slow and spread water movement.	Contractor	As part of slope and batter construction	D3 (f) (i), ii), iii)
12.	To control water pollutants from rehabilitated area, a suitable thickness of clean soil cover will be laid to promote establishment of vegetation. Surface water from external benches and batters will be directed to clean water ponds intended to control pollutants that may be mobilised from rehabilitated areas.	Contractor	As part of slope and batter construction	D3 (f) iii)
13.	To establish geomorphologic stable drainage lines as part of the progressive rehabilitation, and at the completion of each progressive stage of the LNAR.	Contractor	As part of slope and batter construction	D3 (f) i)

5.8.5 Monitoring and Reporting

Landscape rehabilitation and revegetation will be monitored at a range of scales and with a range of techniques as described in **Table 5-33**. Reporting requirements are provided in **Table 5-34**.

Table 5-33 Rehabilitation Monitoring requirements

No.	Monitoring measures	Responsibility	Timing	Source/ Reference
1.	A monitoring program will be developed in conjunction with the revegetation procedure (refer **Section 5.8.3**). This will commence once the first revegetation area has been planted.	Contractor or Specialist consultant on behalf of EA	After vegetation has been planted.	D3 (e) iv), D3 (f) iv), Revegetation procedure

Table 5-34 Rehabilitation Reporting Requirements

No.	Reporting Requirement(s)	Responsibility	Timing	Source/ Reference
1.	Revegetation and rehabilitation activities and progress will be included quarterly in the Monthly Environment Report once revegetation has been established. It is intended that monitoring and reporting of progressive rehabilitation would continue for a period of 5 years post planting of each rehabilitation area, or until vegetation is considered to be sufficiently established in each rehabilitation area.	Contractor	Monthly	OEMP **Section 3.7.2**
2.	Tracking of rehabilitation activities	EA	Annually	A10 and A11

5.9 Waste Management Plan

5.9.1 Introduction

This Waste Management Plan seeks to address the specific requirements of PA 09_0186 CoA and EPL 13007 as they relate to waste. The relevant CoA include D2 (g), E23, E24 and E25.

5.9.2 Overview

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

The EPL for the MPPS governs that waste that can be received, stored, treated, processed, reprocessed or disposed of at the LNAR (see **Section 2.2.3**).

5.9.3 Management, mitigation and monitoring measures

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

Table 5-35 Objectives, References, and Performance Criteria

Objectives
▪ To ensure waste at the LNAR 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. ▪ Ensure that all liquid waste and / or non-liquid waste generated and / or stored on site is assessed and classified in accordance with the *Waste Classification Guidelines* (DECC, 2008), or any future guideline that may supersede that document.
Performance Criteria
▪ No waste generated outside the premises (MPPS) is received at the premises for storage, treatment, processing, reprocessing or disposal, except as permitted by the EPL. ▪ Evidence of a recycling system in use and site-generated waste being disposed of to an appropriate facility. ▪ Waste management details are recorded in the monthly environmental report.
References (in addition to legislation as set out in Section 4.1)
▪ Mount Piper Station Ash Placement Project Environmental Assessment Report Chapter 11- Assessment of other issues, August 2010 (SKM, 2010) ▪ Mount Piper Station Ash Placement Submissions Report (SKM, March 2011) ▪ Mount Piper Station Ash Placement Consistency Report (SKM, June 2012)
Key issue/ constraints
▪ Staff involved in LNAR operations shall be made aware of the waste management procedures outlined in the sub plan. Waste related documents and records are to reflect adherence to these protocols, thereby providing the foundations for the transparent approach to waste management. ▪ The EPL 13007 for Mount Piper Power Station is reviewed every 5 years or as required and updated accordingly. Mitigation measures provided in the following tables should be implemented in accordance with the most up to date EPL for that year. ▪ In addition, EA may change, update or modify their existing Waste Management programs to suit current trends; in this case the contractor shall be notified of these changes if their existing practices are to be affected.

Table 5-36 Mitigation and Management Measures

No.	Environmental measure	Responsibility	Timing	Source/Referenc
1.	Unless authorised by EPL 13007, EA and the Contractor shall not cause, permit or allow any waste generated outside the ash repository to be received at the ash repository for storage, treatment, processing, reprocessing or disposal. Any waste generated at the ash repository shall not be disposed of at the ash repository, unless expressly permitted by the EPL 13007.	EA and its contractors	Ongoing	EPL - L5.1 E24
2.	EA and the Contractor shall ensure that only wastes which are authorised under EPL 13007 are disposed of in at the ash repository (See **Section 2.2.3**). Virgin Excavated Natural Material (VENM) and Excavated Natural Material (ENM) shall be generated from within the Bathurst and Lithgow local government areas only or from other locations in New South Wales with approval from the consent authority.	EA and its contractors	As required	E23
3.	Materials such as scrap metal, paper, cardboard generated on site, shall be processed within EA existing waste regime which includes recycling.	Contractor/ EA	As required	D2 (g)
4.	All cleared vegetation shall be mulched, chipped or re-used on-site for sediment filter fences, site rehabilitation or other uses, where appropriate.	Contractor/ EA	As required	D2 (g)
5.	All liquid waste and / or non-liquid waste generated and / or stored on the site will be assessed and classified in accordance with the *Waste Classification Guidelines (DECC, 2008)*, or any future guideline that may supersede that document.	Contractor/ EA	Ongoing	E25
6.	All waste materials removed from the site to only be directed to a waste management facility lawfully permitted to accept the materials.	Contractor/ EA	Ongoing	E23

Table 5-37 Reporting Measures

No.	Monitoring measures	Responsibility	Timing	Source/Referenc
1.	Compliance reports will be prepared to track Waste Management performance in accordance with conditions E23, E24 and E25.	EA	Annually	A10 and A11

5.10 Weed Management Plan

5.10.1 Introduction

This Weed Management Plan seeks to address the mitigation and management measures outlined in the Mt Piper Ash Placement Project – Lamberts North Ash Repository Modification 1 Report. It provides a framework for EA, its contractors and vendors to manage and to minimise the potential for adverse impacts to biodiversity during the operation of the LNAR through weed management.

The LNAR has been designed to ensure minimal impact to biodiversity values, with all operational activities planned to occur within previously disturbed areas; however, the potential for some indirect biodiversity impacts exists due to transportation of weeds. This plan is intended to mitigate the potential indirect impacts of the LNAR on areas of adjacent native vegetation.

5.10.2 Management, mitigation and monitoring measures

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

Table 5-38 Objectives, References and Performance Criteria

Objectives
▪ To minimise and manage biodiversity impacts at the LNAR in accordance with relevant State legislation.
Performance Criteria
▪ Demonstrate minimal impact to biodiversity values of the local area, by operating only in approved project area and documenting adherence to weed management protocols.
References (in addition to legislation as set out in Section 4.1)
▪ Mount Piper Station Ash Placement Project Environmental Assessment Report Chapter 11- Assessment of other issues, August 2010 (SKM, 2010) ▪ Mount Piper Station Ash Placement Submissions Report (SKM, March 2011) ▪ Mount Piper Station Ash Placement Consistency Report (SKM, June 2012) ▪ Mt Piper Ash Placement Project – Lamberts North Ash Repository Modification 1 Report (ERM, 2021a)
Key issue/ constraints ▪ The introduction of new weeds into areas of adjacent habitats is a potential risk related to the transportation and movement of personnel, materials, machinery and equipment. This is particularly relevant to machinery, vehicles, materials and equipment which are imported to the LNAR footprint, as these can be a vector for weed seeds, plants or soil that contain remnants of weeds not currently present in the nearby native vegetation, posing a threat to the quality of the vegetation community and the habitat it provides.

Table 5-39 Mitigation and Management Measures

No.	Weed Management Protocols	Responsibility	Timing	Source/Referenc
1.	All vehicles, equipment and machinery associated with LNAR shall be thoroughly cleaned, washed down and free of visible plant and soil debris prior to mobilisation to the development footprint.	Contractor/ EA	Ongoing	Mt Piper Ash Placement Project – Lamberts North Ash Repository Modification 1 Report
2.	All construction materials are to be inspected for weeds, seeds and soil prior to transport to site. All materials must be stored in dedicated laydowns that are cleared of vegetation and declared weed free prior to stockpiling of materials.			
3.	Monitoring of weed infestations during visual inspections			
4.	Transport to LNAR footprint is to be via approved transport routes.			

Table 5-40 Reporting Measures

No.	Monitoring measures	Responsibility	Timing	Source/Referenc
1.	Weed management activities based on visual inspections to be included in the routine environmental inspections and environmental audits.	Contractor and EA	Annually	A10 and A11

5.11 Leachate Management Plan

5.11.1 Introduction

This Leachate Management Plan seeks to address the mitigation and management measures outlined in the Mt Piper Ash Placement Project – Lamberts North Ash Repository Modification 1 Report. It provides a framework and protocols for EA, its contractors and vendors to manage leachate and to minimise the potential for adverse impacts to the environment during the operation of the Project.

5.11.2 Leachate Barrier System

The leachate barrier system (using low permeability liners) will be designed to capture and subsequently treat leachate moving through the ash placed above the liner. The installation of a liner, associated water management systems and capping liner seeks to limit the risk of vertical and lateral movement of BCA leachate migrating into the surrounding environment, providing for improved environmental outcomes.

The leachate barrier system includes three primary components as set out in **Sections 5.11.2.1 – 5.11.2.3** (ERM, 2021a). **Figure 8** to **Figure 8f** present an indicative overview of the leachate management system and through the currently proposed stages of the LNAR operation as presented in **Figure 6**.

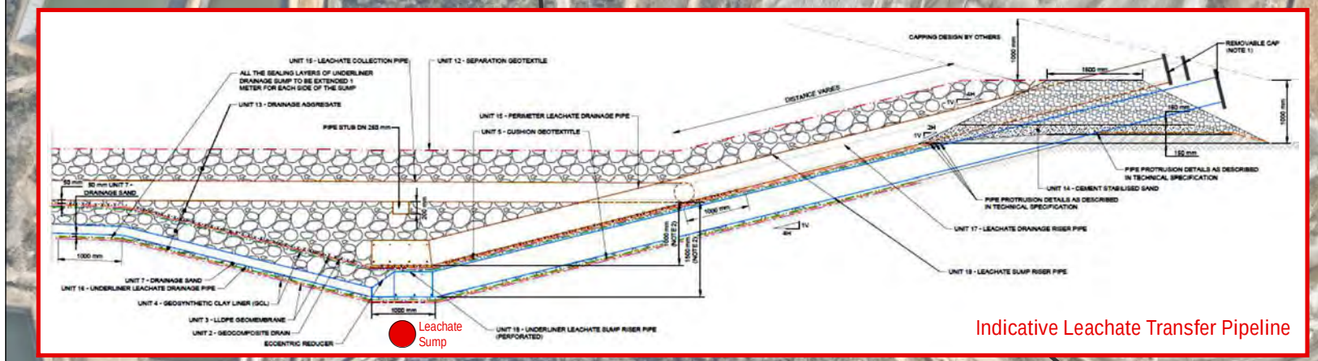
5.11.2.1 Liner Installation

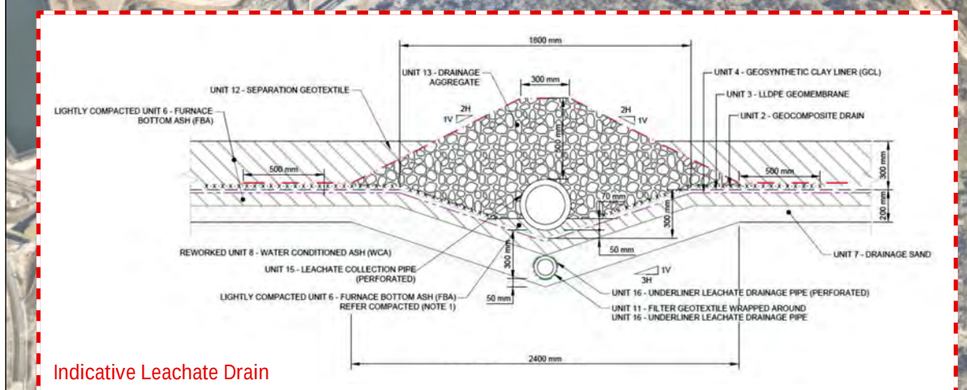
Staged installation of a single HDPE liner LLDPE liner, geocomposite or equivalent (liner) to encapsulate the BCA, Solid Mixed Salts and other authorised wastes (as per EPL 13007). This will include:

- placement of a geotechnical base layer using WCA (and/or other materials as per the detailed design technical specifications) with subsequent drainage/grading preparation (as required) and installation of the liner;
- staged installation of the liner (leachate barrier system), including sidewall liner and capping liner, to suitable design specifications based on NSW Environment Protection Authority Solid Waste Landfill Guidelines (2016); and
- leachate collection system, including placement of drainage aggregate, drainage pipework (as required) followed by geotextile or other equivalent material(s) for leachate management, and leachate sump and riser and connecting pipework.

5.11.2.2 Capping

- The capping liner will comprise of a LLDPE liner underlain by a geocomposite liner **(GCL)** or similar arrangement. The LLDPE (or equivalent) will be welded to the sidewall geo-membrane liner to produce a seal around the lined ash placement area. The capping liner will be overlain with a suitable layer of general fill material, erosion protection (where deemed to be necessary) and a suitable thickness of growth medium for selected vegetation to establish during rehabilitation.





Legend

- Modified LNAR (Lamberts North Ash Repository) Approved Project Footprint
- Approved LSAR (Lamberts South Ash Repository)
- Mt Piper Ash Repository
- EPL 13007 Licenced Premises Boundary
- Creek / River
- Indicative Leachate Sump
- Indicative Clean Water Flow
- Indicative Leachate Transfer Pipeline
- Indicative Leachate Drain
- Indicative Subgrade and Liner Gradient

Indicative Ash Placement Stages:

- Stage 1a & Stage 1b
- 60 ML Multi-purpose Storage (3 x20 ML - Doubled Lined)

Source:
- Spatial Data : DFSI, DCDB/DTDB
- Indicative Stages : Concept Design for Lamberts North Ash Repository - Concept Design Report, March 2021, 12541487-REP-1, pg 91, GHD
- Imagery: Nearmap January 2021
- Insets : IFC Detailed Design Drawings, September 2021, pg 7, 21 and 22, Golder

Indicative Leachate Management Arrangement (Stage 1a/1b)

F 8a

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Drawn By:	GC	Reviewed By: GP	Client: EnergyAustralia NSW Pty Ltd

Coordinate System: GDA 1994 MGA Zone 56

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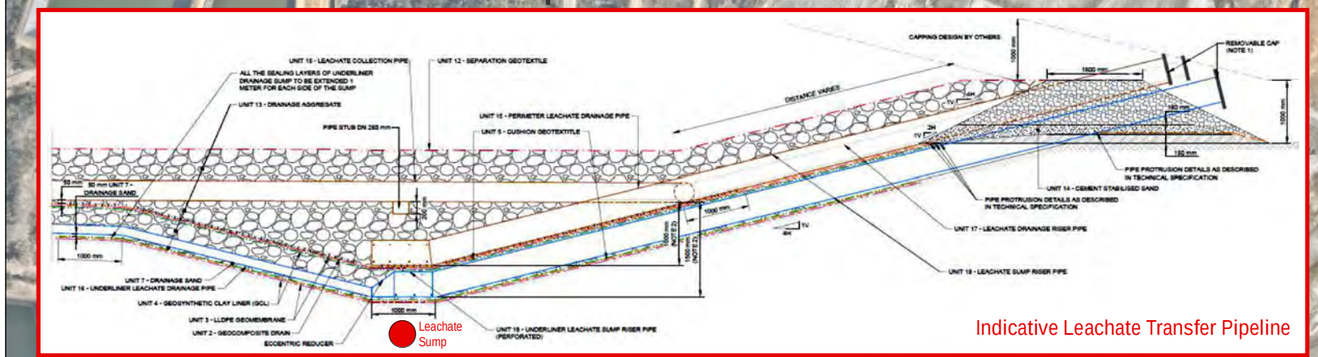

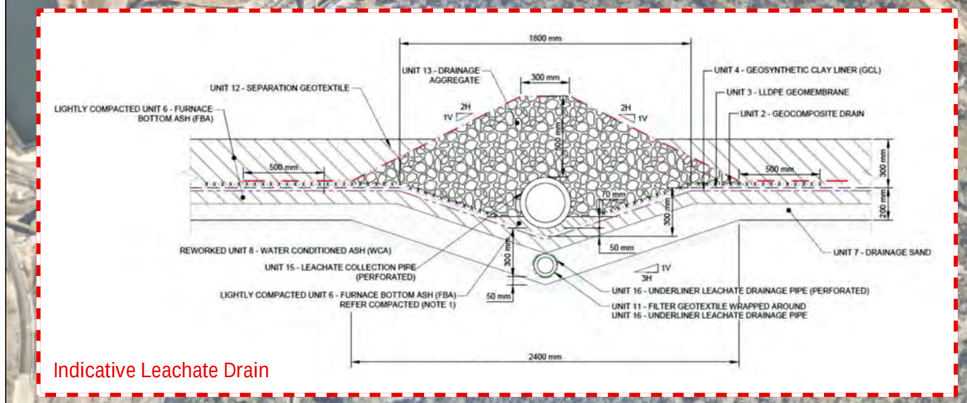

Legend

- Modified LNAR (Lamberts North Ash Repository) Approved Project Footprint
- Approved LSAR (Lamberts South Ash Repository)
- Mt Piper Ash Repository
- EPL 13007 Licenced Premises Boundary
- Creek / River
- Indicative Leachate Sump
- Indicative Clean Water Flow
- Indicative Leachate Transfer Pipeline
- Indicative Leachate Drain
- Indicative Subgrade and Liner Gradient

Indicative Ash Placement Stages:

- Stage 2a
- 60 ML Multi-purpose Storage (3 x20 ML - Doubled Lined)

Source:
- Spatial Data : DFSI, DCDB/DTDB
- Indicative Stages : Concept Design for Lamberts North Ash Repository - Concept Design Report, March 2021, 12541487-REP-1, pg 91, GHD
- Imagery: Nearmap January 2021
- Insets : IFC Detailed Design Drawings, September 2021, pg 7, 21 and 22, Golder

Indicative Leachate Management Arrangement (Stage 2a)

F 8b

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Drawn By:	GC	Reviewed By: GP	Client: EnergyAustralia NSW Pty Ltd

Coordinate System: GDA 1994 MGA Zone 56

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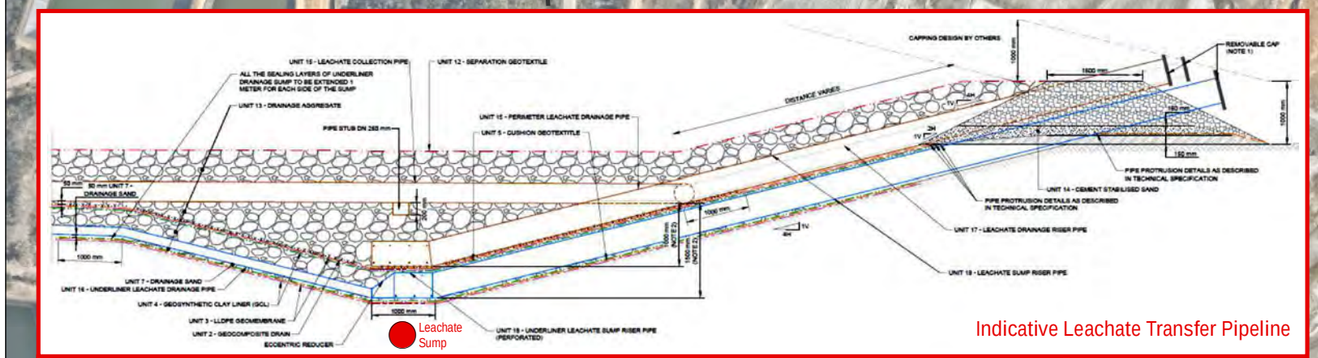

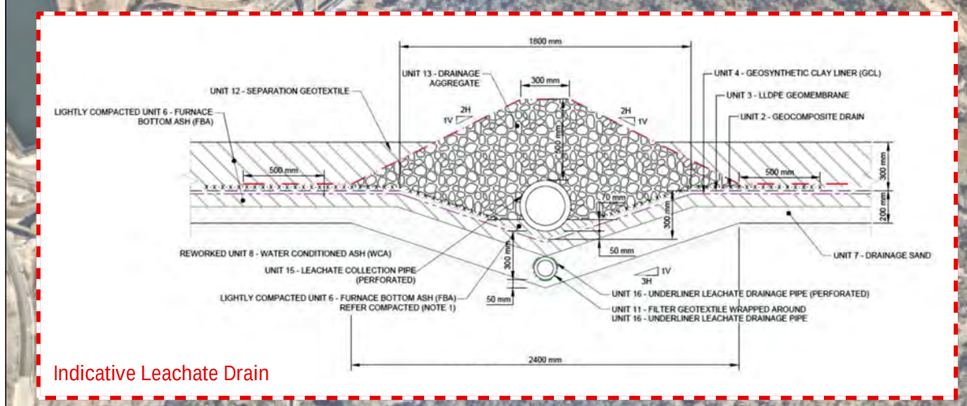

Legend

- Modified LNAR (Lamberts North Ash Repository) Approved Project Footprint
- Approved LSAR (Lamberts South Ash Repository)
- Mt Piper Ash Repository
- EPL 13007 Licenced Premises Boundary
- Creek / River
- Indicative Leachate Sump
- Indicative Clean Water Flow
- Indicative Leachate Transfer Pipeline
- Indicative Leachate Drain
- Indicative Subgrade and Liner Gradient

Indicative Ash Placement Stages:

- Stage 2b
- 60 ML Multi-purpose Storage (3 x20 ML - Doubled Lined)

Source:
- Spatial Data : DFSI, DCDB/DTDB
- Indicative Stages ; Concept Design for Lamberts North Ash Repository - Concept Design Report, March 2021, 12541487-REP-1, pg 91, GHD
- Imagery: Nearmap January 2021
- Insets : IFC Detailed Design Drawings, September 2021, pg 7, 21 and 22, Golder

Indicative Leachate Management Arrangement (Stage 2b)

F 8c

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Coordinate System: GDA 1994 MGA Zone 56

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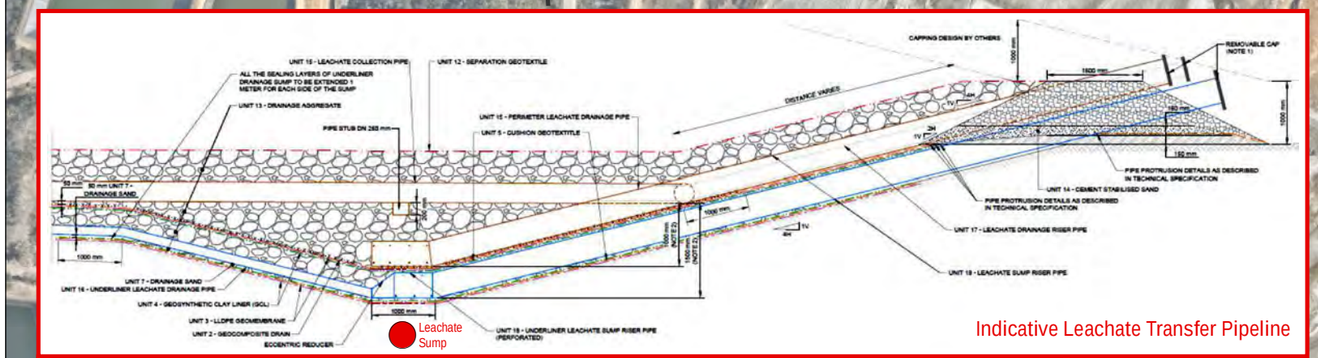

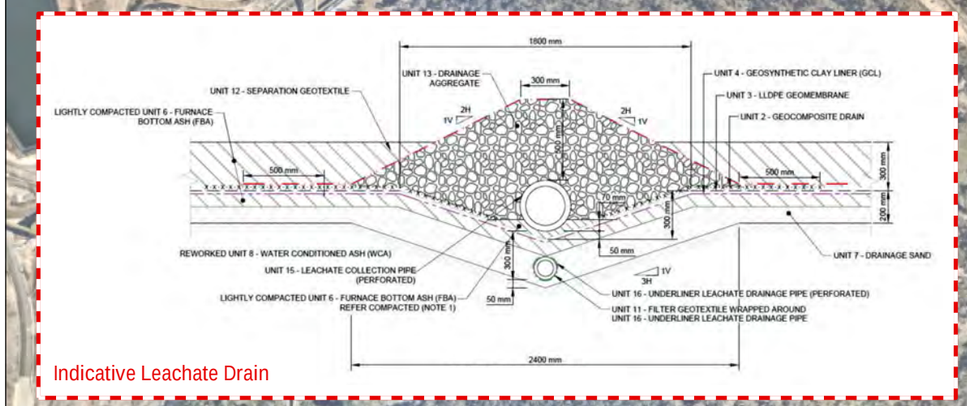

Legend

- Modified LNAR (Lamberts North Ash Repository) Approved Project Footprint
- Approved LSAR (Lamberts South Ash Repository)
- Mt Piper Ash Repository
- EPL 13007 Licenced Premises Boundary
- Creek / River
- Indicative Leachate Sump
- Indicative Clean Water Flow
- Indicative Leachate Transfer Pipeline
- Indicative Leachate Drain
- Indicative Subgrade and Liner Gradient

Indicative Ash Placement Stages:

- Stage 2c
- 60 ML Multi-purpose Storage (3 x20 ML - Doubled Lined)

Source:
- Spatial Data : DFSI, DCDB/DTDB
- Indicative Stages ; Concept Design for Lamberts North Ash Repository - Concept Design Report, March 2021, 12541487-REP-1, pg 91, GHD
- Imagery: Nearmap January 2021
- Insets : IFC Detailed Design Drawings, September 2021, pg 7, 21 and 22, Golder

Indicative Leachate Management Arrangement (Stage 2c)

F 8d

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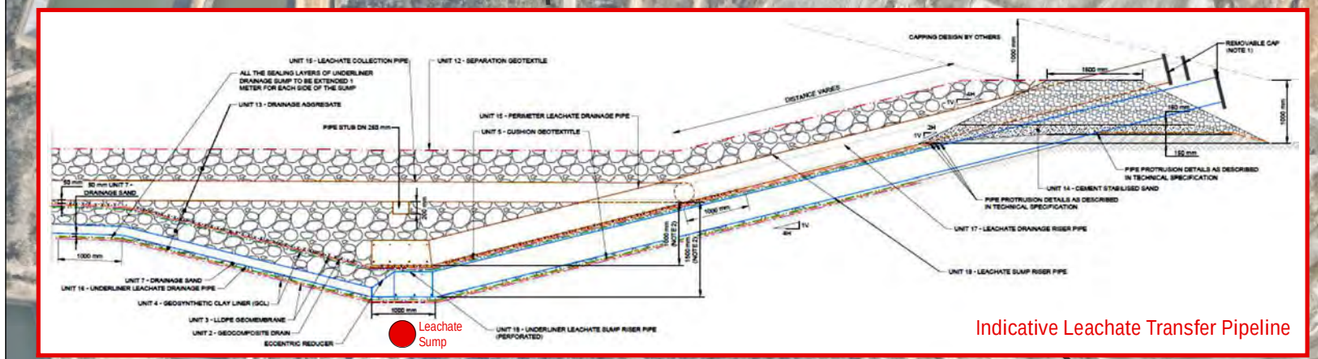

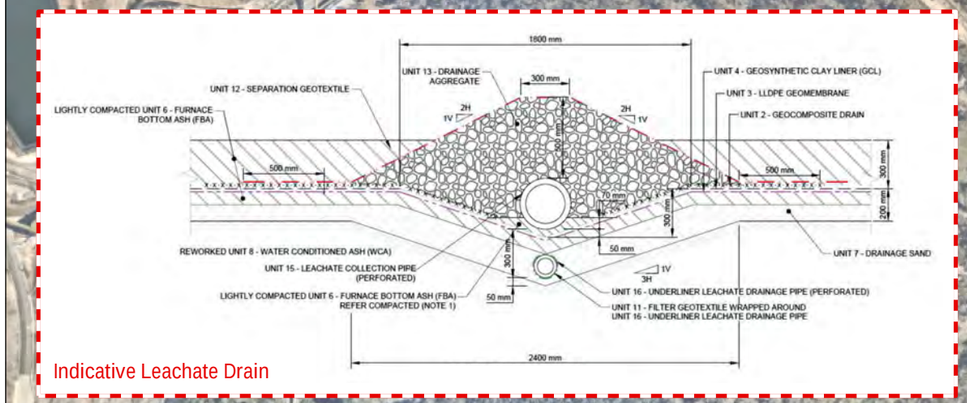

Legend

- Modified LNAR (Lamberts North Ash Repository) Approved Project Footprint
- Approved LSAR (Lamberts South Ash Repository)
- Mt Piper Ash Repository
- EPL 13007 Licenced Premises Boundary
- Creek / River
- Indicative Leachate Sump
- Indicative Clean Water Flow
- Indicative Leachate Transfer Pipeline
- Indicative Leachate Drain
- Indicative Subgrade and Liner Gradient

Indicative Ash Placement Stages:

- Stage 3a
- 60 ML Multi-purpose Storage (3 x20 ML - Doubled Lined)

Source:
- Spatial Data : DFSI, DCDB/DTDB
- Indicative Stages : Concept Design for Lamberts North Ash Repository - Concept Design Report, March 2021, 12541487-REP-1, pg 91, GHD
- Imagery: Nearmap January 2021
- Insets : IFC Detailed Design Drawings, September 2021, pg 7, 21 and 22, Golder

Indicative Leachate Management Arrangement (Stage 3a)

F 8e

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Coordinate System: GDA 1994 MGA Zone 56

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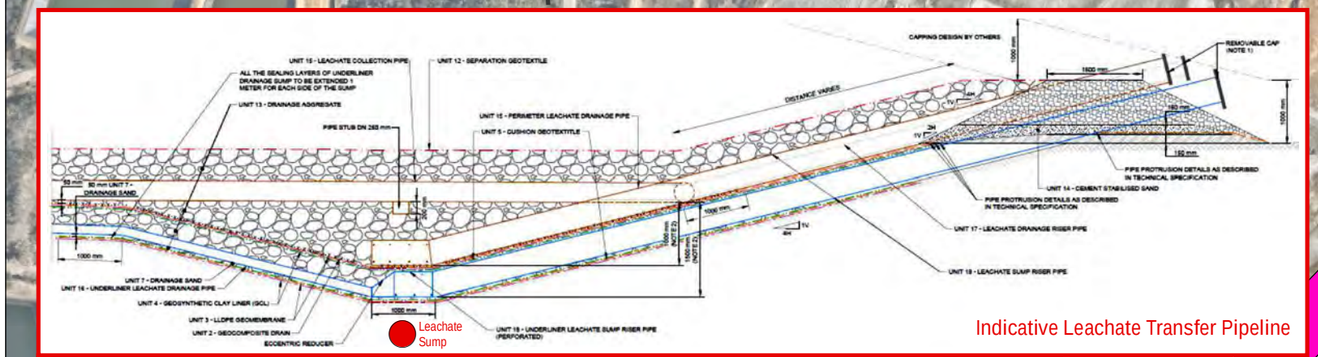

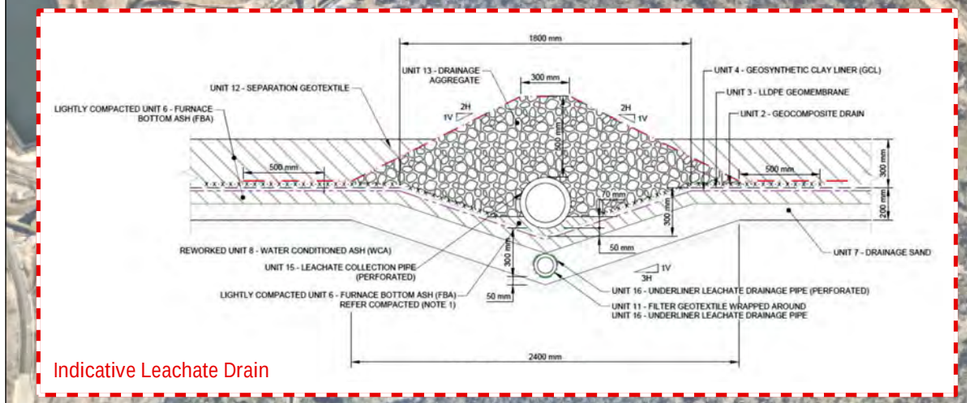

Legend

- Modified LNAR (Lamberts North Ash Repository) Approved Project Footprint
- Approved LSAR (Lamberts South Ash Repository)
- Mt Piper Ash Repository
- EPL 13007 Licenced Premises Boundary
- Creek / River
- Indicative Leachate Sump
- Indicative Clean Water Flow
- Indicative Leachate Transfer Pipeline
- Indicative Leachate Drain
- Indicative Subgrade and Liner Gradient

Indicative Ash Placement Stages:

- Stage 3b
- Multi-purpose Storage (Double Lined)

Source:
- Spatial Data : DFSI, DCDB/DTDB
- Indicative Stages : Concept Design for Lamberts North Ash Repository - Concept Design Report, March 2021, 12541487-REP-1, pg 91, GHD
- Imagery: Nearmap January 2021
- Insets : IFC Detailed Design Drawings, September 2021, pg 7, 21 and 22, Golder

Indicative Leachate Management Arrangement (Stage 3b)

F 8f

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Coordinate System: GDA 1994 MGA Zone 56

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5.11.2.3 Leachate Storage Ponds and Leachate Management

Staged installation of double HDPE lined multipurpose storage ponds to manage leachate from BCA placement as well as water intercepted from other areas of the LNAR. These new ponds will be adequately sized and constructed so as to provide suitable storage volume for leachate derived from the BCA and Solid Mixed Salts lined areas.

5.11.3 Leachate Management

The leachate management system (the system) will capture, transfer and store leachate generated from the lined BCA and Solid Mixed Salts placement areas. The placement areas will be underlain by a suitably lined barrier designed to prevent leakage of leachate from the LNAR (as modified) into underlying fill or soil. The system includes internal leachate drainage lines which follow the general gradient of the prepared subgrade. This gradient will be designed to direct leachate to leachate collection sumps, where the leachate is extracted from risers and in to the transfer pipelines for collection in the leachate storage ponds.

The leachate extraction and level control system will be designed to operate effectively until the capping layer is installed and the lined placement areas are considered stable.

The leachate management system will include installation of leachate transfer pipelines to holding ponds. The existing double HDPE lined multipurpose storage Pond BWA, Pond BWB and Pond BWC will be used to manage leachate generated (currently up to 60 ML of storage) as required. Other ponds be constructed as required by the detailed design specifications.

The leachate storages have the ability to pump water from in between the two liners, along with a sump for leak detection using a dip meter, and the ability to pump out water leaks. The leak detection sump will be checked on a monthly basis by the Contractor.

The volume of stored leachate will be managed via recycling for dust suppression within the lined BCA placement areas of the LNAR, use of vaporisers, or leachate may be transferred to the MPPS for treatment for use as an alternate source of water for inclusion in the MPPS water management system for electricity generation as needed. **Section 5.6.3.4** presents a leachate balance with regard to the ability of the LNAR to reuse collected leachate.

5.11.4 Leachate Monitoring Plan

Table 5-41 Leachate Monitoring

Description of location	Monitoring parameters	Frequency	Target
Leachate storage	Storage volume / capacity, available freeboard, leachate quality as measured from leachate storages	Monthly for leachate quality monitoring for the first 24 months, then quarterly.	Suitable freeboard / pumping capacity available with account for seasonal weather and forecasting. To be defined by the Contractor in the ROP.
Leachate storage	Monitoring for leachate within the space between storage liners and within underlying sumps	Monthly as part of routine inspections	No leaks.
Lined ash placement areas	Leachate level monitoring as measured from leachate collection sumps and leak detection system	Monthly as part of routine inspections	Level to be maintained no more than 300 mm* above the upper surface of the base liner. No leaks.
Leachate transfer pipelines	Monitoring volume and operational integrity	Weekly as part of routine inspections	Visual inspection and documentation to assess integrity of the transfer system. Record of volumes via flow totaliser meter.
Groundwater	In accordance with the GMMP		
Note: *or as required by the technical specifications associated with the detailed design			

5.11.5 Contingency Measures

The contingency planning outlined earlier in the SSSWMP and GMMP can be used in addition to the mitigation measures outlined in the leachate management plan to identify what to do in the event that operational activities at the LNAR are found to have an adverse environmental impact on the quality of surface water or groundwater in relation to leachate management.

Contingency mitigation measures to maintain surface water and groundwater water quality that may be considered if necessary include:

- The ability to change ash placement area or leachate storage infrastructure as needed;
- The installation of an alarm or data flagging system that is activated when the leachate level within the lined placement areas reaches a defined level;
- The ability to install additional monitoring infrastructure as part of contingency investigations;

- The multipurpose double lined storage infrastructure at the MPPS may provide ancillary storage in the event that leachate generation (or surface water capture) at LNAR exceeds the storage capacity of lined storages, or the MPSS is unable to recycle the leachate for a period. Multipurpose double lined storage infrastructure at the MPSS includes (but is not limited to), Settling Pond D (60 ML), Brine Waste Pond A (20 ML), Brine Waste Pond B (20 ML) and LN Pond 2 (13.8 ML). The use of vaporisers on the BCA placement areas could also be used as a contingency.
- Should timely recycling or treatment of leachate not be available at LNAR or the MPSS then excess leachate would require treatment and disposal off site to a facility, which can lawfully accept it, with appropriate documentation and approval; and
- Should monitoring identify the potential for a leak in the leachate barrier system, leachate storage ponds or pipelines, all relevant groundwater bores and surface water locations may be re-sampled to re-confirm the changing conditions and to evaluate the cause:

  - If changes are considered to be associated with leachate storage ponds or pipelines, the pond liners or pipeline will be checked for leaks. Any leaks that are detected will be repaired. During the repair period, the leachate may be transferred to another double lined pond at the MPPS while the defective liner is repaired. Construction of an additional temporary storage feature could also be considered if the adjacent ponds were not suitable for brine storage; and

  - If changes are considered to be associated with the BCA liner barrier system, an investigation will be carried out to assess short-term and, if required, long-term mitigation measures and the relevant regulatory stakeholders will be notified and consulted regarding assessment requirements and mitigation options.

5.11.6 Mitigation Measures

Mitigation measures associated with leachate management for implementation during operation are presented below in **Table 5-42**. The following measures have been designed to ensure that potential impacts to the environment are minimised.

Table 5-42 Leachate Management Mitigation Measures

No.	Mitigation measures	Responsibility	Timing	Source/Reference
General Measures				
1.	Visual inspections of the leachate management infrastructure (pumps, pipe work, ponds) will be conducted to ensure infrastructure is in working order (e.g. no leaks). Maintenance of leachate management infrastructure will be conducted as required.	EA / Contractor	Weekly	Mt Piper Ash Placement Project – Lamberts North Ash Repository Modification 1 Report
2.	Leachate management system and leachate barrier system to be designed for each stage of the LNAR to be generally consistent with the Environmental Guidelines, Solid Waste Landfill (EPA, 2016).	Contractor or specialist engineer	Prior to placing brine conditioned ash for the respective LNAR stage	D5, D3(c)(iv), D3(b)(iii)
3.	Installation of the Leachate management system and leachate barrier system shall be supported by quality assurance and quality control protocols and record keeping.	Contractor or specialist engineer	Prior to placing brine conditioned ash for the respective LNAR stage	D5, D3(c)(iv), D3(b)(iii)
4.	Leachate collection system for each stage shall be appropriately sized based on site water balance modeling	Contractor or specialist engineer (as per detailed design, as required)	Prior to placing brine conditioned ash for the respective LNAR stage	D5
5.	Maintenance of Project infrastructure will be conducted as required.	EA / Contractor	Maintenance within 24 hours of identification of issue (if feasible, or as soon as practicably possible).	Mt Piper Ash Placement Project – Lamberts North Ash Repository Modification 1 Report

No.	Mitigation measures	Responsibility	Timing	Source/Reference
Leachate Management Control				
6.	Limit the area of exposed ash above lined areas.	Contractor	During operations	Mt Piper Ash Placement Project – Lamberts North Ash Repository Modification 1 Report
7.	Control rainfall runoff away from lined ash placement areas.	Contractor	During operations	Mt Piper Ash Placement Project – Lamberts North Ash Repository Modification 1 Report
8.	Ensure adequate compaction of placed materials to limit the rate of infiltration.	Contractor	During operations	Mt Piper Ash Placement Project – Lamberts North Ash Repository Modification 1 Report
9.	Undertake progressive capping of BCA areas as soon as practicable	Contractor (as per detailed design, as required)	During operations	Mt Piper Ash Placement Project – Lamberts North Ash Repository Modification 1 Report
10.	Maintain leachate levels in lined areas less than 300 mm above the liner surface (or as required by technical specifications) and maintain leachate levels in the lined storages to provide for sufficient volume of leachate required to be extracted from the base of lined areas.	Contractor	During operations	Mt Piper Ash Placement Project – Lamberts North Ash Repository Modification 1 Report

No.	Mitigation measures	Responsibility	Timing	Source/Reference
Surface Water Run-off Control				
11.	Implement staged use of temporary and permanent cover as needed based on LNAR operations.	Contractor	During operations	Mt Piper Ash Placement Project – Lamberts North Ash Repository Modification 1 Report
12.	Divert surface water run-off from upslope and upper catchment areas	Contractor	During operations	Mt Piper Ash Placement Project – Lamberts North Ash Repository Modification 1 Report
13.	Direct internal run-off to internal holding basins	Contractor	During operations	Mt Piper Ash Placement Project – Lamberts North Ash Repository Modification 1 Report
14.	Divert external run-off around external batters to storm water holding ponds	Contractor	During operations	Mt Piper Ash Placement Project – Lamberts North Ash Repository Modification 1 Report

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Appendices

Appendix A

Water Quality Monitoring Parameters

Groundwater analytical schedule

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

Table A-1 Groundwater Field Parameters and Analytical Schedule

Description	Parameters
Groundwater Quality monitoring	Metals (dissolved): As, Ba, B, Cd, Ca, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, K, Se, Ag, Na, Zn, Anions: fluoride (F), Cl, SO4, Physical: total alkalinity, phenolphthalein alkalinity, electrical conductivity, pH, TDS , depth
Groundwater connectivity	Measure: ▪ total bore depth ▪ recharge during sampling Depth to water will be assessed with correlation to existing survey data in m AHD.

Surface water analytical schedule

Table A-2 Surface water quality monitoring parameters

Category	Analyte
Field /physical parameters	▪ Total Alkalinity ▪ Phenolphthalein Alkalinity ▪ pH ▪ Total Dissolved Solids (TDS) ▪ Bicarbonate alkalinity ▪ Total Phosphorous ▪ Turbidity ▪ Dissolved Oxygen ▪ Nitrogen ▪ Total Kjeldahl Nitrogen (TKN) ▪ filterable reactive phosphorus as P ▪ Electrical conductivity
Anions	▪ Fluoride ▪ Chloride ▪ Sulfate (SO_4) ▪ Nitrite and Nitrate
Metals (total and dissolved)	▪ Aluminium ▪ Arsenic III, Arsenic V (and total arsenic) ▪ Barium ▪ Boron ▪ Cadmium ▪ Chromium III, Chromium VI (and total chromium) ▪ Copper ▪ Iron ▪ Lead ▪ Magnesium ▪ Manganese ▪ Mercury ▪ Molybdenum ▪ Nickel ▪ Potassium ▪ Selenium ▪ Silver ▪ Sodium ▪ Zinc

Appendix B
Baseline Water Quality

Baseline Data – Groundwater

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

Table B-1: Local baseline and ANZECC (2000) Trigger values (Environmental Goals) for Groundwater receiving waters and Wangcol Creek

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

Notes: * High detection limits used when determining the baseline concentrations. ^ 2000 mg/L TDS/0.77 for groundwater; 0.68 x 2200 uS/cm low land river conductivity protection of aquatic life. # ANZECC (2000) guidelines for protection of freshwaters, livestock, irrigation water or drinking water. Local guideline based upon 90th percentile pre-brine placement (**shown in bold**). Cadmium, Chromium, Copper, lead, nickel and zinc adjusted for effects of hardness: Current Ca, Mg in GCB 147, 113 mg/L: in Wangcol Creek 19.7, 11.8 mg/L, respectively. + Irrigation water moderately tolerant crops; irrigation. Note: Molybdenum drinking is 0.05 mg/L ++ Livestock +++ drinking water. Presented in accordance with Aurecon, 2011. Analytes added as part of Modification 1 OEMP revision including arsenic III, arsenic V, chromium III. chromium VI, and filterable reactive phosphorus as P will be subject to assessment against Environmental Goals provided by ANZG (2018) where available.

In accordance with CoA D3 (b) (ii), E15 and E16 the location and proposed sampling frequency of groundwater monitoring wells and surface water monitoring sites is provided in **Table B-2**.

Table B-2 Surface Water and Groundwater Monitoring Locations

Location ID	Location Type	Proposed Sampling Frequency[1]	Rationale for Inclusion
MPGM4/D1	Groundwater	Quarterly	Existing monitoring well located north of the LNAR and adjacent to the south side Wangcol Creek.
MPGM4/D2	Groundwater	Quarterly	Existing monitoring well downgradient of the mine spoil area and adjacent to Wangcol Creek
MPGM4/D3	Groundwater	Quarterly	Existing background well north of the MPAR
MPGM4/D4	Groundwater	Quarterly	Existing background well northwest (upgradient) of the MPAR
MPGM4/D5	Groundwater	Quarterly	Existing background well northwest (upgradient) of the MPAR
MPGM4/D8	Groundwater	Quarterly	Existing background well located northeast of the LNAR, on the north side of Wangcol Creek.
MPGM4/D9	Groundwater	Quarterly	Existing monitoring well located north of the LNAR and adjacent to the south side of Wangcol Creek.
MPGM4/D10	Groundwater	Quarterly	Existing monitoring well located within the LNAR (central) and adjacent to LN Pond2.
MPGM4/D11	Groundwater	Quarterly	Existing monitoring well located within the LNAR (north).
MPGM4/D15	Groundwater	Quarterly	Existing monitoring well located adjacent to Pond BWC, along the former Huons Gully alignment.
MPGM4/D16	Groundwater	Quarterly	Existing monitoring well located with the LNAR (south).
MPGM4/D17	Groundwater	Quarterly	Existing monitoring well located with the LNAR (south).
MPGM4/D18	Groundwater	Quarterly	Existing monitoring well located with the LNAR (south).
MPGM4/D19	Groundwater	Quarterly	Existing monitoring well located within the mine spoil area, east of the LNAR and adjacent to DML Dam.
D20	Groundwater	Quarterly	Existing monitoring well located adjacent to the northern boundary of the LNAR.
D102	Groundwater	Quarterly	Existing monitoring well downgradient of the Ash Repositories and adjacent Wangcol Creek
D103	Groundwater	Quarterly	Existing monitoring well downgradient of the mine spoil area and adjacent Wangcol Creek
D104	Groundwater	Quarterly	Existing monitoring well downgradient of the mine spoil area and adjacent Wangcol Creek

Location ID	Location Type	Proposed Sampling Frequency[1]	Rationale for Inclusion
D105	Groundwater	Quarterly	Existing monitoring well downgradient of the Ash Repositories, the mine spoil area and adjacent Wangcol Creek
D106	Groundwater	Quarterly	Existing monitoring well downgradient of MPAR, and adjacent Wangcol Creek
D107	Groundwater	Quarterly	Existing monitoring well downgradient of MPAR, and adjacent Wangcol Creek
D113	Groundwater	Quarterly	Existing monitoring well downgradient of the MPAR and adjacent Wangcol Creek
D110	Groundwater	Quarterly	Existing monitoring well located adjacent to the northeast boundary of the LNAR.
D117	Groundwater	Quarterly	Existing monitoring well installed adjacent to the northern boundary of the LNAR, within the footprint of the former Groundwater Collection Basin (Huons Void).
D119	Groundwater	Quarterly	Existing monitoring well located adjacent to the western boundary of the LNAR (central).
D16A	Groundwater	Quarterly	New monitoring well proposed to be installed as a replacement for D16 (to be decommissioned), adjacent to the southern boundary of the LNAR.
LDP12	Surface water	As required during discharge	Monitoring of coal settling pond discharge is required as part of EPL #13007. No subject to assessment against the Environmental Goals, monitored for reference only.
LMP01	Surface water	Monthly	Upstream portion of Wangcol Creek near outflow from main MPPS site
WX22	Surface water	Monthly	Wangcol Creek, downstream from the MPAR and LNAR
SW_C	Surface water	Quarterly	Wangcol Creek, adjacent to groundwater well D107
SW_E	Surface water	Quarterly	Wangcol Creek, downstream section of former open cuts "Area D and Area E"
SW_G	Surface water	Quarterly	Downstream portion of Wangcol Creek, and downstream of WX22, within former open cut mine working
NC01	Surface water	Quarterly	Wangcol Creek, upstream of the LNAR

[1] On an as needed basis select monitoring locations will be monitored more frequently than proposed.
[2] Additional monitoring of groundwater and surface water conditions at the MPPS may be conducted separately to that required under the LNAR Consent.

Baseline Data - Surface Water

Table B-3 Environmental Goals for groundwater receiving waters and Wangcol Creek that have been compared LMP01 and WX22.

Indicator	ANZECC (2000) guideline *90% level of protection[2]	LMP01 (Final Holding Pond Weir)[1]	WX22 (Downstream of MPAR and Huon Gully)[1]
pH	6.5 – 8.0	7.39	7.26
Conductivity (µS.cm-1)	30 - 350	404.56	333.86
Alkalinity (as CaCO3		70.71	47.55
Chloride (mg/L)[3]		17.51	12.78
Sulphate (mg/L)		106.40	90.02
Fluoride (mg/L)		0.220	0.22
Sodium (mg/L)		21.30	19.37
Potassium (mg/L)		6.61	5.42
Calcium (mg/L)		30.35	24.08
Magnesium (mg/L)		16.38	13.40
Arsenic (mg/L)	0.0013	0.008	0.006
Silver (mg/L)	0.00005	0.002	0.002
Barium (mg/L)		0.032	0.030
Boron (mg/L)	0.37	0.066	0.080
Cadmium (mg/L)	0.0002	0.001	0.001
Chromium (mg/L)	0.001	0.003	0.007
Copper (mg/L)	0.0014	0.008	0.004
Iron (mg/L)		0.105	0.117
Mercury (mg/L)	0.00006	0.000	0.001
Manganese (mg/L)	1.9	0.102	0.513
Molybdenum (mg/L)		0.004	0.001
Nickel (mg/L)	0.011	0.005	0.004
Lead (mg/L)	0.0034	0.002	0.002
Selenium (mg/L)	0.005	0.001	0.001
Zinc (mg/L)	0.008	0.039	0.042

[1] Data obtained from Environmental Assessment Appendix D- Hydrology and Water Quality technical report, (SKM 2010b). LMP01 is located downstream of the Final Holding Pond in Wangcol Creek

[2] Trigger values derived from the 'slightly – moderately disturbed' category in ANZECC (2000)

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

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

Table C-1 OEMP Conditions of Approval cross-reference table demonstrating where each CoA has been addressed.

CoA Ref	Condition	Section Reference
Terms of Approval		
A1.	The Proponent must carry out the project: (a) in accordance with the conditions of this approval granted with respect to the Mt Piper Ash Placement Project (09_0186); (b) in accordance with all written direction of the Secretary; and (c) generally in accordance with the EA.	Section 1.3
Staging		
A7.	Where the Proponent intends to construct and operate the project in discrete stages (i.e Lamberts North and Lamberts South) it may comply with the requirements in conditions B4, B5, D2, D3, D4, D5 and D6 separately for each stage.	Section 2.1
Incident Notification, Reporting and Response		
A8.	The Secretary must be notified in writing via the Major Projects website immediately after the Proponent becomes aware of an incident. The notification must identify the project (including the application number and the name of the project if it has one) and set out the location and nature of the incident. Subsequent notification requirements must be given, and reports submitted in accordance with the requirements set out in Appendix 2.	Table 3-5
Non-Compliance Notification		
A9.	The Secretary must be notified in writing via the Major Projects website within seven days after the Proponent becomes aware of any non-compliance. A non-compliance notification must identify the project and the application number for it, set out the condition of approval that the project is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.	Section 3.9.2, Table 3-5
A10.	Compliance Reports of the project must be carried out in accordance with the Compliance Reporting Requirements outlined in the Compliance Reporting Post Approval Requirements (2020).	Section 3.9.2, Table 3-5

CoA Ref	Condition	Section Reference
Access to Information		
A11.	Until the completion of all rehabilitation required under this approval, the Proponent must: (a) make the following information and documents (as they are obtained, approved or as otherwise stipulated within the conditions of this approval) publicly available on its website: i) the EA; ii) all current statutory approvals for the project; iii) all approved strategies, plans and programs required under the conditions of this approval; iv) staging plans for the project if the construction, operation or decommissioning of the project is to be staged; v) regular reporting on the environmental performance of the project in accordance with the reporting requirements in any plans or programs approved under the conditions of this approval; vi) a comprehensive summary of the monitoring results of the project, reported in accordance with the specifications in any conditions of this approval, or any approved plans and programs; vii) a summary of the current phase and progress of the project; viii) contact details to enquire about the project or to make a complaint; ix) a Complaints Register, updated monthly; x) audit reports prepared as part of any Independent Environmental Audit of the project and the Proponent's response to the recommendations in any audit report; xi) any other matter required by the Secretary; and (b) keep such information up to date, to the satisfaction of the Secretary.	Section 3.3.3.3 Section 3.7.1
Environmental Representative		

CoA Ref	Condition	Section Reference
B1.	Prior to the commencement of any construction activities, or as otherwise agreed by the Secretary, the Proponent shall nominate for the approval of the Secretary a suitably qualified and experienced Environmental Representative(s). The Proponent shall engage the Environmental Representative(s) during any construction activities, and throughout the life of the project, or as otherwise agreed by the Secretary. The Environmental Representative(s) shall: (a) oversee the implementation of all environmental management plans and monitoring programs required under this approval, and advise the Proponent upon the achievement of these plans/programs; (b) consider and advise the Proponent on its compliance obligations against all matters specified in the conditions of this approval and the Statement of Commitments, as referred to under condition A1(c); and (c) have the authority and independence to recommend to the Proponent reasonable steps to be taken to avoid or minimise unintended or adverse environmental impacts and, failing the effectiveness of such steps, to recommend to the Proponent that relevant activities are to be ceased as soon as reasonably practicable if there is a significant risk that an adverse impact on the environment will be likely to occur.	Table 3-1
Groundwater Modelling		
B2.	The Proponent shall develop and maintain an up to date groundwater model for Lamberts North. The model should be calibrated to site-specific data. The Proponent shall consult with Water NSW in the preparation of the groundwater model and the model shall be provided to Water NSW within five months of project approval unless otherwise agreed by the Secretary. The model shall address but not necessarily be limited to the following: (a) the findings of the groundwater monitoring of existing ash placement areas and be based on average groundwater quality data; (b) updated predictions of the long term behaviour, fate and impacts of ash placement, in particular for water quality parameters such as sulphates, chlorides, boron, manganese, nickel, zinc, molybdenum copper, arsenic and barium; (c) updated risk assessment for ground and surface water quality impacts under a range of rainfall events of differing duration and intensities (including up to a 100 year ARI event); (d) calibration to site-specific data; and (e) identification of appropriate surface and groundwater management measures required in order to achieve a neutral or beneficial effect on water quality. Prior to construction of Lamberts South, the Lamberts North groundwater model is to be updated as set out above in items (a) - (e) in consultation with Water NSW, to apply to Lamberts South.	Section 5.5.1.2

CoA Ref	Condition	Section Reference
Groundwater Monitoring		
B3.	Baseline groundwater monitoring data, including groundwater quality, location of groundwater monitoring wells, depth and flow of groundwater in the project area should be obtained for a minimum of two sampling events prior to construction and a minimum of two sampling events after construction and prior to ash placement commencing. The baseline monitoring data along with the modelling predictions in B2 should be used in the consideration of the design of the ash placement facilities. The location of groundwater monitoring wells and parameters to be monitored should be undertaken in consultation with Water NSW. Prior to construction of Lamberts South, the Proponent shall conduct baseline groundwater data collection as set out above, and use the results and the modelling predictions in B2 in the consideration of the design of the ash placement facilities.	Section 5.5.1
Environmental Incident Reporting		
C1.	The Proponent shall notify the Secretary of any environmental incident within 12 hours of becoming aware of the incident. The Proponent shall provide full written details of the incident to the Secretary within seven days of the date on which the incident occurred.	Table 3-5
C2.	The Proponent shall meet the requirements of the Secretary to address the cause or impact of any environmental incident, as it relates to this approval, reported in accordance with condition C1 of this approval, within such period as the Secretary may require.	Section 3.9.2
Operational Environmental Management Plan		
D2.	The Proponent must prepare an Operational Environmental Management Plan (OEMP) to detail an environmental management framework, practices and procedures to be followed during operation of the project. The OEMP must be prepared to the satisfaction of the Secretary, and in consultation with the relevant government agencies and must include, but not necessarily be limited to:	This OEMP document

CoA Ref	Condition	Section Reference
a)	identification of statutory and other obligations that the Proponent is required to fulfil in relation to operation of the project, including approvals, licences, approvals and consultations;	Section 4 Relevant CoA include: ▪ OEMP, CoA A1, Schedule 2; ▪ OEMP, CoA A7 to CoA A11, Schedule 2; ▪ OEMP, CoA B1 to CoA B3, Schedule 2; ▪ OEMP, CoA C1 to CoA C2, Schedule 2; ▪ OEMP, CoA D2 to CoA D3A, Schedule 2; ▪ OEMP, CoA E1 to CoA E20, Schedule 2; ▪ OEMP, CoA E23 to CoA E26, Schedule 2; ▪ OEMP, CoA F1, Schedule 2; ▪ OEMP, Appendix 2, Written Incident Notification requirements
b)	a description of the roles and responsibilities for relevant employees (including contractors) involved in the operation of the project;	Section 3.2
c)	overall environmental policies and principles to be applied to the operation of the project;	Section 3.1 describes the EMS for the project. The EMS includes an Environmental Policy which can be provided upon request. Environmental objectives, performance criteria, targets and legislation and guidelines are provided in each Sub Plan.
d)	standards and performance measures to be applied to the project, and a means by which environmental performance can be periodically reviewed and improved, where appropriate;	Each sub plan (Section 5) provides objectives, performance indicators, and monitoring measures by which environmental performance can be measured, reviewed, and improved if required.

CoA Ref	Condition	Section Reference
e)	management policies to ensure that environmental performance goals are met and to comply with the conditions of this approval;	As described in Section 3.1, an EMS will be implemented throughout the life of the project. The EMS shall include the minimum requirements as outlined in this plan, plus a suite of Contractor processes, procedures and plans for project aspects, prepared to ensure compliance with the Project Approval. EMS aspects such as those described in Section 3 'Environmental Planning Framework' will ensure environmental performance goals are met through the implementation of the following policies: project inductions, training, monitoring, inspections, audits, management of non- conformances, incidents and complaints.
f)	the environmental monitoring requirements outlined under conditions E12 to E18 inclusive;	Each sub plan provides monitoring requirements, as follows: ▪ Noise - –Section 5.4 ▪ Groundwater - Section 5.5 ▪ Soil and Surface Water - –Section 5.6 ▪ Air quality - Section 5.7 ▪ Landscape rehabilitation - Section 5.8 ▪ Waste - Section 5.9 ▪ Weeds - Section 5.10 ▪ Leachate management – Section 5.11 ▪ Section 5 outlines the Environmental Monitoring program
g)	details of waste management including reuse and/or recycling of waste material, to minimise the need for treatment or disposal of those materials outside the site;	Waste management sub plan (Section 5.9)
h)	specific consideration of relevant measures to address any requirements identified in the documents referred to under conditions A1(c) of this approval	This table and sub plans (Section 5) Reference documents considered during the preparation of this document are provided in Section 1.3 and referenced throughout the document.

CoA Ref	Condition	Section Reference
i)	The additional requirements of this approval	This table and sub plans (Section 5) and OEMP in general
j)	details of traffic management measures for public roads including managing vehicle movements, ensuring haul routes proposed are communicated to contractors and staff and complied with, measures to reduce impacts during peak hours and at intersections, scheduling heavy vehicle movements to minimise convoy or platoon lengths, identifying local climate conditions that may affect road safety and ensuring truckloads are covered at all times;	Refer Appendix F - Drivers Code of Conduct
k)	incorporation of traffic management measures into a Drivers Code of Conduct for transporting materials on public roads for all contractors and staff;	Refer Appendix F - Drivers Code of Conduct
The OEMP must be submitted for the approval of the Secretary no later than four weeks prior to the commencement of operation of the project, unless otherwise agreed by the Secretary. Operation must not commence until written approval has been received from the Secretary.		This plan shall be submitted no later than 28 February 2022
Nothing in this approval precludes the Proponent from incorporating the requirements of the OEMP into existing environmental management systems and plans administered by the Proponent.		Noted
D3	As part of the OEMP for the project, required under condition D2 of this approval, the Proponent must prepare and implement the following Management Plans:	See below
D3 (a)	**Operational Noise Management Plan**	
D3 (a)	An **Operational Noise Management Plan** to detail measures to mitigate and manage noise during operation of the project. The Plan shall be prepared in consultation with the EPA and include, but not necessarily be limited to	Section 5.4 Noise Management and Monitoring Plan Evidence of consultation with EPA provided in Table 3-3 and Appendix E
(vi)	identification of activities that will be carried out in relation to the project and the associated noise	Section 5.4.3
(vii)	identification of relevant sensitive receivers and the applicable criteria at those receivers commensurate with the noise limit specified under condition E7 of this approval;	Table 5-3 Section 5.4.2 Figure 5
(viii)	noise monitoring procedures (as referred to in condition E12 of this approval) for periodic assessment of noise impacts at the relevant receivers against the noise limits specified under this approval and the predicted noise levels as detailed in the EA;	Table 5-4 and Table 5-5
(ix)	details of management methods and procedures that will be implemented to control individual and overall noise emissions from the site during operation, including the feasibility of noise reducing benching;	Table 5-2

CoA Ref	Condition	Section Reference
(x)	procedures to ensure that reasonable and feasible noise mitigation measures are applied during operation of the project and procedures and corrective actions to be undertaken if non-compliance against the operational noise criteria as detailed in condition E7 is detected at the sensitive receivers; and	Table 5-2 Table 5-7
(xi)	provisions for periodic reporting of results to the EPA as per condition B8.	Table 5-6
D3 (b)	**Groundwater Management Plan**	
D3 (b)	A Groundwater Management Plan to detail measures to mitigate and manage groundwater impacts. The Plan shall be prepared in consultation with DPE Water and Water NSW and include, but not necessarily be limited to:	Section 5.5 Groundwater Management and Monitoring Plan Evidence of consultation with EPA, DPE Water and Water NSW provided in Appendix E and Section 3.3.3
i	consideration of the revised updated groundwater model as per condition B2;	Section 5.5.1.2 Where Groundwater Modelling Condition B2 refers to updating the groundwater model for Lamberts South, this will be a separate project to Lamberts North, therefore is not applicable to this project.
ii	baseline data on groundwater quality (including Huons Creek), Location of groundwater monitoring wells, depth and available flow of groundwater in the project area;	Section 5.5.1, Figure 5 and Appendix B
iii	identification of potential sources of water pollutants and management measures, including the leachate management system which must be designed and constructed generally in accordance with the Environmental Guidelines, Solid Waste Landfills (EPA, 2016) and monitoring requirements;	Potential contaminant sources – Section 5.5.1.3 Management measures - Table 5-10 Reporting - Table 5-16
iv	groundwater assessment criteria including trigger levels for remedial measures;	Section 5.5.1.4 Contingency Plan Appendix B
v	a contingency plan for events that have the potential to pollute or contaminate groundwater sources of water. The plan must include remediation actions and communication strategies (including notification of potentially affected nearby bore users) for the effective management of such an event to prevent discharge of these pollutants from sources within the project area;	Table 5-14 Section 5.5.1.4 Contingency Planning Table 5-15 Investigation protocol

CoA Ref	Condition	Section Reference
vi	a monitoring program as per condition E15 for groundwater connectivity, water levels, groundwater flow and water quality over the short and long term that includes upstream and downstream locations. The program must continue for a minimum of five years following final capping and landscaping;	Section 5.5.3, Appendix A and Appendix B
vii	a protocol for the investigation of identified exceedances of the groundwater impact assessment criteria; and	Table 5-8 Table 5-15 Section 5.5.1.5
viii	provisions for periodic reporting of results to Water NSW as per condition B8.	Table 5-16
Soil and Surface Water Management Plan		
D3 (c)	*As part of the OEMP for the project, the Proponent will prepare*: a Soil and Surface Water Management Plan to outline measures that will be employed to manage water on the site, to minimise soil erosion and the discharge of sediments and other pollutants to lands and/or waters throughout the life of the project. The Plan must be based on best environmental practice and must be prepared in consultation with the DPE Water and Water NSW. The Plan must include, but not necessarily be limited to:	Section 5.6 Soil and Surface Water Management Plan Evidence of consultation provided in Table 3-3 and Appendix E
i.	baseline data on the surface water quality and available flow in Wangcol Creek and Lamberts Gully Creek;	*Wangcol Creek*: Appendix B - Baseline Water Quality of the OEMP. *Lamberts Gull*y: No longer exists refer to submission report June 2012 for updated information
ii.	water quality objectives and impact assessment criteria for Wangcol Creek and Lamberts Gully Creek;	Appendix A and Appendix B Table 5-18
iii.	identification of the operation activities that could cause soil erosion or discharge sediment or water pollutants from the site;	Section 5.6.2
iv.	a description of the management controls to minimise soil erosion or discharge of sediment or water pollutants from the site, including a strategy to minimise the area of bare surfaces, stabilise disturbed areas and minimise bank erosion and including the leachate management system which must be designed and constructed generally in accordance with the Environmental Guidelines, Solid Waste Landfills (EPA, 2016);	Table 5-19
v.	demonstration that the proposed erosion and sediment control measures will conform with, or exceed, the relevant requirements of Managing Urban Stormwater: Soils and Construction (Landcom, 2004);	Table 5-19

CoA Ref	Condition	Section Reference
vi.	details of the water management system including separation of clean and contaminated/polluted water flows, provisions for the treatment, recycling/reuse and/or discharge of flows;	Section 0
vii.	site water balance including water usage for ash placement, sources of water and quantity of run-off generated;	Section 0
viii	details of the lining for the surface water collection ponds;	Section 0 Table 5-19
ix	measures to minimise potential surface water infiltration;	Section 5.6.3.3
x	a flow and water quality monitoring program for Wangcol Creek and Lamberts Gully Creek that includes discharge points, upstream and downstream locations as per condition E16 and limits for identified pollutants;	Table 5-20
xi	specified remedial actions and contingency plans to mitigate any water quality exceedances on receiving waters including identified trigger levels for remedial measures or the activation of contingency plans; and	Table 5-22 Section 5.6.3.5
xii	Provisions for periodic reporting of results to WaterNSW as per condition B8	Table 5-21
D3 (d) Air Quality Management Plan		
D3 (d)	*As part of the OEMP for the project, the Proponent will prepare: a* Air Quality Management Plan to outline measures to minimise impacts from the project on local air quality. The Plan must be prepared in consultation with NSW Health and the EPA and include, but not necessarily be limited to:	Section 5.7 Air Quality Management Plan Evidence of consultation provided in Table 3-3 and Appendix E
i.	baseline data on dust deposition levels;	Section 5.7.6.1
ii.	air quality objectives and impact assessment criteria;	Section 5.7.6.1
iii.	an assessment of alternative methods of ash placement to minimise the exposure of active placement areas to prevailing winds;	ROP
iv.	mitigation measures to be incorporated during ash placement activities, haulage, etc;	Table 5-24
v.	an operating protocol for the ash placement irrigation system including activation rates, application rates and area of coverage and means of dealing with water shortages;	ROP
vi.	detail how ash placement moisture levels will be maintained;	Section 5.7.4.1 and Table 5-24

CoA Ref	Condition	Section Reference
vii.	a contingency plan to deal with high winds and dust suppression;	Section 5.7.4.3
viii.	a protocol for the investigation of visible emissions from the ash placement area;	Table 5-26 Table 5-27
ix.	a response plan to address exceedances in visible emissions including PM10, TSP and deposited dust from the ash placement areas;	Table 5-27
x.	an air quality monitoring program as referred to in condition E18 of this approval including identified air quality monitoring locations (including monitoring at sensitive receivers) and meteorological monitoring to predict high wind speed events;	Section 5.7.6
xi.	provisions for periodic reporting of results to the EPA as per condition B8; and	Table 5-28 (4) AQMMP
xii.	a protocol for suppressing dust emissions within the EPL limits under normal and adverse weather conditions at stages of the ash placement process.	Table 5-24 AQMMP
D3 (e)	**Landscape / Revegetation Plan**	
D3 (e)	*As part of the OEMP for the project, the Proponent will prepare:* A Landscape/Revegetation Plan to outline measures to minimise the visual impacts of the ash placement areas and ensure the long-term stabilisation of the site and compatibility with the surrounding landscape and land use. The Plan must include, but not necessarily be limited to:	Section 5.8 Landscape Revegetation and Rehabilitation combined reports.
i.	identification of design objectives and standards based on local environmental values, vistas, and land uses;	Section 5.8.2 Table 5-31
ii.	identification of the timing and progressive implementation of revegetation works for ash placement areas as they are completed, including short-term and long-term goals including landscape plans;	Section 5.8.4.1
iii.	A schedule of species to be used in revegetation, including the use of local native species in revegetation works selected by a qualified expert to ensure the rehabilitation works do not compromise the long-term integrity of the capping; and	Section 5.8.4.2
iv.	Procedures and methods to monitor and maintain revegetated areas during the establishment phase and long-term.	Table 5-33 Section 5.8.5
D3 (f) Site Rehabilitation Management Plan		
D3f	*As part of the OEMP for the project, the Proponent will prepare:* A Site Rehabilitation Management Plan to outline measures to stabilise and rehabilitate the site following project completion. The Plan must be prepared in consultation with Water NSW and DPE Water. The Plan must include, but not necessarily be limited to:	Section 5.8 Landscape, revegetation and rehabilitation plan Evidence of consultation with provided in Table 3-3 and Appendix E

CoA Ref	Condition	Section Reference
i.	Reinstatement of geomorphologic stable drainage lines on the rehabilitated areas and a timeframe for rehabilitation;	Table 5-32
ii.	Restoration, rehabilitation and revegetation of the project's site;	Section 5.8.4 Table 5-32
iii.	Measures to control water pollutants from rehabilitated areas; and	Section 5.8.4 Table 5-32
iv.	A program and timeframe for monitoring rehabilitated areas.	Section 5.8.4 Table 5-34
D3A	The Proponent must implement the OEMP as approved by the Secretary	Section 1.3 Whole document
D4 Groundwater Quality and Geotechnical Impacts		
D4	Prior to commencement of operation the Proponent shall submit a geotechnical report prepared by a suitably qualified expert that demonstrates the site has been engineered as being suitable for ash placement. The report must also provide an evaluation of groundwater levels once re-profiling has been completed.	Completed prior to construction – not applicable to the OEMP.
Leachate Management System		
D5	Prior to the commencement of operation of each stage of the ash placement process, the Proponent must demonstrate to the satisfaction of the Secretary, in consultation with the EPA, that the design of the leachate management system is generally consistent with the Environmental Guidelines, *Solid Waste Landfills* (EPA, 2016), including: (a) the leachate barrier system, including liner and leachate collection system; and (b) the leachate storage dam/s including freeboard, appropriate sizing based on site water balance modelling and liner.	Noted in Section 5.11
During Operations		
Operational Hours		
E1	Operational activities associated with the project shall only be undertaken from 6.00 am to 8.00 pm Monday to Friday and 6.00am to 5.00pm Saturday and Sunday.	Section 2.2.1
E2.	Operations outside the hours stipulated in condition E1 of this approval are only permitted in the following emergency situations:	As above
a)	where it is required to avoid the loss of lives, property and/or to prevent environmental harm; or	As above

CoA Ref	Condition	Section Reference
b)	breakdown of plant and/or equipment at the ash placement areas or the Mount Piper Power Station and the proposed Mount Piper Power Station Extension project with the effect of limiting or preventing ash storage at the power station outside the operating hours defined in condition E1; or	As above
c)	a breakdown of an ash haulage truck(s) or the conveyor preventing haulage during the operating hours stipulated in condition E1 combined with insufficient storage capacity at the Mount Piper Power Station including the proposed Mount Piper Power Station Extension to store ash outside of the project operating hours; or	As above
d)	in the event that the Australian Energy Market Operator (AEMO), or a person authorised by AEMO, directs the Proponent (as a Licencee) under the National Electricity Rules to maintain, increase or be available to increase power generation for system security and there is insufficient ash storage capacity at the Mount Piper Power Station to allow for the ash to be stored.	As above
e)	In the event of conditions E2b) or E2c) arising, the Proponent is to take reasonable and feasible measures to repair the breakdown in the shortest time possible.	As above
E3	In the event that an emergency situation as referred to under condition E2b) or E2c) occurs more than once in any two-month period, the Proponent shall prepare and submit to the Secretary for approval a report including, but not limited to:	Section 2.2.1
a)	the dates and a description of the emergency situations;	As above
b)	an assessment of reasonable and feasible mitigation measures to avoid recurrence of the emergency situations;	As above
c)	identification of a preferred mitigation measure(s); and	As above
d)	timing and responsibility for implementation of the mitigation measure(s).	As above
	The report is to be submitted to the Secretary within 60 days of the second emergency situation occurring. The Proponent shall implement reasonable and feasible mitigation measures in accordance with the requirements of the Secretary.	As above
E4.	The Proponent shall notify the EPA prior to undertaking any emergency ash haulage or placement operations outside of the hours of operation stipulated in condition E1 of this approval and keep a log of such operations.	As above

<table>
<tr><th>CoA Ref</th><th>Condition</th><th>Section Reference</th></tr>
<tr><td>E5</td><td>The Proponent shall notify the Secretary in writing within seven days of undertaking any emergency ash haulage or placement operations outside of the hours of operation stipulated in condition E1 of this approval.</td><td>As above</td></tr>
<tr><td>E6</td><td>The Proponent shall notify: nearby sensitive receivers (as defined in the OEMP required under condition D3(a) of this approval) prior to 8.00 pm where it is known that emergency ash haulage or placement operations will be required outside of the hours of operation stipulated in condition E1 of this approval.</td><td>Section 2.2.1</td></tr>
<tr><td>E7</td><td>The cumulative operational noise from the ash placement area and ash haulage activity shall not exceed the following L_{Aeq} (15 minute) dB(A):
<table>
<tr><th>Location</th><th>Day (7am to 6pm)</th><th>Evening (6pm to10pm)</th><th>Night (10pm to 7am)</th></tr>
<tr><td>All private sensitive receivers within the township of Blackmans Flat</td><td>42</td><td>38</td><td>35</td></tr>
<tr><td>All other sensitive receivers</td><td>42</td><td>38</td><td>35</td></tr>
</table>
This noise criteria set out above applies under meteorological
conditions except for any of the following:
(a) wind speed greater than 3 meter/second at 10 meters above
ground level;
(b) stability category F temperature inversion conditions and wind
speed greater than 2 meters /second at 10 meters above ground level; and
(c) stability category G temperature inversion conditions.
This criteria does not apply where the proponent and an affected landowner have reached a negotiated agreement in regard to noise and a copy of that agreement has been forwarded to the Secretary and the EPA.</td><td>Section 5.4.4
Table 5-2
Section 5.4.5
Table 5-3</td></tr>
<tr><td>E8</td><td>To determine compliance with the L_{Aeq} (15 minute) noise limits the noise monitoring equipment must be located at the most affected point:
(a) within 30 meters of a dwelling facade where any dwelling on the property is situated more than 30 meters from the property boundary that is closest to the premises; or
(b) approximately on the boundary where any dwelling is situated
30 meters or less from the property boundary that is closest to the premises.</td><td>Section 5.4.5.4
Table 5-5</td></tr>
</table>

CoA Ref	Condition	Section Reference
E9	For the purposes of monitoring noise from the premises to determine compliance with the noise limits: (c) Noise monitoring must be undertaken in accordance with the Noise Policy for Industry (NSW EPA, 2017), or its latest version, using equipment accepted by the EPA in writing; (d) the meteorological data to be used for determining meteorological conditions is the data recorded by the meteorological weather station at the premises; and (e) stability category temperature inversion conditions are to be determined in accordance with the *Noise Policy for Industry* (NSW EPA, 2017), or its latest version.	Section 5.4.5.3 Table 5-5
E10	The Proponent shall implement measures to ensure noise attenuation of trucks. These measures may include, but are not necessarily limited to, installation of residential class mufflers, engine shrouds, body dampening, speed limiting, fitting of rubber stoppers to tail gates, limiting the use of compression braking, and ensuring trucks operate in a one-way system at the ash placement areas where feasible.	Refer Appendix F - Drivers Code of Conduct
Operational Noise Review		
E11	Within 60 days of the commencement of operation of the project, unless otherwise agreed to by the Secretary, the Proponent shall submit to the Secretary and **Operational Noise Review** to confirm the operational noise impacts of the project. The Operational Noise Review shall be prepared in consultation with the EPA. The review shall: (a) identify the appropriate operational noise objectives and levels for sensitive receivers; (b) describe the methodologies for noise monitoring, including the frequency of measurements and location of monitoring sites; (c) document the operational noise levels at sensitive receivers as ascertained by the noise monitoring program; (d) assess the noise performance of the project against the noise criteria specified in E7 of this approval and predicted noise levels as detailed in the report referred to under condition A1 of this approval; and (e) provide details of any entries in the Complaints Register relating to noise impacts. Where monitoring indicates noise levels in excess of the operational noise criteria specified in condition E7 of this approval, the Proponent shall prepare a report as required by condition E13 of this approval.	**COMPLETED** The Operational Noise Review Report was prepared in October 2013 by Aurecon. The report was submitted to the DPI on 9th October 2013 and the EPA on 10th October 2013. The report concluded that the noise resulting from Lamberts North operations comply with the criteria specified in condition E7 at the representative residential receivers at Location 1 and Location 2.

CoA Ref	Condition	Section Reference
Ongoing Operational Noise Monitoring		
E12	The Proponent shall prepare and implement an Operational Noise Monitoring Program to assess compliance against the operational noise criteria stipulated in condition E7 of this approval, throughout the life of the project. The noise monitoring program shall be prepared in consultation with the EPA and must include the proposed frequency of monitoring and as a minimum must include monitoring when there are any significant changes in work locations or processes.	Section 5.4 Noise Management and Monitoring Plan Evidence of consultation with EPA provided in Table 3-3 and Appendix E
	The noise monitoring program shall be prepared in accordance with the requirements of the Noise Policy for Industry (NSW EPA, 2017), or its latest version, and shall include, but not be limited to:	Section 5.4.5.1
a)	monitoring at Lamberts North, Lamberts South and Blackmans Flat during ash placement activities; and	Table 5-4 Lamberts South is a separate project and will have a separate OEMP, refer to submissions report June
b)	monitoring of the effectiveness of any noise mitigation measures implemented under condition D3(a) of this approval, against the noise criteria specified in condition E7 of this approval.	Table 5-4
	The Proponent shall forward to the EPA and the Secretary a report containing the results of any non-compliance within 14 days of conducting a noise assessment. The monitoring program shall form part of the OEMP referred to in condition D3 (a) of this approval.	Table 5-6
E13.	Where noise monitoring including as required by condition E11 and E12 of this approval identifies any non-compliance with the operational noise criteria specified under condition E7 of this approval the Proponent shall prepare and submit to the Secretary a report including, but not limited to: a) an assessment of reasonable and feasible physical and other mitigation measures for reducing noise at the source; b) identification of the preferred measure(s) for reducing noise at the source; c) feedback from directly affected property owners and the EPA on the proposed noise mitigation measures; and d) location, type, timing and responsibility for implementation of the noise mitigation measure(s). The report is to be submitted to the Secretary within 60 days of undertaking the noise monitoring which has identified exceedances of the operational noise criteria specified under condition E7, unless otherwise agreed to by the Secretary. The Proponent shall implement reasonable and feasible mitigation measures in accordance with the requirements of the Secretary.	See Table 5-6 for reporting to be undertaken in the event of a non-compliance

CoA Ref	Condition	Section Reference
E14.	If after the implementation of reasonable and feasible source controls, as identified in the report required by condition E13, the noise generated by the project continues to exceed the criteria stipulated in condition E7 the Proponent shall implement at the receiver reasonable and feasible noise mitigation measures, such as double glazing, insulation, air conditioning and or other building acoustic treatments, in consultation with and with the agreement of the affected landowner.	Table 5-7
E15 Groundwater Monitoring		
E15.	The Proponent shall prepare and implement a Groundwater Monitoring Program to monitor the impacts of ash placement activities on local groundwater quality and hydrology. The Program shall be developed in consultation with Water NSW, and shall describe the location, frequency, rationale and procedures and protocols for collecting groundwater samples as well as the parameters analysed and methods of analysis. The monitoring program shall be ongoing for the operation of the project and for a minimum of 5 years following project completion and include, but not be limited to:	Section 5.5 Groundwater Management and Monitoring Plan Section 5.5.3 Groundwater Monitoring program Evidence of consultation provided in Table 3-3 and Appendix E Procedures and protocols – Table 5-8 Monitoring Parameters – Appendix A Methods of analysis - Table 5-13
a)	monitoring at established bore sites (or expanded bore sites in the event that existing sites are damaged or lost) as described in the Groundwater Management Plan as per condition D3(b); and	Table 5-12 Monitoring Schedule
b)	a schedule for periodic monitoring of groundwater quality, depth and flow at monitoring sites, at an initial frequency of no less than once every month for the first 12 months of operation.	Groundwater Monitoring program Section 5.5.3 Table 5-12 Table 5-13(4)
	The monitoring program shall form part of the Groundwater Management Plan referred to in condition D3(b) of this approval.	Section 5.5 Groundwater Management and Monitoring Plan
Surface Water Quality Monitoring		
E16.	The Proponent shall prepare and implement a surface water quality monitoring program to monitor the impacts of the ash placement activities on Wangcol Creek and Lamberts Gully. The Program shall be developed in consultation with Water NSW and shall describe the location, frequency, rationale and the procedures and protocols for collecting water samples as well as the parameters analysed and methods of analysis. The program shall include, but not necessarily be limited to:	Surface water monitoring program has been provided in Section 5.6. Evidence of consultation provided in Table 3-3 and Appendix E
a)	monitoring at the existing water quality monitoring sites as described in the document referred to under condition A1c);	Section 5.6.5, Table 5-20 (3-4)

CoA Ref	Condition	Section Reference
b)	monitoring at surface water discharge points from Lamberts Gully Creek;	N/A refer to Submission Report dated June 2012
c)	monitoring at surface water discharge points into Wangcol Creek;	Table 5-20
d)	wet weather monitoring with a minimum of two events recorded within the first 12 months operation of the project; and	Table 5-20
e)	a schedule for periodic monitoring of surface quality at sites throughout the life of the project, at an initial frequency of no less than once every month for the first 12 months and must include, but not be limited to, monitoring of dissolved oxygen, turbidity, sulfates, salinity, boron, manganese, iron chloride, total phosphorus and total nitrogen.	Table 5-20 Appendix A, Table A-2
Hydrological Monitoring Program		
E17	A Hydrological Monitoring Program to assess and quantify the impacts and effectiveness of the transformed section of Huons Creek into a sub-surface drainage line in consultation with the Water NSW and DPE Water and any other relevant government agency. Monitoring is to be undertaken for a period of five (5) years upon completion of the creek transformation. The program must include sampling for identified pollutants before and after the transformation works and include a sampling site downstream of the sub-surface section of Huons Creek. In the first 12 months following completion of the transformation, monitoring is to be undertaken at least every three (3) months upon completion of the creek transformation and after any heavy wet weather event. The monitoring program shall form part of the Soil and Surface Water Management Plan referred to in condition D3(c) of this approval.	Given that the former Huon Creek (Gully) primarily contained groundwater seepage, and has now been infilled, the hydrological monitoring has been incorporated into the GMMP outlined in Section 5.5
Air Quality Monitoring		
E18	The Proponent shall prepare an Air Quality Monitoring Program, in consultation with the EPA and NSW Health. The Program shall include, but not necessarily be limited to, monitoring for dust. Monitoring sites shall be identified as per condition D3 (d). The air quality monitoring program shall be ongoing for the life of the project, and during final rehabilitation and stabilisation of the site.	Section 5.7.6 Air Quality Monitoring Program. Evidence of consultation provided in Table 3-3 and Appendix E
Environmental Incident Reporting		
E19	The Proponent shall notify the Secretary of any environmental incident within 12 hours of becoming aware of the incident. The Proponent shall provide full written details of the incident to the Secretary within seven days of the date on which the incident occurred.	Section 3.9.2
E20	The Proponent shall meet the requirements of the Secretary to address the cause or impact of any environmental incident, as it relates to this approval, reported in accordance with condition E19 of this approval, within such period as the Secretary may require.	Section 3.9.3

CoA Ref	Condition	Section Reference
Waste Generation and Management		
E23	Waste materials removed from the site shall only be directed to a waste management facility lawfully permitted to accept the materials.	Table 5-35
E24	The Proponent shall not cause, permit or allow any waste generated outside the site to be received at the site for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by a licence under the Protection of the Environment Operations Act 1997, if such a licence is required in relation to that waste.	Table 5-35
E25	The Proponent shall ensure that liquid and / or non-liquid waste generated and / or stored on the site is assessed and classified in accordance with the Waste Classification Guidelines (DECC, 2008), or any future guideline that may supersede that document.	Table 5-35 Table 5-36
Revision of Strategies, Plans and Programs		
E26	Within 3 months, unless the Secretary agrees otherwise, of: (a) the submission of an incident report or independent audit report under condition B8 or B9; and (b) the approval of any modification to the conditions of this approval; or (c) a direction of the Secretary under condition A1 of Schedule 2; the Proponent must review and, if necessary, revise the studies, strategies or plans required under the conditions of approval to the satisfaction of the Secretary. Where this review leads to revisions in any such document, then within 4 weeks of the review the revised document must be submitted to the Secretary for approval, unless otherwise agreed with the Secretary. *Note: This is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the project.*	Section 3.11.2

CoA Ref	Condition	Section Reference
Project Completion Management Plan - To be prepared no later than one month prior to decommissioning		
F1	No later than one month prior to the decommissioning of the project, or as otherwise agreed by the Secretary, the Proponent is to prepare a Project Completion Management Plan, in consultation with Water NSW, for the approval of the Secretary. The Plan is to include but not necessarily be limited to:	
a)	identification of structures to be removed and how they will be removed;	
b)	measures to reduce impacts on the environment and surrounding sensitive land uses;	
c)	details of components to be recycled;	
d)	details of rehabilitation and revegetation with reference to the biodiversity offset required under condition B6;	
e)	groundwater assessment criteria including trigger levels for remedial measures;	
f)	a groundwater monitoring program as per condition E15 for groundwater connectivity, water levels, groundwater flow and water quality over the short and long term that includes upstream and downstream locations. The program shall continue for a minimum of five years following final capping and landscaping;	
g)	a contingency plan to address potential exceedances and mitigation measures in groundwater and groundwater quality impacts and if exceedances continue, implementation of further measures and groundwater monitoring to demonstrate compliance;	
h)	surface water assessment criteria including trigger levels for remedial measures;	
i)	available flow and water quality monitoring program for Wangcol Creek and Lamberts Gully Creek that includes discharge points, upstream and downstream locations as per condition E16 and limits for identified pollutants. The program shall continue for a minimum of five years following final capping and landscaping; and	
j)	a contingency plan to address potential exceedances and mitigation measures in surface water and surface water quality impacts and if exceedances continue, implementation of further measures and surface water monitoring to demonstrate compliance.	

Appendix D
Project Approval Instrument

Project Approval

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

As delegate of the Minister for Planning and Infrastructure under delegation from the Minister enforced from 1 October 2011, I approve the project application referred to in Schedule 1, subject to the conditions in Schedule 2.

These conditions are required to:

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

Richard Pearson
Deputy Director-General
Development Assessment and Systems Performance

Sydney 2012

The Department has prepared a consolidated version of the consent which is intended to include all modifications to the original determination instrument.

The consolidated version of the consent has been prepared by the Department with all due care. This consolidated version is intended to aid the consent holder by combining all consents relating to the original determination instrument but it does not relieve a consent holder of its obligation to be aware of and fully comply with all consent obligations as they are set out in the legal instruments, including the original determination instrument and all subsequent modification instruments.

SCHEDULE 1

Application No.:	09_0186
Proponent:	**EnergyAustralia NSW Pty Ltd**
Approval Authority:	Minister for Planning and Infrastructure
Land:	The project site is located in the central-west of NSW, at 350 Boulder Road, Portland and located within Lot 9 DP804929, Lot 357 DP751651**, Lot 101 DP 1240974, Lot 102 DP 1240974, Lot 4 DP 1151441.**
Project:	The construction and operation of new ash placement areas at the Lamberts South and Lamberts North sites to cater for the ash generated from the existing Mt Piper Power Station.

SUMMARY OF MODIFICATIONS

Application Number	Determination Date	Decider	Modification Description
MP09_0186-Mod-1	21 September 2021	Director	Staged upgrades to the approved Lamberts North Ash Repository (LNAR) and amendment to LNAR boundary. Project was transitioned from Part 3A on 20 November 2018.

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DEFINITIONS

Act, the	*Environmental Planning and Assessment Act 1979*
Ancillary Facility	Temporary facility for construction. Examples may include an office and amenities compound, construction compound, batch plant, materials storage compound and stockpile areas.
BCS	**Biodiversity, Conservation and Science Directorate within the Department**
Conditions of Approval	**Conditions contained in Schedule 2**
Construction	**All physical works associated with the project, including but not limited to demolition and removal of building or works, erection or installation of building and infrastructure, road upgrades, and the carrying out of works, but excluding pre-construction minor works**
Council	**Lithgow City Council**
Department, the	**Department of Planning, Industry and Environment**
DPIE Water	**Water Group within the Department**
EA	***Mt Piper Ash Placement (two volumes) – Environmental Assessment (EA)*, dated August 2010 and prepared by Sinclair Knight Merz, as amended by:** • ***Mt Piper Ash Placement – Submissions Report,* prepared by Sinclair Knight Merz, March 2011 and *Delta's Letter to the Department – Submissions Report Response to the Department and Agency Issues* (dated 22 June 2011); and** • **Modification application (MOD 1) – *Mt Piper Ash Placement Project – Lamberts North Ash Repository Modification Report – Modification 1*, dated May 2021 and prepared by ERM and associated *Mt Piper Ash Placement Project – Lamberts North Ash Repository Submissions Report – Modification 1,* dated July 2021 and prepared by ERM, and additional information provided by the Proponent to support the modification application and included in Appendix E of the Department's assessment report on Modification 1.**
EPA	Environment Protection Authority.
EPL	**An Environment Protection Licence issued by the NSW Environment Protection Authority pursuant to the *Protection of the Environment Operations Act 1997***
Heritage NSW	**Heritage NSW – Aboriginal Cultural Heritage**
Incident	**An occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be a non-compliance**

Material harm	**Is harm that:** • **involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial; or** • **results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000 (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment).**
Minimise	**Implement all reasonable and feasible mitigation measures to reduce the impacts of the project**
Mitigation	**Activities associated with reducing the impacts of the project**
Minister, the	**Minister for Planning and Public Spaces, or delegate**
Operation	**Means the Operation of the Project, including ash haulage, ash truck movements, ash placement and management, installation of a leachate barrier system (liner and associated water management systems), operation of on-site water management systems, landscaping and revegetation/rehabilitation of the site but does not include commissioning trials of equipment or temporary use of parts of the project during construction.**
Project	The project that is the subject of Major Project Application 09_0186.
Project Area	**Lamberts North and Lamberts South ash disposal areas as identified in the EA**
Proponent	**EnergyAustralia NSW Pty Ltd, or any person carrying out any project to which this approval applies**
Publicly Available	Available for inspection by a member of the general public (for example, available on an internet site).
Reasonable and Feasible	Consideration of best practice taking into account the benefit of proposed measures and their technological and associated operational application in the NSW and Australian context. Feasible relates to engineering considerations and what is practical to build. Reasonable relates to the application of judgement in arriving at a decision, taking into account mitigation benefits, cost of mitigation versus benefits provided, community views, and nature and extent of potential improvements.
Secretary	**Planning Secretary under the EP&A Act, or nominee**
Sensitive Receiver	Residence, educational institution (e.g. school, TAFE college), health care facility (e.g. nursing home, hospital), religious facility (e.g. church), or child care facility.

Waste	**For the purpose of this project, ash, Solid Mixed Salts, Lime Salts and brine are not considered waste.**

SCHEDULE 2
PART A - ADMINISTRATIVE CONDITIONS

Terms of Approval

A1. The Proponent must carry out the project:

(a) in accordance with the conditions of this approval granted with respect to the Mt Piper Ash Placement Project (09_0186);

(b) in accordance with all written direction of the Secretary; and

(c) generally in accordance with the EA.

A2. The conditions of this approval and direction of the Secretary prevail to the extent of any inconsistency, ambiguity or conflict between them and the document listed in condition A1(c). In the event of an inconsistency, ambiguity or conflict between any of the documents listed in condition A1(c), the most recent document prevails to the extent of any inconsistency, ambiguity or conflict.

A3. The Proponent shall comply with the reasonable requirements of the **Secretary** arising from the Department's assessment of:

(a) any **documents** that are submitted in accordance with this approval; and

(b) the implementation of any actions or measures contained in these **documents**.

A4. The Proponent shall meet the requirements of the **Secretary** in respect of the implementation of any measure necessary to ensure compliance with the conditions of this approval, and general consistency with the documents listed under condition **A1(c)** of this approval.

Limits of Approval

A5. This approval shall lapse five years after the date on which it is granted, unless the works that are the subject of this approval are physically commenced on or before that time.

Statutory Requirements

A6. The Proponent shall ensure that all licences, permits and approvals are updated and/or obtained as required by law and maintained as required with respect to the project. No condition of this approval removes the obligation for the Proponent to obtain, renew or comply with such licences, permits or approvals.

Staging

A7. Where the Proponent intends to construct and operate the project in discrete stages (i.e Lamberts North and Lamberts South) it may comply with the requirements in conditions B4, B5, D2, D3, D4**, D5 and D6** separately for each stage.

Incident Notification, Reporting and Response

A8. The Secretary must be notified in writing via the Major Projects website immediately after the Proponent becomes aware of an incident. The notification must identify the project (including the application number and the name of the project if it has one) and set out the location and nature of the incident. Subsequent notification requirements must be given, and reports submitted in accordance with the requirements set out in Appendix 2.

Non-Compliance Notification

A9. The Secretary must be notified in writing via the Major Projects website within seven days after the Proponent becomes aware of any non-compliance. A non-compliance notification must identify the project and the application number for it, set out the condition of approval that the project is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.

Note: A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.

A10. Compliance Reports of the project must be carried out in accordance with the Compliance Reporting Requirements outlined in the *Compliance Reporting Post Approval Requirements* (2020).

Access to Information

A11. Until the completion of all rehabilitation required under this approval, the Proponent must:

(a) make the following information and documents (as they are obtained, approved or as otherwise stipulated within the conditions of this approval) publicly available on its website:

- **i) the EA;**
- **ii) all current statutory approvals for the project;**
- **iii) all approved strategies, plans and programs required under the conditions of this approval;**
- **iv) staging plans for the project if the construction, operation or decommissioning of the project is to be staged;**
- **v) regular reporting on the environmental performance of the project in accordance with the reporting requirements in any plans or programs approved under the conditions of this approval;**
- **vi) a comprehensive summary of the monitoring results of the project, reported in accordance with the specifications in any conditions of this approval, or any approved plans and programs;**
- **vii) a summary of the current phase and progress of the project;**
- **viii) contact details to enquire about the project or to make a complaint;**
- **ix) a Complaints Register, updated monthly;**
- **x) audit reports prepared as part of any Independent Environmental Audit of the project and the Proponent's response to the recommendations in any audit report;**
- **xi) any other matter required by the Secretary; and**

(b) keep such information up to date, to the satisfaction of the Secretary.

PART B – PRIOR TO CONSTRUCTION

Environmental Representative

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

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

(b) consider and advise the Proponent on its compliance obligations against all matters specified in the conditions of this approval and the Statement of Commitments**, as referred to under condition A1(c)**; and

(c) have the authority and independence to recommend to the Proponent reasonable steps to be taken to avoid or minimise unintended or adverse environmental impacts and, failing the effectiveness of such steps, to recommend to the Proponent that relevant activities are to be ceased as soon as reasonably practicable if there is a significant risk that an adverse impact on the environment will be likely to occur.

Groundwater Modelling

B2. The Proponent shall **develop and maintain an up to date groundwater model for** Lamberts North. The model should be calibrated to site-specific data. The Proponent shall consult with **Water NSW** in the preparation of the groundwater model and the model shall be provided to **Water NSW** within five months of project approval, unless otherwise agreed by the **Secretary**. The model shall address but not necessarily be limited to the following:

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

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

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

(d) calibration to site-specific data; and

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

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

Groundwater Monitoring

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

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

Construction Environmental Management Plan

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

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

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

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

(a) a **Construction Noise Management Plan** to detail how construction noise impacts would be minimised and managed. The Plan shall be developed in consultation with the EPA and shall include, but not necessarily be limited to:
  i) details of construction activities and an indicative schedule for construction works;

ii) identification of construction activities that have the potential to generate noise impacts on sensitive receivers;
iii) identification of noise criteria and procedures for assessing noise levels at sensitive receivers;
iv) details of reasonable and feasible actions and measures to be implemented to minimise noise impacts;
v) details of noise monitoring and if any noise exceedance is detected, how any non-compliance would be rectified; and
vi) procedures for notifying sensitive receivers of construction activities that are likely to affect their noise amenity.

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

(c) a **Soil and Surface Water Management Plan** to outline measures that will be employed to manage water on the site, to minimise soil erosion and the discharge of sediments and other pollutants to lands and/or waters throughout the construction period. The Plan shall be based on best environmental practice and shall be prepared in consultation with **Water NSW** and **DPIE Water** and any other relevant government agency. The Plan shall include, but not necessarily be limited to:
i) baseline data on the water quality and available flow data in Huons Creek, Lamberts Gully Creek and **Wangcol Creek**;
ii) water quality objectives and impact assessment criteria for Huons Creek, Lamberts Gully Creek and **Wangcol Creek**;
iii) a geomorphic assessment of the capacity of Lamberts Gully Creek to accommodate additional flow under a range of rainfall events and duration, prior to commencement of construction works;
iv) identification of the construction activities that could cause soil erosion or discharge sediment or water pollutants from the site;
v) description of stockpile locations and disposal methods;
vi) a description of the management methods to minimise soil erosion or discharge of sediment or water pollutants from the site, including a strategy to minimise the area of bare surfaces, stabilise disturbed areas, and minimise bank erosion;
vii) demonstration that the proposed erosion and sediment control measures will conform with, or exceed, the relevant requirements of *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004);
viii) a site water management strategy identifying drainage design including the separation of clean and dirty water areas for the project, details of the lining of surface water collection ponds and the associated water management measures including erosion and sediment controls and provisions for recycling/reuse of water and the procedures for decommissioning water management structures on the site and consideration to the treatment of water prior to discharge to the

environment;

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

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

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

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

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

xiv) provisions for periodic reporting of results to **DPIE Water** and **Water NSW** as per condition B8.

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

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

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

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

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

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

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

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

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

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

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

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

Biodiversity Offsets

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

Ecological Monitoring Program

B7. The Proponent shall prepare and implement an **Ecological Monitoring Program** prior to construction, in consultation with **DPIE Water and BCS** to monitor and quantify the impacts on the ecology of **Wangcol Creek** and the associated riparian environment. The Program shall include, but not necessarily be limited to:
(a) a sampling, data collection and assessment regime to establish baseline ecological health and for ongoing monitoring of ecological health of the in-stream environment during construction and throughout the life of the project

(including operation);

(b) at least one in-stream sampling period prior to ash placement at **Wangcol Creek** and at least two (2) sampling periods following ash placement at each of Lamberts North and Lamberts South;

(c) an assessment regime for monitoring the ecological health of the riparian environment for a period of at least five (5) years after final capping; and

(d) management measures to address any adverse ecological impacts.

Compliance Monitoring and Tracking

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

(a) provisions for periodic review of the compliance status of the project against the requirements of this approval and the Statement of Commitments detailed in the document referred to in condition A1c) of this approval;

(b) provisions for periodic reporting of the compliance status to the **Secretary**;

(c) a program for independent environmental auditing in accordance with **the Department's *Independent Audit Post Approval Requirements* (2020);**

(d) procedures for rectifying any non-compliance identified during environmental auditing or review of compliance**, complying with the requirements listed in condition A8 of this approval**;

(e) mechanisms for recording environmental incidents and actions taken in response to those incidents**, complying with the requirements listed in condition A8 of this approval**;

(f) provisions for reporting environmental incidents to the **Secretary** during construction and operation; and

(g) provisions for ensuring all employees, contractors and sub-contractors are aware of, and comply with, the conditions of this approval relevant to their respective activities.

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

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

Community Information and Complaints Management Provision of Information

B10. Prior to the construction of the project, the Proponent shall establish and maintain a website for the provision of electronic information associated with the project. The Proponent shall, subject to confidentiality, publish and maintain up-to-date information on this website or dedicated pages including, but not necessarily limited to:

(a) the documents referred to under condition A1 of this approval;

(b) this project approval, Environment Protection Licence and any other relevant environmental approval, licence or permit required and obtained in relation to the project;

(c) all strategies, plans and programs required under this project approval, or details of where this information can be viewed;

(d) information on construction and operational progress; and

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

Complaints and Enquiries Procedure

B11. Prior to the construction of the project, the Proponent shall ensure that the following are available for community complaints and enquiries during construction and operation:

(a) a 24 hour contact number(s) on which complaints and enquiries about

construction and operational activities may be registered;

(b) a postal address to which written complaints and enquiries may be sent; and

(c) an email address to which electronic complaints and enquiries may be transmitted.

The telephone number, postal address and email address shall be published in a newspaper circulating in the local area prior to the commencement of the project. The above details shall also be provided on the website required by condition B11 of this approval.

B12. The Proponent shall record the details of complaints received through the means listed under condition B11 of this approval in a Complaints Register. The Register shall record, but not necessarily be limited to:

(a) the date and time of the complaint;

(b) the means by which the complaint was made (e.g. telephone, email, mail, in person);

(c) any personal details of the complainant that were provided, or if no details were provided a note to that effect;

(d) the nature of the complaint;

(e) the time taken to respond to the complaint;

(f) any investigations and actions taken by the Proponent in relation to the complaint;

(g) any follow-up contact with, and feedback from, the complainant; and

(h) if no action was taken by the Proponent in relation to the complaint, the reason(s) why no action was taken.

The Complaints Register shall be made available for inspection by the **Secretary** upon request.

Community Information Plan

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

(a) measures for disseminating information on the development status of the project and methods for actively engaging with surrounding landowners, including Forests NSW and affected stakeholders regarding issues that would be of interest/ concern to them during the construction and operation of the project; and

(b) procedures to inform the community where work has been approved to be undertaken outside the normal Construction hours, in particular noisy activities.

A copy of the Plan shall be provided to the **Secretary** one month prior to the commencement of construction.

Design

B14. The ash placement areas shall be designed by a suitably qualified**, experienced and independent person, whose appointment has been approved by the Secretary** to ensure structural stability of the ash placement areas.

PART C – DURING CONSTRUCTION

Environmental Incident Reporting

C1. The Proponent shall notify the **Secretary** of any environmental incident within 12 hours of becoming aware of the incident. The Proponent shall provide full written details of the incident to the **Secretary** within seven days of the date on which the incident occurred.

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

Construction Hours

C3. Construction activities associated with the project shall only be undertaken during the following hours:

(a) 7:00 am to 6:00 pm, Mondays to Fridays, inclusive;
(b) 8:00 am to 1:00 pm on Saturdays; and
(c) at no time on Sundays or public holidays.

C4. Construction outside the hours stipulated in condition C3 of this approval is permitted in the following circumstances:

(a) where construction works do not cause audible noise at any sensitive receiver; or
(b) for the delivery of materials required outside these hours by the Police or other authorities for safety reasons; or
(c) where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm.

C5. The hours of construction activities specified under condition C3 of this approval may be varied with the prior written approval of the **Secretary**. Any request to alter the hours of construction specified under condition C3 shall be:

(a) considered on a case-by-case basis;
(b) accompanied by details of the nature and need for activities to be conducted during the varied construction hours; and
(c) accompanied by information necessary for the Secretary to reasonably determine that activities undertaken during the varied construction hours will not adversely impact on the acoustic amenity of sensitive receivers in the vicinity of the site.

Construction Noise

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

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

The Proponent shall implement reasonable and feasible noise mitigation measures with the aim of achieving the construction noise objective consistent with the requirements of the Interim Construction Noise Guideline (DECC, July 2009**) (or its latest version), unless the Secretary agrees otherwise**, including noise generated by heavy vehicle haulage and other construction traffic associated with the project.

Dust Generation

C7. The Proponent shall construct the project in a manner that minimises dust emissions

from the site, including wind-blown from earth works and stockpiles and traffic-generated dust. All activities on the site shall be undertaken with the objective of preventing visible emissions of dust from the site. Should such visible dust emissions occur at any time, the Proponent shall identify and implement all practicable dust mitigation measures, including cessation of relevant works, as appropriate, such that emissions of visible dust cease.

Heritage Impacts

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

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

Soil and Water Quality Impacts

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

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

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

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

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

Waste Generation and Management

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

C15. The Proponent shall not cause, permit or allow any waste generated outside the site to be received at the site for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by **an EPL**, if such a licence is required in relation to that waste.

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

PART D – PRIOR TO OPERATION

Ash Management

D1. The Proponent shall prepare a long-term ash management strategy including a program for investigation and assessment of alternative ash management measures with a goal of 40% reuse of ash by 31 December 2020. The report shall be submitted to the **Secretary** six months prior to the commencement of operations. The Proponent shall report on the status and outcomes of its investigations to the **Secretary** every two years from the commencement of the operation of the project, unless otherwise agreed by the **Secretary**.

Operational Environmental Management Plan

D2. The Proponent **must** prepare an Operational Environmental Management Plan (OEMP) to detail an environmental management framework, practices and procedures to be followed during operation of the project. The **OEMP must be prepared to the satisfaction of the Secretary, and in consultation with the relevant government agencies** and **must** include, but not necessarily be limited to:

(a) identification of all statutory and other obligations that the Proponent is required to fulfil in relation to operation of the project, including all approvals, licences, approvals and consultations;

(b) a description of the roles and responsibilities for all relevant employees (including contractors) involved in the operation of the project;

(c) overall environmental policies and principles to be applied to the operation of the project;

(d) standards and performance measures to be applied to the project, and a means by which environmental performance can be periodically reviewed and improved, where appropriate;

(e) management policies to ensure that environmental performance goals are met and to comply with the conditions of this approval;

(f) the environmental monitoring requirements outlined under conditions E12 to E18 inclusive;

(g) details of waste management including reuse and/or recycling of waste material, to minimise the need for treatment or disposal of those materials outside the site;

(h) specific consideration of relevant measures to address any requirements identified in the documents referred to under **conditions A1(c) of this approval;**

(i) the additional requirements of this approval**;**

(j) details of traffic management measures for public roads including managing vehicle movements, ensuring haul routes proposed are communicated to contractors and staff and complied with, measures to reduce impacts during peak hours and at intersections, scheduling heavy vehicle movements to minimise convoy or platoon lengths, identifying local climate conditions that may affect road safety and ensuring truckloads are covered at all times; and

(k) incorporation of traffic management measures into a Drivers Code of Conduct for transporting materials on public roads for all contractors and staff.

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

Nothing in this approval precludes the Proponent from incorporating the requirements of the **OEMP** into existing environmental management systems and plans administered by the Proponent.

D3. As part of the OEMP for the project, required under condition D2 of this approval, the

Proponent **must** prepare and implement the following Management Plans:

(a) an **Operational Noise Management Plan** to detail measures to mitigate and manage noise during operation of the project. The Plan **must** be prepared in consultation with the EPA and include, but not necessarily be limited to:

vi) identification of activities that will be carried out in relation to the project and the associated noise sources;

vii) identification of all relevant sensitive receivers and the applicable criteria at those receivers commensurate with the noise limit specified under condition E7 of this approval;

viii) noise monitoring procedures (as referred to in condition E12 of this approval) for periodic assessment of noise impacts at the relevant receivers against the noise limits specified under this approval and the predicted noise levels as detailed in the EA;

ix) details of all management methods and procedures that will be implemented to control individual and overall noise emissions from the site during operation, including the feasibility of noise reducing benching;

x) procedures to ensure that all reasonable and feasible noise mitigation measures are applied during operation of the project and procedures and corrective actions to be undertaken if non-compliance against the operational noise criteria as detailed in condition E7 is detected at the sensitive receivers; and

xi) provisions for periodic reporting of results to the EPA as per condition B8.

(b) a **Groundwater Management Plan** to detail measures to mitigate and manage groundwater impacts. The Plan **must** be prepared in consultation with **DPIE Water** and **Water NSW** and include, but not necessarily be limited to:

i) consideration of the revised updated groundwater model as per condition B2;

ii) baseline data on groundwater quality (including Huons Creek), location of groundwater monitoring wells, depth and available flow of groundwater in the project area;

iii) identification of potential sources of water pollutants and management measures**, including the leachate management system which must be designed and constructed generally in accordance with the *Environmental Guidelines, Solid Waste Landfills* (EPA, 2016) and monitoring requirements;**

iv) groundwater assessment criteria including trigger levels for remedial measures;

v) a contingency plan for events that have the potential to pollute or contaminate groundwater sources of water. The plan **must** include remediation actions and communication strategies (including notification of potentially affected nearby bore users) for the effective management of such an event to prevent discharge of these pollutants from all sources within the project area;

vi) a monitoring program as per condition E15 for groundwater connectivity, water levels, groundwater flow and water quality over the short and long term that includes upstream and downstream locations. The program **must** continue for a minimum of five years following final capping and landscaping;

vii) a protocol for the investigation of identified exceedances of the groundwater impact assessment criteria; and

viii) provisions for periodic reporting of results to **Water NSW** as per condition B8.

(c) a **Soil and Surface Water Management Plan** to outline measures that will be employed to manage water on the site, to minimise soil erosion and the

discharge of sediments and other pollutants to lands and/or waters throughout the life of the project. The Plan **must** be based on best environmental practice and **must** be prepared in consultation with the **DPIE Water** and **Water NSW**. The Plan **must** include, but not necessarily be limited to:

i) baseline data on the surface water quality and available flow in **Wangcol Creek** and Lamberts Gully Creek;
ii) water quality objectives and impact assessment criteria for **Wangcol Creek** and Lamberts Gully Creek;
iii) identification of the operation activities that could cause soil erosion or discharge sediment or water pollutants from the site;
iv) a description of the management controls to minimise soil erosion or discharge of sediment or water pollutants from the site, including a strategy to minimise the area of bare surfaces, stabilise disturbed areas, minimise bank erosion **and including the leachate management system which must be designed and constructed generally in accordance with the *Environmental Guidelines, Solid Waste Landfills* (EPA, 2016);**
v) demonstration that the proposed erosion and sediment control measures will conform with, or exceed, the relevant requirements of *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004);
vi) details of the water management system including separation of clean and contaminated/polluted water flows, provisions for the treatment, recycling/reuse and/or discharge of flows;
vii) site water balance including water usage for ash placement, sources of water and quantity of run-off generated;
viii) details of the lining for the surface water collection ponds;
ix) measures to minimise potential surface water infiltration;
x) a flow and water quality monitoring program for **Wangcol Creek** and Lamberts Gully Creek that includes discharge points, upstream and downstream locations as per condition E16 and limits for identified pollutants;
xi) specified remedial actions and contingency plans to mitigate any water quality exceedances on receiving waters including identified trigger levels for remedial measures or the activation of contingency plans; and
xii) provisions for periodic reporting of results to **Water NSW** as per condition B8.

(d) a **Air Quality Management Plan** to outline measures to minimise impacts from the project on local air quality. The Plan **must** be prepared in consultation with NSW Health and the EPA and include, but not necessarily be limited to:

i) baseline data on dust deposition levels;
ii) air quality objectives and impact assessment criteria;
iii) an assessment of alternative methods of ash placement to minimise the exposure of active placement areas to prevailing winds;
iv) mitigation measures to be incorporated during ash placement activities, haulage, etc;
v) an operating protocol for the ash placement irrigation system including activation rates, application rates and area of coverage and means of dealing with water shortages;
vi) detail how ash placement moisture levels will be maintained;
vii) a contingency plan to deal with high winds and dust suppression;
viii) a protocol for the investigation of visible emissions from the ash placement area;
ix) a response plan to address exceedances in visible emissions including $PM_{10,}$ TSP and deposited dust from the ash placement areas; and
x) an air quality monitoring program as referred to in condition E18 of this approval including identified air quality monitoring locations (including monitoring at sensitive receivers) and meteorological monitoring to predict high wind speed events;

xi) provisions for periodic reporting of results to the EPA as per condition B8; and

xii) a protocol for suppressing dust emissions within **the EPL** limits under normal and adverse weather conditions at all stages of the ash placement process.

(e) a **Landscape/Revegetation Plan** to outline measures to minimise the visual impacts of the ash placement areas and ensure the long-term stabilisation of the site and compatibility with the surrounding landscape and land use. The Plan **must** include, but not necessarily be limited to:

i) identification of design objectives and standards based on local environmental values, vistas, and land uses;

ii) identification of the timing and progressive implementation of revegetation works for ash placement areas as they are completed, including short-term and long term goals including landscape plans;

iii) a schedule of species to be used in revegetation, including the use of local native species in revegetation works selected by a qualified expert to ensure the rehabilitation works do not compromise the long term integrity of the capping; and

iv) procedures and methods to monitor and maintain revegetated areas during the establishment phase and long-term.

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

i) reinstatement of geomorphologic stable drainage lines on the rehabilitated areas and a timeframe for rehabilitation;

ii) restoration, rehabilitation and revegetation of the project's site;

iii) measures to control water pollutants from rehabilitated areas; and

iv) a program and timeframe for monitoring rehabilitated areas.

D3A. The Proponent must implement the OEMP as approved by the Secretary.

Groundwater Quality and Geotechnical Impacts

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

Leachate Management System

D5. Prior to the commencement of operation of each stage of the ash placement process, the Proponent must demonstrate to the satisfaction of the Secretary, in consultation with the EPA, that the design of the leachate management system is generally consistent with the *Environmental Guidelines, Solid Waste Landfills* (EPA, 2016), including:

(a) the leachate barrier system, including liner and leachate collection system; and

(b) the leachate storage dam/s including freeboard, appropriate sizing based on site water balance modelling and liner.

PART E – DURING OPERATIONS

Operational Hours

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

E2. Operations outside the hours stipulated in condition E1 of this approval are only permitted in the following emergency situations:

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

(b) breakdown of plant and/or equipment at the ash placement areas or the Mt Piper Power Station with the effect of limiting or preventing ash storage at the power station outside the operating hours defined in condition E1; or

(c) a breakdown of an ash haulage truck(s) or the conveyor preventing haulage during the operating hours stipulated in condition E1 combined with insufficient storage capacity at the Mt Piper Power Station to store ash outside of the project operating hours; or

(d) in the event that the Australian Energy Market Operator (AEMO), or a person authorised by AEMO, directs the Proponent (as a licensee) under the National Electricity Rules to maintain, increase or be available to increase power generation for system security and there is insufficient ash storage capacity at the Mt Piper Power Station to allow for the ash to be stored.

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

E3. In the event that an emergency situation as referred to under condition E2b) or E2c) occurs more than once in any two month period, the Proponent shall prepare and submit to the **Secretary** for approval a report including, but not limited to:

(a) the dates and a description of the emergency situations;

(b) an assessment of all reasonable and feasible mitigation measures to avoid recurrence of the emergency situations;

(c) identification of a preferred mitigation measure(s); and

(d) timing and responsibility for implementation of the mitigation measure(s).

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

E4. The Proponent shall notify the EPA prior to undertaking any emergency ash haulage or placement operations outside of the hours of operation stipulated in condition E1 of this approval and keep a log of such operations.

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

E6. The Proponent shall notify nearby sensitive receivers (as defined in the **OEMP** required under condition D3(a) of this approval) prior to 8.00 pm where it is known that emergency ash haulage or placement operations will be required outside of the hours of operation stipulated in condition E1 of this approval.

Operational Noise

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

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

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

(a) wind speed greater than 3 metres/second at 10 metres above ground level;

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

(c) stability category G temperature inversion conditions.

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

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

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

(b) approximately on the boundary where any dwelling is situated 30 metres or less from the property boundary that is closest to the premises.

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

(a) noise monitoring must be undertaken in accordance with the *Noise Policy for Industry* (NSW EPA, 2017), or its latest version, using equipment accepted by the EPA in writing;

(b) the meteorological data to be used for determining meteorological **conditions** is the data recorded by the meteorological weather station at the premises; and

(c) stability category temperature inversion conditions are to be determined **in accordance with the *Noise Policy for Industry* (NSW EPA, 2017), or its latest version.**

E10. The Proponent shall implement measures to ensure noise attenuation of trucks. These measures may include, but are not necessarily limited to, installation of residential class mufflers, engine shrouds, body dampening, speed limiting, fitting of rubber stoppers to tail gates, limiting the use of compression braking, and ensuring trucks operate in a one-way system at the ash placement areas where feasible.

Operational Noise Review

E11. Within 60 days of the commencement of operation of the project, unless otherwise agreed to by the **Secretary**, the Proponent shall submit to the **Secretary** an **Operational Noise Review** to confirm the operational noise impacts of the project. The Operational Noise Review shall be prepared in consultation with the EPA. The Review shall:

(a) identify the appropriate operational noise objectives and levels for sensitive receivers;

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

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

Ongoing Operational Noise Monitoring

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

The noise monitoring program shall be prepared in accordance with the requirements of the ***Noise Policy for Industry*** **(NSW EPA, 2017), or its latest version,** and shall include, but not be limited to:
(a) monitoring at Lamberts North, Lamberts South and Blackmans Flat during ash placement activities; and
(b) monitoring of the effectiveness of any noise mitigation measures implemented under condition D3(a) of this approval, against the noise criteria specified in condition E7 of this approval.

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

E13. Where noise monitoring including as required by condition E11 and E12 of this approval identifies any non-compliance with the operational noise criteria specified under condition E7 of this approval the Proponent shall prepare and submit to the **Secretary** a report including, but not limited to:
(a) an assessment of all reasonable and feasible physical and other mitigation measures for reducing noise at the source;
(b) identification of the preferred measure(s) for reducing noise at the source;
(c) feedback from directly affected property owners and the EPA on the proposed noise mitigation measures; and
(d) location, type, timing and responsibility for implementation of the noise mitigation measure(s).

The report is to be submitted to the **Secretary** within 60 days of undertaking the noise monitoring which has identified exceedances of the operational noise criteria specified under condition E7, unless otherwise agreed to by the **Secretary**.

The Proponent shall implement all reasonable and feasible mitigation measures in accordance with the requirements of the **Secretary**.

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

and with the agreement of the affected landowner.

Groundwater Monitoring

E15. The Proponent shall prepare and implement a **Groundwater Monitoring Program** to monitor the impacts of ash placement activities on local groundwater quality and hydrology. The Program shall be developed in consultation with **Water NSW**, and shall describe the location, frequency, rationale and procedures and protocols for collecting groundwater samples as well as the parameters analysed and methods of analysis. The monitoring program shall be ongoing for the operation of the project and for a minimum of 5 years following project completion and include, but not be limited to:

(a) monitoring at established bore sites (or replacement bore sites in the event that existing sites are damaged or lost) as described in the Groundwater Management Plan as per condition D3(b); and

(b) a schedule for periodic monitoring of groundwater quality, depth and flow at all monitoring sites, at an initial frequency of no less than once every month for the first 12 months of operation.

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

Surface Water Quality Monitoring

E16. The Proponent shall prepare and implement a surface water quality monitoring program to monitor the impacts of the ash placement activities on **Wangcol Creek** and Lamberts Gully. The Program shall be developed in consultation with **Water NSW**, and shall describe the location, frequency, rationale and the procedures and protocols for collecting water samples as well as the parameters analysed and methods of analysis. The program shall include, but not necessarily be limited to:

(a) monitoring at the existing water quality monitoring sites as described in the document referred to under condition A1**c**);

(b) monitoring at surface water discharge points from Lamberts Gully Creek;

(c) monitoring at surface water discharge points into **Wangcol Creek**;

(d) wet weather monitoring with a minimum of two events recorded within the first 12 months operation of the project; and

(e) a schedule for periodic monitoring of surface quality at all sites throughout the life of the project, at an initial frequency of no less than once every month for the first 12 months and must include, but not be limited to, monitoring of dissolved oxygen, turbidity, sulphates, salinity, boron, manganese, iron chloride, total phosphorus and total nitrogen.

Hydrological Monitoring Program

E17. A Hydrological Monitoring Program to assess and quantify the impacts and effectiveness of the transformed section of Huons Creek into a sub-surface drainage line in consultation with **Water NSW and DPIE Water and any other relevant government agency**. Monitoring is to be undertaken for a period of five (5) years upon completion of the creek transformation. The program must include sampling for identified pollutants before and after the transformation works and include a sampling site downstream of the sub-surface section of Huons Creek. In the first 12 months following completion of the transformation, monitoring is to be undertaken at least every three (3) months upon completion of the creek transformation and after any heavy wet weather event.

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

Air Quality Monitoring

E18. The Proponent shall prepare an Air Quality Monitoring Program, in consultation with the EPA and NSW Health. The Program shall include, but not necessarily be limited to, monitoring for dust. Monitoring sites shall be identified as per condition D3 (d).

The air quality monitoring program shall be ongoing for the life of the project, and during final rehabilitation and stabilisation of the site.

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

Environmental Incident Reporting

E19. The Proponent shall notify the **Secretary** of any environmental incident within 12 hours of becoming aware of the incident. The Proponent shall provide full written details of the incident to the **Secretary** within seven days of the date on which the incident occurred.

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

Annual Performance Reporting

E21. Deleted.

Independent Environmental Auditing

E22. Deleted.

Waste Generation and Management

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

E24. The Proponent shall not cause, permit or allow any waste generated outside the site to be received at the site for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by a licence under the Protection of the Environment Operations Act 1997, if such a licence is required in relation to that waste.

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

Revision of Strategies, Plans and Programs

E26. Within 3 months, unless the Secretary agrees otherwise, of:

(a) the submission of an incident report or independent audit report under condition B8 or B9; and

(b) the approval of any modification to the conditions of this approval; or

(c) a direction of the Secretary under condition A1 of Schedule 2;

the Proponent must review and, if necessary, revise the studies, strategies or plans required under the conditions of approval to the satisfaction of the Secretary.

Where this review leads to revisions in any such document, then within 4 weeks of the review the revised document must be submitted to the Secretary for approval, unless otherwise agreed with the Secretary.

Note: This is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the project.

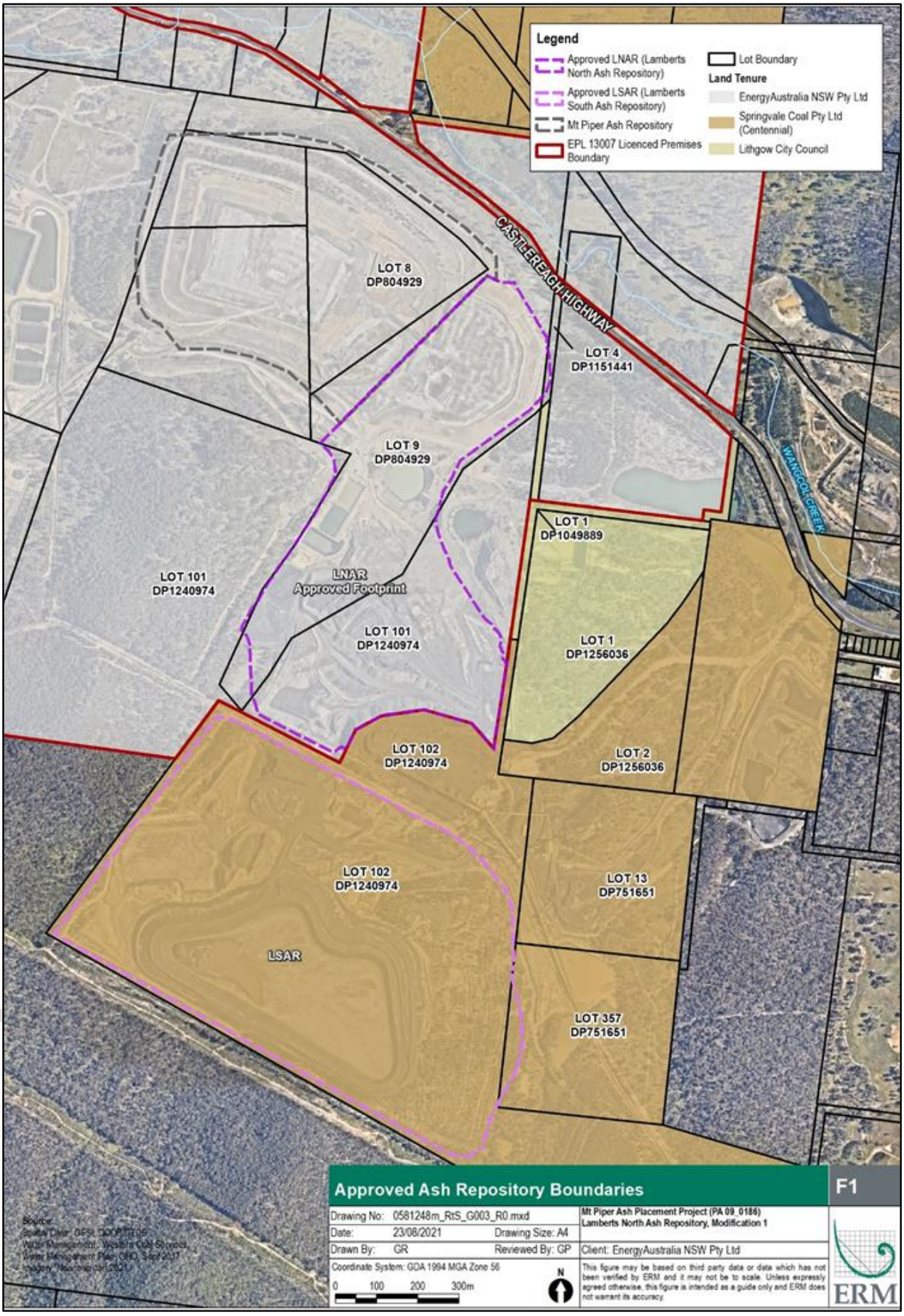
PART F – POST OPERATIONS

Project Completion Management Plan

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

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

APPENDIX 1: PROJECT LAYOUT PLAN



APPENDIX 2: INCIDENT NOTIFICATION AND REPORTING REQUIREMENTS

WRITTEN INCIDENT NOTIFICATION REQUIREMENTS

1. A written incident notification addressing the requirements set out below must be submitted to the Secretary via the Major Projects website within seven days after the Proponent becomes aware of an incident.

2. Written notification of an incident must:
   (a) identify the project and application number;
   (b) provide details of the incident (date, time, location, a brief description of what occurred and why it is classified as an incident;
   (c) identify how the incident was detected;
   (d) identify when the Proponent became aware of the incident;
   (e) identify any actual or potential non-compliance with conditions of approval;
   (f) describe what immediate steps were taken in relation to the incident;
   (g) identify further action(s) that will be taken in relation to the incident; and
   (h) identify a project contact for further communication regarding the incident.

3. Within 30 days of the date on which the incident occurred or as otherwise agreed to by the Secretary, the Proponent must provide the Secretary and any relevant public authorities (as determined by the Secretary) with a detailed report on the incident addressing all requirements below, and such further reports as may be requested.

4. The Incident Report must include:
   (a) a summary of the incident;
   (b) outcomes of an incident investigation, including identification of the cause of the incident;
   (c) details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence; and
   (d) details of any communication with other stakeholders regarding the incident.

Appendix E
Stakeholder Consultation

APPENDIX E - AGENCIES

Refer to the below summary of recommendations or suggestions provided by the EPA and NSW Health , along with EnergyAustralia's response and where the feedback has been addressed in the in relation to the Lamberts North Ash Repository – Modification 1, Operational Environmental Management Plan (OEMP). With the exception of DPIE Water / NRAR, all other agencies (as listed in Table 3-3) had no comments to provide regarding the OEMP. DPIE Water / NRAR had not provided feedback during the period between 22 October and 10 December 2022.

Stakeholder	Recommendation or suggestion	Response	Addressed in OEMP
NSW Environment Protection Authority	Recommendation: Revise the monitoring parameters for surface water to include: • Electrical conductivity, oxides of nitrogen as N, ammonia as N and filterable reactive phosphorus as P. • Filtered metals, arsenic III and arsenic V, chromium III and chromium VI	EnergyAustralia agree with the recommendation from the EPA regarding these monitoring parameters. Electrical conductivity and filtered metals are routinely obtained, and reported for surface water. The OEMP has been updated accordingly to clarify these parameters. Nitrate and nitrite (i.e. oxides of nitrogen as N are currently included in the OEMP and no change is currently proposed for these. The suggested addition of filterable reactive phosphorus as P and speciated metals has been included in the OEMP. However, due to the high background concentrations of some metals (e.g. iron), sample matrix interference may result in raised a laboratory limit of reporting or potentially false elevated concentrations for chromium VI. Once a baseline set of data is established and the results assessed, justification for the ongoing inclusion of these added monitoring parameters will be reassessed at the next scheduled OEMP review.	Refer to Appendix A, Table A-2.
	Recommendation: Inclusion of monthly surface water monitoring at a site upstream of WX22.	EnergyAustralia agree with the recommendation from the EPA for inclusion of added surface water monitoring at a site upstream of WX22. LMP01 has been included as a monthly monitoring site in the OEMP.	Refer to Section 5.6 and Appendix B, Table B-2
	Recommendation: The surface water 'environmental goals' are reviewed to ensure they are appropriate to detect, and inform management	The 'Environmental Goals' were established for the Mt Piper Ash Repository by Connell Wagner (2007)1 using the ANZECC (2000) guidelines to define acceptable ambient water quality, including consideration of guidelines for the protection of aquatic life, livestock, irrigation or drinking water. Adjustments were made to the default ANZECC (2000) guideline values to account for the effects of water hardness, and taking in to account background water quality.	Refer to Section 5.5, Section 5.6 and Appendix B, Table B-1

[1] Connell Wagner Pty Ltd (2007), Mt Piper Power Station, Brine Conditioned Flyash Co-Placement Water Management Plan, Water Quality Monitoring Annual Update Report, February 2006 to January 2007, for Delta Electricity Western, Final Report Reference 7053, 3 December 2007.

Stakeholder	Recommendation or suggestion	Response	Addressed in OEMP
	of, potential quality changes associated with the ash repository (LNAR). Further justification for when groundwater trigger values are based on the 90th percentile pre-placement data, particularly nickel. If receiving groundwater monitoring will also be adjusted for hardness when determining if the environmental goal has been exceeded.	Due to weathering of pyrite and similar minerals in the local area, associated with local ore bodies from abandoned underground coal-mine workings, the local water quality (in particular groundwater) was described by Connell Wagner (2007) as being low in pH, elevated in sulfate, boron, nickel, zinc, manganese and iron, with some of these parameters outside the desired range outlined in the ANZECC (2000) guidelines. Connell Wagner (2007) outlines that the Environmental Goals for groundwater were established using the 90th percentile pre-placement data or available ANZECC (2000) guideline values, whichever was higher. The same approach and values were adopted and approved for the Lamberts North Ash Repository under project approval 09_0186 (as modified). The "pre-placement data" refers to water data collected from the former Groundwater Collection Basin on at least a quarterly basis between April 1993 and October 2000. The Environmental Goals for groundwater were developed for the mineralised elements: iron, manganese, nickel and zinc which exceed the ANZECC (2000) guidelines as a result of background conditions. A similar approach was undertaken for surface water using the 90th percentile pre-placement data for WX22, where the majority of monitoring parameters in surface water were below the available ANZECC guideline values. The exception was for zinc for which the 90th percentile pre-placement data was applied as the Environmental Goal. The above text has been included in the OEMP, under Section 5.5.3.1. The approved Environmental Goals have been adopted for monitoring programs related to the Mt Piper Ash Repository and the Lamberts North Ash Repository since 2007 and 2013 respectively, in accordance with the respective project approval conditions2. While it is acknowledged that there is currently a more extensive background monitoring dataset available, and that a small selection of the ANZECC (2000) default guideline values and correction factors have been updated over time since approval, the currently approved Environmental Goals and assessment of monitoring data have been effective in detecting changes in groundwater and surface water quality, and informing appropriate management actions where required. Further, the Lamberts North Ash Repository – Modification 1 will involve installation of a leachate barrier system to intercept and manage leachate, ultimately intended to result in improved environmental outcomes. Therefore it is proposed that the surface water (and groundwater) Environmental Goals remain as currently presented in the OEMP.	

[2] The MPAR is authorised under Development Consent 80/10060 granted under the Environmental Planning and Assessment Act 1979 (NSW) (EP&A Act), as currently modified (Mt Piper Consent). The LNAR is authorised under project approval 09_0186 granted under the EP&A Act on 16 February 2012 (Lamberts North Project Approval, as modified).

Stakeholder	Recommendation or suggestion	Response	Addressed in OEMP
		The Environmental Goal for iron is currently listed as 300 mg/L; no change is currently proposed to this. Where additional monitoring parameters have been included, the Environmental Goals in the OEMP have accounted for the ANZG (2018) value for 95% species protection as a commitment statement. Terminology in the OEMP has been updated to consistently refer to the water quality management criteria as 'Environmental Goals' throughout. The Environmental Goals will be subject to review in consultation with the EPA under the Environmental Protection Licence (EPL) 13007 – Draft Pollution Reduction Studies (PRS). Once the review of Environmental Goals is completed in accordance with the PRS, the relevant water quality management and monitoring plans will be updated, if required.	
NSW Health Service - Health System Support Group	Suggestion: Whilst the 2019-2020 report indicated exceedances were due to several major unconnected climatic and weather events, a consideration into future air quality monitoring could include analysis of TEOM filters and dust deposition against known content of the Ash placement. This would serve to verify that any aerosolised material from the Ash Emplacement does not contribute to a background 'creep' in air quality. This is particularly important due to uncontrolled factors influencing air quality conditions in this area and resulting in existing health stress burdens.	The Lamberts North Ash Repository – Modification 1 does not propose changes to the handling, placement or management of ash that were considered as part of the original impact assessment and approvals related to air quality. NSW Health has acknowledged that the controls and monitoring specified in the OEMP are sufficient and on this basis, updates to the OEMP Air Quality Management Plan are not proposed. NSW Health has suggested that EnergyAustralia consider analysis of correlation between ash composition and filtered ambient particulate matter to verify the potential influence of the ash placement operations on ambient air quality. In this respect, it is noted that concentrations of potentially hazardous metals such as arsenic, cadmium, chromium, lead, mercury are relatively low in the placed fly-ash, and within the ranges expected in surface soils within the region. Accordingly, the current continuous monitoring of PM10 is considered to form a targeted and technically robust approach to the management and assessment of particulate matter emissions from the operations. With regard to the influence of regional climatic and weather events, EnergyAustralia operate the Wallerawang Air Quality Monitoring Station (AQMS) which includes continuous monitoring of PM10 and PM2.5, whilst the NSW Department of Planning, Industry and Environment operate a separate AQMS at Bathurst that monitors PM10. It is noted, that data from these stations can be applied in the qualification of widespread climatic and regional events.	Nil

A complete overview of the regulatory stakeholder consultation regarding the OEMP conducted between 22 October and 10 December 2022 is provided in the remainder of this appendix.

From: no-reply@majorprojects.planning.nsw.gov.au <no-reply@majorprojects.planning.nsw.gov.au>
Sent: Friday, 19 November 2021 2:34 PM
To: [redacted]@energyaustralia.com.au>
Subject: Mount Piper Power Station - Ash Placement LNAR MOD 1 OEMP - Response from ENVIRONMENT PROTECTION AUTHORITY

ENVIRONMENT PROTECTION AUTHORITY has responded to your request for advice in relation to the Mount Piper Power Station - Ash Placement LNAR MOD 1 OEMP . The response is below and/or attached. Record of this consultation has been automatically saved to the portal.

When you are ready, login to your profile to submit the final document to the Department.

Public Authority Response
Please see Attachment EPA Response

To sign in to your account click here or visit the Major Projects Website.
Please do not reply to this email.

Kind regards

The Department of Planning, Industry and Environment

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DOC21/931779-1

[redacted]
Energy Australia PTY LTD
350 Boulder Road
Portland NSW 2847

Email: [redacted]@energyaustralia.com.au

EPA REVIEW OF OPERATIONAL ENVIRONMENTAL MANAGEMENT PLAN

Dear [redacted]

Thank you for the request of Public Authority Consultation (PA 09_0186), for review by the NSW Environment Protection Authority (EPA) of the Operational Environmental Management Plan (OEMP) for the proposed Lamberts North Ash Repository Mod 1 at the Mount Piper Power Station.

The EPA has reviewed the OEMP and while it appears to appropriately manage surface and groundwater risks the EPA has the following recommendations to make:

Surface Water Monitoring Program
The monitoring program would benefit from the inclusion of Electrical conductivity and additional nutrient fractions. Inclusion of filtered metals and arsenic and chromium species should also be considered as these are more indicative of the readily available metals fractions and would provide a better understanding of potential water pollution risks if compared to the (effects-based) ANZG (2018) default guideline values.
Recommendation:

- Revise the monitoring parameters to include
    - Electrical conductivity, oxides of nitrogen as N, ammonia as N, and filterable reactive phosphate as P.
    - Filtered metals, arsenic III and V, and chromium III and VI

The monitoring frequency also appears broadly appropriate with quarterly sampling planned for all surface water monitoring sites with the exception of WX22 (Wangcol Creek, downstream of the ash repositories), which will be sampled monthly. Monthly sampling of an upstream site (e.g NC01) would better inform management responses in the event that elevated pollutant levels are detected at WX22.
Recommendation:

- Inclusion of monthly monitoring at a site upstream of WX22

Surface Water 'Environmental Goals'
The terms 'local guideline', 'environment goal' and 'trigger value' are used interchangeably in the OEMP to refer to water quality management criteria adopted to trigger management actions when exceeded in the receiving waterways.
The OEMP states "*the local guideline (or Environmental Goal) is based upon the 90th percentile pre-ash placement water quality results as measured at surface water quality point WX22, or the ANZECC (2000) default guideline value (whichever is higher*) (Appendix B)." It is unclear what the basis is for adopting the 90th percentile, how it was derived (e.g sampling conditions, duration, and number) and whether this benchmark is appropriate to detect potential water quality changes associated with the ash repository.

Table B-1 of the plan presents the 'trigger values (environment goals)'. Most of the surface water 'trigger values (environmental goals)' appear to be based on the guideline values from the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZG, 2018; ANZECC, 2000). The following issues are noted:

- The table includes hardness adjusted guideline values for cadmium, chromium, copper, lead, nickel and zinc. However, ANZG (2018) recommends that no hardness adjustment be undertaken for copper. It is also unclear whether the harness corrections were calculated appropriately as no details of the process were provided. For example, it is unclear whether the assumed hardness concentrations reflect the typical concentrations within the receiving waterways.
- Some of the ANZG (2018) guideline values are incorrectly listed in the table:
    - Electrical conductivity - The table incorrectly refers to the guideline value for west flowing lowland rivers (2,200µS/cm), where the appropriate guideline value is that for upland rivers (350µS/cm).
    - Arsenic – ANZG (2018) recommends freshwater guideline values of As(III) (24µg/L) and As(V) (13 µg/L). Total arsenic concentrations should be compared against the lower of these guideline values where the concentrations of As(III) and As(V) are unknown. However, the table incorrectly refers to the higher, As(III), guideline value.
    - Beryllium – The table incorrectly indicates that the relevant guideline value is 110µg/L. The interim working level is 0.13µg/L (see Beryllium technical brief at https://www.waterquality.gov.au/anz-guidelines/guideline-values/default/water-quality-toxicants/toxicants/beryllium-2000).
    - Boron – the table refers to the ANZECC (2000) freshwater guideline value for boron (370µg/L). This guideline value has been revised to 940µg/L (ANZG, 2018).
    - Iron – the table adopts an 'environmental goal' of 1,500µg/L indicating that this is based on the drinking water guideline value. However, the Australian Drinking Water Guidelines recommend a guideline value of 300µg/L for iron, which is consistent with the ANZG (2018) interim working level for aquatic ecosystems.

Recommendation:
The surface water 'environmental goals' are reviewed to ensure they are appropriate to detect, and inform management of, potential quality changes associated with the ash repository.

Groundwater Trigger Values

The application of the pre-placement baseline is appropriate for groundwater, but it is not clarified how the application of the 90th percentile threshold would appropriately detect declining environmental outcomes for groundwaters. The OEMP is required to have further background information or justification for the trace metal triggers for groundwaters which are not clearly justified from the information presented in the OEMP. The groundwater trigger values determined in Appendix B, Table B-1 are not justified in Chapter 5.5.3 Groundwater Monitoring Program, Section 5.5.3.1 Water Quality Criteria. Only that the values are based on the 90th percentile of baseline results and adjusted for hardness.

Recommendation:

- Further justification for when groundwater trigger values are based on the 90th percentile of baseline results, particularly nickel.
- If receiving groundwater monitoring will also be adjusted for hardness when determining if the environmental goal/ trigger has been exceeded.

The OEMP should be amended to include the above recommendations. The EPA will also discuss with Energy Australia a future licence variation that will capture the recommendations for additional analytes and monitoring requirements.

If you have any questions regarding this matter, please contact the EPA at info@epa.nsw.gov.au

Yours sincerely

Sheridan Ledger
A/Manager
Regulatory Operations Regional South

From: [redacted]@energyaustralia.com.au>
Sent: Friday, 10 December 2021 12:55 PM
To: Sheridan.Ledger@epa.nsw.gov.au
Cc: [redacted]
Subject: RE: Mt Piper Power Station LNAR MOD 1: OEMP Consultation
Attachments: 211210 Letter to EPA -LNAR MO1 OEMP Consult_feedback.pdf

Dear Sheridan

Please see attached correspondence regarding our responses to the EPA feedback associated with our LNAR MOD 1 OEMP.

Please don't hesitate to contact me should you have any queries.

Kind Regards,
[redacted]

[redacted]
Approvals and Licencing Specialist | Mt Piper
[redacted]@energyaustralia.com.au

EnergyAustralia
350 Boulder Road, Portland, NSW 2847
energyaustralia.com.au

From: [redacted]
Sent: Friday, 22 October 2021 5:24 PM
To: Sheridan.Ledger@epa.nsw.gov.au
Cc: [redacted]@energyaustralia.com.au>
Subject: Mt Piper Power Station LNAR MOD 1: OEMP Consultation

Dear Sheridan

Please be advised, that we have submitted our DRAFT Operational Environmental Management Plan for the Lamberts North Ash Repository (LNAR) Modification 1 as required under the Conditions of Consent (MP 09_0186) for consultation with the EPA through the DPIE Planning Portal.

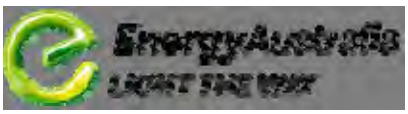
A copy of the submission and a cover letter to the EPA is attached to this email.

Let me know if you have any questions.

Kind Regards,
[redacted]

[redacted]
Approvals and Licencing Specialist | Mt Piper
[redacted]@energyaustralia.com.au

EnergyAustralia
350 Boulder Road, Portland, NSW 2847
energyaustralia.com.au



10 December 2021

EnergyAustralia

EnergyAustralia NSW Pty Ltd
ABN 75 163 935 635

Mt Piper Power Station
350 Boulder Road
Portland NSW 2847
Telephone (02) 6354 8100
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www.energyaustralia.com.au

Sheridan Ledger
Unit Head
Regulatory Operations
NSW Environment Protection Authority

Via Email: Sheridan.Ledger@epa.nsw.gov.au

Reference A1982535

Dear Ms Ledger

Mt Piper Power Station Ash Placement Project – PA 09_0186
(Lamberts North Ash Repository MOD 1)
Operational Environmental Management Plan Consultation

We refer to our correspondence dated 22nd October 2021 (Our Ref: A1966365) requesting feedback on our draft Operational Environmental Management Plan (**OEMP**) for the Lamberts North Ash Repository. We would like to take this opportunity to thank the EPA for the comments provided and timely response.

We have considered all the matters raised in your feedback (Your Ref: DOC21/931779-1, dated 19th November 2021). The Table provided at **Attachment 1**, provides our response to the feedback/comments provided including where we have updated the OEMP to incorporate the suggested items.

We would welcome any further feedback on our responses, otherwise please acknowledge that they have suitably addressed the EPA's recommendations.

Please contact [redacted] if you have any questions relating to the above on [redacted] or at [redacted]@energyaustralia.com.au

Yours Sincerely,

[redacted]
NSW Environment Leader
EnergyAustralia NSW

Encl.

Table 1. Response to EPA Feedback regarding the Lamberts North Operational Environmental Management Plan

Stakeholder	Recommendation	Response
NSW Environment Protection Authority	Revise the monitoring parameters for surface water to include: ■ Electrical conductivity, oxides of nitrogen as N, ammonia as N and filterable reactive phosphorus as P. ■ Filtered metals, arsenic III and arsenic V, chromium III and chromium VI	EnergyAustralia agree with the recommendation from the EPA regarding these monitoring parameters. Electrical conductivity and filtered metals are routinely obtained, and reported for surface water. The OEMP has been updated accordingly to clarify these parameters. Nitrate and nitrite (i.e. oxides of nitrogen as N are currently included in the OEMP and no change is currently proposed for these. The suggested addition of filterable reactive phosphorus as P and speciated metals has been included in the OEMP. However, due to the high background concentrations of some metals (e.g. iron), sample matrix interference may result in raised a laboratory limit of reporting or potentially false elevated concentrations for chromium VI. Once a baseline set of data is established and the results assessed, justification for the ongoing inclusion of these added monitoring parameters will be reassessed at the next scheduled OEMP review.
	Inclusion of monthly surface water monitoring at a site upstream of WX22.	EnergyAustralia agree with the recommendation from the EPA for inclusion of added surface water monitoring at a site upstream of WX22. LMP01 has been included as a monthly monitoring site in the OEMP.
	The surface water 'environmental goals' are reviewed to ensure they are appropriate to detect, and inform management of, potential quality changes associated with the ash repository (LNAR). Further justification for when groundwater trigger values are based on the 90th percentile pre-	The 'Environmental Goals' were established for the Mt Piper Ash Repository by Connell Wagner (2007)[1] using the ANZECC (2000) guidelines to define acceptable ambient water quality, including consideration of guidelines for the protection of aquatic life, livestock, irrigation or drinking water. Adjustments were made to the default ANZECC (2000) guideline values to account for the effects of water hardness, and taking in to account background water quality. Due to weathering of pyrite and similar minerals in the local area, associated with local ore bodies from abandoned underground coal-mine workings, the local water quality (in particular groundwater) was described by Connell Wagner (2007) as being low in pH, elevated in sulfate, boron, nickel, zinc, manganese and iron, with some of these parameters outside the desired range outlined in the ANZECC (2000) guidelines.

[1] Connell Wagner Pty Ltd (2007), Mt Piper Power Station, Brine Conditioned Flyash Co-Placement Water Management Plan, Water Quality Monitoring Annual Update Report, February 2006 to January 2007, for Delta Electricity Western, Final Report Reference 7053, 3 December 2007.

	placement data, particularly nickel. If receiving groundwater monitoring will also be adjusted for hardness when determining if the environmental goal has been exceeded.	Connell Wagner (2007) outlines that the Environmental Goals for groundwater were established using the 90th percentile pre-placement data or available ANZECC (2000) guideline values, whichever was higher. The same approach and values were adopted and approved for the Lamberts North Ash Repository under project approval 09_0186 (as modified). The "pre-placement data" refers to water data collected from the former Groundwater Collection Basin on at least a quarterly basis between April 1993 and October 2000. The Environmental Goals for groundwater were developed for the mineralised elements: iron, manganese, nickel and zinc which exceed the ANZECC (2000) guidelines as a result of background conditions. A similar approach was undertaken for surface water using the 90th percentile pre-placement data for WX22, where the majority of monitoring parameters in surface water were below the available ANZECC guideline values. The exception was for zinc for which the 90th percentile pre-placement data was applied as the Environmental Goal. The above text has been included in the OEMP, under Section 5.5.3.1. The approved Environmental Goals have been adopted for monitoring programs related to the Mt Piper Ash Repository and the Lamberts North Ash Repository since 2007 and 2013 respectively, in accordance with the respective project approval conditions[2]. While it is acknowledged that there is currently a more extensive background monitoring dataset available, and that a small selection of the ANZECC (2000) default guideline values and correction factors have been updated over time since approval, the currently approved Environmental Goals and assessment of monitoring data have been effective in detecting changes in groundwater and surface water quality, and informing appropriate management actions where required. Further, the Lamberts North Ash Repository – Modification 1 will involve installation of a leachate barrier system to intercept and manage leachate, ultimately intended to result in improved environmental outcomes. Therefore it is proposed that the surface water (and groundwater) Environmental Goals remain as currently presented in the OEMP. The Environmental Goal for iron is currently listed as 300 mg/L; no change is currently proposed to this. Where additional monitoring parameters have been included, the Environmental Goals in the OEMP have accounted for the ANZG (2018) value for 95% species protection as a commitment statement.

[2] The MPAR is authorised under Development Consent 80/10060 granted under the Environmental Planning and Assessment Act 1979 (NSW) (EP&A Act), as currently modified (Mt Piper Consent). The LNAR is authorised under project approval 09_0186 granted under the EP&A Act on 16 February 2012 (Lamberts North Project Approval, as modified).

		Terminology in the OEMP has been updated to consistently refer to the water quality management criteria as ‘Environmental Goals’ throughout. The Environmental Goals will be subject to review in consultation with the EPA under the Environmental Protection Licence (EPL) 13007 – Draft Pollution Reduction Studies (PRS). Once the review of Environmental Goals is completed in accordance with the PRS, the relevant water quality management and monitoring plans will be updated, if required.

Sue Parsons

From: no-reply@majorprojects.planning.nsw.gov.au
Sent: Sunday, 7 November 2021 10:28 AM
To: [redacted]
Subject: Mount Piper Power Station - Ash Placement LNAR MOD 1 OEMP - Response from NSW Health Service - Health System Support Group

NSW Health Service - Health System Support Group has responded to your request for advice in relation to the Mount Piper Power Station - Ash Placement LNAR MOD 1 OEMP . The response is below and/or attached. Record of this consultation has been automatically saved to the portal.

When you are ready, login to your profile to submit the final document to the Department.

Public Authority Response
Condition E18 requiring the development of an Air Quality Monitoring Program (AQMP).

Please note that at present Nepean Blue Mountains Local Health District does not have objections to the proposed AQMP to be implemented as a continuation of the LNAR Ash Emplacement. However, the following suggestion is made to ensure that material from the Ash Emplacement does not place a increased burden on the health of nearby residents.

Critical controls that are described by this AQMP include, but are not limited to:
Sufficient control of potential aerosolisation of fine particulate which may contain a mixture of carbons and metals.
Sufficient monitoring at site and at relevant nearby receptors to establish Pm10 impacts on potentially affected properties, adjusted for wind modelling to ensure accurate identification of target premises.
Sufficient monitoring at an offsite location to establish an unaffected background particulate level, specifically for PM10 and finer particulates.

Adequate controls to ensure that emission from the Ash placement is controlled so that it does not produce fine particulates or dust that could present chronic or acute health impacts on residents of the area.

Suggestion:
Whilst the 2019-2020 report indicated exceedances were due to several major unconnected climatic and weather events, a consideration into future air quality monitoring could include analysis of TEOM filters and dust deposition against known content of the Ash placement. This would serve to verify that any aerosolised material from the Ash Emplacement does not contribute to a background 'creep' in air quality. This is particularly important due to uncontrolled factors influencing air quality conditions in this area and resulting in existing health stress burdens.

To sign in to your account click here or visit the Major Projects Website.
Please do not reply to this email.

Kind regards

The Department of Planning, Industry and Environment

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Sue Parsons

From: [redacted]@energyaustralia.com.au>
Sent: Friday, 10 December 2021 12:57 PM
To: James.plant@health.nsw.gov.au
Cc: [redacted]
Subject: RE: Mt Piper Power Station LNAR MOD 1: OEMP Consultation
Attachments: 211210 Letter to NSWHealth -LNAR MO1 OEMP Consult_feedback.pdf

Dear James

Please see attached correspondence regarding our responses to the NSW Health feedback associated with our LNAR MOD 1 OEMP.

Please don't hesitate to contact me should you have any queries.

Kind Regards,

[redacted]
Approvals and Licencing Specialist | Mt Piper
[redacted]@energyaustralia.com.au

EnergyAustralia
350 Boulder Road, Portland, NSW 2847
energyaustralia.com.au

From: [redacted]
Sent: Friday, 22 October 2021 5:30 PM
To: 'James.plant@health.nsw.gov.au' <James.plant@health.nsw.gov.au>
Cc: [redacted]@energyaustralia.com.au>
Subject: Mt Piper Power Station LNAR MOD 1: OEMP Consultation

Dear James

Please be advised, that we have submitted our DRAFT Operational Environmental Management Plan for the Lamberts North Ash Repository (LNAR) Modification 1 as required under the Conditions of Consent (MP 09_0186) for consultation with NSW Health through the DPIE Planning Portal.

A copy of the submission and a cover letter to NSW Health is attached to this email.

Let me know if you have any questions.

Kind Regards,

[redacted]

[redacted]
Approvals and Licencing Specialist | Mt Piper
[redacted]@energyaustralia.com.au

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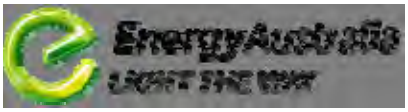
energyaustralia.com.au



EnergyAustralia

EnergyAustralia NSW Pty Ltd
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enq@energyaustralia.com.au
www.energyaustralia.com.au

10 December 2021

Mr. James Plant
Manager Environmental Health
NSW Health
Nepean Blue Mountains Health District
PO Box 63
PENRITH NSW 2751

Via: James.plant@health.nsw.gov.au

Reference A1982537

Dear Sir/Madam

Mt Piper Power Station Ash Placement Project – PA 09_0186
(Lamberts North Ash Repository MOD 1)
Operational Environmental Management Plan

We refer to our correspondence dated 22nd October 2021 (Our Ref: A1966366) requesting feedback on our draft Operational Environmental Management Plan (**OEMP**) for the Lamberts North Ash Repository. We would like to take this opportunity to thank NSW Health for the comments provided and timely response.

We have considered all the matters raised in your feedback (provided via the DPIE Planning Portal). The Table provided at **Attachment 1**, provides our response to the feedback/comments provided. We note that NSW Health does not have any objections to the proposed Air Quality Monitoring Program and we concur that adequate controls are in place to ensure emissions from the ash placement are controlled.

We would welcome any further feedback on our responses, otherwise please acknowledge that they have suitably addressed NSW Health's recommendations.

Please contact [redacted] if you have any questions relating to the above on [redacted] or at [redacted]@energyaustralia.com.au

Yours Sincerely,

[redacted]
NSW Environment Leader
EnergyAustralia NSW

Encl.

Table 1. Response to NSW Health Feedback regarding the Lamberts North Operational Environmental Management Plan

Stakeholder	Suggestion	Response
NSW Health Service - Health System Support Group	Whilst the 2019-2020 report indicated exceedances were due to several major unconnected climatic and weather events, a consideration into future air quality monitoring could include analysis of TEOM filters and dust deposition against known content of the Ash placement. This would serve to verify that any aerosolised material from the Ash Emplacement does not contribute to a background 'creep' in air quality. This is particularly important due to uncontrolled factors influencing air quality conditions in this area and resulting in existing health stress burdens.	The Lamberts North Ash Repository – Modification 1 does not propose changes to the handling, placement or management of ash that were considered as part of the original impact assessment and approvals related to air quality. NSW Health has acknowledged that the controls and monitoring specified in the OEMP are sufficient and on this basis, updates to the OEMP Air Quality Management Plan are not proposed. NSW Health has suggested that EnergyAustralia consider analysis of correlation between ash composition and filtered ambient particulate matter to verify the potential influence of the ash placement operations on ambient air quality. In this respect, it is noted that concentrations of potentially hazardous metals such as arsenic, cadmium, chromium, lead, mercury are relatively low in the placed fly-ash, and within the ranges expected in surface soils within the region. Accordingly, the current continuous monitoring of PM_{10} is considered to form a targeted and technically robust approach to the management and assessment of particulate matter emissions from the operations. With regard to the influence of regional climatic and weather events, EnergyAustralia operate the Wallerawang Air Quality Monitoring Station (AQMS) which includes continuous monitoring of PM_{10} and $PM_{2.5}$, whilst the NSW Department of Planning, Industry and Environment operate a separate AQMS at Bathurst that monitors PM_{10}. It is noted, that data from these stations can be applied in the qualification of widespread climatic and regional events.

From: [redacted]@energyaustralia.com.au>
Sent: Wednesday, 8 December 2021 2:21 PM
To: Anisul Afsar
Cc: [redacted]'nrar.servicedesk@industry.nsw.gov.au'
Subject: RE: Mt Piper Power Station LNAR MOD 1: OEMP Consultation

Hi Anisul

I hope you're well.

As per my email below, I am just chasing up on NRAR's review of our OEMP for the Lamberts North Ash Repository.

Please reach out if you have any issues or questions relating to the above.

We look forward to receiving any feedback on our OEMP should NRAR have any.

Many thanks

Kind Regards,
[redacted]

[redacted]
Approvals and Licencing Specialist | Mt Piper
[redacted]
[redacted]@energyaustralia.com.au

EnergyAustralia
350 Boulder Road, Portland, NSW 2847
energyaustralia.com.au

From: [redacted]
Sent: Tuesday, 30 November 2021 12:55 PM
To: Anisul Afsar <anisul.afsar@nrar.nsw.gov.au>
Cc: [redacted]@energyaustralia.com.au>; 'nrar.servicedesk@industry.nsw.gov.au' <nrar.servicedesk@industry.nsw.gov.au>
Subject: RE: Mt Piper Power Station LNAR MOD 1: OEMP Consultation

HI Anisul

In relation to our draft OEMP for the Lamberts North Ash Repository, we are just chasing up on our request for feedback.

I note that Liz Rogers (from DPIE Water) forwarded our original request for consultation on (around) 25th October 2021. As around 5 weeks has passed since our request, we are just following up on where NRAR's review is up to. If you could let us know, that would be wonderful.

In terms of our timing, we would like to submit the OEMP for approval by DPIE in the next two weeks so we are looking forward to receiving any feedback NRAR might have.

Many thanks – If we don't hear from you, we will follow up again with you in the near future. Please let me know if there are any issues.

Have a good day.

Kind Regards,
[redacted]

[redacted]
Approvals and Licencing Specialist | Mt Piper
[redacted]@energyaustralia.com.au

EnergyAustralia
350 Boulder Road, Portland, NSW 2847
energyaustralia.com.au

From: Liz Rogers <liz.rogers@dpie.nsw.gov.au>
Sent: Monday, 22 November 2021 8:38 AM
To: [redacted]@energyaustralia.com.au>; Anisul Afsar <anisul.afsar@nrar.nsw.gov.au>
Cc: [redacted]@energyaustralia.com.au>; DPIE Water Assessments Mailbox <water.assessments@dpie.nsw.gov.au>; 'nrar.servicedesk@industry.nsw.gov.au' <nrar.servicedesk@industry.nsw.gov.au>
Subject: RE: Mt Piper Power Station LNAR MOD 1: OEMP Consultation

Hi [redacted]

Anisul or a NRAR representative will need to advise on any requests for post approval advice sent prior to November 15.

Please note that from November 15, NRAR is no longer the point of contact for any requests relevant to DPIE Water. I attach more detailed information fyi. Could you please circulate this to your contacts?

If you have any questions, please give me a call.

Thanks, Liz

Liz Rogers
Manager Assessments

Water Group | Department of Planning, Industry and Environment
| **M** 0428 600 421 | **E** liz.rogers@dpie.nsw.gov.au
Prince Street, Locked Bag 21, Orange NSW 2800
www.dpie.nsw.gov.au

Our Vision: Together, we create thriving environments, communities and economies.

I live and work on Wiradjuri Country

The Department of Planning, Industry and Environment acknowledges that it stands on Aboriginal land. We acknowledge the traditional custodians of the land and we show our respect for elders past, present and emerging through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

From: [redacted]@energyaustralia.com.au>
Sent: Monday, 22 November 2021 7:44 AM
To: Liz Rogers <liz.rogers@dpie.nsw.gov.au>; Anisul Afsar <anisul.afsar@nrar.nsw.gov.au>
Cc: [redacted]@energyaustralia.com.au>; DPIE Water Assessments Mailbox <water.assessments@dpie.nsw.gov.au>; 'nrar.servicedesk@industry.nsw.gov.au' <nrar.servicedesk@industry.nsw.gov.au>
Subject: RE: Mt Piper Power Station LNAR MOD 1: OEMP Consultation

Good morning Liz

I hope you had a nice weekend.

I refer to my email dated 22/10/2021 (see below for the trail) and I am just following up on progress regarding review and comment of our OEMP. I note your earlier advice, that you had forwarded our request for consultation to NRAR. You will note that I have included Anisul into this email as he is our usual NRAR contact.

We have received feedback from all the other agencies and we are really keen to consolidate, address all comments and move to the next stage of the process.

It would be great if either Liz or Anisul could provide an update on how the review of our OEMP is going.

Many thanks in advance – I look forward to hearing from you.

Have a nice day.

Kind Regards,

[redacted]
Approvals and Licencing Specialist | Mt Piper
[redacted]@energyaustralia.com.au

EnergyAustralia
350 Boulder Road, Portland, NSW 2847
energyaustralia.com.au

From: Liz Rogers <liz.rogers@dpie.nsw.gov.au>
Sent: Wednesday, 27 October 2021 2:21 PM
To: [redacted]@energyaustralia.com.au>
Cc: [redacted]@energyaustralia.com.au>; DPI Landuse Enquiries Mailbox <landuse.enquiries@dpie.nsw.gov.au>
Subject: RE: Mt Piper Power Station LNAR MOD 1: OEMP Consultation

Hi [redacted]

My apologies as it is very confusing. You will be pleased to know that we are changing the current approach soon so should be easier for you to work out what to do.

The reason why you could only locate NRAR on the portal is that they currently coordinate post approval advice on water matters (even though they are a separate entity) and will contact us to provide comment.

However this is about to change and from November 15, there should be an option for you on the portal to send your request directly to DPIE Water as NRAR will no longer be coordinating on our behalf.

Thanks, Liz

Liz Rogers
Manager Assessments

Water Group | Department of Planning, Industry and Environment
| **M** 0428 600 421 | **E** liz.rogers@dpie.nsw.gov.au
Prince Street, Locked Bag 21, Orange NSW 2800
www.dpie.nsw.gov.au

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From: [redacted]@energyaustralia.com.au>
Sent: Wednesday, 27 October 2021 10:29 AM
To: Liz Rogers <liz.rogers@dpie.nsw.gov.au>
Cc: [redacted]@energyaustralia.com.au>
Subject: RE: Mt Piper Power Station LNAR MOD 1: OEMP Consultation

Thanks for this Liz

Just so you know, there was no option to submit to DPIE Water on the Planning Portal.

I was of the understanding that DPIE Water is a separate entity to NRAR, hence I did not submit to NRAR. Please clarify if my understanding is incorrect. Our Approval specifically refers to “in consultation with DPIE Water” and not NRAR.

Many thanks again for the response.

Kind Regards,
[redacted]

[redacted]
Approvals and Licencing Specialist | Mt Piper
[redacted]@energyaustralia.com.au

EnergyAustralia
350 Boulder Road, Portland, NSW 2847
energyaustralia.com.au

From: Liz Rogers <liz.rogers@dpie.nsw.gov.au>
Sent: Monday, 25 October 2021 2:00 PM
To: [redacted]@energyaustralia.com.au>
Cc: [redacted]@energyaustralia.com.au>; DPI Landuse Enquiries Mailbox <landuse.enquiries@dpie.nsw.gov.au>; 'nrar.servicedesk@industry.nsw.gov.au' <nrar.servicedesk@industry.nsw.gov.au>
Subject: RE: Mt Piper Power Station LNAR MOD 1: OEMP Consultation

Hi [redacted] I have forwarded your request to the Natural Resources Access Regulator mailbox who will coordinate this advice.

Can you please use the Major Projects portal for future requests?

Thanks, Liz

Liz Rogers
Manager Assessments

Water Group | Department of Planning, Industry and Environment
| **M** 0428 600 421 | **E** liz.rogers@dpie.nsw.gov.au
Prince Street, Locked Bag 21, Orange NSW 2800
www.dpie.nsw.gov.au

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From: [redacted]@energyaustralia.com.au>
Sent: Friday, 22 October 2021 5:37 PM
To: Liz Rogers <liz.rogers@dpie.nsw.gov.au>
Cc: [redacted]@energyaustralia.com.au>
Subject: Mt Piper Power Station LNAR MOD 1: OEMP Consultation

Dear Liz

On 21 September 2021, EnergyAustralia (**EA**) procured approval to modify PA 09_0186 from the Minister for Planning, authorising the installation of a leachate barrier and leachate management system at the LNAR (**LNAR-MOD1**). Conditions of approval (**CoA**) attached to the LNAR-MOD 1, require the preparation and implementation of an Operational Environmental Management Plan (**OEMP**) as well as a suite of management plans and monitoring programs. Whilst an approved OEMP currently exists for the operation of the LNAR, the approval of the LNAR MOD-1 has triggered a review of it to take into account the necessary changes to the management of the LNAR resulting from the modification.

Condition D2 requires that the OEMP must be prepared in consultation with the relevant government agencies, which includes DPIE Water (amongst others). Condition D3 requires the preparation of a number of management/monitoring plans that must also be prepared in consultation with DPIE Water (amongst others).

Please find attached a cover letter along with a draft OEMP for review and feedback.

Kind Regards,
[redacted]

[redacted]
Approvals and Licencing Specialist | Mt Piper
[redacted]@energyaustralia.com.au

EnergyAustralia
350 Boulder Road, Portland, NSW 2847
energyaustralia.com.au

From: no-reply@majorprojects.planning.nsw.gov.au
Sent: Monday, 1 November 2021 3:56 PM
To: [redacted]
Subject: Mount Piper Power Station - Ash Placement LNAR MOD 1 OEMP - Response from

has responded to your request for advice in relation to the Mount Piper Power Station - Ash Placement LNAR MOD 1 OEMP . The response is below and/or attached. Record of this consultation has been automatically saved to the portal.

When you are ready, login to your profile to submit the final document to the Department.

Public Authority Response
BCS have no comment to make on the OEMP.

To sign in to your account click here or visit the Major Projects Website.
Please do not reply to this email.

Kind regards

The Department of Planning, Industry and Environment

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From: no-reply@majorprojects.planning.nsw.gov.au
Sent: Tuesday, 2 November 2021 4:08 PM
To: [redacted]
Subject: Mount Piper Power Station - Ash Placement LNAR MOD 1 OEMP - Response from WaterNSW

WaterNSW has responded to your request for advice in relation to the Mount Piper Power Station - Ash Placement LNAR MOD 1 OEMP . The response is below and/or attached. Record of this consultation has been automatically saved to the portal.

When you are ready, login to your profile to submit the final document to the Department.

Public Authority Response
WaterNSW reviewed the OEMP and have no further comments.

To sign in to your account click here or visit the Major Projects Website.
Please do not reply to this email.

Kind regards

The Department of Planning, Industry and Environment

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Appendix F
Drivers Code of Conduct

EnergyAustralia

ENERGY AUSTRALIA NSW
Lamberts North Ash Repository

Driver Code of Conduct

May 2022

Version Final 00

This report may be cited as:

EnergyAustralia NSW (2022). *Lamberts North Ash Repository- Driver Code of Conduct*. EnergyAustralia NSW.

Acknowledgements

EnergyAustralia NSW acknowledges the contributions made by various EnergyAustralia NSW staff and contractors during the development of this report.

Cover photography: 'Mt Piper Power Station*, EnergyAustralia NSW 2020.*

CONTENTS

Document History and Status

Revision	Date Issued	Reviewed By	Approved By	Date Approved	Revision Type
(DRAFT – pending feedback from relevant Regulators)	22 October 2021	Edwina White	Ben Eastwood	For consultation	Updates to incorporate MOD 1 commitments and CoA. Distribution to EPA, NSW Health, Water NSW, BCS, DPIE-Water, NRAR
(DRAFT – pending approval from DPIE)	10 December 2021	Edwina White	Ben Eastwood	For approval	No update from above.
FINAL	24 May 2022	Ben Eastwood	Ben Eastwood	For approval	No update from above.

1. Purpose

This Driver Code of Conduct (the Code) has been developed to support the Lamberts North Ash Repository (LNAR) Operations Environmental Management Plan (OEMP). It sets out the expectations of drivers delivering materials and equipment associated with the installation of leachate barrier (liner) and leachate management system at the LNAR.

The purpose of this document is to:

- articulate expected driver behaviour, particularly for those who will be delivering materials and equipment to the LNAR to enable the installation of the leachate barrier and leachate management system; and
- provide guidance around scheduling the delivery of materials and equipment to minimise impacts on traffic on the Great Western Highway, Castlereagh Highway and Boulder Road .

All employees and contractors are to be made aware that responsible driving and adhering to the Code is a condition of employment on the LNAR Project.

2. Roles and Responsibilities

This Driver Code of Conduct is applicable to all drivers attending the LNAR during operation of the project. While adhering to the Code is primarily the responsibility of each individual driver, with reference to Section 3.2 of the OEMP, the Contractor and the Contractor Administrator are responsible for ensuring drivers adhere to the Code to the extent practicable.

3. Requirements

All drivers' delivering materials and equipment for the installation of the leachate barrier and leachate management system at the LNAR must:

- Have undertaken a site induction or delivery driver induction;
- Hold a valid driver's licence for the class of vehicle that they operate and maintain a log book if required in accordance with licence requirements;
- Operate the vehicle in a safe manner at all times;
- Utilise approved heavy vehicle haulage routes including Great Western Highway, Castlereagh Highway and Boulder Road;
- Limit the heavy vehicle to a PBS truck and dog trailer or PBS prime mover and semi-trailer configurations with a maximum length of 20 metres;
- Comply with this Code of Conduct; and
- Comply with the direction of authorised site personnel when within the Mt Piper Power Station (MPSS) site.

4. Vehicle Speed

All vehicle drivers must observe the posted speed limits, with speed adjusted appropriately to suit the road environment and prevailing weather conditions, to comply with the Australian Road Rules. The vehicle speed must be appropriate to ensure the safe movements of the vehicle based on the vehicle configuration.

5. Heavy Vehicle Compression Breaking

Compression braking by heavy vehicles is a source of irritation to the community generating many complaints especially at early mornings and late evenings when residents are especially sensitive to noise.

In some instances compression braking is required for safety reasons however when passing through or adjacent to residential areas or isolated farmsteads a reduction in the speed of the vehicle is recommended to reduce the instances and severity of compression braking.

All heavy vehicle drivers must ensure brakes are applied so as not to create excessive noise that could disturb local residents where possible. Compression braking throughout residential areas is only to be used if required for safety reasons.

6. Heavy Vehicle Noise

The delivery of materials and equipment for the LNAR liner and leachate management system will occur in accordance with the hours of operation under the Project Approval (PA 09_0186) authorising activities at the LNAR. These timeframes will be managed throughout the project to ensure compliance.

The hours of operation (as set out in Condition E1 of PA 09_0186):

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

When attending site, drivers shall implement measures to ensure noise attenuation of trucks. These measures may include, but are not necessarily limited to, installation of residential class mufflers, engine shrouds, body dampening, speed limiting, fitting of rubber stoppers to tail gates, limiting the use of compression braking, and ensuring trucks operate in a one-way system at the ash placement areas where feasible.

7. Load Covering

Loose material on the road surface has the potential to cause road crashes and vehicle damage.

All trucks transporting materials and equipment arriving at MPPS are required to have an effective cover and/or tie down equipment in use and available to cover the load for the duration of the trip where necessary.

All care is to be taken to ensure that all loose debris from the vehicle body and wheels is removed prior to leaving MPPS.

Drivers must ensure that following unloading that the tail gates are locked into place before leaving the site.

8. Mobile Phones

Mobile phone use is strictly prohibited for all drivers operating a motor vehicle unless a blue tooth hands-free kit is installed and utilised in the vehicles.

Whilst on the MPPS site, there is to be no phone use by drivers unless the vehicle if stopped, parked and secured. This will be enforced to all site personnel and delivery partners during the site specific induction process.

9. Convoying

Trucks delivering materials and equipment for the installation of the leachate barrier and leachate management system must be scheduled as far as practical to avoid convoying of haulage vehicles. This will be communicated to relevant parties using the procedures set out in Section 2.0 of the Code.

10. Fatigue

The heavy vehicle driver fatigue law commenced in NSW in February 2016 and applies to trucks and truck combinations over 12 tonne Gross Vehicle Mass (GVM) (however there are Ministerial Exemption Notices that can apply).

Under the law, industry has the choice of operating under three fatigue management schemes:

- Standard Hours of Operation;
- Basic Fatigue Management (BFM); or
- Advanced Fatigue Management (AFM).

All heavy vehicle drivers delivering materials and equipment for the installation of the leachate barrier and leachate management system at the LNAR are to be aware of their adopted fatigue management scheme and operate within its requirements. In addition to the general duty to not drive a fatigue-regulated heavy vehicle on a road while fatigued, drivers must comply with certain maximum work and minimum rest limits.

11. Scheduling Deliveries

11.1 School Buses

The hours of school bus operation are approximately between 07:30am - 9:30am and 02:30pm - 04:30pm. Travel times for heavy vehicle trucks will be timed to predominantly avoid the school bus drop off and pick up time frames where possible.

If a school bus is observed stopped beside a road, a 40 km/h speed limit applies to traffic passing a school bus that is setting down or picking up school children.

Motorists are advised to:

- reduce speed to 40 km/h when bus lights are flashing;
- give way to buses;
- watch for children crossing;
- not merge too closely in front of buses; and
- never park in or near a bus stop or bus zone.

11.2 Peak Commuter Periods

Travel times for heavy vehicle trucks will be timed to generally avoid the peak commuter periods where possible, which for the Lithgow/Portland area is generally consistent with the School Bus times (refer Section 11.1).

11.3 Local Special Events

In the event that MPPS staff is made aware that heavy vehicle haulage may interact with a local special event, stakeholders will be consulted, as required on a case by case basis. Scheduling of deliveries will be timed to avoid interaction with the local special event where possible.

12. Incidents, Hazards and Near Misses

Road degradation dust and loose gravel from both light and heavy vehicles could be generated and could over time build up on the road surfaces and at the entry and exit to the MPPS and the LNAR.

MPPS management (or their delegate) is to monitor loose material at the entrance to the MPPS and the LNAR area and take appropriate action (removal or suppression) regularly.

Be aware that wildlife may be present along traffic routes and within the delivery area at MPPS. A high level of awareness is required where wildlife signs are posted and where vegetation exists close to road verges.

All incidents, hazards and near misses, whether resulting in an injury or not, MUST be reported to the relevant MPPS contact person immediately. This includes incidents, hazards and near misses which have occurred on or while travelling to and from the project site.

Toolboxes with the transport delivery partners and MPPS Personnel will be undertaken as required to communicate any potential hazards or issues associated with travel on the designated transport route or delivery on site.

13. Weed management

In accordance with the Weed Management Plan, All vehicles, equipment and machinery associated with LNAR shall be thoroughly cleaned, washed down and free of visible plant and soil debris prior to mobilisation to the development footprint.

Appendix G
Environmental Representative Approval

NSW GOVERNMENT | Planning & Environment

Contact: Chris Schultz
Phone: 02 4224 9478
Fax: 02 4224 9470
Email: chris.schultz@planning.nsw.gov.au

Mr Ben Eastwood
Environment Leader
EnergyAustralia NSW
350 Boulder Road
PORTLAND NSW 2847

Email: Ben.Eastwood@energyaustraliansw.com.au

Dear Mr Eastwood

Mount Piper Ash Placement Project – Project Approval 09_0186
Environment Representative Approval and Request for Independent Environmental Audit under Condition E22

I refer to your letter dated 5 April 2018 nominating Mrs Skye Zorz for the role of Environmental Representative for the Mount Piper Ash Placement Project.

In accordance with Condition B1 of Schedule 2 of Project Approval 09_0186 (the approval), the Secretary has reviewed the nomination of Mrs Zorz as the Environmental Representative. The Secretary considers that Mrs Zorz is suitably qualified and experienced and approves her appointment.

In accordance with Condition E22 of Schedule 2 of the approval, the Secretary directs that an Independent Environmental Audit be commissioned by 30 June 2019.

Should you need to discuss the above, please contact Chris Schultz as per the details provided.

Yours sincerely

23/4/18

Katrina O'Reilly
Team Leader Compliance
as nominee of the Secretary