Lidsdale Ash Dam Repository

Construction Erosion and Sediment Control Plan

Prepared for Generator Property Management Pty Ltd

March 2026

Lidsdale Ash Dam Repository

Construction Erosion and Sediment Control Plan

Generator Property Management Pty Ltd

E230337 1

March 2026

Version	Date	Prepared by	Reviewed by	Approved by
Draft V0.1	12 November 2024	Sofia Stergio Wayne Walshe	Phil Towler	Wayne Walshe
Final V1.0	29 November 2024	Lachlan Hamersley, Wayne Walshe	Wayne Walshe	John Pola
V2	8 August 2025	Zainab Ahmed	Nadia Eisenlohr	John Pola
V3	18 September 2025	Zainab Ahmed	Nadia Eisenlohr	John Pola
V4	31 March 2026	Zainab Ahmed	Nadia Eisenlohr	John Pola

Approved by

John Pola
GPM Manager Environment
31 March 2026

Glossary/Abbreviations

Abbreviation	Expanded text
Approval	Approval Modification MP07_005-Mod 2
CEMP	Construction Environmental Management Plan
CESCP	Construction Erosion and Sediment Control Plan
CPESC	Certified Professional in Erosion and Sediment Control
CoAs	Conditions of approval
Minister, the	Minister of the NSW Department of Planning and Environment (or delegate)
DPHI	NSW Department of Planning, Housing and Infrastructure
DS Act	NSW Dams Safety Act 2015 No 26
EPA	NSW Environment Protection Authority
EMS	Environmental Management System
EMMs	Environmental Management Measures as outlined in the project EIS documentation.
Environmental incident	A set of circumstances that causes or threatens to cause material harm to the environment, and/or breaches or exceeds the limits or performance measures/criteria in this approval.
Environmental Representative (ER)	A suitably qualified and experienced person independent of project design and construction personnel employed for the duration of construction. The principal point of advice in relation to all questions and complaints concerning environmental performance.
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
EPL	Environment Protection Licence
GPM	Generator Property Management Pty Ltd
KVAD	Kerosene Vale Ash Dam
KVAR	Kerosene Vale Ash Repository (dry stacked as on top of KVAD)
LADR	Lidsdale Ash Dam Repository
LCC	Lithgow City Council
LDP	Licenced Discharge Point
LDCP	*Lithgow Development Control Plan 2021*
LGA	Local Government Area
Non-compliance	An occurrence, set of circumstances or development that is a breach of the approval but is not an incident.
OEMP	Operational Environmental Management Plan
Principal, the	GPM
POEO Act	*Protection of the Environment Operations Act 1997* (NSW)
Secretary	Secretary of the Department of Planning or their Nominee
SSCAD	Sawyers Swamp Creek Ash Dam

Abbreviation	Expanded text
TfNSW	Transport for New South Wales
WPS	Wallerawang Power Station

TABLE OF CONTENTS

Appendices

Tables

Figures

1 Introduction

The Lidsdale Ash Dam Repository (LADR), formerly known as the Wallerawang Ash Repository, is located at Skelly Road, Lidsdale NSW (the Site) and is approximately 15 kilometres (km) northwest of Lithgow and 2.5 km north-east of Wallerawang Power Station (WPS). The Site comprises an area of approximately 528 hectares (ha) and is situated primarily on Lot 5 of Deposited Plan 829137.

The Site includes several distinct components, including:

- The Kerosene Vale Dry Ash Repository (KVAR) and underlying former Kerosene Vale Ash Dam (KVAD)
- Sawyers Swamp Creek Ash Dam (SSCAD)
- Lidsdale Cut and adjacent asbestos landfills
- WPS Asbestos demolition landfill south of the SSCAD.

The site location and general layout are shown in Figure 1.1.

The Site has been used since the 1950s to store ash and other wastes generated by the Wallerawang Power Station. Site operations started prior to the commencement of the E*nvironmental Planning and Assessment Act 1979* (EP&A Act), when the WPS and associated facilities were owned by the NSW Government.

Ownership and responsibility for the Site was transferred from Energy Australia NSW Pty Ltd to Generator Property Management Pty Limited (GPM) in September 2020. GPM's objectives at the Site include closure of the operational facilities and the rehabilitation and management of the site in general including the KVAR and the SSCAD.

This Construction Erosion and Sediment Control Plan (CESCP) is a sub-plan to the Construction Environmental Management Plan (CEMP) which has been developed to ensure the care and maintenance of the site are carried out responsibly and in accordance with the relevant Conditions of Approval (CoAs) and any other requirements.

GPM and its contractors are also undertaking operation activities that will be managed under the Site's Operational Environmental Management Plan (OEMP).

1.1 Background to the Lidsdale Ash Repository

The Lidsdale Site was originally farmland that was gradually turned into mining premises during the late 1800s into the early 20th century. The Kerosene Vale mines were originally a series of open cut operations that changed to underground mines using portals driven under the northern escarpment.

The original ash placement operations were at the KVAD. The mining void was filled with ash transported from the WPS as a slurry (i.e. wet ash placement). When the KVAD was full, it was capped with a clay capping and then ash placement operations began at the SSCAD, which saw wet ash placement take place from 1980 to 2003. The SSCAD is still used to manage site water requirements with water levels managed by irrigation for dust suppression and other onsite water uses to prevent discharge to Sawyers Swamp Creek. When required, water is transferred for treatment via a Caustic Injection Plant, clarified and discharged through a licenced discharge point (LDP3). The SSCAD is a declared dam under the NSW Dams Safety Act 2015 No 26 (DS Act) and is subject to regular surveillance and monitoring by certified engineers in accordance with the DS Act.

The need to further develop the KVAR area to maintain power-generation operations at WPS was identified in 2001. The existing wet ash storage area (i.e. the SSCAD) was approaching its design capacity and the placement of dry ash at the KVAR was identified as a viable alternative. Conversion from wet to dry ash placement aimed to minimise environmental and social impacts potentially resulting from heavy metal accumulation. The extent of both stages is outlined in Figure 1.1.

It is noted that the Site has recently been formally Declared under the *Contaminated Land Management Act* (CLM Act) by the EPA and is subject to a Voluntary Management Plan requiring detailed and extensive investigations that will guide long term works on the SSCAD and may require additional works on the Site that would be subject to further approval.

1.2 Relevant project approval

In 2002, Project Approval was granted by the then Minister of Planning to change from wet to dry ash-producing activities and to use the KVAR area for dry ash storage.

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

- Stage 1: Comprises about one third of the area associated with the repository site and located on the south-western section of the site, this area was designed to operate for a period of 5 years and reached its design capacity and has been capped.

- Stage 2: Comprises the remainder the repository site, covering an area from the open face of the Stage 1 area to the edge of the original storage area. This stage was designed to operate about 10 years, depending on actual ash production rates.

On 26 November 2008, Project Approval (07_0005) was granted by the then Minister of Planning for the extension of the existing KVAR area to permit the continued disposal of ash generated by the WPS under Part 3A (now repealed) of the EP&A Act 1979. The KVAR Stage 1 placement works were completed and capped in February 2009. The KVAR Stage 2 placement works commenced soon after in April 2009.

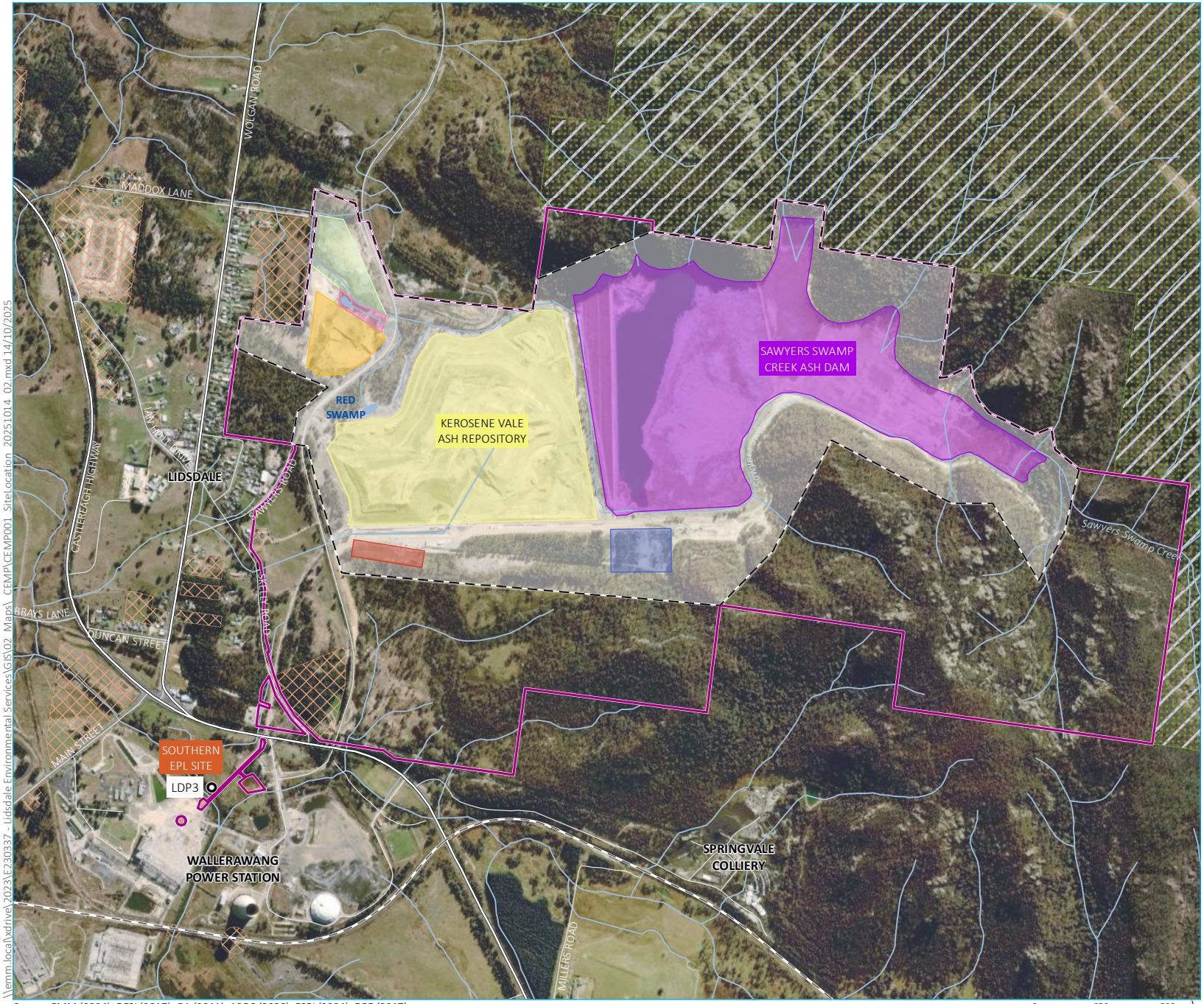
In January 2014, WPS's Unit 7 was removed from service and deregistered from the market; whilst in March 2014, Unit 8 was placed in long term storage. However, in November 2014, EnergyAustralia NSW announced that Unit 8 was to be removed from service and the WPS deregistered from the market.

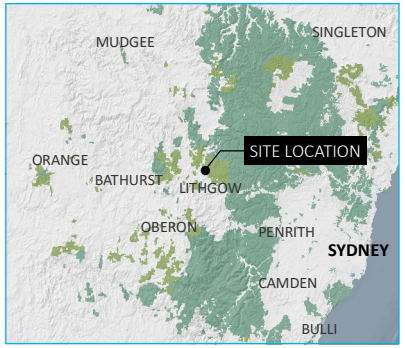
WPS ceased energy production in April 2014 and is currently being decommissioned and dismantled. The bulk transport and disposal of ash to the KVAR ceased following the closure of the WPS. The Lidsdale Ash Repository is currently being managed in a care and maintenance arrangement. Environmental studies and investigations are currently underway to support GPM's safe decommissioning, demolition, rehabilitation and management of ongoing regulatory and contractual obligations associated with the Lidsdale Ash Repository area.

Modification 1 to 07_005 was approved on 9 August 2018 under section 75W of the EP&A Act. This was to allow for the importation of clean fill (virgin excavated natural material and excavated natural material for use in the final shaping and capping of KVAR and SSCAD over two years. This modification included a revised project area that extended the originally approved project to include the area covered by SSCAD.

Modification 2 to 07_005 was approved on 13 October 2023 under section 96(1A) of the EP&A Act. This was to allow for the importation of fill over an additional 10 years (i.e. until 13 October 2033).

The most complete description of the onsite activities was provided in the original *Kerosene Vale Stage 2 Ash Repository Area Environmental Assessment* prepared by Parsons Brinckerhoff in April 2008. This focused on the ongoing ash management without providing any details of site rehabilitation requirements when the power station closed. However, it did include the realignment of a section of Sawyers Swamp Creek to allow the structural earthworks required to achieve an acceptable factor of safety against failure of the ash stockpiles during earthquakes. The subsequent modification applications focussed on the potential impacts of the importation of fill material, rather than on activities within the Site where the material would be utilised.





KEY

- Site boundary
- VMP – Declaration Area Boundary
- Licenced discharge point
- 2018 proposed asbestos disposal area
- Demolition landfill south of SSCAD
- Kerosene Vale ash repository
- Lidsdale cut northern landfill
- Lidsdale cut southern landfill
- Lidsdale cut
- Sawyers Swamp Creek ash dam
- Southern EPL site

Heritage items

- National Heritage list
- Heritage area (LEP)

Existing environment

- Rail line
- Major road
- Minor road
- Watercourse/drainage line
- Named waterbody
- State forest

INSET KEY

- Major road
- NPWS reserve
- State forest

Site location

Source: EMM (2024); DFSI (2017); GA (2011); ASGC (2006); ESRI (2024); DPE (2017)

0 250 500 m

GDA 1994 MGA Zone 56

N

Lidsdale Ash Repository
Construction Environmental Management Plan
Figure 1.1

EMM
creating opportunities

\\emm.local\xdrive\2023\E230337 - Lidsdale Environmental Services\GIS\02 Maps\ CEMP\CEMP001 SiteLocation 20251014 02.mxd 14/10/2025

1.3 Construction and Operational Environmental Management Plan and Sub-plans

CoA 6.2 requires the applicant to develop CEMP that outlines the environmental management practices and procedures to be followed during construction, while CoA 6.3 requires the preparation and implementation of the following plans as sub-plans of the CEMP:

- Construction Traffic Management Plan
- Construction Noise Management Plan
- Construction Erosion and Sediment Control Plan (CESCP)

In addition, CoA 6.4 requires the applicant to prepare and implement an OEMP. This is a separate document to the CEMP that covers the routine operations of the site outside the specific construction activities identified in Table 1.1 below. As part of the OEMP, CoA 6.5 requires the preparation and implementation of the following plans as sub-plans to the OEMP:

- Operational Noise Management Plan
- Operational Groundwater Management Plan
- Operational Surface Water Management Plan
- Operational Air Quality Management Plan
- Operational Landscape/Revegetation Management Plan
- Operational Transport Management Plan.

Table 1.1 provides a high-level overview of the proposed activities that are covered by the CEMP and those covered by the OEMP. Further information on the scope of this plan is provided in Section 1.4.

Table 1.1 Activities covered by the CEMP and OEMP

Environmental Management Plan	Activities covered
CEMP – construction activities	• Construction of reinforcement berms around the perimeter of the KVAR • Sawyers Swamp Creek realignment • Sediment control and water storage works associated with construction on the edge of the KVAR and realignment of the creek • Construction of a Material Delivery area adjacent to access road and associated sediment controls and water storage works • Establishment of access roads onto the surface of the SSCAD and associated roads across the dam surface • Establishment of freshwater collection ponds on the northern edge of SSCAD • Rearrangement of water flows around the KVAR • Reinstatement of environmental controls for historic landfill areas including capping of slumped areas, reprofiling for water management and control of sediment runoff during these activities
OEMP – care and maintenance operations	• ash haulage, placement and management • management of on-site water systems • capping material haulage, placement and management • landscaping and revegetation/rehabilitation of the site

Environmental Management Plan	Activities covered
	• upgrading and maintaining internal access roads in the project area

1.4 Scope of this Sub-plan

This CESCP has been prepared to describe the overarching soil and water management design approach for the development and to provide erosion and sediment control guidance and standards for the construction of the development.

1.5 Environmental management system overview

GPM's Environmental Management System (EMS) is based on AS/NZS ISO 14001. The ISO 14001 standard provides best practice specifications for the implementation of an EMS. An EMS provides a framework for managing the company's environmental responsibilities so that they are integrated into overall operations. The standard approach integrates environmental management and supports the company's compliance with legislated and voluntary environmental requirements, as well as continuously improving their overall environmental performance.

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

- identifying and maintaining awareness of relevant environmental legislation
- assignment of roles and responsibilities
- establishment of procedures for internal and external communications
- establishment of procedures for monitoring and measuring environmental performance
- setting and reviewing objectives and targets for improving environmental performance
- monitoring and measuring environmental compliance and community inquiries
- setting and reviewing management system programs for achieving objectives and targets
- provision of environmental training aligned to skill requirements
- review of EMS performance for continual improvement.

This CESCP has been developed to be consistent with the relevant provisions of GPM's EMS, including approvals and license as noted above. The CEMP and OEMP will also be consistent with the EMS.

A summary of the EMS and its interaction with the CEMP, the OEMP and their respective sub-plans is provided in Figure 1.2.

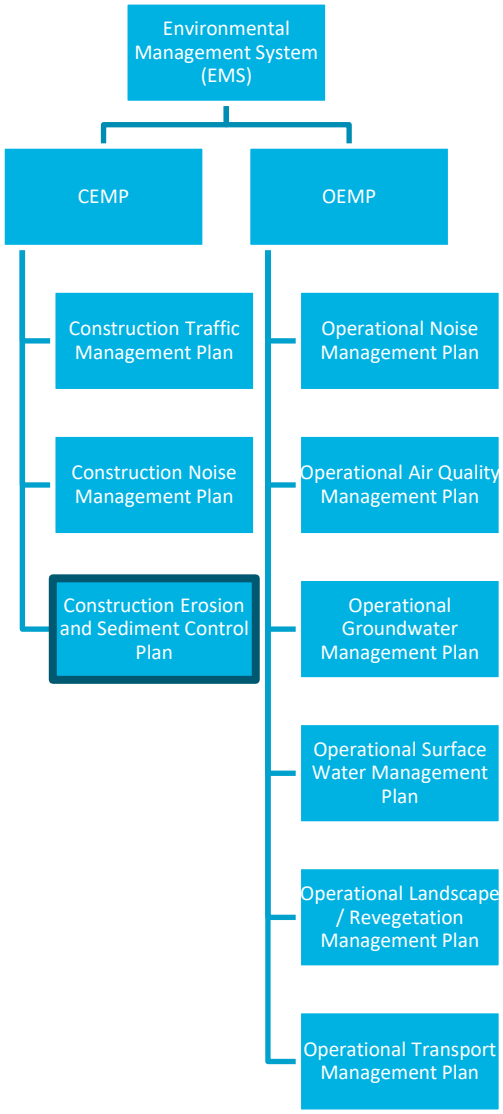


Figure 1.2 Environmental Management System flowchart

1.6 Interactions with other management plans and strategies

This CESCP (outlined in Figure 1.2 above) is a sub-plan to the CEMP and interrelates with the other sub-plans set out in Section 1.3 and 1.5 above.

1.7 Reference documents

The CESCP incorporates the obligations and criteria outlined in the following documents:

- Project Approval 07_0005 (NSW Department of Planning)
- Submission Report – Statement of Commitments (Parsons Brinckerhoff 2008)
- Modification application 07_0005 Mod 1
- Wallerawang Power Station Submissions Report (EA 2018)
- Environment Protection Licence 21185 (NSW Environment Protection Authority).

1.8 Endorsement and approval

1.8.1 Internal approval of CEMP and Sub-plans

The CEMP and associated sub-plans, strategies and monitoring programs undergo ongoing review by the GPM team. Following the ongoing review and revision process, internal signoff will be provided.

Once internal approval is received, the documents will be provided to DPHI and the ER for review prior to undertaking external consultation, review and approval processes described below.

1.8.2 External endorsement and approval of CEMP and sub-plans

Table 1.2 below provides a summary of the relevant authority(s), council(s) and agencies that require consultation during preparation of the CEMP sub-plans (including this CESCP) and monitoring programs in accordance with the conditions of approval.

External distribution for consultation and approval of the CEMP, sub-plans and monitoring programs will be undertaken and updated in consultation with the relevant external parties and will then be endorsed by the Environmental Representative (ER) in accordance with the CoA, confirming that they satisfy the requirements of the approval documentation. After this external consultation and endorsement process is complete the required documents will be submitted to the Secretary for approval. This will occur no later than one month prior to the commencement of construction (unless otherwise agreed by the Secretary).

A copy of the ER Endorsement of the CESCP is included in Appendix A.

Table 1.2 Consultation requirements for CEMP and sub-plans

Report	Consultation required	Relevant CoA
Construction Environmental Management Plan	Submit to Secretary for approval	6.2
Construction Traffic Management Plan	TfNSW, emergency services and Lithgow City Council	2.36, 2.36A, 2.36B, 6.3 (a)
Construction Noise Management Plan	EPA	6.3 (b)
Construction Erosion and Sediment Control Plan	N/A	6.3 (c)

2 Purpose and Objectives

2.1 Purpose

This CESCP for the Lidsdale Ash Repository outlines strategies and actions to mitigate environmental impacts during the project's construction phase. It is designed to set clear protocols and responsibilities, and to thereby ensure that risks are managed, and sustainable practices are upheld. This sub-plan supports the CEMP and should be read in conjunction with the CEMP.

The CESCP requirements are outlined in Section 6.3(c) of the Project approval and was prepared in accordance with *Managing Urban Stormwater: Soils and Construction* (Landcom 2004) guidelines as required by Condition 6.3(c)(iii).

2.2 Objectives

The CESCP aims to:

- minimise the potential impacts of soil erosion on receiving lands and waters from construction activities of the project
- conserve and protect site soil resources
- ensure compliance with relevant regulatory requirements
- ensure all reasonable and feasible measures are taken to prevent discharge of sediments and pollutants from the construction of the project from entering waterways.

2.3 Targets

This CESCP seeks to establish targets and indicators as follows.

Section 3 of the EPL stipulates:

- L1 Pollution of waters
  - L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997
- L2 Concentration limits
  - L2.1 For each monitoring/discharge point or utilisation area specified in the table/s below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table
  - L2.2 Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges
  - L2.3 To avoid any doubt, this condition does not authorise the pollution of waters by any pollutant other than those specified in the table\s.
  - L2.4 Water and/or Land Concentration Limits

- L2.5 The Licensee is only authorised to undertake a 'wet weather discharge'. Discharges must be in accordance with the location and limits specified in Condition L2.3, L2.4 and L3.1. Wet weather is defined as periods when streamflow in the Cox's River is >/=10ML/day so as to maintain a minimum streamflow to discharge ratio of 10:1. Streamflow must be monitored in accordance with Condition M6.1.

• L3 Volume and mass limits

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

Table 2.1 Concentration limits in EPL

Pollutant	Units of measure	100 percentile concentration limit
Ammonia	milligrams per litre	0.10
Cadmium	milligrams per litre	0.0012 (dissolved)
Manganese	milligrams per litre	1.9 (dissolved)
pH	pH	6.5–8.5
Total suspended solids	milligrams per litre	20
Turbidity	nephelometric turbidity units	20

Table 2.2 Volume/mass limit in the EPL

Point	Units of measure	Volume/mass limit
1	megalitres per day	6.5
38	-	-

3 Environmental requirements

3.1 General

The project will be undertaken in accordance with all relevant legislation, development approval conditions, permits and licencing requirements, as described in this section.

3.2 Legislation

3.2.1 Environmental Planning and Assessment Act 1979

Part 3 of the EP&A Act requires councils to prepare local environmental plans that also impose development controls. For the Lithgow Local Government Area (LGA), development controls are detailed the *Lithgow Development Control Plan 2021* (LDCP).

Section 4.15(1)(a)(iii) of the EP&A Act requires Lithgow City Council (LCC) to consider the LDCP when determining development applications that are covered by the LDCP.

3.2.2 Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (POEO Act) establishes offences for polluting the environment and procedures for the granting of licences for environmental protection including waste, air, water, land and noise pollution control. It is an offence to pollute water, air, land, noise and waste. It is also an offence to allow a substance to leak, spill or escape from its container in a manner that results or is likely to result in harm to the environment (s116).

LCC are the regulatory authority for non-scheduled activities in the Lithgow LGA.

Water pollution is prohibited under section 120 of the POEO Act.

3.3 Plans and guidelines

3.3.1 Lithgow Development Control Plan 2021

The objectives and controls of the LDCP in regard to erosion and sedimentation are provided below.

Objective(s)

O1 To ensure that the quality of stormwater run-off from development of sites with a geological or soil-related issue does not impact on the natural environment and receiving waters in terms of soil erosion, sedimentation, water and groundwater pollution, and other impacts.

O2 To maximise the amount of existing significant vegetation retained on a site during construction and operation of the development to minimise soil erosion and sedimentation of watercourses.

Control(s)

Erosion of land through poor land management and development practices can result in significant sedimentation and water quality issues in watercourses and drainage corridors.

The applicant addresses (where relevant) the relative risk of certain developments causing erosion and sedimentation in accordance with the requirements of Landcom, Fourth Edition (2004) Managing Urban Stormwater: Soils and Construction ('Blue Book') (as amended) including, but not limited to:

- Assessment of site constraints and opportunities

- Management of soils/earthworks
- Vegetation retention and enhancement
- Management of water
- Sediment and waste control
- Site access, stabilisation and maintenance.

Council may place conditions of consent on development to comply with the requirements of the 'Blue Book' and Council's DA Guide in accordance with the risk of erosion and/or sediment leaving the site in the following order of risk (low to high):

- Implement sediment & erosion control measures during construction;
- Lodge with Council (for approval) an Erosion & Sediment Control Plan;
- Lodge with Council (for approval) a more detailed Soil & Water Management Plan.

3.4 Relevant Conditions of Approval for MP07_005-Mod 2

The relevant CoAs for MP07_005-Mod 2, and where they are addressed in this Sub-plan are provided in the table below.

Table 3.1 Conditions of approval

Relevant CoA	Condition of Approval	Where addressed in this plan
2.30	The Applicant shall take all reasonable and feasible measures to prevent discharge of sediments and pollutants from the construction and operation of the project entering waterways. Note: Section 120 of the Protection of the Environment Operations Act 1997 prohibits the pollution of water except where expressly provided by an Environment Protection Licence.	Section 7.1
2.31	Earthworks not associated with the realignment of Sawyers Swamp Creek shall not be undertaken within 50 m of the creek where reasonable and feasible.	Section 7.1
2.32	All equipment, machinery and vehicles associated with the construction and operation of the project shall be operated and maintained in a manner that minimises the potential for oil and grease spills/leaks	Section 7.1
6.3 (c)	an **Erosion and Sediment Control Plan** to detail measures to minimise erosion and the discharge of sediment and other pollutants to land and/or water during construction works. The Plan must include, but not necessarily be limited to:	This sub-plan
	i) identification of the construction activities that could cause soil erosion or discharge sediment or water pollutants from the site;	Section 4
	ii) a description of the management methods to minimise soil erosion or discharge of sediment or water pollutants from the site, including a strategy to minimise the area of bare surfaces, stabilise disturbed areas, and minimise bank erosion; and	Section 7.1

Relevant CoA	Condition of Approval	Where addressed in this plan
	iii) demonstration that the proposed erosion and sediment control measures will conform with, or exceed, the relevant requirements of *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004).	Section 3

3.5 Compliance tracking

CoA 4.2 mandates a compliance tracking program to track compliance with the requirements before commencing operations. A compliance tracking tool has been prepared for internal use by GPM to ensure effective and efficient tracking of compliance.

4 Project description

The project will involve the following construction activities, which have the potential to cause soil erosion or discharge sediment or water pollutants from the site:

- construction of reinforcement berms around the perimeter of the KVAR
- Sawyers Swamp Creek realignment
- sediment control and water storage works associated with construction on the edge of the KVAR and realignment of the creek
- construction of a Material Delivery area and associated sediment controls and water storage works
- establishment of access roads onto the surface of the SSCAD and associated roads across the dam surface
- establishment of freshwater collection ponds on the northern edge of SSCAD
- rearrangement of water flows around the KVAR and SSCAD
- reinstatement of environmental controls for historic landfill areas including capping of slumped areas, reprofiling for water management and control of sediment runoff during these activities.

5 Existing environment

This section provides a brief description of the existing environment relevant to erosion and sediment management.

5.1 Site location and topography

Lidsdale Ash Repository is located approximately 3.5 km north-east of the township of Wallerawang.

The area around the Lidsdale ash repository is characterised by flat-lying Permo-Triassic sandstone-quartz, sandstone lithic, ironstone and conglomerate within the Upper Coxs River valley. The landscape features sandstone pagodas, a talus slope, rolling rises with lower colluvial and alluvial areas adjacent to swampy drainage lines (e.g. Long Swamp).

Typical lithologies for this HGL are sandstone, claystone and shale of the Triassic Narrabeen Group underlain by sandstone, shale, claystone and major coal seams of the Illawarra Group; and siltstone, sandstone and conglomerate of the Shoalhaven Group.

This landscape features resistant Narrabeen Sandstones forming a pagoda landscape, local relief (90–130 m) and mountains (900–1184 m) above a steep, vegetated, rubbly, tabular lithic pebble- to boulder-bearing sandy gravel talus slope.

Lower in the landscape are rolling rises adjacent to relatively flat alluvial plains and swamps. Water infiltrates through the pagoda landscape and plateau surface, high in the landscape, and moves through the fractured sedimentary rock, sometimes emerging at horizontal fractures as cliff-face springs.

Water preferentially percolates downward through structures (joints, fractures, faults) in the rock material until it encounters less permeable layers in the stratigraphy, causing water to flow laterally and reach the land surface. Some of this groundwater will move laterally across bedding in the Illawarra Group, low in the stratigraphy, below ground level. Salt may mobilise at that level however it is not expressed at the land surface. Water also filters through the unconsolidated rocky sediments forming the talus slope. Lower in the landscape water moves laterally through the colluvial materials and may emerge in the drainage lines as swamps.

5.2 Soil landscapes

The Soil Landscapes of Central and Eastern NSW (NSW DCCEEW 2013) indicates the site is underlain by the Narrabeen and Angus Place Subgroup. The soil landscapes present on the site include:

- Hassan Walls – a colluvial landscape found on steep slopes and cliffs
- Cullen Bullen – rolling low hills and rises on Illawarra Coal Measures and the Berry Formation.
- Wollangambe – rounded convex crests and moderately to steeply inclined sideslopes on Narrabeen Group sandstones
- Long Swamp – level to very gently inclined swamps on recent alluvium overlying the Permian Illawarra Coal Measures
- Disturbed terrain – extensively disturbed terrain on a variety of geologies.

The soil landscapes are shown on Figure 5.1.

5.2.1 Hassan Walls

Erosion Hazard: Extreme. Moderate to high risk of dispersion.

Soil Limitations for this group include, High organic matter, Very high potential aluminium toxicity, Very low soil fertility, Very strong acidity, High erodibility, High permeability, Low available water-holding capacity.

5.2.2 Cullen Bullen

Erosion Hazard: High to Very high. Potential for dispersible soils

Soil limitations for the group include, High organic matter (localised), High erodibility, Hardsetting surface, Strong acidity, Low permeability, Low wet bearing strength, High erodibility, Very strong acidity, High potential aluminium toxicity, Sodicity/dispersibility.

Moderate gully erosion is evident along some drainage depressions. Minor sheet erosion is common where ground cover has been disturbed by clearing. Extensive severe sheet and rill erosion have occurred on isolated steeper slopes

5.2.3 Wollangambe

Erosion Hazard: High to Extreme, Very high to Extreme Risk of Dispersion

Soil limitations range from slightly acidic to strong/very strong acidity. Water repellence, Low fertility, very high aluminium toxicity, moderate to high sodicity and high to extreme erodibility.

Moderate sheet erosion is evident over most of this landscape. The landscape is particularly susceptible to sheet erosion following bushfire or clearing. Severe rill erosion and sheet erosion are commonplace along poorly designed access tracks

5.2.4 Long Swamp

Erosion Hazard: Low to moderate.

Soil Limitations range from, Low wet bearing strength, Very high organic matter, Very strong acidity, High potential aluminium toxicity, Low permeability, Very strong acidity, Very low fertility, Stoniness.

5.2.5 Disturbed terrain

Erosion Hazard: Variable. High to Extreme. High to extreme risk of dispersion.

Soil Limitations Highly variable depending on the site and may include Low available water-holding capacity Hardsetting surface (localised) Low fertility High shrink-swell Unconsolidated material High erodibility Stoniness Strongly acid (localised) Sodicity/dispersibility

KEY

- Site boundary

Soil landscape

- Disturbed Terrain
- Cullen Bullen
- Hassans Walls
- Long Swamp
- Lithgow
- Mount Sinai
- Medlow Bath
- Pipers Flat
- Newnes Plateau
- Wollangambe

Existing environment

- Rail line
- Major road
- Minor road
- Watercourse/drainage line
- Named waterbody

Source: EMM (2024); ABS (2021); DCSSS (2024); MetroMap (2024); DPIE (2024)

0 0.5 1 km

GDA2020 MGA Zone 56

N

Soil landscapes at the project site

Lidsdale Ash Dam Repository
Construction Erosion and
Sediment Control Plan
Figure 5.1

EMM
creating opportunities

5.3 Hydrologic context

5.3.1 Regional hydrology

The Coxs River is a major tributary to the Hawkesbury-Nepean system. The river flows generally in a southerly direction through parts of the Central Tablelands and Blue Mountains regions of NSW. It has a total catchment area of 1,450 km^2 and ultimately flows into the northern arm of Lake Burragorang (also known as Warragamba Dam). Lake Burragorang is a major water supply dam for the Sydney metropolitan region and is managed by WaterNSW. The Site and LDP3 are in the upper portion of the river's catchment. The catchment area upstream of LDP3 is 178 km^2 and is characterised by a series of valleys that are generally bound by rugged forested escarpments and have cleared valley floors. Key tributaries include Wangcol, Sawyers Swamp, Pipers Flat and Kangaroo Creeks. The river is unregulated and has a variable streamflow regime. Baseflow is known to occur year-round, even during severe droughts such as the 2018–2020 drought (albeit at minimal rates). Seasonally, streamflow is highest in late winter and spring and lowest in late summer and autumn. The streamflow regime fits the definition of a permanent or perennial stream.

5.3.2 Site drainage

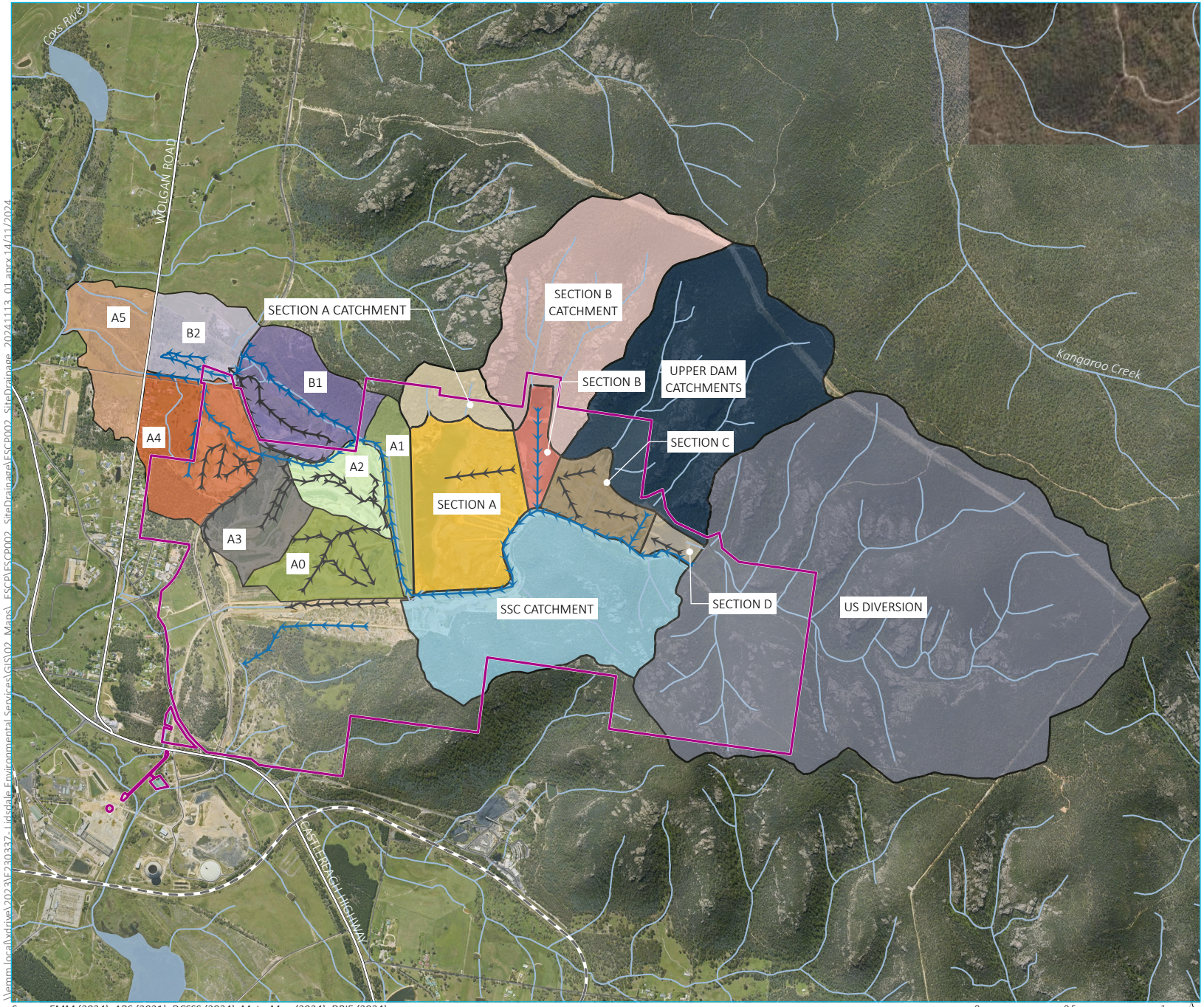
The Coxs River flows in a southerly direction past the western and south-western portions of the Site. Inflows into the river from the Site can occur via incidental discharges to Sawyers Swamp Creek and LDP3 discharges.

Sawyers Swamp Creek is a watercourse that flows through the site in a westerly direction and joins the Coxs River approximately 1 km to the west of the site. The creek was diverted from its original alignment early in the site's history due to coal mining and has been further adjusted when the SSCAD was constructed. The diverted creek (the Sawyers Swamp Creek Diversion) is a clean water system that manages the natural streamflow from the creek's catchment. The system diverts clean water around SSCAD and the KVAR/KVAD water management area. The diversion joins what is thought to be the original Sawyers Swamp Creek to the north-west of the site.

The Sawyers Swamp Creek Diversion receives inflows from the following sources:

- clean water runoff from naturally vegetated catchments to the north, east and south of the site
- water pumped from the surface of Section B of the SSCAD (wet conditions only)
- stormwater discharges from the KVAR/KVAD water management area (wet conditions only)
- groundwater inflows, including potential inflows from the perched groundwater systems that are within the ash dams.

Further information can be found in the annual environmental monitoring reports.



KEY

- Site boundary
- Clean water flow path
- Dirty water flow path

Catchment upper (Sawyers Swamp Creek Ash Dam and upstream)

- SSC catchment
- Section A
- Section A catchment
- Section B
- Section B catchment
- Section C
- Section D
- US diversion
- Upper dam catchments

Catchment lower (downstream of SSCAD to Coxs River)

- A0
- A1
- A2
- A3
- A4
- A5
- B1
- B2

Existing environment

- Rail line
- Major road
- Minor road
- Named watercourse
- Named waterbody

Source: EMM (2024); ABS (2021); DCSSS (2024); MetroMap (2024); DPIE (2024)

0 0.5 1 km

GDA2020 MGA Zone 56

N

\\emm.local\wdrive\2023\E230337_Lidsdale Environmental Services\GIS\02_Maps_FSCP\FSCP002_SiteDrainage\FSCP002_SiteDrainage_20241113_01.aprx 14/11/2024

Site drainage

Lidsdale Ash Dam Repository
Construction Erosion and Sediment Control Plan
Figure 5.2

EMM
creating opportunities

5.4 Climate and rainfall

Long-term average monthly rainfall data for the area (Lidsdale (Maddox Lane) Weather station, BOM Station No. 63132) (Figure 5.3) indicate a high rainfall erosivity risk from October through to March due to the summer storm season.

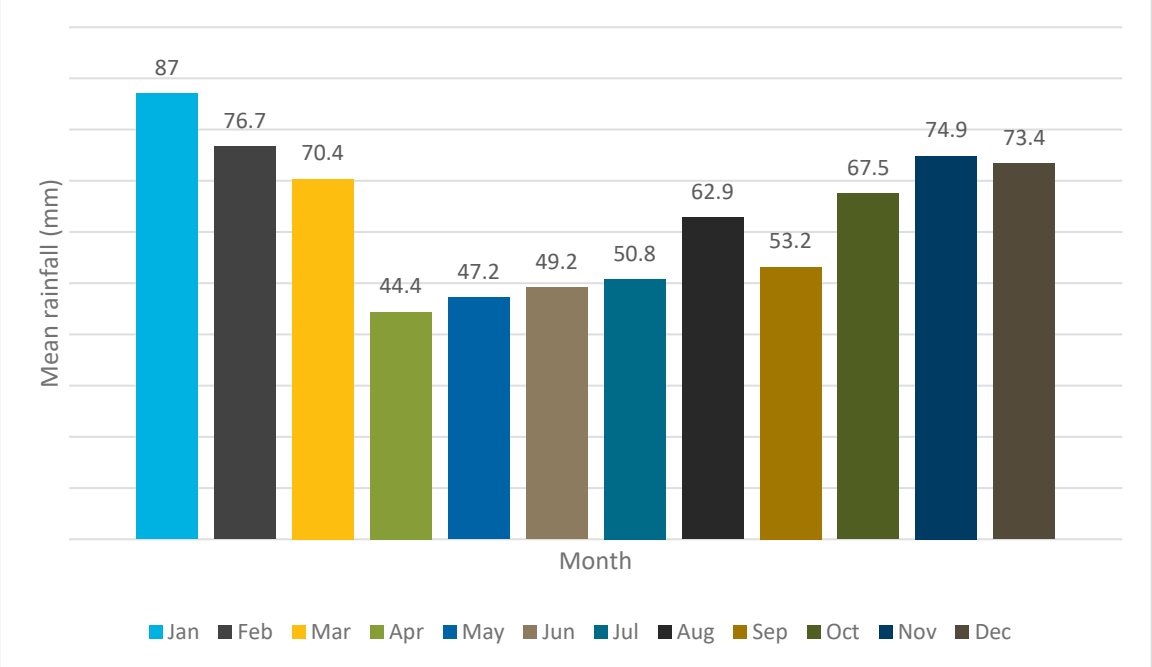


Figure 5.3 Monthly average rainfall at Lidsdale (Maddox Lane) Station number 63132 from 1959 to 2024 (BOM 2024)

5.4.1 Rainfall erosivity

Rainfall Erosivity (R-Factor) is a measure of the ability of rainfall to cause erosion and is calculated based on total energy and maximum 30-minute storm intensity (Landcom 2004). It is a multi-annual average index that measures rainfall's kinetic energy and intensity to describe the effect of rainfall on sheet and rill erosion. It can either be interpolated from the R-factor maps in Landcom 2004 or more accurately calculated using the formula:

$$R = 164.74\ (1.1177)^{S}\ S^{0.6444}$$

where, S is the 2-year average recurrence interval (ARI), 6-hour rainfall event (i.e. 0.5 exceedances per year (EY), 6-hour event) in millimetres per hour (mm/h) (Rosewell & Turner 1992).

For the project S equals 39.6 mm/h.

The calculated R-Factor for the project is 1820 MJ.mm.ha^{-1}year^{-1}.

6 Erosion hazard assessment

The process for the assessment of erosion hazard in NSW is detailed in Section 4.4.1 of Landcom (2004). It is a two-step process that considers overall project erosion hazard via consideration of slope and rainfall erosivity (R-Factor). A more detailed assessment of land soil loss classes (SLCs) is then determined using annual soil loss calculated using the revised universal soil loss equation (RUSLE). Site-specific slopes have been used with a nominal slope length of 80 m. The SLC dictates specific erosion management and mitigation measures as detailed in Landcom (2004).

An assessment of the erodibility of the soil itself is important as the presence or absence of a highly erodible dispersive soil will significantly influence the project drainage, erosion and sediment control requirements.

When a sodic soil (exchangeable sodium percentage (ESP) >6%), or a magnesic soil (exchangeable magnesium percentage (EMP) >20%) contacts non-saline water, water molecules are drawn in between the clay platelets causing the clay to swell to such an extent that individual clay platelets are separated from the aggregate. This process is known as dispersion. Dispersive soils have an extreme rill, gully and tunnel erosion risk and can erode irrespective of surface treatments (e.g. rock lining) applied to the soil surface.

6.1 Soil erosion hazard analysis

The erosion potential of a soil is determined by its physical and chemical properties and is expressed as its K-Factor (t.ha.h)/(ha.MJ.mm). Table 6.1 provides soil erodibility rankings for a range of K-Factors from Rosewell (1993).

Table 6.1 Soil erodibility ranking

K-Factor ($t.ha.h.ha^{-1}.MJ^{-1}.mm^{-1}$)	Erosion potential
<0.02	Low
>0.02 to <0.04	Moderate
>0.04	High

Source: Rosewell (1993)

As detailed soil sampling for erodibility and agronomic parameters has not been undertaken of the project area, site specific soil erodibility factors (K-factors) have not been determined, however Loch et al (1998) measured and estimated K-Factors for a range of Australian dispersive soils and a K-Factor of 0.071 has therefore been adopted. An assessment of project K-Factors against the Rosewell (1993) soil erosion ranking (Table 6.1) demonstrates a 'high' soil erosion potential.

6.2 Slope and rainfall erosivity erosion hazard analysis

The overall project water erosion hazard is determined using the process described in Section 4.4.1 of Landcom (2004); however, as it does not consider the K-Factor, the erosion hazard can be considerably underestimated. If a low erosion hazard is determined, no further delineation of erosion hazard is required. If a high erosion hazard is determined, then further assessment to determine the SLC is required.

SLCs are determined by calculating the annual average soil loss using the Revised Universal Soil Loss Equation (RUSLE) with a nominal 80 m slope length and soil surface cover factor (C-Factor); RUSLE calculates the annual average erosion in tonnes per hectare (t/ha) from rill and inter-rill (sheet) erosion. It does not consider gully or tunnel erosion and does not calculate peak erosion. Section 4.4.2(c) of Landcom (2004) nominates additional requirements for land of SLC 4 and higher.

The first step in the hazard assessment uses a nomograph from Figure 4.6 of Landcom (2004) (reproduced as Figure 6.1) that considers slope of the land and the Rainfall Erosivity (R-Factor) to provide a low or high erosion hazard.

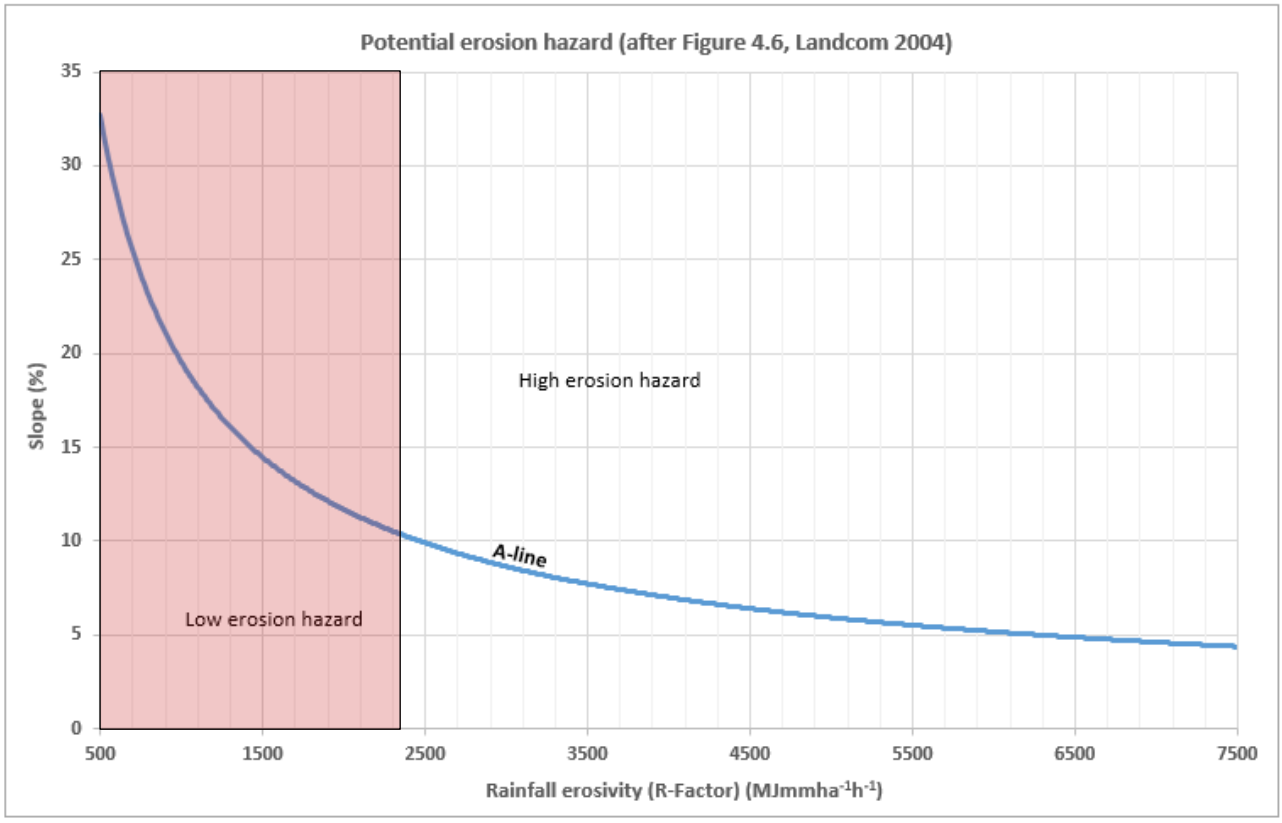


Figure 6.1 Assessment of potential erosion hazard

As detailed in Section 5.4.1, the calculated R-Factor for the project is 1820 MJ.mm.ha^{-1}.h^{-1}.

A high erosion hazard requires further detailed assessment in accordance with section 4.4.2 of Landcom (2004) to determine soil loss classes (Table 6.2).

Table 6.2 Soil loss classes

Soil Loss Class (SLC)	Calculated soil loss (t/ha/yr)	Erosion hazard
1	0–150	Very low
2	151–225	Low
3	226–350	Low-moderate
4	351–500	Moderate
5	501–750	High
6	751–1,500	Very high
7	>1,500	Extremely high

Adapted from Table 4.2 Landcom (2004)

The pink shaded area in Figure 6.1 demonstrates that there are lands of both low and high erosion hazard within the project area and therefore determination of soil loss classes is required. Calculated indicative soil loss in t/ha/yr for slopes ranges from 1–40% for the project are provided in Table 6.3.

Table 6.3 Soil loss calculations to determine soil loss classes

Slope %	1	10	14	20	25	30	40
R-Factor (section 5.4.1)	1820	1820	1820	1820	1820	1820	1820
K-Factor (Loch et al. 1998)	0.071	0.071	0.071	0.071	0.071	0.071	0.071
LS-Factor (Landcom 2004)	0.19	2.81	4.61	7.32	9.51	11.6	15.67
Area	1	1	1	1	1	1	1
P-Factor (Landcom 2004)	1.3	1.3	1.3	1.3	1.3	1.3	1.3
C-Factor (Landcom 2004)	1	1	1	1	1	1	1
Soil loss (t/ha/yr)	32	471	774	1230	1598	1948	2577
Soil Loss Class (SLC)	1	4	6	6	7	7	7

Lands with SLCs ≥4 trigger increased erosion and sediment control management requirements as stipulated in section 4.4.2 of Landcom (2004).

Land disturbing works in highly sensitive lands should be scheduled for periods when rainfall erosivity is low. Landcom (2004) defines highly sensitive lands as:

1. always on SLC 7 lands; and
2. at certain times of the year:
    a) on SLC 5 or 6 lands in all rainfall zones; and
    b) on SLC 4 lands in rainfall zones 5 and 11.

Where scheduling activities on highly sensitive land to periods when rainfall erosivity is low is not possible or is impractical, ideally ensure that any disturbed lands have C-Factors lower than 0.1 when the 3-day rainfall forecast suggests that rain is likely.

7 Environmental management

7.1 Management Measures

Management actions to minimise construction erosion and sediment impacts are summarised in Table 7.1. The erosion and sediment control measures included within Table 7.1 conform with, or exceed, the relevant requirements of Managing Urban Stormwater: Soils and Construction (Landcom, 2004).

The management measures have been prepared to ensure that all reasonable and feasible measures are taken to prevent discharge of sediments and pollutants from the construction and operation of the project entering waterways.

Note – the CESCP is specific to the construction phase only.

Table 7.1 Environmental Management Measures

Relevant aspect	Management and mitigation measures	Source of requirement	Frequency	Relevant records	Responsibility
Land stabilisation	Soil stabilising polymers will be used for temporary stabilisation within the site and bonded fibre matrix hydro-mulches and hydraulically applied growth mediums will be used for permanent vegetative stabilisation solutions.	CoA 6.3 c)	Progressively as areas are completed.	Site inspection checklist	Site contractor
Controlling water movement through or around site	Clean and dirty water catchments will be segregated to the maximum practical extent to minimise erosion potential and the volume of turbid water that needs to be contained and treated on site via diversion around disturbed areas and/or safe conveyance through the site without meeting exposed soils or mixing with turbid water.	CoA 6.3 c)	Progressively as areas are completed.	Site inspection checklist	Site contractor
Minimise soil erosion	Raindrop splash erosion will be controlled by: • minimising the extent and duration of soil disturbance • covering and binding exposed soils with soil stabilising polymers and gravel • progressively rehabilitating disturbed areas.	CoA 6.3 c)	Progressively as areas are completed.	Site inspection checklist	Site contractor
	Rill erosion is effectively controlled by minimising slope length and gradient. This will be achieved within the project area by: • minimising disturbance to steeply grading areas where possible • using retaining walls to minimise the creation of long, steep earthen slopes • treating dispersive soils with gypsum • covering and binding exposed soils with soil stabilising polymers and gravel • progressively stabilising and revegetating disturbed areas • early installation and connection of permanent stormwater drainage systems.	CoA 6.3 c)	Progressively as areas are completed.	Site inspection checklist	Site contractor

Relevant aspect	Management and mitigation measures	Source of requirement	Frequency	Relevant records	Responsibility
	Gully erosion is effectively controlled by minimising the concentration of flow and slowing flow velocity. This will be achieved within the site by: • maintaining sheet flow where possible • avoiding the use of 'v' shaped drains • lining drains where flow velocities exceed the maximum permissible velocity of the soil (temporary and permanent) • treating dispersive soils with gypsum if disturbed • early installation and connection of permanent stormwater drainage systems.	CoA 6.3 c)	Progressively as areas are completed.	Site inspection checklist	Site contractor
	Bank erosion is controlled by minimising the concentration of flow and slowing flow velocity. This is achieved within the site by: • lining flow pathways where practicable • installing diversion dams and check dams to reduce velocity • controlling the discharge volume of water entering waterways from clean water diversions	CoA 6.3 c)	Progressively as areas are completed.	Site inspection checklist	Site contractor
	Chemical erosion is effectively controlled by minimising the disturbance of dispersive soils and maintaining sheet flow conditions. This will be achieved within the site by: • avoiding the concentration of flow where possible • avoiding ponding water on areas of dispersive soil (not using check dams, channel banks, benches, etc) • lining drains where flow velocities exceed the maximum permissible velocity of the soil (temporary and permanent) • treating dispersive soils with gypsum particularly pipe trench back fill material • installing trench breakers to minimise tunnel erosion in stormwater, sewer and potable water pipe trenches. Energy dissipaters will need to be used at the outlets of drains and spillways to reduce flow velocities to less than the maximum permissible velocity for the soil type. Stilling pond and roughness type dissipators are recommended.	CoA 6.3 c)	Progressively as areas are completed.	Site inspection checklist	Site contractor

Relevant aspect	Management and mitigation measures	Source of requirement	Frequency	Relevant records	Responsibility
	Wind erosion is effectively controlled by minimising disturbance and utilising soil stabilising polymers and wetting agents. This will be achieved within the site by: • minimising disturbance • gypsum treatment of dispersive soils • progressively stabilising disturbed areas temporarily with soil stabilising polymer or gravel or permanently with BFM hydromulch and grass • reducing speeds of machinery and vehicles and/or suspending operations during excessively dry and/or windy periods • using trafficable soil polymers and water trucks on tracks and haul roads.	CoA 6.3 c)	Progressively as areas are completed.	Site inspection checklist	Site contractor
Prompt stabilisation of disturbed areas	Progressive stabilisation and rehabilitation of disturbed areas will be undertaken to minimise erosion and the generation of sediment and turbid runoff.	CoA 6.3 c)	Progressively as areas are completed.	Site inspection checklist	Site contractor
Maximise sediment retention on site	Bench testing of site turbid water will be undertaken in accordance with IECA's *Chemical coagulants and flocculant – Sediment Control Technique* (IECA 2016) to determine the most appropriate coagulants and/or flocculants to be used and indicative dosing rates. Products to be tested include: • aluminium chlorohydrate • chitosan lactate • non-ionic polyacrylamide • anionic polyacrylamide.	CoA 6.3 c)	Monthly	Site inspection checklist	Site contractor
Minimise discharge of water pollutants from site	The Surface Water and Ground Water Management Plans describe mitigation and management measures designed to minimise discharge of water pollutants. Measures include: • Stormwater management ponds are designed, built and operated in accordance with Landcom 2004 • Clean water diversions designed to capture and convey clean water around site, preventing it from collecting pollutants • Leachate collection systems to collect seepage from KVAD and SSCAD for treatment via the Caustic Injection Plant or evaporation	CoA 6.3 c)	Progressively as areas are completed.	Site inspection checklist	Site contractor

Relevant aspect	Management and mitigation measures	Source of requirement	Frequency	Relevant records	Responsibility
Inspection and maintenance of control measures	Inspections of control measures will be undertaken prior to predicted rainfall and following rainfall that causes run-off or weekly during dry conditions. Inspections will be undertaken by the Contractors Environmental Management Representative or delegate. That person will have the following knowledge: • an understanding of site environmental values that could be impacted by site construction and operation • an understanding of the requirements of the Development Approval that are relevant to drainage, erosion and sediment control • a good working knowledge of drainage, erosion and sediment control fundamentals and the project specific application thereof • ability to provide advice and guidance on appropriate measures and procedures to always maintain the site in a condition representative of regionally specific best practice, and that is reasonably likely to achieve the required standards • a good working knowledge of the correct installation, operation and maintenance procedures for the full range of drainage, erosion and sediment control measures used on the project.	CoA 6.3 c)	Monthly	Site inspection checklist	Site contractor
	The site contractor will maintain control measures to maximum practicable extent so that control measures: • will best achieve the sites required environmental protection including achieving the water quality criteria specified in the Development Approval and this Primary CESCP for the nominated design storm event • are in accordance with the specified operational standard for each drainage, erosion and sediment control measure • prevents or minimises safety risks. All water, debris and sediment removed from control measures shall be disposed of in a manner that will not create an erosion or pollution hazard.	CoA 6.3 c)	Monthly	Site inspection checklist	Site contractor
Monitoring and adjustment of control practices	If a site inspection or environmental monitoring identifies a significant failure of the adopted drainage, erosion and sediment control measures, a critical evaluation of the failure should be undertaken to determine the cause and appropriate modifications made to this CESCP.	CoA 6.3 c)	Monthly	Complaints register Site inspection checklist Incident records	Site contractor

Relevant aspect	Management and mitigation measures	Source of requirement	Frequency	Relevant records	Responsibility
Drainage, erosion and sediment control competence	All project personnel including contractors are recommended to have an appropriate level drainage, erosion and sediment training. Two levels of competency training for personnel are proposed: • Level 1 – basic awareness level training and provided during the site induction • Level 2 – half day training for foreman, engineers, project managers etc on the legal aspects of drainage, erosion and sediment control, fundaments and site-specific strategies, techniques and requirements prepared.	CoA 6.3 c)	Progressively as new personnel are engaged.	Training records	Site contractor
General	Site contractor to undertake all reasonable and feasible measures to prevent discharge of sediments and pollutants from the construction of the project from entering waterways.	CoA 2.30	At all times	Training records Incident records	Site contractor
	Earthworks not associated with the realignment of Sawyers Swamp Creek shall not be undertaken within 50 m of the creek where reasonable and feasible.	CoA 2.31	At all times	Training records Incident records	Site contractor
	All equipment, machinery and vehicles associated with the construction and operation of the project shall be operated and maintained in a manner that minimises the potential for oil and grease spills/leaks.	CoA 2.32	At all times	Training records Incident records	Site contractor

7.2 Progressive erosion and sediment control plans

Site specific, progressive erosion and sediment control plans (PESCPs) will be developed on a case-by-case basis for specific construction works by the site team and approved by a Certified Professional in Erosion and Sediment Control (CPESC). The process for the continued development of the PESCPs is outlined below:

- CPESC attends site monthly to review construction works, status of erosion and sediment controls and to recommend any actions required.
- Site team and CPESC will develop and implement site-specific erosion and sediment control recommendations based on design logic, calculations and the status of construction works.
- Recommendations and actions will be translated into practical measures to be addressed by GPM. Monitoring points and parameters, trigger levels and response actions will also be defined in the PESCPs and implemented by GPM.
- The CPESC will review monitoring outputs and action reports to identify trends, risks, and corrective/preventative actions

7.2.1 Specific control measures

Specific control measures to be deployed on site are outlined in Table 7.2 below and reference the requirements of Managing Urban Stormwater: Soils and Construction (Landcom, 2004). Maintenance and remedial actions for these measures are detailed in Section 8.3. Further site-specific details will be outlined in the PESCPs.

Table 7.2 Specific control measures to be used on site

Control measure	Landcom 2004 reference
Drainage and erosion control	
Lined clean water diversion drains and banks	Sections 5.4.1, 5.4.3, 5.4.4
Dirty water diversion drains and banks	Sections 5.4.1, 5.4.3, 5.4.4
Drain blocks	Sections 5.4.5, SD 5-8
Lined channel, drains and batter chutes	Sections 5.4.3, SD 5-5, SD 5-6
Sediment control	
Silt fences	Sections 6.3.2, 6.3.7, SD 6-8
Check dams	Sections 5.4.3, SD 5-4
Stabilised construction exits	Sections 5.4.5, SD 5-8
Construction sediment basins	Sections 6.3.2, 6.3.3, 6.3-4

8 Inspections, maintenance and monitoring

8.1 Incidents and complaints and non-compliance

8.1.1 Incidents

All incidents will be reported and investigated, and corrective actions assigned to prevent future occurrences in accordance with the CEMP Section 2.9.

The approval defines an incident as:

A set of circumstances that causes or threatens to cause material harm to the environment, and/or breaches or exceeds the limits or performance measures/criteria in this approval.

Material harm (which includes actual or potential harm) to the health or safety of human beings or to ecosystems that is not trivial or that results in actual or potential loss or property damage exceeding a threshold dollar value as identified by the POEO Act.

The Secretary must be notified in writing via the Major Projects website immediately after the Project team becomes aware of an incident in accordance with CoA 7.1. The notification must identify the development (including the application number and the name of the development if it has one) and set out the location and nature of the incident.

Section 2.9 of the CEMP details environmental incidents and the response to environmental emergencies for the Project. This includes the reporting, notification and investigation of environmental incidents. Emergency contact details are also provided. In the event of an environmental incident or emergency related to the implementation of this CESCP, the responses detailed in the CEMP is to be implemented.

8.1.2 Complaints

Section 2.8.4 of the CEMP details complaints and enquiries procedure for the Project. The complaint and enquiries procedure has been prepared in accordance with CoA 5.3 and 5.4. It lists the details that are required for complaints and the responsibility of relevant personnel. In the event of an environmental incident or emergency related to the implementation of this CESCP, the responses detailed in the CEMP are to be implemented.

8.1.3 Non-compliance

The approval defines non-compliance as:

An occurrence, set of circumstances or development that is a breach of the approval but is not an incident.

The Secretary must be notified in writing via the Major Projects website within seven days after the Project team becomes aware of any non-compliance in accordance with CoA 7.2. A non-compliance notification must identify the development and the application number for it, set out the condition of approval that the development 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 2.10.4 of the CEMP details the Project team's response following the identification of a non-compliance with the CoA, the CEMP and Sub-Plans. This includes the reporting, investigation and notification of non-compliances. Non-compliance with this CESCP will be addressed as required by the CEMP.

8.2 Inspections and monitoring

Inspections of drainage, erosion and sediment control measures will be undertaken:

- weekly during normal construction hours
- after a rainfall event causing runoff to occur on or from the project (≥20 mm of rain in a 24-hour period).
- Monthly during inspection with CPESC, as outlined in Section 7.2.

The inspections will monitor the status of the erosion and sediment control measures to ensure controls are working as intended. If required, maintenance and remedial actions will be undertaken. Recommended maintenance and remedial actions for specific controls are outlined in Section 8.3 below. Specific monitoring programs for surface water quality and groundwater quality are described in the Surface Water Management Plan (Appendix E of the OEMP) and the Groundwater Management Plan (Appendix D of the OEMP).

8.3 Maintenance and remedial actions

Various types of drainage, erosion and sediment control measures will be utilised for the project. A description of the key measures used and maintenance and remedial actions likely to be required are provided in Table 8.1.

Table 8.1 Maintenance and remedial actions

Control measure	Maintenance and remedial actions
Drainage control	
Lined clean water diversion drains and banks	Repair any damage to the liner (replace, re-anchor), repair any bunding or silt fence isolating the clean water catchment from the dirty water catchment.
Dirty water diversion drains and banks	Repair any erosion, re-line if necessary.
Drain blocks	Ensure turbid water cannot enter the drain or pipe. Monitor for damage and sediment accumulation and repair as necessary.
Erosion control	
Temporary	
Polymer soil stabiliser and covers	Reapply or adjust/repair following rainfall, heavy vehicle traffic or other disturbance.
Permanent	
Gypsum amelioration of dispersive soil	Check for rill, gully and tunnel erosion. Re-test soil and incorporate additional gypsum in accordance with the soil testing results.
Lined channel, drains and batter chutes	Look for water flows under or beside the structure and repair and/or modify as necessary. Look for erosion around and downstream of the energy and repair and/or modify as necessary.
Sediment control	
Temporary	
Silt fences	Ensure silt fences pond water. If not, install additional panels. Check for blow-outs in the anchor trench. Re-anchor as necessary. Replace any ripped or damaged sediment fence.
Check dams	Check for erosion between check dams. Install additional check dams if necessary. Remove accumulated sediment.

Control measure	Maintenance and remedial actions
Stabilised construction exits	Ensure rock is free from accumulated sediment. Replace as necessary.
Construction sediment basins	Treat accumulated water with high efficiency coagulants and flocculants. Dewater when water quality is less than nominated water quality limits. Check basin inlets and outlets for erosion and repair as necessary. Check the basin wall for slumping or tunnel erosion. Repair as necessary. Remove accumulated sediment from the basin when it reaches the sediment storage zone marker.
Coagulants and flocculants	Check coagulant/flocculent levels in rainfall activated dosing units and replenish as necessary.

9 Review and Improvement

A review of the CEMP, sub-plans (including this CESCP) and monitoring programs will be undertaken to determine the efficiency of the plans and monitoring programs and whether any changes are required to ensure compliance.

Circumstances which may trigger a review include:

- changes to design, construction, work methods, legislation, or policy
- incidents, complaints or non-compliance
- changes identified by continuous improvement
- changes to key management plans that are relevant
- where additional monitoring measures are identified in annual reviews or audits.

In addition, and in accordance with CoA 6.6, GPM will review and, if necessary, revise the studies, strategies and plans required under the conditions of approval to the satisfaction of the Secretary within three months of:

- the submission of an incident report under CoA 7.1
- the submission of an Annual Review under CoA 7.3
- the submission of an Independent Environmental Audit under CoA 4.2
- the modification of the conditions of this approval (unless the CoAs require otherwise).

Where this review leads to revisions in any such document, then within 4 weeks of the review, GPM will submit the revised document to the Secretary for approval, unless otherwise agreed with the Secretary.

A copy of the updated plans and changes will be distributed to all relevant personnel and discussed at pre-start and toolbox talks.

9.1 Continuous improvement

Continuous improvement of this CESCP will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement.

Appendix A
ER Endorsement

EMM
creating opportunities

Level 3 175 Scott Street
Newcastle NSW 2300
ABN: 28 141 736 558

02 4907 4800

www.emmconsulting.com.au

31 March 2026

John Pola
Environment Manager
Generator Property Management
110 Skelly Road
Lidsdale NSW 2790

Re: MP07_0005 - Wallerawang Ash Dam Areas - Environmental Representative Endorsement - Construction Erosion and Sediment Control Plan Rev 4

Dear John,

Following a review of the documents provided for the Construction Erosion and Sediment Control Plan (CESCP) Rev 4, I can provide the following endorsement.

The CESCP Rev 4 has been reviewed against the DPHI comments. No consultation was undertaken or required to be undertaken for this plan.

All comments have been addressed in the CESCP Rev 4.

The document is endorsed for submission to DPHI for approval.

Yours sincerely

David Bone
Independent Environmental Representative
dbone@emmconsulting.com.au

Australia

SYDNEY
Level 10, The Forum
201 Pacific Highway
St Leonards NSW 2065
T 02 9493 9500

NEWCASTLE
Level 3 175 Scott Street
Newcastle NSW 2300
T 02 4907 4800

BRISBANE
Level 1 87 Wickham Terrace
Spring Hill QLD 4000
T 07 3648 1200

CANBERRA
Suite 2.04 Level 2
15 London Circuit
Canberra City ACT 2601

ADELAIDE
Level 4 74 Pirie Street
Adelaide SA 5000
T 08 8232 2253

MELBOURNE
Suite 9.01 Level 9
454 Collins Street
Melbourne VIC 3000
T 03 9993 1900

PERTH
Suite 3.03
111 St Georges Terrace
Perth WA 6000
T 08 6430 4800

Canada

TORONTO
2345 Yonge Street Suite 300
Toronto ON M4P 2E5
T 647 467 1605

VANCOUVER
2015 Main Street
Vancouver BC V6B 2Z4
T 604 999 8297

CALGARY
700 2nd Street SW Floor 19
Calgary AB T2P 2W2

linkedin.com/company/emm-consulting-pty-limited

emmconsulting.com.au