Wallerawang Power Station Demolition

Soil and Water Management Plan

Prepared for Liberty Industrial Pty Ltd
April 2021

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Soil and Water Management Plan

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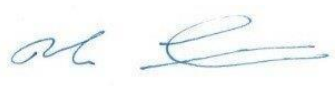
Prepared by	**Approved by**
	
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19 April 2021	19 April 2021

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1 Introduction

1.1 Background

Wallerawang Power Station (WWPS) is a decommissioned coal-fired power station formerly owned and operated by Energy Australia, but now owned by Greenspot Wallerawang Pty Ltd (Greenspot). WWPS is located adjacent to the township of Wallerawang, approximately 14 kilometres (km) from Lithgow and 160 km west of Sydney, in the Central Tablelands of NSW.

WWPS began operation in 1957, initially consisting of four 30 megawatt (MW) units, with two 60 MW units being added in 1961 and 500 MW units being added in 1976 and 1980. The 30 MW and 60 MW units were decommissioned in the 1990s and their above ground infrastructure was salvaged or demolished at that time.

In November 2014, Energy Australia announced it would permanently close WWPS due to ongoing reduced energy demand, lack of access to competitively priced coal and the powers station's high operating costs. The WWPS has since been deregistered as an electricity generation facility with Energy Australia commencing some decommissioning, demolition and rehabilitation (DDR) activities. In September 2020, Greenspot acquired the WWPS site and surrounding buffer lands from Energy Australia. The DDR activities will now be completed by Greenspot, who have appointed Liberty Industrial Pty Ltd (Liberty) as the principal contractor to complete demolition works (the project).

In parallel with completing the project, Greenspot will progress with their development of a future use plan for the WWPS site and buffer lands, seeking approvals for a variety of uses.

1.2 Project approval

Development approval for the project was issued by Lithgow City Council (LCC) on 26 September 2019 (LCC reference DA015/19). This generally approves the project description and mitigation measures presented and assessed in a Statement of Environmental Effects (SEE) prepared by Aurecon dated 26 September 2018.

The project involves demolition of much of the existing site infrastructure above ground level. However, some infrastructure on site will be retained including the turbine hall structure, cooling tower, coal dome and administration building. The existing site stormwater drainage system and other water management and utility infrastructure will also be retained. The project will take approximately 2 years to complete, commencing on site in the first half of 2021.

1.3 Scope

This Soil and Water Management Plan (SWMP) has been prepared to address the potential for soil disturbance and risks related to site water management and downstream water quality that are associated with the project, and specifically to address the requirements of the development approval DA015/19.

This SWMP has been developed consistent with the principles outlined in the following best practice guidelines:

- Best Practice Erosion and Sediment Control (IECA 2008);
- Managing Urban Stormwater, Soils and Construction Volume 1 4th ed. (Landcom 2004); and
- Managing Urban Stormwater, Soils and Construction Volume 2C Unsealed roads (DECC 2008).

It includes the specific content requirements of a SWMP and overarching erosion and sediment control plan as recommended in Landcom (2004) and IECA (2008).

1.3.1 Objectives

The objectives of this SWMP are to:

- minimise potential impacts on receiving land and waters from demolition activities;
- conserve and protect site soil resources; and
- ensure compliance with relevant regulatory requirements.

The objectives of the project more broadly are to:

- maximises the recovery of valuable resources in a safe, environmentally-compliant, cost effective and timely manner;
- protect the workforce from exposure to hazards and risks; and
- protect the surrounding environment and community from avoidable impacts in compliance with the planning approvals.

Liberty, as a licensed demolition contractor, will prepare and implement a variety of management plans (including this SWMP) and a demolition work plan consistent with AS2601-2001 The Demolition of Structures.

1.3.2 Responsibilities

Liberty is generally responsible for implementation of this SWMP, however Greenspot retains several key responsibilities. Roles and responsibilities are described in Section 9.

1.4 Approach and document hierarchy

A two-level approach and document hierarchy to erosion and sediment control planning and site water management will be applied to the project, comprising:

- SWMP (this document); and
- location-specific Progressive Erosion and Sediment Control Plans (PESCPs).

This SWMP for the project provides detailed background information, erosion hazard assessment, overall drainage and water management approach, erosion and sediment control approach, design standards and management strategies.

PESCPs will ultimately be prepared for all work areas, in advance of work activities commencing. Each PESCP will address soil and water management for a discrete location and set of work activities, and will be progressively updated as required as the demolition works progress.

Further details regarding development and use of PESCPs are provided in Section 7.1.

Two example PESCPs applying to early project activities have been developed for the purpose of demonstrating the intended level of detail and integration with this SWMP, and are included in Appendix A.

1.5 Document revisions

Changes to the SWMP shall only be implemented with the approval of the Liberty Project Manager and Greenspot.

This SWMP will be revised to address learnings identified through continual improvement and as necessary.

1.6 Distribution list

This SWMP is to be distributed to the following parties for review and comment:

- Liberty Industrial Directors, Senior Management, Project Manager, Project Engineer, Health Safety Environment and Quality Manager and Site Supervisors;
- Greenspot;
- LCC;
- WaterNSW; and
- NSW Environment Protection Authority (EPA).

Following review and any subsequent revision, updated versions of the SWMP will be submitted to LCC.

Once the SWMP has been approved, it will be integrated into the WWPS Demolition Environmental Management Plan (DEMP). A hardcopy of the DEMP will be kept onsite and updated as required by the Project Environmental Advisor, as well as a controlled electronic version being uploaded into the project management database. All Contractors and Subcontractors will be provided a copy to ensure their works are consistent with the DEMP.

2 Environmental requirements

2.1 General

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

2.2 Legislation

Legislation relevant to soil and water management includes:

- *Environmental Planning and Assessment Act 1979*;
- *Environmental Planning and Assessment Regulation 2000*;
- *Protection of the Environment Operations Act 1997* (POEO Act);
- *Protection of the Environment Operations (General) Regulation 2009*;
- *Protection of the Environment Operations (Waste) Regulation 2014*;
- *Protection of the Environment Operations (Waste) Regulation 2016*;
- *Water Management Act 2000* (WM Act);
- *Water Management (General) Regulation 2018* (WM Regulation);
- *Work Health Safety Act 2011*;
- *Work Health Safety Regulation 2017*;
- *Contaminated Land Management Act 1997*;
- *Environmentally Hazardous Chemicals Act 1995*; and
- *Environmentally Hazardous Chemicals Regulation 2008*.

2.3 Development approval conditions

The development approvals conditions of DA015/19 relating to soil and water management are provided (with some paraphrasing) in Table 2.1, along with the relevant section in this SWMP where each condition is addressed.

Table 2.1 Development approval conditions relating to soil and water management

Schedule	Condition	Where addressed
A	1.The Applicant is required to prepare and submit to Council for approval the following plans relating to demolition of the Wallerawang Power Station Site:	
	(b) Soil and Water Management Plan to protect the Coxs River and associated Riparian Zone and the existing stormwater drainage system from adverse impacts arising from the proposed demolition works	This SWMP
B	8. Measures shall be implemented to minimise wind erosion and dust nuisance in accordance with the requirements of the manual – "Soil and Construction" (2004) (Bluebook).	Sections 7 and 8 [1]
	38. Run-off and erosion controls must be implemented to prevent soil erosion, water pollution or the discharge of loose sediment on the surrounding land by: (a) diverting uncontaminated run-off around cleared or disturbed areas, and (b) erecting a silt fence and providing any other necessary sediment control measures that will prevent debris escaping into drainage systems, waterways or adjoining properties' and (c) preventing the tracking of sediment by vehicles onto roads, and (d) stockpiling topsoil, excavated materials, construction and landscaping supplies and debris with the lot.	Sections 7 and 8
	46. Any run-off and erosion control measures required must be maintained within their operating capacity until the completion of the works to prevent debris escaping from the site into drainage systems, waterways, adjoining properties and roads.	Section 10.4
	68. That the activity be undertaken in compliance with environmental protection licence 766.	Section 2.4.1
	71. All existing stormwater drainages and management measures (such as settling ponds, sedimentation basins) shall be inspected weekly, maintained and protection from all works until demolition and deconstruction is completed.	Section 10.2
	72. A Soil and Water Management Plan shall be prepared for all works at each stage progressively by a person with knowledge and experience in the preparation of such plans. The Plan shall meet the requirements outlines in Chapter 2 of NSW Landcom's Soils and Construction: Managing Urban Stormwater (2004) manual – the "Blue Book".	This SWMP
	The Plan shall be prepared in consultation with WaterNSW prior to the issuance of a Construction Certificate and shall be to the satisfaction of Council.	Section 1.6
	The Plan shall include controls to: • prevent sediment or polluted water leaving the demolition site or entering any natural drainage system or stormwater drains' and	Sections 7 and 8
	• ensure that the demolition site is regularly inspected, monitored and maintained until works have been completed and site stabilised.	Section 10.2
	73. The Soil and Water Management Plan shall be implemented, and effective erosion and sediment control shall be installed prior to any demolition activity. The controls shall be progressively updated according to the staged works.	Section 7.1
	89. The development consent holder must apply to NRAR for a Controlled Activity Approval after consent has been issued by Council and before the commencement of any work or activity.	Section 2.5.1

Note: 1. DEMP and other management plans also relevant.

2.4 Licensing, permits and approvals

2.4.1 Environment Protection Licence

Environment Protection Licence 766 (EPL 766) applies to the WWPS. There are no licensed discharge points or discharge criteria applicable under EPL 766. The pollution of waters is generally managed under Section 120 of the POEO Act.

Site water management, including management of discharges, is described in Section 7 and Appendix E.

2.4.2 Water licensing

The project is not considered to have any requirements for licensing of surface water or groundwater take.

Site runoff captured by existing and proposed water management storages will be reused for construction activities. However, these existing and proposed water management storages satisfy the definition of 'excluded works' under Schedule 1, Item 3 of the WM Regulation, which applies to *"dams solely for the capture, containment and recirculation of drainage and/or effluent, consistent with best management practice or required by a public authority…to prevent the contamination of a water source, that are located on a minor stream".* On that basis the existing and proposed storages on the site are exempt from licensing requirements and harvestable rights provisions under the WM Act.

The project is generally limited to demolition works above ground level will not involve groundwater take that would require licensing.

2.5 Approvals

2.5.1 Controlled activity approval

The project is considered integrated development as it requires an approval under the WM Act in addition to development consent. Specifically the project requires a controlled activity approval (CAA) to be obtained from the Natural Resources Access Regulator (NRAR) to permit proposed works on waterfront land.

Liberty has submitted a CAA application and is awaiting a response from NRAR.

This SWMP will require revision subject to any final CAA conditions imposed by NRAR.

3 Project description

3.1 General

This section provides a brief description of proposed demolition works and associated activities.

Further details are provided in the DEMP.

3.2 Demolition works

3.2.1 Description of works and domains

Proposed demolition works will be managed by Liberty across nine domains, which are shown on Figure 3.1. The domains comprise:

- Domain 1 – Coal Handling Infrastructure;
- Domain 2 – Stacks;
- Domain 3 – Precipitators;
- Domain 4 – Cooling Water Infrastructure;
- Domain 5 – Turbine Hall and Auxiliary Bay;
- Domain 6 – Boilers;
- Domain 7 – Transformer Yard;
- Domain 8 – Buildings and Workshop; and
- Domain 9 – Miscellaneous.

Details of proposed works within each domain are provided in Table 3.1.

Table 3.1 Description of demolition works

Domain	Description of works	
Domain 1 – Coal Handling Infrastructure	Removal of: • Conveyors 10, 14, 15, 16, 17, 1AR/1BR, 2AR/2BR • Live Storage Hopper including • Transfer Tower 1 • Transfer Tower 2 • All below ground coal handling structures • Coal Reclaiming Switch room • Cliplock Roof 1 • Coal Dump Building (Brick)	• Cliplock Roof 2 • Brick Wash Building • Switch Room • Road and Reclaim Hopper • Rill tower • Coal Sampling Room • Weighbridge • Truck Washing and Road Spraying Facilities • All above ground foundations, plinths, bunds and structures

Table 3.1 Description of demolition works

Domain	Description of works	
Domain 2 – Stacks	Removal of: • Unit 7 Concrete ChimneyStack • Unit 8 Concrete ChimneyStack	• All associated ductwork, support framing, ID fans and motors • All above ground foundations, plinths, bunds and structures.
Domain 3 – Precipitators	Removal of: • Unit 7 Precipitator including hoppers, vessels, collection plates, rappers, pipework and valves • Unit 8 Precipitator including hoppers, vessels, collection plates, rappers, pipework and valves	• All associated sheds, buildings, and canopy structures • All associated ductwork and supporting structures • All above ground foundations, plinths, bunds and structures.
Domain 4 – Cooling Water Infrastructure	Removal of: • Unit 7 - CW Pumps and Pumping Station • Unit 7 Chlorination and Acid Dosing Plant Structure	• Unit 7 Above ground CW Conduits • Unit 8 CW pump foundation block • Removal, collapse or backfill of Unit 7 and Unit 8 below ground CW Conduits
Domain 5 – Turbine Hall and Auxiliary Bay	Removal of: • Auxiliary Bay Structure • all internal Turbine Hall plant, structures and associated equipment including Unit 7 and 8 turbine generators, rotors, condensate system, feedwater system, boiler feed pumps and condensers, tanks, pressure vessels, steam pipes, motors and valves	• spare turbine generator • Turbine Hall internal concrete mezzanine floors, masonry and concrete walls, aboveground foundations, plinths, and bunds
Domain 6 – Boilers	Remove all plant and equipment under the boilers Clear Auxiliary Bay • Collapse both Boilers ready for machine destruction Removal of: • Unit 7 Boiler Structure including pressure parts, steam drums, steam mains headers, valves, furnace, water walls, economisers, superheaters, gas and air ducting, air heaters, fans, FD fans, tanks, mills, coal feeders, PF piping, burners, oil ignition system, bunkers, hoppers, conveyors, support structures, motors, pumps	• Unit 8 Boiler Structure including pressure parts, steam drums, steam mains headers, valves, furnace, water walls, economisers, superheaters, gas and air ducting, air heaters, fans, FD fans, tanks, mills, coal feeders, PF piping, burners, oil ignition system, bunkers, hoppers, conveyors, support structures, motors, pumps • Transfer Tower 3 • Former Coal Storage Bin • Conveyor 3A1/3B1
Domain 7 – Transformer Yard	Removal of: • Transformer unit 7-22 / 11kV Transformer Serial Number: P0804 • Transformer unit 7-22 / 3.3kV; Transformer Serial Number: P0805	• Transformer unit 8-22 / 3.3kV; Transformer Serial Number: P0805 • associated structures, towers, enclosures and bund walls
Domain 8 – Buildings and Workshop	Removal of: • Demineralising Plant Building • Medical Centre Building • Contractor Amenities Building	• Staff bathroom Amenities • Unit 7 & 8 Ash Pit • Laggers Building • Ammonia Tank and Dilution Plant

Table 3.1 Description of demolition works

Domain	Description of works	
Domain 9 – Miscellaneous	Removal of: • Communication Building • Hydrogen Generation Building • Busbar Overhead Gantry • Earthing Equipment Store	• Car Wash Area • Waste Oil Loading Bay • Condensate Polishing Plant Regeneration Building • Maintenance Garage • Open Garage

3.2.2 Typical demolition activities

Demolition works for any given infrastructure will typically occur in the following sequence (as required):

1. soft stripping;
2. hazardous materials removal;
3. heritage management works;
4. washdown;
5. demolition;
6. waste management and offsite disposal; and
7. ground stabilisation/rehabilitation works to a point suitable for the future redevelopment of the site.

3.3 Other work areas

Other work areas will be required to support the demolition activities, including:

- laydown area; and
- soil stockpile area.

The locations of the above areas are also shown on Figure 3.1.

The laydown area will be used for:

- temporary storage of plant and equipment used in the demolition works; and
- demolition materials handling and sorting.

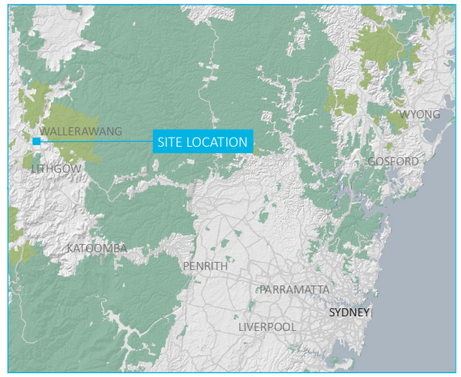
Long term storage of demolition materials is not anticipated. Sorted materials will be transferred offsite to recycling or waste disposal facilities as appropriate on a regular basis.

The stockpile area will be used for temporary storage of up to 20,000 cubic metres (m^3) of virgin excavated natural material (VENM) or other suitable exempt resource recovered material that will be used to backfill and cap selected below ground voids, tunnels and trenches.

3.4 Retained infrastructure

A range of existing infrastructure will be retained, as shown on the plan included in Appendix B.

Of relevance to this SWMP, retained infrastructure will include the existing site stormwater drainage system and all existing water quality controls on the site (refer Section 4.3.2 for further details).



KEY

- Approximate site boundary
- Cadastral boundary
- Catchment
- Watercourse/drainage line
- Rail line

Proposed work area

- Virgin excavated natural material stockpile
- Laydown area

Domain - indicating infrastructure to be demolished

- Coal handling plant
- Stack
- Precipitator
- Cooling water infrastructure
- Turbine hall and auxiliary bay
- Boiler
- Transformer yard
- Building and workshop
- Miscellaneous

INSET KEY

- Major road
- NPWS reserve
- State forest

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Source: EMM (2021); DFSI (2017); GA (2011); ASGC (2006)

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Proposed work areas and domains

Wallerawang Power Station Demolition
Soil and Water Management Plan
Figure 3.1

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4 Existing environment

4.1 General

This section provides a brief description of the existing environment relevant to soil and water management.

4.2 Site location and topography

WWPS is located in the Central Tablelands of NSW, immediately north-east of the township of Wallerawang. The site is approximately 80 hectares (ha) in size and is bounded by the Main Western Railway Line, Main Street and Castlereagh Highway (refer Figure 4.1). Surrounding land uses include a mix of residential, industrial, buffer areas and rural land uses. Several abandoned open cut mines and operating underground coal mines are near the site.

The site has been progressively developed since the first stages of the WWPS were constructed in 1957 and is a highly modified industrial area with relatively few undisturbed and/or natural environmental features remaining. The site is located in a broad river valley formed by the Coxs River and its tributaries. The site is at an elevation of about 880 metres relative to Australian Height Datum (AHD) and is generally flat with gentle slopes falling toward the two named watercourses that traverse the site, namely the Coxs River and Springvale Creek (refer Figure 4.1).

4.3 Hydrologic context

4.3.1 Regional hydrology

The Coxs River bisects the site and flows generally south into Lake Wallace. Lake Wallace was created as a water storage to service the WWPS and is now owned and managed Greenspot. Coxs River and Lake Wallace lie within the Warragamba catchment of Sydney's declared drinking water catchment.

The Coxs River rises north of Wallerawang at Gardiners Gap, within Ben Bullen State Forest, and flows south to Lake Wallace and Lake Lyell, ultimately feeding Lake Burragorang which is the storage impounded by Warragamba Dam.

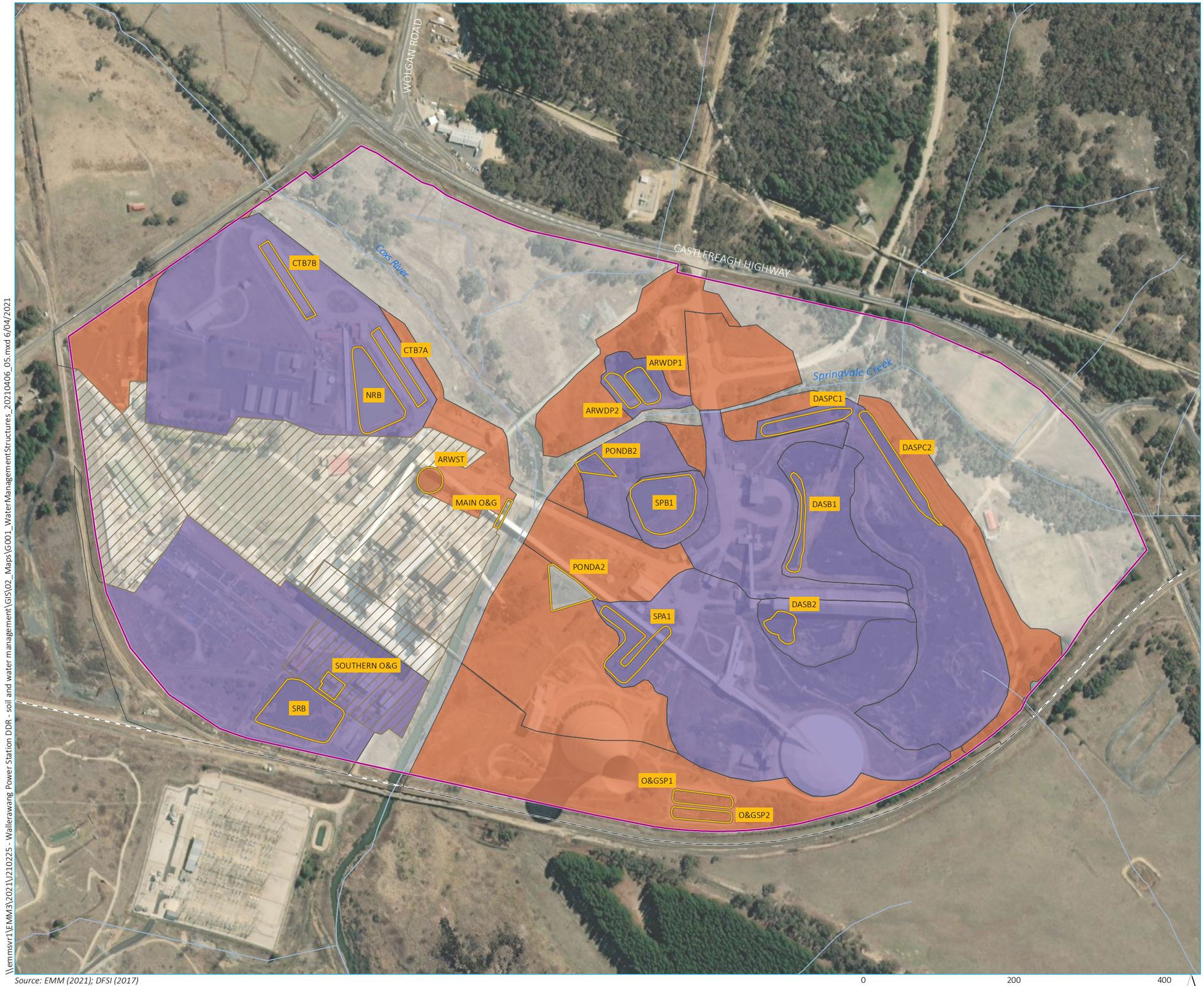
The current water quality in the Upper Coxs River catchment is generally considered poor and degraded due to extensive agricultural and industrial land uses as well as coal mining, all of which over time have both extracted water from and discharged to the river. Several studies (eg The Ecology Lab (TEL) 2004,2006 and 2007, and others more recently) have pointed to evidence of the degraded state of the river, with findings including:

- low diversification of aquatic and macroinvertebrate species generally due to poor water quality;
- pollutant-tolerant species form the dominant taxa of the river system;
- the dominant riparian vegetation is a mixture of introduced and common species of grasses, rushes and sedges with minimal native or vulnerable populations; and
- fish species introduced by lake stocking now dominate the Upper Coxs River and associated lakes.

4.3.2 Site drainage

WWPS has a functioning existing stormwater drainage system. A plan showing the existing site drainage system is included in Appendix C.

Figure 4.1 provides an overview of existing stormwater management, including internal catchment areas and water management infrastructure, and should be referred to when reading this section of the SWMP.



KEY

- Approximate site boundary
- Watercourse/drainage line
- Rail line

Existing water management structure

- Inventory
- Oil and grit catchment
- Unprotected catchment
- Protected catchment

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Source: EMM (2021); DFSI (2017)

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Existing water management structures and internal catchment areas

Wallerawang Power Station Demolition
Soil and Water Management Plan
Figure 4.1

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Stormwater that is generated on the site, as well as streamflow that is conveyed through the site along Coxs River and Springvale Creek, forms part of either:

- **Unprotected areas** (red shaded areas on Figure 4.1):
  - These areas consist of the undisturbed/vegetated areas of the site or relatively clean developed/ancillary areas (eg some internal access roads).
  - Stormwater runoff from unprotected areas is considered 'clean', with very low risk of polluting downstream receiving waters, and is discharged to the Coxs River or Springvale Creek with no treatment.
  - Existing water management infrastructure relevant to unprotected areas includes:
    - clean water diversions;
    - culverts on Coxs River and Springvale Creek at internal road crossings;
    - piped drainage systems; and
    - overland flow paths.
- **Protected areas** (purple shaded areas on Figure 4.1):
  - These areas consist of the former operational areas of the power station and adjacent hardstand areas.
  - Stormwater runoff from protected areas is considered to have higher risk of polluting downstream receiving waters.
  - Existing water management infrastructure relevant to protected areas includes:
    - piped drainage systems to capture and convey runoff to one or more water management structures; and
    - water management structures including 2 oil and grit (O&G) traps and 16 water management basins.

    The location of existing water management structures is shown on Figure 4.1. An inventory of water management structures is provided in Table D.1 in Appendix D.
  - O&G traps control runoff from areas associated with former generating areas of the WWPS with potentially high sediment load and hydrocarbon contamination. The extent of the catchment areas draining to the O&G traps is shown on Figure 4.1. O&G traps are operated as follows:
    - dewatering occurs via pump out to the existing water management infrastructure, which in turn drain to Coxs River;
    - trapped sediments are removed offsite to a licensed disposal facility; and
    - trapped hydrocarbons are removed offsite to a licensed disposal facility.

- Sediment retention basins control runoff from other disturbed/operational areas of the WWPS with potentially high sediment loads, including the former coal handling and storage areas. The extent of the catchment areas draining to basins is shown on Figure 4.1. Basins are typically operated as follows:
    - basins are typically controlled by overflow weir arrangement and drain via gravity to Coxs River;
    - outlet structures enable manual closure of isolation valves to avoid discharge in the event of contamination or poor water quality; and
    - settled sediments are removed offsite to a licensed disposal facility.
- Other water management infrastructure is operated to provide contingency measures to prevent discharge of poor quality water from the site as follows:
    - the former Ash Return Water Storage Tank (ARWST) is configured to receive pumped flows from the Main O&G, and in turn can pump water back to the Kerosene Vale Ash Repository (KVAR) for disposal. Pumped water is received at KVAR under agreement from the current site owner Generator Property Management Pty Ltd (GPM); and
    - the concrete basins associated with the former Cooling Tower 7 (ie basins CTB7A and CTB7B) are available to provide contingency storage of poor quality water. The basins are currently being configured to enable connection to the return water transfer to KVAR during demolition works.

4.3.3 Water supply

It is understood that existing water supply sources available to WWPS comprise:

- raw water – sourced from the Fish River Water Supply Scheme operated by WaterNSW; and
- recycled water – sourced from existing O&G traps and water management infrastructure on the site.

These water supply arrangements will broadly continue/apply for the project.

4.4 Soils

Available soils information comprises:

- *NSW soil and land information system* (SALIS) (OEH 2018a); and
- *Soil landscape mapping of NSW – eSPADE online database* (OEH 2018b).

Natural soils have been previously disturbed by construction and operation of the power station with the majority of the natural soils covered by concrete hardstands, foundations and imported gravel. The insitu subsoils may be disturbed during some demolition activities and associated management activities (eg construction of new sediment basins) therefore an understanding of soil properties and potential constraints is required.

The soil landscape of the project area is mapped as 'disturbed terrain' (refer Figure 4.2, categories with suffix 'xx') which is described as *"areas where the original soil has either been removed, buried or greatly disturbed and erosion varies greatly depending on the properties of the fill material and slope gradients"* (OEH 2018b).

Figure 4.2 Soil landscapes

Source: OEH 2018b

Adjacent soil landscapes include the Cullen Bullen Soil Landscape and the Lithgow Soil Landscape which provide some indication of the likely properties of the underlying subsoils. A description of the soil landscapes and their properties are provided in Table 4.1.

Table 4.1 Soil landscapes adjacent to the project areas

Soil Landscape	Description	Properties
Cullen Bullen	Shallow to moderately deep Yellow Podzolic Soils and Yellow Earths on crests; moderately deep Yellow Podzolic Soils, Soloths and Yellow Leached Earths on upper and mid-slopes. Moderately deep tp deep yellow Solodic Soils and Yellow Podzolic Soils on lower slopes near and along nattow drainage loines. Shallow Yello Earths and Lithosols associated with low scarps	• Low fertility topsoils. • High water erosion hazard due to dispersion (strongly sodic subsoils). • Strong to extreme acidity with associated aluminium toxicity.
Lithgow	Moderately deep Red Podzolic Soils and Yellow Podzolic Soil and Yellow Leached Earths on upper slopes and well-drained areas. Moderately deep to deep, Solods/yellow Solodic Soils on lower slopes and in areas of poor drainage.	• Low fertility topsoils. • High water erosion hazard due to dispersion (strongly sodic subsoils). • Strong acidity with associated aluminium toxicity.

4.5 Climate and rainfall

The area features a subtropical highland climate with warm summers and cool to cold winters with occasional snow.

Rainfall information was obtained from the Bureau of Meteorology (BoM) Lidsdale (Maddox Lane) AWS (BoM Site Number 63132). The area experiences slight summer dominant rainfall, with January being the wettest month with an average of 85.1 millimetres (mm) which generally comes from summer storms. The annual average rainfall is 765.6 mm (BoM 2021).

Monthly rainfall averages are shown in Figure 4.3.

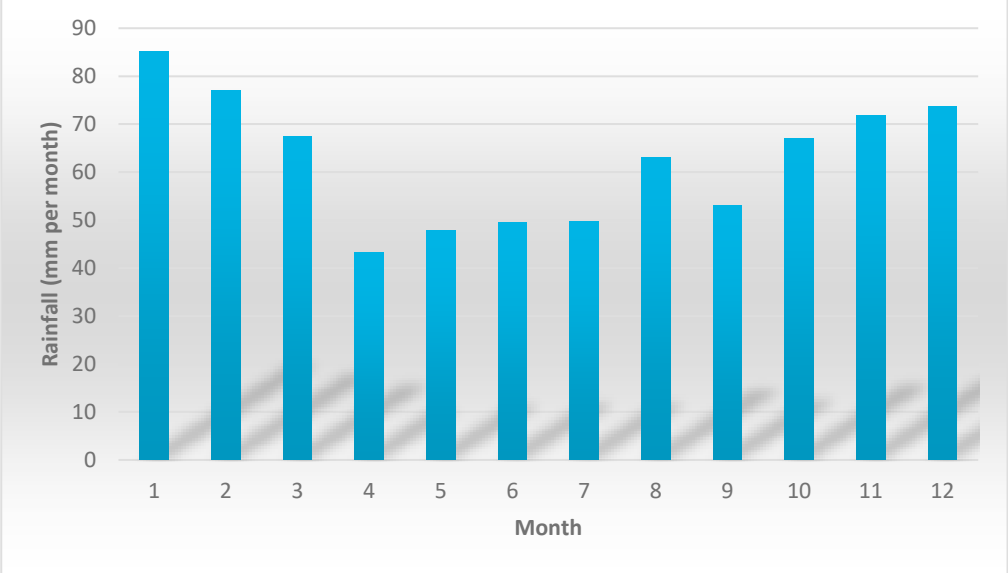


Figure 4.3 Mean monthly rainfall

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, and is 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 (ie 0.5 exceedances per year (EY), 6-hour event) in mm/h (Rosewell & Turner 1992).

For the project S equals 6.93 mm/h.

The calculated R-Factor for the project is 1,240 $MJ.mm.ha^{-1}.year^{-1}$.

5 Environmental aspects and impacts

5.1 Potential impacts

Key aspects of the project that could result in adverse impacts to soils and water include:

- site preparatory works including vegetation clearing, topsoil stripping, minor earthworks (eg at laydown), drainage works;
- initial washdown of structures to be demolished;
- demolition activities;
- material stockpiles;
- movement of plant/equipment and transportation of materials within the site;
- operations including fuel and chemical storage, refuelling and chemical handling; and
- landscaping and revegetation.

5.2 Impact summary

The potential soil and water quality impacts of the project include:

- chemical, heavy metal, debris, oil and grease or petroleum hydrocarbon spills occurring during the demolition process that directly pollute the Coxs River – this risk would be increased during:
    - demolition of structures that cross the river, such as the coal conveyor belt; and
    - initial washdown of former generating infrastructure;
- increased sediment loads from demolition of the coal transfer infrastructure, operation of materials hardstands and dust blown off-site causing high sediment loads to be deposited into nearby waterways; and
- increased levels of litter from waste materials associated with demolition activities polluting downstream watercourses and adjacent lands.

Water quality in the Coxs River and downstream receiving waters has the potential to be impacted by the demolition works through spillage of chemicals, oils, fuels, waste and contamination by materials and equipment used during the demolition process. There is also potential for storm water and the existing storm water drainage system to be impacted during the storing or moving of materials or equipment within the site during the demolition works. The existing poor water quality of the Coxs River reduces the potential for the project to cause water pollution events that have a significant impact on local water quality.

5.3 General approach to soil and water management

This SWMP presents a risk-based approach to soil and water management that:

- avoids discharge of potentially contaminated water associated with initial washdown of former generating infrastructure;
- utilises the existing site stormwater drainage system and water quality controls to the extent possible to manage runoff from demolition areas;
- prevents direct discharge of runoff from demolition areas to the Coxs River;
- minimises the potential for soil erosion and mobilisation/transport of sediment offsite through application of a combination of site-specific and activity-relevant controls, including use of localised drainage, erosion and sediment controls throughout as well as sediment basins for the larger unsealed areas associated with the proposed laydown area; and
- identifies feasible contingency measures to assist with management of poor water quality should this be required.

This approach is considered to minimise the potential for pollution of the Coxs River and downstream receiving waters.

Specific management and mitigation measures to achieve the above are described in Section 7.

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) are 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%) comes into contact with 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 (eg 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)

Based on eSPADE (OEH 2018b), the modelled K-Factors for the project area range from 0.04–0.06 t.ha.h.ha^{-1}.MJ^{-1}.mm^{-1} which indicate that the project soils have a high erosion potential. The modelled K-Factors apply to a maximum depth of 100 mm (Yang *et al.* 2017). However, soil landscape mapping identified the presence of sodic subsoils within the project area, and Loch *et al.* 1998 determined various sodic soils to have typically higher K-Factors ranging from 0.056–0.106 t.ha.h.ha^{-1}.MJ^{-1}.mm^{-1}. On this basis, a K-Factor of 0.071 t.ha.h.ha^{-1}.MJ^{-1}.mm^{-1} has been adopted to determine the erosion hazard of project subsoils.

The two key areas where soil may be exposed are the proposed laydown area and fill material stockpile, which are shown on Figure 3.1.

As the laydown area will be sheeted with suitable road base/gravel material, the K-Factor is expected to be less than for the insitu subsoils. It is also expected that the K-Factor of the imported fill material will be less than the insitu subsoils. The erosion hazard will be re-assessed in the relevant PESCP when the physical and chemical properties of these imported materials are known.

Most of the remainder of demolition works will be on existing concrete hardstand areas where is there no risk of erosion.

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.

SLC's are determined by calculating the annual average soil loss using the 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.

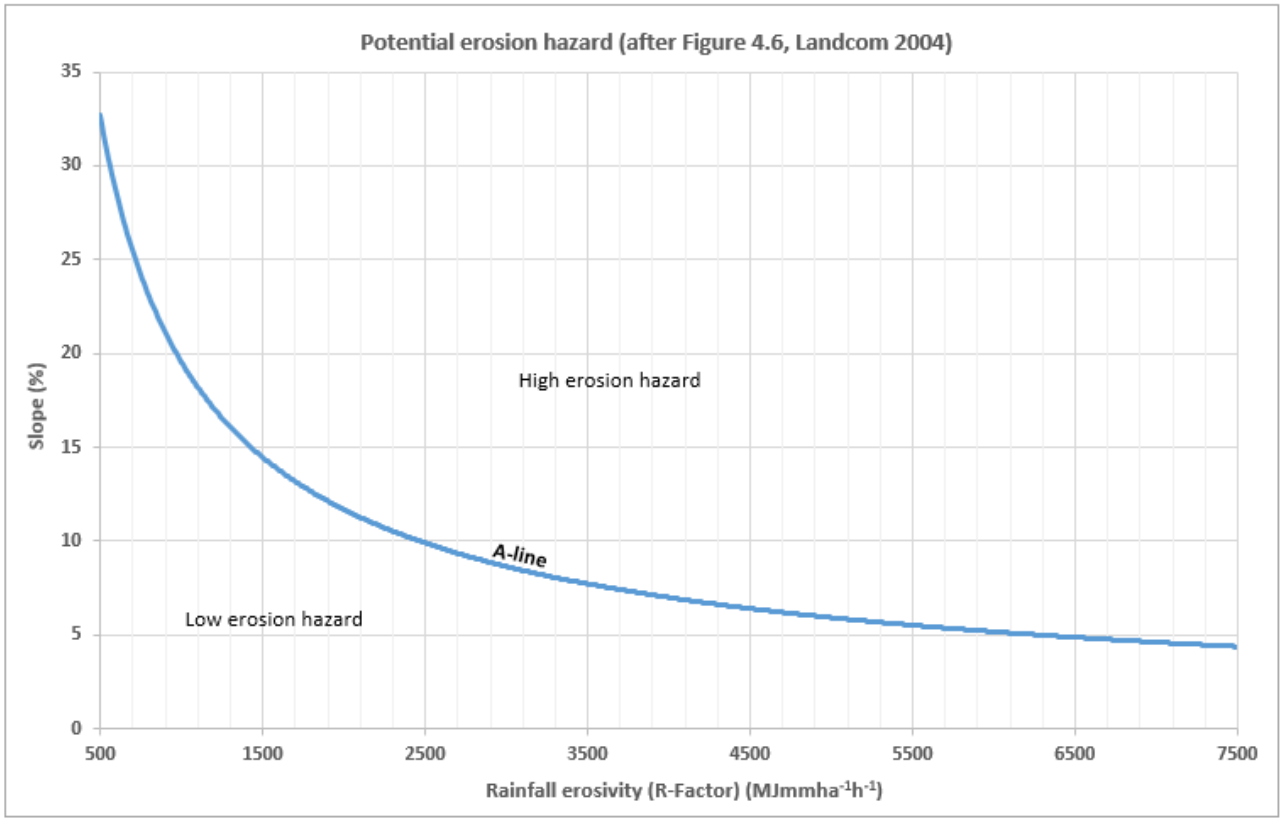


Figure 6.1 Assessment of potential erosion hazard

As detailed in Section 4.4, the calculated R-Factor for the project is 1,240 MJ.mm.ha^{-1}.h^{-1}.

Slope ranges and erosion hazard for key project elements are provided in Table 6.2.

Table 6.2 Slope ranges and erosion hazard for key project elements

Project element [1]	Slope (min %)	Slope (max %)	Average (%)	Erosion hazard
Laydown – SB1	0.5	2.5	1.0	Low
Laydown – SB2	1.0	2.0	1.5	Low
VENM stockpile area	1.0	3.0	1.4	Low

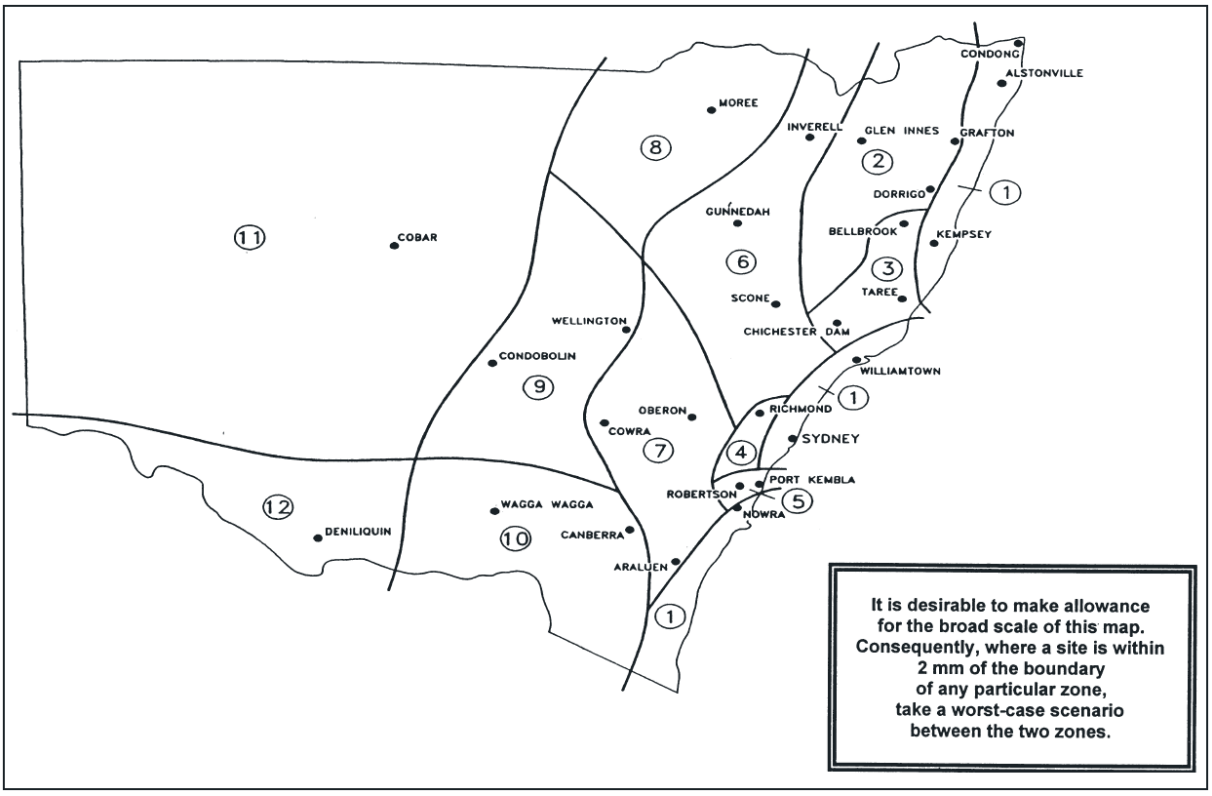
Notes: 1 – refer Figure 3.1 for location

Applying these parameters to the erosion hazard nomograph results in a low erosion hazard due to slope and rainfall erosivity. On this basis, no further analysis of SLCs is required.

Landcom (2004) states that waterfront lands should always be regarded as SLC 6 lands. In the context of this project Landcom (2004) defines waterfront land (consistent with the WM Act) as *"the bed of any river, together with any land lying between the bed of the river and a line drawn parallel to, and the prescribed distance (40m) inland of, the highest bank of the river."*

Any demolition works and associated land disturbing within 40 m of the high bank of the Coxs River will be on SLC 6 lands. The SLC 6 lands trigger increased erosion and sediment control management requirements as stipulated in Section 4.4.2 of Landcom (2004).

The project area is in rainfall zone 7 (refer Figure 6.2).



Source: Landcom (2004)

Figure 6.2 Rainfall zones

Landcom (2004) requires that where possible, disturbance to SLC 6 lands be scheduled for periods when rainfall erosivity is low as detailed in Table 6.3 below.

Table 6.3 Zone 7 high and low rainfall erosivity periods

SLC	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec	
1-4	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
5	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H
6	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	H
7	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H

Source: Landcom (2004)

Disturbance below ground to lands within 40 m of the high bank of Coxs River should therefore be avoided as much as possible during the months of October through to March. Where scheduling activities on these lands to periods when rainfall erosivity is low is not possible or is impractical, ensure that any disturbed lands have C-Factors lower than 0.1 when the 3-day rainfall forecast suggests that rain is likely (eg apply a soil stabilising polymer or cover if rain is predicted within 3 days).

6.3 Application of erosion hazard assessment

Further project specific erosion control measures are provided in Section 7.

7 Management and mitigation measures

7.1 Development of PESCP's

PESCPs will be used to formally document and describe drainage, erosion and sediment control measures for each discrete site location and/or set of work activities. PESCPs are intended to progressively updated as required as the demolition works progress.

PESCPs may be required to be used in conjunction with other site or activity-specific Environmental Work Method Statements (or equivalent) that Liberty will use to provide more detailed site or activity-specific environmental mitigation measures (eg which may apply to control noise, dust, etc).

Two example PESCPs applying to early project activities have been developed for the purpose of demonstrating the intended level of detail and integration with this SWMP, and are included in Appendix A.

PESCPs will typically include (as required or appropriate):

- contours and/or drainage paths;
- clean and dirty water catchments;
- limits of disturbance;
- extent of earthworks;
- location of control measures;
- sediment basin sizing;
- temporary stabilisation requirements; and
- specific operating procedures.

PESCPs will be developed by the Liberty Project Soil Erosion Specialist in consultation with demolition personnel, and modified as required when:

- site conditions evolve;
- flow paths change; or
- demolition activities that affected the characteristics of ground conditions change.

7.2 Design standards

7.2.1 Drainage and erosion control

The WWPS has an extensive existing stormwater drainage network that Liberty will utilise and maintain as required during the project, however it will be necessary to construct temporary drainage or block existing drain outlets to divert clean and dirty flows away from or to control measures. Temporary diversion channels or banks and associated inlet and outlet works will be constructed to convey flows and remain stable for storm events up to the 10-year ARI.

7.2.2 Sediment control

The WWPS has numerous existing water management structures that provide sediment control, including O&G traps and sediment basins.

Existing water management structures will typically be used for an informal, polishing function for runoff from demolition works where formal erosion and sediment control is achieved through localised measures or new sediment basins. A design standard does not apply to this situation.

Where enlarged sediment basins will be established in the laydown area, these shall be Type D basins designed for the 85th percentile 5-day rainfall depth with a sediment storage zone 50% of the rainfall storage zone. The 85th percentile 5-day rainfall depth for Lithgow is 29.4 mm (Table 6.3a Landcom 2004).

Sediment basins outlets will be constructed to convey and remain stable for storm events up to the 10-year ARI.

7.3 Minimise the extent and duration of soil disturbance

The highest erosion risk areas for the project are the laydown area and the proposed fill material stockpile.

7.3.1 Laydown area

The laydown area will be required for a period of approximately 18 months. If necessary, soil stabilising agents will be applied to the laydown area to minimise the generation of fine sediments that can result in fugitive dust emissions and turbid runoff during rainfall events.

Turbid runoff from the laydown area will report to sediment basins where it will captured and treated prior to discharge to the existing downstream drainage system (refer Section 7.7 for details).

Other than where sediment basins will be established, existing sodic subsoils will generally remain capped with road base or gravel material and due to the anticipated low K-Factors of this material and low slope gradients, significant erosion is considered to be unlikely.

7.3.2 Fill material stockpile

The fill material stockpile will be required for a period of approximately 18 months. The fill material will comply with a current resource recovery exemption and will be used to infill and make safe any excavations resulting from the demolition works such as footing or foundation removal and existing voids created by cable runs, pipe trenches, conveyors and ducting. Soil coverings (including covers or stabilising polymers) will be used to minimise the generation of turbid runoff and dust. Local sediment controls (including bunds, sandbags or sediment fences) will be installed to ensure stockpile erosion is confined to the immediate stockpile area.

Drainage from the stockpile area will be directed to the adjacent existing sediment basin (Northern Retention Basin) which will act as a further control for any residual turbid runoff.

7.3.3 Other areas

Demolition works will typically be undertaken on existing concrete hardstands and foundations that will be retained and therefore disturbance to soil will be minimal. Accordingly, no specific measures will be required to minimise disturbance for these areas.

7.4 Control water movement through the site

The WWPS has an existing stormwater drainage system including clean and dirty water drains, as well as piped stormwater elements that discharge directly to Coxs River (refer Section 4.3.2).

The following provides a summary of the proposed control of water movement through the site:

- Existing watercourses, drainage lines and stormwater systems are generally to be protected and maintained.
- Existing clean water diversions will be utilised, and new or enhanced clean water diversions will be established where practical, to maximise the diversion of clean run-on water movement around work sites.
- Existing stormwater drainage and water management infrastructure within the site will generally be maintained and operated per current arrangements, except where otherwise noted in this SWMP.
- Flows along the Coxs River and Springvale Creek are not expected to be impeded by any aspect of the project at any time. Demolition of the coal conveyer that crosses the Coxs River will require removal of structures close to the bank of the Coxs River, however disturbance to the riverbank itself is not anticipated and there is sufficient room to install appropriate sediment controls. These demolition works will be scheduled to avoid the high rainfall erosivity risk periods where possible.

7.5 Minimise soil erosion

The highest risk areas for erosion will be the laydown area and fill material stockpile. The laydown area will be sheeted with suitable road base or gravel and will be substantially more erosion resistant than the underlying subsoils. If necessary, a soil stabilising agent may be applied over or incorporated into the road base to minimise the generation of dust and turbid runoff.

Soil coverings (including covers or stabilising polymers, as appropriate) will be applied to the fill material stockpile prior to predicted rainfall.

Soil coverings will also be applied to the surface of areas backfilled with fill material that are exposed to rainfall or concentrated flows, until these areas can be otherwise stabilised (eg with vegetation).

The main areas where disturbance to the insitu subsoils is anticipated will be during the construction of the laydown area, the demolition of the former coal handling infrastructure adjacent to the laydown, and associated new sediment basins.

Gypsum will be incorporated into the floor and batters of the basin (via contour scarification where practical) to minimise the potential for tunnel, rill and gully erosion, where required. The need for gypsum and application rates are to be determined from site specific soil testing.

Demolition will be undertaken generally on areas of concrete hardstand or foundation, and the land outside of these areas is capped with gravel. The risk of erosion associated with the demolition works is therefore minimal.

Any temporary drains constructed for the demolition works will be appropriately lined where the design velocity exceeds the maximum permissible velocity of the soil. This includes drain inlets and outlets. Sediment basin inlet drains and spillways will be lined where required. The type of lining will be detailed on the PESCPs.

7.6 Promptly stabilise disturbed areas

All disturbed areas will be promptly stabilised with vegetative or other stable cover as soon as practicable.

Hydraulically applied soil stabilising polymers can provide erosion protection equivalent to 60% grass cover for up to three months using a 10% solution applied at 1 litre per square metre (L/m^2) (refer Figure 7.1, from Landloch 2013 Figure 7.1) and could be used to provide temporary erosion protection on fill material stockpiles, and other exposed areas particularly in preparation for periods of predicted rainfall or during shut down periods.

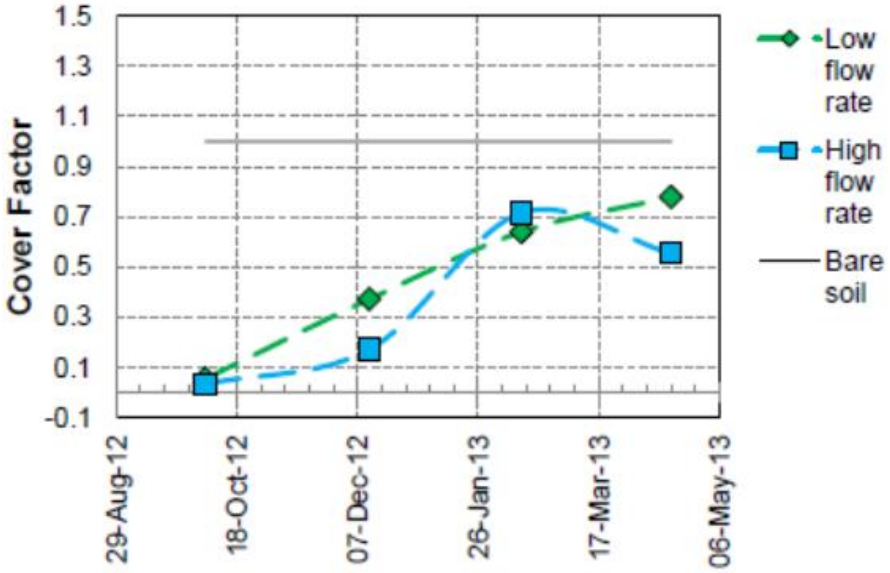


Figure 7.1 C-Factor assessment of soil stabilising polymers

The timing of stabilisation of disturbed areas such as stockpiles and backfilled areas will be in accordance with Landcom (2004) requirements as detailed in Table 7.1.

Table 7.1 Target C factors and timing

Lands	Target C-factor	Target C-factor
Waterways and other areas subjected to concentrated flows, post construction	0.05	A target C factor of 0.05 (approx. 70% soil surface cover) will aim to be achieved 10 days from completion of construction and prior to exposure to concentrated flows.
All lands, including waterways and stockpiles during construction	0.15	A target C factor of 0.15 (approx. 50% soil surface cover) will aim to be achieved 20 working days of inactivity or from completion of construction.
Stockpiles, during construction	0.10	A target C factor of 0.10 (approximately 60% soil surface cover) will aim to be achieved 10 working days from completion of construction.

7.7 Maximise onsite retention of sediment and contaminated water

This section describes measures that will be used to maximise onsite retention of sediment and minimise discharge of potentially contaminated water to receiving waters.

7.7.1 Discharge and reuse management

Appendix E sets out general discharge and reuse management protocols that will be applied to the project.

7.7.2 Laydown area

Sediment and turbid runoff from the laydown area will be controlled by new sediment basins SB1 and SB2 to be created by enlarging existing basins DASB1 and DASB2, respectively (refer Figure 4.1 for locations). Basin design type, purpose and capacity is specified in Table 7.2.

Table 7.2 Sediment basin sizing and purpose

Sediment basin	Current capacity	Design Capacity (m^3)	Basin Type	Purpose
SB1	n/a	529	D	Treat turbid runoff from the northern portion of the laydown area
SB2	n/a	662	D	Treat turbid runoff from the southern portion of the laydown area

Treatment and dewatering of sediment basins will be undertaken generally in accordance with Appendix E. Additional basin management measures are described below:

- Sediment basins will be treated and dewatered back to design capacity within 5-days of the cessation of the design rainfall event. The design capacity water level will be marked clearly on the sediment basin wall. Spadable sediments will be removed as required to maintain the design capacity and reused onsite or disposed of at a suitable licenced waste receival facility.

- A sediment basin commissioning process will be undertaken as follows:

  - To gain a better understanding of the nature of contaminants in site runoff, untreated sediment basin water will be sampled and tested to identify contaminants of concern (CoC). Water quality criteria for discharge will be established in the form of site assessment criteria (SAC) per Appendix E.

  - The water in the sediment basin will be sampled and testing following treatment with suitable coagulants/flocculants to determine if the identified contaminants (if any) are dissolved or bonded to the clay and organic matter in the water. The selection of appropriate coagulants and/or flocculants for use in the sediment basins and the determination of dosing rates will be undertaken by the Project Soil Erosion Specialist using the bench testing procedure described in *Chemical coagulants and flocculants* (IECA 2018).

  - If the contaminant levels in the treated water satisfy the established SAC, then the sediment basin will be dewatered to receiving waters. If the treated water does not satisfy the SAC then it will be subject to further treatment, or pumped to KVAR for disposal.

  - Pre- and post-treatment sampling involving grab samples and laboratory analysis of comprehensive suite of analytes will continue until there is confidence in the treated water quality. Consideration will then be given to scaling back to field parameters only with use of hand-held water quality meters Laboratory sampling of pre- and post-treatment basin water will be undertaken every fifth discharge event as quality check and site practices adjusted accordingly.

7.7.3 Demolition works within existing stormwater drainage system

For demolition works being undertaken within the existing stormwater drainage network, the following controls will be implemented:

- The existing piped stormwater drainage will be temporarily blocked as required to prevent direct discharge of potentially contaminated water to the Coxs River. This may be achieved at surface level (via blocking of grates, etc) or below surface level within pits, as considered most appropriate for water management purposes.

- The existing drainage system will be inspected and ground-truthed to confirm connectivity prior to any temporary modification works.

- Where temporary blocking of the drainage system is required, local stormwater runoff and washdown water will be alternatively controlled via the following:

    - Temporary drainage/bunding to control and contain runoff and washdown water and direct to a suitable control sump – this may be either existing O&G trap (ie Southern or Main O&G trap). Temporary pumping of water will be required where gravity drainage is not feasible.

    - From the Southern or Main O&G trap:

        - local stormwater runoff will be directed back to the existing stormwater drainage system; and

        - washdown water will be managed separately and transferred offsite to KVAR for disposal.

    - Dewatering of O&G traps will be undertaken generally in accordance with Appendix E.

Contingency measures that are available to assist with management of poor water quality (should this be required) include:

- use of additional storages including the former Cooling Tower 7 concrete basins CTB7A and CTB7B (refer Figure 4.1 for locations) to assist with volume management; and

- additional offsite discharge to KVAR.

7.7.4 Demolition works outside existing stormwater drainage system

For demolition works being undertaken outside of the existing stormwater drainage network, due to the small areas of disturbance involved and the anticipated coarse nature of the sediment generated, conventional temporary and localised sediment control techniques such as silt fences and coir log sediment traps are adequate and will be utilised. Treated runoff will be either discharged as overland flow via level spreader arrangement where suitable, or otherwise pumped back to the existing stormwater drainage system.

7.7.5 Other areas

A stabilised construction entry/exit(s) will be constructed, and internal sealed roads swept as required to minimise the potential for mud tracking to public roads. Any sediment tracked onto a public road will be cleaned up using a sweeper or vacuum truck as required.

As further protection to the Coxs River and its riparian environment, the existing internal road crossing of the river will not be used for transport of construction materials or demolition waste to/from the laydown area. Instead, construction access across the Coxs River will be made external to the site (via Main Street and Castlereagh Highway).

7.8 Spill management

To minimise the potential for and consequences of spills during the demolition works, the following controls will be implemented:

- All fuels, oils, hydrocarbons, chemicals and other hazardous materials used onsite will be appropriately stored on an impervious surface and in bunded areas in accordance with the requirements of all relevant Australian Standards, relevant EPA guidance and *Storing and Handling Liquids: Environmental Protection – Participant's Manual* (DECC 2007).
- For storage of liquids requiring bunding, a minimum bund volume requirement of 110% of the volume of the largest single stored volume within the bund will apply.
- Access roads will be clearly indicated through onsite signage and flagging where required. All vehicles will remain in the designated access areas at all times.
- Vehicles will follow appropriate onsite speed limits at all times.
- All plant and machinery used on site will undergo regular maintenance and inspections for leaks with all maintenance records to be kept on file.
- The repair and maintenance of plant and vehicles is to be conducted in a designated area only, which is to be covered to minimise the release of potential contaminants and contain any leaks or spills, due to rain.
- Spill kits are provided onsite and be available at all times. Spill Kit training sessions will be provided to all site workers.

7.9 Promptly manage potential contamination or other unexpected finds

To minimise the consequences of inappropriate management of contaminated materials or other unexpected finds encountered during the demolition works, the following controls will be implemented:

- Demolition works are to be completed to top of slab and ground disturbance is to be limited to necessary activities only.
- Any suspected contamination of land, water or waste, or other unexpected finds, are to be reported immediately. Works are not to recommence until written approval and further direction has been received from Greenspot.
- Any contaminated material is to be stockpiled separately and properly managed to prevent contaminated sediment runoff.
- Any contaminated materials shall be disposed of at a licenced facility as soon as possible after identification with the correct waste classification.

7.10 Maintain control measures in proper working order

All temporary drainage, erosion and sediment control measures will be maintained in proper working order at all times until their function is no longer required. To assist in achieving these requirements, PESCPs will include construction, inspection and maintenance requirements for all drainage, erosion and sediment control measures.

Inspections will be undertaken 24 hours prior to predicted rainfall events and immediately following rainfall events that cause runoff, and weekly during periods of no rain.

All clean and dirty water, debris and sediment removed from drainage, erosion and sediment control measures must be disposed of in a manner that will not create erosion, sedimentation or a pollution hazard.

Upon decommissioning any temporary drainage, erosion and sediment control measures, all materials used to form the control measures will be disposed of appropriately.

The existing stormwater drainage system and water management controls, including all physical infrastructure and functionality, will be retained and returned to working order on completion of the project.

7.11 Monitor the project and adjust control practices to maintain the required performance standards

PESCPs are living documents that will be modified as site conditions change, or if the adopted control measures fail to achieve the required treatment standard. When site personnel detect a notable failure in the adopted control measures, the source of the failure will be investigated, and appropriate amendments made to the controls and PESCPs.

8 Project element specific control measures

8.1 General

This section describes initial application of the management and mitigation measures identified in Section 7 to project-specific works/areas. This will be reviewed as the project progresses, in conjunction with development and update of PESCPs as appropriate.

8.2 Laydown area

The drainage, erosion and sediment control measures planned to be utilised for the laydown area are described in Table 8.1.

Table 8.1 Control measures – laydown area

Control measure	Purpose
Drainage control	
Lined drains	To convey clean run-on water and turbid runoff to basins in a non-erosive manner
Mitre drains	To divert runoff to reduce the volume and velocity of drainage
Erosion control	
Temporary	
Check dams	To reduce flow velocity in drains until permanent drain linings can be installed
Cover crops	Rapid vegetation establishment until permanent vegetation germinates and grows
Polymer soil stabiliser	To protect exposed soil from erosion and to control dust
Soil covers	Geofabric or similar for temporary cover of loose materials to protect from rainfall and wind
Water truck	Wet down laydown area to reduce dust emissions
Permanent	
Roadbase/gravel	To cap insitu subsoils and provide a trafficable low erosion surface for laydown and associated access track
Amelioration of dispersive soils with Gypsum	Reducing the ESP of dispersive soils to <4% to minimise dispersion
VENM or other suitable exempt resource recovered material(s)	To infill excavated foundations
Sediment control	
Temporary	
Sand/gravel bag check dams	Capture small quantities of coarse sediment in drains
Flocc blocks and/or topical application of flocculant	To increase sediment particle size to improve the efficiency of Type 2 and Type 3 sediment controls
Sediment fence	To capture coarse sediment in sheet flow environments

Table 8.1 Control measures – laydown area

Control measure	Purpose
Type D sediment basins (SB1 and SB2)	To capture and treat sediment and turbid runoff
Coagulants	To destabilise the charge on suspended sediments and allow them to come together to form larger particles that will settle out of the water column
Flocculants	Long-chain polymers to trap suspended sediments and form larger particles that will settle out of the water column
Stabilised construction entry/exit	To minimise mud tracking to internal roads

8.3 Fill material stockpile

The drainage, erosion and sediment control measures planned to be utilised for the fill material stockpile area are described in Table 8.2.

Table 8.2 Control measures – VENM stockpile

Control measure	Purpose
Drainage control	
Dirty water drain	To convey turbid runoff to the Northern Retention Basin in a non-erosive manner
Erosion control	
Temporary	
Polymer soil stabiliser or covering (geofabric or similar)	To protect exposed soil from erosion and to control dust where stockpile not in general use
Water sprays	Control dust during dry and windy periods
Sediment control	
Temporary	
Flocc blocks and/or topical application of flocculant	To increase sediment particle size to improve the efficiency of Type 2 and Type 3 sediment controls
Sediment fence	To capture coarse sediment in sheet flow environments
Coagulants	To destabilise the charge on suspended sediments and allow them to come together to form larger particles that will settle out of the water column
Flocculants	Long-chain polymers to trap suspended sediments and form larger particles that will settle out of the water column
Stabilised construction entry/exit	To minimise mud tracking to internal roads

8.4 Demolition areas within existing stormwater drainage system

The drainage, erosion and sediment control measures planned to be utilised for demolition areas that are within the extent of the existing site stormwater drainage system are described in Table 8.3.

Table 8.3 Control measures – demolition areas within existing stormwater drainage system

Control measure	Purpose
Drainage control	
Blocking unprotected area drainage system	Prevent direct discharge to Coxs River. Runoff and washdown water will be diverted to existing O&G traps for management.
Temporary drains/bunding	To control and contain local runoff and washdown water and direct to existing O&G traps for management
Transfer water to KVAR	Disposal of potentially contaminated water from initial washdown activities
Erosion control	
Temporary	
Check dams	To reduce flow velocity in drains until permanent drain linings can be installed
Polymer soil stabiliser	To protect exposed soil from erosion and to control dust
Soil covering (geofabric or similar)	To protect exposed soil from erosion and to control dust
Permanent	
VENM or other suitable exempt resource recovered material(s)	For filling excavations/excavated footings
Sediment control	
Temporary	
Sand/gravel bag check dams	Capture small quantities of coarse sediment in drains and pipes
Flocc blocks and/or topical application of Gypsum	To increase sediment particle size to improve the efficiency of Type 2 and Type 3 sediment controls
Sediment fence	To capture coarse sediment in sheet flow environments
Coagulants	To destabilise the charge on suspended sediments and allow them to come together to form larger particles that will settle out of the water column
Flocculants	Long-chain polymers to trap suspended sediments and form larger particles that will settle out of the water column

8.5 Demolition works outside existing stormwater drainage system

The drainage, erosion and sediment control measures planned to be utilised for demolition areas that are outside the extent of the existing site stormwater drainage system are described in Table 8.4.

Table 8.4 Control measures – demolition works outside existing stormwater drainage system

Control measure	Purpose
Drainage control	
Blocking unprotected area drainage system	Prevent direct discharge to Coxs River. Runoff will be diverted to local sediment controls.
Erosion control	
Temporary	
Barrier mesh	To define disturbance limits

Table 8.4 Control measures – demolition works outside existing stormwater drainage system

Control measure	Purpose
Check dams	To reduce flow velocity in drains until permanent drain linings can be installed
Polymer soil stabiliser	To protect exposed soil from erosion and to control dust
Soil covering (geofabric or similar)	To protect exposed soil from erosion and to control dust
Permanent	
VENM or other suitable exempt resource recovered material(s)	For filling excavations/excavated footings
Sediment control	
Temporary	
Sand/gravel bag check dams	Capture small quantities of coarse sediment
Flocc blocks and/or topical application of Gypsum	To increase sediment particle size to improve the efficiency of Type 2 and Type 3 sediment controls
Sediment Fence	To capture coarse sediment in sheet flow environments
Geologs	To capture coarse sediment in sheet and concentrated flow environments

8.6 Internal roads and access tracks

The drainage, erosion and sediment control measures planned to be utilised for internal roads and access tracks are described in Table 8.5.

Table 8.5 Control measures – internal roads and access tracks

Control measure	Purpose
Drainage control	
Lined table drains	To convey road/track runoff in a non-erosive manner to sediment controls
Mitre drains	To divert road runoff away from the road/track to reduce the volume and velocity of drainage
Erosion control	
Temporary	
Sand/gravel bag check dams	To reduce flow velocity in table drains and mitre drains until permanent drain linings can be installed
Trafficable polymer soil stabiliser	To minimise erosion of any unsealed road surfaces
Sediment control	
Temporary	
Sand/gravel bag check dams	Capture small quantities of coarse sediment in the table drains and mitre drains
Sweeper/vacuum truck	Remove tracked sediments from internal and external road surfaces
Stabilised construction entry/exit	To minimise dust tracking on internal and external roads

9 Roles and responsibilities

9.1 Liberty

Table 9.1 outlines the responsibilities of key roles with respect to drainage, erosion and sediment control.

Table 9.1 Roles and responsibilities – Liberty

Role	Responsibility
Project Manager	• Overall responsibility for drainage, erosion and sediment control implementation; • Ensure the provision of resources for implementation of drainage, erosion and sediment control; and • Ensure the prompt implementation of measures to mitigate erosion and sediment control impacts.
Project Engineers	• Responsible for drainage, erosion and sediment control implementation for their given area; • Design drainage, erosion and sediment control measures as required; • Inspect control measure installation and maintenance; • Inspect and management offsite impacts; and • Report non-conformances and incidents to the Environmental Adviser and Project Manager.
Site Supervisor	• Monitor predicted and actual rainfall; • Seek a DWRA from Greenspot prior to discharging any water; • Ensure wet weather and/or weekend protection measures are implemented when required; • Inspect and maintain control measures; and • Maintain records of inspection and maintenance.
Environmental Advisor	• Monitor and audit for compliance with PESCP's and modify as required; • Inspect and arrange maintenance of control measures; • Undertake water monitoring; • Report and investigate non-conformances and incidents; • Notify Greenspot of any incidents or environmental harm; and • Train personnel on the requirements of this SWMP
Soil Erosion Specialist	• Prepare and review of PESCPs; • Conduct site inspections and audits as required; • Provide drainage, erosion and sediment control advice where required; and • Prepare and present training where required.
All personnel	• Report any damage to control measures and any potential or actual environmental harm to their Supervisor or the Environmental Advisor.

9.2 Greenspot

Greenspot holds several key responsibilities with respect to this SWMP, including:

- approval to discharge or reuse water, via either:
  - release from the site stormwater drainage system to receiving waters;
  - reuse water onsite; or

- pumped transfer to the KVAR;

- all water quality monitoring identified in this SWMP (refer Section 10.3); and
- notification of incidents to relevant authorities (refer Section 10.1).

10 Inspections, maintenance and monitoring

10.1 Incidents and complaints

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

An incident may involve:

- actual or potential pollution incidents where material harm to the environment is caused or threatened. In this case, a 'duty to notify' relevant authorities applies under the POEO Act for 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; or
- any other action or activity deemed to be in non-compliance with this SWMP or associated PESCPs.

10.2 Inspections

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

- weekly during normal construction hours;
- daily during periods of rainfall; and
- within 24 hours of the cessation of a rainfall event causing runoff to occur on or from the project (≥10 mm).

Joint inspections will be undertaken by the Project Soil Erosion Specialist with the Environmental Adviser to verify the adequacy of PESCP's and control measures for site conditions.

10.3 Water quality monitoring

Water quality monitoring has recently commenced and will continue for the duration of the project. This includes:

- monitoring of receiving waters (ie Coxs River and Springvale Creek) both upstream and downstream of the site; and
- monitoring of water quality in selected water management structures, typically during discharge or when dewatering is required.

Indicative monitoring locations are shown in Figure 10.1, which will be finalised prior to commencement of works.

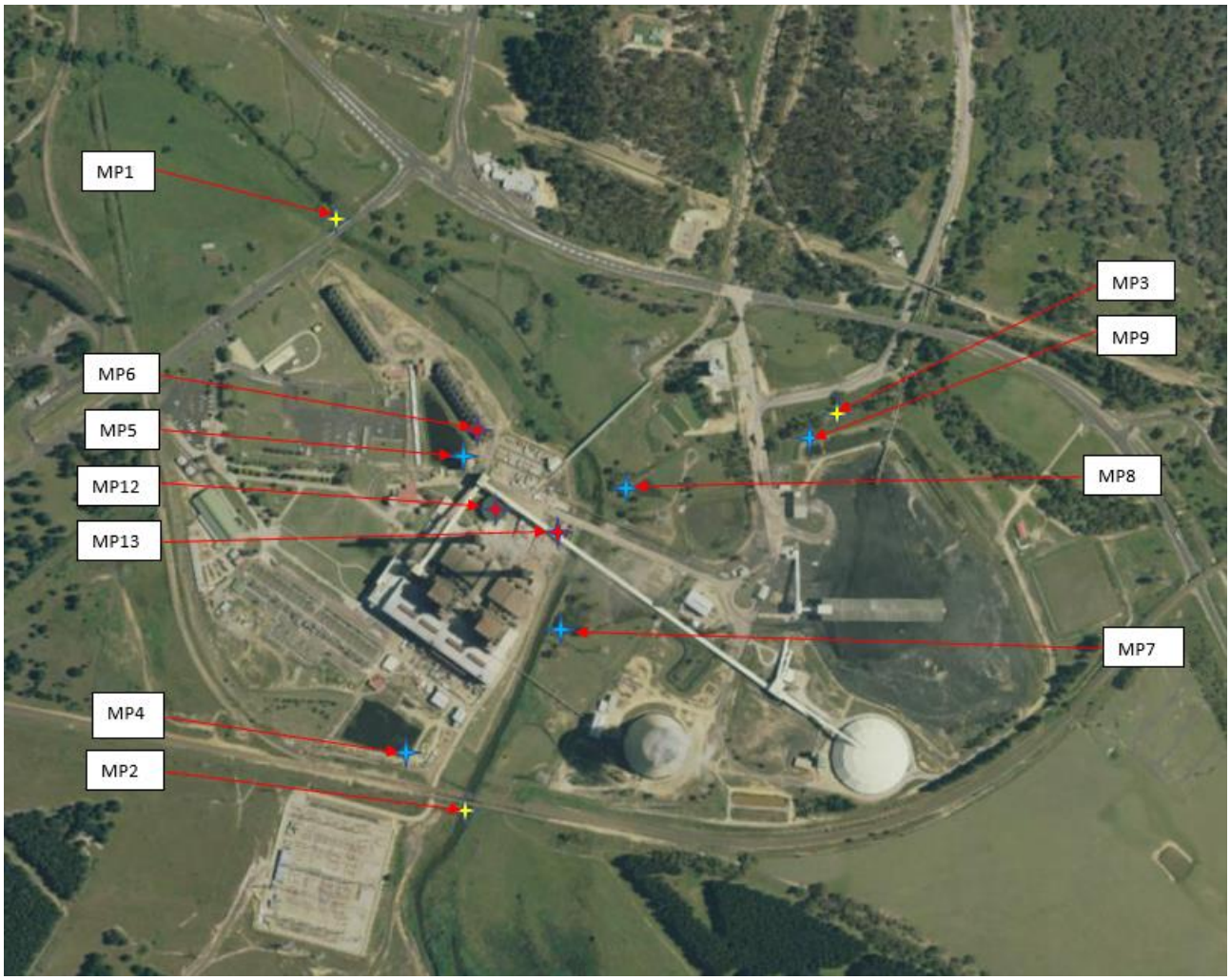


Figure 10.1 Water quality monitoring locations

Water quality monitoring will be used to:

- enable the quality of surface water within the WWPS's water management system and receiving waters to be progressively characterised;
- establish discharge criteria for receiving waters;
- inform decisions regarding suitability of discharge to receiving waters; and
- monitor for and quantify any potential water quality impacts associated with the project.

Surface water quality monitoring will be undertaken generally in accordance with the *Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales* (EPA 2004).

All water quality monitoring will be undertaken by Greenspot.

10.4 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 10.1.

Table 10.1 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.
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.

10.5 Wet weather and site shutdown procedures

The Environmental Adviser will monitor weather forecasts daily. Where the forecasts indicate that there is a ≥ 60% chance of ≥ 10mm of predicted rainfall, the Environmental Adviser will notify the Project Manager and the wet weather preparedness procedure will be implemented.

The Site Supervisors shall initiate drainage, erosion and sediment control preparedness:

- before the end of the working day;
- in the event of imminent rainfall by instruction from the Project Manager or Environmental Adviser; or
- if it is otherwise evident that rainfall is imminent.

Drainage, erosion and sediment control preparedness will include but not be limited to:

- rescheduling any imminent washdown activities;
- ensuring clean water diversions are in place (where required);
- moving spoil from at risk areas (eg from drains, gullies);
- constructing temporary drains if required to ensure dirty catchments are diverted to sediment control measures;
- stabilise unprotected soil stockpiles and erosion prone embankments with covers or soil stabilising polymers and ensure necessary sediment controls are in place;
- ensure sediment traps have been desilted;
- ensure sediment basins have required settling and storage zone capacity, and they are operating correctly and effectively;
- implement any remaining controls in accordance with relevant PESCP(s); and
- implemented any additional controls as recommended by the Environmental Adviser and/or Soil Erosion Specialist.

11 Training and competencies

All project personnel including Liberty employees, contractors and subcontractors will have an appropriate level of drainage, erosion and sediment control training. There will be three levels of competency training for personnel:

- Level 1 – this will be basic awareness level training for all project personnel, and it will be provided during site inductions.
- Level 2 – this will outline the requirements, objectives and management measures as described in this SWMP to ensure that all project personnel are aware of the requirements and their individual responsibilities for water quality management.
- Level 3 – this will consist of toolbox topics on specific drainage, erosion and sediment aspects. It may be targeted to the entire workforce or specific personnel or crews, as required.

All personnel, including employees, contractors and sub-contractors, are required to complete Level 1 and 2 training prior to being authorised to commence work on the project.

12 References

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Abbreviations

ARI	average recurrence interval
ARWST	Ash Return Water Storage Tank
CAA	controlled activity approval
CoC	contaminant of concern
DDR	decommissioning, demolition and rehabilitation
DEMP	Demolition Environmental Management Plan
DWRA	Discharge or Water Reuse Approval
EMP	exchangeable magnesium percentage
EPA	NSW Environment Protection Authority
EPL	Environment Protection Licence
ESP	exchangeable sodium percentage
EY	exceedances per year
GPM	Generator Property Management Pty Ltd
Greenspot	Greenspot Wallerawang Pty Ltd
ha	hectare
KVAR	Kerosene Vale Ash Repository
km	kilometre
L	litre
L/m^2	litres per square metre
Liberty	Liberty Industrial Pty Ltd
m	metre
m^2	square metre
m^3	cubic metre
mm	millimetre
mm/h	millimetres per hour
MSDS	Material Safety Data Sheet
MW	megawatt
NRAR	Natural Resources Access Regulator
O&G	oil and grit

PESCP	Progressive Erosion and Sediment Control Plan
RUSLE	revised universal soil loss equation
SEE	Statement of Environmental Effects
SLC	soil loss class
SWMP	Soil and Water Management Plan
TSS	total suspended solids
VENM	virgin excavated natural material
WM Act	NSW *Water Management Act 2000*
WWPS	Wallerawang Power Station

Appendix A

Example PESCPs

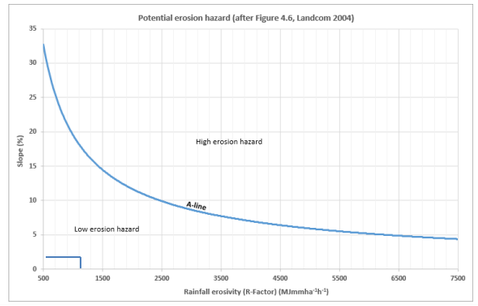
CONSTRUCTION NOTES:

1. THIS EROSION AND SEDIMENT CONTROL PLAN (PESCP) SHOULD BE READ IN CONJUNCTION WITH THE PROJECT SOIL AND WATER MANAGEMENT PLAN AND THE DEMP.
2. NUMBERING (1,2,3) INDICATES ORDER OF WORKS AND CONTROL IMPLEMENTATION.
3. CONTROLS SHOWN ON THE PLAN ARE INDICATIVE ONLY. EXACT LOCATION WILL BE MODIFIED TO SUIT CONDITIONS AND FUNCTION PROVIDED THEY ARE LOCATED WITHIN SITE LIMITS WHERE APPROPRIATE.
4. CONTROLS WILL BE INSPECTED FOLLOWING RAINFALL CAUSING RUNOFF, PRIOR TO WHEN RAINFALL IS PREDICTED AND AT A MINIMUM WEEKLY.
5. 'CLEAN WATER' FLOW IS TO BE MAINTAINED AROUND THE SITE TO THE GREATEST EXTENT POSSIBLE WITH SEPARATION BETWEEN CONSTRUCTION OR 'DIRTY' WATERS IF RUN-ON WATER CATCHMENTS ARE PRESENT.
6. 'CLEAN WATER' DIVERSION CHANNELS WILL BE SIZED TO CONVEY THE 1:2 YR ARI STORM EVENT WHERE TOPOGRAPHY AND CLEARING LIMITS PERMIT.
7. 'DIRTY WATER' FLOW TO SEDIMENT CONTROLS IS TO BE MAXIMISED THROUGH THE USE OF DIVERSION BANKS, CUT OFF DRAINS.
8. SEDIMENT TRAPS ARE TO BE MANAGED IN ACCORDANCE WITH THE SOIL AND WATER MANAGEMENT PLAN.
9. 'DIRTY WATER' THAT CAN NOT BE DIRECTED TO SEDIMENT BASIN MUST BE DIVERTED TO LOCAL SEDIMENT CONTROL MEASURES.
10. DEWATERING IS TO BE UNDERTAKEN IN ACCORDANCE WITH THE SOIL AND WATER MANAGEMENT PLAN.
11. THE DEPOSITION OF SEDIMENT ON PUBLIC ROADS (TRACKING) IS TO BE MONITORED AND REMOVED AS SOON AS POSSIBLE.
12. DUST TO BE MINIMISED WITH WATER CARTS, LIMITING VEHICLE SPEEDS AND THE USE OF SOIL POLYMERS WHERE APPROPRIATE AND PRACTICAL.
13. DISTURBED AREAS ARE TO BE PROGRESSIVELY REVEGETATED WITH STERILE COVER CROP OR PERMANENT REVEGETATION DESIGN. TEMPORARY CONTROLS ARE TO REMAIN UNTIL SITE IS STABILISED (70% SOIL SURFACE COVER).
14. THIS PLAN IS TO BE REVISED AS SITE CONDITIONS OR CONSTRUCTION METHODS CHANGE.

SOIL LOSS CLASS:

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

EROSION HAZARD:



ESTIMATED SOIL LOSS:

CATCHMENT	AREA (HA)	CONSTRUCTION PERIOD	R FACTOR	K FACTOR	LS FACTOR	C FACTOR	P FACTOR	ANNUAL AVERAGE SOIL LOSS (T/YR)	ANNUAL AVERAGE SOIL PER HA (T/HA/YR)	SEDIMENT BASIN REQUIRED Y/N
Laydown	5.4	18 months	1,240	0.071	0.26	1	1.3	159	30	No but will be installed due to turbidity risk

SEDIMENT BASIN SIZING:

SETTING POND SIZING ($Vs = 10\ R_{(85th\%,5\ day)}\ C_v\ A$)	SEDIMENT STORAGE VOLUME (50% OF SETTLING VOLUME)	BASIN VOLUME
352.8	176	529

PROGRESSIVE EROSION AND SEDIMENT CONTROL PLAN

LAYDOWN AREA - NORTH

SHEET 1 OF 2 COVER PAGE

WET WEATHER SHUTDOWN PREPAREDNESS:

INSPECTION OF EROSION AND SEDIMENTCONTROL MEASURES 24 HOURS PRIORTO PREDICTED RAINFALL. UNDERTAKE ANY NECESSARY MAINTENANCE (TRIGGERED IF 60% CHANCE OF 10 MM OF RAIN).

ENSURE SUFFICIENT QUANTITIES OF SOIL POLYMER, SILT FENCE AND APPROVED COAGULANTS AND/OR FLOCCULANTS AVAILABLE ON SITE.

ENSURE ALL SITE TURBID RUNOFF IS DIRECTED TO SEDIMENT CONTROL MEASURES.

ENSURE THE STABILISED CONSTRUCTED EXIT IS FREE FROM ACCUMULATED SOIL AND MUD. REMOVE AND REPLACE WITH CLEAN ROCK AS NECESSARY.

APPLY SOIL POLYMER OR COVERS TO ANY EXPOSEDSOIL PARTICULARLY STOCKPILES.

APPLY APPROVED COAGULANTS AND/OR FLOCCULANTS TO THE INLET DRAINS TO SEDIMENT BASIN.

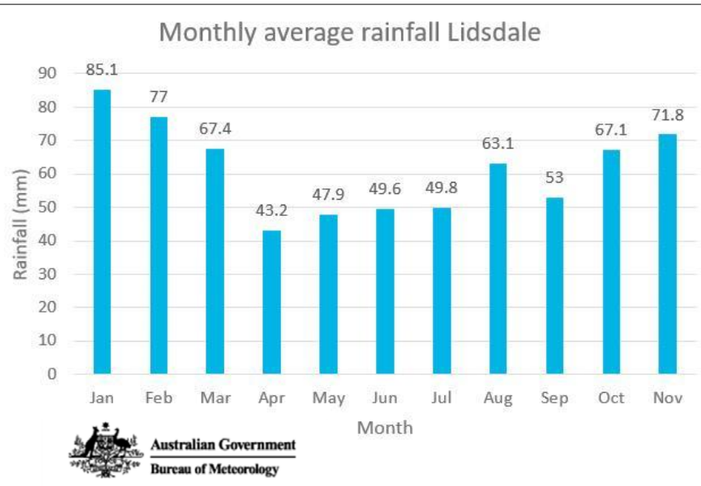
ENSURE ANY CHEMICALS AND HYDROCARBON CONTAINERS ARE PLACED IN BUNDED AREAS OR ON BUNDED PALLETS.

INSPECT CONTROLS AFTER RAINFALL.

SCHEDULE OF WORKS:

ORDER OF WORKS	TASKS	BMPS REQUIRED	TIMING	PURPOSE
1	ENLARGE EXISTING SEDIMENT BASIN TO DESIGN SIZE	TYPE D BASIN (SB1)	PRIOR TO ROADBASE SPREADING	TRAP ANY ERODED SEDIMENT AND CONTAIN TURBID RUNOFF
2	INSTALL BACK-PUSH BANKS TO DIVERT ALL LAYDOWN RUNOFF TO SB1	BACK PUSH DIVERSION BANKS (BPDB1, BPDB2)	PRIOR TO ROADBASE SPREADING	DIVERT ALL TURBID RUNOFF TO SB1
3	INSTALL SUMP AND SUMP PUMP AT LOWEST POINT TO DIRECT WATER TO BASIN SB1		PRIOR TO ROADBASE SPREADING	CAPTURE ANY DISTURBED AREA RUNOFF THAT CANNOT GRAVITY DRAIN TO SB1
4	TEST BASIN SUBSOIL AND MIX GYPSUM INTO THE BATTERS	GYPSUM	PRIOR TO ROADBASE SPREADING	MINIMISE EROSION DUE TO SOIL DISPERSION
5	INSTALL SEDIMENT ZONE MARKER IN SB 1		PRIOR TO RAINFALL	IDENTIFY SEDIMENT CLEANOUT LEVEL IN SB1
6	INSTALL STABILISED ENTRY/EXIT	STABILISED CONSTRUCTION ENTRY/EXIT	PRIOR TO ROADBASE SPREADING	MINIMISE MUD TRACKING TO INTERNAL AND EXTERNAL ROADS
7	SPREAD ROADBASE, GRADE AND ROLL		PRIOR TO DEMO WORKS	PROVIDE STABLE EROSION RESISTANT LAYDOWN AREA
8	APPLY SUITABLE SOIL STABILISING COMPOUND TO LAYDOWN AREA	GRT WETLOC™ OR EQUIVALENT	PRIOR TO DEMO WORKS	PROVIDE STABLE EROSION RESISTANT LAYDOWN AREA

RAINFALL EROSIVITY RISK DURING THE CONSTRUCTION PERIOD:



PREPARED BY/REVIEWED BY	REVISION
MICHAEL FRANKCOMBE CPESC 1351	1
DATE 06/04/2021	**COMMENTS**

EMM
creating opportunities

PROGRESSIVE EROSION AND SEDIMENT CONTROL PLAN

LAYDOWN AREA - NORTH

SHEET 2 OF 2 LAYOUT

LEGEND

- Diversion Channel (Clean)
- Diversion Channel (Dirty)
- Type D Sediment Basin
- Stabilised Exit
- Access Road
- Sump Pump
- Catchment Boundary
- Stabilised laydown surface

Notes:
1.Layout of specific drainage and sediment/erosion controls within the laydown area are to be detailed on updated PESCP once site configuration is confirmed.

PREPARED BY/REVIEWED BY	REVISION
MICHAEL FRANKCOMBE CPESC 1351	1
DATE 06/04/2021	**COMMENTS**

CONSTRUCTION NOTES:

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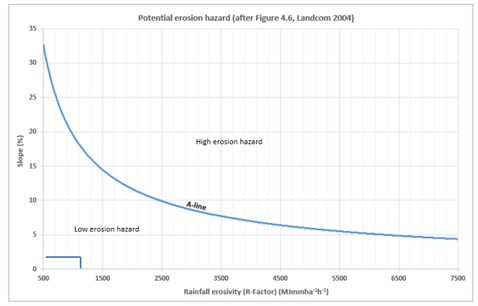
11. THE DEPOSITION OF SEDIMENT ON PUBLIC ROADS (TRACKING) IS TO BE MONITORED AND REMOVED AS SOON AS POSSIBLE.
12. DUST TO BE MINIMISED WITH WATER CARTS, LIMITING VEHICLE SPEEDS AND THE USE OF SOIL POLYMERS WHERE APPROPRIATE AND PRACTICAL.
13. DISTURBED AREAS ARE TO BE PROGRESSIVELY REVEGETATED WITH STERILE COVER CROP OR PERMANENT REVEGETATION DESIGN. TEMPORARY CONTROLS ARE TO REMAIN UNTIL SITE IS STABILISED (70% SOIL SURFACE COVER).
14. THIS PLAN IS TO BE REVISED AS SITE CONDITIONS OR CONSTRUCTION METHODS CHANGE.

SOIL LOSS CLASS:

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

EROSION HAZARD:



ESTIMATED SOIL LOSS:

CATCHMENT	AREA (HA)	CONSTRUCTION PERIOD	R FACTOR	K FACTOR	LS FACTOR	C FACTOR	P FACTOR	ANNUAL AVERAGE SOIL LOSS (T/YR)	ANNUAL AVERAGE SOIL PER HA (T/HA/YR)	SEDIMENT BASIN REQUIRED Y/N

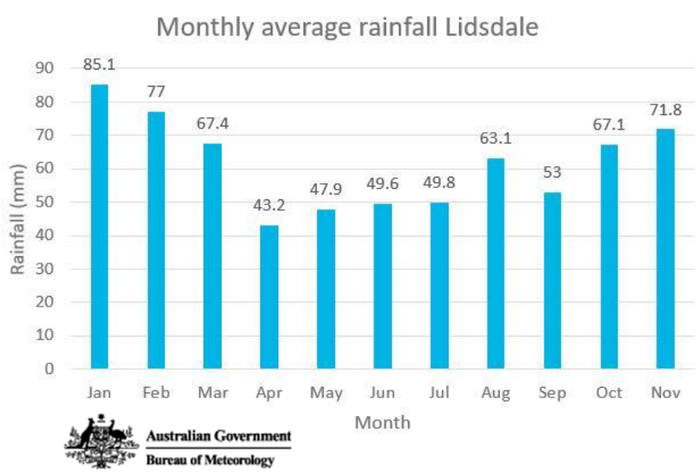
SEDIMENT BASIN SIZING:

SETTING POND SIZING ($Vs = 10\ R_{(85th\%,5\ day)}\ C_v\ A$)	SEDIMENT STORAGE VOLUME (50% OF SETTLING VOLUME)	BASIN VOLUME

SCHEDULE OF WORKS:

ORDER OF WORKS	TASKS	BMPS REQUIRED	TIMING	PURPOSE
1	BLOCK ALL RED DRAINS (BP1-BP15) TO DIVERT ALL DIRTY WATER TO THE MAIN OIL AND GRIT TANK	SAND BAGS, GEOLOGS, GROUTED BARRIERS	PRIOR TO DEMOLITION	TO PREVENT DIRTY WATER ENTERING COXS RIVER
2.	BUILD DIVERSION BANK AND STABILISE WITH POLYMER OR HYDROMULCH	DIVERSION BANK	PRIOR TO DEMOLITION	TO PREVENT DIRTY WATER ENTERING COXS RIVER
3.	INSTALL PUMP TO DEWATER OIL AND GRIT TANK TO COOLING TOWER BASINS	PUMP AND PIPE	PRIOR TO DEMOLITION	TO MAINTAIN ADEQUATE DIRTY WATER STORAGE CAPACITY IN OIL AND GRIT TANK
3.	WASH EXISTING ASH/SEDIMENT FROM DOMAINS TO BE DEMOLISHED	WATER TRUCK	PRIOR TO DEMOLITION	TO REMOVE SEDIMENTS TO MAXIMISE REUSE OF MATERIALS AND MINIMISE DUST DURING DEMOLITION
4.	DEMOLISH STRUCTURES SCHEDULED FOR DEMOLITION		DEMOLITION PHASE	TO DEMOLISH STRUCTURES
5.	REMOVE STRUCTURE DEBRIS TO LAYDOWN AREA. REMOVE ANY SEDIMENT FROM HARDSTANDS AND DRAINS VIA SWEEPING, BOBCAT, SHOVELING, WASH AND DISPOSE TO LAYDOWN FOR TREATMENT.	SWEEPER, BOBCAT, EXCAVATOR, LABOURERS, SHOVEL'S, TRUCK	FOLLOWING DEMOLITION	MINIMISE SEDIMENT POLLUTION, MAINTAIN CAPACITY OF DRAINS
6.	BACKFILL EXCAVATED FOUNDATION WITH VENM AND SHAPE SURFACE TO MINIMISE CONCENTRATION OF FLOW AND CONFORM WITH EXISTING LANDFORM		FOLLOWING DEMOLITION	MAKE AREA SAFE AND MINIMISE EROSION
7.	APPLY SOIL STABILISING POLYMER TO ANY EXPOSED SOILS	SOIL STABILISING POLYMER AND SUITABLE APPLICATION EQUIPMENT	FOLLOWING DEMOLITION	TO MINIMISE EROSION
9.	DEWATER COOLING TOWER BASISNS TO ASH DAMS AS REQUIRED.			

RAINFALL EROSIVITY RISK DURING THE CONSTRUCTION PERIOD:



EMM creating opportunities

PROGRESSIVE EROSION AND SEDIMENT CONTROL PLAN

DOMAINS 2, 3, 5, 6, 8 (PART)

SHEET 1 OF 2 COVER PAGE

WET WEATHER SHUTDOWN PREPAREDNESS:

INSPECTION OF EROSION AND SEDIMENTCONTROL MEASURES 24 HOURS PRIORTO PREDICTED RAINFALL. UNDERTAKE ANY NECESSARY MAINTENANCE (TRIGGERED IF 60% CHANCE OF 10 MM OF RAIN).

ENSURE SUFFICIENT QUANTITIES OF SOIL POLYMER, SILT FENCE AND APPROVED COAGULANTS AND/OR FLOCCULANTS AVAILABLE ON SITE.

ENSURE ALL SITE TURBID RUNOFF IS DIRECTED TO SEDIMENT CONTROL MEASURES.

ENSURE THE STABILISED CONSTRUCTED EXIT IS FREE FROM ACCUMULATED SOIL AND MUD. REMOVE AND REPLACE WITH CLEAN ROCK AS NECESSARY.

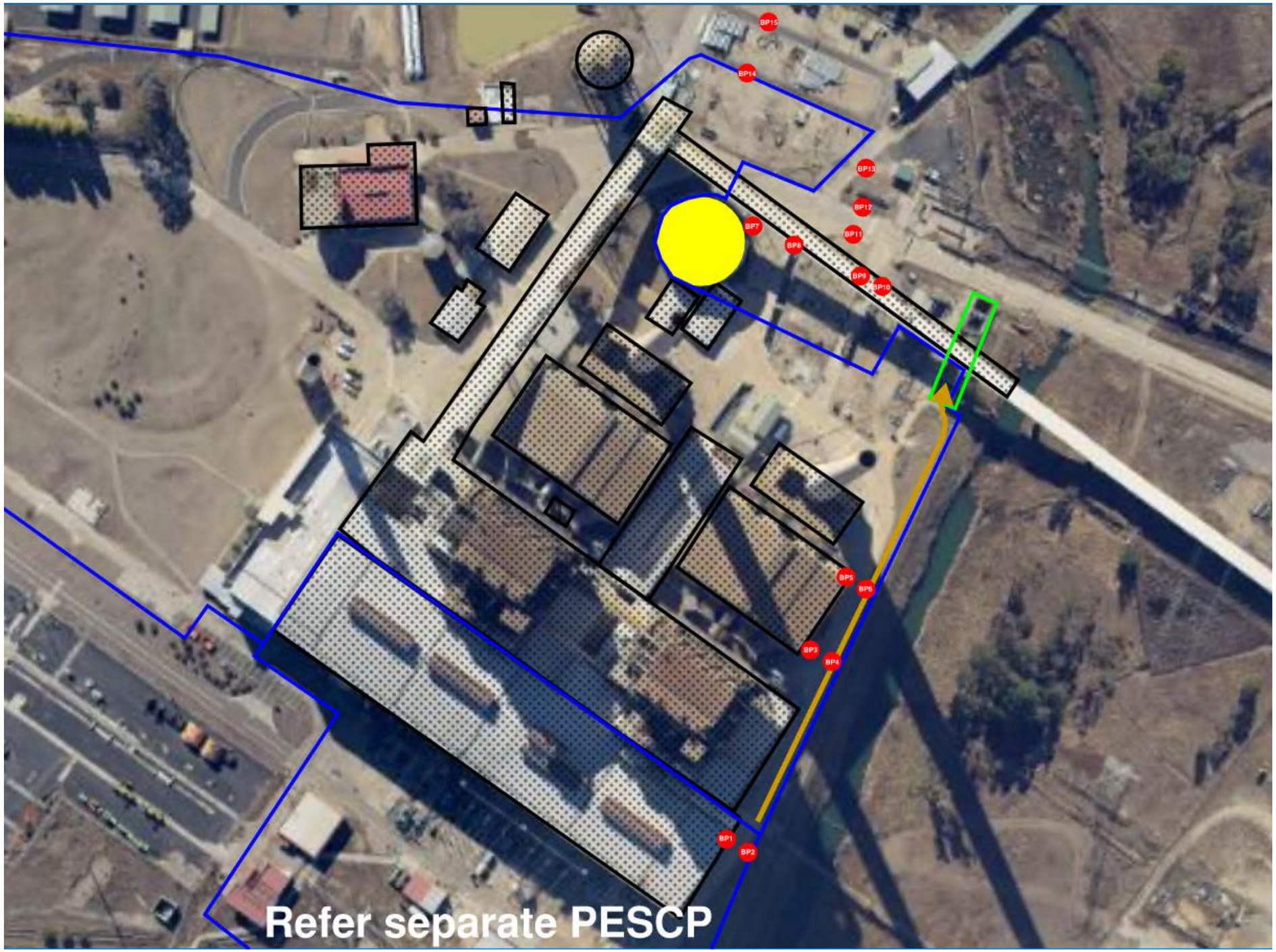
APPLY SOIL POLYMER OR COVERS TO ANY EXPOSEDSOIL PARTICULARLY STOCKPILES.

APPLY APPROVED COAGULANTS AND/OR FLOCCULANTS TO THE INLET DRAINS TO SEDIMENT BASIN.

ENSURE ANY CHEMICALS AND HYDROCARBON CONTAINERS ARE PLACED IN BUNDED AREAS OR ON BUNDED PALLETS.

INSPECT CONTROLS AFTER RAINFALL.

PREPARED BY/REVIEWED BY	REVISION
MICHAEL FRANKCOMBE CPESC 1351	1
DATE 06/04/2021	**COMMENTS**



EMM
creating opportunities

PROGRESSIVE EROSION AND SEDIMENT CONTROL PLAN

DOMAINS 2, 3, 5, 6, 8 (PART)

SHEET 2 OF 2 LAYOUT

LEGEND

- Diversion Bank (Dirty)
- Drain Blockage Point (BP)
- Catchment Boundary
- Main Oil and Grit Tank
- Ash Return Water Storage Tank
- Buildings to be Demolished

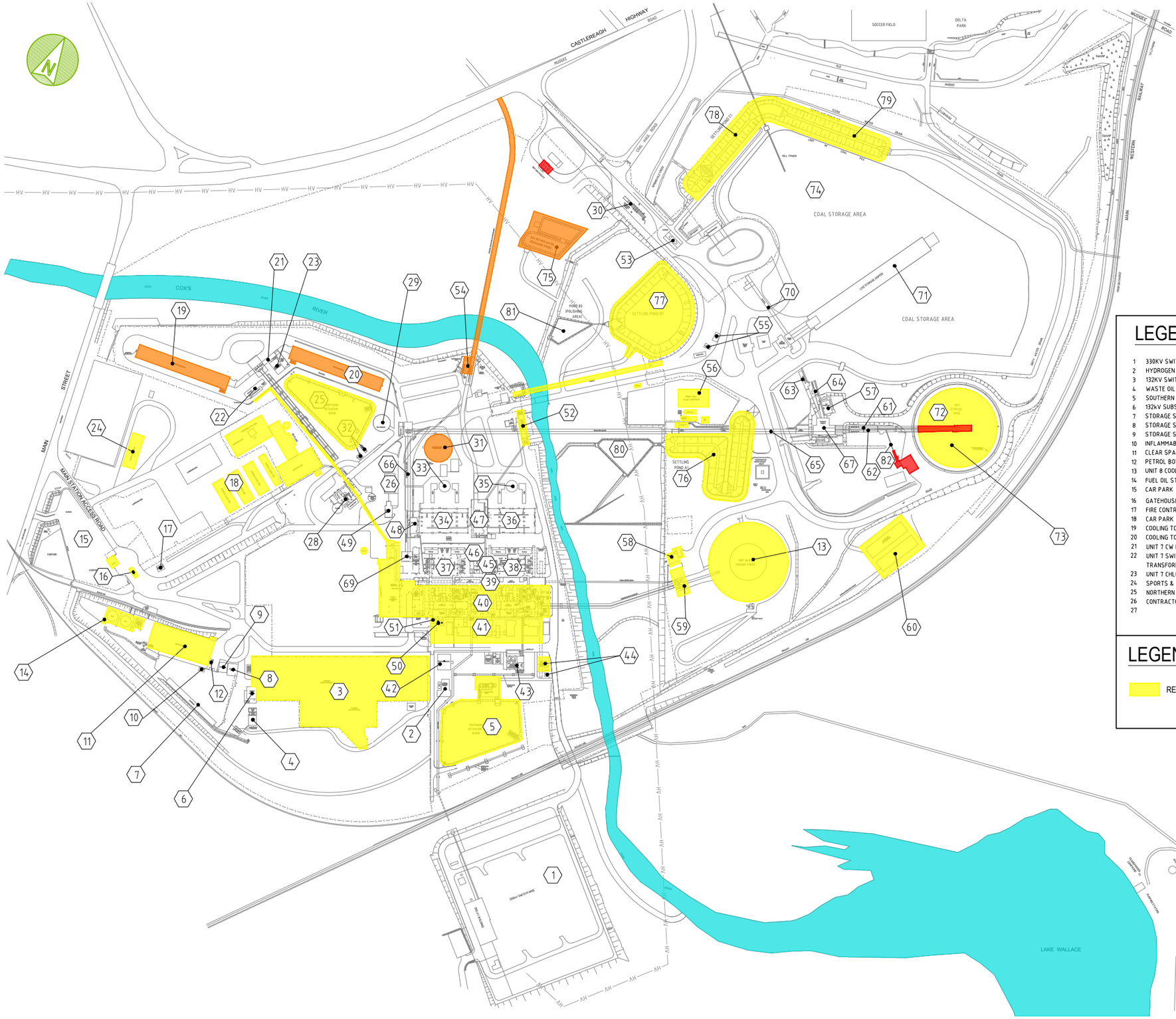
Notes:

1. This PESCP should be read in conjunction with the Demolition Schedule in the DEMP
2. Block drains BP1-BP15 as well as any other red coloured drains within the catchment that are not identified in the Onsite Water Management Infrastructure Plan (OWMIP).
3. Drains should be left blocked until after demolition when there is stable cover or hardstand.

PREPARED BY/REVIEWED BY	REVISION
MICHAEL FRANKCOMBE CPESC 1351	1
DATE 06/04/2021	**COMMENTS**

Appendix B

Infrastructure to be retained



LOCATION PLAN
NOT TO SCALE

LEGEND:

1	330KV SWITCHYARD (TRANSGRID)	28	DEMINERALISING PLANT BUILDING	55	BULLDOZER SERVICE AREA AND OIL STORE
2	HYDROGEN GENERATION PLANT	29	COAL STORAGE BIN (NOT USED)	56	MOBILE PLANT WORKSHOP
3	132KV SWITCHYARD (TRANSGRID)	30	TRUCK WASHING & ROAD SPRAYING FACILITIES	57	COAL HANDLING PLANT SWITCHROOM
4	WASTE OIL STORE	31	ASH RETURN WATER STORAGE RESERVOIR	58	UNIT 8 CHLORINATION & ACID DOSING PLANT
5	SOUTHERN RETENTION BASIN	32	AMMONIA DILUTION PLANT	59	UNIT 8 CW PUMPING STATION
6	132kV SUBSTATION (TRANSGRID)	33	UNIT 7 STACK	60	OIL AND GRIT SETTLING PONDS
7	STORAGE SHED	34	UNIT 7 PRECIPITATOR	61	CONVEYOR 14
8	STORAGE SHED	35	UNIT 8 STACK	62	CONVEYOR 15
9	STORAGE SHED	36	UNIT 8 PRECIPITATOR	63	CONVEYOR 16
10	INFLAMMABLE LIQUID STORE	37	UNIT 7 BOILER	64	CONVEYOR 17
11	CLEAR SPAN STORE	38	UNIT 8 BOILER	65	CONVEYORS 1AR/1BR
12	PETROL BOWSER	39	AUXILIARY BAY	66	CONVEYORS 2AR/2BR
13	UNIT 8 COOLING TOWER	40	TURBINE HOUSE	67	TRANSFER TOWER 1
14	FUEL OIL STORAGE AREA	41	TRANSFORMER YARD	68	TRANSFER TOWER 2
15	CAR PARK	42	COMMUNICATIONS BUILDING	69	TRANSFER TOWER 3
16	GATEHOUSE	43	CONDENSATE POLISHING PLANT	70	CONVEYOR 10R
17	FIRE CONTROL BUILDING	44	UNIT 8 DIESEL GENERATOR	71	LIVE STORAGE HOPPER
18	CAR PARK	45	BOILER CHEMICAL CLEAN PLANT	72	DRY STORAGE SHED
19	COOLING TOWER BASIN 7B	46	UNIT 7 DIESEL GENERATOR	73	STACKER/RECLAIMER
20	COOLING TOWER BASIN 7A	47	ASH AND DUST HANDLING PLANTS & SWITCHROOM BUILDINGS	74	COAL STORAGE AREA
21	UNIT 7 CW PUMPING STATION	48	WORKSHOPS	75	ASH RETURN WATER DISCHARGE PONDS
22	UNIT 7 SWITCHROOM, CONTROL ROOM & TRANSFORMER CUBICLES BLD	49	MEDICAL CENTRE BUILDING	76	SETTLING POND 'A1'
23	UNIT 7 CHLORINATION & ACID DOSING PLANT BLD	50	UNIT 7 CO2 STORAGE AREA	77	SETTLING POND 'B1'
24	SPORTS & SOCIAL CLUB	51	UNIT 8 CO2 STORAGE AREA	78	SETTLING POND 'C1'
25	NORTHERN RETENTION BASIN	52	OIL AND GRIT TRAP	79	SETTLING POND 'C2'
26	CONTRACTORS AMENITIES BUILDING	53	WEIGHBRIDGE, GATEHOUSE AND STAFF AMENITIES	80	POND 'A2' (POLISHING AREA)
27		54	CAUSTIC INJECTION PLANT	81	POND 'B2' (POLISHING AREA)
				82	BIO MASS/COAL PLANT AREA
				83	ASH/DUST DRY SILO PLANT AREA

LEGEND:

RETAINED INFRASTRUCTURE

RETENTION SUBJECT TO GPM Co

EAA RECOVERABLE ASSETS

25 0 50 100m
SCALE 1:2500

Issue	Description	Date	Drawn	Auth
A	FOR REVIEW	09-12-2020	JIGS	MM

CROSSMULLER CONSTRUCTION
OFFICE:
2 Wella Way Somersby, NSW 2250 Australia
Tel: 02 4340 9800 Fax: 02 4340 8293

Project
DOMAIN MAP

Location
POWER STATION GREENSPOT, WALLERAWANG

Drawing
DOMAIN MAP

Scale
1:250 @ A1

Stage
SK

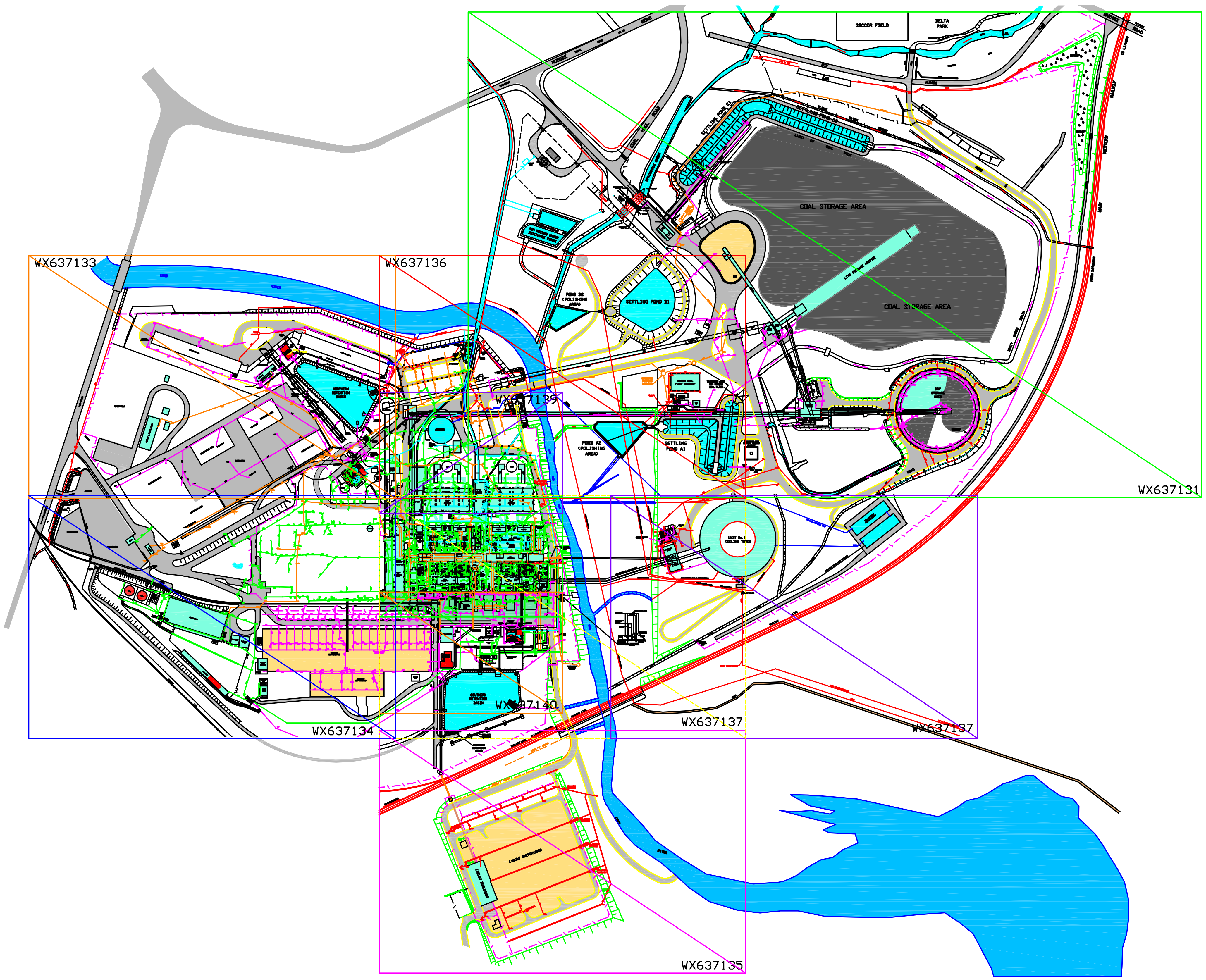
Project Number

Drawing Number
SK02

Issue
A

Appendix C

Site drainage system plan



REFERENCE DRAWINGS

WX637131	SCALE 1:1000
WX637132	SCALE 1:500
WX637133	SCALE 1:500
WX637134	SCALE 1:500
WX637135	SCALE 1:500
WX637136	SCALE 1:500
WX637137	SCALE 1:500
WX637138	SCALE 1:250
WX637139	SCALE 1:250
WX637140	SCALE 1:250

LEGEND

- GRATED PIT
- GATIC COVERED PIT
- COVERED PIT
- GRATED DRAINS
- EXISTING LAYOUT
- SEWER PIPELINES
- CABLE TUNNELS
- ASH/DUST PIPELINE TRENCH
- ASH/DUST SLUICEWAY
- PUMPED LINES
- COXS RIVER CATCHMENT PROTECTED
- COXS RIVER CATCHMENT UNPROTECTED
- OIL/GRIT CATCHMENT
- ASH/DUST PIPE
- RECYCLED WATER
- DECOMMISSIONED PIPELINE

0 40 80 120 160 200m
1:2000

AMENDMENTS

DRAWN BY CG TO DELTA MARKED UP DRAWING. W/O No. 40026742

AMDT	DESCRIPTION	DRN	CKD	DATE
04		BH	GM	28.01.05
05	ASH ROAD ADDED.	BH	GM	27.02.05
06	ASH ROAD AMENDED.	BH	GM	05.03.05
07	INSULATING OIL FILTERER WAS EARTHING EQUIP. STORE. DRAINAGE LINES TO PITS D131 & D134 REVISED. FRESHWATER MAKE-UP FROM SPRINGVALE & CW BLOWDOWN PIPING REVISED.	GAS	MJ	25-NOV-05
08	UNITS 1-6 AREA WAS GREEN & PLANT DELETED.	GAS	MJ	10-DEC-05
09	CAUSTIC PLANT DRAIN ADDED TO CW BLOWDOWN LINE	GAS	MJ	9-APR-07
10	DRAIN CONNECTED FROM D327 TO D326	GAS	NDIF	10-OCT-07

Delta electricity

SUBCONTRACT No.

DRAWN / DATE
DESIGN / DATE
CHECKED DO / DATE
CHECKED ENG / DATE
PASSED EF / DATE

cad

KKS CODING U

ORIGINAL DRAWING APPROVED BY
B.K. ROBY EF 22.02.02
PROJECTS MANAGER

APPROVED
DRAWING STATUS

SCALE AS SHOWN

DELTA ELECTRICITY

WALLERAWANG POWER STATION
WASTE AND CONTAMINATED WATER
STATION DRAINAGE SYSTEM
KEY PLAN - SHEET 1

	PREFIX	NUMBER	SHEET	AMDT
A0		WX637130		10

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Appendix D

Water management structure inventory

Table D.1 Water management structure inventory

Zone	Name [1]	Type	Description	Function
Cooling Tower	SPA1	Settling Pond	Settling basin accepting water from road pits/pipes and the southern half of the disturbed coal handling area.	Settling out sediment from coal contaminated water before discharging into PondA2.
Cooling Tower	PondA2	Polishing Area	This basin receives water from SPA1, it is the second control for water from the disturbed coal handling area.	Polishes water from SPA1 basin before discharge into the Coxs river.
Cooling Tower	O&GSP1	Settling Pond	The first of two settling basins that accepts water from the recycled water network that services the cooling tower. Discharges to O&GSP2.	Settles out contaminants from recycled water.
Cooling Tower	O&GSP2	Settling Pond	The second of two settling basins that accepts water from the recycled water network that services the cooling tower. Discharges to Coxs River.	Settles out contaminants from recycled water.
Disturbed Area	DASB1	Sediment Basin	Existing sediment basin located within northern half of the former coal handling area. This basin will be formalised and enlarged to treat runoff from the proposed laydown area.	Collects and stores water that will eventually flow into SPB1/PondB2.
Disturbed Area	DASB2	Sediment Basin	Existing sediment basin located within southern half of the former coal handling area. This basin will be formalised and enlarged to treat runoff from the proposed laydown area.	Collects and stores water that will eventually flow into SPA1/PondA2.
Disturbed Area	DASPC1	Settling Pond	1 of 2 settling basins that accept water from the eastern section of the former coal handling area.	Settling out sediment from water flowing from DASPC2, small polishing feature at outlet to Springvale creek.
Disturbed Area	DASPC2	Settling Pond	2 of 2 settling basins that accept water from the eastern section of the former coal handling area.	Settling out sediment from coal contaminated water before discharge into DASPC1.
North East	SPB1	Settling Pond	Settling basin accepting water from the road pits/pipes and the northern half of the former coal handling area.	Settling out sediment from coal contaminated water before discharging into PondB2.
North East	PondB2	Polishing Area	This basin receives water from SPB1, it is the second control for water from the former coal handling area.	Polishes water from SPB1 basin before discharge into the Coxs river.
North East	ARWDP1	Discharge Pond	1 of 2 settling ponds that accept water from the ash dam return water pipeline from Kerosene Vale Ash Repository.	Polish water before discharging ash dam return water into Springvale creek.
North East	ARWDP2	Discharge Pond	2 of 2 settling ponds that accept water from the ash dam return water pipeline from Kerosene Vale Ash Repository.	Polish water before discharging ash dam return water into Springvale creek.

Table D.1 Water management structure inventory

Zone	Name [1]	Type	Description	Function
Northern	Main O&G	Oil and Grit Trap	The Main O&G trap collecting water from areas with risk of oil/grit/hydrocarbon contamination. Capability to pump to the ARWST. Can also receive water from the Southern O&G trap.	Control potentially contaminated water with a series of inverted weirs.
Northern	CTB7A	Concrete Basin	1 of 2 concrete basins associated with former Cooling Tower 7. Local catchment area limited to basin footprint.	Available for project contingency storage.
Northern	CTB7B	Concrete Basin	2 of 2 concrete basins with piped connection to the former Cooling Tower 7. Local catchment area limited to basin footprint.	Available for project contingency storage.
Northern	NRB	Retention Basin	Settling basin that accepts water from Northern hardstand areas.	Settling out sediment from water flowing from hardstand areas, overflows into Coxs River.
Northern	ARWST	Water Tank	7.5 ML storage tank that holds water associated with the ash return water network, can accept water from Main O&G trap before pumping offsite to ash dams.	Stored water that required disposal at offsite ash dams, can be used as a contingency for high-risk water or high volume scenarios.
Southern	Southern O&G	Oil and Grit Trap	O&G trap accepting water from areas with risk of oil/grit/hydrocarbon contamination. Adjacent to SRB, will by default pump/overflow to SRB. Also has capability to pump to Main O&G trap if desired.	Control potentially contaminated water with a series of inverted weirs.
Southern	SRB	Retention Basin	Settling basin that accepts water from the Southern hardstand areas. Discharges into the Coxs River by a gated pipeline.	Settling out sediment from water flowing from hardstand areas, further polishes water controlled by the Southern O&G trap.

Notes: 1. Water management structure locations are shown on Figure 4.1, labelled by 'Name'.

Appendix E

Discharge and reuse management

E.1 General

Water to be discharged must be tested and, if required, treated to ensure that it meets water quality criteria and that pollution of the receiving waters does not occur. Results of testing and details of any treatment undertaken must be noted on the Discharge or Water Reuse Approval (DWRA) (refer Section E.6).

Demolition activities may mobilise Contaminants of Concern (CoCs) in elevated levels onsite and therefore the risk exists that the waters contained in sediment basins or otherwise controlled onsite may as a result contain these contaminants above water quality criteria. Therefore, testing in addition to minimum oil and grease, pH and total suspended solids (TSS) may be required. A determination on which tests will be routinely required will be based on project data gathered during testing events with the initial test suites being broad enough to cover potential CoCs. Site assessment criteria (SAC) will be adopted based on ambient water quality monitoring of the Coxs River and ANZECC guidelines.

Before water can be discharged to any receiving waters or reused onsite it must as a minimum meet the criteria outlined in Table E.1.

Table E.1 Discharge or reuse criteria

Parameter	Criteria	Method
Oil and grease	No visible	Visual inspection
pH	6.5–8.5	Water quality meter or grab sample
TSS	<50 mg/L	Grab sample
Specific CoC	SAC to be established prior to first discharge from site	Grab sample

If the above criteria are not met the water will have to be treated and retested prior to discharge as outlined in the following sections.

E.2 Discharge/disposal to KVAR

Contaminated sediments and waters may be pumped to the KVAR in accordance with relevant licences including EPL 21185. Pumping to KVAR requires approval and coordination with GPM, the owner and operator of KVAR, permissible through an existing access license that Greenspot holds with GPM.

E.3 Treating waters prior to reuse or discharge

The following treatment protocols will apply.

Additional sediment basin management procedures are described in Section 7.7.

E.3.1 Oil and grease

- Examine surface of water immediately prior to discharge for evidence of oil and grease (eg sheen, discolouration).
- No action is required if there is no visual contamination.
- If there is contamination, the contaminated water must either be disposed of at a licenced disposal facility, or treated using appropriate absorbent materials, which must be spread on the surface.

- Any used absorbent materials are to be disposed of appropriately.

E.3.2 pH

- If pH is outside the range 6.5–8.5 the water will need to be neutralised. This may be achieved via three methods which are dependent on site and time constraints:
    - Natural – allowing the water to sit for a period of time and naturally neutralise.
    - Mixing – by mixing with other site water of a higher or lower pH (ie other water has also been tested), to achieve pH 6.5–8.5.
    - Acid/Base addition – if the water is above 8.5, acid is used to lower the pH; if the water is below 6.5 a base is used to raise the pH. To treat water with acid or base, safety requirements must be followed as outlined in relevant Material Safety Data Sheet (MSDS).
    - Re-test the water pH following treatment – repeat as necessary, until the acceptable range 6.5–8.5 is reached.

E.3.3 TSS

If TSS is greater than 50 mg/L, the sediments need to settle to the bottom or be removed. This can be achieved via the following methods:

- Natural settlement – this could take a long time or not occur at all (eg with dispersible clay soils). Dependent on soil type and other characteristics, (refer to Chapter 3 of Landcom 2004 for further information).
- Flocculation – chemical treatment with a flocculent mixed by use of a pump. Only environmentally safe flocculants are to be used, based on the Environment Advisor's review of MSDS information.
- Filtration – pumping or gravity feeding the water through a filter medium (eg geofabric) to another storage area (eg container or sediment basin) to remove sediment.
- Gypsum may also be used, either spread over disturbed areas to assist in flocculation, or in gravel form within rock check dams.

E.3.4 Other CoC

- If CoC are present in the water at levels above SAC guidelines treatment or offsite disposal is to occur. Examples of treatment methods include absorption, precipitation and filtration.
- Re-testing of water is required once treatment has been undertaken to ensure criterion for the CoC is met.
- Following treatment and retesting to ensure compliance with the criteria the water may be authorised for discharge by Greenspot.
- If it is not able to be treated onsite, it must be disposed of at a licensed facility or otherwise consistent with EPL 766

E.4 Water reuse

Water reused on site for dust suppression or other uses will not require the TSS criteria, however pH testing and visual inspection for oil and grease, and contaminants of concern may need to be undertaken.

E.5 Discharging water

Once water has been tested and meets all the criteria for discharge to either waters or land or for reuse on site Greenspot must authorise the discharge by signing the DWRA (refer Section E.6). All sediment basins are required to maintain their design capacity, within 5 days following any rainfall event).

All test results will be available both on site and via the Liberty Industrial internal network.

E.6 Approval and methods to discharge or reuse water

A template for the DWRA is provided in Figure E.1.

Discharge can use a syphon system or a pump, with a priority on delivering low energy flows to downstream drainage lines, watercourses or land. The flow from the outlet must be directed onto a non-erodible surface or material and, for discharges to waters, sufficient energy must be dissipated before the flow enters the natural watercourse to ensure no erosion shall occur. The pump inlet must be placed so that it will not disturb or take in any sediment or sediment laden water.

The discharge must be monitored throughout to ensure that the water being syphoned or pumped:

- complies with the discharge criteria;
- does not come into contact with any soil or exposed surfaces before discharging; and
- does not mix with any sediment laden/untested water at either the inlet or outlet.

Water must never be discharged or reused onsite in a manner that exceeds the capacity of sediment controls and/or generates runoff with the potential to discharge from site.

Figure E.1 Liberty DWRA form

Discharge or Water Reuse Approval				
A	Name and Position:			
B	Date inspected:			
C	Basin Location:			
D	Rainfall event: mm			
#	Control Measure	**Yes**	**No**	**Comment**
1	Is maintenance to the basin Required?			
2	Does the basin need emptying? (ie is basin more than 30% full)			
3	Is oil and grease visible on the surface of the water?			
4	What is the turbidly reading of the basin? Floc Basin before discharge if it does not meet turbidity standard (50mg/L)			
5	How much floc was added?			
6	What is the turbidly reading of the basin after flocculating)			
7	What is the turbidity reading at the discharge point after flocculating?			
8	What is the pH of the water in the basin? Ph must be between 6.5 and 8.5. If not treat water			
9	What is the pH again before discharge?			
10	Could water contain CoCs above ANSECC/NEMP?			
11	What testing has been carried out in regards to CoCs			
12	Does the water meet SAC guidelines?			
13	Will hydraulic criteria be meet? (ie no significant effects)			
	Approval for discharge and Signature (yes/no)			
LI				
GS				
	Date and Time of Discharge	Date:		Time:
	Duration and Volume of discharge	Duration:		Volume: