

Liddell Decoupling Works - Soil and Water Management Plan

Revision no: Rev B

AGLM

Liddell Battery Decoupling Works Environmental Management Strategy
22 August 2022

Liddell Decoupling Works - Soil and Water Management Plan

Client name: AGLM
Project name: Liddell Battery Decoupling Works Environmental Management Strategy
Project no: IS423400
Revision no: Rev B
Project manager: Sara Sanderson
Prepared by: Antony Lockyer

Document history and status

Revision	Date	Description	Author	Checked	Reviewed	Approved
A	01/06/2022	Initial Draft	A Lockyer		Peter Horn	Peter Horn
B	22/08/2022	Final Draft	S Sanderson		Andrew Wallace	Andrew Wallace

Distribution of copies

Revision	Issue approved	Date issued	Issued to	Comments

Jacobs Group (Australia) Pty Ltd.

Level 4, 12 Stewart Avenue
Newcastle West, NSW 2302
PO Box 2147
Dangar, NSW 2309
Australia

T +61 2 4979 2600
F +61 2 4979 2666
[Website]

Copyright Jacobs Group (Australia) Pty Ltd. © 2022.

All rights reserved. The concepts and information contained in this document are the property of the Jacobs group of companies. Use or copying of this document in whole or in part without the written permission of Jacobs constitutes an infringement of copyright. Jacobs, the Jacobs logo, and all other Jacobs trademarks are the property of Jacobs.

NOTICE: This document has been prepared exclusively for the use and benefit of Jacobs' client. Jacobs accepts no liability or responsibility for any use or reliance upon this document by any third party.

Contents

Contents	iii
Tables	iv
Acronyms and abbreviations	v
1. Introduction	1
1.1 Context.....	1
1.2 Purpose and Scope	1
1.3 Project Description	2
1.3.1 Project Overview	2
1.3.2 Decoupling works.....	2
2. Regulatory Requirements	3
2.1 Relevant legislation and conditions.....	3
2.1.1 Environment Protection Licence – POEO Act 1997.....	3
2.2 Standards and guidelines.....	3
3. Existing Environment	4
3.1 Soil	4
3.1.1 Soil Landscape	4
3.1.2 Acid Sulphate Soil.....	4
3.1.3 Soil Salinity	4
3.2 Water	4
3.2.1 Waterways and Water bodies.....	4
3.2.2 Surface Water	5
3.2.3 Groundwater	5
3.2.4 Flooding.....	5
3.2.5 Water Supply.....	6
4. Impacts to Soil and Water	8
4.1 Soil	8
4.1.1 Soils, geology and geotechnical stability	8
4.1.2 Contamination.....	8
4.2 Water	8
4.2.1 Water Quality and Hydrology	8
4.2.2 Groundwater	8
4.2.3 Water Supply.....	9
5. Soil and Water Control Measures	10
5.1 Mitigation and Management Measures.....	10
6. Compliance management	13
6.1 Roles and Responsibilities	13
6.2 Monitoring and reporting.....	13
6.3 Incidents and Complaints	13
6.4 Document review and update	13

Tables

Table 1: Soil and Water Management – Development Consent Conditions	1
Table 2: AGLM Water Allocations.....	6
Table 3: Soil and Water Mitigation and Management Measures	10
Table 4. Soil and Water Management Monitoring Plan	13

Figures

Figure 3-1: Waterways.....	7
----------------------------	---

Acronyms and abbreviations

Acronym or abbreviation	Description
BAW	Bayswater Ancillary Works
CEMP	Construction Environmental Management Plan
DECC	Department of Environment, Climate Change and Water
DPE	Department of Planning and Environment
EMS	Environmental Management Strategy
EPA	Environment Protection Authority
EPL	Environment Protection Licence
SWMP	Soil and Water Management Plan
AGLM	AGL Macquarie
ASS	Acid Sulphate Soils
HRSTS	Hunter River Salinity Trading Scheme
WAL	Water Access Licence
LEP	Local Environment Plan
TPZ	Tree Protection Zone

1. Introduction

1.1 Context

This Soil and Water Management Plan (SWMP) has been developed to address the Development Consent Condition C1(e)(i) issued for the Project by the planning Secretary of the NSW Department of Planning and Environment (DPE). All relevant conditions are outlined in Table 1.

Table 1: Soil and Water Management – Development Consent Conditions

Condition	Requirement	SWMP reference
C1(e)(i)	Prior to commencing construction, the Applicant must prepare an Environmental Management Strategy for the development to the satisfaction of the Secretary. This strategy must: (e) include: (i) the following subplans: <ul style="list-style-type: none"> soil, stormwater, water quality, flood and spoil management 	This plan
B24	The Applicant must ensure that it has sufficient water for all stages of the development, and if necessary, adjust the scale of the development to match its available water supply.	Section 3.2.5
B25	The Applicant must ensure that all surface discharges from the development comply with all relevant provisions of the POEO Act, including any discharge limits (both volume and quality) set for the development in any EPL.	Section 2.1.1, Section 5
B26	The Applicant must: (a) ensure the development is designed, constructed and maintained to minimise impacts on surface water, flooding and groundwater at the site; (b) minimise any soil erosion associated with the construction, upgrading or decommissioning of the development in accordance with the relevant requirements in the Managing Urban Stormwater: Soils and Construction (Landcom, 2004) manual, or its latest version; (c) ensure the battery energy storage system and ancillary infrastructure are designed, constructed and maintained to avoid causing any erosion on site; and (d) ensure all works are undertaken in accordance with the Guidelines for Controlled Activities on Waterfront Land (NRAR, 2018), or its latest version unless DPE Water agrees otherwise.	Section 5

1.2 Purpose and Scope

This Soil and Water Management Plan (SWMP) will be used to inform the Contractors Construction Environmental Management Plan (CEMP) and describes how AGLMs Contractors will manage the potential impacts associated with soil and water during the construction of the Project.

The purpose of this SWMP is to:

- Identify the key Soil and Water impacts that require control measures
- Develop strategies to manage impacts to soil and water and implementing those strategies
- Assign responsibilities for impact monitoring and management
- Avoid or minimise potential impacts due to soil and water management
- Maintain compliance with the conditions of the development consent, environmental protection licence (EPL), and legislation relating to soil and water management.

1.3 Project Description

1.3.1 Project Overview

AGLM are progressing plans to facilitate the efficient, safe and reliable continuation of electricity generating works from Bayswater and Liddell. The Project would consist of the following:

- **Decoupling works:** Alternative network connection arrangements for the Liddell 33 Kilovolt (kV) switching station that provides electricity to infrastructure required for the ongoing operation of Bayswater and associated ancillary infrastructure and potential third-party industrial energy users
- **The Battery:** A grid connected Battery Energy Storage System with capacity of up to 500 megawatt (MW) and 2 GWh
- **Bayswater Ancillary Works (BAW):** Works associated with Bayswater which may include upgrades to ancillary infrastructure such as pumps, pipelines, conveyor systems, roads and assets to enable maintenance, repairs, replacement or expansion
- **Consolidated consents:** A modern consolidated consent for the continued operation of Bayswater through the voluntary surrender and consolidation into this application of various existing development approvals required for the ongoing operation of AGLM assets.

This SWMP addresses only the Decoupling Works stage of the project, which will be progressed first in a staged approach to the project. The Decoupling Works are required to be completed first, as it provides an alternative network connection arrangement for the Liddell 33 kV switching station, which provides electricity to infrastructure required for the ongoing operation of the Bayswater Power Station (Bayswater). The decoupling works will allow for the shutdown and demolition of the Liddell Power Station, without disrupting operations at Bayswater.

1.3.2 Decoupling works

The key construction and decommissioning elements for the decoupling works of the Project addressed in this SWMP include:

- Establishment of new 330 kV / 33 kV transformer compounds adjacent to the Liddell switchyard. The 33 kV / 330 kV transformers are expected to be around 7 metres in height
- Installation of new switch/control room building/s, and equipment near the existing Liddell transition point inclusive of auxiliary supplies
- Installation of new 33 kV cables to connect the 330 kV / 33 kV station transformers to the existing 730 and 731 33 kV feeders to the new 33 kV switch room
- Connection to the Liddell switchyard.

The following works may also be required within the Liddell switchyard:

- 330 kV tie ins
- Removal of existing Liddell station transformer 330 kV landing spans
- Earth grid tie-in to the earth grid of the 330 kV /33 kV transformer compounds
- Replacement of protection panel equipment, installation and proofing of new rerouted protection and control cables
- Commissioning works.

2. Regulatory Requirements

2.1 Relevant legislation and conditions

This SWMP has been prepared in accordance with the relevant legislation and regulatory requirements within the EMS; key legislation relating to soil and water includes:

- Environmental Planning and Assessment Act 1979 (EP&A Act)
- Protection of the Environment Operations Act 1997 (POEO Act)
- Water Management Act 2000 (WM Act)
- Water Management (General) Regulation 2018
- NSW Aquifer Interference Policy.

The Minister's Conditions of Approval for the Project, relevant to the SWMP, are listed in Table 1.

2.1.1 Environment Protection Licence – POEO Act 1997

Liddell is operated under EPL 2122. The contractor must ensure that all works are conducted in accordance with the conditions of this licence. AGLM will continue to monitor any Water and/or Land Monitoring Requirements as stated in the EPL.

The EPL includes a number of conditions relevant to surface and groundwater management. The POEO Act defines waters as the whole or any part of:

- Any river, stream, lake, lagoon, swamp, wetlands, unconfined surface water, natural or artificial watercourse, dam, or tidal waters (including the sea), or
- Any water stored in artificial works, any water in water mains, water pipes or water channels, or any underground or artesian water.

Section 120 of the POEO Act states that it is illegal to pollute waters. Under the Act, 'water pollution' includes introducing litter, sediment, oil, grease, wash water, debris, and flammable liquids such as paint etc. into waters or placing such material where it is likely to be washed or blown into water or the stormwater system or percolate into groundwater. All practicable steps should be taken to minimise the risk of pollution of waters.

2.2 Standards and guidelines

The main guidelines, standards and policies relevant to this SWMP include:

- Managing Urban Stormwater: Soils and Construction (Volume 1) (Landcom, 2004)
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2018 update) (ANZG, 2018), referred to herein as the ANZG (2018) Water Quality Guidelines
- Australian and New Zealand Guidelines for Water Quality Monitoring and Reporting (ANZECC/ARMCANZ, 2000)
- Approved Methods or Sampling and Analysis of Water Pollutants in NSW (DEC, 2004)
- NSW Water Quality and River Flow Objectives (DECCW, 2006)
- Pollution Incident Response Management Plans Guidelines (NSW EPA, 2020)
- Acid Sulfate Soil Manual (ASSMAC, 1998).

3. Existing Environment

3.1 Soil

3.1.1 Soil Landscape

The Decoupling Works aspect of the project are situated across Liddell soils (SHld). This soil landscape covers undulating low hills with a few undulating hills, ranging in elevation from 140 – 220 m. Slopes are 4 – 7 %, with long slope lengths (1200 – 2000 m). Local relief is 60 – 120 m. Drainage lines occur at 300 – 1000 m intervals.

The main soils are Yellow Soloths on slopes with some Yellow solodic soils. There are Earthy and Siliceous Sands on mid to lower slopes where the parent material is more sandy. There are some Red Soloths, Red Solodic Soils and Red Podzolic Soils. Clayey subsoils or sandy loam at between 20 cm – 40 cm depths.

This soil type is susceptible to minor to severe sheet erosion, with some minor rill erosion, and moderate gully erosion (to 1.5 m) in drainage lines where salting may be a feature.

3.1.2 Acid Sulphate Soil

The Australian Soil Resource Information System (CSIRO, 2019) mapping indicates the major water bodies in the vicinity of the Project to have 'high probability of occurrence' for ASS, with a 'very low' level of confidence. The majority of the land within the development site is mapped as a 'low probability of occurrence' for ASS, with a 'very low' level of confidence.

As the Project area has elevations ranging from approximately 90 and 250 m above sea level, ASS is not anticipated.

3.1.3 Soil Salinity

The eSPADE profile data in the broad vicinity of the Project indicates that soil salinity values range from 'non saline' to 'highly saline' as per the soil salinity class ranges provided by Agriculture Victoria.

3.2 Water

3.2.1 Waterways and Water bodies

The waterways and artificial water bodies adjacent to, or that intersect with, the Decoupling Works are Lake Liddell and Bayswater Creek. Both are highly disturbed and are not classified as sensitive receiving environments.

Lake Liddell

Lake Liddell, with a capacity of approximately 150 GL, is an artificial lake constructed to supply cooling water to Bayswater and Liddell by damming Bayswater Creek. The lake is located to the north of the Project and collects runoff from the upper portion of the Bayswater Creek catchment. The lake receives flows from licenced discharges of Bayswater and Liddell. Discharges from Bayswater are released into the lake via Tinkers Creek and Chilcotts Creek. Flows from Lake Liddell are intermittently released to Bayswater Creek from a licenced discharge point at the main dam wall. Water discharges released from Lake Liddell to Bayswater Creek are monitored at a licenced discharge point. The quality of water released into Bayswater Creek is subject to regulation by the Hunter River Salinity Trading Scheme (HRSTS) and water quality parameter limits implemented under EPL 779.

The water quality of the lake is influenced by a number of sources as it collects runoff from the upper portion of the Bayswater Creek catchment (Bioregional Assessments, 2019), as well as from licenced discharges released from Bayswater and Liddell at Tinkers Creek, Chilcotts Creek and directly into the Lake Liddell. The

water quality of Lake Liddell is monitored at LDP08 (now EPL Point 23), which is located at the pipe at the dam wall used to release water to Bayswater Creek (Jacobs, 2020b).

The pH values complied with the requirements specified in EPL 779 for LDP08 (now EPL Point 23) monitoring site at all times (6.5-8.5).

A large portion of the trace metals and ions had concentrations below detection limits or below ANZG (2018) guidelines for either the protection of aquatic ecosystems (greater than 80 % species protection) or primary industry (irrigation and general water use and livestock drinking water). The exceptions were boron, cadmium, chloride, copper, fluoride and molybdenum.

Bayswater Creek

Bayswater Creek has been dammed to create the Lake Liddell reservoir and heavily modified below the dam wall to accommodate discharges downstream into the Hunter River. The creek acts as a transfer channel between Lake Liddell and the Hunter River with discharges to Hunter River regulated by the HRSTS.

Water sampling of Bayswater Creek was undertaken by (Aurecon, 2013) in December 2010. Results were extracted from Aurecon (2013), analysed and compared to the ANZECC/ARMCANZ (2000) guidelines for the protection of lowland river aquatic ecosystems, or ANZG (2018) guidelines for either the protection of aquatic ecosystems or primary industry (irrigation and general water use and livestock drinking water).

The quality of water within Bayswater Creek at the time of sampling was characterised by high electrical conductivity (EC), with all samples above the ANZECC/ARMCANZ (2000) guidelines, however all samples were below the stated median EC value for water courses in the area (5500 $\mu\text{S}/\text{cm}$) (Bioregional Assessments, 2019). pH levels remained within the ANZECC/ARMCANZ (2000) guidelines values on all four sampling occasions.

Based on data for toxicant concentrations, a large portion of the analysed trace metals and ions had concentrations below detection limits or below recommended upper limits stated in the ANZG (2018) guidelines for either the protection of aquatic ecosystems (greater than 80 % species protection) or primary industry (irrigation and general water use and livestock drinking water). The exceptions were aluminium, chloride, chromium, copper, fluoride, iron, sodium and zinc which were above the guideline level at a minimum of one sampling site.

3.2.2 Surface Water

Receiving waters for the Decoupling works are limited to Lake Liddell which discharges to Bayswater Creek and then the Hunter River. Water quality of the receiving environments are described in the section above.

3.2.3 Groundwater

There are 35 registered groundwater bores within the surrounding lands, the monitoring data from these bores found that standing water levels for the bores ranged from 3 to 43 mBGL across the site.

The existing groundwater data for the AGLM site indicates that average groundwater depths range from 0.4 mBGL to 11.5 mBGL. It must be noted that the relatively shallow groundwater depths are a result of the relevant bores being in relatively low-lying land.

AGL currently holds a number of water access licences (**WAL**) associated with the ongoing operation of Bayswater and Liddell. As no groundwater would be abstracted during construction of the Project and harvesting of surface water is covered by existing entitlements, a new WAL or modification to existing WAL/s would not be required.

3.2.4 Flooding

The Project is not located on land that is mapped under the Singleton LEP as being susceptible to flooding. No mapping for flood prone land is available under the Muswellbrook LEP. The Battery and Decoupling footprints are elevated above the maximum water level of Lake Liddell and away from drainage lines.

3.2.5 Water Supply

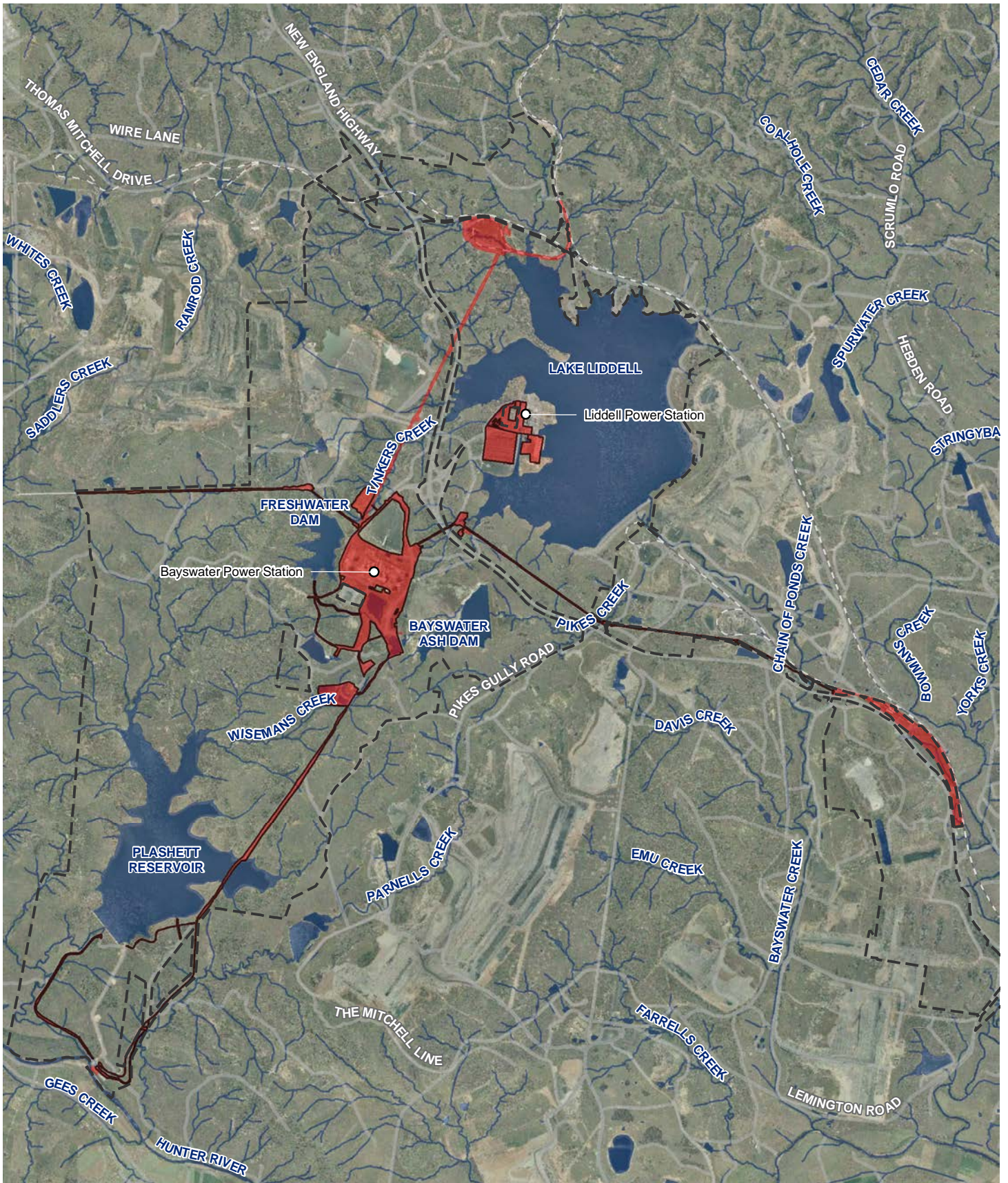
Bayswater and Liddell share an integrated water supply and treatment system. This supply system is designed to pump up to 61,000 ML per year from the Hunter River at Jerry's Plains to meet the water requirements of Liddell (25,000 ML per year) and Bayswater (36,000 ML per year).

The major source of water for AGLM operations are water allocations from the Hunter River.

The maximum allocated water volume is shown in Table 2, with allocations reset based on the calendar year. The actual annual usage of water on site from the Hunter River is variable, and dependent on water availability from the Hunter River, water quality (on site and in Hunter River), and dam levels at AGLM.

Table 2: AGLM Water Allocations

Water allocation (calendar year)	Volume (ML)
Water utility	36,000
Supplementary	36,000
General security	2090
High Security	1740
Total	75,830



Legend

- Project area
- Development site
- AGL owned land
- Railway
- Road
- Waterway
- Waterbody



Data sources

Jacobs 2020
 © Department Finance,
 Services and Innovation 2019
 AGL 2019

Imagery:
 © Department of Customer Service 2020

GDA94 MGA56



Figure 3-1 Waterways

4. Impacts to Soil and Water

4.1 Soil

4.1.1 Soils, geology and geotechnical stability

The Project would not significantly modify the existing landform or create new landforms.

During earthworks and vegetation clearance, it is possible that soil erosion may occur. Soil stabilisation and revegetation would minimise potential soil dispersion impacts. The Project is unlikely to cause large-scale soil disturbance at depth and is not proposed to interface with groundwater.

The Project is not expected to further reduce the soil capability and there are no proposed changes to land use.

4.1.2 Contamination

See specific subplan on Contamination (Annex D of the Environmental Management Strategy)

4.2 Water

4.2.1 Water Quality and Hydrology

During construction, water would be required for activities such as dust suppression, drilling, concrete works and revegetation. Water would be sourced from existing onsite sources in accordance with existing water allocations. No new potable water connections would be required, and no surface water would be abstracted during construction of the Project.

Without controls, impacts to water quality and hydrology could occur through the following construction activities:

- Removal of vegetation, general earthworks, including stripping of topsoil and excavation could result in the mobilisation of exposed soils, increased erosion and sedimentation (**Section 6.4.2** provides further details of soil landscapes within the Project area, including soil erodibility)
- Stockpiling of topsoil and vegetation leading to the discharge of sediment-laden water
- Transportation of cut and/or fill materials and the movement of heavy vehicles across exposed earth
- Potential for spills and leaks of chemicals, petroleum, oils and other toxicants from construction machinery, plant equipment, refuelling and vehicles travelling to and from Liddell and Bayswater, result in discharge to the environment
- Concreting works resulting in concrete dust, concrete slurries or washout water entering downstream waterways which can increase the alkalinity and pH of downstream waterways which can be harmful to aquatic life.

4.2.2 Groundwater

Extraction of groundwater for construction use is not proposed. The Project would source potable water from onsite utilities. The Project is therefore not expected to impact on any adjacent licensed water users or existing groundwater infrastructure.

Indirect impacts to the groundwater environment during construction may occur because of potential spills or leaks of hazardous materials occurring during construction and migrating to the water table. Potential spills or leaks may include oils, lubricants and fuels used by construction plant.

The majority of construction activities would be limited to surface works and as such, there would be limited possibilities for direct interaction with groundwater.

4.2.3 Water Supply

The construction of each Project element may require water for ground improvement, dust suppression and wash down purposes that would be drawn from within the existing AGLM water allocations and would be negligible compared to existing uses.

5. Soil and Water Control Measures

5.1 Mitigation and Management Measures

Table 3 outlines the management measures and mitigation strategies that are undertaken as far as practicable during the pre-execution, execution, and post-execution phases of the project to mitigate the potential impacts to soil and water.

Table 3: Soil and Water Mitigation and Management Measures

Measure	Details	Timing	Responsibility
SWMP1	Ensure the development is designed, constructed and maintained to minimise impacts on surface water, flooding and groundwater at the site	Prior to Construction	Principal EPC Contractor
SWMP2	Undertake pre-mobilisation soil sampling at compound site to confirm no residual impacts	Prior to Construction	Principal EPC Contractor
SWMP3	Install erosion and sediment controls before construction starts in accordance with Managing Urban Stormwater, Soils and Construction, Volume 1 and 2A (Landcom 2004 and DECC 2008; Appendix 1).	Prior to Construction	Principal EPC Contractor
SWMP4	<p>The contractor must document an Erosion and Sediment Control Plan (ESCP). This plan will include but may not be limited to, a drawing or map that clearly shows the site layout including:</p> <ul style="list-style-type: none"> • North point and plan scale • approximate grades and directions of falls. (Contours 0.5m for gradients <15%, 1m for gradients 15-30% and 2m slopes >30%) • site boundaries, adjoining roads and sensitive surroundings • construction access points • site office, car park and location of stockpiles • proposed construction activities and limits of disturbance • approximate location of trees and other vegetation designated "No Go Zones" • existing and proposed drainage patterns and discharge points • clean water diversion of upslope runoff around the disturbed areas • location and details of proposed erosion and sediment control measures • location of stockpile areas, including topsoil storage, protection and reuse methodology • Location of concrete washout areas • creek crossings and mitigation controls; and • commentary describing: <ul style="list-style-type: none"> o timing of works o nature and extent of earthworks (cut and fill) o site rehabilitation proposals including schedules; and o frequency and nature of maintenance regimes. 	Prior to Construction	Principal EPC Contractor
SWMP5	Establish stabilised site access, including the use of track mat or similar if required.	During Construction	Principal EPC Contractor
SWMP6	Install geo-fabric or similar over any stormwater drains (refer to Appendix 1)	During Construction	Principal EPC Contractor
SWMP7	No excavation with machinery, stockpiling, or equipment storage is to occur within the tree protection zones (TPZ)	During Construction	Principal EPC Contractor
SWMP8	Divert any surface runoff away from disturbed soil and stockpiles	During Construction	Principal EPC Contractor
SWMP9	All spoil and material stockpiles must be located away from drainage lines and install sediment fences on the down slope of stockpiles.	During Construction	Principal EPC Contractor

Liddell Decoupling Works - Soil and Water Management Plan

Measure	Details	Timing	Responsibility
SWMP10	Reuse topsoil where possible and stockpile separately	During Construction	Principal EPC Contractor
SWMP11	Where possible cover stockpiles	During Construction	Principal EPC Contractor
SWMP12	Where possible limit the height of stockpiles to less than 2.5 m and batter the sides to 2 (horizontal):1 (vertical) or flatter.	During Construction	Principal EPC Contractor
SWMP13	Stop work during heavy rainfall or in waterlogged conditions when there is a risk of sediment loss off site	During Construction	Principal EPC Contractor
SWMP14	Sweep up any sediment/soil transferred offsite at least daily, or before rainfall.	During Construction	Principal EPC Contractor
SWMP15	Use appropriate controls to avoid potential sedimentation to waterbodies.	During Construction	Principal EPC Contractor
SWMP16	Maintain water cart on site and use for dust suppression on internal roads and on other internal areas necessary, particularly in dry weather.	During Construction	Principal EPC Contractor
SWMP17	Bund potential contaminants and store on robust waterproof membrane, away from drainage lines	During Construction	Principal EPC Contractor
SWMP18	Store all chemicals and fuels in accordance with relevant Australian Standards and Data Safety Sheets. Record stored chemicals on a site register. Bunded areas are to have up to 100% capacity of stored liquid volume. Chemicals and fuels in vehicles must be tightly secured. All chemicals to be clearly labelled	During Construction	Principal EPC Contractor
SWMP19	Conduct equipment washdown within a designated washdown area	During Construction	Principal EPC Contractor
SWMP20	Ensure plant and equipment is leak free. Repair oil/fuel leaks immediately or remove from site and replace with a leak-free item	During Construction	Principal EPC Contractor
SWMP21	Conduct refuelling, fuel decanting and vehicle maintenance in compounds where possible. If field refuelling is necessary, designate an area away from waterways and drainage lines with functioning spill kits close by.	During Construction	Principal EPC Contractor
SWMP22	Keep functioning spill kit on site for clean-up of accidental chemical / fuel spills. Keep the spill kits stocked and located for easy access.	During Construction	Principal EPC Contractor
SWMP23	All pollution incidents, including spills, will be managed in accordance with the AGLM Pollution Incident Response Management Plan (PIRMP)	During construction	Principal EPC Contractor
SWMP24	Locate portable site amenities away from drainage lines	During Construction	Principal EPC Contractor
SWMP25	The contractor will produce a Dewatering Management Plan that will address all aspects of dewatering including groundwater and rainwater. All water discharged will meet the criteria specified in EPL 2122. Obtain any dewatering /aquifer interference permits required under the Water Management Act if the construction dewatering volume exceeds 3ML.	During Construction	Principal EPC Contractor
SWMP26	Ensure imported material is certified for intended use and is free from contamination including asbestos	During Construction	Principal EPC Contractor
SWMP27	Any spoil removed from site will be classified in accordance with NSW Environment Protection Authority Waste Classification Guidelines and disposed of at a suitable licensed waste facility	During Construction	Principal EPC Contractor
SWMP28	Record any spoil removed from site in a Waste Disposal Register and document disposal location.	During Construction	Principal EPC Contractor
SWMP29	Minimise ground disturbance and stabilise disturbed areas progressively.	During Construction	Principal EPC Contractor
SWMP30	Rectify damaged controls immediately	During Construction	Principal EPC Contractor

Liddell Decoupling Works - Soil and Water Management Plan

Measure	Details	Timing	Responsibility
SWMP31	If required, manage acid sulfate soils in accordance with the Acid Sulfate Soils Management Advisory Committee: Acid Sulfate Soils Assessment Guidelines (ASSMAC, 1998)	During Construction	Principal EPC Contractor
SWMP32	If required, adopt appropriate soil salinity mitigation measures. This may include: <ul style="list-style-type: none"> ▪ Treat existing salinity with gypsum ▪ Establish salt tolerant species in existing or potential salinity problem areas after construction ▪ Stabilise existing areas of erosion ▪ Minimise water use on site ▪ Avoid rotation and vertical displacement of the original soil profile ▪ Backfill excavations deeper than one metre in the same order, or treat or use this material as fill at depths more than one metre from the finished level. 	During Construction	Principal EPC Contractor
SWMP33	All concrete washout activity will occur at a designated concrete washout location that will securely capture and store concrete waste water and solids in an impervious bunded area.	During Construction	Principal EPC Contractor
SWMP34	Eliminate ponding and erosion by restoring natural landforms to the pre-works conditions	Post Construction	Principal EPC Contractor
SWMP35	Remove controls once surfaces have been stabilised, including removing trapped sediment in drainage lines	Post Construction	Principal EPC Contractor
SWMP36	Undertake post-demobilisation soil sampling at the compound site to confirm no residual impacts (e.g. impacts to any environmental or heritage factors).	Post Construction	Principal EPC Contractor

6. Compliance management

This section describes the monitoring, environmental reporting, and auditing requirements needed to demonstrate the environmental performance of the Project compared to objectives and targets.

6.1 Roles and Responsibilities

Key roles and responsibilities are outlined in Section 7.3 of the Environmental Management Strategy.

6.2 Monitoring and reporting

A recommended monitoring and inspection plan is provided in Table 4. The key findings and results of all monitoring and inspections listed in Table 4 should be communicated to the site teams during pre-start meetings.

Table 4. Soil and Water Management Monitoring Plan

Type of monitoring	Frequency	Location	Responsibility	Records
Erosion and Sediment Controls have been installed effectively prior to construction	Once	Construction Areas	Principal EPC Contractor	
Environmental inspection <ul style="list-style-type: none"> ▪ Monitoring of control measures – clean, adjust and replace as required. ▪ Visual Inspection of disturbed areas and stockpiles – ensure dust and sediment control measures are active. ▪ Visual inspection of sealed roads 	Weekly or Before and After Heavy Rainfall	Active construction areas and waste storage areas	Principal EPC Contractor	<ul style="list-style-type: none"> ▪ Weekly Environmental Inspection Checklist
Rainfall and Weather forecasts	Daily	N/A	Principal EPC Contractor	<ul style="list-style-type: none"> ▪ Daily Pre-starts
Monthly review of records	Monthly	N/A	Principal EPC Contractor	<ul style="list-style-type: none"> ▪ Daily Site Diary ▪ Waste Management Register ▪ Disposal Dockets
Environmental audit	As per Project Audit schedule	N/A	Principal EPC Contractor	<ul style="list-style-type: none"> ▪ Environmental Incident Report ▪ Waste facility receipts
Close out of soil and water management incidents – lessons are disseminated to project personnel	As required	N/A	Principal EPC Contractor	Toolbox records Pre-start records

6.3 Incidents and Complaints

Incident management will be managed in accordance with the process outlined in Section 7.5 of the EMS.

Complaints and enquiries will be managed in accordance with the process outlined in Section 6.3 of the EMS.

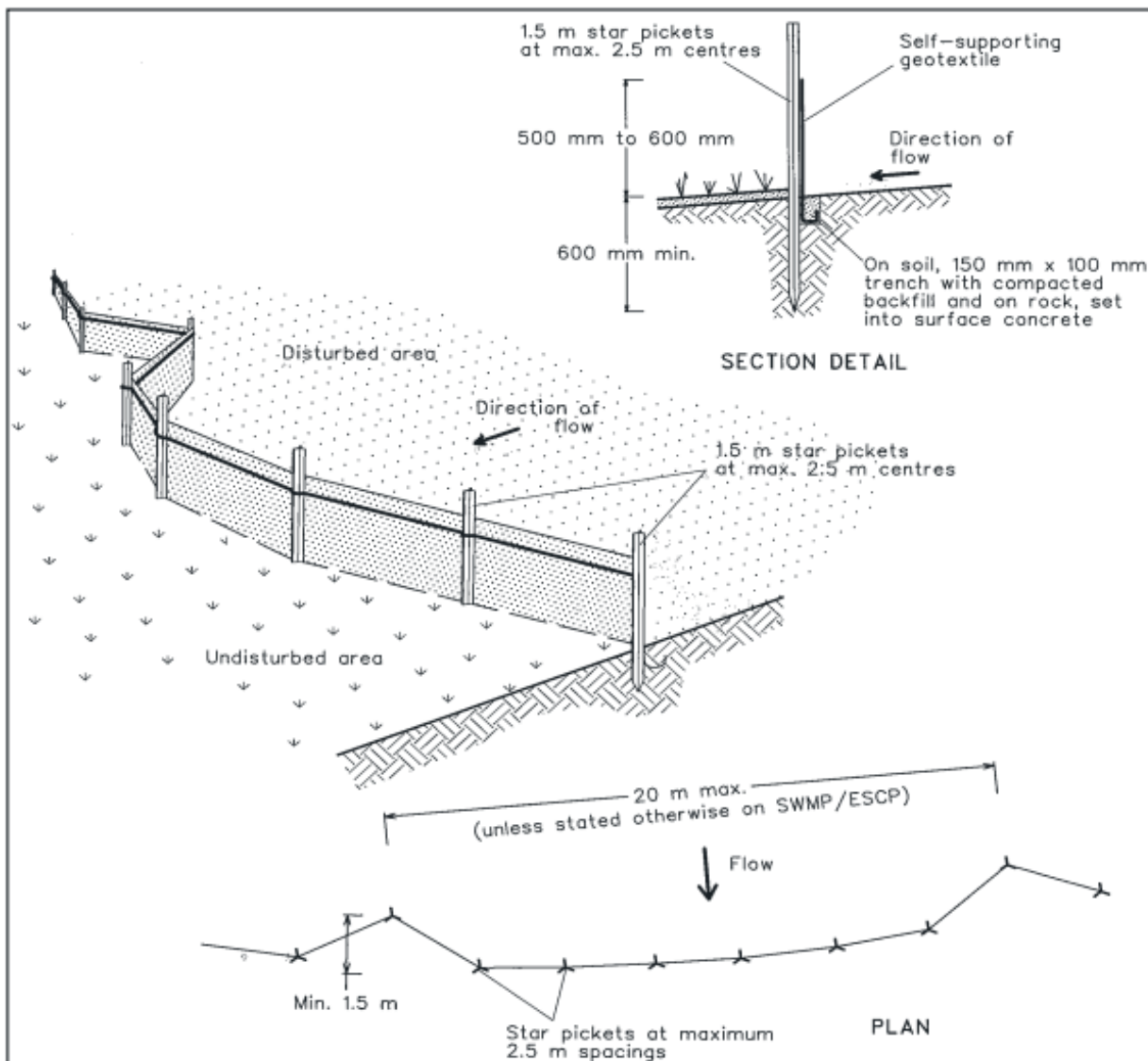
6.4 Document review and update

It is a requirement of the Environmental Management Strategy that all associated plans, studies and strategies are reviewed and updated within three months of the following events:

Liddell Decoupling Works - Soil and Water Management Plan

- The submission of an environmental incident report
- The submission of an audit report
- The approval of any modification to the conditions of the Development Consent
- A direction of the Secretary.

Appendix A. Blue Book Standard Drawings

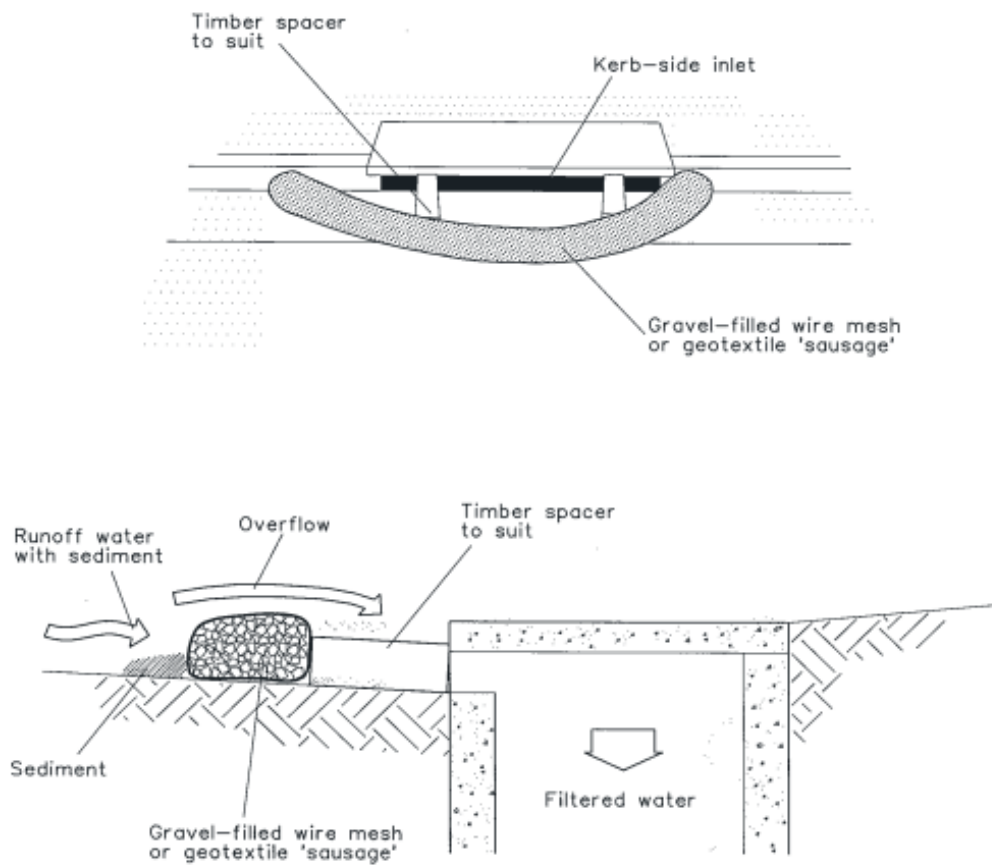


Construction Notes

1. Construct sediment fences as close as possible to being parallel to the contours of the site, but with small returns as shown in the drawing to limit the catchment area of any one section. The catchment area should be small enough to limit water flow if concentrated at one point to 50 litres per second in the design storm event, usually the 10-year event.
2. Cut a 150-mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched.
3. Drive 1.5 metre long star pickets into ground at 2.5 metre intervals (max) at the downslope edge of the trench. Ensure any star pickets are fitted with safety caps.
4. Fix self-supporting geotextile to the upslope side of the posts ensuring it goes to the base of the trench. Fix the geotextile with wire ties or as recommended by the manufacturer. Only use geotextile specifically produced for sediment fencing. The use of shade cloth for this purpose is not satisfactory.
5. Join sections of fabric at a support post with a 150-mm overlap.
6. Backfill the trench over the base of the fabric and compact it thoroughly over the geotextile.

SEDIMENT FENCE

SD 6-8



NOTE: This practice only to be used where specified in an approved SWMP/ESCP.

Construction Notes

1. Install filters to kerb inlets only at sag points.
2. Fabricate a sleeve made from geotextile or wire mesh longer than the length of the inlet pit and fill it with 25 mm to 50 mm gravel.
3. Form an elliptical cross-section about 150 mm high x 400 mm wide.
4. Place the filter at the opening leaving at least a 100-mm space between it and the kerb inlet. Maintain the opening with spacer blocks.
5. Form a seal with the kerb to prevent sediment bypassing the filter.
6. Sandbags filled with gravel can substitute for the mesh or geotextile providing they are placed so that they firmly abut each other and sediment-laden waters cannot pass between.

MESH AND GRAVEL INLET FILTER

SD 6-11

