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18/09/2026

Tomago BESS – Letter of Acknowledgement - Horizontal Drilling Soil and Water Management Plan (SWMP)

Dear Ms. Nettlefold

Thank you for submitting the Soil and Water Management Plan (SWMP) to the Department for information purposes in accordance with Condition B27, Schedule 2 of the Tomago BESS project (SSD-57107216). I also acknowledge that the SWMP has been updated to incorporate a Drilling Fluid Management Plan.

The Department reminds you of the following mitigation commitments outlined in Section 6.5.4, Table 6.4.3 of the approved Environmental Impact Statement (EIS):

- Drilling must be undertaken by appropriately trained and experienced personnel. If construction activities intercept groundwater, the composition of the drilling fluid must be determined by a suitably qualified drilling fluid engineer, having regard to local groundwater and soil geochemistry, to ensure the formation of an appropriate filter cake that minimises fluid loss and exchange with local groundwater.
- Only inert or non-contaminating drilling fluid additives are to be used. Any additives must be certified for use in potable aquifers, including certification to American National Standards Institute (ANSI)/NSF International (NSF) Standard 60 for well drilling aids and well sealants.
- Drilling fluid additives must be closely monitored by the drilling fluid engineer and driller to ensure they remain chemically stable and volumetrically balanced as drilling progresses. Where necessary, additives must be modified to maintain borehole stability and minimise interactions with groundwater.

If you wish to discuss the matter further, please contact Charissa Pillay on 02 99955944.

Soil and Water Management Plan

Tomago Battery Energy Storage System



Yours sincerely

A handwritten signature in dark ink, appearing to read 'Iwan Davies', with a stylized, cursive script.

Iwan Davies
Director
Energy Assessments

As nominee of the Planning Secretary



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Document revision history

Version	Date	Approver	Comments
A	22-May-2025	AGL Environment Manager	Draft
B	16-Jun-2025	AGL Environment Manager	Second draft: addressed AGLs review
C	08-Jul-2025	AGL Environment Manager	Final: Updated surface water testing locations
D	28-Jul-2025	AGL Environment Manager	Final
0	27-Aug-2025	AGL Environment Manager	Final: Addressed DPHI comments
1	15-Sep-2025	AGL Environment Manager	Final: Addressed further DPHI comments
2	23-Apr-2026	AGL Environment Manager	Final: updated surface water testing locations
3	30-Jul-2026	AGL Environment Manager	Final: Amendments from Independent Audit
4	4-Sep-2026	AGL Environment Manager	Inclusion of Drilling Fluid Management Plan



Glossary and abbreviations

Abbreviations	Definition
AECOM	AECOM Australia Pty Ltd
AEP	Annual exceedance probability
AGL	AGL Energy Limited
AGLM	AGL Macquarie Pty Ltd as the proponent of the Project
AHD	Australian Height Datum
ARI	Average Recurrence Interval
BESS	Battery Energy Storage System
BoM	Bureau of Meteorology
DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water
DECC	Department of Environment and Climate Change
DO	Dissolved oxygen
DPE	NSW Department of Planning and Environment
EC	Electrical conductivity
EIS	Environmental Impact Statement
EMS	Environmental Management Strategy
ENM	Excavated natural material
EP&A	<i>Environmental Planning and Assessment Act 1979 (NSW)</i>
EPA	NSW Environment Protection Authority
EPL	Environment Protection Licence
ERP	Emergency Response Plan
ERSED	Erosion and sediment
ESCP	Erosion and Sediment Control Plan
HDD	Horizontal directional drilling
km	kilometre
km ²	square kilometres



Abbreviations	Definition
KPI	Key performance indicator
kV	kilovolt
LEP	Local Environmental Plan
LGA	Local Government Area
m	metre
MW	megawatt
MWh	megawatt-hour
NPS	Newcastle Power Station
NSW	New South Wales
NTU	Nephelometric Turbidity Unit
OEMP	Operational Environmental Management Plan
OSD	On Site Detention system
Planning Systems SEPP	<i>State Environmental Planning Policy (Planning Systems) 2021</i>
PMF	Probable Maximum Flood
POEO Act	<i>Protection of the Environment Operations Act 1997 (NSW)</i>
PSC	Port Stephens Council
Resilience and Hazards SEPP	<i>State Environmental Planning Policy (Resilience and Hazards) 2021</i>
Secretary	Secretary of the NSW Department of Planning, Housing and Infrastructure
SEPP	State Environmental Planning Policy
SMP	Surface Water Management Plan
SSD	State Significant Development
SSI	State Significant Infrastructure
SWMP	Soil and Water Management Plan
TARP	Trigger Action Response Plan
TfNSW	Transport for New South Wales
The Blue Book	Managing Urban Stormwater: Soils and Construction - Volume 1: Blue Book
TSS	Total suspended solids



Abbreviations	Definition
VENM	Virgin excavated natural material
WM Act	<i>Water Management Act 2000</i>
WSP	Water Sharing Plan

1. Introduction

AGL Macquarie Pty Limited (AGLM), a subsidiary wholly owned by AGL Energy Limited (AGL), was granted development consent to construct, operate and maintain a Battery Energy Storage System (BESS) of up to 500 megawatts (MW) and approximately 2000 megawatt-hour (MWh), as well as a new transmission connection/s that would connect the BESS facility to the Transgrid 132 kilovolts (kV) Tomago substation (the Project).

The Project is a State Significant Development (SSD) under the *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP) and is subject to Part 4, Division 4.7 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

An Environmental Impact Statement (EIS) was prepared in November 2023 in accordance with the Secretary's Environmental Assessment Requirements. Development consent (SSD-57107216) was issued by the Department of Planning, Housing and Infrastructure (DPHI) on 8 November 2024.

AECOM Australia Pty Ltd (AECOM) has been commissioned by AGL to prepare a Soil and Water Management Plan (SWMP) for the approved Project.

1.1. Background

Approval was granted on behalf of the Minister for Planning and Public Spaces on 8 November 2024 for AGL to construct and operate a BESS with a capacity of up to 500 MW and up to 2,000 MWh. The BESS was approved for connection via transmission infrastructure to the existing Transgrid 132 kilovolts (kV) Tomago substation located on Lot 101 DP1125747.

This SWMP has been developed specifically for the BESS Project.

1.2. Scope

This SWMP applies to activities associated with the development and operation of the Tomago BESS, covering all relevant works during the construction, operation and decommissioning phases of the Project.

An Erosion and Sediment Control Plan (ESCP) has been incorporated into this SWMP and provides a description of surface disturbance procedures and erosion and sediment (ERSED) control measures that may be implemented as part of the Project (refer to **Appendix A**). During construction, the Principal Contractor will prepare, implement and maintain a Detailed Erosion and Sediment Control Plan (Detailed ESCP) in accordance with its Construction Environmental Management Plan (CEMP) and the requirements of ESCP. The Detailed ESCP will identify surface disturbance procedures and the ERSED control measures to be progressively implemented, maintained and updated throughout the construction phase.

A Surface Water Management Plan (SMP) has also been incorporated into this SWMP, outlining baseline surface and groundwater conditions, monitoring programs, performance criteria, and management measures to minimise project-related impacts on surface water. The SMP also details protocols for compliance evaluation, exceedance response, and mitigation actions in the event of exceedances of impact assessment criteria.

1.3. Purpose

The SWMP provides a framework for the management of surface water, groundwater and key environmental risks, including ERSED control and the prevention of pollution, during the implementation of the Project. The SWMP aims to guide compliance with all relevant statutory requirements and ensure appropriate controls are in place to minimise and prevent risks to the soil and water environment. It identifies key personnel roles, responsibilities, and procedures for project communications and complaint handling.

This SWMP forms part of the Project's Environmental Management Strategy (EMS). The EMS provides the overarching framework for environmental management and compliance with all conditions of approval, including administrative requirements not specifically related to soil and water impacts, across construction, operation and decommissioning of the Project.

1.4. Relevant approvals and conditions

AGL received development consent (SSD-57107216) on 8 November 2024, under section 4.38 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to construct and operate the Tomago BESS (Development Consent).

This SWMP has been prepared in accordance with Condition B27 of the Development Consent. AGL engaged AECOM, to prepare the SWMP in consultation with the Water Group within the New South Wales (NSW) Department of Climate Change, Energy, the Environment and Water (DCCEEW). This SWMP was prepared by Liam Buxton (Registered Planner No. 72130), a suitably qualified professional, being a Principal Environmental Planner with 15 years' experience in planning and environmental science and management. A copy of Liam's CV can be provided upon request.

This SWMP was submitted to DPHI, via the Major Projects portal on 29 July 2025. Following receipt, DPHI issued the SWMP to DCCEEW to complete a review. DCCEEW provided a response, dated 25 August 2025 confirming that they had reviewed the Plan, and provided a post approval recommendation regarding water supply, take and licencing. This correspondence has been noted and provided in **Appendix C**.

Applicable conditions of the Development Consent are shown in **Table 1** with cross references to sections within the SWMP where the requirements have been addressed. For completeness, the requirements for Condition B26 of the Development Consent have also been produced in **Table 1** as these requirements are expressly referenced in Condition B27.

Table 1 Relevant development consent conditions

Condition	Section/ reference
B27. Prior to commencing construction, the Applicant must prepare a Soil and Water Management Plan for the development in consultation with the Water Group. This plan must:	This document
(a) Be prepared by a suitably qualified and experienced persons.	This SWMP has been completed by AECOM.
(b) Include a description of the measures that be implemented to ensure that the objectives of condition B26 (a) – (f) are achieved.	Included in this table, see below.
(c) Include a program to monitor and report on the effectiveness of these measures; and	Section 6 and Section 7
(d) Include details of who would be responsible for monitoring, reviewing and implementing the plan and timeframes for completion of actions.	Section 4
Once prepared, the Applicant must implement the Soil and Water Management Plan	Once prepared, this SWMP will be implemented in full during construction and maintained for the duration of the works, in accordance with the plan.
B26. The Applicant must:	Appendix A
(a) Minimise any soil erosion and control sediment generation	Appendix A
(b) Ensure that battery storage and ancillary infrastructure and any other land disturbance associated with the construction, upgrading or decommissioning of the development has	Appendix A

Condition	Section/ reference
appropriate drainage and erosion and sediment controls designed, installed and maintained in accordance with Managing Urban Stormwater Soils and Construction (Landcom 2024) and the Managing Urban Stormwater Soils and Construction – Volume 2A manual (Landcom 2008), or their latest versions	
(c) Ensure the battery storage and ancillary infrastructure (including security fencing) are designed, constructed and maintained to reduce impacts on surface water, localised flooding and groundwater at the site	Section 6
(d) Ensure the battery storage and ancillary infrastructure do not cause any increased water being diverted off the site or alter hydrology off site	Section 6
(e) Ensure all works within waterfront land is undertaken in accordance with Guidelines for Controlled Activities on Waterfront Land (DPE 2022)	Section 3.1
(f) Incorporate a staged throttle outlet above the permanent water level on the stormwater basin to provide a detention and retention function, to allow contaminants to be intercepted and removed from the basin in the event of fire damage to the battery cells	Appendix A

This SWMP should be read in conjunction with the Environmental Management Strategy (EMS) – Tomago Battery Energy Storage System and with reference to the following documents:

- Development Consent SSD-57107216
- Tomago BESS – Submissions Report (hereafter referred to as the Submissions Report) (AECOM, 2024) and associated appendices, including, but not limited to:
 - Appendix B – Updated mitigation measures
 - Appendix G – Stormwater Easement – 88B Instrument
- Tomago BESS – Environmental Impact Statement (EIS) (hereafter referred to as the EIS) (AECOM, 2023a) and associated appendices, including, but not limited to:
 - Appendix L – Hydrology Assessment (AECOM, 2023b).

2. Project Description

2.1. Project overview

The Project comprises a BESS facility that would store energy from the grid, allowing it to release electricity during periods of high demand and provide other ancillary services.

A summary of the key features of the Project is provided in **Table 2**.

Table 2 Overview of the Project

Project	Tomago Battery Energy Storage System (BESS)
Key features	- Construction and operation of a BESS with a capacity of up to 500 MW and up to 2,000 MWh; and - Connection of the BESS via transmission infrastructure to the Transgrid 132 kV Tomago Substation located on Lot 101 DP1125747
Approved development	- Batteries located within battery enclosures and associated infrastructure including (but not limited) to inverters and a combination of high, medium and low voltage transformers - Cabling and collector units - Substation/s with associated infrastructure including high voltage transformers and other equipment to meet Generator Performance Standards (e.g., harmonic filters and/or synchronous condensers, if required) - Underground connection to an existing electrical switchyard at the 132 kV substation - Temporary and permanent control room/s, office and maintenance buildings, warehouses, switch rooms, site access, internal roads, laydown areas and car parking - Other associated and ancillary infrastructure, including, for example, fire suppression, drainage and stormwater management, security fencing, lighting, and CCTV.
Project Area	The Project Area is shown in Figure 1 , and includes the Site (as described below), the transmission connection corridor options, and the construction laydown area at the Newcastle Gas Storage Facility (NGSF).
Site	The Site is at 1940 Pacific Highway, Tomago (being Part Lot 5 and Lot 6 in DP 1286735).
Transmission connection corridor	The proposed transmission connection would be located across Lots 7, 8, 24, 25 and 28 DP1286735 to a substation on Lot 101 DP1125747.
Grid connection	An electricity transmission line is approved to connect the BESS to Australia's National Electricity Market (NEM). The transmission connection would be installed below ground. The transmission connection would connect the BESS to the neighbouring Transgrid 132 kV substation located on Lot 101 DP1125747.

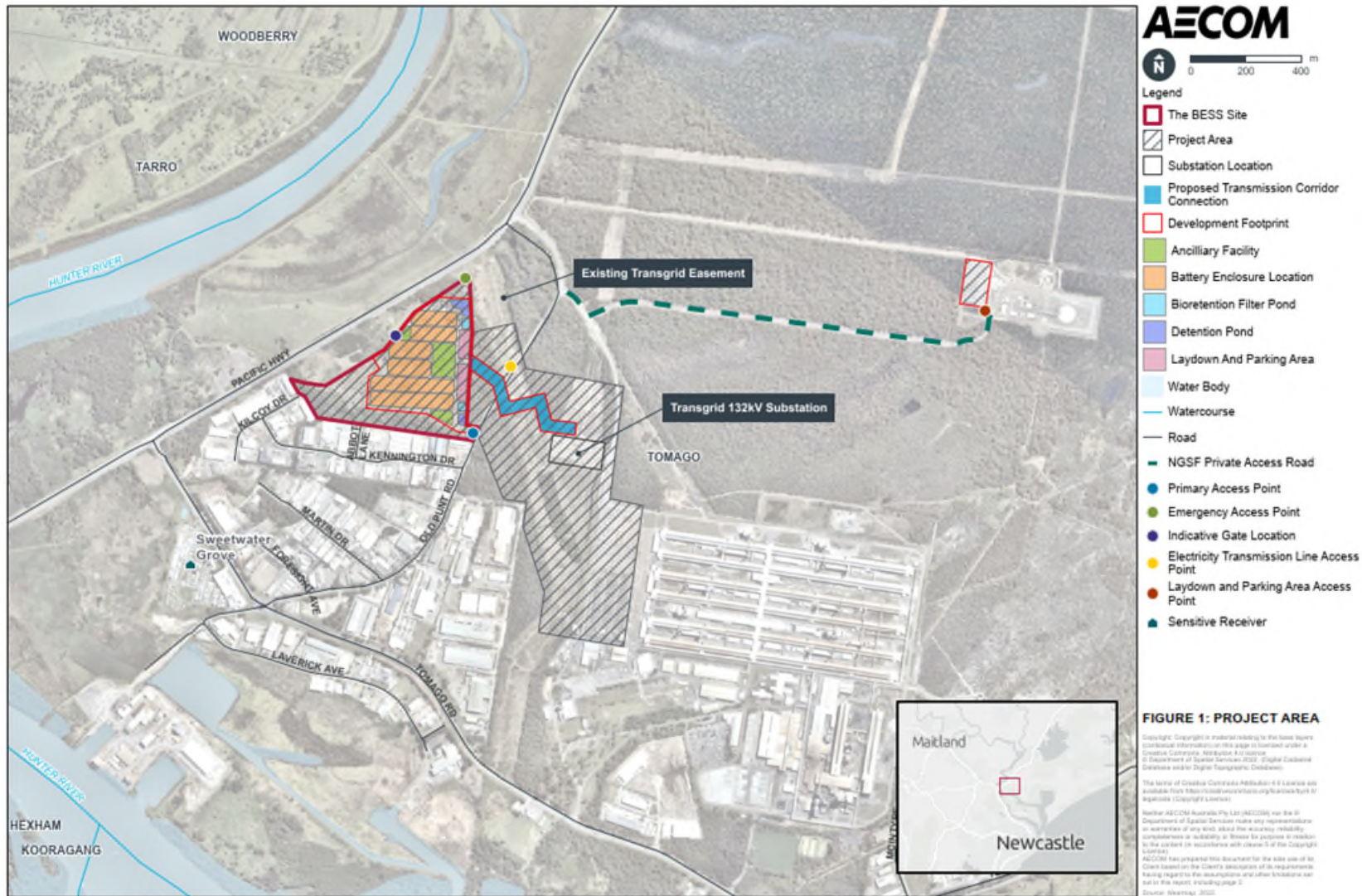


Figure 1 Project Area

2.2. Project and site description

2.2.1. Site description

The Project is within the Port Stephens Local Government Area (LGA) and is located on land zoned E4 General Industrial under the *Port Stephens Local Environmental Plan 2013* (Port Stephens LEP). Old Punt Road borders the Site to the southeast, and an existing general industrial precinct is located immediately adjacent to the south of the Site. Vacant rural land borders the Site to the west and northeast. The M1 Pacific Highway is located to the northwest of the Site.

The Site has previously been used for rural activities, including grazing and agricultural purposes. Some isolated trees have been retained on the Site, while patches of native vegetation are generally confined to the boundaries. The land is relatively flat, with a slight gradient towards the east and west. A number of access paths have been cleared across the Site.

Regional soil mapping indicates that the Site situated across predominantly Beresfield Soil and Tea Gardens (refer to **Section 5.2**).

The Hunter River is the closest river to the Site, located approximately 450 m northwest. No waterways occur within the Site with surface water runoff moving as shallow sheet flow intercepted by small drainage channels feeding into one of two small dams (refer to **Section 5.3**).

2.2.2. Access, circulation and conditions

Primary access to the Site during construction and operation would be via a new access point off Old Punt Road (refer to **Figure 2**). A secondary access point would be available in the northern corner of the Site to provide emergency access and egress to the M1 Pacific Highway on ramp once the M1 extension to Raymond Terrace project (SSI-7319) is constructed.

As shown in **Figure 2**, an internal road would be provided to enable vehicular access around the Site. Adequate parking would be provided onsite for the construction and operation of the Project.

2.2.3. Transmission connection

The transmission connection would be installed below ground. As the connection is installed below ground, it could be in one or a number of trenches. The transmission connection would connect the BESS to the neighbouring Transgrid 132 kV Tomago Substation.

The proposed transmission connection would require the construction of associated infrastructure, including potentially a transmission line/s landing gantry at the Site and connections at the substation. The proposed transmission connection would be located across Lots 7, 8, 24, 25 and 28 DP1286735 to a substation on Lot 101 DP1125747.

Soils along the route of these trenches would be excavated and stockpiled nearby, or within the designated construction laydown areas for the Project. The transmission connection cables would be laid, and the trenches backfilled with the stockpiled soils. This process of excavation would be completed in a progressive manner to minimise the amount of material stockpiled and to reduce the potential impacts related to erosion.

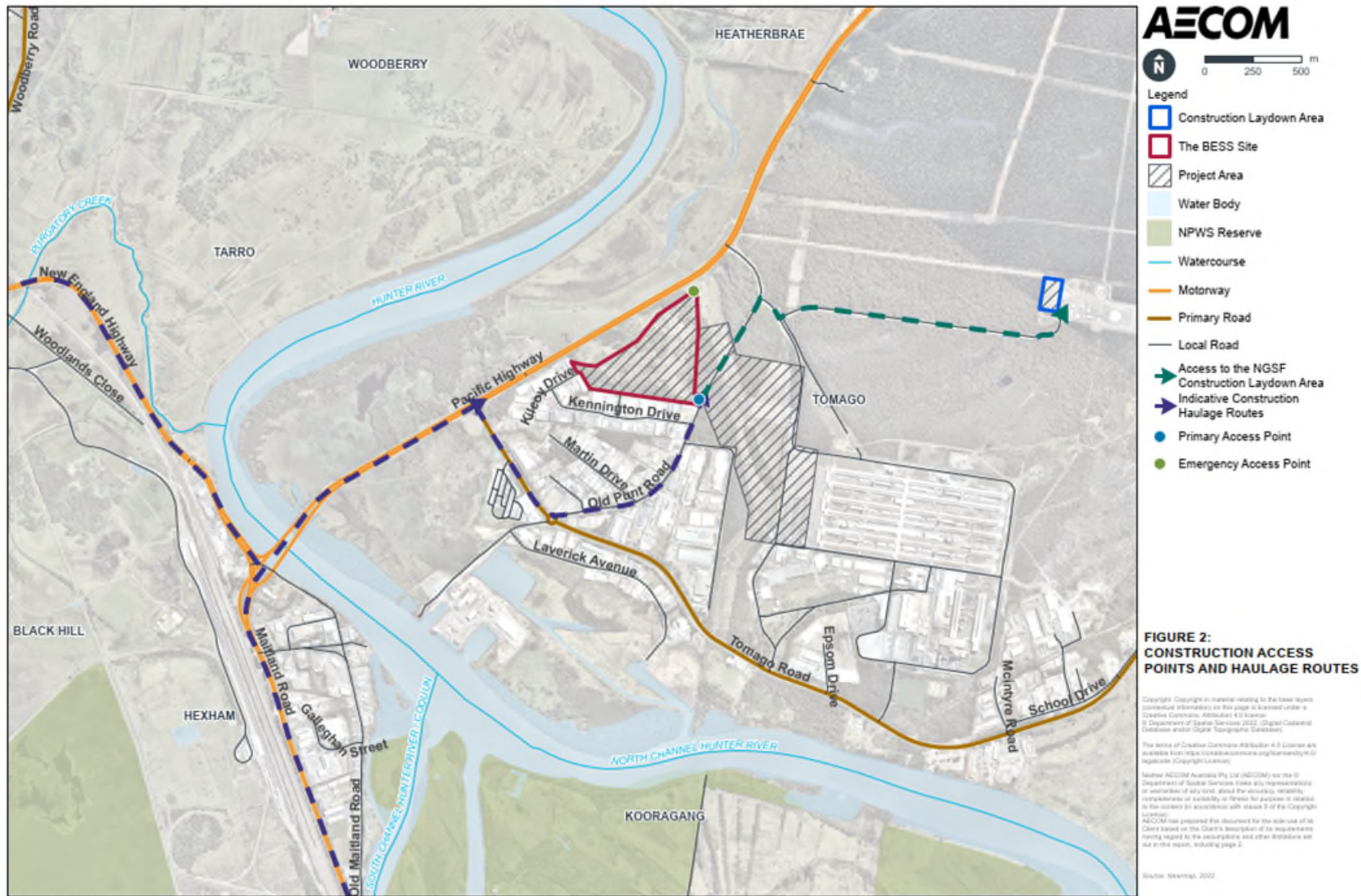


Figure 2 Site access

3. Legislation and guidelines

3.1. Legislation

3.1.1. Water Management Act 2000

The *Water Management Act 2000* (NSW) (WM Act) establishes a framework for managing water in NSW. The overarching objectives of the WM Act are to protect, conserve and promote ecologically sustainable development of water sources across the state.

The WM Act specifies certain activities as controlled activities when carried out on waterfront land. This is defined as within 40 m of the banks of a river, lake or estuary (or are prescribed by the regulations). A controlled activity approval for this Project would not be required by virtue of Section 4.41 of the EP&A Act. This section of the EP&A Act specifies certain approvals that are not required for SSD, including an activity approval under section 91 of the WM Act. Despite this provision, this section of the EP&A Act does not remove the requirement for obtaining an aquifer interference approval or a water access licence. If dewatering activities are expected during construction, separate exemptions under the Water Management (General) Regulation 2018 may apply. Specifically, an aquifer interference exemption is available for dewatering activities involving less than 3 megalitres (ML) per annum.

Furthermore, in accordance with Condition B24 of the Development Consent, AGL will ensure that sufficient water is available for all stages of the development and, if necessary, will adjust the scale of the development to match the available water supply.

3.1.2. Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (NSW) (POEO Act) is the key piece of environment protection legislation used by the NSW Environment Protection Authority (EPA) and other public authorities to prevent, control and investigate pollution in NSW.

Some activities regulated by the POEO Act include those involving air emissions, noise emissions, land pollution, hazardous materials, pesticides, waste, water quality, and state of environment reporting.

The POEO Act identifies a range of 'scheduled activities' that are subject to regulations of the Act. The Project does not include any scheduled activities, as such it is unlikely that an Environmental Protection License (EPL) would be required for construction or operation of the Project. However, sections 120 to 123 of the POEO Act specifically regulate water pollution. In accordance with Condition B25 of the Development Consent, AGL will ensure that the development does not cause any water pollution, as defined under Section 120 of the POEO Act.

3.2. Standards and guidelines

Soil and water management actions undertaken during the Project will be conducted in a manner consistent with the guidance set out in the documents below:

- National Water Quality Management Strategy (Department of Agriculture and Water Resources, 2018)
- Protecting Our Drinking Water Catchments – Guidelines for Development in the Drinking Water Catchments (Hunter Water, 2017)
- Neutral or Beneficial Effect on Water Quality Assessment Guidelines (WaterNSW, 2022)
- Water Sensitive Development Strategy Guidelines – Port Stephens Council (BMT WBM, 2011)

- Managing Urban Stormwater: Soils and Construction – Volume 1: Blue Book (known as “the Blue Book”) (Landcom, 2004)
- Australian Runoff Quality – A guide to Water Sensitive Expected surface water runoff qualities from Urban Design (Engineers Australia, 2006)
- Australian Rainfall and Runoff: A Guide to Flood Estimation (Ball et al., 2019)
- Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand Water Quality Guidelines (ANZECC & ARMCANZ, 2000).

4. Roles and responsibilities

This section outlines the key roles and responsibilities for AGL, its contractors and sub-contractors working on the Project.

4.1. AGL key personnel

AGL's key personnel will be responsible for the management of contractors and sub-contractors and will each have the respective responsibilities provided in **Table 3** below.

Table 3 AGL roles and responsibilities

Role	Responsibilities
Portfolio Manager	- Accountable for all environmental matters - Accountable for reviewing environmental management programs, including the establishment of environmental objectives and targets - Accountable for monitoring and improving environmental performance - Accountable for renewing operating licences - Accountable for compliance with all licence conditions and regulatory reporting requirements
Project Manager	- Responsible for providing adequate resources for the implementation of this SWMP - Responsible for ensuring all appropriate approvals have been obtained - Responsible for ensuring that all Staff or Contractors under their control are aware of environmental compliance issues and environmental controls listed in this SWMP - Responsible for overseeing project implementation - Responsible for ordering Stop-work for an activity that may cause environmental harm - Responsible for all environmental matters - Responsible for reviewing environmental management programs, including the establishment of environmental objectives and targets - Responsible for monitoring and improving environmental performance - Responsible for renewing operating licences - Responsible for compliance with all licence conditions and regulatory reporting requirements
Site Manager	- Overall responsibility for the Site - Review environmental management programs, including the establishment of environmental objectives and targets - Ensure all appropriate approvals have been obtained prior to commencing works - Ensuring that all staff or contractors under their control are aware of

	• environmental compliance issues and environmental controls listed in this SWMP • Order Stop-work for an activity that may cause environmental harm • Ensure employees are equipped with sufficient skills to meet the objective of competent delivery of the project
Environment Manager	• Oversee the implementation of this SWMP • Notify regulatory authorities and affected stakeholders of incidents or non-compliances in accordance with this SWMP • Order Stop-work for an activity that may cause environmental harm • Coordinate ongoing consultation with stakeholders • Coordinate periodic reviews of this SWMP • Undertake internal environmental audits and facilitate independent audits • Manage complaints and provide advice to enable a consistent outcome and approach to be achieved • Liaise with authorities and organisations as required
Supervisors	• Participate in awareness and environment training • Ensuring that all staff or contractors under their control are aware of environmental compliance issues and environmental controls listed in this SWMP • Assist in overseeing project implementation • Assist the Environment Advisor with investigations into non-compliances, incidents or complaints • Report and raise any issues that arise that may have an environmental impact • Promote continual improvement and provide support as required
All personnel	• Undertake works in accordance with this SWMP • Participate in awareness and environment training Immediately report and raise any issues that arise that may have an environmental impact • Stop work immediately if a particular activity is carried out in an unsatisfactory manner

4.2. Contractor key personnel

The Contractor key personnel will include service providers engaged by AGL for the Project and any sub-contracted personnel. **Table 4** outlines the Contractor key personnel and responsibilities.

Table 4 Contractor roles and responsibilities

Contractor role	Responsibility
Environment Advisor	• Initiate and support any external independent environmental audit program by liaising and providing required information • Communicate environmental performance to the AGL Environment Manager/Advisor

	• Assist in the management and investigation of environmental non-compliances, incidents or complaints • Manage the Contractor's environmental management plan • Provide necessary technical input • Co-ordinate environmental compliance • Assist in developing environmental objectives and targets and environmental management programs • Identify environmental incidents • Report and raise any issues that arise that may have an environmental impact • Manage the implementation and maintenance of the ESCP detailed in this SWMP
Site Manager	• Ensure that environmental considerations are integrated into all business functions where practical • Monitor and improve environmental performance • Comply with all environmental requirements and regulatory and other reporting requirements • Ensure appropriate licences are held by sub-contractors (i.e., waste) • Participate in awareness and environment training • Report and raise any issues that arise that may have an environmental impact • Ensure all ESCP measures detailed in this SWMP are installed, maintained and regularly inspected • Review and respond to water quality monitoring results on-site, initiating corrective actions as required
Contractor – Water Quality Monitoring	• Conduct surface water quality monitoring in accordance with the requirements of this SWMP • Ensure water quality monitoring equipment is fit for purpose and appropriately calibrated • Ensure timely reporting of non-conformances or exceedances identified in water quality analytical data • Report environmental incidents and SWMP non-conformances to the Environment Advisor and Site Superintendent for investigation
Contractor staff Subcontractors	• Undertake works in accordance with this SWMP • Participate in awareness and environment training • Report and raise any issues that arise that may have an environmental impact • Implement and maintain all ESCP measures as directed by the Site Superintendent • Complete induction prior to commencing work • Maintain competencies relevant to activities • Understand risks associated with activities

- | | |
|--|--|
| | <ul style="list-style-type: none">• Stop work immediately if a particular activity is carried out in an unsatisfactory manner• Report environmental incidents and SWMP non-conformances to supervisor |
|--|--|

5. Environmental setting

5.1. Climate and rainfall

The nearest weather station to the Project, with a continuous record of monthly rainfall, evaporation, and temperature data, is located at the Williamtown Royal Australian Air Force Base (station number: 061078). Climatic statistics and patterns observed at this weather station over the past 81 years (from 1942 to present) were accessed through the Bureau of Meteorology's (BoM) online climate database and are presented in **Table 5** (BoM, 2025).

The Project is located within a 'temperate' climate zone which is characterised by warm summers and consistent rainfall over the calendar year. While rainfall is heavier during earlier months (from January to June), there are no 'dry' periods with zero rainfall. The region has a reliable rainfall all year round, with a total average rainfall of 1129.8 mm per annum (**Table 5**).

Temperatures near the coastline are moderated by the ocean's heat capacity, with moderate to warm summers and slightly dropping to cooler temperatures during the winter. Mean maximum and minimum temperatures range between 16.7-28.3 °C during summer months and 6.5-18.8 °C in winter months (**Table 5**). Remaining spring and autumn months experience milder temperatures, with averages ranging between 9.2-26.4 °C (**Table 5**).

Regional net water balance can be demonstrated through a comparison of rainfall versus evaporation. Since evaporation (average of 1734.2 mm per annum) exceeds total rainfall (average of 1129.8 mm per annum) by almost 35%, there is a water deficit across the region. Pools of water would experience net drying conditions in most months, from July to April, where evaporation exceeds rainfall. Net wetting conditions would only occur in the remaining two months of the year (May and June).



Table 5 Regional climatic statistics

Statistics	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean rainfall (mm)	100.3	117.6	127.2	111.6	110.8	122.1	75.4	71.5	60.2	75.6	82.6	76.0	1129.8
Highest rainfall (mm)	422.4	599.6	459.2	364.0	410.2	414.2	327.4	427.5	179.2	252.0	246.4	238.0	1793.7
Mean number of rain days	7.2	7.5	8.5	7.6	7.8	8.3	6.5	6.1	5.7	7.3	7.3	7.0	86.8
Mean evaporation (mm)	213.9	173.6	155.0	114.0	83.7	75.0	80.6	111.6	141.0	173.6	189.0	223.2	1734.2
Mean maximum (°C)	28.3	27.7	26.4	23.8	20.4	17.7	17.2	18.8	21.5	23.8	25.6	27.4	23.2
Mean minimum (°C)	18.2	18.2	16.5	13.3	10.1	8.0	6.5	6.9	9.2	12.0	14.5	16.7	12.5

5.2. Geology and soils

The Project Area is located within the northern part of the Sydney Basin, a major structural basin containing thick PermoTriassic sedimentary sequences extending north from Batemans Bay to Port Stephens. Two geological units are present within the Project Area:

- Tomago Coal Measures (comprising shale, mudstone, sandstone, coal, tuff and clay)
- Quaternary Alluvial Soils (comprising sand, gravel and silt).

These geological units formed in the Permian and Pleistocene Quaternary periods, respectively. The geology within these units typically comprises of sandstone and siltstone, with underlying coal seams.

The Project Area is predominantly situated across Beresfield and Tea Gardens (Variant a) soils, where Millers Forest soils are also present but to a lesser extent. The Beresfield soils occupy mostly the centre of the Project Area, while the Tea Gardens (Variant a) soils are present along the north and northeast boundary. Beresfield soils are an urban erosion hazard with moderate to high erodibility. These soils can suffer considerable erosion in disturbed areas if not appropriately managed. Tea Gardens soils are also susceptible to wind erosion hazards when on localised dry, sandy ridges. Erosion can be prevented with sufficient ground cover. Millers Forest soils are flat, low-lying floodplains of Holocene alluvial sediments in the southeast Hunter Region. These deep soils typically support cleared tall open-forest and are susceptible to compaction by stock in poorly drained areas.

The Project is on two Australian soil classifications:

- Dermosols (in the southwest and centre portions of the Project Area)
- Podosols (in the north and east portions of the Project Area).

Dermosols soils are heavy, sandy loam with a maximum clay content exceeding 15%, while Podosols have a clay field texture of 35% or more. Podosols often have open cracks throughout the year (unless conditions are moist) that are at least 5 millimetres (mm) wide and extend upward to the surface.

Following obtaining project approval, AGL commissioned WSP (2024) to complete a Preliminary Site Investigation (PSI) to provide an assessment of potential contaminating activities historically undertaken at the Site (including the presence and management of acid sulfate soils (ASS)). The outcomes of this study has been used to inform the preparation of this SWMP

5.3. Topography, drainage and flooding

The Project Area is located on a high point adjacent to the low-lying Hunter River. On average, the Project Area sits at approximately 15 metre (m) Australian Height Datum (AHD). The lowest point is located in the southwest of the Project Area, dropping to around 4-7 m AHD, while the south and southeast portion of the Project Area, including the transmission line easement, ranges between 10-16 m AHD.

The Project Area is located within the Hunter River catchment, which is a major coastal catchment covering a total area of 22,000 square kilometres (km²). The Hunter River is the closest river to the Project Area, located approximately 450 m northwest. The Hunter River flows in a south-westerly direction past the Site before heading in a south-easterly direction approximately 1 kilometre (km) downstream of the Site, travelling under the Hexham Bridge.

Figure 3 depicts the local drainage features across the Project Area and throughout the surrounding locality.

The natural ridgeline within the Site is a defining drainage feature, dividing the Site into a northern and southern half. In the northern half, surface water drains toward the northern corner, while in the southern half, surface water drains to the southern boundary of the Site.

Within the Project Area, drainage infrastructure is limited. On the Site, surface water runoff moves as shallow sheet flow intercepted by small drainage channels feeding into one of two small dams. When these dams are full, surface water continues to flow as sheet flow to the next drainage channel. Three major discharge points at the Site include (as shown on **Figure 3**):

- Northern discharge point
- Southwestern discharge point
- Southeastern discharge point.

The receiving environment of the surface water runoff from the above discharge points includes the Port Stephens LEP listed wetlands along the southern boundary of the Site or Hunter River flood plains, which eventually drains into the Hunter River.

The Site is not affected during the following modelled rain events: 10% annual exceedance probability (AEP), and 1% AEP. It is important to note, however, that the southern portion of the Site is impacted by flooding during the Probable Maximum Flood (PMF) event. Flooding of the southern portion of the Site can occur due to mainstream flooding, local overland flooding, or a combination of both. Each of these flooding scenarios is summarised in Section 5.7 of Appendix L (Surface Water and Flooding Assessment) of the Project EIS (AECOM, 2023b).

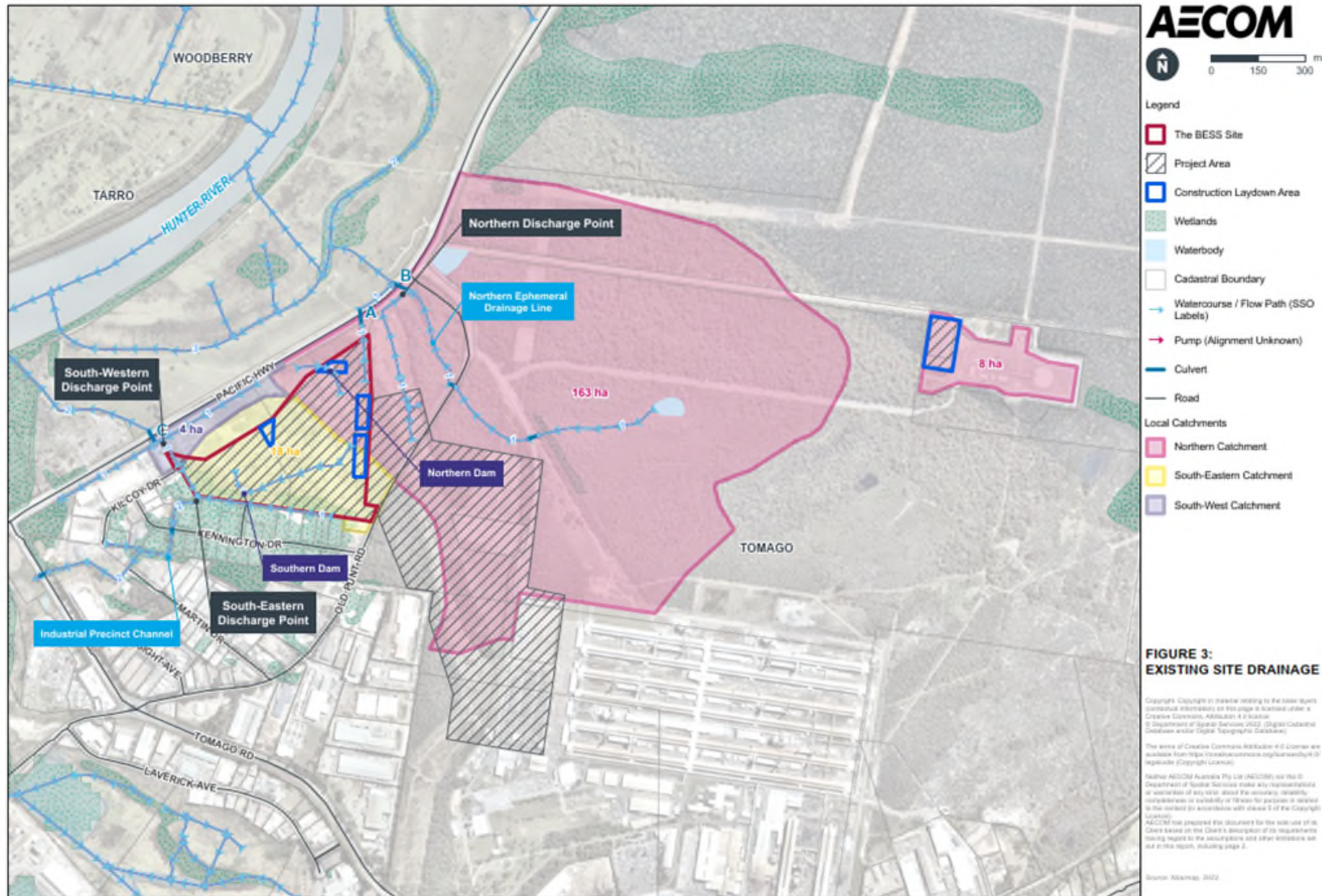


Figure 3 Existing site drainage

5.4. Sensitive receiving environments

There are no protected wetlands within the Project Area. The Hunter Wetlands National Park is located around 2 km south of the Site and is the largest wetland reserve within a single estuary across NSW, in the order of 62 km² (Swanson et al., 2017). It includes the Ramsar-listed Kooragang Nature Reserve, Wetlands Centre Australia and a large area of Coastal Wetlands. Additional areas of Coastal Wetland protected under Chapter 2 of the Resilience and Hazards SEPP are located around 500 m to the southwest of the Site. An area of Port Stephens LEP-listed wetlands is located adjacent to and along the southern boundary of the Site. All of these wetlands are interconnected by a network of tributaries across the Hunter River estuary. The northern portion of the Site drains to a natural valley and seep-away area that overlays the fringe of the Tomago Sandbeds aquifer, which is one of Hunter Water's protected Drinking Water Catchments.

The Hunter River estuarine system and its coastal wetlands, along with the Tomago Sandbeds aquifer, are considered sensitive surface and groundwater receptors that may potentially be affected by the Project without the implementation of mitigation and management measures.

A Preliminary Site Investigation conducted by WSP (WSP, 2024) concluded that the site presents a low risk of groundwater contamination, but a moderate to high risk of soil contamination. Existing contamination was identified on the site but is not considered a barrier to the approved Project provided that appropriate environmental management plans are implemented under the ongoing industrial land use scenario.

5.5. Water quality

The Hunter River has historically been subjected to significant industrial water pollution since the regulation of industrial waste did not exist before the 1970s. Untreated surface water discharge, including acids, phenols, ammonium, cyanide, and heavy metals were discharged into receiving environments as common practice. Stricter regulations were introduced post 1970 by the EPA to regulate industrial discharges from large premises.

An estuary wide water monitoring program intending to gain insight into industrial pollution and its impact on the health of the Lower Hunter River estuaries (Swanson et al., 2017) was reviewed to gain understanding of the baseline water quality of the Lower Hunter River. The water quality results from this program were compared against the Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand Water Quality Guidelines (ANZECC & ARMCANZ, 2000).

The main findings of the water monitoring program show that current background levels for chlorophyll-a, turbidity, ammonia, phosphate, and nitrate all generally exceed the recommended trigger values for the Lower Hunter River estuarine system. Water quality gradings also shows that the middle estuary generally has a 'fair' water quality rating, while water quality conditions are slightly more improved in the lower estuary, with a 'good' water quality rating.

The salinity of the lower Hunter River based on existing water quality tests are approximately 33 to 35 parts per thousand due to regular tidal interactions.

5.6. Potential impacts

Potential surface water and flooding impacts could arise if appropriate mitigation and management measures are not implemented. Those potential impacts could include the following:

- The quality of surface water runoff leaving the Site that could enter downstream waterways during both construction and operation could be adversely impacted by sediment laden runoff, transported pollutants, leaks or spills mixing with runoff, or exposed contaminated soils entering runoff.

- Potential flood impact due to the increase in impervious area during operation, or changes to flood storage and potential flood impact on the Project, such as flood overland flow obstructing temporary access tracks during the construction or the site access and evacuation routes during construction and operation.

Further detail relating to the potential surface water and flooding impacts of the Project can be sourced from Appendix L – Surface Water and Flooding Assessment Project EIS (AECOM, 2023b).

According to the soils and contamination impact assessment undertaken for the Project EIS, potential sediment and erosion-related impacts due to the construction of the Project include (AECOM, 2023a):

- Soil erosion risk due to vegetation removal, excavation, and earthworks on erosion-prone soils (Beresfield and Tea Gardens).
- Dust and sediment runoff may affect air and surface water quality if not managed.
- Soil tracking by vehicle movements could lead to offsite sedimentation impacts.
- Trenching for transmission lines may cause localised soil disturbance and erosion, though progressive excavation can reduce impact.
- Horizontal Directional Drilling (HDD) presents lower erosion risk but generates liquid drilling waste requiring disposal.
- Temporary laydown areas may contribute to erosion where vegetation clearing, and earthworks are required.
- Uncovered soil or stockpiles for extended periods could increase erosion risk if not treated with binders or covers.
- Post-construction rehabilitation (e.g. revegetation) will help stabilise soil and minimise long-term erosion

The disturbance of Acid Sulfate Soils during deep excavation or dewatering activities presents a low risk of contaminating surface and groundwater. However, if exposed soils are not properly rehabilitated, there remains a potential for acid generation. To mitigate the risk of exposure of acid sulfate soils, an acid sulfate soil management plan (ASSMP) will be prepared and implemented prior to construction (refer to **Appendix A**) No erosion or sedimentation impacts are expected during operation of the Project.

6. Surface water management plan

Environmental Strategies was engaged by AGL to undertake an Environmental Site Assessment (ESA) with the objective of identifying potential for contamination which could pre-exist across the Site as part of the sale and purchase agreement for the land (Environmental Strategies, 2018). The ESA comprised a site-specific Sampling, Analysis and Quality Plan (SAQP) for soils, sediments, groundwater and surface water which has been used to inform the high-level Surface Water Management Plan (SMP) for the Project detailed below, together with the monitoring programs detailed in Appendix L – Surface Water and Flooding Assessment Project EIS (AECOM, 2023b)..

6.1. Surface water management measures

The management measures provided in **Table 6** shall be implemented to minimise potential surface water impacts from the BESS Project.

Regular monitoring of surface water quality discharging from the Site during both construction and operation is to be completed to ensure mitigation and management measures are performing as intended. Operational responsibilities are split for the BESS Project, with AGL responsible for Balance of Plant (BoP) and the Project Contractor responsible for battery supply.



Table 6 Surface water management measures (AECOM, 2024)

Reference	Surface water management measures	Responsibility	Timing
SW-1	Construction phase monitoring will occur at the discharge points from the Site (Figure 4), to help satisfy regulatory requirements and identify if water quality issues are occurring as the result of construction works. Monitoring will occur upstream and downstream of the construction works. Monitoring will occur monthly and with sampling scheduled as soon as practical following rainfall events. As a minimum the following locations will be monitored during construction: • Northern ephemeral drainage line and southern industrial precinct channel, as designated 'background areas' • Sediment basins • Discharge points from the Site. The following parameters will be monitored: • pH • Total suspended solids (TSS) • Turbidity (NTU) • Electrical conductivity (EC) Dissolved oxygen (DO) • Oils and grease (visual assessment and/or laboratory sample). Note that TSS and NTU results should be collected and reviewed over time to allow trends to be identified and correlations between the parameters to be determined.	Project Contractor	Pre-construction, Construction
SW-2	The SWMP and ESCP will be developed in accordance with the Blue Book (Landcom, 2004). Measures to be included in these plans will include: • Designated vehicle access tracks to reduce the risk of soil disturbance onsite and vibration grids to prevent the transportation of sediments offsite	Project Contractor	Pre-construction, Construction



	- Minimising the area of exposed and unstable ground surfaces by resealing or revegetating surfaces as soon as practicable - If possible, clean water diversion drains to direct external, 'clean' surface water around the Site and prevent it from mixing with 'dirty' surface water runoff generated by the construction site. If not possible, then all water to be considered 'dirty' Early installation of necessary permanent drainage culverts, under access roads or wherever drainage paths are obstructed to prevent localised ponding/flooding across the site - If practicable locate stockpiles on localised high points, away from drainage paths, and protecting these stockpiles from rainfall with geofabric or other equivalent measures - Installation of sediment controls to slow down flow rates and capture and contain mobilised sediments and gross pollutants carried by Site runoff - Scour protection and energy dissipaters along steep channels and at discharge points - Sediment basins near both northern and southern discharge points to store, test and manage surface water from disturbed areas onsite - Where possible, reuse of water stored within sedimentation basins for dust suppression and irrigation purposes will be considered.		
SW-3	A Dewatering Procedure will be developed, if dewatering exceeds 3ML per annum, to control the process for removing water from excavations, storing this water, testing water (where applicable) and either releasing water into the environment or removing it from Site. If required, this procedure will be included in the CEMP and governed by the CEMP. The procedure will outline the testing methods, treatment options and water quality requirements to discharge the water into the receiving environment.	Project Contractor	Construction
SW-4	An Emergency Response Plan (ERP) will be prepared for the Project. The ERP will include procedures for the protection of personnel and infrastructure during extreme flood events, up to the PMF event. This plan will include: - Roles, responsibilities and communication procedures including emergency contacts, monitoring procedures for predicted rainfall and flood warnings - Requirements to monitor weather forecasts and flood warnings to enable flood preparedness procedures to be implemented ahead of potential flooding events - Site shutdown and flood preparedness procedures, to minimise harm to persons, plant and the environment. This will include:	Project AGL Contractor,	Construction, Operation (BoP), Operation (Battery)



	– Actions in the lead up to a potential flood – Actions at the time of a flood – Actions post-flood • Safe evacuation routes and procedures • Rescue procedures • Procedure for resuming operations • Reporting requirements and corrective actions.		
SW-5	Spill Response Procedures will be prepared to help avoid and manage spills of potentially hazardous substances. Separate procedures will be prepared for both construction and operational phases. Both procedures will include: • Training and required Personal Protective Equipment requirements • Measures for handling and storing chemicals and fuels • Details of a program of regular inspections for spills, leaks or damages to bunds/sumps • Spill response protocols • Reporting procedures Spill kits will be kept at the Site during construction and operation and close to worksites during the transmission connection installation.	Project AGL	Contractor, Construction, Operation (BoP), Operation (Battery)
SW-6	The Site will include dedicated re-fuelling areas with bunded fuel and liquid storage areas to minimise the risk of potential losses of containment.	Project Contractor	Construction
SW-7	Potentially contaminating substances such as chemicals, fuels, oils and caustic (drilling mud additive) will be handled and stored in accordance with relevant Australia Standards and the NSW Environment Protection Authority's (EPA's) Storing and Handling of Liquids: Environmental Protection – Participants Manual (DECC, 2007). All liquids, including diesel, will be stored on impermeable surfaces within bunded areas with sufficient capacity to contain 110% of the volume of liquid stored. This ensures that any potential leaks or spills are contained and do not enter the Site's stormwater management system. Inspection and, if required, maintenance will be undertaken after significant rainfall events.	Project Contractor	Construction



	Licensed contractors will be engaged to collect, transport and dispose of liquid hazardous materials, waste solvents, paints and hydrocarbon products to an appropriate offsite facility in accordance with relevant EPA guidelines.		
SW-8	Lined concrete washout areas will be established away from drainage paths and waterbodies. The washout capacity will be regularly checked before being used. The wash water will be left to evaporate, with dried concrete removed for recycling as required. Inspection of the capacity of the washout area and integrity of the liner will be undertaken prior to each use, and prior to rainfall events or site shut down. Wash water will be pumped out as required to maintain capacity or prior to rain events and disposed offsite as contaminated water.	Project Contractor	Construction
SW-9	If encountered, groundwater will be managed in accordance with groundwater provisions in the CEMP. Information and measures relating to groundwater within the CEMP will include: • Background groundwater quality and levels • Management of groundwater interference and dewatering • Groundwater discharge or reinjection criteria • Groundwater monitoring program during construction • Reporting requirements Protocol for the investigation, notification and mitigation of identified exceedances of the groundwater quality criteria.	Project Contractor	Construction
SW-10	Groundwater encountered and abstracted from the Tomago Sandbeds aquifer during the transmission connection construction works will be managed in line with statutory and environmental requirements.	Project Contractor	Construction
SW-11	Conduct refuelling, fuel decanting and vehicle maintenance in compounds or sealed areas, where possible. If field refuelling is necessary, portable bunding and/or absorbent material to be used to minimise the risk of spills infiltrating to groundwater.	Project Contractor	Construction
SW-12	If under-boring or Horizontal Directional Drilling (HDD) is required for the transmission connections, a Drilling Fluid Management Plan will be produced as part of the SWMP, to guide the environmental management of the HDD work. The drilling will be undertaken by an appropriately trained and experienced person. Should construction work intercept groundwater, the make-up of the drilling fluid will be determined by an appropriately qualified drilling fluid engineer, based on local groundwater and soil geochemistry so that it forms a suitable wall cake to minimise fluid loss and exchange with local groundwater.	Project Contractor	Construction



	Inert or non-contaminating additives for drilling fluids will be used. Drilling fluid additives used will be certified for use in potable aquifers (certified to American National Standards Institute (ANSI)/NSF International (NSF) STD 60 Certified well Drilling Aids and well Sealants). The drilling fluid additives will be monitored by the drilling fluid engineer and driller to remain chemically stable and volumetrically balanced with the progression of the hole and, if necessary, modified to maintain stability and minimise interaction with the groundwater.		
SW-13	Transformers will be designed in line with the relevant Australian Standards for power transformers and located within impermeable bunds which are designed to contain 110% of the volume of the oil in the transformer.	Project AGL	Contractor, Pre-construction, Construction, Operation (BoP)
SW-14	A Surface Water Management Plan (SWMP) will be prepared as part of the Operational Environmental Management Plan (OEMP). It will include details on the required surface water management measures and monitoring requirements needed to manage surface water runoff within the Site and control the quality and quantity of surface water discharge into receiving environments. The plan will detail the final stormwater management approach and treatment train for the Project including the internal drainage system, bioretention system, interceptors, gross pollutant traps, scour protection and outlet control measures. The plan will include the water quality monitoring procedures to ensure the above measures can achieve the required level of treatment. The SWMP will include the requirement for contaminated waters to be disposed of at an appropriately licensed facility. Runoff generated during maintenance/cleaning activities, along with oily or contaminated water, will be trucked offsite and disposed of at an appropriate liquid waste facility.	AGL	Operation (BoP)
SW-15	The On-Site Detention (OSD) system will be designed to ensure no increase in peak flow between the pre-development and the post-development conditions of the existing main outlets. The Project will not alter the flows discharging from the Site.	AGL	Operation (BoP)
SW-16	AGL lodged a section 50 compliance certificate with Hunter Water to confirm a secure water supply in February 2024. Hunter Water provided a letter detailing requirements to be met before a Compliance Certificate can be issued (refer to Appendix B). The requirements for the Compliance Certificate must be satisfied prior to the commencement of any construction or operational activities necessitating water to the Site.	AGL	Construction, Operation (BoP)
SW-17	A Wastewater Management Report will be prepared by a suitably qualified wastewater or environmental consultant in accordance with PSC Onsite wastewater Development Assessment Framework requirements for high hazards sites.	AGL	Operation (BoP)

6.1.1. Drilling Fluid Management Plan

As required by measure SW-12 in Table 6, where under-boring or HDD is undertaken for the transmission connections, a Drilling Fluid Management Plan will be prepared and implemented as part of this SWMP to guide the environmental management of the HDD works. HDD has been selected as the method for installing the high voltage (HV) cables beneath Old Punt Road as part of the transmission line connecting the Tomago BESS to the Transgrid 132 kV substation, and the Drilling Fluid Management Plan prepared for this work scope is included at **Appendix F** and forms part of this Plan.

6.2. Construction water monitoring program

During construction, surface water monitoring shall be undertaken at the northern ephemeral drainage line and southern industrial precinct channel, as designated 'background areas', the sediment basins, and the northern, south-western and south-eastern discharge points, depicted on **Figure 4**. Surface water monitoring during construction of the Tomago BESS is to be undertaken in accordance with the sampling techniques and methods detailed in AS/NZS 5667.1:1998 Water Quality – Sampling.

In all cases where sampling points are relocated or unable to be sampled, these changes would be discussed in the relevant monitoring report. This ensures the Contractor is able to achieve the objectives of their sampling program, including frequency and intent and ensure surface water quality impacts are continued to be monitored without delay.

The following parameters are to be monitored during construction of the Project:

- pH
- Total suspended solids (TSS)
- Turbidity (Nephelometric Turbidity Unit) (NTU)
- Electrical conductivity (EC)
- Dissolved oxygen (DO)
- Oils and grease (visual assessment and/or laboratory sample)

During the construction of the Project, water quality monitoring shall be carried out monthly and as soon as practical following rainfall events as part of an environmental site inspections, whilst significant rainfall events shall be monitored each quarter (refer to **Table 11**). The environmental site inspection will be the responsibility of the Project Contractor, and comprise inspection of ERSER control measures, disturbed areas and stockpiles, sealed roads, and local water quality (**Table 11**). For safety reasons, significant rain event sampling will be undertaken post peak flows, when flows are constant, and sampling locations can be safely accessed (**Table 11**).

Significant rainfall events refer to times when runoff from the Site is entering the receiving waters through onsite sedimentation controls or when sedimentation basins require maintenance discharge to restore their design capacity. For predicted events, a significant rainfall event is defined as 20 mm/day.

Provided that monitoring can demonstrate that these parameters remain within the trigger levels for the Project, it is expected that the mitigation and management measures proposed for the construction phase are appropriate. **Section 6.6** outlines actions to be taken in the event monitoring results in exceedance of the trigger values, as part of a Trigger Action Response Plan (TARP).

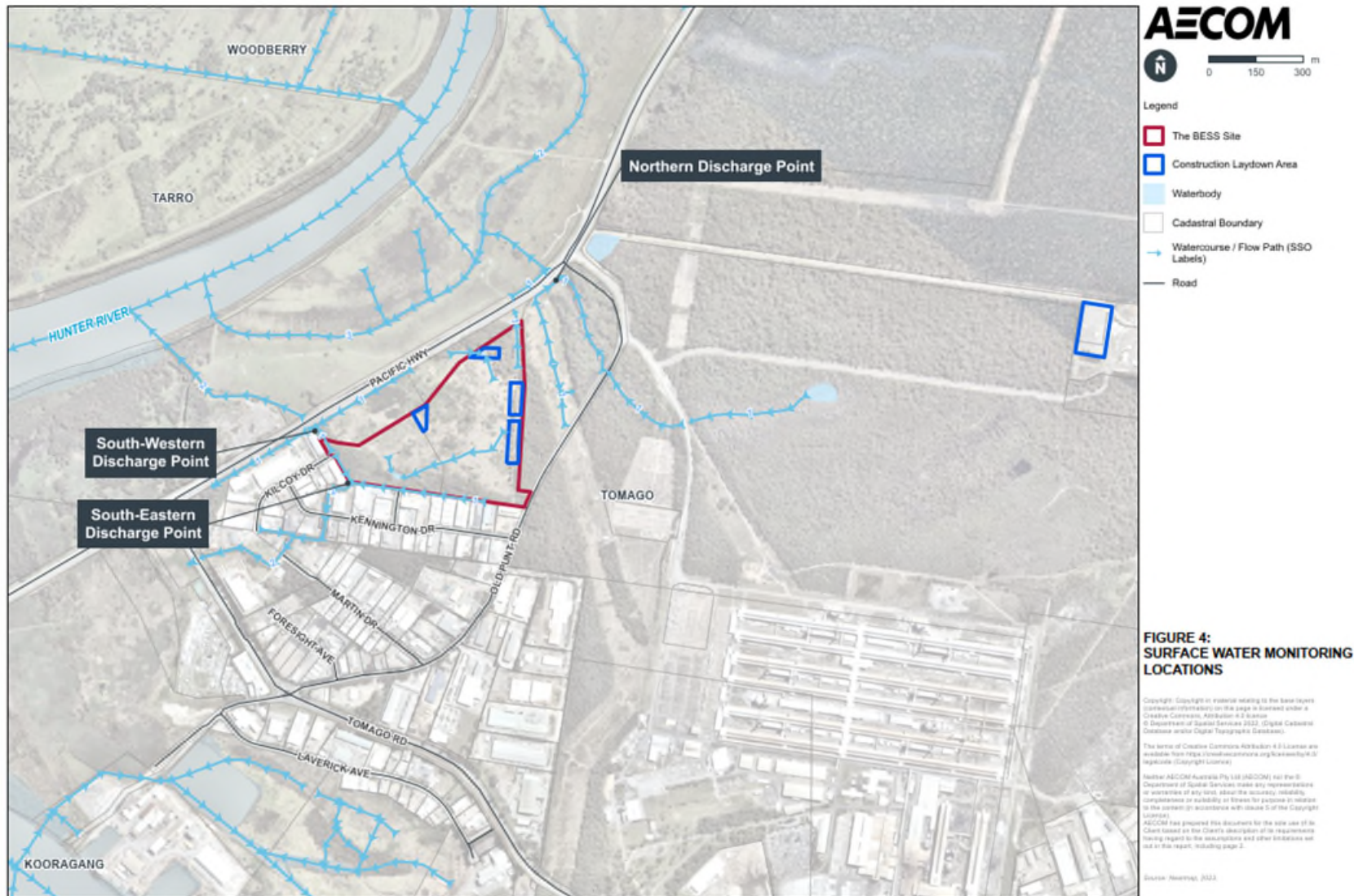


Figure 4 Surface water monitoring locations

6.3. Operational water monitoring program

The requirements for operational phase monitoring should be confirmed based on a review of the construction phase monitoring data.

Operational phase monitoring would be conducted at the stormwater control measures (e.g., bioretention or OSD basins) to avoid or manage potential impacts on the receiving waters. Regular water quality testing should initially be carried out at the same monitoring locations and for the same parameters utilised during construction (refer to **Section 6.1.1**). Quarterly monitoring for the first 12 months of operation and then if results demonstrate that the Site has stabilised, the sampling frequency and sampling locations may be reviewed and reduced or discontinued.

Regular inspection, monitoring and maintenance of permanent surface water measures is detailed in **Section 7.2**, and would ensure systems are not blocked and are operating as intended, to prevent ponded waters across the Site, flooding of the Site, and/or environmental degradation from uncontrolled releases.

6.4. Monitoring records

Records of water quality monitoring shall be documented by means of a quality-controlled field sheet. All field notes shall be retained onsite with Project documentation. The following records must be kept in respect of any samples required to be collected for the water quality monitoring:

- Sample location ID
- Name(s) of sampler/s
- Date and time of sampling
- Observations of the sampled water (e.g., colour, turbidity, odour, sheen, etc.)

6.5. Assessment criteria

6.5.1. Performance measures

The effectiveness of the water management actions implemented during the Project can be assessed based on the Key Performance Indicators (KPIs) set for each performance measure in **Table 7**.

Table 7 Construction Key Performance Indicators

Feature	Performance Measure	KPI
Water management – general	• Minimise the use of clean and potable water on the site. • Maximise water recycling, reuse and sharing opportunities. • Design, install, operate and maintain water management systems in a proper and efficient manner. Minimise risks to the receiving environment downstream water users.	• Water use records are reviewed to maximise water recycling opportunities. • ERSed controls are installed, effective and maintained (Appendix A). • Monitoring program is implemented to identify water quality impacts or exceedances.
ERSed control works	Establish ERSed controls in accordance with the Blue Book.	ERSed controls are installed as per the ESCP (Appendix A) and maintained in good working order.

6.5.2. Surface water impact assessment criteria

Surface water impact assessment criteria have been developed for sampling parameters based on the Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand Water Quality Guidelines (ANZECC & ARMCANZ, 2000).

ANZECC Guidelines define lowland freshwaters as those below 150 m AHD. Given, the section of the Hunter River adjacent to the Site is below 150 m AHD, lowland river trigger values have been considered for the purposes of this monitoring plan (ANZECC & ARMCANZ, 2000).

Table 8 provides the surface water impact assessment criteria which will be used as trigger values for assessing surface water impacts during the Project. Site-specific thresholds may be identified in the future based on review of collected data.

Section 6.6 outlines actions to be taken in the event monitoring results in exceedance of the trigger values, as part of a Trigger Action Response Plan (TARP).

Table 8 Surface water impact assessment criteria

Water quality parameter	Unit	Numerical criteria (trigger values)
pH	N/A	6.5-8.5 ¹
Total suspended solids (TSS)	mg/L	Ranges for turbidity and TSS are similar, and as such, only turbidity was reported in ANZECC 2000.
Turbidity	NTU	6-50 ¹
Salinity (Electrical conductivity (EC))	µS/cm	125-2200 ¹
Dissolved oxygen (DO)	Percentage saturation	85-110 ¹
Oils and grease (including petrochemicals)	µg/L	<300 (freshwater) ²

¹ Lowland river trigger values from southeast Australia (ANZECC & ARMCANZ, 2000).

² Toxicant guidelines for the protection of aquaculture species (ANZECC & ARMCANZ, 2000).

6.6. Trigger action response plan

The Trigger Action Response Plan (TARP) for the Project is provided in **Table 6.4**. The objective of the TARP is to present a set of procedures to be followed and actions to be implemented should an exceedance of the performance measures (**Section 6.5.1**) or assessment criteria (**Section 6.5.1**) be identified. The TARP outlines different levels of notification (i.e., internal or external) and actions required to mitigate, repair or offset adverse water quality impacts that may occur as a result of the construction phase of the Project.

Exceeding the limits specified in **Table 8** for discharges from the site's erosion and sediment control basins is permitted where the discharge (overtopping scenario only) occurs solely as a result of measured rainfall at the premises exceeding the design rainfall depth value (5-day rainfall depth as outlined in the ESCP), and the sediment basins and other erosion and sediment controls identified in the ESCP have been designed, constructed, operated, and maintained in accordance with the Blue Book and the ESCP (**Appendix A**).

Table 9 Trigger Action Response Plan

Trigger	Action	Response	Plan
Water monitoring indicates turbidity is greater than the trigger value; or sediment or oil and grease are visible at the downstream location	• Notify Site Supervisor • Contractor to notify AGL Environment Advisor • Inspect site to determine if there is an immediate risk to the environment (eg sediment laden water leaving site), if so, contain contaminated water to prevent further environmental harm. • Confirm field monitoring results through the collection of samples for laboratory analysis • Carry out assessment of exceedance cause as per Section 6.6.1.	• If following the review, it is determined that the change in water quality may relate to the construction works, the following steps should be undertaken: – Initiate an investigation to review the ERSED control measures – If required, implement corrective actions or install additional ERSED control measures identify corrective actions or additional control measures to be implemented where relevant to mitigate potential water quality impacts – Conclude that an incident has occurred and undertake relevant actions as outlined in the EMS, including notification as required by the Development Consent and POEO Act.	• A summary of monitoring results, investigations and corrective actions to be retained onsite with project documentation • Record of incident reporting and notifications to be maintained onsite with project documentation.
Water monitoring indicates exceedance of surface water impact assessment criteria specified in Section 6.5.2	• Contractor to notify AGL Environment Advisor • Carry out assessment of exceedances as per Section 6.6.1 to:	• If following the review, it is determined that the change in water quality may relate to the construction works, the following steps should be undertaken: – Initiate an investigation to review the ERSED control measures	• A summary of monitoring results, investigations, corrective actions and notification to regulatory authorities to be retained onsite with project documentation



	– Initiate an investigation to determine the cause of the exceedance – Conduct additional monitoring to confirm water quality parameters – Identify corrective actions where relevant	– If required, implement corrective actions or install additional ERSED control measures – Identify corrective actions or additional control measures to be implemented where relevant to mitigate potential water quality impacts – Conclude that an incident has occurred and undertake relevant actions as outlined in the EMS, including notification to relevant stakeholders.	• If required, amend the SWMP (and related plans) to reflect changes to the methodology • Record of incident reporting and notifications to be maintained onsite with project documentation.
Forecasts of a significant rain event (greater than 20 mm predicted over a 24-hour period)	• Ensure ERSED controls are installed correctly and maintained prior to the event	• Inadequacies in ERSED control measures are to be rectified as soon as possible	• Site inspection checklist to be used to document inspections of ERSED controls and action undertaken
Uncontrolled activities ¹ related to AGL's operations	• Contractor to notify AGL Environmental Advisor • A non-conformance may have occurred where activities were undertaken without sufficient controls in accordance with the Detailed ESCP but, due to lack of rainfall for example, potential or actual impact did not occur.	• If required, implement corrective actions to address the investigation findings • Continue water quality monitoring to assess the effectiveness of corrective actions • Follow any written reporting requirements required by the Development Consent and POEO Act	• A summary of monitoring results, investigations, corrective actions and notification to regulatory authorities to be retained onsite with project documentation • Record of incident reporting and notifications to be maintained onsite with project documentation • If required, amend the SWMP (and related plans) to reflect changes to the methodology

- A non-conformance and incident may have occurred where activities were undertaken without sufficient controls in place and there was potential for impact.
- Inspect site to determine if there is an immediate risk to the environment (eg sediment-laden water leaving site), if so, contain contaminated water to prevent further environmental harm
- Determine whether a non-conformance and/or incident may have occurred, in which event, investigation to determine the cause of the incident to be undertaken
- Conduct further sampling immediately to confirm water quality parameters. Sampling to be undertaken at locations nominated in this SWMP, as well as representative points upstream of each discharge point and the construction site.

^{1.} Uncontrolled activities are activities resulting in actual or potential environmental harm due to the failure, absence or ineffective implementation of erosion and sediment control measures.

6.6.1. Assessment of exceedance results

Results from samples taken as part of the construction monitoring program will be compared with the performance criteria (**Table 8**) and with previous results and will be reported in the construction compliance monitoring reports as detailed in **Section 6.4**. Where water parameters indicate exceedance of surface water impact assessment criteria specified in **Section 6.5.2**, the following steps as outlined in **Table 10** will be applied when reviewing and responding to the surface water quality exceedance to determine whether the exceedance may be attributable to Project activities and whether further investigation or corrective actions are required.

Table 10 Water parameter exceedance step based approach

Step	Action
1	In the event of an exceedance of any water parameter trigger values, a review will be initiated to determine the significance of the exceedance and the possible causes, and determine whether the exceedance may relate to the construction activities. Samples must be undertaken at an upstream representative sampling point for comparison as soon as practicable after downstream monitoring. If upstream samples are taken longer than 1 day after downstream samples, updated downstream samples may be required for effective comparison.
2	A comparison will be undertaken at a representative upstream location. For the parameters that exceed the trigger values, an assessment will be undertaken comparing the results of up and down stream sampling locations. Further investigation is deemed necessary under the following circumstances: 1. Where the downstream value is greater than 2x the upstream value for any parameter (other than pH/TSS/NTU) that exceeds the adopted trigger values upstream of the project site (refer to Table 6), step 3 would be followed. 2. Where the downstream value exceeds the adopted trigger values (refer to Table 6) and upstream value does not exceed the adopted trigger value of the project site, step 3 would be followed. Where the downstream water quality results are consistent with, or less than the upstream water quality results, no further action would be taken.
3	Where an exceedance of a trigger value is identified, the assessment process of the TARP is followed. If the exceedance is determined to be attributable to Project activities, the event will be managed as an environmental incident in accordance with the requirements of Section 7.4. Corrective and preventative actions will be identified and implemented as part of that process.

7. Monitoring, compliance and reporting

7.1. Water use and disposal

The Contractor will be required to maintain records of water use and disposal, along with records of any measures implemented to reduce water use.

7.2. Environmental inspection

An environmental inspection protocol for Project approved disturbance activities is proposed as set out in **Table 11**.

Table 11 Soil and water management monitoring plan

Monitoring activity	Frequency	Responsibility	Records
ERSED controls effectively installed	Pre-construction	Contractor/AGL	Inspection checklist
ERSED controls ongoing condition	Daily during active clearing activities	Contractor/AGL	- General observations - Inspection checklist
Rainfall and weather forecasts	Daily	Contractor	- General observations - Inspection checklist
Environmental site inspection: - Inspection of ERSED control measures – clean, adjust and replace as required - Inspection of disturbed areas and stockpiles – ensure dust and sediment control measures are active - Inspection of sealed roads – identify any sediment/soil which has been transferred offsite - Inspection water quality at identified monitoring locations for exceedance of surface water impact assessment criteria (Section 6.5.2)	Weekly	Contractor	Inspection checklist
	Monthly and as soon as possible after a rainfall event	Contractor	- Quality-controlled field sheet (water quality monitoring) - Inspection checklist
Significant rainfall event inspection: - Inspection of ERSED controls - Inspection of disturbed areas and stockpiles - Inspection of sealed roads - Inspection local water quality	As required	Contractor	- Inspection checklist - Quality-controlled field sheet (water quality monitoring)

The Contractor will establish and maintain a system of records that provide full documentation of all inspections. Records are to include the following:

- Photos of each site
- Document the date the control is installed and removed

Document checks and any issues with each control

7.3. Unexpected finds

An unexpected finds procedure for contamination has been developed for the Project. The unexpected finds procedure details the actions to be taken when potential contaminated soil and/ or “unexpected” material is encountered during excavation and construction works. A copy of this plan has been provided in **Appendix D**.

7.4. Incidents, complaints and non-compliance reporting

Incidents, complaints and non-compliance reporting will be managed in accordance with the procedures outlined in the EMS (AECOM, 2025) and in accordance with the conditions of the Development Consent for the Project. As outlined in Section 7.4, information on how complaints can be made, the complaints register, and compliance reports will also be publicly available on the Project website in accordance with Condition C14.

7.5. Community consultation and public engagement

In accordance with Condition C14, relevant Project information will be made publicly available on the Project website and kept up to date. This includes:

- The EIS
- The final layout plans for the development
- Current statutory approvals for the development
- Approved strategies, plans, or programs required under the conditions of this consent (other than the Fire Safety Study and Emergency Plan)
- The proposed staging plans for the development if the construction, operation, or decommissioning of the development is to be staged
- How complaints about the development can be made
- The complaints register
- Compliance reports
- Any independent environmental audit prepared in accordance with Condition C13, and the Applicant's response to the recommendations in any audit
- Any other matter required by the Planning Secretary

8. Continual improvement and review

The SWMP will be reviewed and updated as necessary during the lifespan of the Project to allow new or changing environmental risks relating to the works to be addressed. The Environment Advisor will ensure that feedback systems will be in place for the duration of the Project.

In accordance with condition C2 of the Development Consent, AGL shall:

- update the SWMP to the satisfaction of the Planning Secretary prior to carrying out any upgrading or decommissioning activities on site; and
- review the SWMP to the satisfaction of the Planning Secretary within 1 month of the:
 - (i) submission of an incident report under condition C10 of the Development Consent;
 - (ii) submission of an audit report under condition C13 of Development Consent; or
 - (iii) any modification to the conditions of the Development Consent.

Subsequent revisions of this SWMP shall have a log that summarises changes from the previous version of the SWMP (refer to **Appendix E**). The current updates to this SWMP have been undertaken, including:

- DPHI comments on the SWMP were addressed in August 2025.
- Additional comments from DPHI were addressed in September 2025.
- Surface water monitoring locations were amended due to construction works on the M1 Pacific Highway in April 2026.
- The SWMP was amended in July 2026 in response to findings and recommendations from an independent audit conducted in May 2026.

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Appendix A

Erosion and Sediment Control Plan

Erosion and Sediment Control Plan

This Concept Erosion and Sediment Control Plan (ESCP) aims to ensure appropriate procedures are in place to minimise soil erosion and potential sediment discharge to downstream waters during construction. The Concept ESCP provides a framework for the Contractor to prepare Detailed ESCP(s). The concept ESCP layout is shown below in **Figure 5-A**. As the Site will be changing during the construction phase, the Contractor must proactively manage and update the Detailed ESCP(s) to incorporate suggested treatments on a case-by-case basis. Detailed ESCPs will be a standalone document and evolve with the specific activities on site. They shall be prepared and complied with for all relevant work components of the Project.

Managing Urban Stormwater: Soils and Construction – Volume 1 (Landcom, 2004) and the *Managing Urban Stormwater: Soils and Construction – Volume 2A manual* (Landcom, 2008) are to be referenced as the comprehensive guidelines for use in construction to ensure all industries comply with appropriate stormwater management practices.

The Hunter Wetlands National Park lies approximately 2 km south of the Site and encompasses the RAMSAR-listed Kooragang Nature Reserve. Coastal wetlands protected under the Resilience and Hazards SEPP exist 500 m southwest of the Site, whilst LEP-listed wetlands occur immediately adjacent to the Site's southern boundary. The proximity of these wetlands to the Project increases the risk of sediment-laden runoff discharged from the Site, directly impacting mapped wetland areas. The site's northern portion drains to a natural valley and seep-away area that overlays the fringe of the Tomago Sandbeds aquifer, which necessitates informed erosion and sediment (ERSED) management throughout the duration of the Project.

The Project is anticipated to impact the existing soil and water environment at the Site through the following construction activities (AECOM, 2023a):

- Soil erosion risk due to vegetation removal, excavation, and earthworks on erosion-prone soils (Beresfield and Tea Gardens)
- Dust and sediment runoff may affect air and surface water quality if not managed
- Soil tracking by vehicle movements could lead to offsite sedimentation impacts
- Trenching for transmission lines may cause localised soil disturbance and erosion, though progressive excavation can reduce impact
- Horizontal Directional Drilling (HDD) presents a lower erosion risk but generates liquid drilling waste requiring disposal
- Temporary laydown areas may contribute to erosion where vegetation clearing and earthworks are required.
- Uncovered soil or stockpiles for extended periods could increase erosion risk if not treated with binders or covers
- Post-construction rehabilitation (e.g. revegetation) will help stabilise soil and minimise long-term erosion.
- Installation of battery storage infrastructure and ancillary works (e.g. fencing, access gates, conduits) may cause localised soil disturbance and erosion if not appropriately managed.

No ERSED impacts are expected during Project operation.

The following control measures are proposed as part of the Concept ESCP and are subject to change based on detailed facility design, where appropriate or practical:

- If practical stockpiles and other loose materials shall be located at localised high points within the indicative laydown area along the eastern boundary of the Site, away from drainage paths and protected from rainfall with geofabric or other equivalent measures. Where soil or ground is to be left exposed, a soil binder would be used to help prevent water and wind-induced erosion.

Where soil or ground is left exposed for more than three days, a soil binder will be used to prevent water and wind induced erosion. Binders or covers would be used on soil stockpiles where these stockpiles are to be in situ for more than 24 hours. If the stockpile is going to be inactive for more than 2 weeks. Stockpiles are to be implemented for the purpose of segregating spoil and preventing cross-contamination of clean spoil (virgin excavated natural material (VENM) or excavated natural material (ENM)) with potentially contaminated soil. To further reduce the risk of leaching and protect underlying soils and groundwater, impermeable barriers (e.g. HDPE liners or equivalent) shall be placed beneath contaminated soil stockpiles or construction materials where there is potential for contamination. All stockpiles should be stabilised if they are in place for more than 10 days (refer to Standard Drawing (SD) 4-1 the Blue Book).

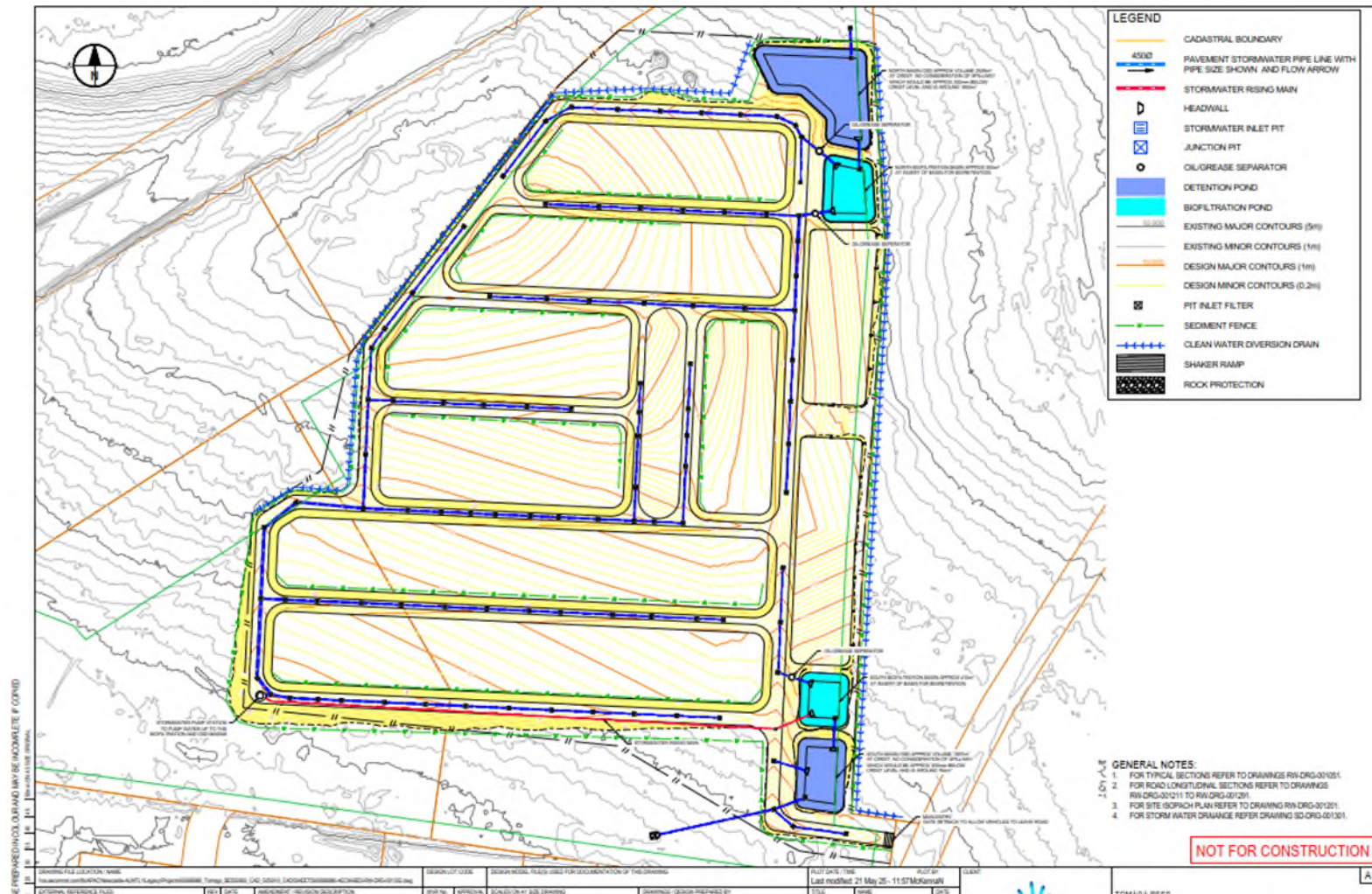
- Designated vehicle access tracks and a stabilised site access (refer to SD 6-8 the Blue Book) should be established to reduce the risk of soil disturbance. Delineation of disturbance areas will be clearly marked with flagging or signage to avoid accidental disturbance of adjacent vegetation. A shaker ramp is to be installed at the main vehicular entrance (located in the southwest corner of the Site), to reduce the risk of sediment being tracked on- and offsite.
- Clean water diversion drains situated along the eastern and western boundaries of the Site direct external, 'clean' surface water southward and away from the battery enclosure locations and laydown areas. These diversion drains shall prevent 'clean' surface water from mixing with 'dirty' surface water runoff, which is diverted into biofiltration and on site detention (OSD) basins along the eastern boundary of the Site via a pavement stormwater pipeline. Water stored within OSD basins, located at the northeastern and southeastern corners of the Site, shall be reused for dust suppression and irrigation purposes.
- Bare ground and exposed soils across the Site would be rehabilitated and returned to pre-development conditions as far as practicable and/or would be landscaped. Recontouring of disturbed areas will be undertaken to return the surface to its natural topography and drainage channels where possible, to ensure surface and ground water flows are consistent with pre-development hydrology. These measures will prevent unintended water diversion offsite reducing the risk of erosion, sedimentation, and localised flooding. If surface disturbance occurs in an area with potential for acid sulfate soils, the site-specific management actions detailed in the Acid Sulfate Soil Management Plan shall be carried out.
- Sediment fencing (refer to SD 6-8 in the Blue Book) is to be installed around each of the battery enclosure locations and laydown areas, ancillary infrastructure as well as around the perimeter of the Site. This shall slow down the flow rate of stormwater on the Site and ensure the capture and containment of mobilised sediments. Scour protection and energy dissipaters will be installed at steep drainage channels, discharge points and around battery infrastructure and security fencing where concentrated flows may occur across the Site to reduce erosion risks, where appropriate and practical. OSD basins will be constructed adjacent to the northern and southern discharge points to allow for the storage, testing, and treatment of water from disturbed areas onsite, and capture excess flows from hard surface battery infrastructure, ensuring no increase in offsite water diversion. The sediment basin components of the OSD basins will be designed in accordance with Managing Urban Stormwater: Soils and Construction (Landcom, 2004) for Type D and F soils. Sediment basins will be sized using the applicable Newcastle 80th percentile 5-day rainfall design criteria (refer to Table 6.3a in the Blue Book) and will be managed to achieve a discharge quality target of less than 50 mg/L of TSS prior to discharge. Water captured within the basins will be reused onsite where practicable, including for dust suppression and irrigation purposes. OSD basins and their outlet should be designed to be stable in the peak flow from at least the 10-year Average Recurrence Interval (ARI) time of concentration event (refer to Section 9.3.2 of the Blue Book). Oil and grease separators shall be implemented along the pavement stormwater pipeline leading into the biofiltration and OSD basins located at the northeast and southeast corners of the Site.
- Sediment basins will be inspected regularly and following significant rainfall events. Accumulated sediment will be removed as required to maintain available storage capacity and basin performance. Where natural settlement is insufficient to achieve required discharge water quality targets within the nominated

management period, appropriate coagulants or flocculants may be used in accordance with the Blue Book and relevant environmental management procedures. Removed sediment will be disposed of in a manner that prevents re-entry into drainage lines, waterways, wetlands or disturbed construction areas.

- A staged throttle outlet will be incorporated above the permanent water level on each OSD basin to provide a detention and retention function, allowing contaminants to be intercepted and removed from the basin in the event of fire damage to the battery cells. Noting the inclusion of the pump station was initially stated, based on the preliminary bulk earthworks plan, which required a rising main to convey water from the low point (southwest) of the site to drain to the detention basins (located up gradient). If the detailed design can achieve gravity feed to the basins and WSUD devices prior to discharging from site, then this can be removed.

All erosion and sediment control measures described in this Concept ESCP apply to the full scope of construction activities, including battery storage infrastructure and ancillary works such as security fencing, hardstands, and access gates. These elements will be designed and managed to comply with Planning Condition B26 and relevant Landcom guidelines, with final details to be confirmed in the Detailed ESCP(s). In accordance with Section 8.0 of the Blue Book, all ERSed control structures shall be:

- Maintained to hold their design capacity through inspection and removal of accumulated sediment.
- Inspected prior to forecasted significant rainfall events, the design event and following major rainfall events to confirm available storage capacity, structural integrity and operational performance. Where practicable, captured water may be discharged in accordance with project water quality requirements or reused onsite to maximise available storage before significant rainfall events.
- Designed and maintained such that flows exceeding sediment basin design capacity are conveyed via designated overflow and spillway structures. Following any overtopping or exceedance event, erosion and sediment controls, basin embankments, outlets, spillways and downstream drainage paths shall be inspected and any damage, scour, sediment release or reduction in basin capacity rectified as soon as practicable.
- Maintained in good order by staff, contractors and subcontractors, with damaged sections replaced as appropriate.
- Removed when no longer required in a way that complies with:
 - safety standards;
 - consent conditions;
 - requirements that sediment and other materials are disposed in an approved manner; or sound construction principals.



Appendix **B**

Hunter Water Development Requirements Letter



Hunter Water Corporation
ABN 46 228 513 446

PO Box 5171
HRMC NSW 2310
36 Honeysuckle Dr
NEWCASTLE NSW 2300
1300 657 657 (T)
enquiries@hunterwater.com.au
hunterwater.com.au

28 February 2024

AGL MACQUARIE PTY LTD
C/- AECOM Australia Pty Ltd
6 STEWART AVE
NEWCASTLE WEST NSW 2302

Requirements for your Building Services / Development Application

Application service:	Development Assessment (Section 50)
Property address:	6 OLD PUNT RD, TOMAGO NSW 2322
Lot & Plan number:	Lot 5 DP 1286735, Lot 6 DP 1286735
Development description:	Development of Battery Energy Storage System with Ancillary Workshop and Office Amenities
Hunter Water reference:	2024-180

We have assessed your application for the above development and include the following requirements. All requirements will need to be met before a Compliance Certificate will be issued.

Financial Requirements

A Developer Charge is required to be paid

We are phasing in developer charges for water and wastewater services from 1 July 2023 ([find out more here](#)). We have detailed what this transition looks like for your development in each financial year in your calculation below.

Developer charges must be paid to Hunter Water prior to connecting to our networks. The estimated total developer charge for your proposed development appears in the table below. Further information on how developer charges are calculated [is here](#).

Please note, payment of the developer charge can only be made when:

- All requirements of this letter have been met; and
- A valid State Significant Development consent, DA consent or Complying Development consent has been provided to us; and
- In the case of water or sewer works being required, once these works have been completed and a finalisation package has been submitted by your Accredited Design Consultant.

Once you have met all requirements, you will need to contact us and request a final calculation of your developer charge (CPI and phasing adjustment). We will issue an invoice for the final payment amount.

We require more information from you

At the time of assessment, we have been unable to determine what the system utilisation will be for your proposed development and therefore you will be required to engage the services of a [Hydraulic Design Consultant](#) to estimate the **annual water consumption** and anticipated **meter sizing** for your development. Once you have these details you will need to provide a **Hydraulic Assessment Summary Report** to us in order for us to calculate the developer charge applicable for your development. You can upload this Report directly to your Property Self Service Portal.

Hunter Water understands that the proposed development will not connect to the sewer network. This will need to be confirmed as part of the **Hydraulic Assessment Summary Report** outlined above.

Administrative & Document Requirements

Development Consent

To confirm that the application you have submitted to us is consistent with the development consent, you will need to upload a copy of either your **State Significant Development consent** from the NSW government, **DA consent** from Council or your **Complying Development Consent** from your private certifier to your Property Self Service Portal.

Create water services easement

The plans provided with your application indicate that the primary access point to the development site will be from Old Punt Rd and over 6B Old Punt Rd (Lot 28 DP 1286735). A title search conducted by Hunter Water indicates that 6B Old Punt Rd is owned by Transport for NSW.

Unless you provide written evidence from Transport for NSW indicating 6B Old Punt Rd is part of the road corridor, you will need your registered surveyor to create an easement for water services in order to provide the lot(s) with access to a watermain on Old Punt Rd. You need to upload us a copy of the easement terms (88B) and the final plan of subdivision to the Property Self Service Portal.

Advice Specific to your Development

Driveway over watermain

Your driveway construction may impact our assets. Any work associated with altering our asset(s) or any damage caused will be at your cost. Your constructors should be careful when accessing the site to ensure no damage is caused to our Assets. Refer to our [website](#) for more information.

Connection Requirements

Hydraulics

Submit an application for a hydraulic design assessment of internal water and sewerage services for this development, including rainwater tanks and any alternative water supply systems. More information including the steps on submitting a hydraulic design assessment can be found on our [website](#). Alternately, if you need to confirm specific requirements for your development, you can contact our Technical Services Team via email plumbing@hunterwater.com.au.

Once the above requirements have been completed, you can have your plumber submit a [connection application](#) to have water meters and sewer connections completed.

These requirements are valid for 12 months from the date of this letter. For further details on developing, please see the [Supplementary Information and Guidance Sheet](#) or visit our [website](#).

If you have any enquiries, please contact your designated assessment officer below.

Greg McHarg - Account Manager Major Development

T: 02 4081 5835

E: greg.mcharg@hunterwater.com.au

Deed, Design or Construction enquiries please contact our Project Delivery Team below.

Project Delivery Team

T: (02) 4081 5705 or contact your nominated Project Delivery Team representative

Deeds - developer.deed@hunterwater.com.au

Design Submissions & REF's - design.submission@hunterwater.com.au

Construction Notifications - deliveryteam@hunterwater.com.au

Finalisation & Construction Enquiries - finalise.project@hunterwater.com.au

Appendix B

DCCEEW

Correspondence

NSW Department of Climate Change, Energy, the Environment and Water



Our ref: OUT25/9656

Arianna Henty

Email: ahenty2@agl.com.au

25 August 2025

Subject: Tomago Battery Project Soil and Water Management Plan (SSD-57107216-PA-12)

Dear Arianna Henty,

I refer to your request for advice sent on 29 July 2025 to the Department of Climate Change, Energy, the Environment and Water (DCCEEW) Water Group about the above matter.

NSW DCCEEW Water Group has reviewed the Soil and Water Management Plan and has a post approval recommendation regarding water supply, take and licensing. Please see Attachment A for more detail.

Should you have any further queries in relation to this submission please do not hesitate to contact the Water Assessments team at water.assessments@dpie.nsw.gov.au.

Yours sincerely,



Rob Brownbill

Manager, Assessments, Knowledge Division

NSW Department of Climate Change, Energy, the Environment and Water

Attachment A

Detailed advice regarding the Tomago Battery Project Soil and Water Management Plan (SSD-57107216-PA-12)

1.0 Water supply, take and licensing

1.1 Recommendation – post approval

Should groundwater be intercepted a Water Access Licence (WAL) under the *Water Management Act 2000* must be obtained unless an exemption applies.

Explanation

Under the *Water Management Act 2000*, if groundwater is intercepted a WAL must be obtained prior to any water take occurring unless an exemption under the *Water Management (General) Regulation 2018* applies. An exemption may be available for water take during construction activities in coastal water courses under Clause 2 of Schedule 1 of the WM Reg, or where the groundwater take during construction or operation is less than or equal to 3ML per water year (cl 7, sch 4 of WM Reg). To claim either of these exemptions certain requirements must be met, such as

- the person claiming the exemption keeps a record of the water taken under the exemption and provides this to the Minister within 28 days of the end of the water year; and
- the records are kept for 5 years.

Further information on these requirements and other information on licensing and approvals and exemptions, including a form to report and record water taken can be found at:

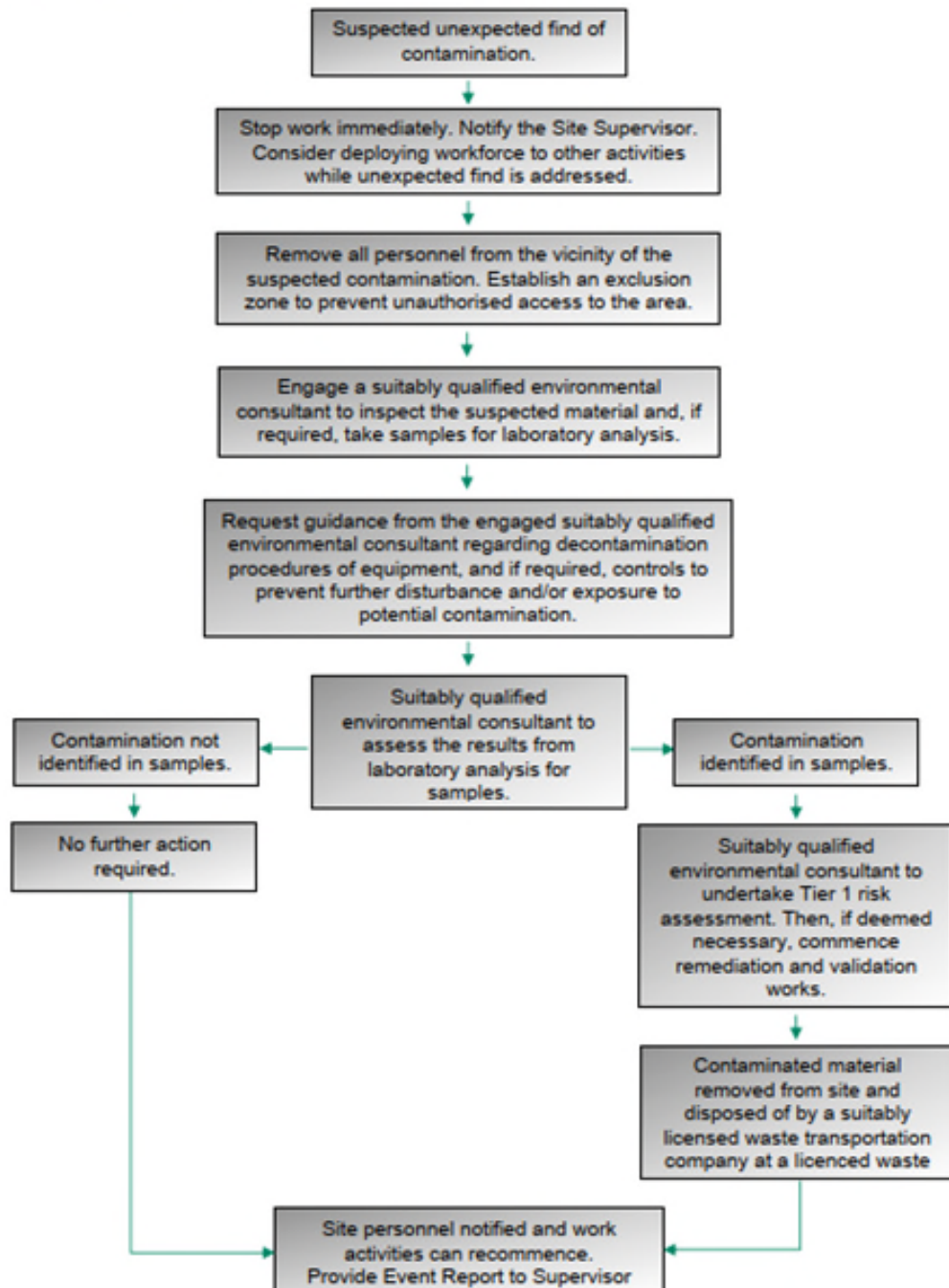
<https://water.dpie.nsw.gov.au/licensing-and-trade> and [Groundwater access licence exemptions | NSW Government Water](#).

End Attachment A

Appendix C

Unexpected Finds Procedure

Figure 1 Unexpected Finds Flowchart



Appendix E

SWMP Update Summary Log

Version	Date	Description of update	Reason for update	Prepared by
1	27-Aug-2025	Updated SWMP in response to DPHI comments.	Address DPHI review comments.	AECOM
2	15-Sep-2025	Updated SWMP in response to additional DPHI comments.	Address additional DPHI review comments.	AECOM
3	23-Apr-2026	Amended surface water monitoring locations due to construction works on the M1 Pacific Highway.	Reflect site access and monitoring requirements during construction works.	AECOM
4	27-Aug-2025	Updated SWMP following recommendations and corrective actions identified during an independent audit.	Address findings from independent audit in May 2026.	AECOM
5	Ongoing	Updates to be recorded as they occur.	Maintain an up-to-date record of changes to the SWMP.	As applicable
6	4-Sep-2026	Inclusion of Drilling Fluid Management Plan (Appendix F)	As required by surface water management measure SW-12	AGL

Appendix F

Drill Fluid Management Plan



Connecting people through infrastructure

Drill Fluid Management Plan

29 July 2026

Project Name: Tomago BESS Connection Project

Prepared for



Rev	Date	Remarks	Prepared By	Checked By	Approved By
0.0	29/07/2026	Draft for review	Andrew Heterick	TBC	TBC
1.1	3/09/2026	TransGrid review addressed	Andrew Heterick		

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DRAFT - NOT FOR CONSTRUCTION: This plan must not be issued for construction until Enerven, TransGrid and DPHI has reviewed & approved the selected drill fluid management option, the approved IFC bore design and workfront layout are available, the waste pathway is confirmed, and the project-specific Frac-Out Response Plan, CEMP/EMP and SWMS are aligned.

1. Purpose and scope

1.1 Project overview

The Tomago Battery Energy Storage System connection project is located at 1940 Pacific Highway, Tomago, NSW. The connection works include underground 132 kV cable and communications infrastructure between the existing Tomago substation and the proposed BESS substation. Austonne's delivery scope includes civil works, conduit installation, horizontal directional drilling (HDD) and associated cable installation support for Enerven.

The current tender and design information identifies multiple HDD/underbore workfronts. The final number, length, diameter, alignment, entry and exit locations, ground profile and drilling sequence must be confirmed against Enerven-approved issued-for-construction (IFC) drawings before drilling commences.

1.2 Purpose

This Drill Fluid Management Plan establishes the controls required to:

- Select, mix and maintain drilling fluid suitable for the approved bore design and verified ground conditions.
- Monitor circulation, pressure, returns and fluid volumes so that abnormal losses are identified early.
- Recover and contain drilling fluid and cuttings at the entry and exit workfronts.
- Prevent uncontrolled release to land, stormwater, drainage lines, groundwater or surface waters.
- Provide two controlled management pathways for recovered drill fluid and drilling mud.
- Maintain waste classification, transport, treatment, reuse, disposal and record-keeping evidence.
- Integrate drill fluid controls with the project-specific Frac-Out Response Plan.

1.3 Scope

This plan applies to drilling fluid, drilling mud and cuttings generated by Austonne's HDD activities from initial mixing through to final reuse, stockpiling, transport or lawful disposal. It applies to Austonne personnel, HDD subcontractors, waste consultants, laboratories and fluid waste management partners engaged for the works.

NDD slurry, contaminated soil, acid sulfate soil (ASS), potential acid sulfate soil (PASS), hydrocarbon-affected material, asbestos or other unexpected material is not to be combined with HDD mud unless separately assessed and expressly approved. The treated drilling mud resource recovery pathway does not apply to drilling mud generated through contaminated soils, ASS or PASS. ASS /PASS are only present down to a depth of roughly 0.5 metres below ground level (BGL). Because drilling starts below this layer at 1.0 metre BGL, the resulting drilling mud is assumed to be unaffected by ASS/PASS.

1.4 Objectives and performance standard

- No uncontrolled discharge of drilling fluid or decant water.
- No overflow from pits, tanks, bins or the bore pond.
- All additives approved and supported by current Safety Data Sheets (SDS).
- Continuous monitoring of pressure and returns during drilling.
- Complete fluid balance, inspection and waste movement records.
- Material reused onsite only where the current legal, technical and client approval pathway is satisfied.

- Material transported offsite only to a facility lawfully able to receive the classified waste.

2. References and definitions

2.1 Project reference documents

Reference	Document / requirement	Status before issue
Enerven RFQ	TOM 132 kV Substation - 132 kV Cable Civils & Install RFQ and current clarifications	Confirm current revision
Design	Tomago 132 kV cable route, trenching and HDD drawings, including the CAB400127 series, CAB400129 and CAB400130	Replace 85% drawings with approved IFC set
AustonNE proposal	AustonNE Proposal 2904 and agreed scope, assumptions and exclusions	Confirm contracted basis
Environmental	Project CEMP/EMP, erosion and sediment controls, waste plan and incident notification requirements	CEMP 1466.EV.MGP.0.001 Progressive ESCP Rev 2 Acid sulfate management plan EP4681.002 v2
HDD controls	Project-specific HDD methodology, bore plan, fluid program and Frac-Out Response Plan	IFC Design Bore plan CAB400127-04 Underbore Solutions Endorsement Letter Approved AustonNE Construction Methodology
Safety	Approved SWMS, excavation permits, service proving records, traffic/plant controls and emergency arrangements	003, 005, 011
Products	Current SDS and technical data sheets for bentonite, polymers, pH agents, treatment agents and other additives	Approved before use

2.2 Legislation and guidance

- Protection of the Environment Operations Act 1997 (NSW), as amended.
- Protection of the Environment Operations (Waste) Regulation 2014 (NSW), as amended.
- NSW EPA Waste Classification Guidelines, Part 1: Classifying Waste, current version.
- NSW EPA Treated Drilling Mud Order 2014 and Treated Drilling Mud Exemption 2014, current versions at the time of use.
- Applicable environment protection licence conditions, development consent conditions, Enerven requirements and site-specific approvals.
- Relevant SafeWork NSW requirements, AustonNE procedures, permits, SWMS and critical controls.

2.3 Definitions

Term	Definition used in this plan
Drilling fluid	Water and approved additives, including bentonite and polymers, used to support HDD operations.
Drilling mud	The mixture of naturally occurring soil/rock cuttings and drilling fluid generated during HDD.
Recovered material	Drilling fluid, mud and cuttings recovered from entry/exit pits, tanks, bins, vacuum systems or surface containment.

Term	Definition used in this plan
Frac-out	An inadvertent release of drilling fluid from the bore to the ground surface, waterway, drainage path or another unintended location.
Bore pond	An approved, controlled and contained onsite pond used to receive, settle, dewater and treat recovered drilling mud.
Spadeable material	Dewatered material that is not free-flowing and is generally capable of being picked up by a spade or shovel.
GSW (non-putrescible)	General solid waste (non-putrescible), where that classification has been established in accordance with the current NSW EPA Waste Classification Guidelines.
Resource recovery pathway	Reuse of treated drilling mud under the current Treated Drilling Mud Order and Exemption, subject to every applicable condition being met.
Fluid waste management partner	The approved contractor engaged to supply bins/tanks, collect, transport and arrange lawful treatment or disposal. Name: [Insert].
Receiving facility	The EPA-licensed or otherwise authorised facility that has confirmed it can lawfully receive the classified material. Facility: [Insert].

3. Roles and responsibilities

Role	Key responsibilities
Project Director / Executive Sponsor	Provide executive oversight and support escalation of material environmental, safety, client, programme or commercial issues.
Project Manager	Own this plan; obtain Enerven approval of the selected option; confirm scope, budget and programme; appoint competent waste and HDD providers; ensure records and close-out are complete.
HSEQ / Environmental Manager	Review environmental controls, waste classification pathway, product SDS, sampling plan and incident requirements; audit implementation; support notification and corrective action.
Site Supervisor / HDD Supervisor	Implement this plan onsite; brief crews; confirm controls and capacity; monitor workfronts; maintain records; stop work when trigger levels are reached; coordinate recovery and waste movements.
Drilling Operator / Mud Technician	Experienced in HDD drilling fluid selection, Follow the approved fluid program; test and record fluid properties; monitor pressure, flow and returns; report abnormal conditions immediately; stop or reduce pumping when directed; Monitor drill fluid additives to ensure chemical stability. If ground water is intercepted immediately notify the lead HDD supervisor to then adjust the makeup of the drill fluid if necessary.
Waste consultant / NATA laboratory	Prepare or review the sampling plan; sample and test material; provide waste classification and/or Treated Drilling Mud Order compliance advice and reports.
Fluid waste management partner	Provide fit-for-purpose bins/tanks and transport; confirm facility acceptance; prevent leaks during collection and transport; provide licences, dockets, weighbridge records and disposal evidence.
Enerven / client representative	Approve the selected management option, onsite locations, access and final reuse/stockpile arrangement; provide client escalation and acceptance where required.

Role	Key responsibilities
All workers	Follow inductions, SWMS, permits and environmental controls; report spills, losses, pond/bin damage, unexpected material and unsafe conditions immediately.

4. Planning and approvals before drilling

4.1 Pre-start information

The Project Manager and Site Supervisor must confirm the following before mobilisation of the HDD spread:

- Approved IFC bore alignment, profile, bore diameter, product pipe arrangement and entry/exit pit details.
- Verified existing services, permits and asset owner requirements, including the high-pressure gas and electrical interfaces shown on current design information.
- Geotechnical and groundwater information available for the bore path, including any known contamination, ASS or PASS constraints.
- Environmental constraints, drainage paths, sensitive receptors, wet-weather controls and incident notification requirements.
- The approved drilling fluid program, expected volumes, anticipated loss zones and contingency volume.
- The selected fluid management option, available storage capacity and approved locations.
- The approved waste consultant, NATA laboratory, fluid waste management partner and receiving facility, as applicable.
- Access, lifting, traffic, plant interaction, lighting, exclusion zone and emergency arrangements.

4.2 Option selection and approval

Default position: Option 1 - offsite removal is the default where the onsite reuse pathway, bore pond design, client approval, sampling program, material suitability or final use is not fully confirmed. Option 2 may only be used after all prerequisites and hold points in this plan are closed.

Selection item	Project entry
Selected option	☐ Option 1 - offsite removal ☐ Option 2 - onsite bore pond treatment
Selected by	[Insert name / role / date]
Enerven approval	[Insert written approval reference / date]
Waste consultant review	[Insert name / report / date]
Fluid waste partner / facility	[Insert contractor and receiving facility]
Bore pond or mud bin location	[Insert approved drawing / marked-up plan reference]
Estimated fluid / mud volume	[Insert m ³ and contingency allowance]
Commercial instruction	[Insert PO/variation/approved allowance where the option changes the contracted basis]

4.3 Capacity and volume planning

A fluid volume forecast must be prepared before drilling. It is to consider the theoretical bore volume, overcut, pilot and reaming stages, circulation system volume, anticipated formation losses, recovered cuttings, rainfall

and a contingency allowance. The forecast is to be updated daily using actual fluid mixed, pumped, returned, recovered, treated and removed.

- Pits, tanks, bins and the bore pond must have enough available capacity before each drilling stage commences.
- Storage is not to be operated above the approved safe working level or freeboard.
- Additional bins, vacuum capacity or offsite collections must be booked before forecast capacity is reached.
- Where wet weather may compromise capacity, drilling is to be deferred or additional capacity provided.

4.4 Site layout



4.5 Hold points

Hold point	Release requirement	Release by
HP-01 Bore readiness	Approved IFC bore plan, service proving, permits and workfront access confirmed.	Project Manager / Site Supervisor
HP-02 Fluid products	Fluid program, product SDS and additives approved; no unapproved chemicals onsite.	HSEQ / HDD Supervisor
HP-03 Management option	Option 1 or Option 2 selected, cost/programme impact understood and Enerven written approval received.	Project Manager

Hold point	Release requirement	Release by
HP-04 Storage location	Mud bins/tanks or bore pond location, capacity, access and environmental controls inspected and accepted.	Site Supervisor / HSEQ
HP-05 Waste pathway	Facility acceptance and classification plan confirmed for Option 1; sampling plan and reuse/disposal pathway confirmed for Option 2.	HSEQ / Waste consultant
HP-06 Daily start	Available capacity, weather, vacuum recovery, spill equipment and monitoring resources confirmed.	Site Supervisor

5. Drilling fluid selection and design

5.1 Fluid selection

The fluid system is to be selected by the HDD specialist for the approved bore design and verified ground conditions. They will be non – contaminating fluids used. They will be certified to NSF/ANSI/CAN 60. The base fluid will generally comprise:

- Fresh water of suitable quality.
- Sodium bentonite clay.
- Approved polymers or fluid-loss control additives where required.
- Approved pH conditioning or lubrication additives where required.

Only products included in the approved fluid program may be used. Product SDS, environmental information and manufacturer instructions must be available onsite. Any proposed change to additives must be reviewed for drilling performance, environmental impact, waste classification and treatment/reuse implications before use.

5.2 Target fluid properties

Parameter	Project target / range	Minimum check frequency	Record
Water quality	Clean Fresh water suitable for approved drilling fluid system. Sourced from Hydrant on the north Side of Old Punt Road.	Before initial mix and when source changes	Water source / test
Marsh funnel viscosity		Each batch and when conditions change	Daily fluid log
Density / mud weight		Each batch / as directed	Daily fluid log
pH		Each batch and after treatment/additive change	Daily fluid log
Sand / solids content		As directed by HDD specialist	Daily fluid log
Fluid loss / filtration		As directed by HDD specialist	Test record
Pump pressure and flow	Within approved bore plan limits	Continuous	Drill log
Return rate / volume	Stable and reconcilable	Continuous / each rod	Fluid balance log

5.3 Change control

The drilling operator must not materially increase fluid pressure, flow, viscosity or additive dosage outside the approved program without the HDD Supervisor's approval. Changes that may affect waste classification, treatment or reuse must also be reviewed by HSEQ and the waste consultant.

6. Fluid mixing and preparation

6.1 Mixing area set-up

- Locate the mixing unit on stable ground outside drainage paths and sensitive areas.
- Inspect tanks, pumps, hoses, connections and valves before use.
- Provide drip trays, sandbags, bunding or equivalent containment at connection and transfer points.
- Arrange the drill rig and entry pit so fluid released during rod changes drains to a controlled recovery point.
- Position the vacuum truck or recovery unit for immediate access without obstructing emergency routes.
- Provide appropriate spill kits, absorbents, drain covers, recovery hoses and waste containers.
- Secure and label all additives and maintain current SDS at the workforce.

6.2 Mixing procedure

1. Confirm the approved water source, required batch volume and product quantities.
2. Add products in the approved manufacturer sequence and prevent dust or splash exposure.
3. Allow the required bentonite hydration time and maintain consistent agitation.
4. Test the batch against the approved fluid parameters before circulation.
5. Record product names, batch numbers, quantities, water volume, test results and adjustments.
6. Do not discharge rejected or surplus fluid. Transfer it to the approved recovery and management system.

6.3 Daily fluid balance

The following quantities are to be recorded and reconciled at least once per shift and at completion of each bore stage:

- Opening tank, pit, bin and pond volumes.
- Water and additives used.
- Fluid mixed and pumped.
- Estimated and measured returns.
- Fluid recovered, recycled, treated or transferred.
- Fluid removed offsite or stockpiled.
- Unexplained variance or loss.

7. Circulation and monitoring

7.1 Continuous monitoring

- Pump pressure, flow and torque trends.
- Return volume, colour, consistency and cuttings load.
- Fluid levels in tanks, pits, bins and the bore pond.
- Surface conditions along and around the bore alignment.
- Drainage lines, low points, service corridors and other potential release pathways.
- Fluid properties and any change following additives or ground condition changes.

7.2 Trigger levels and required actions

Trigger / observation	Immediate action	Escalation / disposition
Reduced or no returns	Reduce or stop pumping; hold drilling; check fluid balance and surface alignment.	Notify Site Supervisor; implement Frac-Out Response Plan if unexplained.
Unexpected pressure increase	Stop advancement or pumping as directed; verify tooling, blockage and bore condition.	HDD Supervisor to approve restart and modified parameters.
Sudden pressure loss	Stop/reduce pumping; inspect the full bore alignment and nearby drainage/service paths.	Treat as potential loss/frac-out until accounted for.
Surface pooling or seepage	Stop pumping; contain with sandbags/earth bunds; recover by vacuum.	Notify Enerven and HSEQ in accordance with incident plan.
Pit, bin or pond high level	Stop transfer/drilling before overflow; deploy additional storage or collection.	Project Manager to arrange urgent removal or change of option.
Heavy rain / forecast rainfall	Protect storage, maintain freeboard, suspend transfer or drilling if capacity is at risk.	Reassess before restart.
Unexpected odour, sheen, discolouration or debris	Segregate material; stop treatment/reuse; prevent mixing.	Waste consultant to assess; manage as potentially contaminated.
Treatment or testing failure	Quarantine and cover the batch; do not reuse or hand over as GSW.	Reclassify and arrange Option 1 or another approved lawful pathway.

7.3 Restart authorisation

Following a loss of returns, abnormal pressure, suspected frac-out or storage control failure, drilling may only recommence after the cause has been assessed, the workfront is made safe, recovery and containment controls are adequate, Enerven notifications are complete and the Site Supervisor/HDD Supervisor has authorised restart.

8. Recovery, containment and temporary storage

8.1 Primary recovery

- Recover drilling fluid from entry and exit pits using pumps, vacuum equipment or a closed circulation/recycling system.
- Use screens, shakers or settlement controls where approved to separate cuttings and recover reusable fluid.
- Maintain pit capacity and stable edges; prevent plant, spoil or storage loads from compromising excavations.
- Keep hoses and transfer lines within controlled areas and inspect connection points regularly.

8.2 Mud bins and tanks

- Use purpose-built, liquid-tight mud bins or tanks accepted by the fluid waste management partner and receiving facility.
- Place bins on stable, level ground with controlled vehicle access and a credible spill containment arrangement.
- Clearly label each bin with project, contents, waste status, fill date and maximum safe fill level.
- Do not overfill. Allow for movement during loading and transport and for rainfall where the bin is not fully enclosed.
- Cover bins when not actively filling and inspect for leaks, corrosion, damage and unauthorised access.

- Keep incompatible or differently classified material segregated.

8.3 Bore pond

- Use only an Enerven-approved location shown on the project layout.
- Confirm the pond design, liner/containment, ground stability, access, capacity, minimum freeboard and wet-weather allowance before use.
- Provide fencing, signage and plant exclusion zones. No person is to enter the pond.
- Prevent stormwater run-on and uncontrolled discharge. Maintain erosion and sediment controls around the pond.
- Inspect pond walls, liner, freeboard, seepage, rainfall impacts and fauna interaction at least daily and after significant rain.
- Provide a contingency pump, vacuum truck or additional bins where capacity could be exceeded.

8.4 Decant and recovered water

Decanted or separated water remains controlled material. It may only be reused in the drilling system where it is technically suitable and approved. It must not be discharged to land, stormwater, drainage or surface waters unless a separate written approval and applicable water quality criteria are satisfied. Otherwise, it is to be retained and removed through the approved waste pathway.

9. Drill fluid management options

9.1 Option comparison and selection principles

Criterion	Option 1 - offsite removal	Option 2 - onsite pond treatment
Primary use	Default where certainty, speed and clear disposal evidence are required.	Conditional where a compliant pond, testing program and lawful onsite reuse/stockpile pathway are approved.
Material form	Liquid, slurry or dewatered material accepted by the receiving facility.	Dewatered/spadeable material; no free-flowing liquid for the solid pathway.
Key approvals	Waste classification, transporter and facility acceptance.	Enerven approval, pond design, waste consultant, sampling plan, NATA testing, current RRO/RRE or disposal classification, approved final use.
Main risks	Transport, bin leakage, facility rejection, disposal cost and collection timing.	Overflow, seepage, treatment failure, contamination, sampling cost, delayed results, unsuitable fill and unlawful land application.
Contingency	Additional bins/collections or alternative lawful facility.	Quarantine material and revert to Option 1.

9.2 Option 1 - offsite removal to an authorised facility

9.2.1 Method

1. Confirm the waste classification approach and obtain written acceptance from an EPA-licensed or otherwise authorised facility that can lawfully receive the material in its actual condition.
2. Confirm the fluid waste management partner's required licences, insurances, equipment, bin type, collection frequency, emergency response and documentation.
3. Position purpose-built, liquid-tight mud bins at the approved location and establish loading, exclusion, spill and traffic controls.
4. Transfer or tip recovered drill fluid and mud into the bins under supervision. Avoid free fall, splash, hose whip and overfilling.
5. Inspect and label each bin, maintain the safe fill level and cover the bin when not actively filling.
6. Book collection before capacity becomes critical. Suspend drilling if adequate compliant storage is not available.
7. The fluid waste management partner will collect and transport the bins in leak-free, secured condition to the accepted receiving facility.
8. Retain classification records, facility acceptance, transporter details, collection docket, weighbridge/tipping docket and final disposal or treatment receipt.

9.2.2 Waste classification and transport controls

- Austonne, as waste generator, will ensure the material is classified before transport or accepted under a documented facility-specific characterisation process.
- Material that remains free-flowing may meet the definition of liquid waste and must be managed and transported accordingly.
- Waste tracking requirements are to be applied where triggered by the waste class, quantity or movement.
- The receiving facility must confirm that its licence/authorisation permits it to receive the classified material.
- No load is to leave site without the destination, contact, docket process and emergency arrangements being confirmed.

9.2.3 Option 1 records

Record	Minimum information
Waste classification / characterisation	Source, date, description, additives, analytical report or facility acceptance basis.
Bin register	Bin ID, location, fill dates, condition, estimated volume and inspection status.
Transport docket	Date, time, transporter, vehicle/registration, bin ID, quantity and destination.
Facility receipt	Facility name, licence/authorisation confirmation, weighbridge/tipping quantity and acceptance outcome.
Reconciliation	Opening stock, quantities generated, removed and remaining onsite.

9.3 Option 2 - onsite bore pond treatment and controlled reuse or stockpiling

9.3.1 Mandatory prerequisites

Critical compliance point: Dewatering material until it is spadeable does not, by itself, establish a general solid waste (non-putrescible) classification or authorise reuse. The final pathway must be supported by the current NSW EPA framework, test results, client approval and a fit-for-purpose end use.

- Enerven has approved the pond location, treatment method, final reuse or stockpile location and responsibility for the material.
- The approved bore path is not through contaminated soil, ASS or PASS where the Treated Drilling Mud Order/Exemption pathway is proposed.
- A qualified waste consultant has confirmed the applicable pathway and prepared or approved the sampling plan.
- The pond has adequate containment, capacity, freeboard, weather contingency and safe plant access.
- Only approved treatment agents with current SDS are used, and their effect on pH, waste classification and end-use performance has been assessed.
- A NATA-accredited laboratory is engaged and the programme allows for sampling, testing and result review before reuse.
- A technically suitable and lawful engineering fill or earthworks use is identified, or the client has accepted a controlled stockpile for later lawful disposal.

9.3.2 Pond operation and treatment process

1. Transfer recovered drilling fluid and mud to the approved bore pond while maintaining freeboard and preventing splash, runoff or hose failure.
2. Allow solids to settle. Recover reusable fluid back to the drilling system where technically suitable, or retain separated water for the approved waste pathway.
3. Dewater the mud using settlement, mechanical separation, approved absorbent/solidification agents or another approved method.
4. Mix the material evenly using suitable plant from a stable operating position. Do not enter the pond.
5. Continue treatment until the resultant material is not free-flowing and is generally capable of being picked up by a spade or shovel.
6. Form and clearly identify discrete batches or stockpiles so each sample result can be traced to the relevant material.

7. Quarantine each batch pending test results and written acceptance of its final pathway.

9.3.3 Treated drilling mud order and exemption pathway

Where treated drilling mud is proposed for onsite application as engineering fill or for use in earthworks, the Project Manager and waste consultant must confirm that the current NSW EPA Treated Drilling Mud Order and Exemption remain in force and that every applicable condition is met. The current order includes the following controls:

Requirement	Draft project control
Material condition	Dewatered so that it meets the order's solid/spadeable criteria and does not become free-flowing during handling or transport.
Exclusions	Not generated by deep mineral/gas/coal exploration or by drilling through contaminated soil, ASS or PASS.
Written sampling plan	Prepared before supply/application and covering sample preparation, collection, traceability and storage.
Batch sampling	For a non-continuous batch, truckload or stockpile: currently 5 composite samples per 10 tonnes dry weight (or part), unless the current order or approved advice requires otherwise.
Continuous process sampling	Currently 10 composite samples per 100 tonnes dry weight (or part), where genuinely generated as a continuous process.
Laboratory testing	NATA-accredited testing for the chemical and other attributes specified in the current order, including metals, EC, pH, PAHs, benzo(a)pyrene, TPH and chlorinated hydrocarbons.
Compliance review	Results validated against the current order's maximum average and absolute maximum values before supply/application.
Statement and documents	Written statement of compliance and a copy/link to the current order and exemption provided to the consumer before the transaction.
Final use	Only as engineering fill or for use in earthworks; fit-for-purpose, geotechnically suitable and consistent with approvals and design.
Records	Sampling plan, results, quantity and recipient details retained for at least six years, together with client approvals and placement records.

9.3.4 Final disposition pathways

Following treatment and receipt of results, the material will be managed through one of the following controlled pathways:

- Reuse onsite as engineering fill or in earthworks under the current Treated Drilling Mud Order and Exemption, only after written Enerven approval, owner/occupier permission, development/design confirmation and geotechnical suitability review.
- Stockpile onsite for client disposal, where Enerven has provided a nominated location and written acceptance of the quantity, classification, stockpile controls and responsibility for final lawful removal.
- Transport offsite under Option 1 where the material does not meet the reuse conditions, is not suitable for the proposed end use, cannot be lawfully applied, is rejected by Enerven or exceeds the approved storage period/capacity.

Where material is proposed to be classified for disposal as general solid waste (non-putrescible), that classification must be established separately under the current NSW EPA Waste Classification Guidelines. The material is not to be described or handed over as GSW (non-putrescible) solely because it has been dewatered or treated.

9.3.5 Stockpile controls for client disposal

- Place only at the Enerven-approved location on a stable, contained surface away from drainage and sensitive areas.
- Segregate by batch and classification; install signs showing source, status, date, volume and 'quarantined pending disposal' where applicable.
- Shape and cover the stockpile to prevent rainfall infiltration, dust, runoff and tracking by plant.
- Inspect after rain and at least daily while Austonne controls the work area.
- Complete a written handover identifying the material, quantity, test/classification records, location, stockpile condition and agreed disposal responsibility.

9.3.6 Bore pond closure

- Remove all treated and residual material through the approved pathway.
- Remove contaminated liner, geotextile and sediment where required and classify before disposal.
- Inspect the pond footprint for staining, seepage or contamination and undertake testing/remediation where directed.
- Backfill and reinstate in accordance with the approved project requirements.
- Close out quantities, test results, photos, dockets, handover records and lessons learned.

9.4 Change between options

A change from the approved option must be assessed for safety, environmental, programme, capacity and cost impacts. The Project Manager is to obtain written Enerven direction and commercial agreement before implementing a changed pathway, except where immediate action is required to contain a spill or prevent environmental harm. Emergency costs and evidence are to be recorded.

10. Integration with the Frac-Out Response Plan

10.1 Prevention

- Use the approved bore profile, fluid program, tooling and pressure limits.
- Maintain stable pits, adequate storage and working recovery equipment.
- Monitor fluid balance, pressure and returns continuously.
- Inspect the full alignment and likely migration paths during pilot, reaming and pullback.
- Maintain sandbags, booms, absorbents, drain covers, pumps, vacuum equipment and clean-up tools ready for immediate use.

10.2 Response to suspected frac-out or unexplained loss

1. Stop or reduce pumping immediately and hold drilling.
2. Notify the Site Supervisor and implement the project-specific Frac-Out Response Plan.
3. Inspect the bore alignment, drainage paths, service corridors and sensitive areas.
4. Contain the release using the least intrusive effective method and protect drains and waterways.
5. Recover released fluid using vacuum equipment, pumps, hand tools or absorbent materials.
6. Segregate recovered material where contamination or interaction with surface material may have changed its classification.
7. Complete required Enerven, principal, regulator and emergency notifications in accordance with the incident plan.
8. Do not recommence until the source is controlled, the response is closed out and restart is authorised.

10.3 Recovered frac-out material

Material recovered from a frac-out must be separately assessed. Soil, vegetation, debris, stormwater or other contaminants may change its classification and may make it unsuitable for the onsite treated drilling mud reuse pathway. Where there is uncertainty, quarantine the material and manage it through Option 1 following waste consultant advice.

11.Environmental controls

Aspect	Minimum controls	Inspection / evidence
Water pollution	No discharge; protect drains and waterways; contain transfer points; maintain emergency recovery.	Pre-start, continuous during transfer, photos
Stormwater / rain	Prevent run-on; maintain pond/bin capacity and freeboard; cover stockpiles/bins; inspect after rain.	Daily and post-rain checklist
Ground contamination	Use stable contained areas; inspect leaks/seepage; segregate unexpected material; remediate spills.	Daily inspection / incident record
Chemicals	Approved products only; SDS available; secure storage; compatible spill kits; controlled dosing.	Chemical register / pre-start
Waste	Classify, label, segregate, track and reconcile; use lawful facility or compliant resource recovery pathway.	Registers, reports and dockets
Dust / odour	Keep treated material moist enough to prevent dust but not free-flowing; cover stockpiles; investigate odour.	Daily inspection
Fauna	Fence bore pond; provide approved fauna egress where required; inspect before plant operation.	Daily inspection / fauna record
Housekeeping	Clean transfer areas, hoses and plant; prevent mud tracking; recover washdown water.	End-of-shift inspection

12.Safety controls

Hazard	Critical controls
Chemical exposure	Review SDS; use approved PPE; control dust/splash; provide eyewash; maintain hygiene and emergency first aid arrangements.
Plant and people interaction	Delineate work zones; use positive communication and spotters; maintain exclusion zones; separate pedestrians and vehicles.
Mud bin loading / collection	Stable hardstand; approved lifting/hook-lift process; no person between truck and bin; secure load; inspect for leakage.
Open pits / bore pond	Excavation assessment; fencing/signage; stable batters/edges; no entry; keep plant and spoil clear of edges; manage drowning/engulfment risk.
Hoses and pressure	Rated hoses and fittings; whip checks where required; depressurise before disconnecting; keep workers clear of pressurised lines.
Vacuum equipment	Competent operators; inspect hoses/tanks; control suction hazards; isolate before clearing blockages.

Hazard	Critical controls
Existing services	Approved permits, positive location, safe approach distances and asset owner controls before drilling or excavation.
Slips and manual handling	Maintain clean access, remove mud build-up, use mechanical aids and suitable tools.
Traffic / waste transport	Approved access and loading route; traffic management; licensed drivers; loads contained and secured.
Confined space	No entry to tanks, bins, pits or pond unless separately assessed, permitted and supported by an approved confined-space system and rescue plan.

13. Inspection, testing and quality controls

Control point	Acceptance criteria	Evidence	Responsible
Pre-start workfront	Approved layout, storage capacity, weather and emergency equipment confirmed.	Pre-start checklist / photos	Site Supervisor
Fluid batch	Approved products and target properties achieved.	Fluid mixing/test log	Mud Technician
Drilling monitoring	Pressure and returns stable; fluid balance reconcilable.	Drill log / daily log	Drilling Operator
Mud bins	Liquid-tight, labelled, below safe fill level, no leaks.	Bin inspection register	Site Supervisor
Bore pond	Containment sound, freeboard maintained, no seepage/overflow, secure access.	Pond inspection log	Site Supervisor / HSEQ
Treatment batch	Spadeable, traceable and quarantined pending results.	Batch record / photos	Site Supervisor
RRO/RRE testing	Sampling and results comply with current treated drilling mud order.	Sampling plan / NATA report / statement	Waste consultant / HSEQ
GSW classification	Classification report supports the stated class and intended disposal facility accepts it.	Classification / acceptance	Waste consultant / PM
Offsite load	Destination confirmed, load contained and docket issued.	Docket / receipt	Waste partner / Site Supervisor
Final close-out	All material reconciled, pond/bin area reinstated and records complete.	Close-out pack	Project Manager

14. Training and communication

- All relevant workers are to be inducted into this plan, the HDD methodology, SWMS, environmental controls and Frac-Out Response Plan.
- The Site Supervisor will brief the selected option, workfront layout, monitoring duties, trigger levels, stop-work authority, notification contacts and emergency equipment at the pre-start.
- Operators handling additives must understand SDS, dosing, PPE and spill response.
- Waste partner drivers and operators must receive site access, traffic, loading, exclusion zone and emergency instructions.

- Option 2 personnel must be briefed on pond controls, batch segregation, quarantine status, sampling traceability and the prohibition on reuse before written release.
- Changes to the fluid program, waste pathway or site layout are to be communicated through a documented toolbox talk or revised work pack.

15. Documentation and reporting

15.1 Daily records

- Pre-start and workfront inspection.
- Fluid mixing and property test log.
- Drilling pressure, flow, returns and fluid balance.
- Pit, bin, tank and pond levels and condition.
- Weather and rainfall observations.
- Waste/treatment batch register.
- Photos of controls, stockpiles, bins, loads and reinstatement.
- Incidents, abnormal losses, instructions and corrective actions.

15.2 Option 1 records

- Waste classification or documented characterisation.
- Transporter and receiving facility acceptance/licence evidence.
- Bin register, transport dockets, weighbridge/tipping records and final receipts.
- Quantity reconciliation and any rejected loads or alternate destination approval.

15.3 Option 2 records

- Bore pond design/location approval and inspection records.
- Treatment product approvals and SDS.
- Batch identification, treatment quantities and spadeability evidence.
- Written sampling plan, chain of custody, NATA results and waste consultant review.
- Treated Drilling Mud Order statement of compliance and order/exemption documents, where used.
- Written Enerven approval, owner/occupier permission, final-use location, placement quantity and geotechnical/design acceptance.
- Stockpile handover and final disposal records where the client retains material.

15.4 Record retention and submission

Project records are to be retained in Austonne's document control system for the contractual and statutory period. Records required under a current resource recovery order or exemption are to be retained for the period stated in those instruments, currently at least six years. The Project Manager will submit the agreed close-out evidence to Enerven.

16. Incident notification and emergency response

16.1 Notification triggers

- Frac-out, unexplained loss of returns or drilling fluid outside containment.
- Overflow, seepage, damaged pond liner, leaking bin or transport spill.
- Discharge or threatened discharge to stormwater, drainage or surface water.
- Unexpected contamination, ASS/PASS, odour, sheen, asbestos or hazardous material.
- Waste load rejection, incorrect destination, missing docket or classification discrepancy.

- Failure to meet the treated drilling mud order/exemption or waste classification requirements.
- Injury, plant incident, excavation instability or unauthorised entry to the controlled work area.

16.2 Immediate response

1. Stop work and make the area safe.
2. Stop the source and protect drains, waterways and people.
3. Contain and recover the material using available emergency equipment.
4. Notify the Site Supervisor, Project Manager and HSEQ immediately.
5. Notify Enerven and other parties in accordance with the project incident escalation process.
6. Preserve evidence, photos, logs, samples and dockets.
7. Classify recovered material and arrange the lawful pathway before clean-up waste leaves site.
8. Complete incident investigation, corrective actions and plan review before recommencement where required.

Regulatory notification decisions are to be made promptly by authorised Austonne and client personnel against the applicable legal and project requirements. This plan does not replace specialist environmental or legal advice.

17. Plan review and change control

This plan will be reviewed when:

- IFC design, bore count, alignment, profile or construction sequence changes.
- Groundwater, contamination or unexpected ground conditions are identified.
- Fluid products, treatment agents, waste partner or receiving facility change.
- The selected management option changes or available capacity is reduced.
- A frac-out, spill, overflow, rejected load or classification non-conformance occurs.
- Enerven, the principal, an authority or the EPA issues a direction or updated requirement.
- Audits, lessons learned or workforce feedback identify a control gap.

Revisions must be reviewed by the Project Manager and HSEQ. No material change is to be implemented until affected personnel are briefed and Enerven approval is obtained where required.

18. Appendices

18.1 Appendix A - Option selection and approval record

Field	Project entry
Project / workfront	Tomago BESS Connection / [Insert bore ID]
Date required	[Insert]
Estimated fluid/mud volume	[Insert m ³]
Selected option	☐ Option 1 offsite ☐ Option 2 onsite treatment
Reason for selection	[Insert]
Mud bin / bore pond capacity and location	[Insert]
Waste consultant / sampling plan	[Insert / N/A]
Fluid waste partner / receiving facility	[Insert / N/A]
Final reuse / stockpile / disposal location	[Insert]
Environmental constraints	[Insert]
Programme / commercial impact	[Insert]
Prepared by	[Name / signature / date]
Reviewed by HSEQ	[Name / signature / date]
Approved by Project Manager	[Name / signature / date]
Accepted by Enerven	[Name / written reference / date]

18.2 Appendix B - Daily drill fluid management log

Project detail	Entry	Project detail	Entry
Date / shift	[Insert]	Bore ID / stage	[Insert]
Supervisor	[Insert]	Drilling operator	[Insert]
Selected option	[1 / 2]	Weather / rain	[Insert]
Opening storage capacity	[Insert m³]	Contingency capacity	[Insert m³]

Fluid properties and volume balance

Time	Water added	Fluid mixed	Fluid pumped	Returns / recovered	Pressure / flow	Viscosity / pH	Variance / action

Storage and environmental inspection

Check	AM	PM	Comments / action
Pits/tanks/bins/pond below safe level	☐	☐	
No leaks, seepage or overflow	☐	☐	
Freeboard / weather capacity adequate	☐	☐	
Drainage and spill controls in place	☐	☐	
Surface alignment inspection completed	☐	☐	
Waste / treatment batches labelled	☐	☐	
Dockets / photos / records filed	☐	☐	

18.3 Appendix C - Waste movement and treatment register

Date	Batch/bin ID	Source / bore	Description / status	Volume or tonnes	Classification / report	Destination / final use	Docket / approval

Option 2 treatment and testing details

Batch ID	Treatment method / agent	Spadeable check	Sampling date / plan	NATA report	Result / release	Placement or stockpile reference

18.4 Appendix D - Pre-start checklist

Done	Pre-start requirement	Evidence / reference
☐	Current approved IFC bore plan and HDD methodology available.	
☐	Services positively located and permits/asset owner controls approved.	
☐	CEMP/EMP, SWMS and Frac-Out Response Plan aligned.	
☐	Approved drilling fluid program, SDS and target properties available.	
☐	Option 1 or Option 2 selected and Enerven written approval received.	
☐	Fluid volume forecast and storage contingency confirmed.	
☐	Mud bins/tanks or bore pond inspected and accepted.	
☐	Fluid waste partner, transporter and receiving facility confirmed for Option 1.	
☐	Sampling plan, NATA lab and final-use approval confirmed for Option 2.	
☐	Vacuum recovery, spill kits, drain protection and containment ready.	
☐	Weather forecast reviewed and wet-weather capacity adequate.	
☐	Traffic, loading, plant interaction and exclusion zones established.	
☐	Crew briefed on monitoring, trigger levels, stop-work and notification.	
☐	Daily logs, bin/pond inspections and waste registers available.	

Release	Name	Signature / reference	Date
Site Supervisor			
HSEQ / Environmental			
Project Manager			
Enerven representative			