

Soil and Water Management Plan

Tomago Battery Energy Storage System

15-Sep-2025

Soil and Water Management Plan

Tomago Battery Energy Storage System

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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
KPI	Key performance indicator
kV	kilovolt

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

1.0 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.

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.

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 1-1** 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 1-1** as these requirements are expressly referenced in Condition B27.

Table 1-1: 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 6.0 and Section 7.0
(d) Include details of who would be responsible for monitoring, reviewing and implementing the plan and timeframes for completion of actions.	Section 0
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 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	

Condition	Section/ reference
(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 6.0
(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 6.0
(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).

2.0 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 2-1**.

Table 2-1: Overview of the Project

Project	Tomago Battery Energy Storage System (BESS)
Key features	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 2-1 , 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.

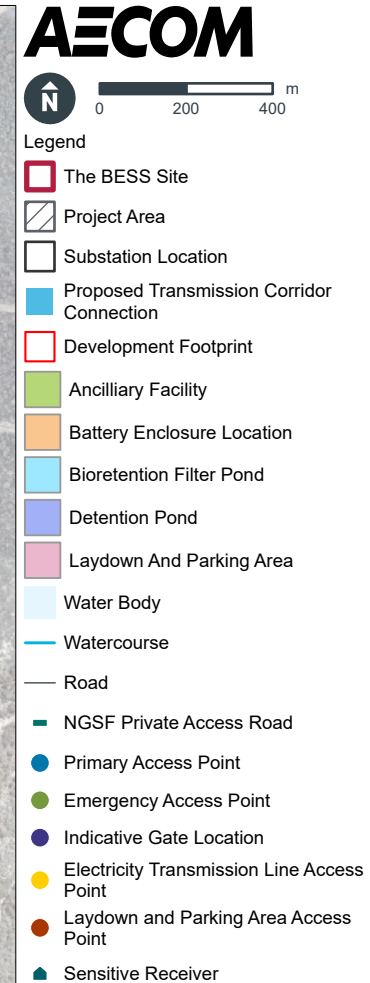
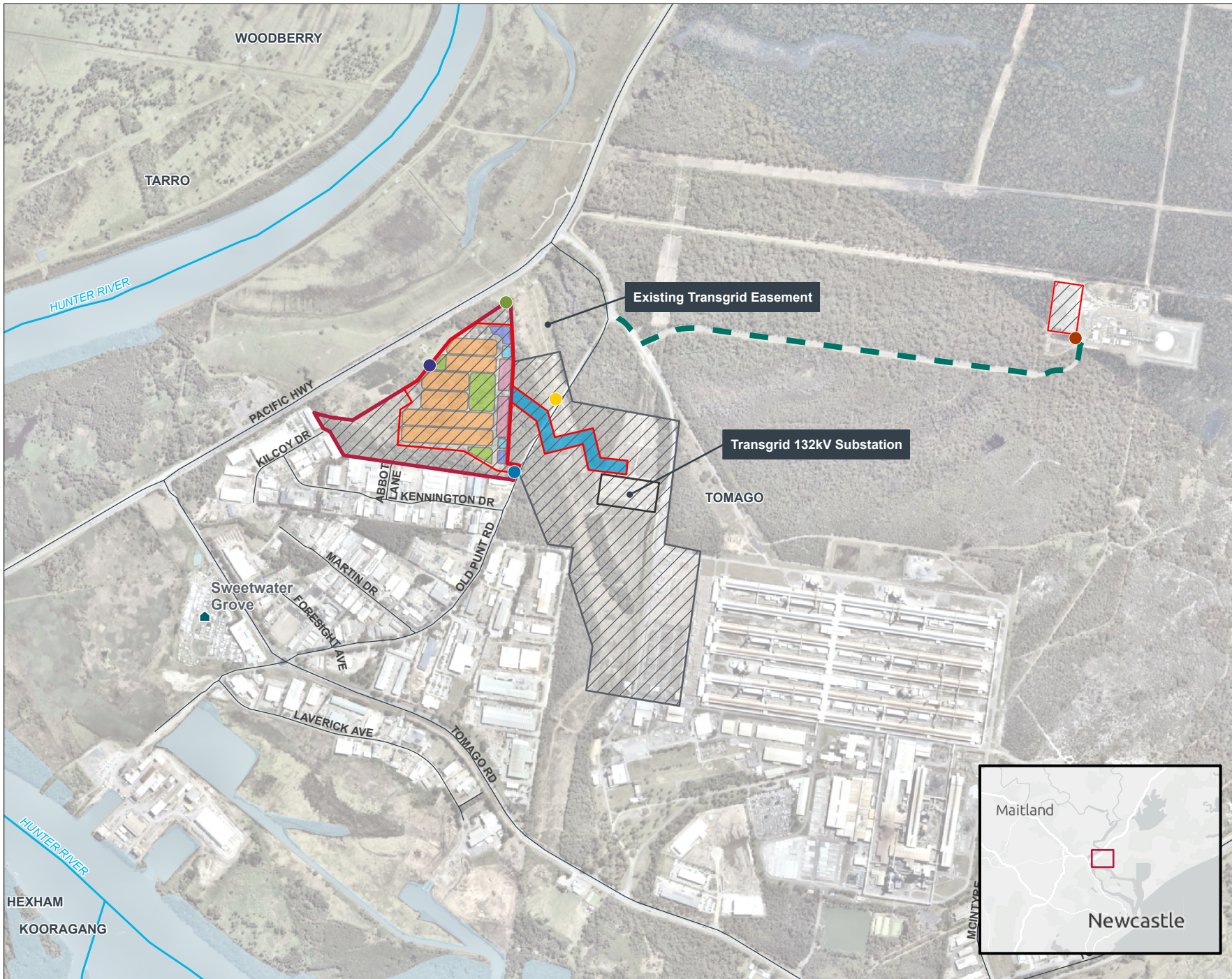


FIGURE 2.1: PROJECT AREA

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Source: Nearmap, 2022.

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 2-2**). 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.

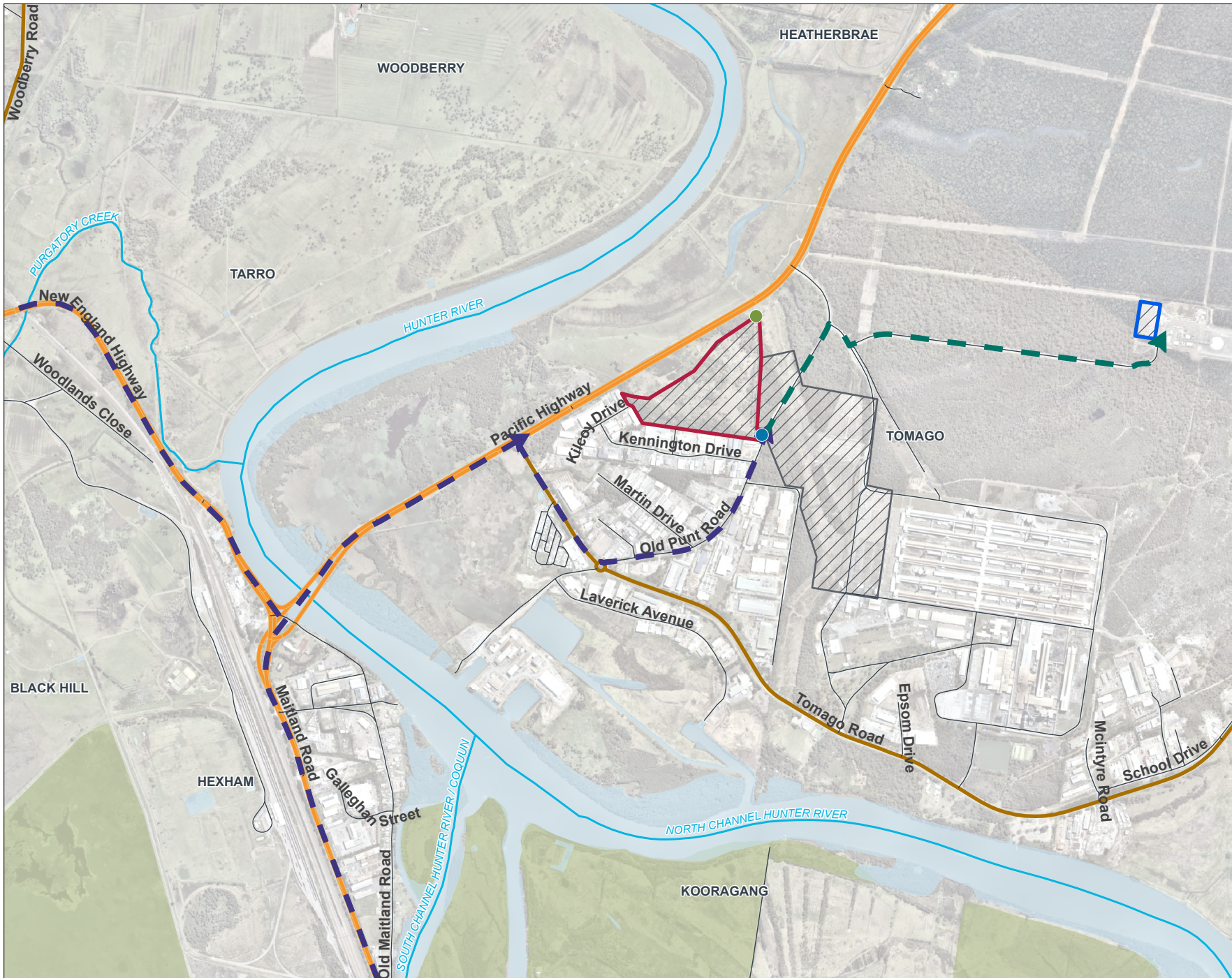
As shown in **Figure 2-2**, an internal road would be provided to enable vehicular access around the Site. Adequate parking would be provided onsite for the operation of the Project.

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.



AECOM

Legend

- Construction Laydown Area
- The BESS Site
- Project Area
- Water Body
- NPWS Reserve
- Watercourse
- Motorway
- Primary Road
- Local Road
- Access to the NGSF Construction Laydown Area
- Indicative Construction Haulage Routes
- Primary Access Point
- Emergency Access Point

**FIGURE 2.2:
CONSTRUCTION ACCESS
POINTS AND HAULAGE ROUTES**

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Source: Neamap, 2022.

3.0 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. 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)

4.0 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 4-1** below.

Table 4-1: AGL roles and responsibilities

Role	Responsibilities
Portfolio Manager	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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

Role	Responsibilities
	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 4-2** outlines the Contractor key personnel and responsibilities.

Table 4-2: Contractor roles and responsibilities

Contractor role	Responsibility
Environment Advisor	<ul style="list-style-type: none"> 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

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

5.0 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 Williamstown 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 5-1** (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 5-1**).

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 5-1**). Remaining spring and autumn months experience milder temperatures, with averages ranging between 9.2-26.4 °C (**Table 5-1**).

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 5-1: 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)
- Podisols (in the north and east portions of the Project Area).

Dermosols soils are heavy, sandy loam with a maximum clay content exceeding 15%, while Podisols have a clay field texture of 35% or more. Podisols 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 5-1 depicts the local drainage features across the Project Area and throughout the surrounding locality.

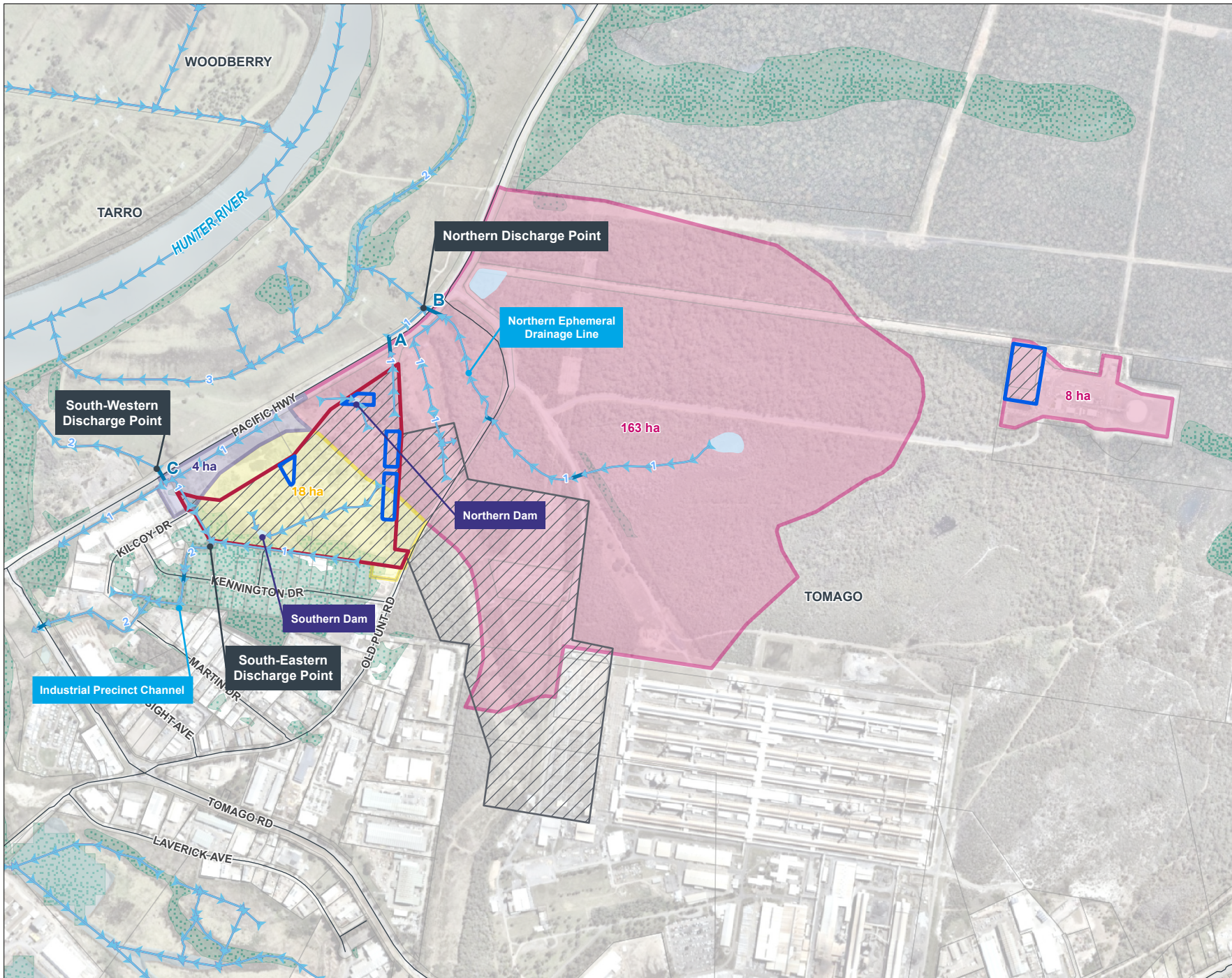
The natural ridgeline within the Site is a defining drainage feature, dividing the Site into a northern and southern half. In the northern half, surface water drains toward the northern corner, while in the southern half, surface water drains to the southern boundary of the Site.

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 5-1**):

- 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 5-1:
EXISTING SITE DRAINAGE**
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- Source: Neamap, 2023.

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.

6.0 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 6-1** 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 6-1: Surface water management measures (AECOM, 2024)

Reference	Surface water management measures	Responsibility	Timing
SW-1	<p>Construction phase monitoring will occur at the discharge points from the Site (Figure 6-1), to help satisfy regulatory requirements and identify if water quality issues are occurring as the result of construction works.</p> <p>Monitoring will occur upstream and downstream of the construction works. Monitoring will occur monthly and as soon as practical following rainfall events.</p> <p>As a minimum the following locations will be monitored during construction:</p> <ul style="list-style-type: none"> Northern ephemeral drainage line and southern industrial precinct channel, as designated 'background areas' Sediment basins Discharge points from the Site. <p>The following parameters will be monitored:</p> <ul style="list-style-type: none"> pH Total suspended solids (TSS) Turbidity (NTU) Electrical conductivity (EC) Dissolved oxygen (DO) Oils and grease (visual assessment and/or laboratory sample) 	Project Contractor	Pre-construction, Construction

Reference	Surface water management measures	Responsibility	Timing
SW-2	<p>The SWMP and ESCP will be developed in accordance with the Blue Book (Landcom, 2004). Measures to be included in these plans will include:</p> <ul style="list-style-type: none"> • Designated vehicle access tracks to reduce the risk of soil disturbance onsite and vibration grids to prevent the transportation of sediments offsite • 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. 	Project Contractor	Pre-construction, Construction
SW-3	<p>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 form part of the CEMP and will outline the testing methods, treatment options and water quality requirements to discharge the water into the receiving environment.</p>	Project Contractor	Construction

Reference	Surface water management measures	Responsibility	Timing
SW-4	<p>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:</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> – 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. 	Project Contractor, AGL	Construction, Operation (BoP), Operation (Battery)
SW-5	<p>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:</p> <ul style="list-style-type: none"> • 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 <p>Spill kits will be kept at the Site during construction and operation and close to worksites during the transmission connection installation.</p>	Project Contractor, AGL	Construction, Operation (BoP), Operation (Battery)
SW-6	<p>The Site will include dedicated re-fuelling areas with bunded fuel and liquid storage areas to minimise the risk of potential losses of containment.</p>	Project Contractor	Construction

Reference	Surface water management measures	Responsibility	Timing
SW-7	<p>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).</p> <p>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.</p> <p>Inspection and, if required, maintenance will be undertaken after significant rainfall events.</p> <p>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.</p>	Project Contractor	Construction
SW-8	<p>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.</p>	Project Contractor	Construction
SW-9	<p>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:</p> <ul style="list-style-type: none"> • 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

Reference	Surface water management measures	Responsibility	Timing
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	<p>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 WSMP, to guide the environmental management of the HDD work. The drilling will be undertaken by an appropriately trained and experienced person.</p> <p>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.</p> <p>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).</p> <p>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.</p>	Project Contractor	Construction
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 Contractor, AGL	Pre-construction, Construction, Operation (BoP)

Reference	Surface water management measures	Responsibility	Timing
SW-14	<p>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.</p> <p>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.</p>	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)

6.2 Construction water monitoring program

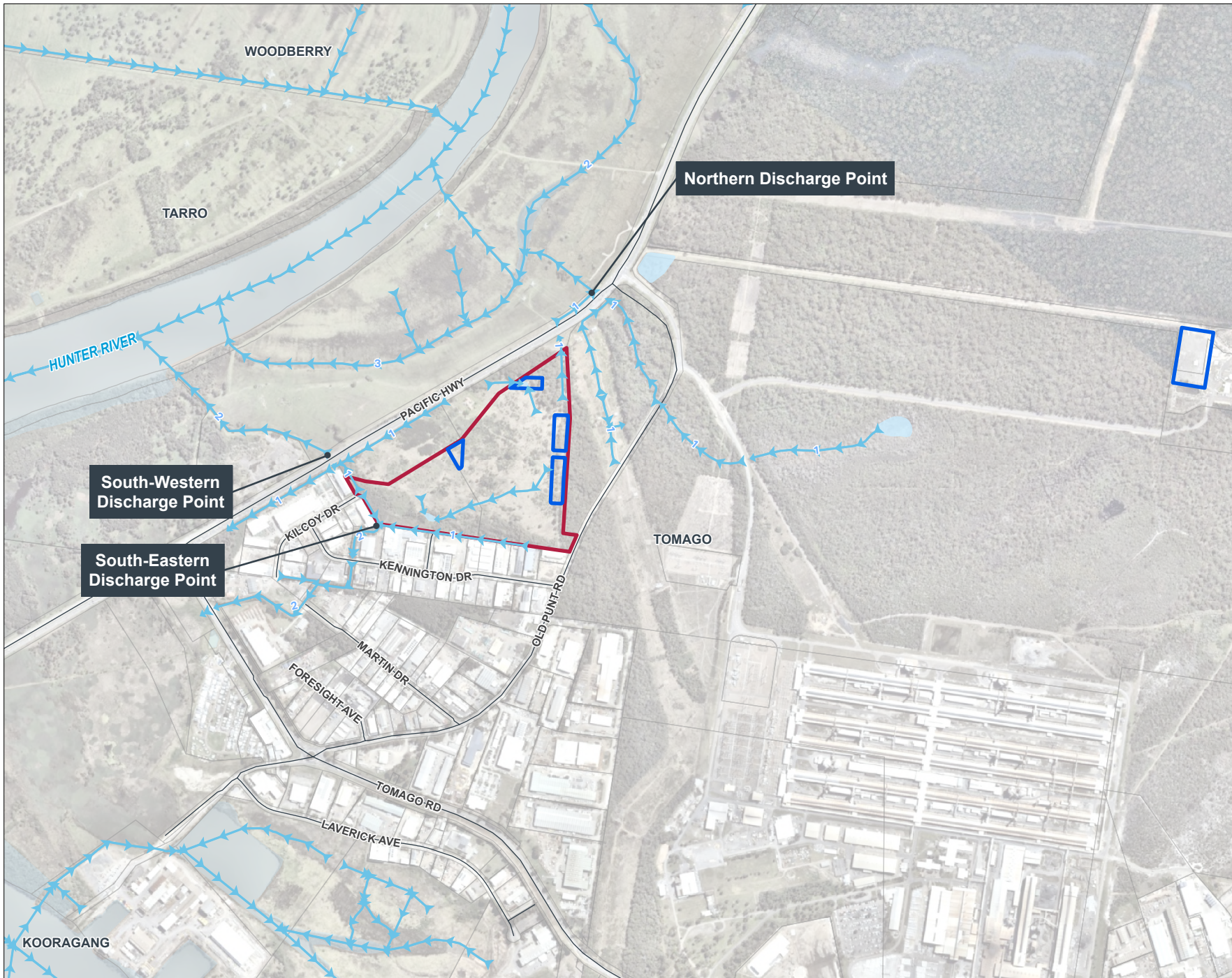
During construction, surface water monitoring shall be undertaken at the northern ephemeral drainage line and southern industrial precinct channel, as designated ‘background areas’, the sediment basins, and the northern, south-western and south-eastern discharge points, depicted on Figure 6-1. Surface 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. 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 7-1**). The environmental site inspection will be the responsibility of the Project Contractor, and comprise inspection of ERS&D control measures, disturbed areas and stockpiles, sealed roads, and local water quality (**Table 7-1**). 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 7-1**).

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.



- Legend
- The BESS Site
 - Construction Laydown Area
 - Waterbody
 - Cadastral Boundary
 - Watercourse / Flow Path (SSO Labels)
 - Road

**FIGURE 6-1:
SURFACE WATER MONITORING
LOCATIONS**

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Source: Nearmap, 2023.

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 6.2**). 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 6-2**.

Table 6-2 Key Performance Indicators

Feature	Performance Measure	KPI
Water management – general	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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 6-3 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.

Table 6-3 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 6.5.2**) 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.

Table 6-4 Trigger Action Response Plan

Trigger	Action	Response	Plan
<ul style="list-style-type: none"> Water monitoring indicates turbidity is greater at the downstream location compared to the sampling result at the upstream location; or sediment or oil and grease are visible at the downstream location 	<ul style="list-style-type: none"> Notify Site Supervisor Initiate an investigation to review the ERSER control measures Identify corrective actions or additional control measures to be implemented where relevant to mitigate potential water quality impacts Confirm field monitoring results through the collection of samples for laboratory analysis 	<ul style="list-style-type: none"> If required, implement corrective actions or install additional ERSER control measures 	<ul style="list-style-type: none"> A summary of monitoring results, investigations and corrective actions to be retained onsite with project documentation
<ul style="list-style-type: none"> Water monitoring indicates exceedance of surface water impact assessment criteria specified in Section 6.5.2 	<ul style="list-style-type: none"> Contractor to notify AGL Environment Advisor Initiate investigation to determine the cause of the exceedance Conduct additional monitoring to confirm water quality parameters Identify corrective actions where relevant 	<ul style="list-style-type: none"> Implement corrective actions or additional mitigation measures Continue water quality monitoring to assess the effectiveness of corrective actions 	<ul style="list-style-type: none"> A summary of monitoring results, investigations, corrective actions and notification to regulatory authorities to be retained onsite with project documentation If required, amend the SWMP (and related plans) to reflect changes to the methodology
<ul style="list-style-type: none"> Forecasts of a significant rain event (greater than 20 mm predicted over a 24-hour period) 	<ul style="list-style-type: none"> Ensure ERSER controls are installed correctly and maintained prior to the event 	<ul style="list-style-type: none"> Inadequacies in ERSER control measures are to be rectified as soon as possible 	<ul style="list-style-type: none"> Site inspection checklist to be used to document inspections of ERSER controls and action undertaken
<ul style="list-style-type: none"> Uncontrolled discharge related to AGL's operations 	<ul style="list-style-type: none"> Contractor to notify AGL Environmental Advisor Undertake notification as required by the Development Consent and POEO Act 	<ul style="list-style-type: none"> If required, implement corrective actions to address the investigation findings Continue water quality monitoring to assess the effectiveness of corrective actions 	<ul style="list-style-type: none"> A summary of monitoring results, investigations, corrective actions and notification to regulatory authorities to be retained onsite with project documentation

	<ul style="list-style-type: none">• Contain contaminated water to prevent further environmental harm• Initiate investigation to determine the cause of the incident• Conduct further sampling immediately to confirm water quality parameters	<ul style="list-style-type: none">• Follow any written reporting requirements required by the Development Consent and POEO Act	<ul style="list-style-type: none">• If required, amend the SWMP (and related plans) to reflect changes to the methodology
--	---	--	---

7.0 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 7-1**.

Table 7-1 Soil and water management monitoring plan

Monitoring activity	Frequency	Responsibility	Records
ERSED controls effectively installed	Pre-construction	Contractor/AGL	<ul style="list-style-type: none"> Inspection checklist
ERSED controls ongoing condition	Daily during active clearing activities	Contractor/AGL	<ul style="list-style-type: none"> General observations Inspection checklist
Rainfall and weather forecasts	Daily	Contractor	<ul style="list-style-type: none"> General observations Inspection checklist
Environmental site inspection: <ul style="list-style-type: none"> 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 	Weekly	Contractor	<ul style="list-style-type: none"> Inspection checklist
<ul style="list-style-type: none"> Inspection water quality at identified monitoring locations for exceedance of surface water impact assessment criteria (Section 6.5.2) 	Monthly and as soon as possible after a rainfall event	Contractor	<ul style="list-style-type: none"> Quality-controlled field sheet (water quality monitoring)
Significant rainfall event inspection: <ul style="list-style-type: none"> Inspection of ERSED controls Inspection of disturbed areas and stockpiles Inspection of sealed roads Inspection local water quality 	As required	Contractor	<ul style="list-style-type: none"> 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

8.0 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.

9.0 References

- AECOM (2023a). *Environmental Impact Statement – Tomago Battery Energy Storage System*.
- AECOM (2023b). *Tomago Battery Energy Storage System Surface Water and Flooding Assessment*.
- AECOM (2024). *Submissions Report – Tomago Battery Energy Storage System*.
- AECOM (2025). *Environmental Management Strategy – Tomago Battery Energy Storage System*.
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- Ball J, Babister M, Nathan R, Weeks W, Weinmann E, Retallick M, Testoni I, (2019). *Australian Rainfall and Runoff: A Guide to Flood Estimation*. Commonwealth of Australia (Geoscience Australia).
- BMT WBM (2011). *Water Sensitive Development Strategy Guidelines – Port Stephens Council*. Prepared for Port Stephens Council and Hunter Water Corporation. Document Ref. R.N2107.001.02.docx. Revision No. 2.
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- Department of Agriculture and Water Resources (2018). *National Water Quality Management Strategy*.
- Engineers Australia (2006). *Australian Runoff Quality – A guide to Water Sensitive Urban Design*. Editor-in-chief: THF Wong.
- Hunter Water (2017). *Protecting Our Drinking Water Catchments – Guidelines for Developments in the Drinking Water Catchments*.
- Landcom (2004). *Managing Urban Stormwater: Soils and Construction – Volume 1* (known as “the Blue Book”), Landcom, Sydney.
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- Swanson, R. L., Potts, J. D., and Scanes, P. R. (2017). *Lower Hunter River Health Monitoring Program: Legacies of a Century of Industrial Pollution and Its Impact on the Current Condition of the Lower Hunter River Estuary*. Office of Environment and Heritage, Sydney.
- WaterNSW (2022). *Neutral or Beneficial Effect on Water Quality Assessment Guideline*.
- WSP (2024). *Preliminary Site Investigation – Battery Energy Storage Systems*.

Appendix A

Erosion and Sediment Control Plan

Appendix A 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). 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 shall be prepared 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:

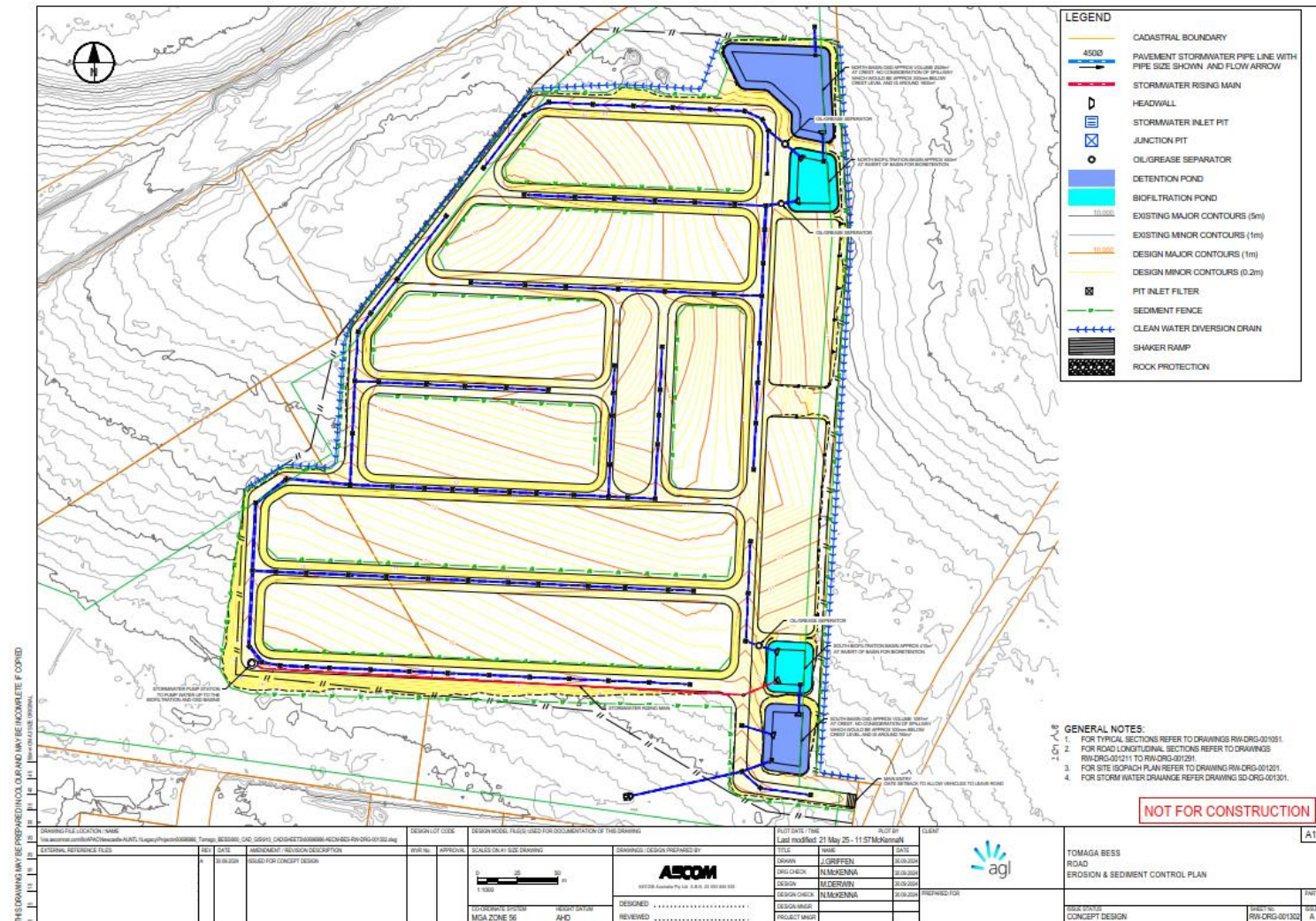
- If practical stockpiles and other loose materials shall be located at localised high points within the indicative laydown area along the eastern boundary of the Site, away from drainage paths and protected from rainfall with geofabric or other equivalent measures. Where soil or ground is to be left 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. 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.
- 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 regular removal of sediment.

- 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

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 C

DCCEEW
Correspondence

Appendix C DCCEEW Correspondence

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,

A handwritten signature in black ink, appearing to read "Rob Brownbill".

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 sources under Clause 2 of Schedule 4 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 D

Unexpected finds
procedure

Appendix D Unexpected finds procedure

Unexpected Finds Procedure for Contamination

Tomago Battery Energy Storage System

10-Feb-2025

Unexpected Finds Procedure for Contamination

Tomago Battery Energy Storage System

Client: AGL Macquarie Pty Ltd

ABN: 18 167 859 494

Prepared by

AECOM Australia Pty Ltd

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10-Feb-2025

Job No.: 60696986

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Quality Information

Document Unexpected Finds Procedure for Contamination
Ref 60696986
I:\legacy\projects\60696986_tomago_bess\500_deliverables\503_unexpected finds procedure for contamination\60696986 - unexpected finds procedure for contamination_vb.docx
Date 10-Feb-2025
Originator Grace Rogers
Checker/s Mark Tiedeman
Verifier/s Greg Matthews

Revision History

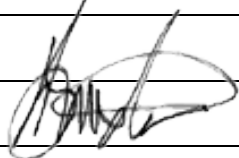
Rev	Revision Date	Details	Approved	
			Name/Position	Signature
A	02-Oct-2024	Draft	Liam Buxton Project Manager	
B	14-Jan-2025	Draft	Liam Buxton Project Manager	
0	10-Feb-2025	Final	Liam Buxton Project Manager	

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	Unexpected Finds Protocol Flowchart	A

1.0 Introduction

1.1 Purpose

This Unexpected Finds Procedure for Contamination (this UXP) has been developed for AGL Macquarie's Tomago Battery Energy Storage System (BESS) (the Project). This UXP details the actions to be taken when potential contaminated soil and/or "unexpected" material are encountered during excavation and construction works at the Tomago BESS site (the Site).

In the event that contaminated materials are discovered, this UXP will be implemented. This UXP is applicable to all works conducted by site personnel (including subcontractors) on the Project that have the potential to uncover/encounter contaminated soil or "unexpected" material.

1.2 Objectives

The objectives of this UXP are to:

- Describe management practices to be implemented to minimise human and environmental exposure to Chemicals of Potential Concern (CoPC) following encounters of unexpected finds as described within **Section 4.0**;
- Detail the types and natures of potential unexpected finds pertinent to the Site;
- Detail the management methodology for unexpected finds;
- Detail the requirements for assessing and reporting unexpected finds; and
- Outline the requirements for off-site disposal or on-site re-use of unexpected finds.

The primary aim of this UXP is to ensure that the subcontractors undertaking development works within the Site have a clear and unified understanding of the regulatory and health, safety and environmental (HSE) requirements in relation to the manner in which unexpected finds are to be handled.

2.0 Site Contacts

The Site contact details at the time of preparation of this UXP are provided in **Table 1**. These contact details will need to be updated and communicated as and when actual details become apparent and/or formal role appointment has been undertaken.

Table 1 Site Contact Details

Contact Name	Contact Details
Principal Client	Nominated environmental representative
Environmental Consultant	TBC
Site Supervisor	TBC
NSW EPA	131 555
WorkSafe NSW	131 050

3.0 Site Identification

The Site identification information is presented below in **Table 2**.

Table 2 Site Identification

Item	Description
Landowner	AGL Macquarie Pty Ltd
Location	6 and 6A Old Punt Road, Tomago, NSW 2322

Item	Description
Current Zoning	E4 – General Industrial
Legal Description	Lot 5 DP 1286735 Lot 6 DP 1286735

4.0 Potential Unexpected Finds

During future excavation and construction works within the Site, there is the potential of encountering unexpected in-ground finds associated with the following CoPC (but not limited to):

- Total Petroleum Hydrocarbons (TPH);
- Benzene, Toluene, Ethylbenzene, Total Xylenes and Napthalene (BTEXN);
- Polycyclic Aromatic Hydrocarbons (PAH);
- Phenols;
- Polychlorinated Biphenyls (PCBs);
- Heavy Metals;
- Organochlorine Pesticides (OCP);
- Organophosphorus Pesticides (OPP);
- Heavy mineral sands;
- Acid Sulfate Soils¹; and
- Asbestos Containing Material (ACM)¹.

The following unexpected finds may potentially be encountered during excavation activities and may include (but not be limited to):

- Underground storage tank/s (e.g. abandoned/decommissioned fuel tanks, septic systems);
- Rubbish pit/s or buried building rubble; and
- Demolition Wastes (e.g. builders rubble, construction wastes etc.).

Section 5.0 presents the assessment and management actions for the CoPC listed above.

5.0 Management of Unexpected Finds

The details of the Unexpected Finds Protocol are provided in **Sections 5.1** through **5.3**, with a decisions flowchart presented in **Appendix A**. All unexpected finds must be recorded in the Unexpected Finds Register. The principal contractor will record all unexpected finds in an unexpected finds register. The register and any potential disposal records will be made available to AGL and the Site Supervisor upon their request.

5.1 Identification and Stop-Work Actions

During development works if unexpected finds are uncovered:

- Works are to cease immediately in the vicinity of the discovery;
- The Site Supervisor is to be notified;

¹ If a CEMP is developed for part or all of the site, an Asbestos Management Plan and Acid Sulfate Soils Management Plan will be included in the CEMP. If Asbestos and/or Acid sulfate Soils are encountered on site, in an area not covered by the Asbestos Management Plan and Acid Sulfate Soils Management Plan, the Asbestos and/or Acid Sulfate Soils encountered on site will be managed under this Procedure.

- The area surrounding the unexpected finds is to be barricaded to ensure site works do not disturb the affected area until an assessment is undertaken; and
- A suitably qualified environmental scientist is to be engaged to attend the Site and assess the find.

5.2 Assessment of Unexpected Finds

The environmental scientist is to advise the required course of action for the find. This may include:

- Sample collection and laboratory analysis;
- A detailed assessment of the information against the notification triggers under the *Contaminated Land Management Act 1997*;
- Advice as to whether the unexpected find may be able to be addressed within the Works' resources, or whether the find warrants immediate escalation to relevant Stakeholders;
- Where contamination impacts warrant, as outlined in Section 60 of the *Contaminated Land Management Act 1997*, then recommendations to AGL for reporting to the NSW EPA;
- Compliance with request for further information, investigation or remediation by the NSW EPA if necessary; and
- Preparation of an assessment report.

Where the NSW EPA determines that the contamination is significant, some or all of the following steps may be required (as determined by the NSW EPA):

- The environmental consultant is to prepare a Remedial Action Plan (RAP), to be reviewed and approved for use by the NSW EPA, if required, prior to the commencement of remediation activities;
- Upon completion of remediation works, the environmental consultant is to prepare a validation report summarising the remediation works undertaken and all validation activities; and
- The validation report is to be reviewed and approved by the NSW EPA, if required, prior to works recommencing within the area of the unexpected find.

5.3 Offsite Disposal / Beneficial Re-use

All unexpected finds, and unexpected finds materials to be either re-used onsite or removed for offsite disposal, are to be assessed and classified by a suitably qualified environmental scientist in accordance with the NSW EPA *Waste Classification Guidelines, Part 1: Classifying Waste* (2014).

Prior to the offsite disposal or onsite re-use of any materials all necessary approvals/permits must be obtained. Transportation of materials for offsite disposal must be undertaken by a suitably licensed waste transportation company with transportation and delivery receipts kept for documentation and inclusion in any reporting.

6.0 Work Health and Safety

The contactors Site-specific Health and Safety Plan should be referred to for all Work Health and Safety (WHS) matters. However, the following general WHS requirements based on WHS legislation should be followed:

- Evaluation of on-Site hazards and risks associated with these hazards;
- Risk control measures (including asbestos controls provisions regarding lighting, noise, atmosphere, electricity, confined spaces and manual handling);
- Definition of personal protection standards;
- Classification of on-site personnel and work zones;

- Details on work practices and restrictions, assessment of anticipated protection levels, controls on access to work zones and decontamination;
- The use of plant at places of work;
- Supervision of work practices and medical surveillance;
- The notification of accidents and other matters;
- Environmental monitoring protocols;
- Emergency information; and
- Risk assessment methods.

6.1 General

All workers and visitors to the Site must attend a Site-Specific Safety Induction before entry to the work zone is allowed.

6.2 Potential Hazards and Prevention

In addition to the regulatory WHS requirements, the controls as provided in **Table 3** will need to be employed (as a minimum) for the Site.

Table 3 Hazard Prevention Control Measures

Hazard	Prevention
Potentially Contaminated Soil and Groundwater	<ul style="list-style-type: none"> • Wear gloves and long sleeves/pants; • Personal protective equipment shall be provided in sufficient quantities to allow for the duties to be adequately performed by Site Operational Staff. • Site Operational Staff should avoid direct contact with potentially contaminated materials encountered during excavation works. Should contact with potentially contaminated materials be required, disposable nitrile gloves are to be worn to avoid dermal contact with potentially contaminated materials.
Acid Sulfate Soils	
ACM Materials	<ul style="list-style-type: none"> • All works must comply with relevant NSW legislation for the movement and handling of ACM materials. • Where necessary, personnel must have correct certification for the handling or assessment of ACM material (Class A assessor etc). • A detailed Safe Work Method Statement (SWMS) is to be prepared outlining the requirements for working with potential ACM materials. • Where practicable, works not associated with the movement and placement of ACM material should be scheduled to avoid contact with the ACM work site. • All personnel working within the vicinity of the movement and placement of ACM material are to be provided with all necessary PPE for working with ACM material. • During excavation and placement of ACM material, air monitoring is to be undertaken by a Class A asbestos assessor to ensure fugitive fibres are not released. • Equipment used to transport the ACM material within the Site is to be decontaminated (high pressure water, wheel wash, etc.) before leaving the designated work area.

Hazard	Prevention
	<ul style="list-style-type: none"> The material is to be “wet down” during excavation and placement to ensure potential fugitive dust emissions are suppressed.
Underground Structures	<ul style="list-style-type: none"> Prior to works commencing, a Dial Before You Dig search must be completed to identify any known underground items/infrastructure. A suitably qualified service locator will assess the area prior to the works commencing to identify and potentially unknown underground items/infrastructure.

7.0 Emergency Response

In the event of any incident, the first priority is the safety of all personnel and the community in the immediate vicinity of the incident. Following this, all practical steps should be taken to minimise the risk of further environmental damage as soon as possible after the event.

The situation should be stabilised following the appropriate incident management or contingency plan procedures. The appropriate staff should be notified, and emergency procedures enacted. Typical first response actions may include:

- Containment of any pollution using booms, silt fences, absorbents, bunding or interception pits; or
- Temporary repair or isolation of failed plant/equipment component; and/or
- Sampling of impacted site media, be it soil, surface water or groundwater.

Follow up action will include the development of a work plan to remediate the impacted site media. Such a work plan would detail any sampling and analysis requirements to define the nature and extent of impact, methods for the recovery, handling, storage and treatment of impacted material, disposal and/or reuse options for impacted material and personal protective equipment requirements. In the event of a serious emergency at the Site, the following procedure will be followed:

- Step 1: Identification of potential contamination;
- Step 2: Stop work, all personnel to leave the area via an established entry/exit, leave the Site and assemble at the designated evacuation assembly area, inform the Site Supervisor and, if necessary, the relevant regulatory authorities (e.g. NSW EPA, SafeWork);
- Step 3: Contact and engage a suitably qualified environmental consultant, complete the initial assessment of the area and record the findings;
- Step 4: The suitably qualified environmental consultant to undertake sampling of potential contamination;
- Step 5: Assess the sampling results and notify the relevant regulatory authority/ies;
- Step 6: Undertake further investigations, as recommended by relevant regulatory authority/ies ;
- Step 7: Implement management strategies and/or remediation and validation works; and
- Step 8: Recommence works.

No project personnel or visitors are to leave the assembly area unless advised to do so by the Site Supervisor.

The Site Supervisor will notify the relevant service as to the details regarding any emergency:

- Fire Brigade: 000
- Ambulance: 000
- Police: 000

- NSW EPA: 131 555

Records will be kept of any incidents, accidents, hazardous situations, unusual events and unsafe health exposures and the corrective action taken.

Emergency procedures and contact telephone numbers will be displayed in a prominent position during Site works.

8.0 Reporting

All site personnel are responsible for reporting any unexpected contamination finds for the duration of the Project. Reporting, including photologs, are to be provided to the Site Supervisor, together with a summary of any actions taken. The following records are to be maintained by the principal contractor relating to all unexpected finds:

- A photographic record of the unexpected finds;
- A record of geographical locations and spot levels on the RL (m AHD) to provide position of find within the Site;
- A daily field activity log of works associated with any finds and subsequent management works;
- A site plan identifying the exact locations of the unexpected find;
- Remedial Action Plan (if prepared for the unexpected find);
- Correspondence with regulatory authorities; and
- Waste transport certificates (if material is removed from site).

8.1 Non-Conformance and Corrective Action Reports

Unexpected finds non-conformances will be recorded in a Non-Conformance and Corrective Action Report. Details of the non-conformance, including any immediate corrective actions undertaken, are to be recorded by the Site Operational Staff.

It is the responsibility of the Site Supervisor to immediately initiate corrective actions, if required in the instance of an unexpected find. Once completed, the Site Supervisor will provide details of the actions undertaken on the Non-Conformance Report and sign, date and file the report.

8.2 Incident Management Reports

Records will be kept of any environmental incidents, accidents, hazardous situations, unusual events and unsafe health exposures, including those relating to unexpected finds, and the corrective action taken.

The Site Supervisor will adequately investigate the cause of any incident so that necessary changes in work practices can be made to prevent the incident recurring.

Appendix A

Unexpected Finds Protocol Flowchart

Figure 1 Unexpected Finds Flowchart