

Tallawarra Stage B Gas Turbine Power Station

Soil and Water Management
Sub-Plan

**EnergyAustralia Tallawarra
Pty Ltd**

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Abbreviations

Abbreviation	Meaning
AEC	Areas of environmental concern
AEP	Annual exceedance probability
CCGT	Combined cycle gas turbine
CEMP	Construction environmental management plan
CoA	Conditions of Approval to Major Project MP07-0124
DPiE	Department of Planning, Industry and Environment
EA	Environmental Assessment (SKM, 2009)
EMS	Environmental management strategy
ENM	Excavated natural material
EP&A Act	<i>Environment Planning and Assessment Act 1979</i>
EPA	NSW Environment Protection Agency
EPL	Environment protection licence
ER	Environmental representative
EWMS	Environmental work method statements
GECL	GE Clough, engineering, procurement and construction contractor
HSSE	Health, safety, security and environment
kV	Kilovolts
Mod-1	Modification 1 to Major Project MP07-0124
Mod-2	Modification 2 to Major Project MP07-0124
MW	Megawatts
NRAR	Natural Resources Access Regulator
OEMP	Operational environmental management plan
OCGT	Open cycle gas turbine
PESCP	Progressive erosion and sediment control plans
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
PMF	Probable maximum flood
SEPP	State Environmental Planning Policy
SoC	Statement of Commitments within the Environmental Assessment and Submissions Report (SKM, 2009/2010)
SWMP	Soil and water management plan
VENM	Virgin excavated natural material
WARR Act	<i>Waste Avoidance and Resource Recovery Act 2001</i>
WMP	Waste management plan

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1 Introduction

1.1 Document structure

The Tallawarra Stage B Gas Turbine Power Station (the Project) Environmental Management Strategy (EMS) provides the strategic environmental management framework for the construction and operation of the Project.

Within the EMS the Construction Environment Management Plan (CEMP) provides a system of management, including procedures, policies, and processes for EnergyAustralia to establish and maintain project compliance and best practice controls to manage potential environmental impacts during the construction of the Project.

The CEMP provides a structure for project specific management sub-plans, including this document, to translate the corresponding environmental management requirements, commitments, and conditions of approval into an actionable construction management plan.

This SWMP has been prepared to supplement the CEMP. It should be read in conjunction with the EMS and CEMP and used to inform the development of activity specific Environmental Work Method Statements (EWMS).

1.2 Project delivery structure

The project will be delivered through various entities and contracts including:

- EnergyAustralia, as proponent / owner has overarching accountability for the project delivery. During construction, EnergyAustralia will manage delivery of certain owner directed works which may include transmission line works or other ancillary works.
- GE Clough (GECL) has been awarded the Engineering, Procurement and Construction (EPC) main contract for construction and commissioning of the Tallawarra B Power Station. GECL will be responsible for the power station design, construction and commissioning, including the establishment of associated construction ancillary facilities.
- Sub-contractors may be engaged by EnergyAustralia or GECL, as required.
- EnergyAustralia would operate the project following construction.

This SWMP is applicable to all personnel including contractors and subcontractors associated with the delivery of the project.

1.3 Background

This Soil and Water Management Sub-Plan (SWMP) has been prepared for the construction and commissioning of the proposed Tallawarra Stage B Gas Turbine Power Station (MP07-0124) (the Project). It includes provisions for:

- Contaminated land management
- Water quality management
- Erosion and sediment control
- Flooding constraints management.

This plan aligns with the corresponding environmental management commitments made on behalf of the Project in the Environmental Impact Assessment and Modification and the requirement of the Conditions of Approval and Environmental Protection Licence.

1.4 Location and land use

The Project is located at Yallah Bay Road, Yallah approximately 13 km south of Wollongong and 60 km south of Sydney. The site was previously used for a coal-fired power station, which was decommissioned in 1989. The Project will be constructed immediately adjacent to the existing Tallawarra A closed cycle gas turbine power station. As a result of its previous uses, the majority of the land surrounding the Project site (Tallawarra Lands) is vacant and has been cleared of vegetation. Currently, cattle grazing, and other rural activities constitute the primary land use beyond the power station site boundary.

1.5 Tallawarra A power station

The existing Tallawarra A closed cycle gas turbine power station is operated by EnergyAustralia. It will continue be operational throughout construction of the Project. The Project will utilise much of the existing Tallawarra Stage A power station equipment and infrastructure during construction, including but not limited to stormwater catchment systems.

1.6 Objectives

Objectives, targets, and details of how they will be achieved through the SWMP are identified below in Table 1-1.

Table 1-1: SWMP objectives and targets

item	Objective	Targets	Measurement tool
Construction compliance	Construction of the project in accordance with environmental approvals and licences	Compliance with all statutory approvals and licences	Safeguards and management measures – Section 5 Audits – Section 7.3 Construction compliance reporting – CEMP Section 13 Management reviews – CEMP Section 13 and 14
Soil erosion and sediment	Prevent soil loss and associated waterway impacts	Erosion and sediment controls are appropriate designed, implemented and maintained. No impacts to waterways surrounding the project from sediment resulting from the project.	Safeguards and management measures – Section 5 Audits – Section 7.3 Construction compliance reporting – CEMP Section 13 Management reviews – CEMP Section 13 and 14
Water quality	Protect water quality in waterways surrounding the project	No change to water quality in waterways surrounding the project resulting from the project	Safeguards and management measures – Section 5 Audits – Section 7.3 Construction compliance reporting – CEMP Section 13 Management reviews – CEMP Section 13 and 14
Flooding	Minimise adverse hydrological impacts resulting from the project	No adverse effects to adjoining land as a result of flooding and runoff	Safeguards and management measures – Section 5 Audits – Section 7.3 Construction compliance reporting – CEMP Section 13 Management reviews – CEMP Section 13 and 14

2 Relevant legislation and guidelines

2.1 Relevant legislation

The relevant legislation addressed in this SWMP include:

- *Environmental Planning and Assessment Act 1979* (EP&A Act).
- *Environmental Planning and Assessment Regulation 2000*
- *Protection of the Environment Operations Act 1997*
- *Contaminated Land Management Act 1997*
- *Soil Conservation Act 1938*
- *Water Management Act 2000*.
- *Water Management (General) Regulation 2018*

Responsibilities for addressing approvals, licenses, and permits required for the Project are listed in the legislative requirements responsibility table provided in Appendix G of the EMS.

2.2 Guidelines and policies

The guidelines and policies addressed in this SWMP include:

- Managing Urban Stormwater: Soils and Construction - Volume 1, 4th edition, Landcom 2004
- Managing Urban Stormwater: Soils and Construction - Volume 2A Installation of services, DECC 2008
- Storing and Handling Liquids: Environmental Protection Participant's Manual, EPA 2007
- NSW Waste Guidelines, Part 1 Classifying Waste, EPA 2014
- NSW Waste Guidelines, Addendum to Part 1: Classifying Waste, EPA 2016
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality, ANZECC 2000
- Controlled activities: Guidelines for watercourse crossings, DPI Office of Water 2012
- Controlled activities: Guidelines for instream works, DPI Office of Water 2012
- Controlled activities: Guidelines for outlet structures, DPI Office of Water 2012
- Controlled activities: Guidelines for riparian structures, DPI Office of Water 2012
- Controlled Activities Guidelines, DPIE Water 2008
- BMT (2019), Lake Illawarra Coastal Management Program, Draft Report, June 2019, prepared for Wollongong City Council and Shellharbour City Council
- Wollongong City Council (2005), Lake Illawarra Floodplain Risk Management Study and Plan, version 6 (May 2005).

2.3 Conditions of approval

The conditions of approval specifically relating to this SWMP are provided in Table 2-1 along with the responsibility for compliance. Where these conditions translate into an environmental safeguard or management measure, Table 2-1 indicates where in this SWMP (or other management plan) the condition is addressed.

Table 2-1: Conditions of approval relevant to the SWMP

No	Condition	Where addressed
Water quality and soils		
3.30	Except as may be provided by an Environment Protection Licence for the project, the Proponent shall comply with section 120 of the <i>Protection of the Environment Operations Act 1997</i> which prohibits the pollution of waters.	Table 5-1
3.31	Soil and water management controls shall be employed to minimise soil erosion and the discharge of sediment and other pollutants to lands and/or waters during construction activities, in accordance with Landcom's (2006) <i>Managing Urban Stormwater: Soils and Construction</i> .	Table 5-1
Hydrology		
3.34	The Proponent shall utilise existing crossings over Yallah Creek and shall avoid constructing temporary watercourse crossings for heavy vehicles and machinery.	Table 5-1
3.35	The Proponent shall ensure that any construction activities within 40 metres of the bank of Yallah Creek, and any other watercourses, are consistent with Controlled Activity Guidelines (Department of Water and Energy, 2008) including, but not limited to, 'In-stream Works', 'Outlet Structures', 'Riparian Corridors', 'Vegetation Management Plans', and 'Watercourse Crossings', or any guidelines which supersede these documents.	Table 5-1
3.36	The Proponent shall ensure that the project is designed, sited, and constructed so that it is not subject to inundation by floodwaters up to or at a level of the Probable Maximum Flood, nor does it exacerbate flooding on adjacent land. Where the Proponent can demonstrate to the satisfaction of the Secretary that it is not reasonable and feasible to design to the Probable Maximum Flood, the Proponent may nominate an alternative design flood level for the approval of the Secretary. The alternative flood level shall be developed using a risk-based approach and in consultation with Wollongong City Council.	Table 5-1
3.37	The project shall be designed, and employ surface water management techniques, such that existing runoff volumes along drainage lines from the site are maintained at pre-construction levels and there are no adverse effects to adjoining land as a result of flooding and runoff.	Table 5-1
Environmental management - general		
5.1 and Appendix 1	The Secretary must be notified in writing via the Major Projects website immediately after the Proponent becomes aware of an incident. The notification must identify the development (including the application number and the name of the development if it has one) and set out the location and nature of the incident. Subsequent notification requirements must be given, and reports submitted in accordance with the requirements set out in Appendix 1 [of the major project approval].	Section 7.5 Appendix E
7.3	As part of the CEMP for the project, required under condition 7.2 of this approval, the Proponent shall prepare and implement the following: (d) a Soil and Water Management Plan prepared in consultation with the DPIE Water, EPA and Wollongong City Council to detail measures to mitigate and manage soil erosion and the discharge of sediment and other pollutants to land and/or water during construction. The Plan must include, but not be limited to:	This plan Appendix A

No	Condition	Where addressed
	a) identification of the construction activities that could cause soil erosion or discharge sediment or water pollutants from the site.	Section 3
	b) a description of the management methods to minimise soil erosion or discharge of sediment or water pollutants from the site, including a strategy to minimise the area of bare surfaces and stabilise disturbed areas, and plan drawings showing the locations for sediment and erosion control measures.	Table 5-1 Appendix D
	c) demonstration that the proposed erosion and sediment control measures will conform with, or exceed, the relevant requirements of Managing Urban Stormwater: Soils and Construction (Landcom, 2004).	Table 5-1 Appendix D
	d) details on the installation, monitoring and maintenance requirements for each of the recommended measures for erosion and sediment control.	Table 5-1 Appendix D
	e) details of stormwater overflow paths and measures for managing overflows.	Table 5-1 Appendix D
	f) detailed drawings of any engineering structures such as sediment and evaporation ponds, including design standards and management regimes.	Table 5-1 Appendix D
7.7	<p>Within 3 months, unless the Secretary agrees otherwise, of:</p> <ul style="list-style-type: none"> a) the submission of an incident report under condition 5.1 of this approval; b) the submission of an Independent Environmental Audit report under condition 5.11 of this approval; c) the approval of any modification to the conditions of this approval; or d) a direction from the Secretary under condition 1.3 of this approval; <p>the Proponent must review and, if necessary, revise the studies, strategies or plans required under the conditions of approval to the satisfaction of the Secretary.</p> <p>Where this review leads to revisions in any such document, then within 4 weeks of the review the revised document must be submitted to the Secretary for approval, unless otherwise agreed with the Secretary.</p>	Section 7.7

3 Aspects and impacts

This SWMP is informed by the identification and analysis of environmental aspects and impacts, and the mitigation of associated risks. Section 7 of the CEMP details how environmental aspects, impacts and environmental risks are identified and assessed as part of the development of activity specific environmental work method statements (Section 5.1).

This section provides details on the soil and water aspects and impacts relevant to the construction of the project.

3.1 Aspects

The aspects described in this section are referenced where appropriate to the soil and water features presented in Figure 3-1.

3.1.1 Drainage

The Tallawarra site is located along the eastern edge of Lake Illawarra and is intersected by three watercourses: Duck Creek, Wollingurri Creek, and Yallah Creek. Yallah Creek is piped under the north-west section of the Project site before discharging into Lake Illawarra. An ephemeral stream located in Yallah Gully flows in a west-east direction and is piped under the southern portion of the Tallawarra Stage A power station site before discharging to Lake Illawarra.

A bunded artificial wetland located in the upper Yallah Creek catchment is fed by first flush and small intermittent flows. During periods of high and sustained flow, water from Yallah Creek bypasses the wetland down its original course. Some flow then enters the northern drain which is an open channel to the site road where it passes underneath the development through a 1.8 m diameter pipe. The remaining flow enters a pipe which runs adjacent to the site, with some water being diverted to the sewage treatment plant. Water from the treatment plant is used to irrigate the surrounding catchments and does not re-enter the creek.

From about 200 metres into the project boundary, Yallah Creek is channelised into an underground culvert drain known as the 'north drain'. The north drain conveys stormwater from Yallah Creek through to Lake Illawarra. Consultation with Wollongong City Council identified a concern that the north drain may become blocked during heavy rains.

3.1.2 Lake Illawarra water quality

Lake Illawarra is an important ecological and community resource that supports diverse uses. In 2009 the EA characterised water quality in Lake Illawarra as generally poor due to the narrow connection to the Pacific Ocean which results in limited flushing. Because of this, urban, industrial, and agricultural pollutants, including silt and nutrients, tend to be retained in the lake (SKM 2009). More recently, the Lake Illawarra Estuary Health and Water Quality Report 2021 (WCC 2021), rated water quality as good to very good for 2020/2021. It reports that the condition of the estuary has improved over the period 2013 - 2021.

The project is generally located adjacent to the western bank of Lake Illawarra and project works will be undertaken up to 20 metres from Lake Illawarra. Due to this proximity, water quality in Lake Illawarra could be directly impacted by the mobilisation of sediment, or from contaminated runoff.

3.1.3 Controlled activities

Clause 43 of the Water Management (General) Regulation 2018 provides for an exemption for the project from requirements to obtain controlled activity approval. Notwithstanding this exemption, the project Condition of approval 3.35 requires any construction activities within 40 metres of the bank of Yallah Creek, and any other watercourses (including Lake Illawarra), to be undertaken consistent with Controlled Activity Guidelines (Department of Water and Energy, 2008). These guidelines referenced in the conditions of approval have now been superseded.

The current version of the guidelines for controlled activities and the protection of waterfront land is available from <https://www.dpie.nsw.gov.au/nrar/how-to-apply/controlled-activities/guidelines-for-controlled-activities>. Several aspects of the project will need to be undertaken consistent with the controlled activities guidelines. These activities are identified in Table 3-1 along with the management controls to be implemented in accordance with each guideline.

Table 5-1 includes a requirement for activity specific EWMS (refer to Section 5.1) to include evidence of compliance with the relevant controlled activity guidelines, where appropriate.

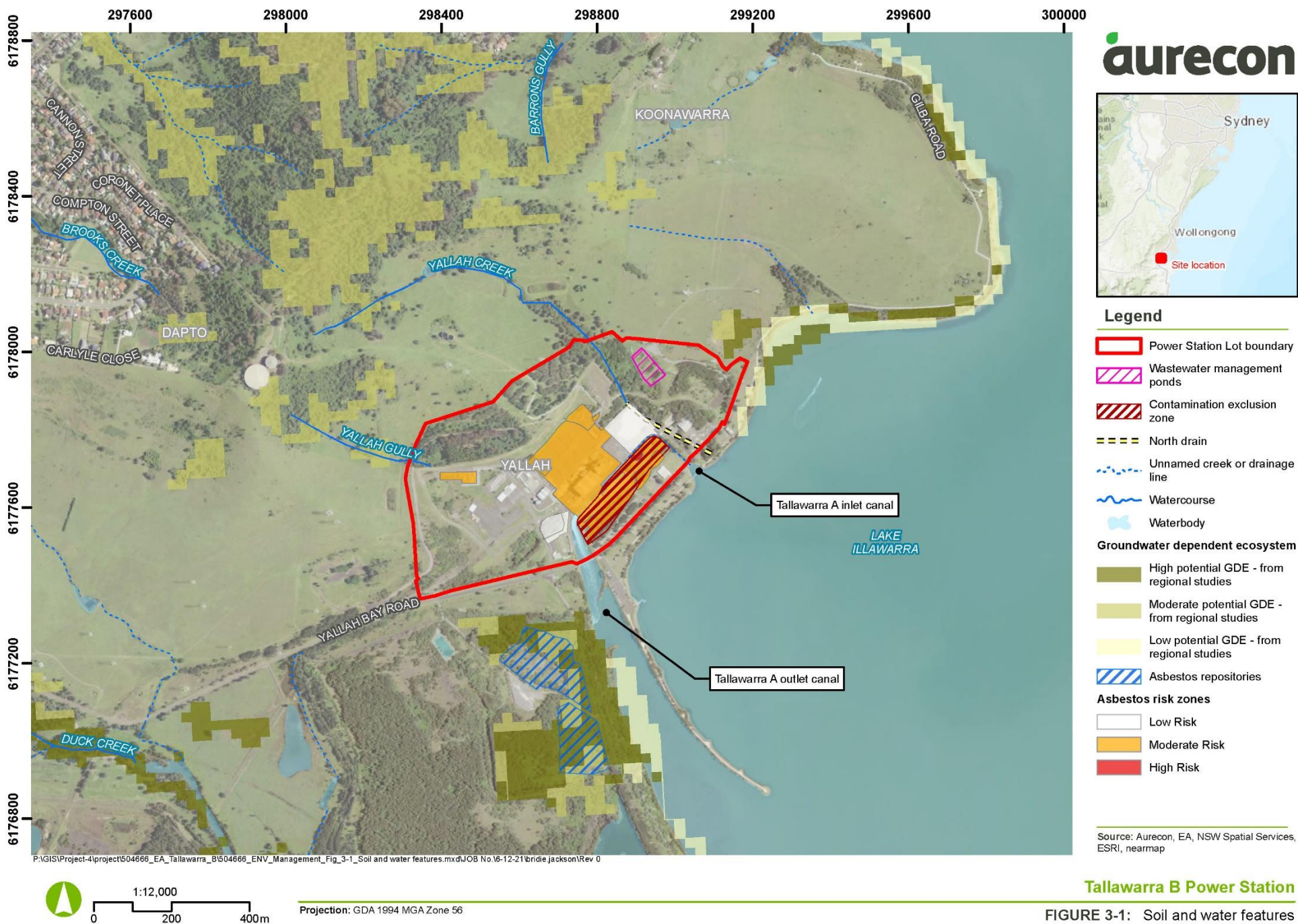


Table 3-1: Controlled activities and controls to be implemented

Controlled activity	Potential project activities within the scope of the controlled activity	Controlled activity guideline controls to be implemented
<p>Guideline – instream works</p> <p>Instream works – including works on waterfront land including the bed and bank of any river, lake or estuary and all land within 40 metres of the highest bank of the river, lake or estuary</p>	<ul style="list-style-type: none"> ■ Establishment of project laydown areas within 40 metres of Lake Illawarra ■ Establishment of the switchyard laydown area within 40 metres of Yallah Creek ■ Construction of a new transmission line within 40 metres of Yallah Creek ■ Construction of the Tallawarra B Power Station main turbine hall within 40 metres of Yallah Creek 	<ul style="list-style-type: none"> ■ Identify the width of the riparian corridor in accordance with the NSW Office of Water guidelines for riparian corridors. ■ Consider the full width of the riparian corridor and its functions in the design and construction of any instream works. Where possible, the design should accommodate fully structured native vegetation. ■ Minimise the design and construction footprint and proposed extent of disturbances to soil and vegetation within watercourse or waterfront land. ■ Maintain or mimic existing or natural hydraulic, hydrologic, geomorphic and ecological functions of the watercourse. Demonstrate the instream works will not have a detrimental impact on these functions. ■ Maintain the natural geomorphic processes. <ul style="list-style-type: none"> – Accommodate natural watercourse functions. – Establish natural bed and bank profiles, for example meanders, chain of ponds, surface water pools and riffles and bed controls. – Allow for the movement of sediment and woody debris. – Prevent increased scour and erosion of the watercourse bed or banks in any storm events. – Avoid locating works or structures on bends in the channel unless they are structures to restore stability. – Address existing bed degradation to protect structures and restore channel and bed stability. ■ Maintain the natural hydrological regimes. <ul style="list-style-type: none"> – Accommodate site hydrological conditions, for example maintain low flows. – Do not alter natural bank full or floodplain flows. Modifications to watercourses should be based on roughness coefficients that represent the 'natural' state including fully structured mature riparian vegetation. – Do not change the gradient of the bed except to address existing bed and bank degradation. – Do not increase velocities by constricting flows. ■ Protect against scour by designing and providing necessary scour protection, for example, rock rip-rap and vegetation. ■ Stabilise and rehabilitate all disturbed areas including topsoiling, revegetation, mulching, weed control and maintenance in order to adequately restore the integrity of the riparian corridor. ■ Monitor and maintain all in-stream works until suitably stabilised.
<p>Guideline – outlet structures</p> <p>Outlet structures – on waterfront land being land within the bed and bank of any river, lake or estuary and all land within 40 metres of the highest bank of the river, lake or estuary</p>	<ul style="list-style-type: none"> ■ Potential for temporary construction water discharges within 40 metres of Lake Illawarra ■ Potential for the construction of new drainage outlets within 40 metres of Lake Illawarra 	<ul style="list-style-type: none"> ■ Define the infrastructure route and identify the specific point of discharge. Where possible select a route along an existing cleared or disturbed area that avoids trees, preferably beyond their drip line. ■ Choose a stable section of the stream for the discharge point, preferably mid-way between bends. Alternatively, incorporate outlet discharge points into disturbed/eroded areas which are to be stabilised or rehabilitated.

Controlled activity	Potential project activities within the scope of the controlled activity	Controlled activity guideline controls to be implemented
		<ul style="list-style-type: none"> Minimise construction footprint and proposed extent of disturbance to soil and vegetation within the watercourse or waterfront land. Demonstrate that changes to the hydrology of the receiving watercourse have been assessed and there is no detrimental impact on discharge volumes and channel velocities. Discharge velocities and flow rates should mimic natural flows and not initiate erosion. Discharge from an outlet should not cause bed or bank instability. Protect the bed of the watercourse below the outlet if not bedrock, or if bed scour is likely. Consider bank material and outlet jet effect and protect the opposite streambank if required. Point outlet structure and direct discharge downstream. The outlet should not protrude beyond the streambank but tie in with the adjoining bank alignment. Calculate tractive stresses generated from outlet discharges and from bank full discharges to determine appropriate rock size requirements for the structure. Rock rip-rap is the preferred material to provide a natural outlet. Rip-rap should extend for the full extent of the design scour apron and adjoining flanks/streambank. Rip-rap must be appropriately keyed in to withstand the velocities of runoff or discharge from the site and cut-off trenches should be provided where necessary. Rip-rap should consist of durable, angular run-of-quarry rock placed over a bedding layer of angular cobbles over geotextile. Where possible, incorporate vegetation such as sedges and rushes into scour management as Figure 1 [of the guideline] for further stability. Grade scour apron to bed level of the watercourse or just below any permanent water created by any stable feature such as a rock bar within the watercourse. Stabilise and rehabilitate all disturbed areas including topsoiling, revegetation and regeneration, mulching, weed control and maintenance.
<p><u>Guideline – Riparian corridors</u></p> <p>Riparian corridors – including works within designated riparian corridor as defined under the guideline</p>	<ul style="list-style-type: none"> Consistent with CoA 3.42 a vegetated riparian zone will be established to a width of 50 metres on either side of Yallah Creek for the project. Under this condition, all works and disturbance areas associated with the project must be located outside of the riparian zone. The establishment of this zone is managed through the FFMP. The project will therefore be consistent with the riparian corridor guideline. 	<ul style="list-style-type: none"> Seek to maintain or rehabilitate a riparian corridor/vegetated riparian zone with fully structured native vegetation in accordance with Table 1 [of the guideline]. Seek to minimise disturbance and harm to the recommended riparian corridor/vegetated riparian zone. Minimise the number of creek crossings and provide perimeter road separating development from the riparian corridor/vegetated riparian zone. Locate services and infrastructure outside of the riparian corridor/vegetated riparian zone. Within the riparian corridor/vegetated riparian zone provide multiple service easements and/or utilise road crossings where possible. Treat stormwater run-off before discharging into the riparian corridor/vegetated riparian zone.
<p><u>Guideline - Watercourse crossings</u></p> <p>Watercourse crossings - relates to the design and construction of watercourse crossings and</p>	<ul style="list-style-type: none"> Consistent with CoA 3.34 the project will be designed and constructed to utilise existing crossings over Yallah Creek and will avoid constructing temporary watercourse crossings for heavy vehicles and machinery. The project is 	<p>If new watercourse crossings are required, they should be designed and constructed to:</p> <ul style="list-style-type: none"> Identify the width of the riparian corridor in accordance with the NSW Office of Water guidelines for riparian corridors. Consider the full width of the riparian corridor and its functions in the design and construction of crossings.

Controlled activity	Potential project activities within the scope of the controlled activity	Controlled activity guideline controls to be implemented
ancillary works, such as roads on land within 40 metres of the highest bank of the river, lake or estuary	therefore likely to be consistent with the watercourse crossings guideline.	<p>Where possible, the design should accommodate fully structured native vegetation.</p> <ul style="list-style-type: none"> ■ Minimise the design and construction footprint and extent of proposed disturbances within the watercourse and riparian corridor. ■ Maintain existing or natural hydraulic, hydrologic, geomorphic and ecological functions of the watercourse. ■ Demonstrate that where a raised structure or increase in the height of the bed is proposed there will be no detrimental impacts on the natural hydraulic, hydrologic, geomorphic and ecological functions. ■ Maintain natural geomorphic processes. <ul style="list-style-type: none"> – Accommodate natural watercourse functions. – Maintain the natural bed and bank profile. – Ensure the movement of sediment and woody debris is not inhibited. – Do not increase scour and erosion of the bed or banks in any storm events. – Avoid locating structures on bends in the channel. – Where bed degradation has occurred, address bed degradation to protect the structure and restore channel and bed stability. ■ Maintain natural hydrological regimes. <ul style="list-style-type: none"> – Accommodate site hydrological conditions. – Do not alter natural bank full or floodplain flows or increase water levels upstream. – Do not change the gradient of the bed except where necessary to address existing bed and bank degradation. – Do not increase velocities by constricting flows, for example filled embankments on approaches. ■ Protect against scour. <ul style="list-style-type: none"> – Provide any necessary scour protection, such as rock rip-rap and vegetation. – Ensure scour protection of the bed and banks downstream of the structure is extended for a distance of either twice the channel width or 20 metres whichever is the lesser. – If cutting into banks, protect cuttings against scour. ■ Stabilise and rehabilitate all disturbed areas including topsoiling, revegetation, mulching, weed control and maintenance in order to adequately restore the integrity of the riparian corridor. <p>Bridges - additional design considerations</p> <ul style="list-style-type: none"> ■ Ideally, bridges shall be elevated and span the riparian corridor. ■ Bridge piers or foundations should not be located within the main channel of the watercourse. ■ The bridge design must be certified by a suitably qualified engineer. <p>Causeways or bed level crossings - additional design considerations</p> <ul style="list-style-type: none"> ■ The deck of the crossing shall be at the natural bed elevation. ■ The crossing should have a vertical cut-off wall on the downstream side of the crossing to a minimum depth of one metre and minimum width of 100 millimetres.

Controlled activity	Potential project activities within the scope of the controlled activity	Controlled activity guideline controls to be implemented
		<ul style="list-style-type: none"> Approaches to crossings should be sealed and incorporate appropriate roadside drainage, such as stabilised table drains where necessary <p>Culverts - additional design considerations</p> <ul style="list-style-type: none"> Box culverts are preferred to pipes. Align culverts with downstream channel. Incorporate elevated dry cells and recessed wet cells with the invert at or below the stable bed level. The culvert design must be certified by a suitably qualified engineer.

3.1.4 Flooding

Flood risk to the Project from Duck Creek is minimal in all events up to and including the 1% annual exceedance probability (AEP) (1 in a 100-year event) as flooding is generally limited to the south of the Tallawarra site. Flood risk to the Project from smaller tributaries including Wollingurri Creek, Barrons Gully, and Pithungar Gully is also minimal as flooding in these watercourses are unlikely to breach their banks (SKM, 2009).

Flood risk to the Project from Lake Illawarra is minimal in all events up to and including the 1% AEP. In a 1% AEP flood, without mitigation waters would back up Yallah Creek resulting in inundation up to approximately 35m from the Project (SKM, 2009).

The probable maximum flood (PMF) for the Project is defined as the largest flood that could conceivably occur at the Project site. At the Project site, this equates to a relative level of 3.24 metres Australian Height Datum. This PMF level is identified in the project conditions of approval.

Consultation with Wollongong City Council has been undertaken on flooding. In response to this, the design of the project will consider:

- The Lake Illawarra Flood Risk Management Study to determine if it is reasonable and feasible to design the Project to an alternative PMF level derived from the study.
- Sea level rise scenarios and the Lake Illawarra Coastal Management Program, Draft Report, June 2019 to determine if the Project could be impacted by high risk inundation areas and where tidal movement may create inundation to the site.

3.1.5 Acid sulfate soils

Actual or potential acid sulphate soils (ASS) have been identified during previous investigations in Coffey (2010). ASS has been identified predominantly in the southern part of the site around the current/former lower lying alluvial/estuarine environments. The majority of these areas coincide with the former ash ponds and/or low lying areas.

Given the potential acid sulphate soil areas are mapped outside of the power station boundary and given the project would not include any excavations greater than one metre deep in these areas, the risk of encountering acid sulfate soils during the project is low.

If the project was amended to interact with potential or actual ASS the HSSE Lead must prepare appropriate procedures and update this SWMP, or approve appropriate actions and safeguards as part of an activity specific EWMS.

3.1.6 Groundwater

Groundwater depth varies across the site from greater than 15 metres below ground level in the wester upper slope areas of the site to greater than 3.5 meters below ground level closer to Lake Illawarra (Coffey 2010, Earth 2 Water 2010). Groundwater generally flows towards Lake Illawarra.

Evidence from the Tallawarra A power Station construction indicates that the power station island is not subject to any groundwater infiltration. The project design is still being developed, however excavations greater than three metres deep are not proposed. As such the risk of groundwater interception through the project is very low.

If groundwater is encountered during the project, the following processes will be followed:

- Stop work and consult with the HSSE Lead and Environmental Representative
- If practical, complete the works without extracting groundwater from the excavation
- If groundwater extraction is required:
 - The HSSE Lead would confirm that the works can continue under the Schedule 4, Part 1(7) of the Water Management (General) Regulation 2018 allowing up to 3ML/year to be extracted.
 - If groundwater volumes are likely to be less than 1000 litres, groundwater would be contained and directed to the nearest sediment basin.
 - If groundwater volumes are likely to be greater than 1000 litres, a dewatering plan will be developed to consider water levels, flow direction and rates, groundwater quality and proposed dewatering effluent disposal methods.
 - Volumes of all groundwater extracted will be recorded.

3.1.7 Groundwater dependent ecosystems

Groundwater Dependent Ecosystems (GDEs) are susceptible to clearing of vegetation, contamination of groundwater and may be impacted by the release of contaminants or oxidation of acid sulphate soils (ASS).

Direct impacts to GDEs are unlikely because the closest groundwater dependent ecosystems are located outside of the power station boundary (approximately 100 metres from the project works at the closest point) and the project is not likely to intersect or extract groundwater (refer to Section 3.1.6).

If groundwater is extracted for the project, the volume would be less than 3 ML per year (refer to Section 3.1.6). Given the strong connectivity of the aquifer to Lake Illawarra and the proximity of the works to this recharge source (Coffey 2010), any groundwater drawdown resulting from the project would be minor and temporary.

Indirect impacts to GDEs are also unlikely because the disturbance of potential or actual acid sulfate soils is not expected to occur (refer to Section 3.1.5) and measures will be in place to prevent accidental spillages from contaminating groundwater.

3.1.8 Contamination

AECOM (2021) provides the most recent contaminated soils assessment for the Project area. This assessment has been used to identify an area of potential contamination located south of the inlet canal (refer to Figure 3-1). This area has been identified to contain contamination, predominantly associated with asbestos (chrysotile and amosite), and is noted not to be suitable for construction activities. This area has been identified in the GeoPortal as a construction exclusion zone to be securely fenced off and signposted to prevent access during construction.

Due to the previous site land uses the Project area is likely to contain contaminated soils, including asbestos containing materials. Not all areas that may be subject to soil disturbance for the project have been recently or fully assessed for contamination. As such the risks of the project disturbing contaminated materials is high. To manage potential contamination impacts all project works that would disturb soils are required to follow the Unanticipated Find Procedure – Contamination provided in Appendix B and the Unanticipated Find Procedure – Asbestos provided in Section 19.2 of Appendix C, Hazmat Services (2011).

Whilst Hazmat Services (2011) provides the asbestos management processes to be followed for the Project, Figure 7 in Hazmat Services (2011) has been superseded by the most recent contamination assessment for the Project area, AECOM (2021). In particular, the 'high risk' area for asbestos contamination identified in

Figure 7 of Hazmat Services (2011) has been remediated and no longer presents a high risk of encountering asbestos.

Potential Areas of Environmental Concern (AEC) outside of the Power Station boundary have been identified during previous investigations in the Geotechnical, Contamination and Groundwater Investigation Tallawarra Lands, Yallah, NSW report (Coffey 2010). Of the AECs identified, actual soil contamination has been identified at AEC2, AEC3, AEC4, AEC8, and AEC9. The range of contaminants identified across these locations include asbestos, lead, arsenic, petroleum hydrocarbons and aldrin (a pesticide). The potential for soil contamination from these AECs to constrain the project is considered low because all the identified AECs are located outside the project boundary. If any project works are proposed outside of the power station boundary, the AECs identified in Coffey (2010) should be considered.

3.1.9 Erosion and sediment control

All construction activities will be undertaken in accordance with the Project's Progressive Erosion and Sediment Control Plan (PESCP) (refer to Appendix D) and mitigation measures outlined in Table 5-1. The initial version of the PESCP addresses the initial construction areas that will be subject to soil disturbance. As the construction planning and construction activity for the project progresses, updates to the PESCP will be made prior to soil disturbance occurring in any previously undisturbed area.

As part of the erosion and sediment control risk strategy, all ground disturbance will be progressive within local management areas. This will enable site specific erosion and sediment control measures to be designed, installed, and maintained to achieve control of potential sedimentation risks downstream.

The vegetation clearing program will be staged according to the construction works program to further reduce disturbed areas. Existing vegetated or grassed areas will remain undisturbed until temporary or permanent works are programmed to commence.

As a priority, permanent treatments will be implemented on finished surfaces in accordance with the Landscape Plan, otherwise temporary measures such as establishment of a cover crop or the use of soil binders will be used to minimise erosion and stabilise areas.

As detailed in the PESCP (Appendix D), the Project will collect and reuse site waters for construction purposes including dust suppression as part of the strategy to reduce potential sedimentation to Lake Illawarra and adjoining watercourses.

Vehicle movements will be restricted to nominated carparking areas and nominated construction ancillary sites. Most site access will be on-foot to reduce unnecessary traffic movements and additional ground disturbance.

Upstream catchment waters will be diverted around the site works using the natural flow path as per the PESCP to ensure clean and site water separation. Existing drainage within the site will be protected using site controls such as sandbags, sediment fence, etc. Drainage lines and flow paths will remain free of mobile and loose construction materials including stockpile management which will be as per the PESCP (Appendix D) and activity specific EWMS.

3.2 Potential impacts

3.2.1 Project GeoPortal and sensitive area maps

The Project's environmentally sensitive areas (waters, wetlands, asbestos risk zones, potential or actual sulfate soil areas and/or areas of contaminated soil areas of potential concern) are identified and visually displayed in the project [GeoPortal](#) and are also detailed in Figure 3-1. The GeoPortal is a web-based geospatial mapping tool that digitally identifies site environmentally sensitive areas and key project features and ancillary facilities.

The Project will avoid, manage and/or mitigate impacts to these environmentally sensitive areas. Further information is available in Section 6.4 of the CEMP.

3.2.2 Construction activity potential impacts

Key Construction activities that have the potential to impact on water and soil include:

- General site establishment, clearing of vegetation, and general construction works would disturb groundcover and expose soils which would increase the risks of erosion and sediment and potentially risk encountering ASS.
- General construction works would present the risk of spills (such as during refuelling of equipment) that could run off and impact waterways.
- Site preparation of the remaining Tallawarra coal fired power station footings may be required to establish building platforms and access roads for the Project. This area has the potential to be contaminated with asbestos.
- Major plant items and buildings would be established on concrete foundations. The design of foundations would be determined following the detailed structural design process. Deep excavations that would have the potential to encounter contamination, ASS, or groundwater are not expected to be required.
- Excavation is not expected to be required to install the gas feeder pipeline. If trenching was required for pipeline works, it would have the potential to encounter contamination, ASS, and groundwater. Excavation and stockpiling may result in erosion and sediment control impacts.
- Once installed the pipeline would be hydrostatically tested for leaks. Hydraulic testing may result in the loss of water under pressure through leaks and defects, which may result in erosion and sediment control impacts. The loss of testing fluids that are dyed could result in pollution to nearby waterways.
- Flooding of the construction worksite, if it occurred, would have the potential to carry sediment and pollutants from the worksite to nearby waterways.
- The construction workforce for the Project would require up to 200 personnel that would generate wastewater / sewage that would be managed by the existing site wastewater treatment facilities and by pump out facilities. Discharges from these systems may result in water or soil pollution.

4 Roles and responsibilities

Project personnel roles and responsibilities are described in the CEMP. Responsibilities for the implementation of specific environmental mitigation measures are indicated in Section 8.

5 Environmental safeguards and management measures

5.1 Activity specific Environmental Work Method Statements

The preparation of activity specific EWMS (EWMS) is required as a hold point for all construction activities.

As part of the development of EWMS the Contractor will prepare progressive erosion and sediment control plans (PESCP). PESCP will be completed by a suitably qualified person. An initial PESCP is provided in Appendix D. As the construction planning and construction activity for the project progresses, updates to the PESCP will be made prior to soil disturbance occurring in any previously undisturbed area.

Any suspected or actual contaminated soils will be managed in accordance with the unanticipated find protocol – contamination (Appendix B) and the Waste Management Plan (WMP).

Any suspected or actual asbestos will be managed in accordance with the waste management plan and the Tallawarra Power Station, Asbestos Management Plan, Version 7 (Hazmat Services 2011) and most recent Project area contamination assessment, AECOM (2021). If contaminated land or asbestos containing materials is found, any related works will need to be considered as part of an activity specific EWMS.

These requirements, and the Project environmental safeguards and management measures to be implemented for the Project, are consolidated in Table 5-1.

5.2 Conditions of approval

The Project (MP07-0124) was granted approval by the then Minister for Planning on 21 December 2010. The Project was declared as Critical State Significant Infrastructure (CSSI) by the Minister for Planning on 26 February 2008 in accordance with section 5.13 of the *Environment Planning and Assessment Act 1979* (EP&A Act).

An approval modification (Mod-1) for extension of the lapse date was approved March 2016, which extended the Project Approval lapse date by five years to 21 December 2020. A second approval modification (Mod-2) was approved by the Department of Planning, Industry and Environment (DPIE) in December 2020. Mod-2 extended the Project Approval lapse date by a further two years to December 2022 and amended several conditions of approval, including allowing for a single OCGT to be used for the project.

The conditions of approval specifically relating to this SWMP are provided in Table 2-1 along with the responsibility for compliance. Where these conditions translate into an environmental safeguard or management measure, they are included in Table 5-1.

5.3 Statement of commitments

The Environmental Assessment Statement of Commitments (EA, 2009) provides the mitigation measures and safeguards that have been developed to manage potential environmental impacts associated with the Project. The Environmental Assessment Statement of Commitments specifically applicable to this SWMP are consolidated in Table 5-1.

One Statement of Commitment requires asbestos containing materials to be managed on site within the EnergyAustralia asbestos repository. However, since the EA was prepared EnergyAustralia has closed the asbestos repository and removed the repository from EPL555. Accordingly, any asbestos containing materials would be removed from site to an appropriacy licensed facility and generally managed in accordance with Tallawarra Power Station, Asbestos Management Plan, Version 7 (Hazmat Services 2011) and the most recent Project area contamination assessment, AECOM (2021). This approach is considered to be generally in accordance with the EA and as such complies with CoA 1.1.

5.4 Commitments made in Project modifications

Major Project MP07_0124 Modification 2 (December 2020) contained a safeguard designed to protect surface water from impacts associated with wastewater generated by construction personnel. This has been included in Table 5-1.

No other commitments have been made in Modification 1 (March 2016), Modification 2 (December 2020), submissions reports associated with these modifications, or technical specialist studies that were prepared to support the modification applications.

5.5 Environmental protection licence

EnergyAustralia holds an Environmental Protection Licence (EPL) number 555 under Section 58(5) of the *Protection of the Environment Operations Act 1997* for the project site. The EPL covers the operational licence requirements for the Tallawarra A project and construction requirements relevant to the construction of the Tallawarra B project.

The construction relevant EPL requirements related to the project are detailed and maintained as part of the EMS. See Appendix H of the EMS for relevant EPL responsibilities.

Condition L1.1 of the environmental protection licence requires that EnergyAustralia not cause or permit any waters to be polluted above the limits prescribed in the licence or at locations not prescribed. Condition L1.1 is consolidated with the Project environmental safeguards and management measures in Table 5-1.

Table 5-1: Safeguards and management measures

ID	Objective	Action / CoA	Timing	Responsibility	Evidence	Reference
1	Minimise impact of construction on surrounding area	As part of the CEMP for the project, required under condition 7.2 of this approval, the Proponent shall prepare and implement the following: (d) a Soil and Water Management Plan prepared in consultation with the DPIE Water, EPA and Wollongong City Council to detail measures to mitigate and manage soil erosion and the discharge of sediment and other pollutants to land and/or water during construction	Pre-construction	<ul style="list-style-type: none"> ■ HSSE Lead ■ Contractor 	<ul style="list-style-type: none"> ■ This plan 	<ul style="list-style-type: none"> ■ Statement of Commitments ■ Minister's Condition of Approval 7.3
2	Prevention of water quality impacts	The project will be designed, and employ surface water management techniques, such that existing runoff volumes along drainage lines from the site are maintained at pre-construction levels and there are no adverse effects to adjoining land as a result of flooding and runoff	Construction	<ul style="list-style-type: none"> ■ HSSE Lead ■ Contractor 	<ul style="list-style-type: none"> ■ Drainage and flooding detailed design reports 	<ul style="list-style-type: none"> ■ EPL 555 ■ Minister's Condition of Approval 3.37
3	Ensure all work conforms to the requirements of the relative permits, licences, approvals, and legislation	All licences, permits and approvals are obtained and maintained as required throughout the life of the project. No condition of this approval removes the obligation for the Proponent to obtain, renew or comply with such licences, permits or approvals. The Proponent will ensure that a copy of this approval and all relevant environmental approvals are available on the site at all times during the life of the project.	Construction	<ul style="list-style-type: none"> ■ HSSE Lead ■ Contractor 	<ul style="list-style-type: none"> ■ CEMP and sub-plans ■ Audits 	<ul style="list-style-type: none"> ■ Best practice
4	Prevention of water quality impacts	Except as may be provided by an Environment Protection Licence for the project, the Proponent shall comply with section 120 of the <i>Protection of the Environment Operations Act 1997</i> which prohibits the pollution of waters	Construction	<ul style="list-style-type: none"> ■ Contractor 	<ul style="list-style-type: none"> ■ EWMS ■ PESCPs ■ Audits 	<ul style="list-style-type: none"> ■ Minister's Condition of Approval 3.30
5	Minimise erosion and sediment loss from the site	Soil and water management controls will be employed to minimise soil erosion and the discharge of sediment and other pollutants to lands and/or waters during construction activities, in accordance with Landcom's (2006) <i>Managing Urban Stormwater: Soils and Construction</i>	Construction	<ul style="list-style-type: none"> ■ HSSE Lead ■ Contractor 	<ul style="list-style-type: none"> ■ SWMP ■ EWMS ■ Audits 	<ul style="list-style-type: none"> ■ Minister's Condition of Approval 3.31
6	Minimise erosion and sedimentation of nearby watercourses	The Proponent will utilise existing crossings over Yallah Creek and shall avoid constructing temporary watercourse crossings for heavy vehicles and machinery.	Construction	<ul style="list-style-type: none"> ■ HSSE Lead ■ Contractor 	<ul style="list-style-type: none"> ■ TMP ■ Audits 	<ul style="list-style-type: none"> ■ Minister's Condition of Approval 3.34
7	Prevent impacts to watercourses and riparian zones	The Proponent will document compliance with any Controlled Activity Guidelines relevant to any project works as part of activity specific environmental work method statements.	Construction	<ul style="list-style-type: none"> ■ HSSE Lead ■ Contractor 	<ul style="list-style-type: none"> ■ EWMS ■ SWMP 	<ul style="list-style-type: none"> ■ SWMP Section 3.1.3

ID	Objective	Action / CoA	Timing	Responsibility	Evidence	Reference
					<ul style="list-style-type: none"> ■ FFMP ■ Audits 	<ul style="list-style-type: none"> ■ Minister's Condition of Approval 3.35
8	Flood impacts are minimised	<p>The project will be designed, sited, and constructed so that it is not subject to inundation by floodwaters up to or at a level of the Probable Maximum Flood (as defined in the conditions of approval), nor does it exacerbate flooding on adjacent land.</p> <p>Where the Proponent can demonstrate to the satisfaction of the Secretary that it is not reasonable and feasible to design to the Probable Maximum Flood, the Proponent may nominate an alternative design flood level for the approval of the Secretary. The alternative flood level will be developed using a risk-based approach and in consultation with Wollongong City Council.</p> <p>The design of the project will consider the Lake Illawarra Flood Risk Management Study to determine if it is reasonable and feasible to design the Project to an alternative PMF level derived from the study.</p> <p>The design of the project will consider sea level rise scenarios and the Lake Illawarra Coastal Management Program, Draft Report, June 2019 to determine if the Project could be impacted by high risk inundation areas and where tidal movement may create inundation to the site.</p>	Pre-construction and Construction	<ul style="list-style-type: none"> ■ EA Project Director ■ Contractor 	<ul style="list-style-type: none"> ■ Drainage and flooding detailed design reports 	<ul style="list-style-type: none"> ■ Minister's Condition of Approval 3.36 ■ Consultation requirement with Wollongong City Council
9	Water quality impacts are minimised	Temporary pump-out toilet facilities will be provided during construction to prevent the risk of additional wastewater load resulting the contamination of Yallah Creek and Lake Illawarra. Temporary pump-out toilet facilities will be sited at least 40 metres away from sensitive areas and will be regularly inspected and maintained to ensure no wastewater discharges to the environment.	Construction	<ul style="list-style-type: none"> ■ Contractor 	<ul style="list-style-type: none"> ■ Audits 	<ul style="list-style-type: none"> ■ Mod-2
10	Minimise likelihood of impacts on aquatic and riparian habitats	Appropriately bunded areas will be provided to store and manage fuels and oils on the project site. Spill containment equipment will be available on site at all times to prevent and contain accidental spills near local waterways.	Construction	<ul style="list-style-type: none"> ■ Contractor 	<ul style="list-style-type: none"> ■ Audits 	<ul style="list-style-type: none"> ■ Statement of Commitments
11	Avoidance of known areas of contamination	An area of potential asbestos contamination identified in AECOM (2021) and shown in Figure 3-1 of the SWMP must be treated as a construction exclusion zone by securely fencing off the area and signposting to prevent access during construction.	Construction	<ul style="list-style-type: none"> ■ HSSE Lead 	<ul style="list-style-type: none"> ■ Audits 	<ul style="list-style-type: none"> ■ AECOM (2021)

ID	Objective	Action / CoA	Timing	Responsibility	Evidence	Reference
12	Proper management of asbestos containing material	<p>Asbestos and suspected asbestos containing materials will be managed in accordance with Tallawarra Power Station, Asbestos Management Plan, Version 7 (Hazmat Services 2011), the most recent Project area contamination assessment, AECOM (2021) and the NSW Waste Management Guidelines.</p> <p>Asbestos containing materials must either be removed from site to an appropriately licensed facility, or, with the approval of the HSSE Lead and in accordance with the EPL requirements be retained and contained on site in the existing EPA approved site asbestos repository established as part of the Tallawarra A approval.</p>	Construction	<ul style="list-style-type: none"> ■ HSSE Lead ■ Contractor 	<ul style="list-style-type: none"> ■ Records management as required by Hazmat Services (2011) 	<ul style="list-style-type: none"> ■ Statement of Commitments (amended) ■ SWMP Section 5.3
13	Groundwater interception is managed	<p>The project will be designed and constructed to minimise groundwater interception.</p> <p>If groundwater is encountered during the project, the following processes will be followed:</p> <ul style="list-style-type: none"> – Stop work and consult with the HSSE Lead and Environmental Representative – If practical, complete the works without extracting groundwater from the excavation – If groundwater extraction is required: <ul style="list-style-type: none"> ■ The HSSE Lead would confirm that the works can continue under the Schedule 4, Part 1(7) of the Water Management (General) Regulation 2018 allowing up to 3ML/year to be extracted. ■ If groundwater volumes are likely to be less than 1000 litres, groundwater would be contained and directed to the nearest sediment basin. ■ If groundwater volumes are likely to be greater than 1000 litres, a dewatering plan will be developed to consider water levels, flow direction and rates, groundwater quality and proposed dewatering effluent disposal methods. 	Design and Construction	<ul style="list-style-type: none"> ■ HSSE Lead ■ Contractor 	<ul style="list-style-type: none"> ■ Drainage and flooding detailed design reports ■ Dewatering plan ■ Groundwater extraction volume records 	<ul style="list-style-type: none"> ■ SWMP Section 3.1

ID	Objective	Action / CoA	Timing	Responsibility	Evidence	Reference
		<ul style="list-style-type: none"> Volumes of all groundwater extracted will be recorded. 				
14	To manage unanticipated contamination	All project works that would disturb soils will follow the Unanticipated Find Procedure – Contamination (SWMP Appendix B) and the Unanticipated Find Procedure – Asbestos (SWMP, Appendix C, Section 19.2).	Construction	<ul style="list-style-type: none"> HSSE Lead Contractor 	<ul style="list-style-type: none"> EWMS Audits 	<ul style="list-style-type: none"> SWMP Section 3.1, Appendix B and Appendix C
15	Flood impacts are minimised	The north drain will be checked and cleared of debris following rainfall events to reduce the likelihood of blockage.	Construction	<ul style="list-style-type: none"> HSSE Lead Contractor 	<ul style="list-style-type: none"> Audits 	<ul style="list-style-type: none"> Consultation requirement from Wollongong City Council
16	Appropriate wastewater management	<p>EnergyAustralia will connect the Tallawarra A and Tallawarra B power stations to a networked sewage system when it is installed for the adjacent Tallawarra Lands development.</p> <p>EnergyAustralia will continue to consult with the Tallawarra Lands developer on timing of the Tallawarra Lands networked sewage system installation.</p>	Construction Operation	<ul style="list-style-type: none"> Project Director 	<ul style="list-style-type: none"> Consultation records 	<ul style="list-style-type: none"> Consultation requirement from EPA
17	To obtain a Water Access Licence	A Water Access Licence (WAL) must be obtained from NRAR prior to water take unless an exemption under the Water Management (General) Regulation 2018 applies.	Construction	<ul style="list-style-type: none"> HSSE Lead 	<ul style="list-style-type: none"> Controlled activity exemption e-tool 	<ul style="list-style-type: none"> Consultation requirement from DPIE Water / NRAR

6 Monitoring and inspections

6.1 Monitoring

Monitoring, measurement, analysis and evaluation for the project is detailed and maintained as part of the EMS, Section 7.5. Specific monitoring requirements that apply to this SWMP are provide in Table 6-1.

Table 6-1: SWMP monitoring requirements

Type	Purpose / methodology	Frequency	Responsibility
Potential acid sulfate soil (PASS)	To prevent PASS oxidation soils must be tested for acid soil potential by a qualified person whenever excavations deeper than 1m are proposed.	Whenever excavations deeper than 1m are proposed	HSSE Lead Contractor
Stormwater runoff quality	To prevent water quality impacts to sensitive receiving environments erosion and sediment controls are to be inspected and maintained.	Weekly, and immediately following rainfall events	HSSE Lead Contractor
Groundwater interception volumes	To prevent taking or contaminating groundwater all excavations greater than 1m deep should be inspected visually for groundwater interception.	While any excavations are open that are greater than 1 metre below ground level.	HSSE Lead Contractor

Regular inspections are a requirement of the CEMP (Section 12). Regular inspections are to include consideration of:

- EWMS compliance
- Controlled activity guideline compliance
- North drain maintenance to prevent blockages
- PESCP measures are appropriately designed, installed and maintained.

7 Compliance management

7.1 Communication

Communication shall be undertaken as outlined in Section 6 of the EMS.

7.2 Training and competency

All project personnel are required to undergo site environmental induction training which incorporates soil and water management measures in accordance with Section 8 of the CEMP.

7.3 Audit

Regular audits are to be completed in accordance with Section 12 of the CEMP. Audits will assess SWMP compliance, to identify any issues of noncompliance, and to confirm licence and approval conditions are being met.

EnergyAustralia has engaged an approved independent auditor to undertake independent audits in accordance with the Independent Audit Post Approval Requirements (DPIE, 2020). Further information on the independent auditing schedule and requirements is found in the EMS Section 7.2.

Weekly inspections of the Project Works within the Scope of Works will be undertaken by the contractor. Weekly inspections will include the assessment and maintenance (where needed) of safeguards and mitigation measures required in Table 5-1.

Audits and inspections will specifically consider how targets that apply to this SWMP are being addressed, including:

- Adherence to relevant legislation, statutory requirements, permits and/or licenses
- Status of control in meeting progressive sediment and erosion control plans
- Adherence with the asbestos management plan
- Adherence with the unanticipated finds procedure
- Reportable incidents
- Complaints.

7.4 Reporting

To comply with project condition of approval 5.5 and 5.6, compliance reports of the project must be carried out in accordance with the Compliance Reporting Requirements and timing requirements outlined in the *Compliance Reporting Post Approval Requirements (2020)*. To comply with project condition of approval 5.7 each compliance report must be made publicly available within 60 days of submitting it to the Secretary, unless otherwise agreed by the Secretary. Full details of compliance reporting requirements are addressed in the CEMP Section 13.

Any complaints identified through audits or inspections will be managed in accordance with project approval condition 6.3. Full details of complaint management are provided in Section 11 of the CEMP.

Any non-conformances identified through audits or inspections will be managed in accordance with project approval conditions 5.2, 5.3 and 5.4. Full details of non-conformance management are provided in Section 13 of the CEMP.

Any breach of a licence condition will be reported as per licence requirements.

7.5 Incident management and corrective actions

The management, investigation, reporting and notification process for environmental incidents is to be undertaken in accordance with:

- GECL Emergency Response Plan for Tallawarra B (where related to the construction of the project)
- EnergyAustralia TQMS12-HSE-L001 - Emergency Response Plan (where related to the broader project site or Tallawarra A operations)
- Conditions of Approval incident reporting requirements
- EPL 555 requirements.

If an incident does occur, all project personnel are required to cease works immediately and follow the processes in line with the EnergyAustralia TQMS12-HSE-L001 - Emergency Response Plan, and notification and reporting requirements outlined in the following sections.

If the incident is under the control of GECL during construction, then the GECL Emergency Response Plan for Tallawarra B must be followed.

Generally environmental incident notification and reporting would ensure that all environmental incidents and non-compliances must be immediately reported to the HSSE Lead and Construction Manager. Verbal notification must occur immediately on becoming aware of the incident or non-compliance. EnergyAustralia will notify NSW EPA immediately of all pollution incidents that cause or threaten material harm to the environment. EnergyAustralia will also notify the ER of any environmental incident immediately or within 24 hours of becoming aware of the incident.

EnergyAustralia will notify the Secretary in writing via the Major Projects website immediately after it becomes aware of an environmental incident following the requirements of CoA 5.1 and Appendix 1 of the major project approval. The major project approval Appendix 1 incident reporting requirements are replicated in Appendix E of this SWMP.

For full details of incident management requirements, refer to Section 10.3 of the CEMP.

7.6 Consultation

During development of the SWMP, consultation has been undertaken with the stakeholders. Table 7-1 identifies the SWMP consultation and provides a summary of the agency key issues.

Table 7-1: Agency consultation summary

Agency	Key issues
DPIE Water / NRAR	<ul style="list-style-type: none">■ Compliance with the Controlled Activities Guidelines, where appropriate■ Water Access Licence (WAL) unless an exemption applies
Wollongong City Council	<ul style="list-style-type: none">■ Confirmation of flood planning levels and associated site drainage design■ Asbestos management
EPA	<ul style="list-style-type: none">■ On-site wastewater management■ Proposed erosion and sediment controls

Full details of agency consultation undertaken for the SWMP, including details of how stakeholder issues have been addressed by this SWMP is provided in Appendix A.

7.7 Review

This plan will be subject to continuous review throughout the construction and pre-operational stage of the Project, aimed at identifying areas for improvement. Review will be carried out in accordance with procedures described in the Section 14 of the CEMP.

This plan will be subject to continuous review throughout the construction stage of the Project, aimed at identifying areas for improvement.

Specific review of this plan is required to comply with Condition of Approval 7.7. This condition requires that within 3 months, unless the Secretary agrees otherwise, of:

- a) the submission of an incident report under condition 5.1 of this approval;
- b) the submission of an Independent Environmental Audit report under condition 5.11 of this approval;
- c) the approval of any modification to the conditions of this approval; or
- d) a direction from the Secretary under condition 1.3 of this approval;

EnergyAustralia must review and, if necessary, revise the studies, strategies or plans required under the conditions of approval to the satisfaction of the Secretary.

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

In accordance with project condition of approval 7.8, to ensure the studies, strategies and plans for the project are updated on a regular basis and incorporate any required measures to improve the environmental performance of the project, EnergyAustralia may submit revised studies, strategies or plans required for the project under the conditions of approval at any time.

With the agreement of the Secretary, EnergyAustralia may also submit any study, strategy or plan required under the conditions of this approval on a staged basis. The Secretary may approve a revised strategy or plan required under the conditions of approval, or the stage submission of these documents, at any time.

With the approval of the Secretary, EnergyAustralia may prepare the revised or staged strategy or plan without undertaking consultation with all parties nominated under the applicable condition in this approval.

References

AECOM (2021) Tallawarra B Laydown Area Supplementary Assessment, Job No.: 60602160

BMT (2019), Lake Illawarra Coastal Management Program, Draft Report, June 2019, prepared for Wollongong City Council and Shellharbour City Council

Cardno (2007) Forbes Rigby Duck Creek flood study

Coffey (2010) *Geotechnical, Contamination and Groundwater Investigation Tallawarra Lands, Yallah, NSW report*

Earth 2 Water (2010) Groundwater Site Assessment, TRUenergy Tallawarra Pty Ltd, Yallah, NSW, Report number: E2W-0124 R001

Hazmat Services, (2011) Tallawarra Power Station Asbestos management plan, Version 7, ref: HAZ009_AMP_FIN_270111

SKM (2009) Contamination Assessment North Shore Precinct: Appendix 22C of the Environmental Assessment, Tallawarra Stage B Power Station

SKM (2009) Register of Hazardous Materials Report Residences in the Northern Precinct: Appendix 22D of the Environmental Assessment, Tallawarra Stage B Power Station

Wollongong City Council (2005), Lake Illawarra Floodplain Risk Management Study and Plan, version 6 (May 2005)

Appendix A: Agency consultation log

Consultation undertaken for this SWMP is summarised below.

Agency	Date	Method	Actions and responses
Wollongong City Council	22/7/20	Consultation meetings and invitation to comment during public exhibition of Mod-2	<ul style="list-style-type: none"> Given the construction workforce for the Project would require up to 250 personnel, the existing onsite wastewater treatment plant established on the site would have insufficient capacity to manage onsite wastewater generated during construction. To prevent this additional hydraulic load from contaminating Yallah Creek and Lake Illawarra, EnergyAustralia proposed to establish pump out wastewater facilities for the construction personnel. In Council's submission to Mod-2 they indicated Council generally supports the expansion of the Tallawarra Power Station through the Tallawarra B project and has no objection to the modification request. Regarding wastewater management, Council requested that comment be sought from NSW EPA.
NSW EPA	29/7/20	Consultation meetings and invitation to comment during public exhibition of Mod-2	<ul style="list-style-type: none"> Given the construction workforce for the Project would require up to 250 personnel, the existing onsite wastewater treatment plant established on the site would have insufficient capacity to manage onsite wastewater generated during construction. To prevent this additional hydraulic load from contaminating Yallah Creek and Lake Illawarra, EnergyAustralia proposed to establish pump out wastewater facilities for the construction personnel. EPA believes the proposed on-site wastewater management systems will adequately manage sewage. EPA recommended EnergyAustralia commit to connect to a networked sewage system when it is installed for the adjacent Tallawarra Lands development.
DPIE Water	14/01/21	Email: Post-approval clarification of CoA 3.34 and 3.35	<ul style="list-style-type: none"> Email to DPIE Water from EnergyAustralia asking for CoA 3.34 and 3.35 in the Project Approval 07_0124 clarification CoA 3.34 details that "The proponent shall utilise existing crossings over Yallah Creek and shall avoid constructing temporary watercourse crossings for heavy vehicles and machinery" and CoA 3.35 details "The Proponent shall ensure that any construction activities within 40 metres of the bank of Yallah Creek, and any other watercourses, are consistent with Controlled Activity Guidelines (Department of Water and Energy, 2008) including, but not limited to, 'In-stream Works', 'Outlet Structures', 'Riparian Corridors', 'Vegetation Management Plans', and 'Watercourse Crossings', or any guidelines which supersede these documents" EnergyAustralia requested DPIE Water confirm that an approval for a Controlled Activity is not required but rather EnergyAustralia is required to comply with the Controlled Activities Guidelines (Department of Water and Energy, 2008)
DPIE Water	15/01/21	Email: Post-approval clarification of CoA 3.34 and 3.35 – confirmed by DPIE Water	<ul style="list-style-type: none"> Email response back from DPIE Water in relation to the post-approvals clarification request Confirmed EP&A Act Section 5.23 is the appropriate legislation that details how some select NSW legislation does not apply for State Significant Infrastructure projects. Under (g) of the Section, which includes water use approval under section 89, a water management work approval under section 90 or an activity approval (other than an aquifer interference approval) under section 91 of the Water Management Act 2000. As such seeking approval from NRAR is not necessary for these activities. Intent of CoA 3.35 is to ensure that any construction activities within 40 metres of the bank of Yallah Creek, and any other watercourses, are consistent with the content of the Controlled Activity Guidelines (Department of Water and Energy, 2008)

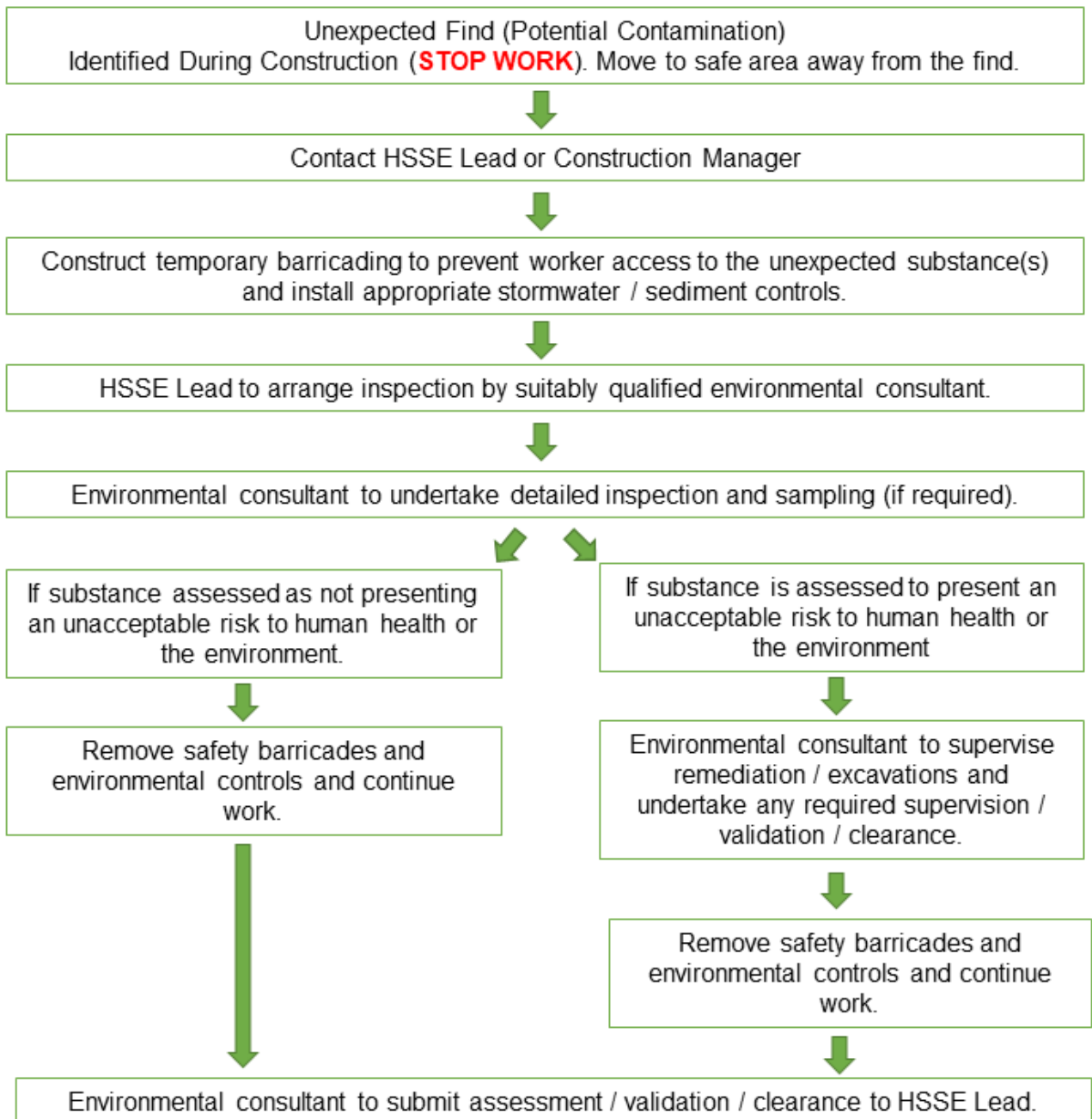
Agency	Date	Method	Actions and responses
			<ul style="list-style-type: none"> Note the Guidelines also refer to other relevant NRAR guidelines such as 'Controlled activities: Guidelines for watercourse crossings' and 'Controlled activities: Guidelines for instream works'
Wollongong City Council	30/08/21	Email: introduction of the project	<ul style="list-style-type: none"> Purpose of the email was to introduce the project, the proponent and the CoA requirement of consultation with Council for the traffic, water quality, flooding and the visual impact management plans Aurecon requesting availability of Wollongong City Council for a TEAMS/virtual meeting of the relevant management plans Aurecon requesting confirmation of contacts for consultation
DPIE Water	30/08/21	Email: introduction of the project	<ul style="list-style-type: none"> Purpose of the email was to introduce the project, the proponent and the CoA requirement of consultation with DPIE Water on matters relating to the proposed measures to mitigate and manage soil erosion and the discharge of sediment and other pollutants to land and/or water during construction Mention the development of a draft Soil and Water management plan (SWMP) for the project and the opportunity to consult on this plan with DPIE Water Aurecon requesting availability of for a TEAMS/virtual meeting of the relevant management plans
Wollongong City Council	01/09/21	Email: response to initial project introduction email	<ul style="list-style-type: none"> Response from Andrew Heaven from Council confirming a TEAMS/virtual meeting with key stakeholders within Council would be beneficial Meeting proposed for 08/09/21 Andrew Heaven requesting an agenda with key items for discussion during the meeting including background regarding the project, timing, constraints, as well as any plans / images
Wollongong City Council	02/09/21	Email: Aurecon confirmed meeting date	<ul style="list-style-type: none"> Response email to email sent on 01/09/21 accepting/confirming proposed meeting day/time Aurecon confirming that agenda and reference materials would be sent to Council prior to meeting
NSW EPA	02/09/21	Email: follow-up email on pre-construction consultation and draft NAQMP and SWMP for review/comment	<ul style="list-style-type: none"> Email to follow up on pre-construction consultation for the Project Introduction of the CoA requirement for consultation of the CEMP and sub-plans with NSW EPA Attached to the email is the draft NAQMP and the SWMP for review/comment Note that erosion and sediment control plan is still under preparation Confirmation of agreed TEAMS/virtual meeting time for 10/09/21
Wollongong City Council	03/09/21	Email: sent meeting agenda and draft management plans	<ul style="list-style-type: none"> Aurecon sent through meeting agenda Attached to the email was the draft Soil and Water Management Plan (SWMP), draft Landscape Plan and the draft Traffic Management Plan (TMP)
Wollongong City Council	06/09/21	Email: Council confirmation of agenda and management plans received	<ul style="list-style-type: none"> Confirmation email from Council that meeting agenda and attached management plans have been received
NSW EPA	07/09/21	Email: NSW EPA reviewed/comments on draft NAQMP and SWMP	<ul style="list-style-type: none"> Email from NSW EPA confirming receipt and review of NAQMP and SWMP Marc Cooper from NSW EPA provided key points/information to include in the management plans Also recommended to consider drafting an AIE SWMP and NDAMP map listing controls

Agency	Date	Method	Actions and responses
NSW EPA	07/09/21	Email: NSW EPA provided example AIE SWMP	<ul style="list-style-type: none"> Greg Newman provided an example AIE SWMP to assist in the development of the project specific AIE SWMP Example AIE SWMP was attached to the email
Wollongong City Council	08/09/21	Online/virtual consultation meeting with Wollongong City Council	<ul style="list-style-type: none"> Council raised issue around Yallah Creek and how this influences the PMF. This was resolved by Council and referred to the Lake Illawarra Flood Risk Management Study (SES Flood Portal and Data Hub) as a reference for 2100 sea level rise scenarios, and the newly adopted Lake Illawarra Coast Management Plan for high risk inundation areas and where tidal movement may create daily inundation to the site. <ul style="list-style-type: none"> – <i>Addressed in item 8 of Table 5-1 with a specific safeguard.</i> Council raised an issue around the Northern Drain and that this drain needed to remain unblocked during heavy rains to ensure localised flooding didn't occur. Aurecon and EnergyAustralia both confirmed that maintenance would be undertaken to reduce the likelihood of the north drain blocking. <ul style="list-style-type: none"> – <i>Addressed in Section 3.1.1 and a safeguard added to Table 5-1 to require maintenance to reduce the potential for the north drain to become blocked.</i> Council queried if digging through the slab was being considered and if asbestos was assessed. Aurecon and EnergyAustralia both confirmed in the affirmative to both <ul style="list-style-type: none"> – <i>Asbestos management is addressed in this SWMP in Section 3, Table 5-1 and Appendix C.</i>
Wollongong City Council	08/09/21	Email: Nicole Ashton providing direct contact details	<ul style="list-style-type: none"> Email from Nicole Ashton from Wollongong City Council providing preferred contact details Request to identify which condition Aurecon is providing the information for
Wollongong City Council	08/09/21	Email: Aurecon response with indicative timings for management plan submission	<ul style="list-style-type: none"> Aurecon responding to Wollongong City Council with confirmation/commitment of re-submitting updated management plans including cross-references to the CoAs within a week
Wollongong City Council	09/09/21	Email: meeting minutes	<ul style="list-style-type: none"> Email to Wollongong City Council and other attendees circulating meeting minutes. Meeting minutes attached to email Commitment to Wollongong City Council to re-issue the documents that we provided along with the cross references to the conditions of approval that each addresses
Wollongong City Council	09/09/21	Email: re-attached management plans and CoA cross-reference	<ul style="list-style-type: none"> Draft management plans re-attached to email Email contains a CoA table with cross-references to where this is addressed in the Plan Attached to the email was a full copy of the current CoAs for the project
DPIE Water	10/09/21	Email: introduction to the project – response from DPIE Water	<ul style="list-style-type: none"> Email response from DPIE Water to the introductory email from the 30/08/21 Jessica Braden from DPIE Water requesting a copy of the draft Soil and Water Management Plan for review/comment Confirmation of meeting to be determined after review/comment
DPIE Water	10/09/21	Email: draft SWMP sent for review/comment	<ul style="list-style-type: none"> Draft Soil and Water Management Plan sent to DPIE Water for review/comment. Management plan sent as an attachment
NSW EPA	15/09/21	Email: receipt of NSW EPA's comments/review and draft Preliminary	<ul style="list-style-type: none"> Email confirming that NSW EPA's comments/review were received on the construction plans Highlighting that the EPC contractor has prepared a draft Preliminary Erosion and Sediment Control Plan (ESCP) which has been signed off by a soil conservationist

Agency	Date	Method	Actions and responses
		Erosion and Sediment Control Plan (ESCP)	<ul style="list-style-type: none"> • Offer to organise a meeting to run through Preliminary ESCP if NSW EPA would like to be consulted further • Anticipating comment/review of the Preliminary ESCP
NSW EPA	16/09/21	Email: confirmation of receipt of email and attached Preliminary ESCP	<ul style="list-style-type: none"> • Email from Marc Cooper from NSW EPA confirming that he will undertake his review and provide comments
NSW EPA	20/09/21	Email: confirmation from NSW EPA no further comments	<ul style="list-style-type: none"> • Confirmation received from NSW EPA that there are no further comments on the Preliminary ESCP
DPIE Water	20/09/21	Email: following up email for review/comment of the SWMP	<ul style="list-style-type: none"> • Aurecon following up on consultation on the draft Soil and Water Management Plan for the project • Request to DPIE Water for likely timing for any consultation comments
DPIE Water	21/09/21	Email: comments received on SWMP	<ul style="list-style-type: none"> • Plan to ensure that information is provided on how the works will be in accordance with the NRAR Guidelines for Controlled Activities. – <i>SWMP updated with Section 3.1.3 and a new control in Table 5-1 to address controlled action guideline compliance</i> • Update reference to NRAR Guidelines for Controlled Activities to the current version – <i>SWMP updated with Section 3.1.3 identifying and linking to the updated controlled activity guidelines</i> • Indication that a full assessment will be conducted when this plan is formally submitted for review
DPIE Water	05/10/21	Email: Formal written comments on SWMP provided	<ul style="list-style-type: none"> • Provide details for any works on waterfront land or in-stream including outlet structures and crossings. Should there be any works on waterfront land please provide detail on how they will be in accordance with the NRAR Guidelines for Controlled Activities. – SWMP updated with Section 3.1.3 and a new control in Table 5-1 to address controlled action guideline compliance • A Water Access Licence (WAL) must be obtained from NRAR prior to water take unless an exemption under the Water Management (General) Regulation 2018 applies. – WAL exemption has been identified for the project under the Water Management (General) Regulation 2018
EPA	12/10/21	Meeting: MS Teams meeting with EPA (Marc Cooper and Greg Newman)	<ul style="list-style-type: none"> • Discussed using existing stockpiled material for project work located adjacent to the asbestos repository cells. EPA had no objections. • Discussed placing 'unsuitable' (uncontaminated) material excavated from the Project site at this existing stockpile site near the asbestos repository. EPA advised this was not supported. • Discussed placing contaminated spoil from the Project site within the existing asbestos repository cells (or creating a new cell if this is warranted). EPA advised the existing EPL provides for this to be undertaken (provided all measures related to the repository management in the relevant EPL variation are complied with). EPA advised that only asbestos contaminated material may be disposed of in the repository.
WCC	07/12/21	Email: Additional comments on the SWMP	<ul style="list-style-type: none"> • Council reiterated a previously raised issue that the flood report referenced in EnergyAustralia's submission is a 2001 study that was superseded by a 2003 study and then by the current Lake Illawarra Flood Risk Management Study.

Agency	Date	Method	Actions and responses
			<ul style="list-style-type: none"> • Council suggested that prior to finalising the design it is reviewed against the Lake Illawarra Flood Risk Management Study and Plan 2012, including a check against the sea level rise projections. – Addressed in item 8 of Table 5-1 with an amended made to the specific safeguard prepared to address this item when previously raised. – Added the updated Lake Illawarra Flood Risk Management Study and Plan 2012 to the guidelines and policies section 2.2 – Updated discussion of flooding risks in Section 3.1.4 – GECL design engineers have been instructed in writing by EnergyAustralia to consider the Lake Illawarra Flood Risk Management Study and Plan 2012 in the design.

Appendix B: Unanticipated Finds Procedure – Suspected Contamination



Appendix C: Asbestos Management Plan (Hazmat Services 2011)



TRUenergy Tallawarra Power Station Asbestos Management Plan Version 7

27 January 2011

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Ref: HAZ009_AMP_FIN_270111

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APPENDICES

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Appendix 2:	Bidim Product Specification
Appendix 3:	Dig Permit
Appendix 4:	Asbestos Management Area Inspection Checklists
Appendix 5:	Asbestos Contaminated Soil Removal Procedures
Appendix 6:	Asbestos Repository Operation

AMP Revision and Issue Status

AMP Revision Status

Version No	Details
2	Revised AMP to address issues raised by EPA, WorkCover & Council.
3	Amended AMP to reflect ongoing management following remediation works undertaken in February & March 2003.
4	Amended AMP to reflect ongoing management and updating following Plant Civil Works stage 1 works undertaken in 2004.
5	Review and update of the AMP, and ongoing Management guidance following the construction of the power station on the lower slab area and switchyard on the upper slab area.
6	Review and update of the AMP and ongoing management advice for operation of the Power Station and Switchyard
7	Review and update of AMP

Copy No	Issued to	Issued by	Date	Quantity
1	Plant Manager – Tallawarra	TRU		1 copy
2	DECC – Wollongong Office	TRU		1 copy
3	Wollongong Council	TRU		1 copy

Report prepared by:

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Report reviewed by:

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PTR Eng Pty Ltd

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Name: John McIntyre _____ Date: _____
TRUenergy

Report approved by:

Name: Ross McFarland _____ Date: _____
AECOM, Site Auditor

1.0 INTRODUCTION

The Asbestos Management Plan (AMP) for the Tallawarra Power Station site (the Site) was originally prepared by Pacific Power, the former owners of the Tallawarra site, in response to the identification of traces of asbestos fibre in and around the old power station slab at the Site. The original AMP has been superseded by subsequent versions as the Site evolved from a decommissioned power station site to a new operational power station.

Version 2, which has been superseded, detailed the proposed works for the remediation of the asbestos contaminated areas. These works were completed and validated in March 2003.

Version 3, which has also been superseded, provided ongoing management guidance.

Version 4, which has also been superseded, provided a review and update of the AMP following the Plant Civil Works Stage 1 works and ongoing management guidance.

Version 5 provided a review and update of the AMP, and ongoing maintenance guidance following the construction of the power station on the lower slab area and switchyard on the upper slab area.

Version 6 was an update following review of Version 5 and details the ongoing maintenance and management requirements following the commencement of operation of the new gas-fired Power Station and Switchyard sites.

Version 7 details the management requirements following Site Audit Statement sign off.

A contaminated Site Auditor accredited by the NSW Department of Environment and Climate Change (DECC) has been appointed by TRUenergy Tallawarra Pty Ltd to prepare a Site Audit Statement for the overall remediation and validation of the Site. Site Auditors has reviewed the AMP and has provided his Interim Advice as to the suitability of the AMP which is contained in **Appendix 1**.

The dominant forms of asbestos at the Site are loose asbestos fibre and asbestos cement fragments in soil. Asbestos-containing materials (ACM) have also been identified in existing buildings that were associated with the former power station.

An extensive asbestos remediation and validation program has been undertaken at the Site prior to the construction of the new Power Station and Switchyard. Validation reports prepared for the Site as part of the asbestos remediation process have been used to determine the extent of asbestos contamination remaining in the ground at the Site. In addition, a Hazardous Materials Survey inclusive of Asbestos Register has been prepared for the existing building at the Site. Further detail of the Site Asbestos Management Areas is provided in **Section 8**.

This AMP does not include the management of the Asbestos Repository which is the subject of a separate AMP.

Figure 1 shows the Site and Asbestos Repository. **Figure 2** shows the detail of the current power station site including site boundaries and security fencing.



Figure 1: Tallawarra Power Station Site and Asbestos Repository



2.0 DEFINITIONS

The use the following words or terms in this document indicate the word or words have the following defined meaning:

Asbestos:	The fibrous form of those mineral silicates that belong to the serpentine or amphibole groups of rock-forming minerals, including actinolite, amosite (brown asbestos), anthophyllite, chrysotile (white asbestos), crocidolite (blue asbestos) and, tremolite.
Asbestos-containing material (ACM):	Any material, object, product or debris that contains asbestos.
Asbestos Register:	A register recording the type, condition and location of all asbestos and asbestos containing materials for all premises under TRUenergy's control.
Asbestos Work:	Work undertaken in connection with a work process in which exposure to asbestos may occur and includes any work process involving the use, application, removal, mixing or other handling of asbestos or asbestos containing material.
Asbestos Work Area:	<p>The immediate area in which work on ACM is taking place. The boundaries of the Asbestos Work Area must be determined by a risk assessment.</p> <p><i>Note: The asbestos work area should include the boundaries of an enclosure or barriers set up to warn or restrict access to the area where the asbestos work is being undertaken.</i></p>
Bidim (or Green Layer):	The green coloured membrane used to cover the asbestos contaminated soil. The areas below the green layer remain asbestos contaminated. See Product Specification in Appendix 1 .
Bonded asbestos material:	Any material (other than friable asbestos material) that contains asbestos.

Clearance Inspection:

An inspection, carried out by a competent person, to verify that an asbestos work area is safe to be returned to normal use after work involving the disturbance of ACM has taken place. A clearance inspection must include a visual inspection, and may also include clearance monitoring and/or settled dust sampling.

Note: A clearance inspection should only be carried out when the asbestos work area is dry.

Clearance Monitoring:

means air monitoring using static or positional samples to measure the level of airborne asbestos fibres in an area following work on ACM. An area is 'cleared' when the level of airborne asbestos fibres is measured as being below 0.01 fibres/mL.

Note: Static or positional samples are taken at fixed locations which are usually between one and two metres above floor level.

Competent person:

A person who has acquired through training, qualifications or experience, or a combination of them, the knowledge and skills to carry out the particular task.

Control Level:

The airborne concentration of a particular substance which, if exceeded, indicates a need to implement a control, action or other requirement. Control levels are generally set at no more than half the National exposure Standard for the substance. Control levels are occupational hygiene 'best practice', and are not health-based standards.

Note: The first Control Level for Asbestos is set at 0.01 fibres/mL of air.

Control Monitoring:

Air monitoring, using static or positional to measure the level of airborne asbestos fibres in an area during work on ACM. Control monitoring is designed to assist in assessing the effectiveness of control measures. Its results are not representative of actual occupational exposures, and should not be used for that purpose.

Note: Static or positional samples are taken at fixed locations which are usually between one and two metres above floor level.

Dust and debris:

Visible particles, fragments or chunks of material, large enough to have settled in the work area by virtue of their weight, that are presumed to have originated from asbestos containing materials.

Exposure Monitoring:

Air monitoring to determine a person's likely exposure to a hazardous substance. Exposure monitoring is designed to reliably estimate the person's exposure, so that it may be compared with the National Exposure Standard.

Note: Exposure monitoring includes airborne asbestos fibre sampling, analysis, estimation of time-weighted average exposure and interpretation. Samples are taken within the breathing zone and are usually obtained by fastening the filter holder to the worker's jacket lapel.

Friable asbestos material:

Any asbestos or asbestos containing material that is in the form of a powder or can be crumbled, pulverised or reduced to powder by hand pressure when dry. This includes asbestos containing materials that have been subjected to extensive weathering.

Hierarchy of hazard control:

Measures taken to minimise risks to the lowest level reasonably practicable in the descending order of: Elimination, Substitution, Engineering Controls, Administrative Controls, and PPE.

Licence:

A licence granted by the WorkCover Authority of NSW to carry on the business of licensed work under the OHS Regulation 2001.

Licensed work:

Means one of the following kinds:

- a) Friable asbestos removal work, other than:
 - i. Work done for the purpose only of obtaining a sample of asbestos for identification, or
 - ii. Work done by a person, at the person's usual place of business, at a frequency of one hour per week or less.

An AS A Asbestos Removal License is required for friable asbestos removal work

- b) Bonded asbestos removal work, other than:
 - i. Work done for the purpose only of obtaining a sample of asbestos for identification, or
 - ii. Work done in relation to bonded asbestos material having a total surface area of less than 10 square metres.

An AS B Asbestos Removal License is required for bonded asbestos removal work

NOHSC:

National Occupational Health and Safety Commission.

NATA:	National Association of Testing Authorities (NATA) is Australia's national laboratory accreditation authority.
Occupational Hygienist:	For the purpose of this AMP an appropriately qualified person competent in asbestos legislation and consulting and in particular for this Site, asbestos contaminated soils.
Site Auditor:	Means a person for the time being accredited under the Contaminated land Management Act.

3.0 REFERENCED DOCUMENTS

3.1 Legislation Standards & Guidance Materials

- Occupational Health and Safety Act 2000
- Protection of the Environment Act 1997
- Contaminated Land Management Act 1997
- Environmentally Hazardous Chemicals Act 1985
- Occupational Health and Safety Regulation 2001
- Protection of the Environment Operations (Waste) Regulation 1996
- Australian Standard 1216-2006: Class labels for dangerous goods
- Australian Standard 1319-1994: Safety signs for the occupational environment
- Australia/New Zealand Standard 1715-2009: Selection, use and maintenance of respiratory protection devices
- Australia/New Zealand Standard 1716-2003: Respiratory protection devices
- Australian Standard 3544-1988: Industrial vacuum cleaners for particles dangerous to health
- Australian Standard 4260-1997: High efficiency particulate air (HEPA) filters – Classification, construction and performance
- Australia/New Zealand Standard ISO31000-2009: Risk Management – Principles and Guidelines
- Australian Standard 4964-2004 Method For the Qualitative Identification of Asbestos in Bulk Samples
- Code of Practice for the Management and Control of Asbestos in Workplaces [NOHSC: 2018(2005)]
- Code of Practice for the Safe Removal of Asbestos, 2nd Edition [NOHSC: 2002 (2005)]
- Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibre, 2nd Edition [NOHSC: 3003 (2005)]
- Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia May 2009
- Adopted Exposure Standards for Atmospheric Standards on the Occupational Environment [NOHSC:1003(1995)] (see the Hazardous Substances Information System located on the Australian Safety and Compensation Council website at <http://hsis.ascc.gov.au> for latest updates to documented Exposure Standards)
- Working With Asbestos Guide 2008, NSW WorkCover
- Guidelines for Consultants Reporting on Contaminated Sites, Environment Protection Authority NSW, Contaminated Sites, EPA 97/104, November 1997.

3.2 Site Specific Documentation and Reports

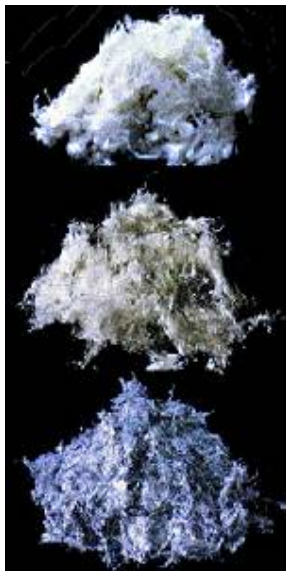
- Environmental Survey of the Decommissioned Tallawarra Power Station – Dames and Moore, May 1990
- Tallawarra Power Station Heritage Assessment – Godden Mackay Pty Ltd, June 1990
- Notice of Determination Consent Application No: DD98/74 - Wollongong City Council, July 1999
- Site Contamination Assessment - Tallawarra Power Station - Coffey Geosciences Pty Ltd, July 2002.
- Additional Sampling and Analysis for Asbestos - Tallawarra Power Station - Coffey Geosciences Pty Ltd, October 2002
- Additional Sampling and Analysis for Asbestos - Tallawarra Power Station - Coffey Geosciences Pty Ltd, December 2002
- Validation Report of Implementation of the Tallawarra Power Station Asbestos Management Plan - Coffey Geosciences Pty Ltd, 26th March, 2003
- Summary Site Audit Report. Asbestos Remedial Work Tallawarra Power Station – Environ, April 2003
- Asbestos Validation Report. Tallawarra Power Station Lower Slab Area, Yallah Bay Road, Yallah NSW, New Environment – A Division of Heggies Australia Pty Ltd 12 October 2006
- Asbestos Validation Report Area 17, 18 and 22, New Environment – A Division of Heggies Australia Pty Ltd, 26 November 2008
- Asbestos Validation Report, Switchyard Tallawarra Power Station, New Environment – A Division of Heggies Australia Pty Ltd, 18 February 2008
- Hazardous Materials Survey Old Control Building, Bowling Club And Workshop Building Tallawarra Power Station site Yallah Bay Road, Yallah NSW 2530 – Phil Clifton and Associates Pty Ltd, 22 February 2008
- Detailed Contamination Assessment, Former Bowling Club Tallawarra Lands (Rev 2) – JBS Environmental Pty Ltd, August 2008
- Underground Storage Tank Investigation Report and Remedial Action Plan (RAP) – JBS Environmental Pty Ltd, September 2008
- Preliminary Site Investigation – EHS Solutions, November 2008
- Environmental Site Assessment, Former Coal Stack Maintenance Area – JBS Environmental Pty Ltd, December 2008
- UST Removal Works Validation - JBS Environmental Pty Ltd, February 2009

- Detailed Site Contamination Assessment, Volumes 1 & 2, Area 20; Former Switchyard and Area 21 Asbestos Containment Mounds, Tallawarra Lands, Yallah Bay Road, Yallah, NSW – JBS Environmental Pty Ltd, April 2009
- Auditor's Interim Advice of the TRUenergy Asbestos Management Plan Version 6, Tallawarra Power Station, Yallah Bay Road, Tallawarra, NSW – AECOM, 18 March 2010
- Earth2Water Pty Ltd (2010) Groundwater Site Assessment, TRUenergy Tallawarra Pty Ltd, Yallah, NSW.
- *Heggies (2008) Asbestos Validation Report, Switchyard Tallawarra Power Station, Yallah Bay Road, Yallah, NSW 2530*, dated 29 January 2008
- JBS Environmental (2008) *Underground Storage Tank Investigation Report and Remedial Action Plan (RAP), Tallawarra Power Station, Tallawarra Lands, Yallah Bay Road, Yallah, NSW*. Dated September 2008.
- JBS (2009) *Auditor Interim Opinion Correspondence – Response Concerning Outstanding Issues, UST Removal Works Validation, Former Tallawarra Power Station, Yallah, NSW*, dated 9 July 2009.
- EHS Solutions (2009) *Response to Auditors Review of Areas 17, 18 and 22 – N2148203_Review _Heggies Validation_3June09-V3*;
- Hibbs and Associates Pty Ltd (2010) *Assessment of Asbestos Contamination in Soil – Area 26 (North) Tallawarra Power Station*, dated 24 September 2010
- JBS Environmental (2010), *Environmental Site Assessment, Former Stores/Workshop Building (Area 28)– Area 26 (North) Tallawarra Lands, Yallah Bay Road, Yallah NSW* dated November 2010;
- JBS Environmental (2010), *Additional Site Assessment, Former Coal Stack Maintenance Area Tallawarra Lands, Yallah Bay Road, Yallah NSW*, dated November 2010;
- JBS Environmental (2010), *Response to Site Audit Review of Guideline Compliance – Stage 2 Investigation, Tallawarra Lands – Former Coal Stack Maintenance Area*, dated 29 November 2010;
- JBS Environmental (2010), *Detailed Site Assessment, Former Control Room Building (Area 29) and Former Switch Yard (Area 20) Tallawarra Lands, Yallah Bay Road, Yallah NSW*, November 2010.

4.0 ASBESTOS

4.1 Types of Asbestos

Asbestos is a term applied to some mineral silicates present in a fibre form. There are many members of this mineral group. Common among these are white asbestos (chrysotile), brown or grey asbestos (amosite) and blue asbestos (crocidolite). See illustration in **Figure 3** below.



- **CHRYBOTILE (white asbestos)**
 - Soft, white curly fibres
 - Used in woven rope, brake pads, floor tiles
 - Most common form of three commercial types
- **AMOSITE (brown asbestos)**
 - Straight, grey to brown fibres
 - Used where additional strength needed, eg: lagging, AC pipes
- **CROCIDOLITE (blue asbestos)**
 - Straight, very fine blue fibres
- – Used where acid resistance required

Figure 3: Types of Asbestos

Because of its unique properties – flexibility, tensile strength, insulation (from heat and electricity) and chemical inertness – asbestos was one of the most useful and versatile minerals known to mankind. It is the only natural mineral that can be spun and woven into useful fibres and fabrics in a similar way to cotton or wool.

Uses of asbestos have included fibro-sheeting, corrugated roofing, asbestos cement pipes, thermal insulation and fireproofing. It has also been used as an additive in paints and sealants, cement, in textiles, in gaskets, and in friction products like brake linings and clutches. During the peak building years, i.e. 1950s, 60s and 70s, asbestos found its way into most public buildings, including power stations and other industrial plant, hospitals, schools, libraries, office blocks and factories.

Due to the extensive use of asbestos in a wide variety of products, it is often present in many workplaces. Consequently, it may pose an occupational health risk to persons who work in close proximity to asbestos containing materials.

The dominant forms of asbestos at the Site are loose asbestos fibre and asbestos cement fragments in soil. Asbestos-containing materials (ACM) have also been identified in existing buildings that were associated with the former power station.

4.2 Asbestos in Soils

The National Environment Protection (Assessment of Site Contamination) Measure, National Environmental Protection Council, 1998 provides a framework for the assessment of site contamination in Australia. No numeric guidelines are provided for asbestos in this document.

According to NSW WorkCover, *"Friable asbestos material is any material that contains asbestos and is in the form of a powder, or can be crumbled, pulverized or reduced to powder by hand pressure when dry"* and *"Any asbestos cement products that have been subjected to weathering, or damaged by hail, fire or water blasting, are considered to be friable asbestos"*. A competent occupational hygienist should be utilised to determine:

- If the asbestos material is bonded or friable;
- The extent of asbestos contamination;
- Safe work procedures for the remediation of the site.

The assessment and safe work procedures should reflect the level of the hazards and the proposed use of the land. Environmental and planning legislative requirements must be complied with.

Loose asbestos fibre in soil includes free fibres of asbestos and small fibre bundles which constitutes a friable asbestos situation and can pose a considerable inhalation risk if made airborne. Bonded asbestos fragments usually represent a low human health risk.

For contaminated sites, the NSW DECC has advised that no asbestos in soil at the surface is permitted. The DECC suggests that their advice was based upon health concerns regarding loose asbestos fibres in soil at the surface. Unlike most other significant soil contaminants, the DECC has not published any criteria for the acceptable level of contamination in soils below the surface.

The adopted Soil Asbestos Criteria for the Site for both bonded AC and friable asbestos materials in Area 26 North are detailed in the following sections.

4.3 Health Effects

The health effects from exposure to asbestos result from the inhalation of asbestos fibres.

If asbestos fibres are inhaled, they must first pass the filtration mechanisms lining the nose and the mouth down to the fine airways that lead to the small alveoli in the lungs. Hence, only very small particles barely visible with a high-powered microscope may eventually reach the alveoli. Fibres such as blue asbestos, which are relatively long and very fine, are more likely to reach the alveoli.

Some of the effects from inhalation of asbestos include:

- Pleural plaques - benign plural effusion and fibrosis (scarring);
- Asbestosis - a form of fibrosis of the lungs, which results in breathlessness;

- Lung cancer - cancer of the larger and medium sized airways, similar to that caused by smoking. (The combination of asbestos exposure and smoking has a synergistic effect, which greatly increases the risk of lung cancer).
- Mesothelioma - a rare cancer of the pleura and peritoneum. Crocidolite (blue asbestos) is very potent in inducing Mesothelioma and Amosite (brown asbestos) is to a lesser extent see **Figure 4** and **Figure 5**.

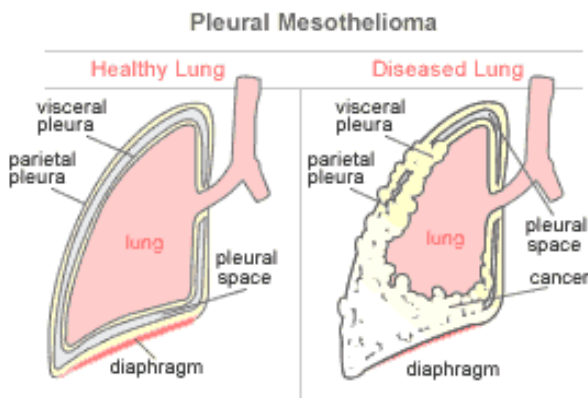


Figure 4: Pleural Mesothelioma

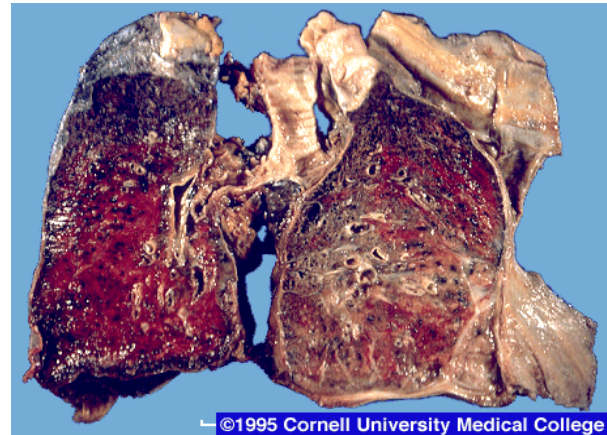


Figure 5: Mesothelioma

4.3.1 Bonded Asbestos

Asbestos forms a minor constituent of bonded AC products, typically <15%. Asbestos fibres within bonded AC products are encapsulated within the cement matrix of the material. AC products do not release measurable levels of free respirable fibres unless they are mechanically worked i.e. sawn, sanded, grit/hydro blasted or machined. The WA DOH has adopted a conservative risk-based approach for the assessment, remediation and validation of asbestos impacted sites. For open space / parkland sites impacted purely by AC, the soil asbestos criteria employed by WA DOH is 0.02% w/w. Thus, the soil asbestos concentration of 0.02% w/w was applied as the remediation trigger value if contamination by bonded AC only was identified at the Site. With acknowledgement of numerous occupational hygiene assessments undertaken in past decades, the DOH considers that the percentage of free asbestos arising from the weathering / disturbance of AC materials will not exceed 10% of the ACM, even if the ACM is primarily very small pieces arising from severe mechanical action.

4.3.2 Friable Asbestos / Free Asbestos Fibres

There is a potential for friable and/or free asbestos fibres, not associated with the weathering of AC materials, to be present at the Site. Regardless of whether the land use is residential, parkland / open space or commercial / industrial, the soil asbestos investigation criteria for free asbestos fibres is 0.001% w/w. The soil asbestos concentration of 0.001% w/w was applied as the remediation trigger value if friable or free asbestos was identified at Area 26 North.

4.4 Asbestos Hazard and Exposure Pathways

According to the National Environment Protection Measure 1999, Schedule B (7a), the major health risk from asbestos is from the inhalation of asbestos fibres. Friable asbestos poses the greatest health risk, as it is more likely to give rise to airborne fibres.

For commercial/industrial land use, asbestos left undisturbed is not considered to present a risk to health from ingestion. The main exposure risk is related to the potential for disturbance and generation of airborne asbestos, which may be inhaled. The risk of exposure by direct soil ingestion or by dermal contact is extremely low.

The areas containing asbestos fibres at the Site are located within the inner security area, which is surrounded by a man-proof fence. There is no public access to the inner security area. A program of monthly air monitoring commenced in October 2002 and concluded in October 2006 during remediation works. Air monitoring was undertaken daily during asbestos remediation activities on Site. This testing indicated that no measurable airborne asbestos fibres were being generated. On this basis, the likelihood of asbestos fibres migrating off the power station area to areas accessible to the public is considered negligible.

Heggies (New Environment) Pty Ltd (Wollongong) conducted the air monitoring and took 284 samples as outlined in the site *Asbestos Validation Report, October 2006*. Air monitoring results were generally less than the minimum detection limit of the method which is 0.01fibres/mL and well below the Time Weighted Average (TWA) Exposure Standard of 0.1 fibres/mL.

5.0 PRINCIPLES OF ASBESTOS MANAGEMENT

The principles of asbestos management have been adapted from the general principles documented in the *"Code of Practice for the Management and Control of Asbestos in Workplaces"* published by the National Occupational Health and Safety Commission (2005). These principles are summarised below:

- The presence of asbestos, type, location and condition is to be identified for all workplaces;
- At present it is not possible to assess whether there is a level of exposure to asbestos in humans below which an increased risk of cancer would not occur. Accordingly, exposure to asbestos should always be kept to a minimum.
- The recognised occupational exposure standard for asbestos is that adopted by the National Occupational Health and Safety Commission or specified by legislation.
 - In New South Wales, the current legislated exposure standard for airborne Chrysotile asbestos fibre is 0.1 fibres/ml.
 - For Amosite and Crocidolite asbestos or any mixture of asbestos fibre, the exposure standard is 0.1 fibres/ml (Ref: <http://hsis.ascc.gov.au> – Australian Safety and Compensation Council – Hazardous Substances Information System).
 - The method used to measure exposure to asbestos is the "Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Dust, 2nd Edition [(NOHSC: 3003 (2005))."
- Where appropriate, products or areas containing asbestos shall be labelled accordingly.
- Asbestos removal may not be immediately necessary, but must be completed before a structure or part of a structure, is demolished.
- Removal of asbestos should be subject to priority setting, determined by the condition and location of the asbestos as well as any planned refurbishment works.
- Asbestos presents a risk only when it is airborne. The risk to health increases as the number of fibres inhaled increases.
- Wherever practicable, substitutes shall be found for asbestos products. Such substitutes shall be thoroughly evaluated before use to ensure that they do not constitute a health hazard. Ultimately, all asbestos products should be eliminated wherever possible.
- All persons who may be exposed to the risk of inhalation of asbestos in the course of employment shall be provided with full information of the occupational health and safety consequences of exposure and appropriate control strategies.
- Where a risk assessment indicates that personal protective equipment is required when entering an area where asbestos is present, the area shall be identified by appropriate warning signs and/or barriers.
- The use of ACM shall be prohibited on this Site.

Figure 6 is taken from the *"Code of Practice for the Management of Asbestos [NOHSC: 2018 (2005)]"* and shows a flowchart detailing how the principles of asbestos management have been applied for this Site.

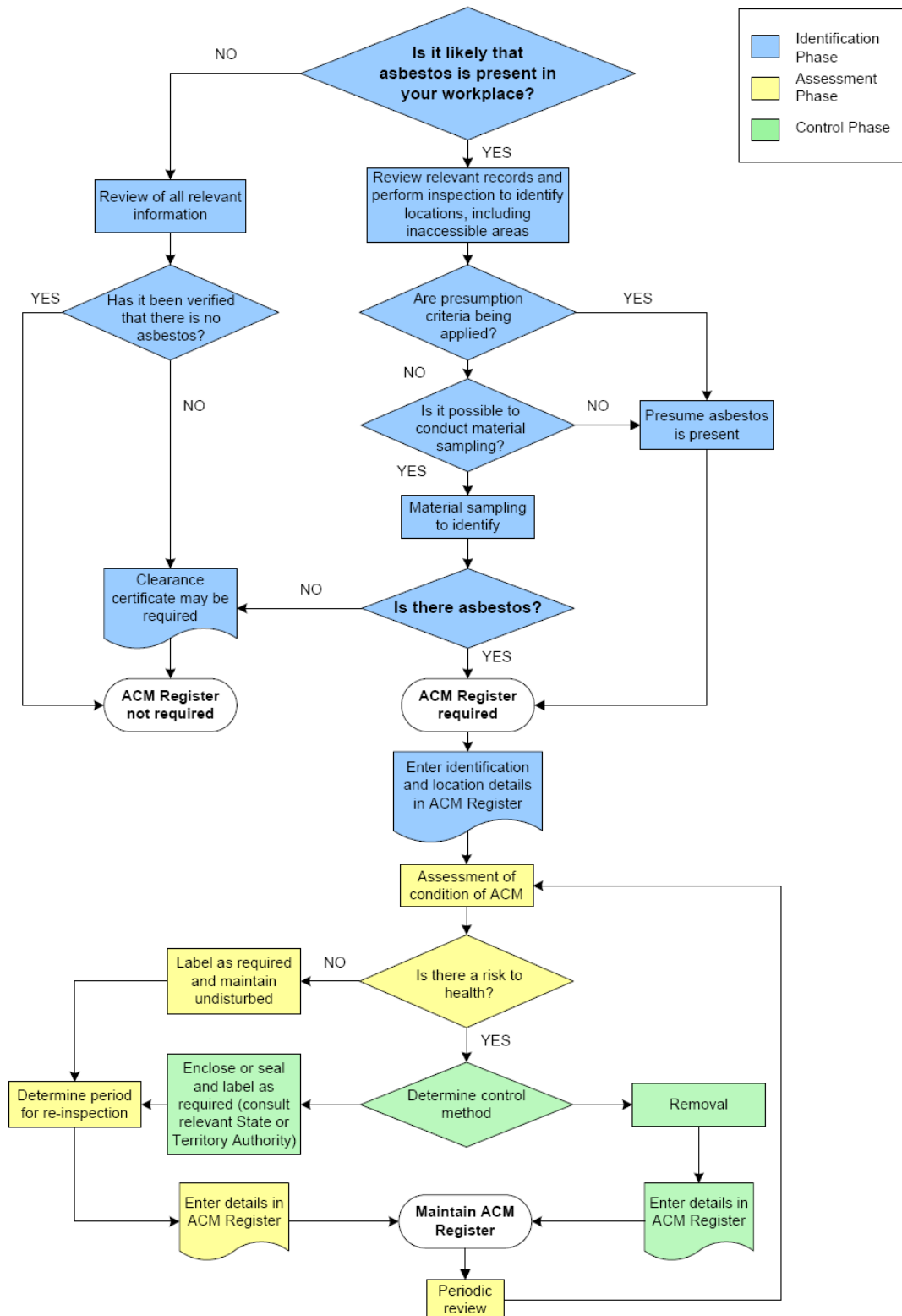


Figure 6: General Principles of Asbestos Management

If adequate asbestos-contamination investigations and risk assessments have taken place, it should be possible to narrow down the most likely asbestos management principles and to select one or a combination of them.

In undertaking the selection process, it is important that all options are considered and the preferred one should be supported by strong argument when compared with the others. Although cost, time, convenience and future owner perception will be important considerations, the arguments presented for selection should be primarily stated in terms of public and worker protection.

The asbestos management principles consider the minimisation of public risk, minimisation of contaminated soil disturbance minimisation and of contaminated material/soil moved to landfill.

6.0 APPLICATION

The AMP has been prepared to ensure the health and safety of employees and visitors to the Site. Future work undertaken at the Site may be in an asbestos-containing environment and may involve asbestos removal and remediation work. Any of this type of work must be carried out in a manner that ensures the protection of the health and wellbeing of TRUenergy employees and contractors, and ensures that all personnel employed at the site are aware of asbestos-containing materials and asbestos contamination and their location.

The purpose of the Asbestos Management Plan (AMP) is to address TRUenergy's legal obligation under the NSW Occupational Health and Safety Act and Regulation, as it relates specifically to the presence of asbestos and asbestos contamination on the Site.

The AMP is a working document designed to effectively manage and minimise asbestos-related health risks to personnel working on or visiting the Site. The AMP is to be read in conjunction with existing Hazardous Materials Survey reports, Asbestos Survey Reports / Registers, Validation Reports, Site Auditor Reports and Site Auditor Statements prepared for the Site where applicable and dependent upon the work planned for the Site of part thereof.

The AMP is based on the recognition of areas impacted by asbestos contamination that have been identified at the Site and the risks identified during the investigations and validation studies conducted for the Site. The extent of asbestos remediation work is also recognised and the AMP deals specifically with the ongoing management of the areas of the Site still affected by asbestos contamination (Asbestos Management Areas – see **Figure 7**).

The effective management of the asbestos hazards at the Site requires the co-operation and involvement of all levels of the workforce.

The AMP has been developed to satisfy current Occupational Health and Safety, Environmental and Planning requirements of legislation and best practice. Compliance with legislation and ongoing improvement will ensure employees, visitors and nearby residents and property are not affected by exposure to airborne asbestos fibre from activities carried out at the Site.

All work at the Site must be carried out in a manner which ensures the health, safety and well being of employees, visitors and nearby residents and ensures that all personnel employed at or visiting the Site are aware of the asbestos hazards associated with the Site.

The ultimate aim of this AMP is to ensure that no persons whether employed at the Site, visiting the Site or residing near the Site are exposed to the risk of the inhalation of airborne asbestos fibre during access to the Site or activities carried out at the Site. In addition, it is essential that all employees, visitors and the surrounding community are fully informed of the control strategies that will be established and the factual health consequences of exposure to airborne asbestos fibre.

Employees, and visitors, will be made aware by signs at the entry to the asbestos impacted areas of the Site (see **Section 14**). Personnel supervising the Site will advise them, and others who may be approved entry to the Site, and by strategically placed warning signs, that they are not permitted in or near the areas which are impacted by asbestos contamination and make them aware of the activities that may result in exposure of capped asbestos in the ground.

The key objectives of this AMP are to:

- Define TRUenergy's responsibilities in relation to ACM and asbestos contamination at the Site.
- Detail the areas of the Site that are impacted by ACM and asbestos contamination (Asbestos Management Areas).
- Outline the requirements for the ongoing management of ACM and asbestos contamination issues associated with the Site.
- Detail the procedures required for work in areas of the Site affected by asbestos contamination.
- Define areas on the Site where asbestos contamination is known to exist.

The procedures developed as part of this AMP are designed to ensure the long term integrity of the asbestos management systems (e.g. capping layer) such that potential environmental and/or health and safety impacts posed by the encapsulated asbestos contamination to future site users/workers are minimised through exposure prevention, regular monitoring, checks and mitigation.

All personnel undertaking on-site works that require intrusion into the ground must comply with the requirements of this AMP. A copy of this AMP must be issued to all personnel responsible for the undertaking of works that may involve intrusion into the ground at the Site as defined in this AMP. It should be made immediately available to all persons engaged in intrusive works at the Site and should form part of any contract for routine maintenance works where intrusive works are planned or anticipated.

7.0 TRUENERGY RESPONSIBILITIES

TRUenergy have a range of responsibilities defined by statutory requirements as well as moral and corporate commitments in relation to the ACM and asbestos contamination located at the Site. For the purpose of this AMP the following responsibilities have been defined:

7.1 Site Managers and Manager/Technical Services

Site Managers and Manager/Technical Services have responsibility for the following:

- i) The identification of asbestos and ACM in workplaces under their control;
- ii) The implementation of this Asbestos Management Plan;
- iii) The maintenance of the Asbestos Register;
- iv) Informing all persons that work at the Site of the presence of asbestos;
- v) Informing all persons at the Site when asbestos work is being carried out;
- vi) Informing all contractors required to work on asbestos affected areas of the Site or equipment containing asbestos, and who may be exposed to the asbestos during such work of its presence and their obligation to comply with this AMP, safe work practices and legislative responsibilities;
- vii) That persons are warned by the use of signs, labels or other similar measures, of the presence of ACM and asbestos contamination at the Site;
- viii) Licensed work is carried out only by a contractor licensed by the WorkCover Authority of NSW to carry out such work;
- ix) Friable asbestos removal work or bonded asbestos removal work is carried out by competent persons;
- x) Regular, periodic inspections and assessment of premises under their control are carried out by a competent person;
- xi) Consultation with employees on the health effects of exposure to asbestos and, where necessary, the use of safe work procedures and appropriate training and assessment;
- xii) Ensuring risk assessments are undertaken for any work to be conducted in asbestos affected areas of the Site;
- xiii) Ensuring Dig Permits are provided for any work involving penetration of the ground within the asbestos affected areas of the Site;
- xiv) Ensuring Contractor's and Employees comply with the requirements of this AMP.

7.2 Employees

Employees have a responsibility, in relation to ACM and asbestos contamination at this Site, to:

- i) Comply with this AMP, safe work procedures and instructions given for their own health and safety and that of others generally;
- ii) Not undertake any work for which they have not received appropriate training and/or assessment;
- iii) Co-operate with TRUenergy to ensure compliance with this AMP and legislative obligations;
- iv) Report any health or safety hazard, or potential hazard to their direct supervisor immediately.

7.3 Environmental Health and Safety Officer

The Environmental Health and Safety Officer is responsible for:

- i) The annual review and maintenance of the AMP;
- ii) Background Asbestos monitoring program;
- iii) TRUenergy Staff Asbestos Awareness Training Program;
- iv) Contractor Induction Training;
- v) Advice to TRUenergy Staff, Contractors and Visitors on the requirements of this AMP.

7.4 Occupational Hygienist

An Occupational Hygienist is an appropriately qualified person competent in asbestos legislation and consulting and in particular for this Site, asbestos contaminated soils.

Asbestos Identification Analysis and Airborne Asbestos Monitoring and Analysis must be undertaken by NATA Approved Identifiers and Counters.

The Occupational Hygienist may be engaged to conduct asbestos monitoring, clearance inspections, auditing, risk assessment, consulting and other technical services relating to asbestos in accordance with the requirements of this AMP.

8.0 SITE ASBESTOS MANAGEMENT AREAS

Figure 7, details the Site Asbestos Management Areas outlining the status of asbestos contamination and remediation as they existed when this version of the AMP was implemented. The Risk Assessment process undertaken has determined the Action Priority Ratings and access requirements for each of the areas and further explanation is provided in **Section 10**.

The outcomes of Asbestos Survey and Risk Assessment processes undertaken at the Site have determined the following Site Asbestos Management Areas as shown in **Figure 7**:

- **Red Shaded Areas** - Denote areas of the Site that require specific management due to the presence of asbestos contamination. Access is not permitted to these areas. Any work planned for these areas needs to be undertaken under asbestos removal conditions. Action Priority Rating P2.
- **Blue Shaded Areas** – Evidence of service trenches and channels likely to contain asbestos contamination. Dig permit is required for any excavation in these areas.
- **Green Shaded Areas** – These are areas that have undergone asbestos remediation and remain asbestos contaminated areas. These areas have been encapsulated (capped) to allow construction of the new power station and switchyard. Construction in these areas is essentially complete and the new power station and switchyard are operational. A 'Dig Permit' is required for any excavation in these areas (see **Appendix 3: Dig Permit**). Action Priority Rating P4.
- **Brown Shaded Areas** - Existing Canal – still in use – asbestos contamination below canal floor is unknown. Action Priority Rating P4.
- **Yellow Shaded Areas** – No Asbestos. These areas have been validated and cleared. Access permitted. A 'Dig Permit' is required for any excavation in these areas (see **Appendix 3: Dig Permit**). Action Priority Rating P5.

Maintenance and further construction or demolition in the **Green**, **Red**, **Blue** and **Brown** Shaded Areas must account for the existence of the asbestos contamination and must be conducted under controlled asbestos conditions.

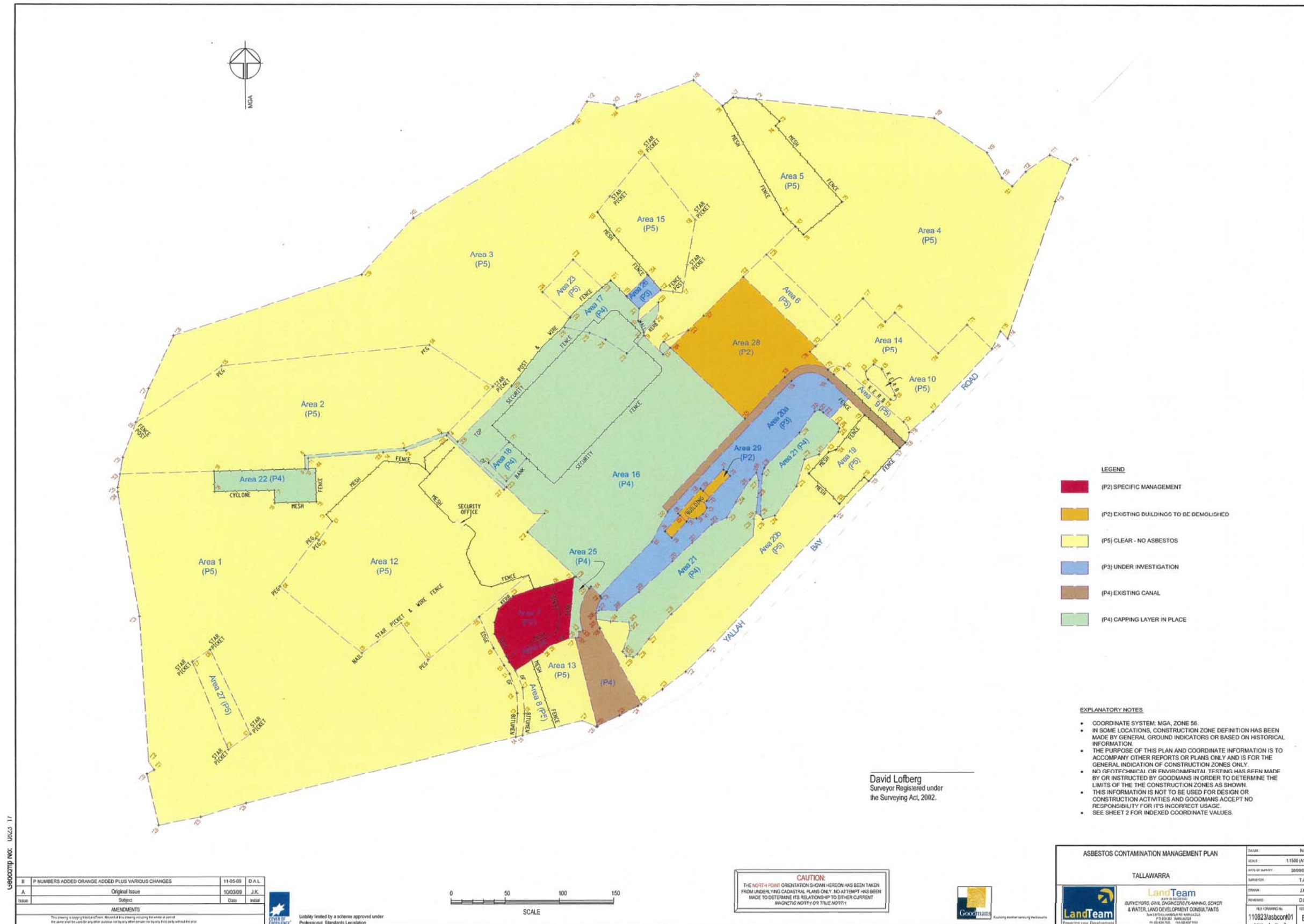


Figure 7: Site Asbestos Management Areas

Detail of Figure 7 Legend:

- **Red Shaded Asbestos Management Areas** – Specific Management Areas due to presence of Asbestos Contamination. No Access. Action Priority Rating P2.
- **Blue Shaded Asbestos Management Areas** – Asbestos Contamination is likely in trenches and channels in soil. Access is permitted. Dig permit required. Action Priority Rating P3.
- **Green Shaded Asbestos Management Areas** – Asbestos Contaminated Capped Areas. Dig Permit Required. Action Priority Rating P4.
- **Brown Shaded Asbestos Management Areas** – Existing Canal – Still in use – Asbestos Contamination below Canal Floor unknown. Action Priority Rating P4.
- **Yellow Shaded Asbestos Management Areas** – Areas that have been Validated and Cleared. No Asbestos. Access Permitted. Action Priority Rating P5.

9.0 ASBESTOS REGISTER AND VALIDATION REPORTS

Validation reports prepared for the Site as part of the asbestos remediation process have been used to determine the extent of asbestos contamination in the ground and these areas are detailed as Asbestos Management Areas in **Figure 7**. The Asbestos Register of asbestos contamination in soil for the Site is contained in **Table 1**.

In addition, a Hazardous Materials Survey inclusive of Asbestos Register has been prepared for the Bowling Club at the Site. The "*Hazardous Materials Survey Old Control Building, Bowling Club And Workshop Building Tallawarra Power Station site Yallah Bay Road, Yallah NSW 2530*" is located in the Site library. No asbestos was detected in the Bowling Club. The other buildings have been demolished since the Hazardous Materials Survey was conducted.

9.1 Asbestos Contaminated Soils

9.1.1 Sub-surface Asbestos Contaminated Soils

Asbestos, in the form of loose fibre bundles is located within the sub-surface profile beneath the following areas:

- Area 16;
- Area 17;
- Area 18;
- Area 21;
- Area 22;
- Area 26 a, b.

Area 26 consists of 3 parts (a, b & c). Asbestos was detected in parts a & b on the slope between the top and bottom roads, in the garden section closer to the power station. These areas have a capping layer installed utilising the green geo-fabric textile indicating layer (Bidim), topsoiled and vegetated with a no maintenance planting regime. Part of Area 26 c, to the left of the service road leading to the water tanks has been investigated and asbestos was determined not to be a risk.

In the above areas, the asbestos contaminated soils have been removed to a level below the planned construction levels of the buildings, plant and structures that have been erected as part of development of the gas-fired power station, switchyard, gas pipelines and associated plant. The areas have been encapsulated using a capping layer system to assist in identifying the depth of the asbestos contamination.

The capping layer in the power station portion of Area 16 consists of the following:

1. A leveling layer of recycled steel furnace slag where required with an approximate thickness range of 100mm to 9000mm (Australian Steel Mill Services product SFS502);
2. A green geo-fabric textile indicating layer (Bidim, see **Appendix 2**); and
3. An encapsulating layer of 2% cement modified air cooled blast furnace slag with an approximate thickness range of 100mm to 300mm (Australian Steel Mill Services product ABF200).

A profile example of the capping layer is shown in **Figure 8**.

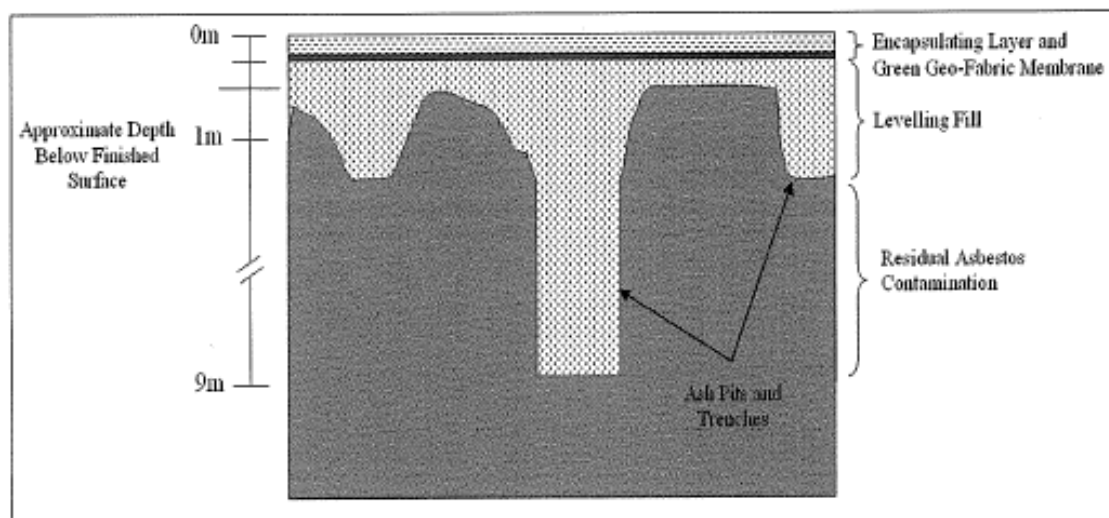


Figure 8: Typical Profile of Capping Layer – Area 16, Power Station Portion of Site

The capping layer on the switchyard portion of Area 16, Area 17, Area 18, Area 22 and 26 a & b consists of the following:

1. A green geo-fabric textile indicating layer (Bidim); and
2. An encapsulating layer of road base and certified imported fill with an approximate thickness range of 100mm to 15000mm.

A profile example of the capping layer is shown in **Figure 9** below:

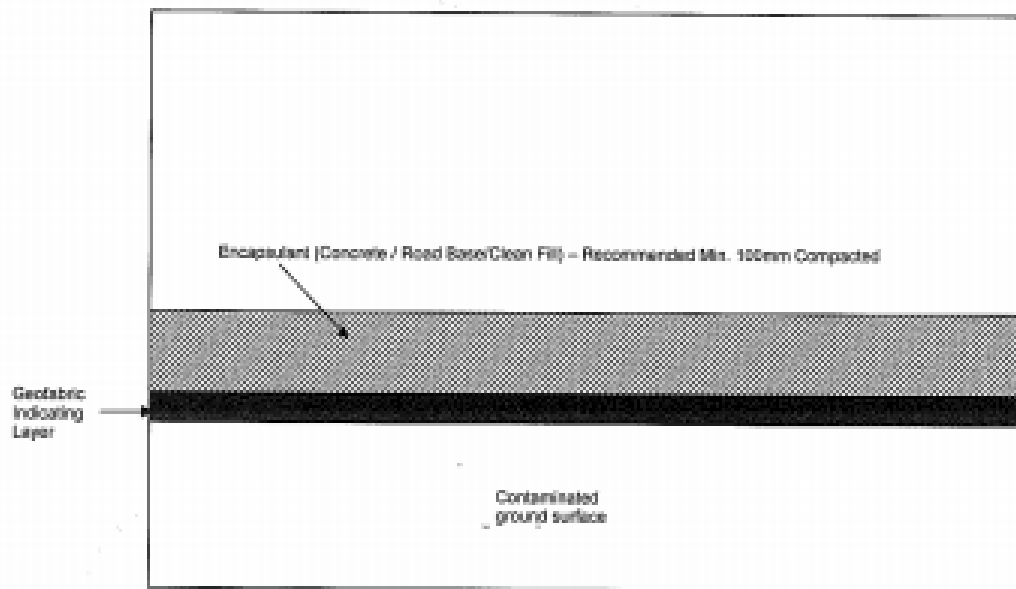


Figure 9: Typical Profile of Capping Layer – Areas 16 (Switchyard) 17, 18, 22

In Area 21, asbestos contaminated crushed concrete was capped with fill material and an orange geotech layer during the demolition of the original Power Station. In addition to this, a green fabric layer has been put placed over the mounds to make it consistent with the rest of the Site, and significant amounts of topsoil up to 3m deep in places has been placed over the mounds. The mounds are now fully vegetated. Area 20 a and 29 do not have a green layer, however it is anticipated that asbestos is present in the channels and trenches under the surface in this area.

9.1.2 Surface Asbestos Contaminated Soils

Asbestos is also present in the form of loose fibre bundles in surface soils in:

- Area 7; and
- Area 24.

These areas are fenced with a chain wire fence inside the outer Power Station fence. The access gate is locked and appropriate access permission is required prior to entering the areas.

9.1.3 Surface Asbestos Contamination

In the case of the Western Retention Wall between the power station and switchyard, a green industrial acrylic paint (Emer-Clad) has been used as an encapsulating layer. Asbestos cement conduit used for weep holes within the wall have been encapsulated using PVC pipe and Watty Gap Filler, an industrial mastic encapsulant.

The Eastern Canal Wall on which asbestos contamination was present has been encapsulated using the green industrial acrylic paint (Emer-Clad) and asbestos cement conduit and cable ducts within the wall are encased in concrete and encapsulated with Emer-Clad.

Other vertical rock surfaces and other limited areas where encapsulation using the geo-fabric and slag was impractical have been encapsulated with a green coloured Shotcrete product.

Apart from the Western Retention Wall, the capping layer has been covered by the construction of the power station, switchyard and associated plant.

A filtration system was placed around the base of the excavations in the southeast portion of the power station part of the Site to filter groundwater that may permeate the capping layer and potentially transport asbestos contamination. The filtration system was designed to filter groundwater using filters capable of filtering particles greater than 5µm.

Area 25 was covered with an encapsulating layer of DGB20 road base with an approximate thickness of 100mm. This was then rolled and compacted.

9.1.4 Asbestos Contaminated Soils Register

A summary and register of the Asbestos Management Areas that are impacted by asbestos contaminated soils is shown in **Table 1**.

Table 1: Asbestos Contaminated Soils Register

Asbestos Contaminated Soils Register – Tallawarra Power Station Site					
Location	Description	Asbestos Type	Health Risk Rating	Action Priority*	Comment
Area 7	Asbestos contaminated soils	Friable	Moderate	P2	Loose fibre bundles to ground surface
Area 16	Asbestos contaminated soils	Friable	Negligible	P4	Encapsulated by Capping Layer
Area 17	Asbestos contaminated soils	Friable	Negligible	P4	Encapsulated by Capping Layer
Area 18	Asbestos contaminated soils	Friable	Negligible	P4	Encapsulated by Capping Layer
Area 20A	Asbestos contaminated soils	Friable	Low	P3	Assumed asbestos in service trenches and channels
Area 21	Asbestos contaminated soils	Friable	Negligible	P4	Encapsulated by Capping Layer
Area 22	Asbestos contaminated soils	Friable	Negligible	P4	Encapsulated by Capping Layer
Area 24	Asbestos contaminated soils	Friable	Moderate	P2	Loose fibre bundles to ground surface
Area 25	Asbestos contaminated soils	Friable	Negligible	P4	Encapsulated by Capping Layer
Area 26 Part 2 & 3	Asbestos contaminated soils	Friable	Negligible	P4	Encapsulated by Capping Layer
Area 29	Presumed Asbestos contaminated soils	Friable	Low	P3	Assumed asbestos in service trenches and channels
Canal	Asbestos contaminated soils	Friable	Negligible	P4	Encapsulated by Capping Layer

**Note: refer to Section 10.2.*

9.2 ACM in Buildings and Under Demolished Buildings

Buildings associated with the former power station within Areas 28 and 29 were demolished in late 2010.

Asbestos Contamination may exist in Area 20a – surrounding Area 29 due to buried trenches / channels associated with former site facilities.

The Bowling Club was subject to a Hazardous Materials Survey and no asbestos was found. The building was originally constructed in 1986 and therefore is unlikely to contain concealed asbestos.

10.0 RISK ASSESSMENT AND HAZARD RATING

10.1 Risk Assessment

Risk assessments have been conducted for all areas identified as having asbestos and/or ACM to determine appropriate control measures and inspection schedules. Risk assessments shall also be undertaken whenever new discoveries of asbestos contamination or ACM are made at the Site.

Regular, periodic inspections of existing asbestos impacted areas are to be undertaken in accordance with the surveillance requirements in **Table 5** to assess the potential for the release of asbestos fibres into the atmosphere from any ACM or asbestos contamination. These inspections are to be conducted by a competent person trained in the identification of ACM and asbestos contamination and the risk assessment process (i.e. Consultant Occupational Hygienist or TRUenergy personnel nominated by the Plant Manager).

The period between assessments will be determined by the risk assessment based on the condition and location of the asbestos and the likelihood of damage or deterioration. Existing asbestos contamination and ACM will be assessed on a monthly basis (see **Section 11.2**).

Risk assessments of any ACM or asbestos contamination should include the following:

1. Date of the assessment;
2. Type and condition of the ACM or asbestos contamination (i.e. whether the ACM is friable or bonded and stable, or liable to damage or deterioration, etc.);
3. Likelihood of possible exposure;
4. Whether the nature or location of any work to be carried out is likely to disturb the ACM or asbestos contamination;
5. Control measures recommended as a result of the risk assessment;
6. Determination of an Action Priority Rating using the Risk Assessment rating in Table 2.

Risk assessments should be reviewed during the monthly inspections of the Asbestos Management Areas and amended if:

1. There is evidence that the risk assessment is no longer valid;
2. A significant change is proposed in the place of work or in work practices or procedures to the area that the risk assessment relates;
3. There is a change in the condition of the capping layer of to the ACM or asbestos contamination; or
4. The ACM or asbestos contamination has been removed, encapsulated, enclosed or sealed.

10.2 Priority Rating for Control of Asbestos Containing Materials

Asbestos is hazardous when it is airborne. The health risk posed by asbestos contamination or ACM in workplaces is due to a number of risk factors including:

- Accessibility of the material;
- Condition of the material;
- Friability of the material;
- Potential for disturbance and
- Location of the material.

A hazard level for ACM and asbestos contamination can be determined by multiplying the hazard level for the given asbestos type by the product of the risk factor hazard levels. The risk assessment methodology must be based on the Australian / New Zealand Standard ISO 31000-2009, *"Risk Management – Principles and Guidelines"*.

The Risk Assessment Matrix for use at the Site is shown in **Table 2**.

Table 2: Risk Assessment Matrix

Risk Factor/Description			Hazard Level
ASBESTOS TYPE	<i>Non-Asbestos</i>	Materials that do not contain asbestos.	0
	<i>Bonded or Non-Friable</i>	Materials that contain asbestos in a bonded matrix (may consist of Portland cement or various resin/binders and cannot be crushed by hand when dry).	2
	<i>Friable</i>	ACM which, when dry, is or may become crumbled, pulverised or reduced to powder by hand pressure. Includes soils containing loose bundles of asbestos fibre.	3
CONDITION	<i>Good</i>	No sign of damage or deterioration; non friable.	1
	<i>Fair</i>	Only mild damage; deterioration; friable with force.	2
	<i>Poor</i>	Severe damage or deterioration; very friable.	3
ACCESSIBILITY	<i>Low</i>	Totally encapsulated beneath a capping layer, enclosed behind a false ceiling or wall; sealed or painted.	1
	<i>Moderate</i>	Partially protected by encapsulation or enclosure.	2
	<i>High</i>	No encapsulation or enclosure.	3
AIRBORNE POTENTIAL	<i>Low</i>	No exposure to air movement.	1
	<i>Moderate</i>	Exposed to natural ventilation.	2
	<i>High</i>	Exposed to forced ventilation (i.e. intakes/vents, air conditioners, fans).	3
EXPOSURE	<i>Low</i>	Activities undertaken in the area are not likely to result in further damage or deterioration of the material.	1
	<i>Moderate</i>	Activities undertaken in the area may result in further damage or deterioration of the material.	2
	<i>High</i>	Activities undertaken in the area are likely to result in further damage or deterioration of the material.	3

The product of the hazard level from each risk factor can be then used to determine the recommended health risk/action priority rating as presented in **Table 3**. All ACM and asbestos contamination identified at the Site shall be assessed and assigned a Priority Rating. Priority Ratings determine the level of risk from P1 (high risk) to P4 (negligible risk) and P5 (Non Asbestos, no risk) according to the following criteria:

Table 3: Health Risk/Action Priority Rating

Health Risk	Hazard Level	Action Priority
High	>50	Priority 1 – P1
Moderate	20-49	Priority 2 – P2
Low	4-19	Priority 3 – P3
Negligible	0-3	Priority 4 – P4
Nil	0	Priority 5 – P5

The health risk/action priority ratings are defined as follows:

HIGH/P1 - Materials that pose an immediate or elevated health risk to employees or the public. The level of risk is applicable to the presence of friable material such as asbestos contamination in soil. The materials are readily accessible, in poor or friable condition. Immediate actions should be taken. Removal, when required is only permitted by an ASA licensed asbestos removal contractor.

MEDIUM/P2 - Products or materials that pose a potential health risk to employees and the public in their current state. This level of risk is applicable to damaged or unstable material that is friable with force, accessible within a high activity area such as broken or deteriorated cement sheeting, loose asbestos fibre bundles within soil which presents a potential immediate health risk if disturbed. Control measures to stabilise the material should be initiated immediately and regular monitoring of the material is recommended for these materials. Formal abatement should be considered when capital allows or where planned maintenance, refurbishment or demolition works will disturb these materials. Removal, when required should be undertaken by licensed asbestos removal contractors.

LOW/P3 - Products or materials that pose little health risk to employees and the general public. They consist of materials that currently are in a damaged stable or non-friable condition with a low accessibility. The material does not present a health risk unless further disturbed. Maintenance work should be carried out to stabilise or repair the damaged area. Control must be implemented to protect these materials from further damage including materials identified by warning signs. Reassessment of the priority rating will be required if any planned maintenance, refurbishment or demolition works impact on their condition. If any damage is present, maintenance work should be carried out to stabilise and repair the damaged area. Removal, when required should be undertaken by licensed asbestos removal contractors.

NEGLIGIBLE/P4 – Encapsulated asbestos contaminated soils or Asbestos Products such as Bonded ACM that pose negligible health risk to employees and the general public, such as painted cement sheeting, vinyl floor tiles etc in buildings or asbestos contamination that is buried in the ground and encapsulated. They consist of materials that currently are in an undamaged, stable, non-friable condition within a low accessible area. The material does not present a health risk unless disturbed by intrusive work such as penetration of the capping layer and excavation of asbestos contaminated soils or drilling, cutting, breaking or sanding of ACM. Controls must be implemented to protect these materials from damage including materials identified by warning signs. Reassessment of the priority rating will be required if any planned maintenance, refurbishment or demolition works impact on their condition. If damaged, maintenance work should be carried out to stabilise and repair the damaged area. Removal, when required should be undertaken by licensed asbestos removal contractors.

NIL/P5 – Material has been tested and does not contain asbestos. No risk to health.

10.3 Entry Requirements for Site Asbestos Management Areas – Priority Ratings

At the time this version of the AMP was issued the following priorities and entry requirements apply for each of the Asbestos Management Areas detailed in **Figure 7**:

- **Red Shaded Asbestos Management Areas** are classified as P2;
- **Blue Shaded Asbestos Management Areas** are classified as P3;
- **Green Shaded Asbestos Management Areas** are classified as P4;
- **Brown Shaded Asbestos Management Areas** are classified as P4;
- **Yellow Shaded Asbestos Management Areas** have no requirements for entry in relation to the presence of asbestos and are classified as P5.

Following is a description of the entry requirements for areas containing asbestos contamination or ACM. These will apply for existing asbestos contamination and ACM identified at the Site and for any additional asbestos contamination or ACM discovered:

Priority 1 (P1) Asbestos Management Area:

- Posting of area with caution signs required.
- There is unavoidable contact with loose or friable asbestos in this area.
- Access to these areas requires half-face cartridge type respirator fitted with P1 filters, disposable coveralls and boot covers.
- Coveralls and boot covers must be taken off before exiting the area and disposed of into an asbestos waste bag.
- Entry and exit can only be obtained through a decontamination unit.

Priority 2 (P2) Asbestos Management Area:

- Posting of area with caution signs required.
- Minimum requirement for entry into this area is a half-face cartridge type respirator fitted with P1 filters, disposable coveralls and boot covers.
- Coveralls and boot covers must be taken off before exiting the area and disposed of into an asbestos waste bag.
- Where extensive work is to be carried out, the entry requirement is the same as P1.

Priority 3 (P3) Asbestos Management Area:

- Asbestos is present in a damaged stable or non-friable condition with a low accessibility. The material does not present a health risk unless further disturbed.
- Posting of area with caution signs required.
- The condition of the asbestos must not be disturbed or damaged in any form.
- No special entry precautions are necessary unless work is to be carried out that will further damage or affect the ACM.
- Where extensive work is to be carried out, the entry requirement is the same as P1.

Priority 4 (P4) Asbestos Management Area:

- Asbestos is present in well sealed condition.
- Posting of caution signs is required.
- The capping layer or condition of the ACM must not be disturbed or damaged.
- No special entry precautions are necessary.
- Dig Permit required for any intrusive work.

Priority 5 (P5) Asbestos Management Area:

- No asbestos contamination or ACM present.
- No asbestos or access precautions required.

10.4 Asbestos Management Areas Requiring Dig Permits

Table 4 below details the tasks that are allowed within each of the Asbestos Management Areas and whether a "Dig Permit" is required for any work involving excavation or penetration of the ground. The "Dig Permit" is contained in **Appendix 3**.

Table 4: Dig Permit Requirements

Tasks	Asbestos Management Areas				
	Red P2	Blue P3	Green P4	Brown P4	Yellow P5
Penetration of ground – excavation >150mm	No surface disturbance allowed	No surface disturbance permitted	Dig permit allowed	No digging allowed	Dig Permit Required
Mowing and ground maintenance activities	Not allowed	Allowed	Allowed	Not allowed	Allowed
Landscaping	No surface disturbance allowed	Dig permit required	Dig permit required	Not allowed	Dig Permit required
Driving	Not allowed	Allowed	Allowed	Not allowed	Allowed
Walking	Not allowed	Allowed	Allowed	Not allowed	Allowed

11.0 CONTROL MEASURES

It is the aim of TRUenergy to include asbestos issues into internal works orders and Site works contracts, designed to ensure any asbestos contamination or ACM that may be encountered during the work to be undertaken is dealt with in accordance with this AMP.

When a risk assessment has identified a potential for the liberation of asbestos fibres into the atmosphere from asbestos contamination or ACM, all practicable steps shall be taken to eliminate or control the hazard. Control measures should utilise the most appropriate method applicable to the particular circumstances in accordance with the hierarchy of hazard control measures for occupational hazards and the Priority Rating. A combination of control measures may be required to adequately manage in situ asbestos contamination and ACM.

If stable and inaccessible, the asbestos contamination or ACM should be left in situ until such time as work disturbs or impacts upon it e.g. construction, excavation, demolition, partial demolition or renovation.

If the asbestos contamination or ACM is not in a stable condition, or is considered to constitute a potential health risk, it shall be removed as soon as practicable.

Access to the exposed asbestos contamination in Red Shaded Asbestos Management Areas shall be restricted by a man-proof fence and approved signs. These locations shall be kept under periodic surveillance.

Access to Blue Shaded Asbestos Management Areas is allowed and a dig permit is necessary. These locations shall be kept under periodic surveillance.

All Green Asbestos Management Areas where asbestos contamination has been capped and left in situ shall be clearly signposted and regularly inspected to ensure that the integrity of the capping layer is sound and it is not presenting a potential health risk and/or deteriorating.

Personal protective equipment is required when entering an area where asbestos is present and not covered by the capping layer (i.e. Red Asbestos Management Area). These areas shall be identified by the man-proof fence and appropriate warning signs.

Based upon the assessment of the condition of the asbestos, it's potential to suffer damage or mechanically degrade, and the likelihood of exposing people to airborne asbestos, the following control strategies are relevant for the existing Asbestos Management Areas and are to be considered when assessing unknown or new areas where the presence of asbestos becomes apparent:

11.1 In-Situ Asbestos Management Areas

In situ management primarily involves the isolation of the contaminated area with barriers and covers so that it cannot be readily disturbed and therefore will not generate airborne fibres. If stable and inaccessible, the asbestos contamination may be left in-situ until such time as work disturbs or impacts the ACM e.g. construction, excavation, demolition, partial demolition or renovation. All of the Asbestos Management Areas that contain asbestos and are identified in **Figure 7** will need to be signposted and inspected on a regular basis.

Asbestos in a stable condition and not prone to mechanical or environmental disturbance can generally remain in-situ. In-situ asbestos contamination within the capped **Green**, **Red** and **Blue** Shaded Asbestos Management Areas will remain unless impacted upon by intrusive activities.

The management of the in-situ asbestos contamination must ensure that in the case of Area 7 and 24, the environmental conditions and the condition of the flora and ground cover within the areas does not give rise to exposure of the loose asbestos fibre contamination to the environment.

The capped **Green** Asbestos Management Areas must be managed to ensure that the capping layer is not damaged or deteriorates to such an extent that workers or visitors are unnecessarily exposed to airborne asbestos fibres. Regular inspections are to be undertaken to ensure the integrity of the capping layer is maintained and asbestos contamination must be removed under controlled conditions prior to demolition or intrusive works that may disturb the asbestos contamination.

11.2 Inspections of Asbestos Management Areas

Inspections of the Asbestos Management Areas must be undertaken monthly with the frequency of inspections depending upon the site use and potential for the capping layer to be damaged. Any damage noted must be assessed for its potential to adversely impact the function of the capping and cause either adverse immediate or longer-term impacts. Inspection records should be a pro forma (see **Appendix 4 – Asbestos Management Area Inspection Checklist**) that includes as a minimum the following information:

- The date of inspection;
- Personnel conducting the inspection (name and designation);
- Description of any damage;
- Photographs of any damage noted;
- Sketch plan of the location of any damage;
- Planned remedial action including short and long term actions;
- Timeframe for completion of the remedial actions;
- Sign-off on satisfactory completion of the works.

Inspections are to be conducted by competent personnel trained in the identification of ACM and asbestos contamination and the risk assessment processes (i.e. Consultant Occupational Hygienist or TRUenergy personnel nominated by the Plant Manager).

The inspections will involve visual assessment of the condition of the capping layer to determine whether the material remains in a satisfactory condition, or if deterioration has occurred since the previous inspection. These inspections will determine if any remedial action is required.

Inspections will be performed on a **monthly** basis unless determined otherwise through the risk assessment process.

Normally, re-sampling of the Asbestos Management Areas would not be required during re-inspections. If, however, previously unidentified or undocumented asbestos, or materials suspected of containing asbestos, are encountered during the inspection process, sampling and analysis will need to be performed. The Asbestos Register and **Figure 7** will need to be updated and re-issued at the completion of the inspection work if necessary.

Control measures for identified hazards should be implemented (as far as practicable) in the following order:

11.2.1 Encapsulation

Encapsulation refers to the coating of the outer surface of the ACM by the application of a sealant compound that usually penetrates to the substrate and hardens the material. Sealing is the process of covering the surface of the material with a protective coating impermeable to asbestos. Encapsulation or sealing helps protect the asbestos from mechanical damage, is designed to reduce the risk of exposure by inhibiting the release of asbestos fibres into the airborne environment and increase the length of serviceability of the product. The use of encapsulation or sealing may be of limited application. It is not considered to be an acceptable alternative to repairing or removing severely damaged ACM.

11.2.2 Enclosure

Enclosure involves installing a barrier between the ACM and adjacent areas. This is effective in inhibiting further mechanical disturbance to the asbestos contaminated soils or other friable ACM which may be targeted for enclosure where removal is not an option. The type of barrier installed for the asbestos contaminated soils is the green "Bidim" membrane or for other friable ACM may include concrete, plywood or sheet metal products, constructed as boxing around the asbestos.

11.2.3 Removal

If the ACM is not in a stable condition, or is considered to constitute a potential health risk and the options of encapsulation or enclosure are not realistic it shall be removed as soon as practicable. Removal of asbestos must be performed by licensed asbestos removal contractors under controlled conditions, depending on the amount and type of asbestos contamination or ACM to be removed.

No asbestos removal work requiring a licence shall be undertaken by TRUenergy personnel.

Removal is considered preferable to the other abatement options such as enclosure or encapsulation, as it eliminates the hazard from the workplace but, as demonstrated during previous asbestos remediation work at the Site it is not always practical. The removal process, however, does pose an increased risk to personnel engaged in the removal and may result in increased airborne fibre levels in adjacent occupied areas if the removal program is not strictly controlled.

The removal of asbestos is considered appropriate where construction, excavation, demolition or refurbishment works are to occur and this work is likely to impact on the asbestos contaminated soils or other ACM. The asbestos must be removed under controlled conditions prior to the commencement of any site works. In the case of ACM, when the asbestos product has deteriorated, has reached an unserviceable condition, or is at risk of being disturbed, and the other control options are not feasible, removal is considered the most appropriate method of control.

Prior to asbestos being removed the following actions shall be implemented:

1. Access to the exposed asbestos shall be restricted by a barrier or approved tape and approved signs; and
2. The location shall be recorded and kept under periodic surveillance. The period of surveillance shall be determined by the risk assessment.

Any asbestos contaminated areas or ACM left in situ after a partial removal shall be clearly signposted or labelled and regularly inspected to ensure that it is not presenting a potential health risk and/or deteriorating.

12.0 ONGOING SITE ASBESTOS MANAGEMENT REQUIREMENTS

Due to the presence of the capped asbestos contamination and ongoing investigation and validation of parts of the Site, ongoing maintenance and management will be required to maintain the integrity of the capping layer over the buried asbestos contamination and to manage access and activities that may impact on the asbestos contamination still within the ground and also within existing buildings associated with the former power station, thereby preventing a risk of harm to human health and the environment.

Access and activities are to be managed in accordance with this AMP to protect TRUenergy employees and Contractors.

The following site tasks are required to manage the capped asbestos contaminated areas:

- Ongoing periodic maintenance inspections.
- Provision of effective surface drainage and/or provision of a durable surface cover to prevent scour and erosion of the capping.
- No disturbance of the land or the erection of any buildings or structures or carrying out any development of the land without the written approval of TRUenergy.
- Implementation and ongoing maintenance of this AMP to prevent accidental exposure of employees, Contractors and visitors to the buried asbestos contamination.

To meet these requirements, periodic surveillance will be undertaken as detailed in **Table 5**. Warning signs have also been installed on the main access gates and around the perimeter of the upper and lower platform as well as the visual mound area to alert visitors/contractors of the buried asbestos.

Table 5 – Asbestos Management Areas Surveillance Requirements

Surveillance Activity	Frequency Recommended	Responsible Person
<i>Inspect perimeter fences and gates to ensure the power station and Asbestos Repository are secured from unauthorised entry. Initiate repairs as required to prevent entry.</i>	Monthly	Plant Manager
<i>Inspect the Asbestos Repository and Asbestos Management Areas for signs of erosion and settlement.</i>	Monthly	Plant Manager
<i>Inspect the capping on the Green Shaded Asbestos Management Areas for signs of erosion. Initiate repairs as required to control erosion.</i>	Monthly	Plant Manager
<i>Inspect the Western Retention Wall between the Power Station and Switchyard to assess the integrity of the encapsulant and water seepage from weep holes. Initiate repairs to encapsulant and replace filter medium as required.</i>	Monthly	Plant Manager
<i>Inspect the Eastern Canal Wall to assess the integrity of the encapsulant and concrete enclosed asbestos conduit. Initiate repairs as required.</i>	Monthly	Plant Manager
<i>Inspect the fencing and signage associated with the Red Shaded Asbestos Management Areas. Remedy as required</i>	Monthly	Plant Manager
<i>Inspect the fencing and signage associated with the Blue Shaded Asbestos Management Areas. Remedy as required.</i>	Monthly	Plant Manager
<i>Inspect the fencing and signage associated with the Asbestos Repository. Remedy as required.</i>	Monthly	Plant Manager
<i>Background Asbestos Monitoring Program. Air monitoring to be conducted at various locations throughout the Site to assess the effectiveness of the Controls being applied.</i>	Annually	EH&S Coordinator
<i>TRUenergy Staff Asbestos Awareness Training</i>	At commencement of employment	EH&S Coordinator
<i>Contractor Induction Training</i>	At commencement of Contract	EH&S Coordinator
<i>Review of AMP.</i>	Annually	EH&S Coordinator
<i>Ensure all staff and contractors entering the contaminated portions of the site area advised of the presence of asbestos below the capped areas.</i>	Ongoing	EH&S Coordinator

13.0 EMPLOYEE INFORMATION & TRAINING

Training and sharing of information is one of the most important elements of this AMP. All categories of personnel employed at a site where ACMs are present, and visitors to the Site, will be given appropriate Asbestos Awareness Training and/or information during the site induction process and at further specific Asbestos Awareness Training if required. This training is to:

- i) Provide sufficient factual information regarding asbestos and its management so that staff and/or visitors are able to respond appropriately to asbestos issues that may arise from time to time;
- ii) Allow TRUenergy employees to be able to effectively manage and comply with the requirements of the TRUenergy Asbestos Management Plan (AMP).

The Asbestos Awareness Training shall be conducted as follows:

13.1 Level 1 – General Awareness Training

This is a general awareness course for employees who may be required to work in areas where asbestos contamination or ACM may be present, but who are not required to carry out work on any of the ACM such as:

- i) Employees or Contractors who work in the asbestos contaminated areas.
- ii) Management personnel with a need to be aware of the issues that may be affecting their employees;
- iii) People undertaking work and/or inspections at the Site on a regular basis.

Level 1 training should include (as a minimum):

- i) The health risks of asbestos;
- ii) The types, uses and likely occurrence of asbestos at the Site;
- iii) Where the Asbestos Register is located and how it can be accessed;
- iv) The purpose of the AMP and the employees' roles and responsibilities under the AMP.

13.2 Level 2 – Training for Supervisors

TRUenergy staff required to supervise asbestos work shall receive training appropriate for their required duties and responsibilities and the type of asbestos work to be undertaken. The Level 2 training course is a more comprehensive program and will apply to:

- i) People who may become involved with work in the Asbestos Management Areas or with the handling of ACM;
- ii) Supervisors of asbestos removal projects;
- iii) Personnel undertaking inspections of the Asbestos management Areas.

This type of training should include the General Awareness Training in addition to the following (as appropriate):

- i) Obtaining samples of materials, soil, dust, debris, powder or other substance suspected of containing asbestos;
- ii) Conducting visual assessments to determine the potential for the release of asbestos fibres into the atmosphere from any ACM;
- iii) Conducting regular periodic inspections of the Site, the Site asbestos controls and other parts of the Site that may contain ACM;
- iv) How the correct use of maintenance and control measures, protective equipment and work methods can minimise the risks from asbestos, limit exposure of workers and limit the spread of asbestos fibres outside the asbestos work areas;
- v) Carrying out friable asbestos removal work or bonded asbestos removal work including the processes and procedures to be followed to prevent exposure.

Note: These courses are not designed to train personnel to remove asbestos in situations requiring a licence.

Records of such training shall be kept for all employees for the duration of their employment.

13.3 Contractor Induction Training

Site-Specific Induction Training for contractors shall include appropriate information with regard to Asbestos Awareness, including:

- i) The requirements of the AMP;
- ii) Any asbestos contamination or ACM that may impact upon their work;
- iii) Asbestos management procedures including Asbestos Management Area access requirements and personal protective equipment requirements;
- iv) The Contractor's responsibility in relation to asbestos matters, and the health hazards that may result if these responsibilities are neglected.

14.0 LABELLING AND WARNING SIGNS

Signposting of known asbestos contaminated areas shall be carried out in accordance with the NOHSC Asbestos Codes of Practice. Labels should comply with Australian Standard 1216 (AS1216 – 1995, Class Labels for Dangerous Goods) and warning signs should comply with Australian Standard 1319 (AS1319 – 1994, Safety Signs for the Occupational Environment). This procedure is designed to avoid exposure to asbestos fibre. Examples are shown below in **Figure 10**.

14.1 Warning Signs

All areas of the Site, including the Asbestos Management Areas, plant, equipment and components that contain asbestos contamination or ACM shall, where practicable, be signposted with cautionary warning signs to ensure that the asbestos is not knowingly disturbed without correct precautions being taken. Signs should be located at all main entrances to the workplace or all entrances to the areas where asbestos is present.

All warning signs shall comply with Australian Standard AS 1319:1994 *Safety signs for the Occupational Environment*.

Examples of wording used for asbestos warning signs are as follows:

- **Red Asbestos Management Areas**: - ASBESTOS CONTAMINATION – Do not enter without prior approval from Plant Manager
- **Blue Shaded Asbestos Management Areas**: – Likely underground asbestos contamination. Do not excavate without Dig Permit.
- **Green Asbestos Management Areas**: - ASBESTOS MANAGEMENT AREA – Do not excavate without Dig Permit
- **Green Asbestos Management Areas**: - ASBESTOS MANAGEMENT AREA - Inform your supervisor immediately if the Green layer is visible
- **Green Asbestos Management Areas**: - ASBESTOS MANAGEMENT AREA –Do not breach wall surface

14.2 Labelling

In addition to warning signs, when a risk assessment has identified that the ACM may be disturbed or there is a potential health risk, the ACM must be labelled to warn of the presence of asbestos. The location of the label should be consistent with the location of the ACM as outlined by information in the Asbestos Register. A competent person should determine the number and positioning of labels required.

Labels used for this purpose must identify the material as containing asbestos and should comply with Australian Standard AS 1216:1995 *Class Labels for Dangerous Goods*.



Figure 10: Examples of Asbestos Signage

15.0 SAMPLING & IDENTIFICATION OF ACM

Suspected ACM should be identified using AS 4964 Method for the Qualitative Identification of Asbestos in Bulk Samples. Analysis for identification purposes should be carried out by one of the National Association of Testing Authorities (NATA) laboratories accredited for this method. Occupational hygienists who have training in asbestos identification, and who have knowledge and experience in asbestos removal, should carry out asbestos identification and assessment of the friability of ACM.

15.1 Soil Sampling

Dependent upon the reason for the sampling of soil from the Site, a Sampling Plan is to be developed in accordance with the NSW DECC "*Contaminated Sites Sampling Design Guidelines*" 1995. The Sampling Plan is to include a risk assessment of the work to be undertaken and a sampling strategy that provides for scientifically defensible methodology.

15.2 Material Sampling

Where a material, dust, debris, powder or similar substance suspected of containing asbestos is detected, a sample shall be taken by a competent person (e.g. Occupational Hygienist or person who has received appropriate training for working with asbestos).

Samples shall be placed in an airtight container, appropriately labeled and immediately dispatched for analysis or, where this is not possible, stored in a secure area until dispatched.

15.3 Labelling of Samples

Samples shall be adequately labeled, to enable follow-up action and shall include:

- Name and location of the area, building, structure, plant or equipment from which the sample was taken;
- Exact location of the sampled material;
- Date of sampling;
- Batch identification number (if appropriate);
- Name and telephone number of the person who took the sample.

15.4 Sample Analysis

Analysis of the sample shall only be performed at a laboratory accredited by NATA in accordance with AS 4964 Method for the Qualitative Identification of Asbestos in Bulk Samples.

When a sample is taken for analysis, the following information should be specified for inclusion in the analysis report provided by the testing authority:

- i) The sample identification number;
- ii) The analysis method used;
- iii) A description of the sample appearance;
- iv) Proportion / concentration (if known) and type of asbestos present;
- v) Comment on other materials detected.

This information shall be retained in the Asbestos Register.

15.5 Identification Requirements

When identifying ACM or asbestos contamination for inclusion in the Asbestos Register, the following should, as far as practical, be included:

- i) The location of the ACM or asbestos contamination;
- ii) Dates when identification was made;
- iii) Details of the competent person/s who identified the ACM or asbestos contamination;
- iv) The type of ACM or asbestos contamination;
- v) Details of any material presumed to be ACM ;
- vi) Any inaccessible areas that are likely to contain ACM; and
- vii) Results of any analysis that has confirmed a material in a workplace is/is not an ACM.

16.0 ASBESTOS REMOVAL WORK

A number of control procedures shall be put in place when working on asbestos to ensure that the generation of asbestos fibre does not occur during asbestos related activities.

Activities carried out at TRUenergy properties will be such as to ensure that all equipment used and all facilities erected and procedures used are designed and operated to eliminate the emission of asbestos fibres into the atmosphere. Precautions will be taken to remove any risk to health arising from airborne asbestos dust caused by these activities.

16.1 Asbestos Removal Requirements

Contractors carrying out asbestos work at the Site shall prepare procedures detailing steps they will take to comply with the requirements of this AMP. The procedures must include an overview of the methodology to be used, containment procedures and health protection methods.

These procedures shall be compatible with the AMP and their implementation shall be subject to audit by the TRUenergy Project Manager or his representative. The minimum procedural requirements for the removal of asbestos contaminated soils are shown in **Appendix 5**.

Where Contractors are engaged in asbestos removal works:

1. All contractors tendering for asbestos works will be issued with tender documents, which include this AMP and the applicable section of the Asbestos Register.
2. Prior to entering site to undertake works, the contractor will provide for approval, their proposed procedures related to the works.
3. Only licensed and reputable asbestos removal contractors will be utilised.

All asbestos works requiring the use of outside Contractors may require the contractor to provide information concerning their experience, qualifications and approvals. The information sought at the time of tendering will include:

1. Name of Company tendering;
2. Evidence of currency of asbestos-related insurances;
3. Evidence of currency of asbestos licence;
4. Name of on-site supervisor, and their qualification;
5. Name of workers to be employed on the project and evidence that they have undergone asbestos training;
6. A list and details of past asbestos removal projects undertaken in the past six months;
7. A list of referees and their contact telephone numbers;
8. JSA (Job Safety Analysis) or WMS (Work Method Statements) to be used for the asbestos removal works;
9. A copy of any training records for staff; and
10. Copies of health surveillance and records of medicals for employees.

At the time of seeking tender for asbestos related works, a copy of the AMP will be made available to the prospective tenderer, and in award of contract the Contractor will be required to comply with the AMP.

All ACM removal works are to be performed in accordance with the following documents:

1. The NSW Occupational Health and Safety Act 2000;
2. The NSW Occupational Health and Safety Regulation 2001;
3. Code of Practice for the Management and Control of Asbestos in Workplaces [NOHSC: 2018(2005)];
4. Code of Practice for the Safe Removal of Asbestos, 2nd Edition [NOHSC: 2002 (2005)]; and
5. Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibre, 2nd Edition [NOHSC: 3003 (2005)].

In the case of conflict between these procedures and any Regulation or Act, then the more stringent requirement shall apply.

Any asbestos removal work requiring a license shall be undertaken by a licensed Asbestos Removal Contractor. Licensing requirements are as follows:

1. Friable asbestos must only be removed by an AS A licensed asbestos removal contractor;
2. Bonded asbestos over 10 square metres must be removed by an AS A or AS B asbestos removal contractor or a demolition contractor with an Unrestricted Demolition license;
3. Bonded asbestos under 10 square metres can be removed by unlicensed persons but must be removed in accordance with the Asbestos Code of Practice or other WorkCover guidance material;

Personnel undertaking ACM removal work must be appropriately trained and competent.

16.2 Construction and/or Demolition Work

When carrying out construction or demolition work, any asbestos work shall be completed before a structure or part of a structure is demolished.

When carrying out construction work where asbestos or ACM may be present the following shall apply:

- i) All persons at the workplace are informed when asbestos work is being carried out;
- ii) Signs, labels or other similar measures warn of the presence of asbestos or ACM at the place where construction work is being carried out;
- iii) All persons (including contractors) required to work on the Site and who may be exposed to the asbestos during such work, are to be informed of its presence and their obligation to comply with safe work practices and legislative responsibilities;



- iv) Measures to prevent the uncontrolled disturbance of the ACM shall be implemented while construction work is being carried out;
- v) No ACM is to be reused in connection with the carrying out of construction work;
- vi) No high-pressure processes are to be used to clean the surface of any ACM or any structures that consist of or contain asbestos.

17.0 ASBESTOS DISPOSAL

TRUenergy personnel and Contractors will arrange disposal of asbestos waste materials at a licensed Waste Facility in a manner, which complies with the Asbestos Codes of Practice (2005) and the requirements of the WorkCover Authority of New South Wales and the New South Wales DECC.

Whilst the current Asbestos Repository located at the Site is licensed and operational, asbestos waste is to be disposed of there.

It is the responsibility of the TRUenergy employees and Contractors to dispose of asbestos waste in a proper manner. See **Appendix 6 Asbestos Repository Operation** for details on the disposal of asbestos waste.

18.0 AIRBORNE ASBESTOS FIBRE MONITORING

Airborne Asbestos Monitoring Programs establish the background levels of airborne asbestos fibres within TRUenergy's buildings or Site that contain ACM or asbestos contamination, and which are assessed as being a risk for persons working in the vicinity of the ACM or asbestos contamination.

Airborne Asbestos Monitoring Programs are to be established when deemed necessary during asbestos removal projects and whenever the Green Capping Layer is disturbed or penetrated.

The data collected from this monitoring is used to assess whether the control procedures being applied are satisfactory and that relevant airborne asbestos fibre levels are not being exceeded.

18.1 Control Air Monitoring for Asbestos Removal Projects

Asbestos removal projects undertaken on TRUenergy sites requiring air monitoring are those which require a removal licence and include:

1. Friable ACM;
2. Asbestos contaminated soils;
3. Asbestos contaminated materials and debris;
4. Asbestos cement sheet (bonded asbestos) removal greater than 10m²; and
5. Any other asbestos removal project where air monitoring is deemed necessary due to close proximity to other employees, visitors or contractors.

Initially, background air quality monitoring will be undertaken to determine levels of airborne asbestos fibre during normal operations and activities. Monitoring will be continued at appropriate intervals during asbestos removal operations.

Monitoring data will include:

1. Exact location of static monitors including distinctive features of the workplace;
2. Names and job titles of workers, location of work;
3. Potential sources of asbestos emissions or exposure;
4. Information on the particular process and control measures;
5. Date and time of samplings;
6. Name of person conducting the sampling and analysis.

18.2 Background Airborne Asbestos Monitoring

Monitoring of air quality will be undertaken **annually** in identified areas to determine background levels of airborne asbestos fibres during normal operations and activities. This monitoring will establish background air quality data that can be used for comparison during disturbance or removal of asbestos contamination and ACM, future background air quality monitoring results, or air clearance results.

The main goals of the Monitoring Program are to:

1. Ensure the health of workers is being protected;
2. Ensure control measures and preventative actions are effective;
3. Assess changes in airborne asbestos fibre levels;
4. Ensure that changes to work practices and procedures do not result in increased levels of airborne asbestos fibres;
5. Promote the implementation of more effective preventative measures; and
6. Assess compliance with workplace and environmental goals.

18.3 Air Quality Criteria

The risk associated with asbestos relates to the inhalation of airborne asbestos fibres. These fibres may be liberated by disturbance of the asbestos contamination or ACM.

Air quality criteria for a range of contaminants including asbestos have been set by the NOHSC. In addition, the NSW Occupational Health and Safety Regulation 2001 has legislated the exposure standard for Chrysotile asbestos in New South Wales. The exposure standard sets out the time-weighted average (TWA) fibre concentration of the air breathed by the worker throughout a working shift, as calculated from one or more measurements taken over a sampling period of not less than four hours using the Membrane Filter Method.

The TWA airborne concentrations for asbestos shall not exceed the legislated exposure standard of:

- | | |
|--|----------------|
| • Chrysotile: | 0.1 fibres/ml; |
| • Amosite: | 0.1 fibres/ml; |
| • Crocidolite: | 0.1 fibres/ml; |
| • Other forms of asbestos: | 0.1 fibres/ml; |
| • Any mixture of these, or where the composition is unknown: | 0.1 fibres/ml. |

Exposure Standards may be reviewed from time to time, therefore the Australian Safety and Compensation Council – Hazardous Substances Information System website at <http://hsis.ascc.gov.au> and NSW Legislation should be consulted for any variations.

TRUenergy have established a standard whereby corrective action is instigated when the lowest detection limit possible – 0.01 fibres/mL (using the required Membrane Filter Method) is met or exceeded.

18.4 Control Air Monitoring Limits

'Control levels' are airborne asbestos fibre concentrations which, if exceeded, indicate there is a need to review current control measures or take other action. These control levels are occupational hygiene 'best practice', and are not health-based standards.

The control levels shown in **Table 6** should be used for the purposes of determining the effectiveness of control measures:

Table 6 – Control Air Monitoring Levels and Required Actions

Control level (fibre/mL)	Control / Action
< 0.01	Continue with control measures
≥ 0.01	Review control measures
≥ 0.02	Stop removal work and find the cause

Where a result of occupational (personal) or control monitoring is considered high and/or is outside the acceptable limits, the cause of the high reading is to be ascertained by the Asbestos Removalist and the Occupational Hygienist with the Asbestos Removalist responsible to take all remedial action (at their own expense) to ensure that further high readings are not repeated. Procedures to be followed in the event of elevated air sampling readings are outlined in **Figure 11**.

The minimum requirement for asbestos removal process work is as follows:

- i) Control monitoring will be undertaken at barriers to determine whether the barriers are correctly located.

For work, which has been previously carried out with satisfactory air sampling results and where all conditions affecting dust control remain unchanged, further sampling may not be necessary.

Static samples will be collected in the clean end of the decontamination unit, in the lunchroom, in the laundry and at areas nominated by the Consultant Occupational Hygienist and the Plant Manager.

- ii) Occupational (personal) monitoring may be taken on staff in the area as required by the Consultant Occupational Hygienist and the Plant Manager.
- iii) On completion of the clean-up process and before barriers are removed, further air monitoring will be carried out after the surfaces have dried out in the asbestos removal area, together with a visual inspection to confirm that final detail cleaning has removed all asbestos dust. Settled dust analysis may also be undertaken at the discretion of the Consultant Occupational Hygienist.

General surveys, including visual inspection, settled dust analysis and/or air sampling, shall be carried out throughout the asbestos removal process as determined by the Consultant Occupational Hygienist having regard to the amount of, and condition of, asbestos contamination or ACM at the Site.

18.5 Air Monitoring Methodology

Air quality monitoring will be carried out using the only internationally recognised sampling and analytical methodology in accordance with the "*Membrane Filter Method for Estimating Airborne Asbestos Fibre*" [NOHSC: 3003 (2005)]. All monitoring shall be undertaken by personnel registered and accredited by the National Association of Testing Authorities (NATA) Australia.

Air sampling and filter analysis will only be carried out by the Consultant Occupational Hygienist.

18.6 Number of Monitors

The number of monitors used will depend on the scope of asbestos removal works and will be determined by the Consultant Occupational Hygienist. Air monitors will be run continuously while asbestos removal works are in progress.

18.7 Duration and Location of Monitors

Control monitoring will be undertaken continuously and reported in appropriate intervals (usually four-hourly). The location of monitors will be on workplace barriers at locations determined by the Consultant Occupational Hygienist in consultation with the TRUenergy Plant Manager. Personal or occupational monitoring may be conducted utilising employees working in, or adjacent to, the asbestos removal work area as required, or if determined necessary.

18.8 Sample Flow Chart and Result Feedback

Air monitoring results will be reported to the TRUenergy Plant Manager as soon as possible after the conclusion of the air-monitoring interval. Results will be readily available and accessible to both management and employees and shall be displayed in a prominent position.

18.9 Records of Monitoring Results

Records of all airborne asbestos fibre monitoring results will be maintained and any asbestos exposures documented. All monitoring data will be maintained, stored and preserved for a period of 30 years.

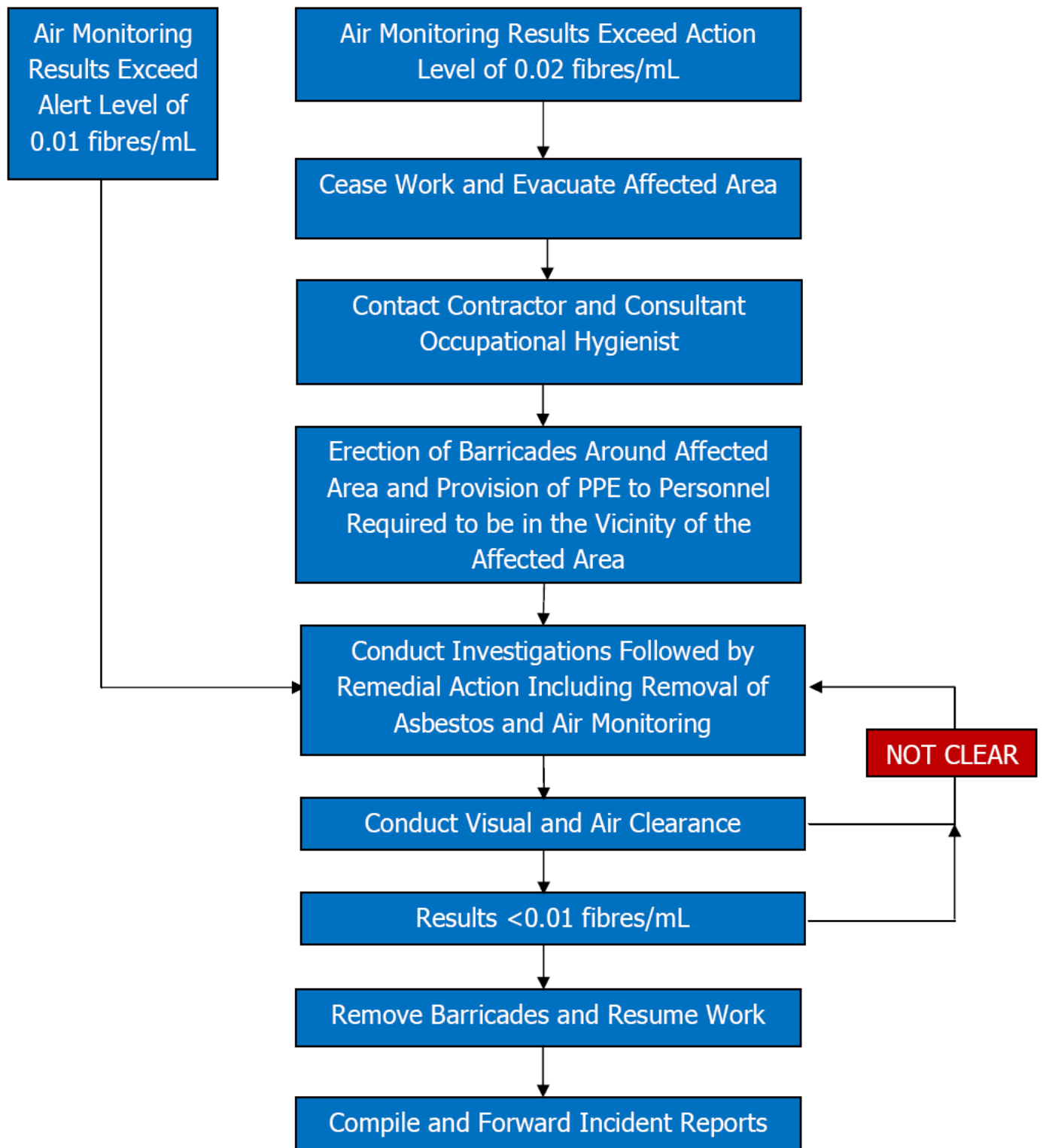


Figure 11: Procedure for Exceeding Control Air Monitoring Limits

19.0 EMERGENCIES AND INCIDENTS

Emergency procedures on site will cover actions to be taken when asbestos is inadvertently uncovered, catastrophic events occur or air monitoring indicates high levels of airborne asbestos fibre. The procedures contained in **Figure 12** shall be followed in an emergency.

It is important to remember that the first priority must always be the safety of any persons either workers or others involved in the events. Uncovering of asbestos may occur due to human error or to catastrophic event. Catastrophic events may include but not limited to:

- Explosion;
- Industrial Accident;
- Failure of construction structures;
- Failure of an asbestos control (i.e. encapsulation, equipment etc);
- Earthquake;
- Flood; and
- Fire.

All emergency action should take place as soon as possible after the event and the first priority is to stabilise the situation and to prevent further hazard or employee exposure.

19.1 Incidents

When an incident is identified, it will be recorded. The TRUenergy Plant Manager or the Consultant Occupational Hygienist will usually make these observations during routine site inspections.

All incidents are to be managed in accordance with TRUenergy's Safety Management System Procedure. All reportable incidents are to be documented within the TRUenergy Safety Management Program.

19.2 Uncovering of Suspected Asbestos Contamination or ACM

The procedure to be followed in the event of suspected asbestos contamination or ACM being uncovered is shown in **Figure 12**.

Once the material has been confirmed as containing asbestos, appropriate warning labels are to be affixed to the material or signs and boundary markers placed to delineate the asbestos affected area.

The Asbestos Registers and Asbestos Management Area plan (**Figure 7**) are to be updated.

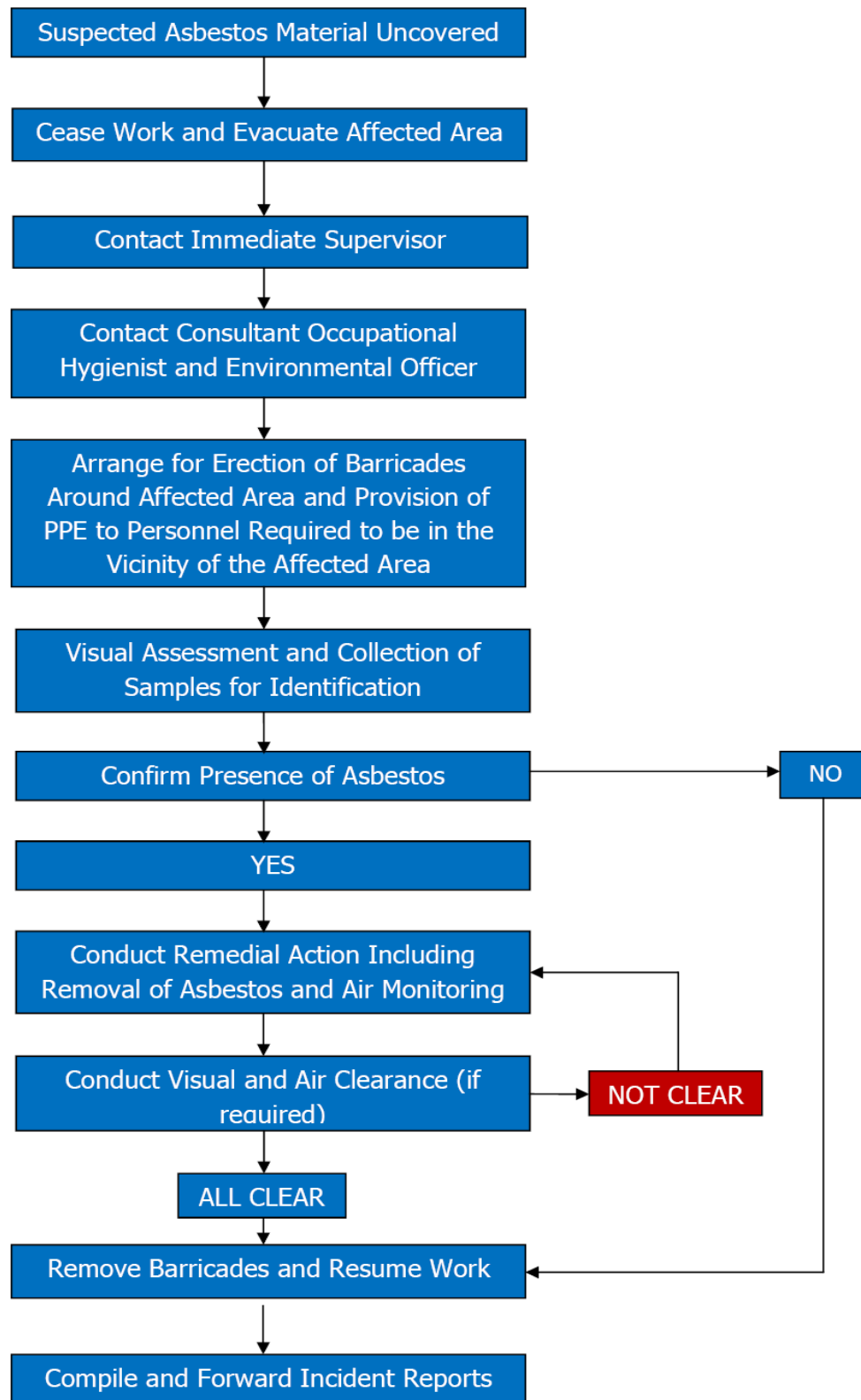


Figure 12: Procedure for Asbestos Emergencies and Incidents

20.0 ASBESTOS MANAGEMENT RECORDS

All asbestos records will be stored and maintained by TRUenergy Document Control Procedures. The records will be updated as required.

The record system will contain:

- i) Records of inspection and test plans;
- ii) Records of corrective action;
- iii) Records of audits;
- iv) Original records of certification/approvals by statutory authorities;
- v) Records of surveys;
- vi) Records of complaints from employees;
- vii) Records of inspections, maintenance and tests results;
- viii) Records of training and inductions; and
- ix) Records of employee involvement in site works.



Appendix 1: Bidim Product Specification

bidim® Nonwoven Geotextiles



The use of geotextiles in construction projects around the world has grown substantially since their humble beginnings in the 1960's. Geotextiles in one form or another are now used in virtually every civil engineering construction project. While a number of generic classes of geotextile are manufactured by far the most popular geotextile is the nonwoven needle punched style of product due to its versatility and overall performance. **bidim®** was first produced in 1969 and continues to lead the way in terms of technical performance and range of applications.

bidim® is a continuous filament nonwoven needle punched polyester geotextile designed to provide effective and economic solutions to a multitude of engineering applications. Introduced into Australia in 1978 **bidim®** geotextiles have a proven track record, which is unsurpassed.

bidim® nonwoven needle punched geotextile is manufactured to the highest international standards and has ISO9001:2000 accreditation. As a result you can rely on the fact that, when you use **bidim®** for your construction project, you receive the same top quality from the first to the last metre on the roll.

Geofabrics Australasia is the only geotextile manufacturer in Australia, with plants in Albury and the Gold Coast. As Australia's geotextile supplier of choice we pride ourselves in providing the best service to customers throughout the country.

The knowledge gained over the past 29 years allows our technical staff to provide relevant support based on local conditions and sound experience.

Typical bidim® Applications



Drainage

bidim® nonwoven geotextiles are ideally suited to subsoil drainage systems used to remove water from road layer works, sports fields and behind retaining walls. The three dimensional structure of a nonwoven needle punched geotextile ensures high through flow rates and hence excellent drainage performance.

Separation

bidim® needle punched geotextiles are used extensively in construction of roads and embankments over soft ground. The separation geotextile ensures the soft subgrade does not contaminate the fill material quality. The high elongation characteristics (>50%) of **bidim®** nonwoven geotextiles limits installation damage which ensures long term performance.

Filtration

bidim® polyester geotextiles outperform natural filters in many applications particularly revetments and subsoil drainage. The extremely high porosity of nonwoven geotextiles allows water flow while preventing fines migration. The complex flow path mimics a natural filter and provides considerable cost saving over a traditional graded natural filter.



Protection

Heavy weight **bidim®** needle punched geotextiles provide excellent protection to liner systems in landfills, heap leach pads and general landfill

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lining applications. The protection geotextile cushions the forces that otherwise have been directly transferred onto the liner. The inclusion of a geotextile protection layer can extend the life and maintain the integrity of the lining system for many years.

Reinforcement

bidim® continuous filament geotextiles are often used as reinforcing elements in retaining structures which are designed to flex such as blast walls or temporary retaining structures. The nature of the continuous filaments ensure good strength characteristics while the needle punching allows a high level of flexibility.

Features

- Australian Made
- Made from Recycled Soft Drink Bottles
- Up to 6m wide rolls
- ISO9001 quality assurance
- 3 dimensional structure
- High through flow
- Excellent filtration
- Isotropic strength
- High elongation
- High melting point ($\pm 260^{\circ}\text{C}$)
- High Specific Gravity (1.25kg/m^3)
- High UV resistance

Benefits

- Fast & Efficient delivery of goods Over 150 people employed in Regional and Metropolitan Australia
- Minimised waste to landfill
- Minimised overlap wastage
- Guaranteed quality and consistency
- Provides extensive flow paths
- Allows rapid drainage
- Mimics a natural sand filter
- Can accommodate irregular deformations
- Less susceptible to damage
- Suited to paving fabric applications
- Will sink in water under its own weight
- Extended shelf life

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**HAZMAT
SERVICES**

TRUenergy
Tallawarra Power Station
Asbestos Management Plan
Version 7



Appendix 2: Dig Permit



Click on object to open PDF.

	TRUenergy Tallawarra
	EXCAVATION & PENETRATION CERTIFICATE

- An Excavation & Penetration Certificate shall be completed for all disturbance of ground exceeding 150mm deep and all penetrations of walls.
- The Certificate shall be fully completed by the TRUenergy Contract Supervisor and the person performing the work, prior to being issued with the appropriate safety documents from the Permit Room.
- A Certificate issued for work lasting longer than one day shall be reviewed at the start of each working day.

Associated Permit Number:			
Date of Issue		Risk Assessment	Yes <input type="checkbox"/> (attach copy)
1. ADMINISTRATION			
Date of Excavation or Penetration		Time of Excavation or Penetration	Expected Duration:
Excavation or Penetration Location			
Planned Excavation or Penetration Method			
Reason for Excavation or Penetration			
Organisation carrying out Excavation or Penetration			
24 hour contact number		24 hour contact person:	
2. CHECKLIST FOR CERTIFICATE (Authorised Issuing Officer)			
All items on Checklist to be checked, either YES, NO, or N/A			
PRIOR TO COMMENCING			Comments
1. Has person/s performing the work been Inducted by TRUenergy?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>		
2. If the work is being performed on the Jemena easement, have they been contacted? Phone 1800 620 492	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>		
3. Has a Dial Before You Dig been conducted Phone 1100	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>		
4. Have all services been located and marked?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>		
5. Has the water supply been Isolated and tagged?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>		
6. Has the electrical power been Isolated and tagged?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>		
7. Have the telecommunications lines been located?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>		
8. Will barricading/signs/lights be required?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>		

Authorised by: Plant Manager, Tallawarra
Date of Original Approval: 03/03/2010
Date of this Revision: 07/04/2010
Control Status: Controlled when viewed on the screen, uncontrolled if printed unless stamped "TALLAWARRA" in red ink.

Version No: 2.01

Doc No.: TQMS11-HSE-P003-F01

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Appendix 3: Asbestos Management Area Inspection Checklists



Process: Asbestos Management Area – Inspection Checklist

Responsibility: TRUenergy Plant Manager

TRUenergy Supervisor: _____

Date of Inspection: _____	
Inspect Perimeter Fences and Gates of Power Station Site:	YES / NO
Observations: _____	
Remedial Action Required: _____	
Inspect Perimeter Fences and Gates of Asbestos Repository:	YES / NO
Observations: _____	
Remedial Action Required: _____	
Inspect Asbestos Management Areas for signs of erosion:	YES / NO
Observations: _____	
Remedial Action Required: _____	
Inspect Asbestos Repository for signs of erosion:	YES / NO
Observations: _____	
Remedial Action Required: _____	
Inspect Asbestos Management Areas for signs of damage to capping layer:	YES / NO
Observations: _____	
Remedial Action Required: _____	

Inspect Asbestos Repository for signs of damage to capping layer:	YES / NO
Observations: _____	
Remedial Action Required: _____	
Inspect Western Retention Wall for signs of damage :	YES / NO
Observations: _____	
Remedial Action Required: _____	
Inspect Eastern Canal Wall for signs of damage :	YES / NO
Observations: _____	
Remedial Action Required: _____	
Have Remedial Actions been Completed:	YES / NO
Attach Photographs of pre and post remedial actions:	YES / NO
Attach marked-up copy of Figure 3 from AMP showing areas requiring Remedial Action:	
YES / NO	

Signed: _____ (TRUenergy Inspector) Date: _____

Signed: _____ (Plant Manager) Date: _____



Appendix 4: Asbestos Contaminated Soil Removal Procedures



**HAZMAT
SERVICES**

TRUenergy
Tallawarra Power Station
Asbestos Management Plan
Version 7



1. ASBESTOS REMOVAL REQUIREMENTS

The Asbestos Removal Contractor shall remove from site asbestos contaminated soils as specified by TRUenergy and dispose of them in the approved manner.

The Asbestos Removal Contractor shall ensure that surrounding areas are not contaminated during the asbestos removal process.

The Asbestos Removal Contractor is to satisfy himself as to the Scope of Work.

The Asbestos Removal Contractor shall display a copy of their licence wherever they are carrying out asbestos removal work in accordance with the NSW Government legislative requirements. The licence is only to be displayed whilst asbestos removal is in progress.

All asbestos Works are to be performed in accordance with the following documents:

1. The NSW Occupational Health & Safety Act 2000.
2. The NSW Occupational Health & Safety Regulation 2001.
3. Code of Practice for the Management & Control of Asbestos in Workplaces [NOHSC: 2018(2005)].
4. Code of Practice for the Safe Removal of Asbestos, 2nd Edition [NOHSC: 2002(2005)].
5. Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres" 2nd Edition [NOHSC:3003 (2005)].
6. Protection of the Environment Operations (Waste) Regulation 1996.
7. This AMP.

In the case of conflict between TRUenergy's works Specification and any Regulation or Act, then the more stringent requirement shall apply.

Signs are to be placed in areas agreed by the Consultant Occupational Hygienist with the words "Asbestos Work Area, Do Not Enter" or similar, approved signage. This sign is only to be displayed whilst asbestos removal is in progress. It is to be placed at the Asbestos Work Area boundaries and at the entry to the decontamination unit. Appropriate signs are to be displayed in the areas and locations agreed with the Consultant.

The Asbestos Removal Contractor shall provide instruction to all employees who may be exposed to asbestos in the course of employment regarding the danger to health and the statutory requirements that are required to provide safe working conditions. Staff involved with asbestos removal work must also be trained in safe working procedures and in the wearing and maintenance of protective clothing and equipment in accordance with NSW WorkCover requirements.

TRUenergy wishes to promote full consultation, involvement and information sharing between themselves, the Consultant Occupational Hygienist and the Asbestos Removal Contractor in regards to all removal and disposal methods. When requested, the Asbestos Removal Contractor will assist the Consultant Occupational Hygienist in the development of effective plans of action to protect all employees and nearby occupants from potential asbestos exposures.

All work shall be subject to review by of the Consultant Occupational Hygienist. Work shall not proceed until such review is complete.

Transport and final disposal of asbestos waste material shall be carried out by the Asbestos Removal Contractor in a manner, which will prevent the liberation of asbestos dust into the atmosphere. Vehicles licensed for the transportation of asbestos waste shall only be used.

The waste material shall be disposed at the Site Asbestos repository and in a manner as approved by the Local and State Authorities. Should the Site Asbestos Repository be unavailable, a facility licensed to accept asbestos waste is to be utilised. Documentary evidence for the disposal shall be provided to the Consultant Occupational Hygienist immediately following each tipping event, for off-site disposal this will include name of authorised landfill, weighbridge docket and registration number of vehicle for every disposal.

Pending disposal of the waste material, provision shall be made by the Asbestos Removal Contractor for the storage of the containers in a safe area ensuring that all containers are properly marked and covered.

The removal of all asbestos waste materials from the site shall be conducted between the hours as stated by TRUenergy.

The Asbestos Removal Contractor shall provide proof of medical examinations to the Consultant Occupational Hygienist for each employee within the last twelve months. The Asbestos Removal Contractor shall maintain a register of all staff involved in asbestos removal on the Site and ensure that all employees are scheduled for regular medical examination and the results provided upon request by the Consultant Occupational Hygienist.

The Asbestos Removal Contractor will be responsible for signing off Inspection and Test Checklists (ITCs). The Consultant Occupational Hygienist will sign off the ITCs if satisfied the Principal Contractor has met the stated requirements. ITCs are to be Project specific and supplied by the Consultant Occupational Hygienist. Asbestos removal shall not commence until all appropriate checklists are completed. It is the Asbestos Removal Contractor's responsibility to ensure that the checklists are completed.

1.1 List of items

The following list of items shall be furnished by the Asbestos Removal Contractor prior to the commencement of work:

1. Copy of Friable Asbestos Removal Licence.
2. Confirmation of Health Register.
3. Detailed Work methodology.
4. WorkCover "Permit to Work".
5. Receipts for payment of fees.
6. Site Specific Safety Plan.
7. Employee list and employee qualifications for approval.
8. Details of employee medical details.

1.2 Scope of Work

Details of the extent of the asbestos contaminated soil removal will be provided by TRUenergy or their representative.

All work is to be undertaken during the hours specified.

The Asbestos Removal Contractor is to satisfy himself as to the Scope of Work, which will be further detailed at a Site inspection.

The Scope of Work to be carried out by the Asbestos Removal Contractor includes but is not limited to the following:

1. Supervise the removal of asbestos contaminated soil and debris for disposal. This will include the provision of a Competent Supervisor. Supervisors must have a minimum of five (5) years experience in removing ACM and have attended an approved Asbestos Removal Course for Supervisors.
2. Supply of labour who have attended an approved Asbestos Removal Course and hold appropriate training certification to undertake any work on the Site. Operation of plant and equipment may be undertaken a sub-contractor who also satisfies the asbestos removal training requirements. Work will include the lining of trucks with impervious plastic prior to the removal of asbestos waste from the Site, watering-down of the Site during excavation work and other work undertaken within the Asbestos Work Area to assist with the excavation.
3. Supply of a decontamination unit as detailed in **Section 1.10 of Appendix 5**.
4. Supply of all personal protective equipment including respiratory equipment as detailed in **Section 1.9 of Appendix 5** for use by TRUenergy, Consultant Occupational Hygienist and Asbestos Removal Contractor's personnel.
5. Supply of all asbestos consumables including but not limited to :
 - a. 0.2mm impervious plastic;
 - b. Tape;
 - c. Asbestos bags for asbestos waste and soiled PPE;
 - d. Hoses and fittings for wetting down and vehicle washing;
 - e. Signage and barriers; and
 - f. Vacuum cleaners and bags.

1.3 Existing Services

Identification and protection of existing services at the Site is the responsibility of the TRUenergy. The Asbestos Removal Contractor is to assist where necessary and is to provide all labour for protection if required.

1.4 Establishment of Site

All construction and planning requirements shall be in accordance with the relevant industry legislative requirements, standards and guidance notes. In addition, special consideration is given to the requirements of working in an asbestos contaminated area and additional precautions observed

1.5 Requirements for Mobile Plants and Equipment

Mobile plant and equipment will include:

- Trucks for the transport of asbestos contaminated waste. Trucks are to be leak-proof and dust-proof;
- Front-end loaders and excavators for the transfer of the asbestos contaminated material to the trucks;
- Service Vehicles; and
- Water Carts.

Mobile plant and equipment will be modified to enable its safe use in an asbestos containing environment and to comply with this AMP.

All mobile equipment will be supplied or modified to enable use of the recirculating air function only. Air conditioning filters will be fitted with High Efficiency Air Particulate (HEPA) filters and all air vents will be fitted with HEPA filters. Should the function of the air conditioning system be affected by the use of HEPA filter material, the system shall be switched off and the air vents sealed with tape whilst operating in the Asbestos Work Area. An assessment of the heat related risks to operators must be included in the project risk assessment should the air conditioning system be inoperable.

All windows will be sealed closed to prevent use.

Two-way radios are to be provided in all mobile plant and equipment.

1.6 Maintenance of Mobile Plant and Equipment

The Asbestos Removal Contractor or his sub-contractor will maintain the mobile plant and equipment on a regular basis.

The Asbestos Removal Contractor is responsible for ensuring that the vehicle is cleaned regularly.

The key elements of the maintenance and cleaning of Mobile Plant and Equipment includes:

- All vehicles washed down at the Asbestos Work Area at the end of each shift to remove any accumulated dust.
- All vehicle cabins to be vacuumed internally at the end of each shift to remove any accumulated dust.
- All vehicles to be washed down and vacuumed internally immediately prior to having any repair or maintenance work carried out.

Note: Vacuum cleaners must be fitted with HEPA filters and conform to AS3544-1988 *Industrial Vacuum Cleaners for Particulates Hazardous to Health*. Vacuum cleaner bags are to be disposed of as asbestos waste.

1.7 External Dust Suppression

Dust suppression is crucial to the operation of the Site. Dust will be generated by several factors including:

- vehicle movement;
- shovelling and digging in the Asbestos Work Areas; and
- wind.

To ensure that dust generation is minimised all sources of dust are to be suppressed by the use of fine mist sprays of water.

Mist spray procedures will be employed at the Asbestos Work Areas whenever materials are being disturbed or moved.

The sprays will provide minimal amounts of water applied to the work areas in a mist form to minimise water run-off.

Water will be applied to all roads on a continual basis during work hours.

The use of Wash Bays at the Asbestos Work Area and Asbestos Repository will ensure that dust is minimised and not transported around the Site.

The ongoing Asbestos Monitoring Program will be used to assist in determining if additional dust suppression techniques are required.

1.8 Asbestos Removal Procedures

The following procedures are an outline of the asbestos removal methodology to be used for asbestos contaminated soil removal works. Alternative methods of asbestos removal may be considered, however these must be reviewed and agreed to by the Consultant Occupational Hygienist prior to the commencement of the ACM removal.

These procedures are a guide only and do not override the requirements of the WorkSafe Australia Code of Practice for the Safe Removal of Asbestos, 2nd Edition [NOHSC:2002(2005)] or accepted minimum standards, which apply for asbestos removal Work.

1.8.1 Excavation and Soil Removal Work

The Asbestos Removal Contractor's Work methodology must comply with the following:

1. The Asbestos Removal Contractor is to be an AS1 licensed Asbestos Removal Contractor in accordance with the NSW Occupational Health & Safety Regulation 2001. A copy of the current license is to be furnished by the Principal Contractor prior to the commencement of Work and displayed in a prominent position during the asbestos removal project.
2. The Asbestos Removal Contractor is to apply for and supply a copy of a "Permit to Work" issued by the NSW WorkCover Authority in accordance with the Regulation. A copy of the "Permit to Work" is to be furnished by the Principal Contractor prior to the commencement of Work and displayed in a prominent position during the asbestos removal project.
3. All personnel employed by the Asbestos Removal Contractor are to be appropriately trained in asbestos removal. Copies of the appropriate certificates are to be supplied to the Consultant prior to the commencement of Work.
4. Approved vacuum cleaners are to be utilised at all times during the asbestos removal process for cleaning and decontamination of plant and equipment. Vacuum cleaners used during the process are to be approved for use with asbestos and are to be fitted with HEPA filters in accordance with AS3544-1988 *Industrial Vacuum Cleaners for Particulates Hazardous to Health* and AS 4260-1997 *High Efficiency Particulate Air Filters (HEPA) – Classification, Construction and Performance*. Standard domestic or industrial vacuum cleaners are not permitted. The vacuum collection bags and filters are to be disposed of as asbestos waste.
5. A dry decontamination area is to be established. Entry to the Asbestos Work Area for plant operators is to be via the Decontamination Area where personnel will change into the required personal protective equipment (PPE).
6. The decontamination area is also the area in which contaminated PPE must be removed prior to personnel leaving the Asbestos Work Area. It is set up as a temporary adjunct to the Asbestos Work Area. It should be adjacent to the Asbestos Work Area but must not be used for purposes other than decontamination.

7. Disposable coveralls, respirator filters and gloves must be disposed of as asbestos waste within this area. Hard hats, boots and glasses must be wiped with a damp cloth to remove dust and other contamination.
8. Dry decontamination procedures are to be as follows:
 - a. Workers are to don the PPE at the decontamination area. One set of disposable coveralls are to be worn over the plant operators work clothing whilst operating in the Asbestos Work Area and while asbestos removal work is being carried out.
 - b. Upon leaving the Asbestos Work Area, the coveralls and boot covers are to be removed and placed into 0.2mm polyethylene low-density plastic bags labelled as 'Asbestos Waste' ('Asbestos Bags').
 - c. Remaining PPE is to be removed at the decontamination area and personnel are to decontaminate or wash any exposed parts of the body. Hard hats, boots and glasses must be wiped with a damp cloth to remove dust and other contamination.
9. A wet decontamination unit is to be established at the Asbestos Work Area boundary for use by the Asbestos Removal Contractors personnel should an emergency arise. Entry to and exit from the Asbestos Work Area for the Principal Contractor's personnel shall only be permitted via the decontamination unit. The decontamination unit shall also have a clean change area adjacent to and separate from the clean end of the decontamination unit.
10. The Asbestos Work Area boundaries are to be established and warning signs are to be affixed to the boundaries in accordance with the *Code of Practice for the Safe Removal of Asbestos, 2nd Edition* [NOHSC:2002(2005)]. For example – ***"Asbestos Work Area – Do Not Enter"***.
11. All drains at ground level that may be affected by the removal process should be covered with filter material to prevent asbestos residue entering the drainage system. Filter material shall be removed and disposed of as asbestos waste at completion of the removal process.
12. Suitable silt fencing and filtration is to be used at the Asbestos Work Area boundaries to prevent run-off to adjoining property.
13. A visual inspection will be undertaken by the Consultant Occupational Hygienist to assess the completion of the establishment of the Asbestos Work Area and decontamination facilities prior to accessing the Asbestos Work Areas. Access to the Asbestos Work Areas will only be permitted following satisfactory completion of the visual inspection.
14. The appropriate PPE must be worn when accessing Asbestos Work Areas and when undertaking any asbestos removal work. All PPE is compulsory and must be worn by all personnel entering the Asbestos Work Areas.
15. All existing services, electrical and data cabling is identified by TRUenergy and protected prior to asbestos removal work.
16. To ensure that dust generation is minimised the ground surface and all other sources of dust are to be suppressed by the use of sprays of water. The sprays will provide minimal amounts of water applied to the Asbestos Work Area in a mist form to minimise water run-off and with consideration given to slips and

falls. Spraying must also be undertaken when removing the soil and debris from the ground.

17. The ACM and asbestos contaminated material and debris from the site may be removed using excavators or front-end loaders. The material is to be placed into trucks or bins that are leak-proof and dust-proof and covered with 0.2mm impervious plastic. Care is to be taken and water sprays applied to avoid the generation of dust when placing the material into the trucks or bins. When filled, the trucks or bins are to be sealed using 0.2mm impervious plastic and tape prior to transportation from the Asbestos Work Area.
18. Some materials may need to be removed by hand or shovel and placed into 0.2 mm polyethylene low density plastic bags labelled as 'Asbestos Waste'.
19. All equipment and machinery used within the Asbestos Work Area shall only be used in that area and when removed from the designated area shall be thoroughly washed. Tools used in the Asbestos Work Area are to be sealed in 'Asbestos Bags' for transport to and from the Asbestos Work Area or must be thoroughly cleaned and decontaminated before being taken from the Asbestos Work Area.
20. Operators of mobile plant and equipment required to operate within the Asbestos Work Area must wear the appropriate PPE and the operators' cabin must be completely closed and the air conditioning system must only be operated on a recirculating air function.
21. Where 'Asbestos Bags' are used for waste, they are to be sealed, placed into a second bag and sealed again. Bags are to be filled to no more than 1/2 full, or so that the weight is manageable and does not result in manual handling injury or bag rupture. The bagged material is to be placed into leak-proof and dust-proof trucks or bins for disposal.
22. All soiled PPE shall be placed into 0.2 mm polyethylene low-density plastic bags labelled as 'Asbestos Waste'. Bags are to be filled to no more than 1/2 full, sealed, placed into a second bag and sealed for disposal with the asbestos waste.
23. Asbestos waste and other waste material is to be disposed of in the appropriate manner at the Site Asbestos Repository or at an approved off-site waste disposal facility. If an off-site waste facility is used, permission to dump the asbestos waste is to be obtained from the appropriate authority prior to the commencement of Works and dumping dockets are to be provided to the Consultant Occupational Hygienist following each dumping event.
24. The Asbestos Work Area will be inspected by the Consultant Occupational Hygienist to ensure that all waste and debris from the Asbestos Work Area is removed from the Asbestos Work Area and that no visible asbestos contamination remains. The Consultant is to be accompanied by the Asbestos Removal Contractor at all times during clearance inspections. Soil validation will be undertaken in accordance with **Section 15.1** of this AMP.
25. Air monitors are to be placed around the Asbestos Work Area by the Consultant Occupational Hygienist during all stages of the work. All air monitoring and clearance inspections will be carried out by the Consultant Occupational Hygienist to NOHSC and NATA Standards.

26. Upon receipt of satisfactory air and soil validation results the Asbestos Work Area barriers may be dismantled.
27. A final inspection will be carried out by the Consultant Occupational Hygienist and TRUenergy to ensure all work has been carried out and areas cleaned satisfactorily.

1.8.2 Asbestos Contaminated Waste Transportation Procedure

Requirements for the transportation and storage of asbestos waste are detailed in Section 29 of the Protection of the Environment Operations (Waste) Regulation 1996 – Special Requirements Relating to Asbestos Waste and in **Appendix 6** of this AMP.

This procedure is a guide only and does not override the current legislative requirements relating to the transport and disposal of asbestos waste. The following procedure will apply:

1. All asbestos removal works undertaken at the Site are to be performed in accordance with this AMP.
2. The trucks must be leak-proof and dust-proof and licensed for the transport of hazardous waste.
3. Trucks or bins that do not have leak-proof trailers and tailgates are to be lined internally with 0.2mm impervious plastic prior to loading with asbestos contaminated waste.
4. ACM is to be placed into the truck and not dropped. All loaded material will be wetted sufficiently to prevent the emission of any dust during loading and unloading. Loader buckets will only be loaded to $\frac{3}{4}$ capacity and trucks will only be loaded to a level below the height of the tipping body. The bucket will be shaken above the tipping body after each bucket is emptied. This will also prevent asbestos contaminated material from being spilt on the truck bodies and subsequently being dropped on route to the waste disposal facility.
5. Trucks are to be covered with 0.2mm impervious polyethylene sheeting and sealed for the journey to the Site Asbestos Repository or the off-site DECC approved waste disposal facility. Tailgates are to be sealed closed.
6. Trucks are to be washed prior to leaving the Asbestos Work Area to remove any residual dust and debris.
7. Trucks will be inspected prior to departing the Asbestos Work Area to ensure that the load is adequately covered and any spillage is contained.
8. Proceed directly to the Site Asbestos Repository or the off-site DECC approved waste disposal facility where drivers will be directed to the disposal area.
9. TRUenergy or the Consultant Occupational Hygienist may decide to suspend unloading of the asbestos waste due to unfavourable weather conditions. If suspension of unloading occurs, all trucks and bins are to return to the Asbestos Work Area or remain at the Asbestos Repository with loads covered and sealed until permitted to unload.

10. Trucks are to reverse up to the disposal point and slowly tip the trailers or bins. The waste is to be hosed with water at all times while being unloaded.
11. If disposal is to occur at an off-site DECC approved waste disposal facility Drivers are to request a dumping receipt for each dumping event and supply to the Consultant Occupational Hygienist following each dumping event.
12. Air monitoring may be carried out periodically at the Site Asbestos Repository to assess and determine levels of airborne asbestos fibre during the unloading of the asbestos waste. Air monitoring will be undertaken by the Consultant Occupational Hygienist in conjunction with the monitoring conducted at the Site.

1.9 Protective Clothing

All persons engaged in asbestos removal processes shall wear approved personal protective equipment (PPE).

Supply of PPE to workers, other trades TRUenergy and the Consultant Occupational Hygienist personnel shall be provided by the Asbestos Removal Contractor as required.

1.9.1 Protective Clothing

Protective clothing for all personnel entering the Asbestos Work Area for any purpose shall include as a minimum, disposable overalls, steel-capped safety boots, hard hats and safety vests. All PPE is compulsory and must be worn by all personnel entering the Asbestos Work Area.

No items of protective clothing shall be laundered for re-use unless agreed to by the Consultant. Where approved, laundering of protective clothing shall be carried out in accordance with the Code of Practice for the Safe Removal of Asbestos 2nd Edition [NOHSC: 2002(2005)].

Underwear and towels may be laundered under approved conditions and re-used. Procedures must be submitted to the Consultant Occupational Hygienist for review prior to the commencement of Work.

1.9.2 Respiratory Protection

Approved types of respiratory protection devices shall be used by all personnel entering the Asbestos Work Area. During the asbestos removal process, a half-face cartridge type particulate respirator fitted with Class P3 or HEPA filters shall be used.

Plant operators are to use a disposable type Class P1 respirator at all times when operating within the Asbestos Work Area.

The quality and type are to comply at all times to the NSW Occupational Health & Safety Regulations "Guidelines for the Management & Removal of Asbestos" and AS1715 and AS1716.

Respiratory protection devices shall be issued on a personal basis with the user's name clearly marked on any non-disposable type.

Note: Effective seal of respirators cannot be made over beards, long facial growth or spectacles. Personnel with facial growth will not be permitted to work in the Asbestos Work Area.

Respirators, which have become contaminated, shall be vacuum cleaned and washed at each shift break. Cartridges shall be changed at the end of each shift. When not in use the respirator shall be stored or carried in a clean plastic bag.

Disposable respirators are to be disposed of as asbestos waste each time the operator leaves the Asbestos Work Area. A new disposable respirator is to be used whenever plant operators enter the Asbestos Work Area.

All respiratory equipment shall be checked and maintained in good condition by persons who are trained for the above work.

A maintenance record shall be kept covering pertinent details of all respiratory protective equipment.

1.10 Decontamination Area

A decontamination facility shall be used with showers that can be divided into three distinct areas, namely a dirty decontamination area, a clean decontamination area and a clean changing area.

From commencement of the works, a decontamination facility shall be situated immediately adjacent to and directly connected to the Asbestos Work Area.

A change area is to be constructed immediately adjacent to and directly connected to the decontamination unit on the opposite side of the Asbestos Work Area. The Asbestos Removal Contractor's personnel are to don their PPE in this area before entering the Asbestos Work Area. At the completion of shift and at shift breaks, personnel are to shower through the decontamination unit and change into their normal work clothes in the change area.

All personnel will be required to use the decontamination facility for access to and egress from the Asbestos Work Area with the exception of the plant operators who will utilise a dry decontamination area. Water supply to the decontamination unit is to be taken from the nearest supply point. Wastewater is to be filtered of all asbestos using a filter capable of capturing particles down to 5µm and disposed of to the sewerage system or recycled for use in the Asbestos Work Area.

- No more than 6 persons shall use one decontamination unit.
- Personnel must not smoke, eat or drink in any part of the decontamination facility.
- The decontamination facility is to be cleaned daily by personnel equipped with the appropriate PPE.

1.11 Disposal of Asbestos Contaminated Materials

Asbestos waste including waste from vacuum cleaners and soiled PPE shall be placed into marked plastic bags which, are to be sealed by wire ties or tape and then suitably washed. The bags shall then be conveyed in leak-proof vehicles for disposal at the Site Asbestos Repository or off-site approved waste disposal facility.

Should it be necessary to temporarily store asbestos waste prior to burial then all asbestos waste shall be held in leak-proof metal containers, trucks or bins suitably marked and held in a secured area displaying appropriate warning signs.

Solid asbestos waste shall be collected and double bagged in heavy duty, low-density polyethylene 0.2mm thick bags or wrapped in 0.2mm polyethylene sheeting and sealed with duct tape. A maximum bag size of 1200mm (length) x 900mm (width) shall be observed and bags shall be filled to no more than 50 per cent capacity or so that the weight is manageable and does not result in manual handling injury or bag rupture.

To reduce bag rupture and to minimise asbestos contamination, asbestos waste shall be double bagged; once at the workplace and a second time away from the workplace but prior to leaving the Asbestos Work Area.

Each bag or other container shall be labelled on its outermost surface with warning statements.

Bags or primary containers which have held asbestos contaminated material shall not be re-used, and containers marked as above shall not be used for any other purpose.

Transport of asbestos waste material shall be conveyed in leak-proof vehicles covered so that no spillage or dispersal of the waste to the atmosphere occurs.

Care must be taken to ensure that the integrity of the containment is not damaged during handling or transportation. In particular, bags of asbestos waste shall not be thrown or dropped from a height, which may rupture the bag. Vehicles will be checked for cleanliness prior to leaving the disposal site.

Controlled wetting of waste shall be employed, where practicable, to reduce asbestos dust emission during bag sealing and in cases of accidental bag rupture during transportation. Excessive water logging shall be avoided as the excess of contaminated water may leak out of the bags, thereby creating a future source of airborne asbestos dust.

The asbestos waste shall be disposed of at the Site Asbestos Repository in accordance with the procedures in **Appendix 6** of this AMP or at an approved off-site waste disposal facility when documentary evidence of the disposal shall be provided including name of the authorised tip, weighbridge docket and registration number of vehicle for every disposal. This information is to be supplied to the Consultant Occupational Hygienist.

1.12 Clearances and Dismantling of Work Area

After the asbestos removal work has been completed, the Asbestos Work Area will be inspected by the Consultant Occupational Hygienist to determine whether the ACM or asbestos contaminated material has been removed to a satisfactory standard.

A comprehensive visual inspection shall be undertaken by the Consultant to ensure removal has been satisfactorily completed and that no visible source of asbestos contamination remains in the Asbestos Work Area. Where sub-grade asbestos contamination is to remain at the Site, the excavation surface will be covered with a geotextile marker layer ('Bidim') as detailed in **Figures 8 and 9** and **Section 11** of this AMP.

Soil sampling and analysis will be undertaken by the Consultant for validation purposes.

The barriers surrounding the asbestos removal area and plastic used for sealing purposes may only be dismantled if a thorough inspection reveals no visible asbestos contamination and soil samples contain no asbestos.

1.13 Air Sampling

Control monitoring will be carried out by the Consultant Occupational Hygienist to ensure that the procedure used has kept the concentration of airborne asbestos dust to the minimum practical level and, below the prescribed threshold limit values (TLV) stated in current Regulations.

Control Limits applicable to asbestos removal work at this Site include:

- <0.01 fibres/mL - acceptable limit, continue with control measures (equal to background and detectable limits. Level to achieve for air clearances).
- ≥0.01 fibres/mL - alert level, review control measures (locate source and rectify).
- ≥0.02 fibres/mL - action level, cease Work, locate source and rectify. Work may only recommence following receipt of air clearance monitoring results of <0.01 fibres/mL.

Where a result of personal or control sampling is considered high and/or is outside the site acceptable limits, the cause of the high reading is to be ascertained by the Asbestos Removal Contractor and the Consultant Occupational Hygienist with the Asbestos Removal Contractor responsible to take all remedial action at his own expense to ensure that further high readings are not repeated. Procedures to be followed in the event of elevated air sampling readings are outlined in **Figure 11**.

Air sampling and filter analysis will only be carried out by the Consultant Occupational Hygienist.

A copy of all air monitoring results will be supplied to TRUenergy and a copy posted in a location accessible to Site staff.

General surveys, including visual inspection and/or air sampling, shall be carried out periodically as determined by the Consultant Occupational Hygienist having regard to the amount of, and condition of, ACM and asbestos contamination at the Site.

1.14 Emergency Procedure

Emergency procedures on Site will cover actions to be taken when asbestos is inadvertently uncovered, catastrophic events occur or air monitoring indicates high levels of airborne asbestos fibre. The procedures contained in **Section 19.2** of this AMP and **Figure 12** shall be followed in an emergency.



**HAZMAT
SERVICES**

TRUenergy
Tallawarra Power Station
Asbestos Management Plan
Version 7



Appendix 5: Asbestos Repository Operation

ASBESTOS REPOSITORY

Asbestos waste from all previous asbestos remedial works conducted at the Site has been disposed of (buried) at the Department of Environment and Climate Change (DECC) licensed Site Asbestos Repository which is located in the Rehabilitated Ash Storage Areas No. 1 (See **Figure 13** and **Figure 14**).

DECC Environment Protection Licence No. 555 was amended to allow asbestos contaminated material recovered from the site to be buried in the existing disposal area and also allowed for an extension of this area should it be required. The existing and extended Asbestos Repository is illustrated in a survey drawing, 110823/ASB01 dated 18/07/2008 (**Figure 13**). The latest version of the DECC Environment Protection Licence No. 555 due for review on 1 April 2011, permits the operation of an Industrial Waste Landfill as set out in Section 3, Condition L5 and Condition L8.

At the time of issue of this version of the AMP, Clause 42 of the Protection of the Environment Operations (Waste) Regulation 2005 specifies the requirements for any activity that involves the transportation, disposal, re-use or recycling of any type of asbestos waste, regardless of whether the activity is required to be licensed. In addition, Limit Conditions are detailed in the DECC Environment Protection Licence No. 555.

The following applies for transportation, storage and disposal of all types of asbestos waste at the Site:

1. The requirements relating to the transportation of asbestos waste at the Site are as follows:
 - a. Bonded ACM must be securely packaged at all times;
 - b. Friable asbestos material must be kept in a sealed container;
 - c. Asbestos-contaminated soils must be wetted down;
 - d. All asbestos waste must be transported in a covered, leak-proof vehicle to prevent spillage or dispersal of the waste;
 - e. Any vehicle used to transport any type of asbestos waste must be cleaned before leaving the Site Asbestos Repository so as to ensure that all residual asbestos waste is removed from the vehicle.
2. The requirements relating to the collection and storage of asbestos waste are as follows:
 - a. asbestos waste that is in the form of asbestos fibre and dust waste must be covered in such a manner as to prevent the emission of any dust;
 - b. Asbestos waste that is in the form of asbestos fibre and dust waste must not be collected and stored except in accordance with the following procedures:

- i. The waste must be wetted so as to prevent the emission of any dust;
 - ii. In wetting the asbestos waste, care must be taken to ensure that the wetting process does not cause any emission of dust or lead to any discharge of polluted water;
 - iii. The waste must be kept covered at all times;
 - iv. The cover must prevent any spillage or dispersal of the waste.
 - c. Asbestos waste in any form must not be stored except in accordance with the following procedures:
 - i. The waste must be stored in a secure area so as to prevent entry by unauthorised persons and to prevent the risk of environmental harm;
 - ii. The waste must, if it is practicable to do so, be stored separately from other types of waste.
- 3. The requirements relating to the disposal of asbestos waste are as follows:
 - a. Asbestos waste in any form must be disposed of only at a landfill site that may lawfully receive the waste. The Site Asbestos Repository is Licensed as an Industrial Waste Landfill (see DECC Environment Protection License No. 555);
 - b. When unloading and disposing of asbestos waste at the Asbestos Repository, the waste must be unloaded and disposed of in such a manner as to prevent the generation of dust or the stirring up of dust,
 - c. In disposing of the asbestos waste in any form, the waste must not be compacted before it is covered and must not come into contact with any earthmoving equipment at any time.
 - d. Asbestos waste disposed of at the Site Asbestos Repository must be covered with virgin excavated natural material or other material as approved in the Site's Environment Protection License (DECC Environment Protection License No. 555):
 - i. Initially (at the time of disposal), to a depth of at least 0.15 metres, and
 - ii. At the end of each day's operation, to a depth of at least 0.5 metres, and
 - iii. Finally, to a depth of at least 1 metre (in the case of bonded asbestos waste or asbestos contaminated soils) or 3 metres (in the case of friable asbestos material) beneath the final land surface of the Asbestos Repository site.
 - e. Any vehicle used to transport any type of asbestos waste must be cleaned before leaving the Site Asbestos Repository so as to ensure that all residual asbestos waste is removed from the vehicle.
- 4. Asbestos waste in any form must not be re-used or recycled.

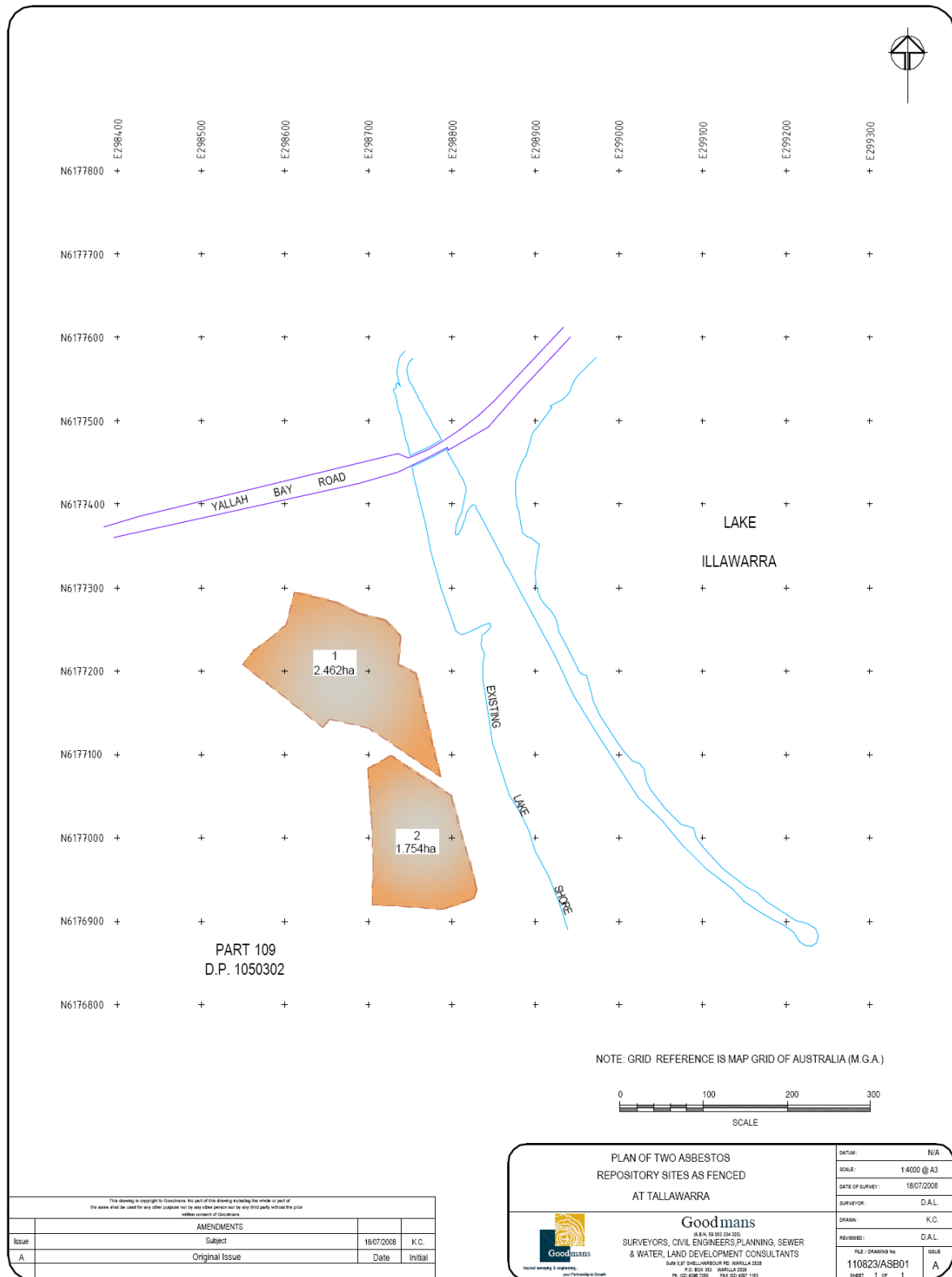
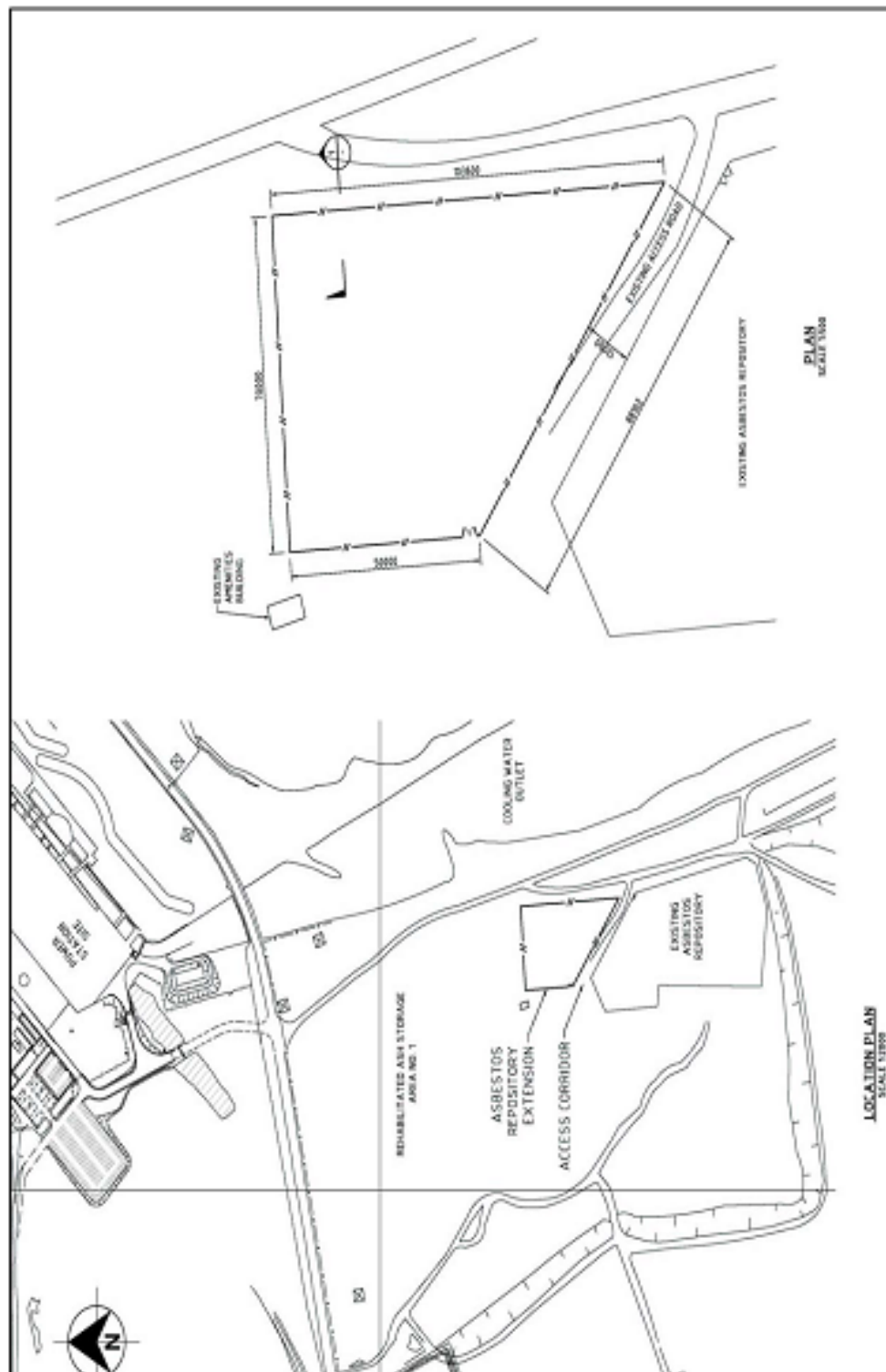


Figure 13: Asbestos Repository Survey Plan 2008




Appendix D: Progressive erosion and sediment control plan


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A	TALLAWARRA POWER STATION B PROGRESSIVE EROSION AND SEDIMENTATION CONTROL PLAN																																			
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C	<div><div>GENERAL NOTES</div><div><div><div>1.</div><div>THIS PLAN WILL BE READ TOGETHER WITH RELEVANT ENVIRONMENTAL DOCUMENTATION (eg SWMP, EWMS).</div></div><div><div>2.</div><div>WEATHER FORECASTS TO BE REGULARLY MONITORED.</div></div><div><div>3.</div><div>NUMBERING INDICATES ‘ORDER’ OF WORKS WHERE RELEVANT (eg 1, 2, 3).</div></div><div><div>4.</div><div>THE PRINCIPLE OF MINIMUM DISTURBANCE TO EXISTING VEGETATION TO BE IMPLEMENTED WITH ‘NO-GO’ ZONES ISOLATED WITH FLAGGING ETC.</div></div><div><div>5.</div><div>PRIORITY TO BE PLACED ON THE CONSTRUCTION OF PERMANENT DRAINAGE WORKS FOR ‘CLEAN’ WATER MANAGEMENT.</div></div><div><div>6.</div><div>‘CLEAN’ AND ‘DIRTY’ OR CONSTRUCTION RUNOFF TO BE SEPARATED.</div></div><div><div>7.</div><div>TEMPORARY EROSION AND SEDIMENT CONTROLS TO BE INSTALLED PRIOR TO SITE DISTURBANCE WHERE REASONABLE AND FEASIBLE.</div></div><div><div>8.</div><div>CROSSINGS TO BE CONSTRUCTED AS PER ‘BLUE BOOK’ GUIDELINES AND PRIOR TO ANY PLANT/VEHICLE MOVEMENT OVER WATERCOURSES.</div></div><div><div>9.</div><div>STOCKPILE LOCATIONS CONTROLS ARE TO BE AS PER DRAWINGS.</div></div><div><div>10.</div><div>RUNOFF CONTROL FROM FORMATIONS/TOPS OF FILLS TO SEDIMENT BASINS TO BE VIA ONE OR A COMBINATION OF FILL SHAPING, DIVERSION DRAINS/BANKS, EARTH BUND ALONG TOP EDGES OF FILL BATERS DISCHARGING TO BATTER DRAINS AND STORM WATER PITS ETC.</div></div><div><div>11.</div><div>CULVERT INLET AND OUTLET PROTECTION TO BE CONSTRUCTED IMMEDIATELY AFTER PIPE OR BOX UNIT INSTALLATION (eg. HEAD & WING WALLS, DISSIPATERS).</div></div><div><div>12.</div><div>THE LOCATIONS OF TEMPORARY CONTROLS ON THIS PLAN ARE INDICATIVE ONLY WITH ACTUAL SITES TO BE DETERMINED DURING WORKS.</div></div><div><div>13.</div><div>TEMPORARY CONTROLS IN ADDITION TO THOSE SHOWN ON THE DRAWINGS TO BE CONSTRUCTED AT ‘KEY’ LOCATIONS AS REQUIRED AND CONSIST OF: EROSION CONTROLS (eg WINDROWS ON CONTOURS TO REDUCE SLOPE LENGTH AND SURFACE FLOW VELOCITIES); and SEDIMENT CONTROLS (eg SEDIMENT FENCES, MULCH SEDIMENT TRAPS, MULCH BUND SEDIMENT TRAPS).</div></div><div><div>14.</div><div>THE ONSITE TEAM ARE TO ENSURE PROPOSED SLOPE LENGTHS ARE ADHERED TO.</div></div><div><div>15.</div><div>DISTURBED AREAS ARE TO BE PROGRESSIVELY STABILISED (eg TEMPORARY TREATMENTS SUCH AS SOIL BINDER, FINAL DESIGN TREATMENTS SUCH AS REVEGETATION).</div></div><div><div>16.</div><div>CONTROLS REMOVED OR DISTURBED DURING WORKS TO BE REINSTATED PRIOR TO WEEKENDS AND FORECAST RAIN.</div></div><div><div>17.</div><div>AREAS TO BE FULLY ‘SECURED’ WITH CONTROLS PRIOR TO ANY TEMPORARY SUSPENSION OF WORKS.</div></div><div><div>18.</div><div>ADEQUATE TIME TO BE PERMITTED TO ‘SECURE’ THE PROJECT PRIOR TO FORECAST RAIN.</div></div><div><div>19.</div><div>MULCH TO BE STORED AND MANAGED IN ACCORDANCE WITH THE DOCUMENT – ‘ENVIRONMENTAL DIRECTION MANAGEMENT OF TANNINS FROM VEGETATION ‘MULCH’ (ROADS & MARITIME SERVICES, 2012 B).</div></div><div><div>20.</div><div>DEWATERING OF EXCAVATIONS ETC TO BE CONDUCTED AS PER THE REQUIREMENTS OF THE SWMP.</div></div><div><div>21.</div><div>THE TRACKING OF MUD/SOIL MATERIAL ONTO LOCAL ROADS TO BE MONITORED AND CONTROLLED (eg SHAKER RAMPS).</div></div><div><div>22.</div><div>DUST TO BE CONTROLLED ON SITE AND ALONG UNSEALED ROADS WITH CONTROLS SUCH AS WATER CARTS AND/OR LIMITING VEHICLE SPEEDS.</div></div><div><div>23.</div><div>TEMPORARY CONTROLS TO BE INSPECTED REGULARLY WITH MAINTENANCE/REPAIRS UNDERTAKEN AS REQUIRED.</div></div><div><div>24.</div><div>THIS PLAN HAS BEEN PREPARED AS PER ‘BLUE BOOK’ GUIDELINES AND STANDARD DRAWINGS – VOLUMES 1 & 2D.</div></div><div><div>25.</div><div>THIS PLAN IS TO BE REVISED WHEN REQUIRED (eg CHANGE IN CONSTRUCTION METHODS AND/OR SITE CONDITIONS).</div></div></div></div> <div>SPECIFIC NOTES PLEASE REFER TO ATTACHED DRAWINGS:-<ul style="list-style-type: none">- PROGRESSIVE EROSION AND SEDIMENT CONTROL PLAN LOCATION PLAN SHEET 2 OF 6- PROGRESSIVE EROSION AND SEDIMENT CONTROL PLAN SHEET 3 OF 6- PROGRESSIVE EROSION AND SEDIMENT CONTROL PLAN SHEET 4 OF 6- PROGRESSIVE EROSION AND SEDIMENT CONTROL PLAN SHEET 5 OF 6- PROGRESSIVE EROSION AND SEDIMENT CONTROL PLAN DETAILS SHEET 6 OF 6</div>																																			
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H	<div><table><tr><th>PLAN No.</th><th>PREPARED BY</th><th>DESIGNATION</th><th>SIGNATURE</th><th>DATE</th><th>REVIEWED BY</th><th>DESIGNATION</th><th>DATE</th></tr><tr><td></td><td>JOHN WRIGHT</td><td>SENIOR SOIL CONSERVATIONIST - T.R.E.E.S P/L</td><td>J.Wright</td><td>07.10.21</td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table><div><div><div>No</div><div>TITLE</div></div><div><div>REV</div><div>BY</div><div>DATE</div><div>DESCRIPTION</div></div><div><div>CKD</div><div>DESIGN</div><div>ENG APPR</div><div>PROJ APPR</div></div></div><div><div>GE Power</div><div><div><div>COPYRIGHT ©</div><div>THIS DRAWING REMAINS THE PROPERTY OF CLOUGH PTY LTD AND MAY NOT BE COPIED IN ANY WAY EXCEPT FOR FULFILLING THE SPECIFIC PURPOSE FOR WHICH IT IS ISSUED.</div></div><div><div>TWB/90/K/u--CEP2P/CG/010</div></div></div><div><div>STATUS IFC</div><div>GE POWER DWG No. TWB/90/K/u--CEP2P/CG/010</div></div><div><div>APPROVALS</div><div><div>DRAWN DHa</div><div>CHECKED KKa</div><div>DESIGNED KKa</div><div>ENG APPR AYg</div><div>PROJ APPR BPf</div></div></div><div><div>CLIENT ENERGY AUSTRALIA</div><div>TITLE TALLAWARRA B POWER STATION</div><div>PROGRESSIVE EROSION & SEDIMENT CONTROL COVERPAGE AND NOTES SHEET 1 OF 6</div><div>SCALE NTS</div><div>CLOUGH DRAWING No. 45762-DWG-0000-C-00068</div></div><div><div>A1</div><div>REV. 0</div></div></div></div>												PLAN No.	PREPARED BY	DESIGNATION	SIGNATURE	DATE	REVIEWED BY	DESIGNATION	DATE		JOHN WRIGHT	SENIOR SOIL CONSERVATIONIST - T.R.E.E.S P/L	J.Wright	07.10.21											
PLAN No.	PREPARED BY	DESIGNATION	SIGNATURE	DATE	REVIEWED BY	DESIGNATION	DATE																													
	JOHN WRIGHT	SENIOR SOIL CONSERVATIONIST - T.R.E.E.S P/L	J.Wright	07.10.21																																
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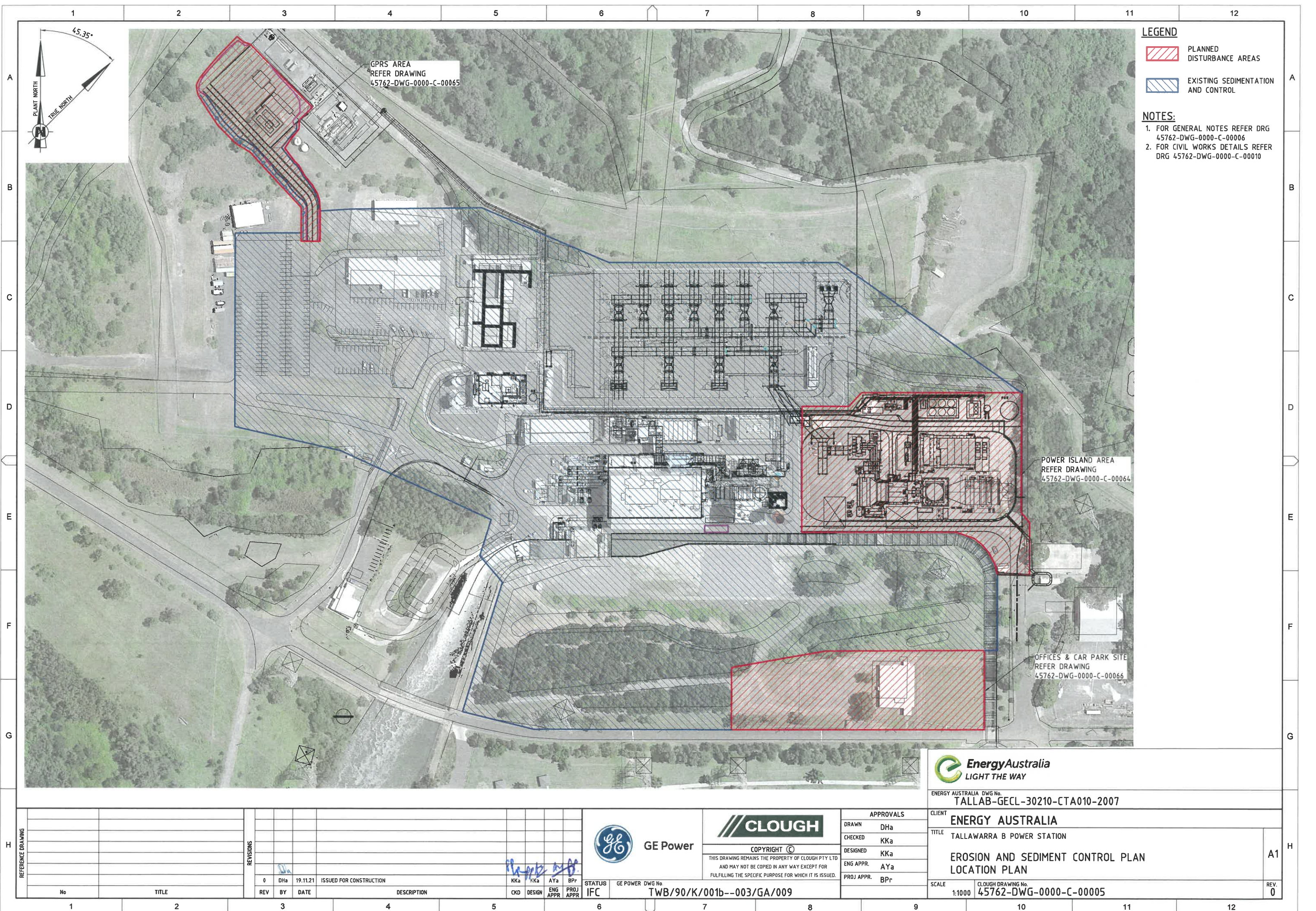
1. THIS PLAN WILL BE READ TOGETHER WITH RELEVANT ENVIRONMENTAL DOCUMENTATION (eg SWMP, EWMS).
2. WEATHER FORECASTS TO BE REGULARLY MONITORED.
3. NUMBERING INDICATES 'ORDER' OF WORKS WHERE RELEVANT (eg 1, 2, 3).
4. THE PRINCIPLE OF MINIMUM DISTURBANCE TO EXISTING VEGETATION TO BE IMPLEMENTED WITH 'NO-GO' ZONES ISOLATED WITH FLAGGING ETC.
5. PRIORITY TO BE PLACED ON THE CONSTRUCTION OF PERMANENT DRAINAGE WORKS FOR 'CLEAN' WATER MANAGEMENT.
6. 'CLEAN' AND 'DIRTY' OR CONSTRUCTION RUNOFF TO BE SEPARATED.
7. TEMPORARY EROSION AND SEDIMENT CONTROLS TO BE INSTALLED PRIOR TO SITE DISTURBANCE WHERE REASONABLE AND FEASIBLE.
8. CROSSINGS TO BE CONSTRUCTED AS PER 'BLUE BOOK' GUIDELINES AND PRIOR TO ANY PLANT/VEHICLE MOVEMENT OVER WATERCOURSES.
9. STOCKPILE LOCATIONS CONTROLS ARE TO BE AS PER DRAWINGS.
10. RUNOFF CONTROL FROM FORMATIONS/TOPS OF FILLS TO SEDIMENT BASINS TO BE VIA ONE OR A COMBINATION OF FILL SHAPING, DIVERSION DRAINS/BANKS, EARTH BUNDS ALONG TOP EDGES OF FILL BATTERS DISCHARGING TO BATTER DRAINS AND STORM WATER PITS ETC.
11. CULVERT INLET AND OUTLET PROTECTION TO BE CONSTRUCTED IMMEDIATELY AFTER PIPE OR BOX UNIT INSTALLATION (eg. HEAD & WING WALLS, DISSIPATERS).
12. THE LOCATIONS OF TEMPORARY CONTROLS ON THIS PLAN ARE INDICATIVE ONLY WITH ACTUAL SITES TO BE DETERMINED DURING WORKS.
13. TEMPORARY CONTROLS IN ADDITION TO THOSE SHOWN ON THE DRAWINGS TO BE CONSTRUCTED AT 'KEY' LOCATIONS AS REQUIRED AND CONSIST OF:
EROSION CONTROLS (eg WINDROWS ON CONTOURS TO REDUCE SLOPE LENGTH AND SURFACE FLOW VELOCITIES); and
SEDIMENT CONTROLS (eg SEDIMENT FENCES, MULCH SEDIMENT TRAPS, MULCH BUND SEDIMENT TRAPS).
14. THE ONSITE TEAM ARE TO ENSURE PROPOSED SLOPE LENGTHS ARE ADHERED TO.
15. DISTURBED AREAS ARE TO BE PROGRESSIVELY STABILISED (eg TEMPORARY TREATMENTS SUCH AS SOIL BINDER, FINAL DESIGN TREATMENTS SUCH AS REVEGETATION).
16. CONTROLS REMOVED OR DISTURBED DURING WORKS TO BE REINSTATED PRIOR TO WEEKENDS AND FORECAST RAIN.
17. AREAS TO BE FULLY 'SECURED' WITH CONTROLS PRIOR TO ANY TEMPORARY SUSPENSION OF WORKS.
18. ADEQUATE TIME TO BE PERMITTED TO 'SECURE' THE PROJECT PRIOR TO FORECAST RAIN.
19. MULCH TO BE STORED AND MANAGED IN ACCORDANCE WITH THE DOCUMENT – 'ENVIRONMENTAL DIRECTION MANAGEMENT OF TANNINS FROM VEGETATION 'MULCH' (ROADS & MARITIME SERVICES, 2012 B).
20. DEWATERING OF EXCAVATIONS ETC TO BE CONDUCTED AS PER THE REQUIREMENTS OF THE SWMP.
21. THE TRACKING OF MUD/SOIL MATERIAL ONTO LOCAL ROADS TO BE MONITORED AND CONTROLLED (eg SHAKER RAMPS).
22. DUST TO BE CONTROLLED ON SITE AND ALONG UNSEALED ROADS WITH CONTROLS SUCH AS WATER CARTS AND OR LIMITING VEHICLE SPEEDS.
23. TEMPORARY CONTROLS TO BE INSPECTED REGULARLY WITH MAINTENANCE/REPAIRS UNDERTAKEN AS REQUIRED.
24. THIS PLAN HAS BEEN PREPARED AS PER 'BLUE BOOK' GUIDELINES AND STANDARD DRAWINGS – VOLUMES 1 & 2D.
25. THIS PLAN IS TO BE REVISED WHEN REQUIRED (eg CHANGE IN CONSTRUCTION METHODS AND/OR SITE CONDITIONS).

PLEASE REFER TO ATTACHED DRAWINGS:-

- PROGRESSIVE EROSION AND SEDIMENT CONTROL PLAN
LOCATION PLAN SHEET 2 OF 6
- PROGRESSIVE EROSION AND SEDIMENT CONTROL PLAN
SHEET 3 OF 6
- PROGRESSIVE EROSION AND SEDIMENT CONTROL PLAN
SHEET 4 OF 6
- PROGRESSIVE EROSION AND SEDIMENT CONTROL PLAN
SHEET 5 OF 6
- PROGRESSIVE EROSION AND SEDIMENT CONTROL PLAN
DETAILS SHEET 6 OF 6

PLAN No.	PREPARED BY	DESIGNATION	SIGNATURE	DATE	REVIEWED BY	DESIGNATION	DATE
	JOHN WRIGHT	SENIOR SOIL CONSERVATIONIST – T.R.E.E.S P/L		07.10.21			

 EnergyAustralia LIGHT THE WAY		
ENERGY AUSTRALIA DWG No. TALLAB-GECL-30210-CTA010-2063		
CLIENT ENERGY AUSTRALIA		
TITLE TALLAWARRA B POWER STATION PROGRESSIVE EROSION & SEDIMENT CONTROL COVERPAGE AND NOTES SHEET 1 OF 6		A1
SCALE NTS	CLOUGH DRAWING No. 45762-DWG-0000-C-00068	REV. 0



LEGEND

PLANNED DISTURBANCE AREAS

EXISTING SEDIMENTATION AND CONTROL

- NOTES:**
- 1. FOR GENERAL NOTES REFER DRG 45762-DWG-0000-C-00006
 - 2. FOR CIVIL WORKS DETAILS REFER DRG 45762-DWG-0000-C-00010

GPRS AREA
REFER DRAWING
45762-DWG-0000-C-00065

POWER ISLAND AREA
REFER DRAWING
45762-DWG-0000-C-00064

OFFICES & CAR PARK SITE
REFER DRAWING
45762-DWG-0000-C-00066



ENERGY AUSTRALIA DWG No.
TALLAB-GECL-30210-CTA010-2007

CLIENT
ENERGY AUSTRALIA

TITLE
TALLAWARRA B POWER STATION

EROSION AND SEDIMENT CONTROL PLAN

LOCATION PLAN

SCALE
1:1000

CLOUGH DRAWING No.
45762-DWG-0000-C-00005

A1

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REFERENCE DRAWING			REVISIONS											
			0	DHa	19.11.21	ISSUED FOR CONSTRUCTION				KKa	KKa	AYa	BPr	
No	TITLE		REV	BY	DATE	DESCRIPTION				CKD	DESIGN	ENG APPR	PROJ APPR	

SWITCHYARD ROAD:
1. VEGETATIVE MATERIAL TO BE REMOVED FROM INLETS TO PITS.
2. A DIVERSION TO BE INSTALLED UNDER THE GUARDRAIL ON THE SOUTH SIDE OF THE ROAD TO DIVERT 'CLEAN' FLOWS FROM THE WORKS AREA (EG COLD MIX OR SAND BAG BUND).

INSERT ROAD 'CLEAN' WATER DIVERSION CONTINUES UPHILL TO THE SWITCHYARD

NON DISTURBANCE AREA

SEALED ROAD TO BE RETAINED

VEGETATIVE MATERIAL & SEDIMENT TO BE REMOVED FROM THE DRAIN ALONG THE TOE OF THE RETAINING WALL

VEGETATIVE MATERIAL TO BE REMOVED FROM THE PIT AT THE EAST END OF THE RETAINING WALL

EXISTING ROAD - INSERT DIVERTING 'CLEAN' RUNON UPSLOPE OF WORKS

EASTERN SEALED ROAD:
1. EXISTING OLD CONTROLS TO BE REMOVED FROM PITS WITH NEW CONTROLS INSTALLED (EG PIT BAGS AT DROP PITS & SAND/FILTER BAGS AT GUTTER PITS).
2. GUTTERS TO BE CLEANED (EG SEDIMENT, VEGETATION).

EXISTING NORTHERN DRAIN UNDER THE WORKS AREA

AREA EAST OF THE EXISTING UNDERGROUND DRAIN NOT TO BE DISTURBED

NON DISTURBANCE AREA

POWER ISLAND

CONTROLS TO BE INSTALLED ON SITE TO SUIT THE STAGE OF WORKS (EG SEDIMENT FENCES JUST DOWNSLOPE OF STOCKPILES). ALSO, WORKS EXCAVATIONS TO FUNCTION AS LARGE SEDIMENT TRAPS.

AREA EAST OF THE EXISTING UNDERGROUND DRAIN NOT TO BE DISTURBED

EXISTING CONCRETE SLAB TO BE USED FOR STOCKPILING MATERIAL & LAYDOWN AREA

EXISTING 'CLEAN' WATER AREA PITS DO NOT REQUIRE CONTROLS

NON DISTURBANCE AREA

SEDIMENT FENCE TO BE INSTALLED PRIOR TO WORKS AND MAINTAINED

INSTALL A SAND BAG SEDIMENT TRAP AT PIT INLET

STABILISED ACCESS TO BE INSTALLED PRIOR TO WORKS (EG SHAKER RAMP) OR EQUIVALENT METHOD (EG STREET SWEEPING, SUCKER TRUCK)

TURKEY'S NEST TO BE CONSTRUCTED PRIOR TO WORKS FOR DIVERSION/PUMPING OF 'DIRTY' WATER FROM EXCAVATIONS ETC

LEGEND

- STABILISED ACCESS
- PRE-DISTURBED WORKS AREA
- TURKEY'S NEST
- SEDIMENT FENCE
- 'CLEAN' WATER DIVERSION
- KERB INLET PIT SEDIMENT TRAP
- 'DIRTY' WATER SURFACE FLOW
- 'CLEAN' WATER SURFACE FLOW

NOTES:

- FOR GENERAL NOTES REFER DRG 45762-DWG-0000-C-00006
- FOR CIVIL WORKS DETAILS REFER DRG 45762-DWG-0000-C-00010
- SEDIMENT FENCES SHALL BE INSTALLED AT DOWNSLOPE OF DISTURBED AND EXCAVATED MATERIAL STOCKPILE AREAS.
- SEDIMENT FENCES INTERCEPTING DIRTY WATER AT CONTAMINATION SENSITIVE AREA SUCH AS THE TALLAWARRA A COOLING WATER INTAKE CHANNEL SHALL INCLUDE THE USE OF GEOFABRIC WRAPPED GRAVEL FILTER TO ENHANCE THE FILTRATION EFFECT.
- USE OF SOIL BINDER AGENT OVER BARE / DISTURBED AREAS PRIOR TO FORECAST RAINFALL AND 'SHUTDOWN' PERIOD DURING CONSTRUCTION.
- THE 'TURKEY'S NEST' SHALL BE CONSTRUCTED ONLY DURING CONSTRUCTION PHASE WITH THE PURPOSE OF TEMPORARY STORING DIRTY WATER FROM THE FOUNDATIONS EXCAVATION ACTIVITIES.
- DIRTY WATER GENERATED AS A RESULT OF EXCAVATION ACTIVITIES SHALL BE PUMPED IN THE 'TURKEY'S NEST' TO AVOID OVERLAND FLOW CONTAMINATION.
- DIRTY WATER STORED IN 'TURKEY'S NEST' SHALL BE REUSED ON SITE SUCH AS WATERING VEGETATION AND DUST SUPPRESSION.
- ANY EXCESS DIRTY WATER FROM EXCAVATION ACTIVITIES SHALL BE DIRECTLY PUMPED INTO WATER CART FOR REUSE, IF THE 'TURKEY'S NEST' STORAGE IS FULL.

POWER ISLAND AREA



ENERGY AUSTRALIA DWG No. TALLAB-GECL-30210-CTA010-2060

CLIENT ENERGY AUSTRALIA

TITLE TALLAWARRA B POWER STATION

EROSION AND SEDIMENT CONTROL PLAN SHEET 1

SCALE 1:300 CLOUGH DRAWING No. 45762-DWG-0000-C-00064

A1

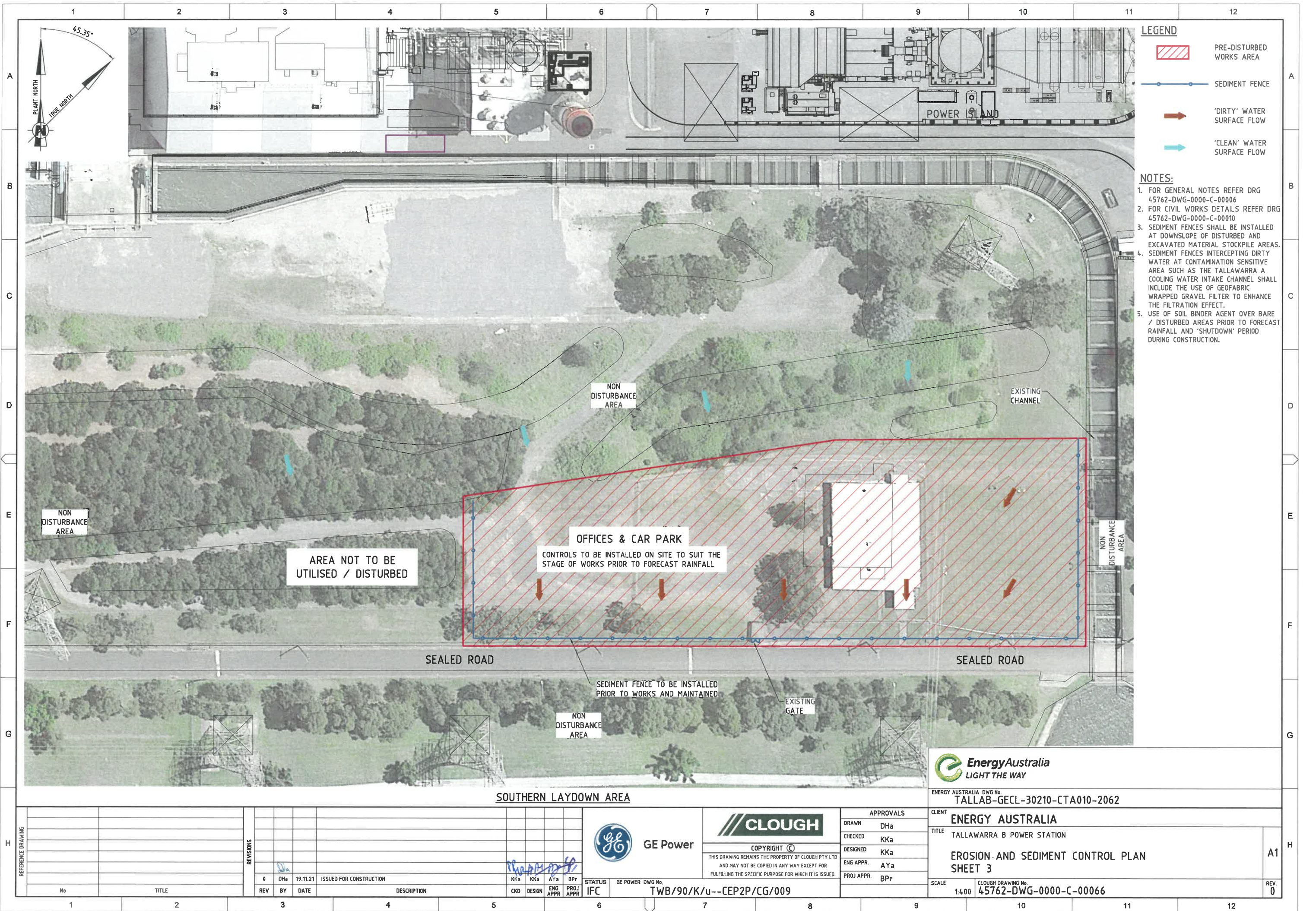
REV. 0

REVISIONS		REV		BY	DATE	DESCRIPTION	CKD	DESIGN	ENG APPR	PROJ APPR
0	DHa	19.11.21	ISSUED FOR CONSTRUCTION							

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CHECKED	KKa
DESIGNED	KKa
ENG APPR	AYa
PROJ APPR	BPr



LEGEND

- PRE-DISTURBED WORKS AREA
- SEDIMENT FENCE
- 'DIRTY' WATER SURFACE FLOW
- 'CLEAN' WATER SURFACE FLOW

- NOTES:**
1. FOR GENERAL NOTES REFER DRG 45762-DWG-0000-C-00006
 2. FOR CIVIL WORKS DETAILS REFER DRG 45762-DWG-0000-C-00010
 3. SEDIMENT FENCES SHALL BE INSTALLED AT DOWNSLOPE OF DISTURBED AND EXCAVATED MATERIAL STOCKPILE AREAS.
 4. SEDIMENT FENCES INTERCEPTING DIRTY WATER AT CONTAMINATION SENSITIVE AREA SUCH AS THE TALLAWARRA A COOLING WATER INTAKE CHANNEL SHALL INCLUDE THE USE OF GEOFABRIC WRAPPED GRAVEL FILTER TO ENHANCE THE FILTRATION EFFECT.
 5. USE OF SOIL BINDER AGENT OVER BARE / DISTURBED AREAS PRIOR TO FORECAST RAINFALL AND 'SHUTDOWN' PERIOD DURING CONSTRUCTION.

REFERENCE DRAWING	
No	TITLE
1	
2	

REVISIONS			
0	DHa	19.11.21	ISSUED FOR CONSTRUCTION
REV	BY	DATE	DESCRIPTION

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STATUS: IFC

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CHECKED	KKa
DESIGNED	KKa
ENG APPR.	AYa
PROJ APPR.	BPr

EnergyAustralia
LIGHT THE WAY

ENERGY AUSTRALIA DWG No. TALLAB-GECL-30210-CTA010-2062

CLIENT: **ENERGY AUSTRALIA**

TITLE: TALLAWARRA B POWER STATION

EROSION AND SEDIMENT CONTROL PLAN

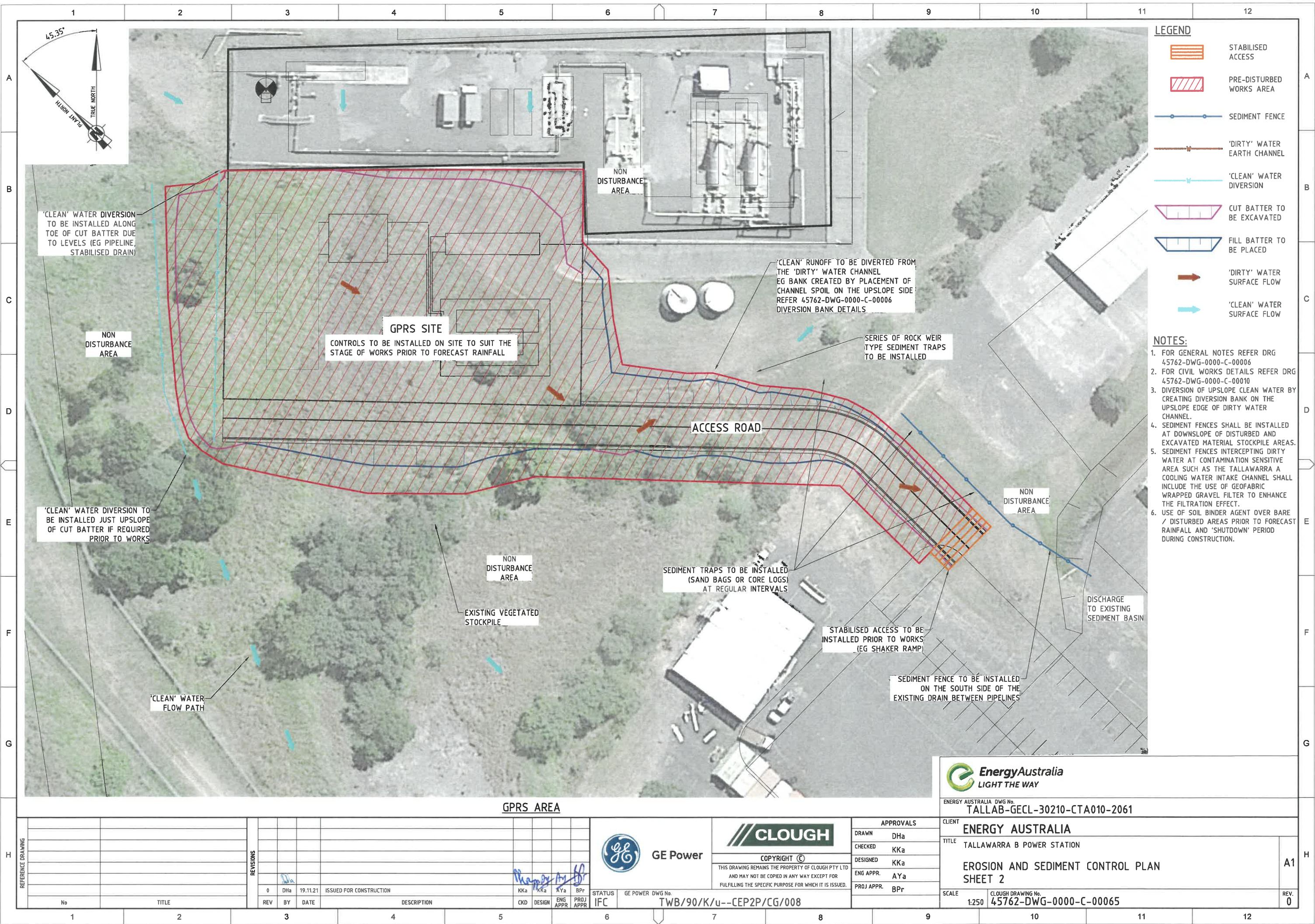
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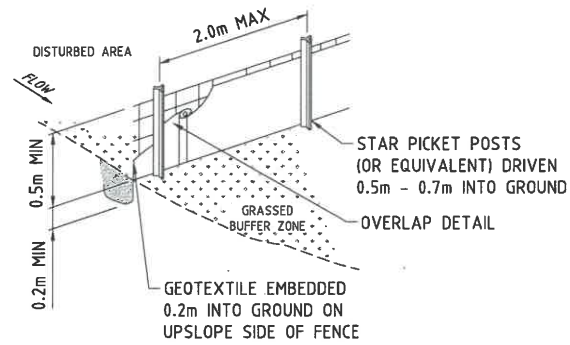
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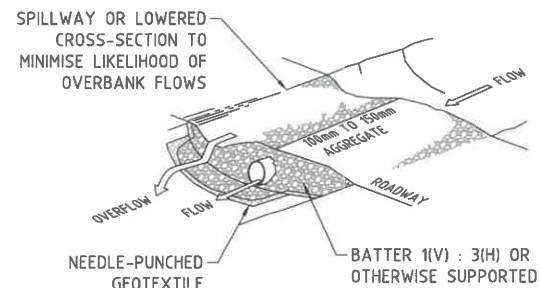
REV. 0

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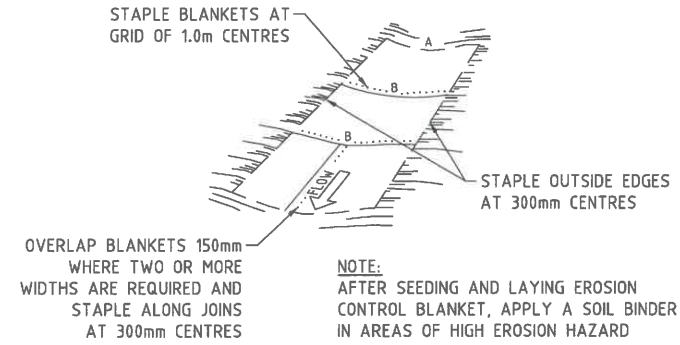




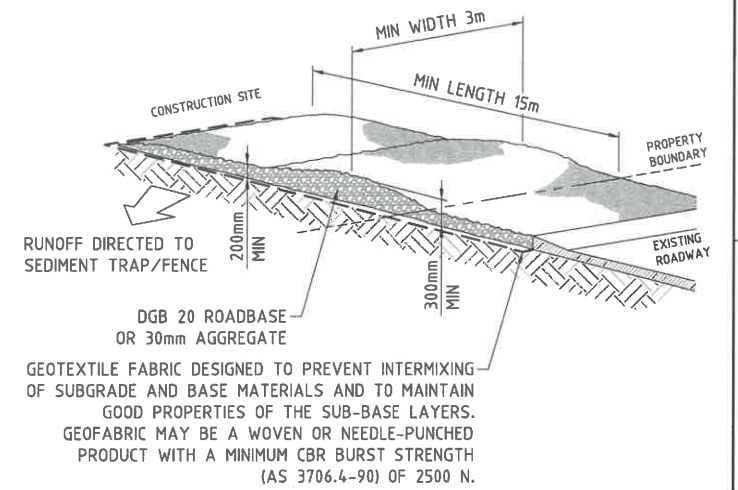
GEOFABRIC SEDIMENT FENCE - PERSPECTIVE
NOT TO SCALE



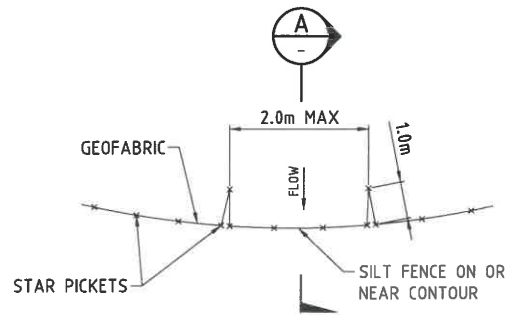
TEMPORARY WATERWAY CROSSING
NOT TO SCALE



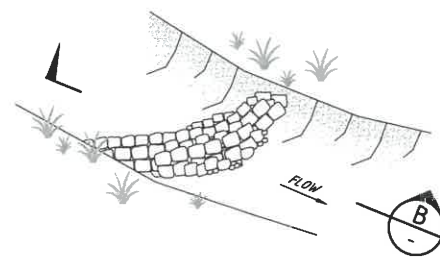
RECP: CONCENTRATED FLOW - PERSPECTIVE
NOT TO SCALE



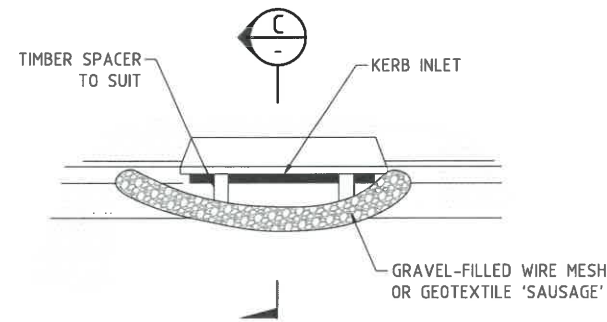
STABILISED ACCESS - PERSPECTIVE
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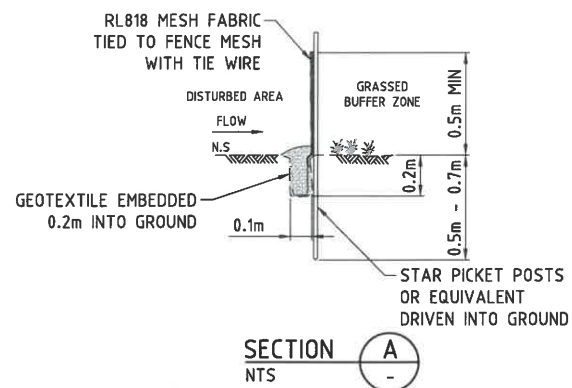
GEOFABRIC SEDIMENT FENCE - PLAN
NOT TO SCALE



CHECK DAM - PERSPECTIVE
NOT TO SCALE



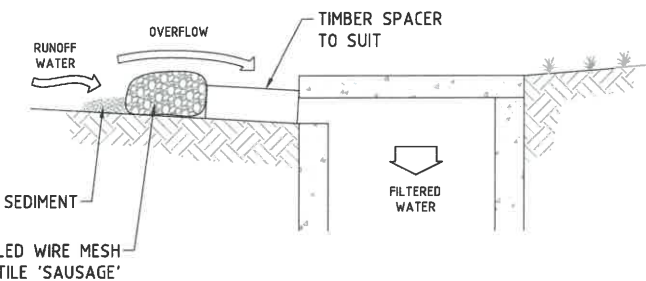
KERB INLET PIT SEDIMENT TRAP - PLAN
NOT TO SCALE



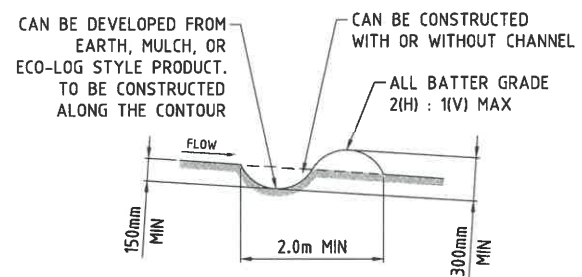
DIVERSION BANK - ELEVATION
NOT TO SCALE

NOTE:
SPACING OF CHECK DAMS ALONG CENTRELINE 20m MAX SPACING UON.
SCOUR PROTECTION BELOW EACH CHECK DAM TO BE SPECIFIED ON
CONSTRUCTORS SWMP/ESCP.

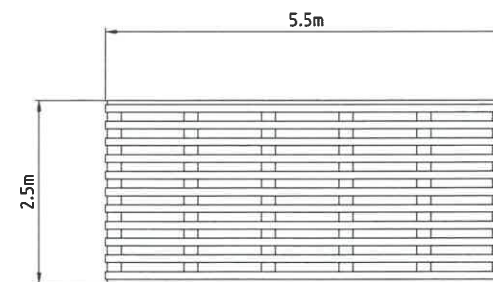
SECTION B
NTS



SECTION C
NTS



LOW FLOW / FLOW BREAK - ELEVATION
NOT TO SCALE



SHAKER GRATE - DETAIL
NOT TO SCALE

- NOTES**
1. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO COMPLY WITH THE NOTES ON DRAWING 45762-DWG-0000-C-00006.



ENERGY AUSTRALIA DWG No.
TALLAB-GECL-30210-CTA010-2024

CLIENT
ENERGY AUSTRALIA

TITLE
TALLAWARRA B POWER STATION

**PROGRESSIVE EROSION & SEDIMENT CONTROL
DETAILS SHEET 6 OF 6**

SCALE
NTS
CLOUGH DRAWING No.
45762-DWG-0000-C-00010

A1

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0

REV	BY	DATE	DESCRIPTION	CKD	DESIGN	ENG APPR	PROJ APPR	STATUS	GE POWER DWG No.
0	DHa	19.11.21	ISSUED FOR CONSTRUCTION	KKa	KKa	AYa	BPr	IFC	TWB/29/K/u--CEP2P/CG/005



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APPROVALS	
DRAWN	DHa
CHECKED	KKa
DESIGNED	KKa
ENG APPR.	AYa
PROJ APPR.	BPr

Appendix E: Incident notification requirements (major project approval, Appendix 1)

Written incident notification requirements:

1. A written incident notification addressing the requirements set out below must be submitted to the Secretary via the Major Projects website within seven days after the Proponent becomes aware of an incident. Notification is required to be given under this condition even if the Proponent fails to give the notification required under condition 5.1 or, having given such notification, subsequently forms the view that an incident has not occurred.
2. Written notification of an incident must:
 - a. identify the development and application number;
 - b. provide details of the incident (date, time, location, a brief description of what occurred and why it is classified as an incident);
 - c. identify how the incident was detected;
 - d. identify when the Proponent became aware of the incident;
 - e. identify any actual or potential non-compliance with conditions of approval;
 - f. describe what immediate steps were taken in relation to the incident;
 - g. identify further action(s) that will be taken in relation to the incident; and
 - h. identify a project contact for further communication regarding the incident.
3. Within 30 days of the date on which the incident occurred or as otherwise agreed to by the Secretary, the Proponent must provide the Secretary and any relevant public authorities (as determined by the Secretary) with a detailed report on the incident addressing all requirements below, and such further reports as may be requested.
4. The Incident Report must include:
 - a. a summary of the incident;
 - b. outcomes of an incident investigation, including identification of the cause of the incident;
 - c. details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence; and
 - d. details of any communication with other stakeholders regarding the incident.

Document prepared by

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