



# Liddell Decoupling Works - Contamination Management Plan

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AGL Macquarie Pty Limited

Liddell Battery Decoupling Works Environmental Management Strategy  
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## Liddell Decoupling Works - Contamination Management Plan

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## Acronyms and abbreviations

Acronym or abbreviation	Description
ACM	Asbestos Containing Material
AEC	Areas of Environmental Concern
AHD	Australian Height Datum
ASS	Acid Sulphate Soils
BAW	Battery Ancillary Works
CEMP	Construction Environment Management Plan
CMP	Contamination Management Plan
COPC	Contaminant of Potential Concern
DPE	Department of Planning and Environment
EEC	Endangered Ecological Community
EPA	Environment Protection Authority
EPL	Environment Protection Licences
gWh	Gigawatt hours
kV	Kilovolt
LAA	Licensed Asbestos Assessor
MW	Megawatt
IA	Improvement Action

## 1. Introduction

### 1.1 Context

This Contamination Management Plan (CMP) has been developed to address Development Consent Condition C1(e)(i) issued for the Project by the Planning Secretary of the NSW Department of Planning and Environment (DPE). This condition requires a subplan to manage the potential environmental impacts arising from contamination, including an unexpected finds protocol. All relevant conditions are outlined below in Table 1.

**Table 1. Contamination Management – Development Consent Conditions**

Condition	Requirement	CMP reference
C1 (e)	Prior to commencing construction, the Applicant must prepare an Environmental Management Strategy for the development to the satisfaction of the Secretary. This strategy must: (e) include: (i) The following subplans: <ul style="list-style-type: none"> <li>Contamination, including an unexpected finds protocol.</li> </ul>	This plan
B4	Specifies that all chemicals, fuels and oils used on-site must be stored in accordance with the requirements of all relevant Australian Standards; and the NSW EPA's Storing and Handling of Liquids: Environmental Protection – Participants Handbook if the chemicals are liquids. If there is an inconsistency in requirements the most stringent shall prevail to the extent of the inconsistency.	Section 5.1
B25	The Applicant must ensure that all surface discharges from the development comply with all relevant provisions of the POEO Act, including any discharge limits (both volume and quality) set for the development in any EPL.	See Soil and Water Management Plan (Annex A)
B27	The Applicant must: <ol style="list-style-type: none"> <li>take all reasonable steps to minimise the waste generated by the development;</li> <li>classify all waste in accordance with the Waste Classification Guidelines (EPA, 2014);</li> <li>dispose of all waste at appropriately licensed waste facilities or as expressly permitted in an applicable EPL; and</li> <li>manage any asbestos or asbestos-contaminated materials identified during construction and operation of the development in accordance with the requirements under the Protection of the Environment Operations (Waste) Regulation 2014.</li> </ol>	See Waste Management Plan (Annex E)
B28	Specifies that the development must be rehabilitated to the satisfaction of the Planning Secretary, with objectives including ensuring that all areas of the site affected by the development are safe, stable and non-polluting, and ensuring public safety for the community at all times.	Section 5
C4	Specifies that the Planning Secretary must be notified in writing via the Major Projects website immediately after the Applicant becomes aware of an incident, including identification of the development and the location and nature of the incident.	Section 5.2.4

### 1.2 Purpose and Scope

The purpose of this CMP is to identify the key contamination issues and summarise the proposed mitigation and management measures to be implemented for the Project. This CMP has been developed to address the construction and decommissioning activities specifically occurring in relation to Decoupling Works, in line with the conditions of approval provided by the NSW DPE. All works undertaken by the Project Contractor must comply with the mitigation measures outlined in this document.

## 1.3 Project Description

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

### 1.3.1 Project Overview

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

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

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

### 1.3.2 Decoupling Works

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

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

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

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

## 2. Regulatory Requirements

### 2.1 Relevant legislation, guidelines and conditions

All legislation relevant to the CMP will be included in the Environmental Management Strategy (EMS). The main guidelines, standards and policies relevant to this CMP include:

- *Environmental Planning and Assessment Act 1979*
- *Protection of the Environment Operations Act 1997*
- *Contaminated Lands Management Act 1979*
- *NSW Work Health and Safety Act 2011*
- *NSW Work Health and Safety Regulations 2011*
- *Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018)*
- NSW EPA (2014) Waste Classification Guidelines
- National Environment Protection Council, 1999. National Environment Protection (Assessment of Site Contamination) Measure, amended 2013
- Safe Work Australia, 2018. Code of Practice: How to safely remove asbestos.
- NSW EPA (1995) Contaminated Sites: Sampling Design Guidelines, September 1995.

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

### 2.2 Other requirements relevant to the development of this plan

Additional environmental requirements established in the Environmental Impact Statement have been detailed in Table 2.

Table 2: Environmental management measures for contamination impacts.

REFERENCE	ENVIRONMENTAL MANAGEMENT MEASURES	TIMING
L01	The internal bunding and environmental controls for hazardous substances management suitable for the Battery and transformers will be in accordance with applicable guidelines.	Detail design
L02	Potential contamination-related impacts associated with the Project will be managed by the implementation of a CEMP that includes (but not limited to): <ul style="list-style-type: none"> <li>▪ An unexpected finds protocol for the appropriate assessment and management of encountered contamination to mitigate impacts to the development</li> <li>▪ Procedures to ensure that all material excavated during the construction of the development is appropriately assessed and classified before being disposed of in accordance with environmental laws</li> <li>▪ Specific control measures to mitigate impacts to soil, water, air, noise, traffic, structures and clear protocols for measurement of affected media and validation of results during construction of the development.</li> </ul>	Construction
L03	The Asbestos Management Procedure would be updated as required to provide appropriate control measures during the construction phase (as well as the operational phase if maintenance activities are required) to mitigate any risks of worker exposure to airborne asbestos fibres during work activities.	Construction/ Operation
L04	Detailed design of each Project component would consider and address geotechnical stability risks in accordance with applicable design standards.	Detailed design

### 3. Existing Environment

#### 3.1 Areas of environmental concern

Targeted contamination assessments have previously been conducted across “areas of environmental concern” (AEC) at the Liddell site. These areas were identified as having the potential to be impacted from power station activities conducted since the station was initially constructed. The Contaminants of Potential Concern (COPC) associated with the power station, and their current status, have been summarised in Table 3.

Table 3: Contamination assessment summary for AEC

Project Area	Results	Outcomes
Former coal yards area	<ul style="list-style-type: none"> <li>Results from 9 sampling locations in the area did not any concentrations of COPC above the commercial/industrial screening criteria.</li> <li>For operational reasons the majority of sampling locations were restricted to the edge of the existing coal storage yards.</li> </ul>	It is reasonable to expect that contamination in the wider coal yards area is likely to be similar to boundary concentrations.
Solar array area	<ul style="list-style-type: none"> <li>Results from 6 targeted sample locations did not any concentrations of COPC above the commercial/industrial screening criteria.</li> </ul>	There is potential for unknown filling however results and historical uses indicate that widespread contamination is unlikely to be present in this area.
Non-process development land (DL01 and DL02)	<ul style="list-style-type: none"> <li>Results from 2 sampling locations representative of DL01 did not identify any concentrations of COPC above the commercial/industrial screening criteria.</li> <li>One of the DL01 samples, taken in the vicinity of the ash pipeline was found to contain asbestos.</li> <li>Results from 8 sampling locations did not identify any concentrations of COPC above the commercial/industrial screening criteria.</li> </ul>	DL01 and DL02 are considered unlikely to constrain the development provided industry standard construction controls are utilised.
Decoupling area	<ul style="list-style-type: none"> <li>Results from 54 sampling locations identified 4 samples having concentrations of COPC above the commercial/industrial screening criteria. Two samples exceeded criteria for Asbestos and two samples for Hydrocarbons.</li> <li>These Asbestos samples have been associated with the ash pipeline.</li> <li>Elevated hydrocarbon concentrations were identified in the transformer corridor.</li> </ul>	AGLM have confirmed that the Decoupling Works will have minimal interaction with the ash pipeline, as such the identified asbestos is considered unlikely to impact the Project. The transformer corridor is covered by a concrete hardstand and will not be disturbed as part of the Project.

#### 3.2 Surrounding land uses and sensitive receptors

Sensitive environmental receptors on and adjacent to the Project site include:

- Indoor and outdoor human health receptors in the form of workers on site
- Intrusive maintenance workers both on and off site
- Potential groundwater users in the vicinity of the site
- Ecological receptors, including EEC and vegetation in the local creeks, Lake Liddell, Plashett Reservoir and the Hunter River
- Residents on rural properties along the Hunter River, east of Saltwater Creek, including users of irrigation water for agricultural purposes.



## 4. Contamination Impacts

Liddell Station and the potential contamination will continue to be managed in accordance with the EPLs issued by the EPA and all other legal requirements. The contamination risks of the Project have been described below.

### 4.1 Asbestos contamination

As described in **Error! Reference source not found.** Table 3, two asbestos samples were identified in the Decoupling Works area and have been associated with the ash pipeline. AGLM have confirmed that the Decoupling Works would have minimal interaction with the ash pipeline. Therefore, the identified asbestos is considered unlikely to impact on the Project. Occupational hygiene controls will be implemented as a precaution to mitigate potential construction worker exposure to asbestos, as detailed in Table 4.

### 4.2 Hydrocarbon contamination

As identified in Table 3, all samples showing elevated levels of hydrocarbon concentration in the transformer corridor are covered by concrete hardstand. As Decoupling Works in this area are limited to disconnecting and moving the existing transformer to the proposed 33kV transition area there will not be interaction with the impacted soil.

Routes for sub-surface cable trenching linking the relocated transformers to the Liddell switchyard, and the Battery to the transformers, have not yet been finalised. Should localised elevated COPC be present in areas disturbed as part of the Decoupling Works, it is likely they would be limited in extent and unlikely to require significant remedial works (if any). Industry standard construction controls would be implemented as part of the development construction. Considering the above, the elevated hydrocarbon concentrations present in the Decoupling area are considered unlikely to constrain the development.

### 4.3 Leaks and spills

Construction of the Project will also involve the storage, treatment or handling of fuels, chemicals, building materials, wastes and other potential contaminants. Any spill during construction would be managed and cleaned up to prevent impacts on human health and the environment. The risk of leaks and spills would be managed through the application of Australian Standards for the storage and handling of fuels and chemicals, and appropriate engineering design. In the unlikely event of significant leaks or spills of contaminants, remediation would be implemented immediately during construction.

## 5. Contamination Control Measures

### 5.1 Mitigation and management measures

To ensure the protection of environmental aspects and workers standard mitigation measures outlined in Table 4 are to be undertaken.

Table 4. Contamination Mitigation Measures

Measure	Details	Timing	Responsibility
CM1	Implement training to induct staff on AEC, required controls, good hygiene practices and the Unexpected Finds protocol.	Prior to and during construction	Principal EPC Contractor
CM2	Contamination risks and relevant controls are to be discussed and documented in the daily pre-start meetings.	Prior to and during construction	Principal EPC Contractor
CM3	Place silt socks around the perimeter of the established work area (i.e. at the base of the temporary fence panels) to prevent contaminated runoff entering stormwater drains, waterways or other sensitive areas.	During construction	Principal EPC Contractor
CM4	Place excavated materials so that they do not impact the flow path of, or further contaminate, surficial runoff.	During construction	Principal EPC Contractor
CM5	Appropriately stocked emergency spill kits will be available at all work areas at all times. All staff will be made aware of the location of the spill kit and trained in its use.	Prior to and during construction	Principal EPC Contractor
CM6	Where there is potential for asbestos related exposure the work area will be wetted-down.	During construction	Principal EPC Contractor
CM7	Implement occupational hygiene controls as a precaution to mitigate potential worker exposure (e.g. handwashing facilities, a separate clean area).	Prior to and during construction	Principal EPC Contractor
CM8	Visual monitoring is to be undertaken during all ground disturbing works to identify suspected contamination.	Prior to and during construction	Principal EPC Contractor
CM9	If required, site crews involved in activities where contamination is identified will be briefed on the required specific environmental controls prior to commencing.	Prior to and during construction	Principal EPC Contractor
CM10	If contamination is encountered, all soil/sand on vehicles, machinery, and footwear is to be removed.	During construction	Principal EPC Contractor
CM11	Where required, vehicle washdown stations will be established on accessible flat areas located away from surface water and waterways.	During construction	Principal EPC Contractor
CM12	All excavation and ground-disturbing activities will be done in the open air to allow for the dissipation of any released vapours.	During construction	Principal EPC Contractor
CM13	All excavation and ground-disturbing activities are to occur progressively to allow for quick identification and implementation of remediation works, where required.	During construction	Principal EPC Contractor
CM14	Storage and management of dangerous goods and hazardous materials (if required) will occur in a safe, secure location consistent with the requirements of applicable Australian Standards; and the NSW EPA's Storing and Handling of Liquids: Environmental Protection – Participants Handbook.	Prior to and during construction	Principal EPC Contractor

### 5.2 Accidental discovery protocol for Unexpected Finds

The Unexpected Finds Protocol has been detailed below and is to be enacted immediately where suspected contamination is discovered. All staff will be required to be inducted into the Contractors' CEMP, which will contain further details on the Unexpected Finds Protocol.

### 5.2.1 Identification of potential contamination

Key identifiers of potential contamination or contaminated materials include:

Sudden unexplained change in texture or colour;  
Change in odour; and  
Inclusion of construction/building materials in fill.

### 5.2.2 Immediate response

If unknown or unexpected contaminated sites or materials are found during Decoupling Works, the Site Superintendent, Construction Project Manager, AGLM Project Manager, and Site Environmental Representative must be notified immediately. Work must cease within the immediate area of the find, and the material must be covered and isolated through the use of barricades and proper signage (e.g. DANGER CONTAMINATED AREA signs or similar) to limit potential contamination. Every attempt should be made to prevent unauthorised entry to the impacted area by restricting access and implementing signage.

### 5.2.3 Assessment and sampling

The Project Manager is to arrange an assessment of the unexpected find by an appropriately qualified and competent person. Where Asbestos Containing Material (ACM) is suspected a Licenced Asbestos Assessor (LAA) will be required to confirm the presence of ACM. A sample of the contaminated material may be required to undergo laboratory analysis at a NATA accredited testing laboratory to confirm the potential contamination status.

Excavated material from the immediate vicinity will be separated from other materials and stockpiled for assessment, with sampling undertaken in accordance with NSW EPA *Sampling Design Guidelines*.

Works in the immediate vicinity are not to recommence until appropriate advice and approval has been obtained from a suitably qualified and experienced person. Any ground-disturbing works will not recommence until the extent of any contamination has been assessed and, if necessary, a remedial action plan (RAP) has been prepared. Should the presence of ACM be confirmed the LAA should confirm appropriate steps to manage the unexpected find and is required to supervise the excavation works at the site beyond the known asbestos impacted zone (until excavations enter natural material) to manage the asbestos risk appropriately.

### 5.2.4 Reporting requirements

The HSE Incident, Near Miss and Hazard Management Procedure (AGL-HSE-PRO-012.1) is to be implemented to provide an effective response and to minimise impacts on the works, human health and the environment. In addition, this protocol is to be implemented immediately if an adverse unintended result occurs to known contaminated sites.

If asbestos or suspected asbestos material is discovered refer to Section 3.4 'Asbestos Waste Management' of the *Liddell Decoupling Works Waste Management Plan* for further detail.

In response to identifying suspected contamination or positively identification through lab testing, AGLM staff are to update the myHSE Investigation and enter all Improvement Actions (IAs). Any unexpected finds must be documented, including details such as the:

- Exact location of the find;
- Volume of material removed;
- Classification of the material;
- Licenced facility the material was disposed to; and
- Receipt documentation.

## 5.3 Disposal of contaminated material

Where potential contamination finds are not applicable for potential reuse as backfill they will be classified and disposed of at a lawful place in accordance with the NSW EPA *Waste Classification Guidelines 2014* and

the *Liddell Battery Decoupling Works Waste Management Plan*. Disposal docket must be retained and attached to the relevant RA prior to close-out.

## **6. Compliance management**

This section describes the environmental reporting and auditing requirements needed to demonstrate the environmental performance of the Project against the identified objectives and targets.

### **6.1 Incidents and complaints**

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

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

### **6.2 Document review and update**

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

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