Liddell Decoupling Works - Waste Management Plan

Revision: Rev B

AGLM

Liddell Battery Decoupling Works Environmental Management Strategy
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Liddell Decoupling Works - Waste Management Plan

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Project manager: Sara Sanderson

Prepared by: Sara Sanderson

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Jacobs Group (Australia) Pty Ltd.

Floor 11, 452 Flinders Street
Melbourne, VIC 3000
PO Box 312, Flinders Lane
Melbourne, VIC 8009
Australia

T +61 3 8668 3000
F +61 3 8668 3001

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Acronyms and abbreviations

Acronymn or abbreviation	Description
ACM	Asbestos Containing Material
BAW	Bayswater Ancillary Works
CEMP	Construction Environmental Management Plan
DECC	Department of Environment, Climate Change and Water
DPE	Department of Planning and Environment
EMS	Environmental Management Strategy
EPA	Environment Protection Authority
EPL	Environment Protection Licence
GWh	Gigawatt hours
LAA	Licenced Asbestos Assessor
LAR	Licenced Asbestos Removalist
MW	Megawatt
IA	Improvement Action

1. Introduction

1.1 Context

This Waste Management Plan (WMP) has been developed to address the Development Consent Condition C1(e)(i) issued for the Project by the planning Secretary of the NSW Department of Planning and Environment (DPE). All relevant conditions are outlined in Table 1**Error! Reference source not found.**.

Table 1. Waste Management – Development Consent Conditions

Condition	Requirement	WMP reference
C1(e)(i)	Prior to commencing construction, the Applicant must prepare an Environmental Management Strategy for the development to the satisfaction of the Secretary. This strategy must include a subplan on waste management	This plan
B27(a)	The Applicant must take all reasonable steps to minimise the waste generated by the development	Section 3.3
B27(b)	The Applicant must classify all waste in accordance with the Waste Classification Guidelines (EPA, 2014)	Section 2.2
B27(c)	The Applicant must dispose of all waste at appropriately licensed waste facilities or as expressly permitted in an applicable EPL	Section 3.2 and Section 3.3
B27(d)	The Applicant must manage any asbestos or asbestos-contaminated material identified during construction and operation of the development in accordance with the requirements under the *Protection of the Environment Operations (Waste) Regulation 2014*.	Section Error! Reference s ource not found.

1.2 Purpose and Scope

The purpose of this WMP is to:

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

1.3 Project Description

1.3.1 Project Overview

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

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

This WMP 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 AQMP include:

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

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

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

2. Regulatory Requirements

2.1 Relevant legislation and conditions

This Waste Management Plan has been prepared in accordance with the relevant legislation and regulatory requirements within the Environmental Management Strategy; key legislation relating to waste includes:

- *NSW Protection of the Environment Operations Act* 1997 *(*POEO Act*)*
- Protection of the Environment Operations (Waste) Regulation 2014
- *Waste Avoidance and Resource Recovery Act* 2001

The Minister's Conditions of Approval for the Project, relevant to the Waste Management Plan, are listed in **Error! Reference source not found.**.

2.2 Standards and guidelines

The main guidelines, standards and policies relevant to this Waste Management Plan include:

- NSW Waste and Resource Recovery Strategy 2014-21 (NSW EPA, 2014)
- NSW Government Resource Efficiency Policy (OEH 2014)
- Waste Classification Guidelines (NSW EPA 2014).

Waste should be classified using the Waste Classification Guidelines (NSW EPA, 2014) as summarised in Table 2.

Table 2. Waste classification descriptions

Waste classification	Description
Special waste	Includes waste that has unique regulatory requirements such as asbestos or tyres and includes anything classified as special waste under an EPA gazettal notice
Liquid waste	Waste (excluding special waste) that has an angle of repose of less than 5 degrees above horizontal, becomes free-flowing at or below 60ºC or when it is transported, is generally not capable of being picked up by a spade or shovel or is classified as liquid waste under an EPA gazettal notice.
Hazardous waste	Hazardous waste (other than special waste or liquid waste) includes waste that is a dangerous good that is classified under the Transport of Dangerous Goods Code as a 'Class 1' to 'Class 8' type of waste. It can also include coal tar or coal tar pitch waste, lead, acid or nickel-cadmium batteries, lead paint waste or any mixture containing one of these types of wastes.
General solid waste (putrescible)	General solid waste (putrescible) (other than special waste, liquid waste, hazardous waste or restricted solid waste) includes standard household and litter bins waste that is collected by or on behalf of local councils, food waste, animal waste, manure and night soil and any grit of screening from sewage treatment systems.
General solid waste (non-putrescible)	General solid waste (non-putrescible) (other than special waste, liquid waste, hazardous waste, restricted solid waste or General solid waste (putrescible)) includes household recyclable waste that does not contain food waste, garden waste, wood waste, waste that was previously in dangerous containers that have been thoroughly cleaned out, virgin excavated material and building and demolition waste.

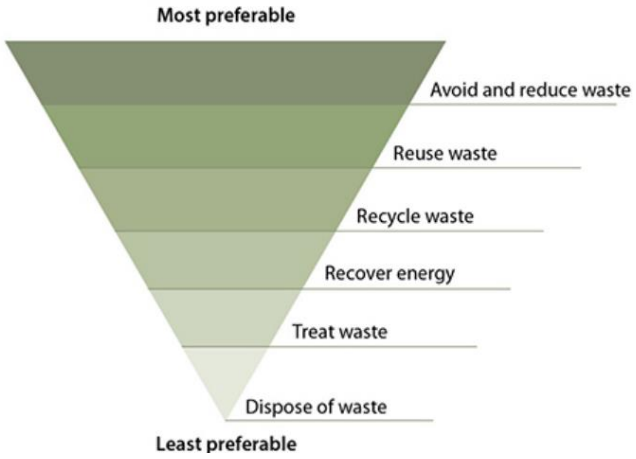
The Environment Protection Authority's Waste Classification Guidelines (EPA, 2014) provide a process for classifying waste based on risks to the environment and human health. The classes of waste are defined in the POEO Act 1997, Schedule 1, clause 49.

3. Waste impacts and management

3.1 Waste hierarchy

Mitigation measures and requirements to address waste and resource consumption during construction are outlined in Sections 3.2 and 3.3. These measures are presented within the framework of the waste management hierarchy (Figure 1).

Figure 1. Waste hierarchy



3.2 Construction waste streams and management

Waste streams generated from construction of all stages of the project were identified, and no problematic waste streams or volumes are expected for the entire project. New waste streams from construction activities for the rest of the project were associated with the Battery components, demolition waste, and standard construction waste.

The only new waste stream associated with the Decoupling works is the generation of construction waste. Construction waste types and proposed management measures are provided in Table 3.

Table 3. Construction waste streams and management

Waste type	Waste description	Likely classification	Proposed management	Waste management hierarchy
Sewage	Portable ablutions facilities pump-out	Liquid	Manage through Liddell facilities until closure.	Dispose
Fuels, lubricants and chemicals	Containers that previously contained Class 1,3,4,5 or 8 substances used for construction plant, and used oil from construction plant	Hazardous	Fuels and oils drained from plant for maintenance would be decanted for re-use. Where re-use is not an option, it would be taken off-site for recycling.	Re-use
Excavated natural material	Earthworks spoil	General	Maintain soils on site. If unexpected, contaminated soil is found, the soil is to be tested and classified prior to off-site disposal.	Re-use
Construction waste	Timber, packaging, metal,	General	Segregate for recycling to the extent practicable in	Recycle

Waste type	Waste description	Likely classification	Proposed management	Waste management hierarchy
	asphalt, concrete, glass, plastic, rubber, plasterboard, ceramics, bricks from the installation of foundations and underground services and above ground civil, mechanical and electrical plant and equipment		accordance with current site practices. Material unable to be recycled or re-used on site would be classified for lawful disposal.	
Grit, sediment in erosion controls	Collected in, and removed from, stormwater treatment devices and/or stormwater management systems	General	Clean sediment would be incorporated into rehabilitation	Re-use
Site office waste	Paper/cardboard	General	Recycled as per existing site practices	Recycle
Food waste	Generated from worker's lunches	Putrescible	Off-site disposal as per existing practices	Dispose
Potential contaminated land and materials	Soils or water that have been contaminated by hazardous materials	Special/ Hazardous	Test to classify, and dispose at licensed landfill or re-use if possible.	Re-use or dispose

Waste management associated with operations should be undertaken in accordance with AGL-HSE-STD-009.7-Waste Standard and AGLM-HSE-PLN-009.07 Waste Management Plan.

3.3 General waste management

General controls that should be implemented throughout all stages of development are provided in Table 4.

Table 4. EIS controls

EIS reference	Environmental management measure	Waste management hierarchy
WR01	A Waste Management Plan will be developed for the Project	General
WR01	A hierarchical waste management approach will be used, from the most preferable (reduce, reuse or recycle wastes) to the least preferable (disposal) to prioritise waste management strategies to avoid waste generation	General
WR01	Materials with minimal packaging requirements should be used, removal of packaging should occur offsite by suppliers, and fabrication of parts should be conducted offsite	Avoidance
WR01	Where waste cannot be avoided, waste materials will be segregated by type for collection and removal (for processing or disposal) by licensed contractors	Recycling, Re-use, and Dispose

EIS reference	Environmental management measure	Waste management hierarchy
WR01	All waste types are to be separated at the source for recycling	Recycling
WR01	A licenced service provider will be appointed to collect waste during construction and operation	Recycling and Dispose
WR01	Each waste type will be classified for transport to ensure correct handling	General
WR01	Any waste that cannot be recovered or recycled will be disposed of to a suitably authorised or licensed treatment or disposal facility where it will be treated and disposed of according to its classification	Disposal

3.4 Asbestos waste management

Asbestos Containing Material (ACM) is classified in the *Protection of the Environment Operations (Waste) Regulation* 2014 as either:

1. **Bonded asbestos material** meaning any material (other than friable asbestos material) that contains asbestos; or
2. **Friable asbestos material** meaning any material that contains asbestos and is in the form of a powder or can be crumbled, pulverised or reduced to powder by hand pressure when dry.

This section outlines the requirements for the proper management and disposal of all ACM.

3.4.1 Management of asbestos waste

If ACM is identified (or assumed to be identified) during the course of Decoupling Works all works in the immediate vicinity will cease and the area isolated using barricades and signage, as outlined in Section 5.2 'Accidental discovery protocol for unexpected Finds' of *the Liddell Battery Decoupling Works Waste Management Plan*.

A Licenced Asbestos Assessor (LAA) will be required onsite to confirm the presence of ACM, and where necessary a sample of the suspected ACM may be sent for laboratory analysis at a NATA accredited testing laboratory for further confirmation. Once confirmed, the LAA should confirm appropriate steps to manage the contaminated land/material. All Personal Protective Equipment used in asbestos-related work is to be treated as contaminated and disposed of accordingly.

ACM containing wastes are to be classified in accordance with the NSW EPA *Waste Classification Guidelines* 2014. The Project Manager is to engage a Licenced Asbestos Removalist (LAR) to remove and dispose of the asbestos waste safely at a correctly licenced landfill site. Prior to the LAR beginning works the ACM is to be kept covered, barricaded and signed to prevent unauthorised entry and subsequent contamination incidents.

An Asbestos Register detailing the location, magnitude and environment Improvement Action (IA) undertaken is to be prepared, maintained, reviewed and kept readily accessible at the workplace.

3.4.2 Transportation of asbestos waste

The LAR responsible for the transportation of asbestos waste are required to ensure that:

- Any part of the vehicle in which ACM is being transported is coved, leak-proof for the duration of its transportation;
- All bonded ACM is securely packed during its transportation;
- All friable ACM is in a sealed contained during its transportation; and that
- Any ACM other than bonded ACM that is securely packaged or friable ACM that is in a sealed container is wetted down during its transportation.

Prior to transportation of ACM (in a single load over 100 kilograms or 10 square metres in volume) the LAR is required to provide information to the EPA, including but not limited to:

- The address of the site at which the ACM has been generated;
- The name, address and contact details of the premises from which the load is to be transported;

- The proposed date of the intended transportation;
- The name, address and contact details of the proposed receiving premises; and
- The approximate weight of each class of ACM in the load.

Following approval from the EPA a unique consignment code will be issued. Additionally, to the requirements set above, interstate transportation of ACM is required to be tracked.

4. Compliance management

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

4.1 Roles and Responsibilities

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

4.2 Inspections, Monitoring, and Reporting

A recommended monitoring and inspection plan is provided in Table 5.

Table 5. Waste and Resource Management Monitoring Plan

Type of monitoring	Frequency	Location	Responsibility	Records
Environmental inspection ▪ Implementation of waste management activities ▪ Site is neat, tidy and free of litter ▪ Stockpiled and segregated waste collection points are clearly signposted ▪ Quantities of stored materials are appropriate based on construction scheduling/procurement constraints	Weekly	Active construction areas and waste storage areas	Site Superintendent	▪ Weekly Environmental Inspection Checklist
Monthly review of records	Monthly	N/A	Site Superintendent	▪ Daily Site Diary ▪ Waste Management Register ▪ Disposal Dockets/records
Environmental audit	As per Project Audit schedule	N/A	Site Superintendent	▪ Immediate Notification Report ▪ myHSE Initial Report ▪ Waste facility receipts
Close out of waste management incidents – lessons are disseminated to project personnel	As required	N/A	Site Superintendent	▪ Toolbox records ▪ Pre-start records
Inspection of contaminated materials awaiting disposal	Twice daily when required	Locations where contaminated material has been identified and/or stored	Site Superintendent	▪ Asbestos Register ▪ Improvement Actions

4.3 Incidents and Complaints

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

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

4.4 Document review and update

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

- The submission of an environmental Immediate Notification Report
- The submission of an environmental myHSE Initial Report
- The submission of an audit report
- The approval of any modification to the conditions of the Development Consent
- A direction of the Secretary DPE.