Department of Planning, Housing and Infrastructure

Our ref: SSD-8889679-PA-108

Lachy Taylor
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AGL Macquarie Pty Limited
2000 George Street
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05/06/2026

Liddell Battery and Bayswater Ancillary Works – Air Quality Management Plan (AQMP)

Dear Mr. Taylor

Thank you for submitting the AQMP in accordance with Condition A7 , Schedule 2 of the consent for the Liddell Battery and Bayswater Ancillary Works (SSD -8889679).

I note the AQMP was updated to reflect the changes from the construction stage to operational stage of the development; and contains the information required by the conditions of approval.

Accordingly, as nominee of the Planning Secretary, I approve the revised AQMP (Rev 7 , May 2026).

You are reminded that if there are any inconsistencies between the Plan and the conditions of approval, the conditions prevail.

Please ensure you make the document publicly available on the project website at the earliest convenience.

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

Yours sincerely

Stephen O'Donoghue
Director
Resource Assessments

As nominee of the Planning Secretary

Liddell Power Station Battery Energy Storage System Air Quality Management Sub Plan

Environmental Management Strategy

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Document revision history

Date	Version	Author	Comments
10-Feb-2023	0	Neil Standen Project Manger	Draft for client review
28-Mar-2023	1	Neil Standen Project Manger	Second draft for client review
03-May-2023	2	Neil Standen Project Manger	Final draft for DPE review
16-Jun-2023	3	Neil Standen Project Manger	Final
05-Apr-2024	4	Neil Standen Project Manger	Spoil stockpiling update
10-May-2024	5	Neil Standen Project Manger	Spoil stockpiling update
05-May-2025	6	Neil Standen Project Manger	MOD 2 - Transmission Line Easement
7-May-2026	7	Lachy Taylor Environment Advisor	Update for operational phase

Glossary and Terms

Term	Description
AECOM	AECOM Australia Pty Ltd
AGLM	AGL Macquarie Pty Ltd
Approved Methods	*Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (Environment Protection Authority 2016)
AQIA	Air Quality Impact Assessment
AQMP	Air Quality Management Plan
BAW	Bayswater Ancillary Works
BESS	Battery Energy Storage System
CCTV	Closed-circuit television
DPE	Department of Planning and Environment (now DPHI)
DPHI	Department of Planning, Housing and Infrastructure (formerly DPE)
EIS	Environmental Impact Statement
EMS	Environmental Management Strategy
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
EPA	Environment Protection Authority (NSW)
EPL	Environment Protection Licence
GWh	Gigawatt hours
ha	hectares
km	kilometre
kV	Kilovolt
LBBAWP	Liddell Battery and Bayswater Ancillary Works Project, consisting of a battery energy storage system at Liddell, decoupling works, and works associated with the ongoing operation of Bayswater
LDBS	Liddell Battery Energy Storage System
Liddell BESS	Liddell Battery Energy Storage System Stage 2 of the Liddell Battery and Bayswater Ancillary Works Project consisting of the construction of a BESS with the storage capacity to facilitate a maximum discharge of up to 500 MW for a four-hour period, or up to 2 GWh
MW	Megawatt
NEM	National Energy Market
$PM_{2.5}$	Particulate matter 2.5 micrometres or less in diameter
PM_{10}	Particulate matter 10 micrometres or less in diameter
POEO Act	*Protection of the Environment Operations Act 1997* (NSW)
RTS	Response to Submissions
SEARs	Secretary's Environmental Assessment Requirements
Site (the)	Location of the BESS
SSD	State Significant Development
TARP	Trigger, Action and Response Plan
TSP	Total suspended particulates
V	Volt

1. Introduction

AGL Macquarie Pty Limited (AGLM) have prepared this Air Quality Management Plan (AQMP) for a Battery Energy Storage System (BESS) which forms part of the Liddell Battery and Bayswater Ancillary Works Project (LBBAWP), NSW.

The LBBAWP is a State Significant Development (SSD) under the State *Environmental Planning Policy (State and Regional Development) 20111* , and is subject to Part 4, Division 4.7 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

An Environmental Impact Statement (EIS) was prepared in March 2021 in accordance with the Secretary's Environmental Assessment Requirements (SEARs). Development consent (SSD-8889679) was issued by the Department of Planning and Environment (DPE) (now Department of Planning, Housing and Infrastructure (DPHI)) on 8 March 2022.

1.1. Background

AGLM is progressing with plans to facilitate the efficient, safe and reliable continuation of electricity-generating works from the Bayswater and Liddell sites. The LBBAWP will be carried out in the following stages:

- Stage 1 - Decoupling Works: Alternative network connection arrangements for the Liddell 33 Kilovolt (kV) switching station that provides electricity to the infrastructure required for the ongoing operation of Bayswater power station, to associated ancillary infrastructure and to potential third-party industrial energy users
- Stage 2 - BESS: Replacement of a portion of Liddell's dispatchable electricity supply is required for the National Energy Market (NEM), including the construction, operation and decommissioning of a grid-connected utility-scale BESS with a capacity of up to 500 megawatts (MW) and 2 gigawatt hours (GWh)
- Stage 3 - Bayswater Ancillary Works (BAW): Works associated with Bayswater power station, 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: Surrender and consolidation of various existing development approvals required for the ongoing operation of AGLM assets.

This management plan has been developed for the operational phase of Stage 2 only (i.e. the BESS), which is hereinafter referred to as the Liddell BESS (LDBS).

1.2. Site details

The AGLM landholding is located approximately 15 kilometres (km) southeast of Muswellbrook, 25 km northwest of Singleton, and approximately 165 km west northwest of Sydney in NSW. The total area of the AGLM landholding is approximately 10,000 ha, including the Bayswater and Liddell power station operational areas, the Ravensworth rehabilitation area, Lake Liddell and surrounding buffer lands.

Surrounding the AGLM landholding is predominantly land uses heavily influenced by industrial activity. The local area is dominated by large-scale infrastructure associated with Bayswater and Liddell power stations and open-cut mining activities. Agricultural clearing for the purposes of grazing is also present within and surrounding the AGLM landholding.

[1] Now State Environmental Planning Policy (Planning Systems) 2021

Elevations within approximately 10 kilometres of the AGLM landholding range from around 100 to 500 metres above sea level.

The majority of the AGLM landholding has been previously disturbed during the construction and operation of Liddell and Bayswater power stations and historic agricultural activity. LDBS is located at the former solar array shown in Figure 1. This location was selected as it is in close proximity to Liddell Power Station and is on previously disturbed operational lands no longer required for Liddell operations.

1.3. Project description

LDBS has the storage capacity to facilitate a maximum discharge of up to 500 MW for up to a four-hour period or up to 2 GWh. LDBS is connected to the existing TransGrid 330kV substation via a 330kV high-voltage power line (refer to Figure 1).

Key components for the BESS are as follows:

- 1,548 pre-assembled battery enclosures containing 24,768 battery modules.
- 172 inverters with 86 core transformers
- One control room, two switchgear room and a warehouse/ workshop
- 33kV reticulation system and collector switch rooms
- Overhead, underground, or a combination of both, 330 kV line to connect to TransGrid 330 kV substation
- Two 33 kV / 33kV / 330 kV three-winding transformers and 330 kV connection equipment
- Ancillary infrastructure, including water tanks for bushfire protection purposes, lightning protection, security fencing and closed-circuit television (CCTV).

The site layout of LDBS is shown in **Figure 2**.

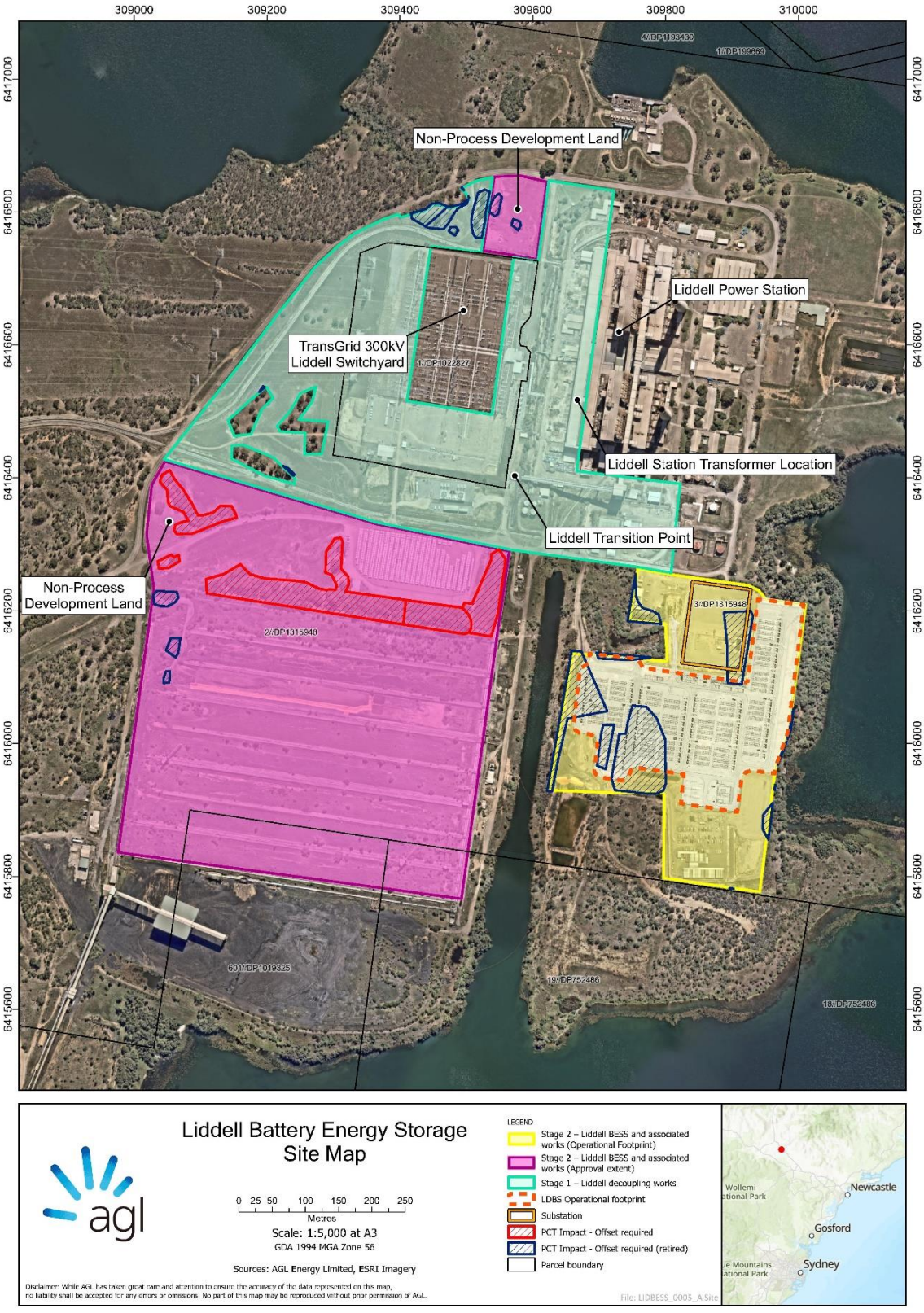

Figure 1 Site map

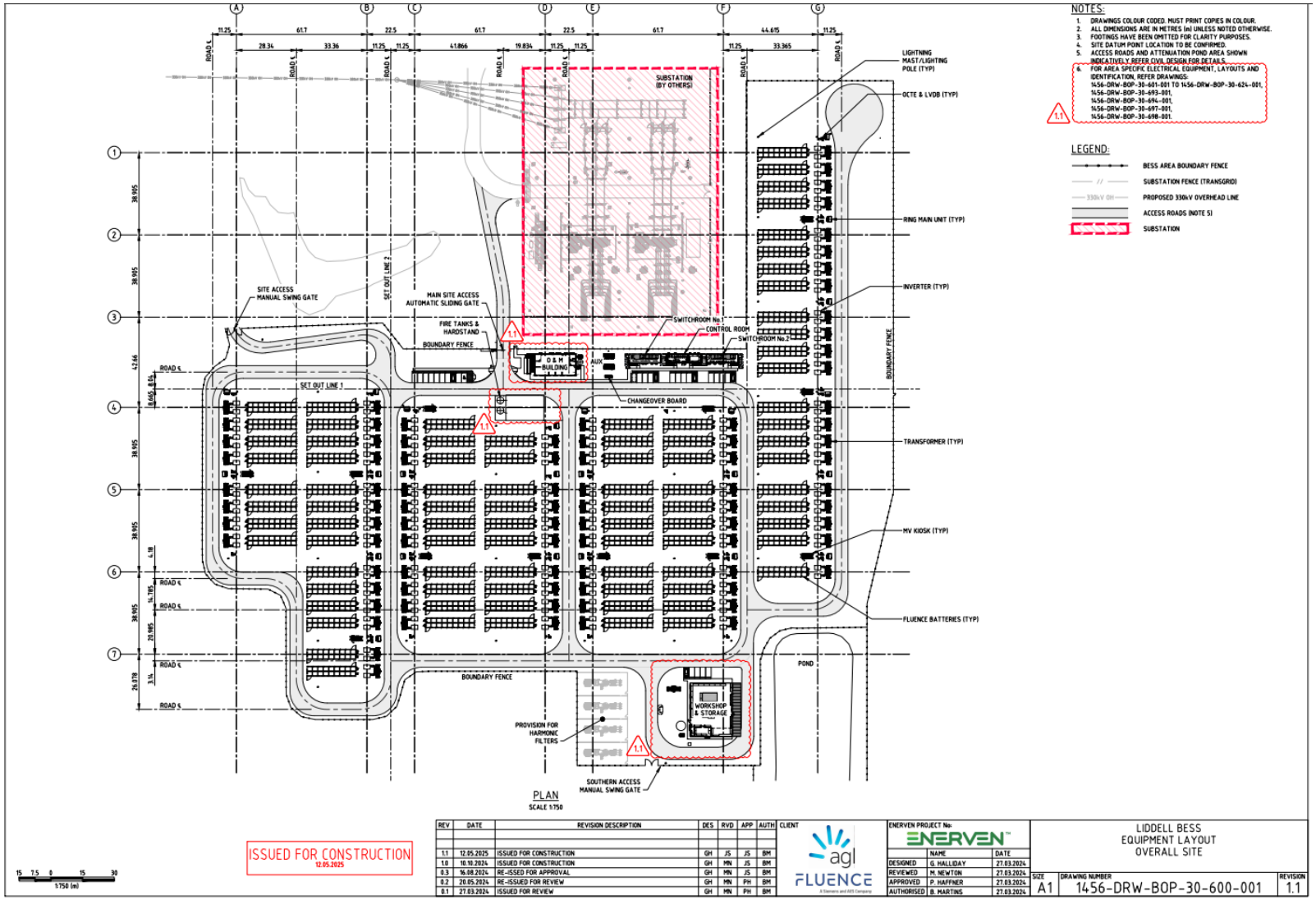

Figure 2 LDBS layout

1.4. Relevant approvals and conditions

1.4.1. Project approvals

Development consent (SSD-8889679) was granted for the AGL Macquarie Limited on 8 March 2022, which includes the voluntary surrender and consolidation of various existing development approvals into SSD-8889679. This approval includes the development of Liddell Battery and Bayswater Ancillary Works.

The site does not constitute a scheduled activity and is therefore not subject to obtaining a separate EPL. The site however does sit within the boundaries of EPL 2122, held by AGL Macquarie, and utilises licence discharge point 27 for discharge of water from site to Lake Liddell and therefore is subject to the provisions of the licence.

1.4.2. Development consent conditions

In accordance with SSD-8889679 development consent condition C1, an Environmental Management Strategy (EMS) has been prepared for the LDBS to provide a strategic framework for the environmental management of the development. A range of subplans has been developed to support the EMS and address development consent condition C1(e)(i).

This AQMP has been developed to manage potential air quality impacts arising from the operation and decommissioning of the LDBS. The relevant conditions are outlined below in **Table 1**.

Table 1 Development consent conditions – air quality management

Condition	Requirement	Reference
C1	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: – the following subplans: ○ soil, stormwater, water quality, flood and spoil management; ○ construction and decommissioning noise, including an out-of-hours works protocol; ○ **air quality management;** ○ contamination, including an unexpected finds protocol ○ waste management; and ○ traffic.	This management plan
A12	The Applicant must ensure that all plant and equipment used on site, or in connection with the development, is: • maintained in a proper and efficient condition; and • operated in a proper and efficient manner.	Section 5
B15	The Applicant must take all reasonable and feasible steps to: • minimise odour, fume and dust emissions of the development; • eliminate or minimise the risk of spontaneous combustion; and • minimise to the greatest extent practicable, dust generating surfaces exposed on the site.	Section 5

1.5. Scope, purpose and objectives

This AQMP has been developed in accordance with SSD-8889679 development consent condition C1 and to address relevant requirements associated with:

- SSD-8889679 development consent conditions
- EIS management measures, which were amended in the Response to Submissions (RTS) (Jacobs 2021)
- AGL plans and procedures.

The purpose of this AQMP is to:

- Summarise the potential impacts of the operation and decommissioning of the LDBS on the local air quality environment as assessed in the EIS (Jacobs 2021)
- Identify environmental management measures to be implemented to minimise air quality impacts.

The objective of this AQMP is to mitigate and manage potential air quality impacts on the local environment as a result of the operation and decommissioning of the LDBS and to maintain compliance with SDD-8889679.

All works undertaken at the site must comply with the environmental management measures outlined in Section 5 of this plan.

2. Legislation and guidelines

2.1. Legislation

This AQMP has been prepared in accordance with the relevant legislation and regulatory requirements within the EMS. Specifically:

- POEO Act (NSW)
- POEO (Clean Air) Regulation 2022 (NSW)
- *National Environment Protection (Ambient Air Quality) Measure 2021* (Commonwealth).

2.1.1. POEO Act

The aim of the POEO Act is to achieve the protection, restoration and enhancement of the quality of the NSW environment and reduce potential risks to human health and the environment. The POEO Act is the primary piece of legislation for the regulation of potential pollution impacts associated with scheduled operations or activities in NSW. Scheduled activities are those defined in Schedule 1 of the Act.

The site does not constitute a scheduled activity and is therefore not subject to obtaining a separate EPL. The site however does sit within the boundaries of EPL 2122, held by AGL Macquarie, and utilises licence discharge point 27 for discharge of water from site to Lake Liddell and therefore is subject to the provisions of the licence.

2.1.2. POEO (Clean Air) Regulation 2022

The *POEO (Clean Air) Regulation 2022* is the key regulatory mechanism in NSW for reducing emissions of harmful pollutants in the air. It contains provisions for the regulation of emissions to air from wood heaters, open burning, motor vehicles, fuels and industry.

2.1.3. National Environment Protection (Ambient Air Quality) Measure 2021

The aim of the *National Environment Protection (Ambient Air Quality) Measure 2021* is to achieve National Environment Protection Standards as assessed in accordance with (set) monitoring protocols. The outcome is to achieve ambient air quality that allows for the adequate protection of human health and well-being.

2.2. Standards and guidelines

The main standards and guidelines relevant to this AQMP include:

- Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (Environment Protection Authority (EPA), 2016)
- Approved Methods for the Sampling and Analysis of Air Pollutants in NSW (EPA, 2007).

Both these documents were updated in 2022, replacing the above versions of these documents. Given that the LBBAWP was assessed prior to 9 September 2022 (refer to Section 3.4), the assessment remains in accordance with the 2016 version of the *Approved Methods for Modelling and Assessment*. However, monitoring conditions within an EPL must be undertaken in accordance with the 2022 version of the Approved Methods for Sampling and analysis (which replaces the 2007 version).

2.3. Environmental Impact Assessment

An Air Quality Impact Assessment (AQIA) was prepared by Jacobs (2021) in accordance with the SEARs issued for the LBBAWP and to support the EIS. The key purpose of the AQIA was to establish suitable air quality assessment criteria, estimate emissions to air associated with the LBBAWP and present and discuss predicted potential impacts. The AQIA also recommended suitable mitigation and management measures which have been included in this AQMP in Section 5, where relevant to the operation and decommissioning of the BESS. The EIS was placed on public exhibition for a period of 28 days, between 15 April 2021 to 12 May 2021. Following this, a RTS report (Jacobs 2021) was prepared to consider and respond to any submissions received during the exhibition period, which resulted in changes to some of the management measures from the EIS. Therefore, the management measures in the RTS report supersede those in the EIS, where changes have been made.

3. Roles and Responsibilities

Section 4.3 of the EMS outlines key roles and responsibilities for all staff working at the LDBS.

4. Environmental Setting and Potential Impacts

4.1. Sensitive receivers

The AQIA for the LBBAWP considered all three stage for the project as a whole when identifying sensitive receivers. The AQIA identified 22 receivers within the vicinity of the LBBAWP, including 15 residential receivers, one passive recreational area and six industrial premises. The location of the receivers presented in the AQIA has been presented below in Table 2 and Figure 3. The nearest residential receiver to the LBBAWP is also the closest receiver to the BESS footprint, being RR12 about 3.5 kilometres northeast.

Table 2 Nearby representative sensitive receivers (UTM MGA Zone 56)

Receiver ID	X co-ordinate	Y co-ordinate	Approximate distance and direction to the LBBAWP
RR01	306177	6421554	6300 north
RR02	316337	6419837	7800 northeast
RR03	318041	6411978	3000 east
RR04	320245	6405818	8000 southeast
RR05	316832	6403296	8800 southeast
RR06	313729	6403903	8100 southeast
RR07	307735	6402915	5300 south
RR08	302782	6404017	1100 south
RR09	300275	6406687	1000 southwest
RR10	300383	6407252	1100 southwest
RR11	295636	6412963	6800 west
RR12	**311493**	**6418878**	**2700 northeast**
RR13	309979	6420335	3500 northeast
RR14	309141	6421575	4700 north
RR15	302022	6404606	700 south

4.2. Meteorology

The meteorological data collected at monitors operated by AGLM and other local industry operators (including DPHI) identified that the annual prevailing winds blow from the southeast and northwest.

4.3. Background air quality

The background air quality environment contains emissions from many sources such as mining activities, construction works, bushfires and ‘burning off’, industry, vehicles, roads, windblown dust from nearby and remote areas, fragments of pollens, moulds and domestic wood fires. Data from air quality monitoring stations indicated that the EPA’s daily impact assessment criterion was occasionally exceeded and that annual PM_{10} and $PM_{2.5}$ concentrations due to these environmental factors. Deposited dust levels were also occasionally measured above the relevant criteria.

Figure 1 Noise sensitive receivers around the Project

Figure 3 Nearby sensitive receivers surrounding the LBBAWP (source: Jacobs 2022)

4.4. Potential Impacts

As identified in the EIS and AQIA, there would be limited air quality-related risks during the operation of the LDBS given the sealed surface of the site and low impact nature of the activity.

5. Environmental Management Measures

The management measures provided in **Table 3** will be implemented to minimise potential air quality impacts from the LDBS. For completeness, measures relevant to decommissioning have been included, however where they are not applicable to the operational phase they have been marked in grey. Measures identified for pre-construction or that are not relevant to operations or decommissioning have been excluded prior phases have been completed.

Table 3 Environmental management measures - air quality (EIS / RTS / development consent)

Reference	Environmental management measures	Responsibility	Timing
AQ1	The following will be undertaken to manage fugitive emissions from stored chemicals: • Limiting the quantity of chemical products stored at the site to the extent practical	AGLM	Operation Decommissioning
AQ2	Trucks entering and leaving the site that are carrying loads of dust-generating materials will be covered at all times, except during loading and unloading. • During the loading and unloading of materials, the following will be undertaken: • Water sprays as applicable • Minimising drop heights • Reviewing and, where necessary, modifying or suspending activities during dry and windy weather and elevated background air quality conditions.	AGLM Decommissioning contractor	Decommissioning
AQ3	While hauling materials in trucks, the following will be undertaken: • Regular watering of unsealed haulage routes • Regular inspection and removal of debris from plant and equipment to avoid the tracking of materials onto the adjacent road network.	AGLM Decommissioning contractor	Decommissioning
AQ4	The following will be undertaken to manage exhaust emissions from plant and equipment: • Maintaining all equipment in a proper and efficient condition • Inspecting all plant and equipment before it is used on-site • Switching off all vehicles, plant and equipment when not in use for extended periods • Avoiding the use of diesel or petrol-powered generators and use mains electricity or battery-powered equipment where practicable.	AGLM	Operation
AQ6	The following will be undertaken to manage wind erosion from stockpiles and exposed surfaces:	AGLM	Operation

Reference	Environmental management measures	Responsibility	Timing
	• Watering stockpiles and exposed surfaces • Progressive rehabilitation of exposed surfaces (as feasible) that are no longer required for construction.		

6. Compliance and Reporting

6.1. Monitoring and reporting

There will be no operational monitoring associated with the LDBS.

6.2. Incidents and complaints

Incident management will be managed in accordance with the process outlined in Section 4.5 of the EMS. Complaints and enquiries will be managed in accordance with the process outlined in Section 5.3 of the EMS.

6.3. Document review and update

It is a requirement of the EMS 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.

This document will also be reviewed and updated prior to the commencement of decommissioning.