Kerosene Vale Ash Repositories

Annual Environmental Management Report

Prepared for Generator Property Management Pty Ltd

November 2026

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Generator Property Management Pty Ltd

E230337 RP1

November 2026

Version	Date	Prepared by	Reviewed by	Comments
1	9 October 2026	Tasman Coupe	Dan Condon	For internal review
2	30 October 2026	Tasman Coupe	Dan Condon	Draft
3	3 November 2026	Tasman Coupe	Dan Condon	Final

Approved by



Daniel Condon
Associate Environmental Scientist
3 November 2026

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Executive Summary

Table ES1 Annual Environmental Management Report title block

Name of operation	Kerosene Vale Ash Repository
Operation historically referred to as	• Wallerawang Ash Repository • Lidsdale Ash Dam
Name of operator	Generator Property Management Pty Limited
Development consent/project approval #	07/0005 (Mod 2)
Name of holder of development consent/project approval	Generator Property Management Pty Limited
AEMR start date	1 September 2025
AEMR end date	31 August 2026

I, *Carolina Alvim,* certify that this audit report is a true and accurate record of the compliance status of Kerosene Vale Ash Repository for the period 1 September 2025 to 31 August 2026 and that I am authorised to make this statement on behalf of Generator Property Management Pty Limited.

Note.
a) The AEMR is an 'environmental audit' for the purposes of section 9.42 of the Environmental Planning and Assessment Act 1979. Section 9.42 (1) provides that a person must not include false or misleading information in a report of monitoring data, or an audit report produced to the Minister in connection with an environmental audit, if the person knows that the information is false or misleading in a material respect.

Section 9.42 (2) provides the proponent of an approved project must not fail to include information in (or provide information for inclusion in) a report of monitoring data, or an audit report produced to the Minister in connection with an environmental audit, if the proponent knows that the information is materially relevant to the monitoring or audit.

Section 9.42 (3) provides that with respect to the retention of monitoring data or audit documentation, the proponent of an approved project must retain any monitoring data in accordance with the relevant condition of the approval for at least 5 years after it was collected, retain any documentation required to be prepared by the proponent in connection with an environmental audit for a period of at least 5 years after the audit report concerned was produced to the Minister, and produce during that period any such documentation on request to a departmental investigation officer under Division 9.2.

b) Maximum penalty – Tier 3 monetary penalty

*c). Section 9.54 provides that (1) If **Tier 3** is specified as the maximum penalty, a person who contravenes or fails to comply with that provision is guilty of an offence and liable to a penalty not exceeding $1 million (in the case of a corporation), and for a continuing offense, a further $10,000 for each day the offence continues. In the case of an individual, the liability is $250,000, and for a continuing offence—a further $2,500 for each day the offence continues. Section 9.54 (2) provides that if a period of imprisonment is also specified, the person is also liable to imprisonment not exceeding the period so specified.*

Name of authorised reporting officer	Carolina Alvim
Title of authorised reporting officer	Manager Environment
Signature of authorised reporting officer	



Date 03/11/2026

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1 Summary of compliance

Generator Property Management Pty Limited (GPM) owns and operates the Ash Storage Dams and stockpiles within the Kerosene Vale Ash Repository (KVAR) at Lidsdale. The facility covers approximately 528 hectares (ha) and was previously part of the decommissioned Wallerawang Power Station, located on Skelly Road, Lidsdale, NSW (referred to throughout as both 'the Project Area' and 'the Site').

The Project Area consists of:

- the Kerosene Vale Dry Ash Repository (KVAR) and underlying former Kerosene Vale Ash Dam (KVAD)
- Sawyers Swamp Creek Ash Dam (SSCAD)
- The associated heavy vehicle access route
- KVAR and SSCAD private access routes.

This Annual Environmental Management Report (AEMR) has been prepared pursuant to Schedule 2, Condition 7.3 of Project Approval 07_0005 and in accordance with the NSW Government's *Compliance Reporting Post Approval Requirements* dated May 2020. The reporting period covered by this AEMR is 1 September 2025 to 31 August 2026.

A summary of the Kerosene Vale Ash Repository compliance achieved during the reporting period is provided in Table 1.1. There were no non-compliances against the Conditions of Approval (CoA) recorded during the 2025-2026 reporting period (1 September 2025 to 31 August 2026). An extended review of compliance with the CoA is presented in Appendix A.

Table 1.1 Statement of compliance during the 2025-2026 reporting period

Were all conditions of the relevant approval(s) complied with?	
Project Approval #07_0005	Yes

No non-compliances with the COA were identified during the AEMR reporting period.

1.1.1 Assessment of compliance

Assessment of compliance was conducted using the compliance status descriptions presented in Table 1.2 and in accordance with the *Independent Audit Post Approval Requirements* (NSW Government 2020).

Table 1.2 Compliance status descriptors

Status	Colour code	Description
Compliant		The auditor has collected sufficient verifiable evidence to demonstrate that all elements of the requirement have been complied with within the scope of the audit.
Non-compliant		The auditor has determined that one or more specific elements of the conditions or requirements have not been complied with within the scope of the audit.
Not triggered		A requirement has an activation or timing trigger that has not been met during the temporal scope of the audit being undertaken (may be a retrospective or future requirement), therefore an assessment of compliance is not relevant.

An acceptable standard of environmental performance has been achieved during the reporting period for all other conditions as evidenced by the following:

- In accordance with the Voluntary Management Plan (VPM), the revised Detailed Site Investigation (DSI) draft was submitted to the Accredited Site Auditor (the Auditor) in February 2026. A revised draft of the Human Health and Ecological Risk Assessment (HHERA) was submitted to the Auditor in December 2025.

- Conditional approval of the revised Construction Environmental Management Plan (CEMP), revised Operational Environmental Management Plan (OEMP) and all associated sub plans. Approval was provided by the Planning Secretary nominee on 9 April 2026.

- All noise limits were complied with at all sensitive receivers during the reporting period.

- Air quality monitoring results relating to activities at the Kerosene Vale Repository site were below the OEMP assessment criteria for depositional dust gauges located in the Lidsdale township.

- During the AEMR Period, a review of progress against the Action Plan was included within the Water Quality Monitoring Report that was submitted to the NSW Environment Protection Authority (EPA) in September 2025 and March 2026.

- Surface water quality trends in Lidsdale Cut and the SSCAD are consistent with recent AEMR periods (i.e. 2018 to the current period). Dump Creek water quality over the AEMR period was variable with pH, salinity and metal concentrations, in some samples, exceeding Default Guideline Values (DGVs). Water quality results over the AEMR period at Dump Creek, indicated poor water quality conditions during drier months, where groundwater seepage to the creek is in a higher proportion than better quality surface water. Surface water quality downstream of the Site in Sawyers Swamp Creek was generally consistent with the understood surface water characteristics. Surface water quality in the Coxs River was not affected by the inflows from Sawyers Swamp Creek.

- Groundwater quality trends during the AEMR Period were generally consistent with recent AEMR periods (i.e. 2018 to the current period). The highest concentrations of nickel, copper and zinc occurred at CA1 (located in the central eastern portion of Cell A of SSCAD). Groundwater quality at monitoring bore WGM1/D3 (located between SSCAD and the KVAR/KVAD), may be degraded, however this is consistent with previous results, relative to water quality trends at upgradient bores. Groundwater quality at monitoring bore WGM1/D6 (located downgradient of KVAR/KVAD) is consistent with ash affected water. The groundwater quality at bore WGM1/D5, located to the north-west and downgradient of the KVAD, has improved compared to the previous AEMR period (2024 to 2025) where it was reported with elevated electrical conductivity (EC), anions, cations and dissolved metals.

- The groundwater level trends were consistent with historical trends and generally reflect the cumulative rainfall departure (CRD) trend. Twelve instances of groundwater level reported less than the SSTV (5th percentile) occurred across the November 2025, January and May 2026 monitoring rounds.

- No known Aboriginal or non-indigenous heritage sites were impacted during the reporting period. All heritage sites associated with the Project Area identified within the reporting period were submitted to the AHIMS database and accepted for registration on AHIMS in June 2026. GPM have implemented practical measures for the immediate and ongoing protection of the six identified sites, including the implementation of “Active Protection” measures including demarcation and barricading of sites.

- Weed management has been ongoing throughout the reporting period targeting pampas grass, blackberry, St John’s wort, purple top, broom, stink wort, cineraria, tussock and various broadleaf weeds.

- There were no community complaints received relating to the management of the Project Area during the AEMR period.
- Throughout the reporting period, GPM engaged regularly with the Community Consultative Group (CCG). There were three Community Consultation Group Meetings held during the reporting period. A key focus was GPM's long-term closure strategy for the KVAR, with an emphasis on creating a safe, stable, and self-sustaining landform rehabilitated with native vegetation.
- An Independent Environmental Representative (ER) conducted monthly inspections at the Site to ensure closure works are undertaken in accordance with the approval requirements. Multiple actions identified by the ER were completed by GPM during the AEMR reporting period.

GPM is committed to the continuous improvement and safe management of the site and propose to:

- Finalise, in consultation with the Auditor and NSW EPA, the Remedial Action Plan, incorporating the Remediation Options Assessment and submit to the NSW EPA in the next AEMR reporting period.
- Revise and submit to the NSW EPA the human health environmental risk assessment (HHERA), incorporating the Auditor comments, in the next AEMR reporting period.
- Ensure that the long-term remediation and closure of the Site is planned and executed in accordance with the Voluntary Management Proposal (VMP) and Auditor requirements and in consultation with the local community, including neighbours who adjoin the land holding.
- Review and update the OEMP to ensure care and maintenance of the Site reflect current practices and is in line with best practice.
- Review and update the CEMP to ensure construction activities required for the closure of the Site are included in the CEMP and are in accordance with the approval and licence conditions.
- Continue investigating potential groundwater contamination sources, pathways and receptors as part of the VPM process that GPM has negotiated with the NSW EPA.
- Continue to progressively improve the water management system through implementing the Action Plan commitments.
- Update the CEMP and OEMP plans at their next revision to align audit frequency, clarify ER inspections, inclusion of the Secretary consultation in the Auditor selection process, update Obligations Registers for CoA 4.1 and CoA 4.2 and align both plans with the March 2026 Independent Audit Post Approval Requirements, if required by NSW Department of Planning, Housing and Infrastructure (DPHI). It is noted GPM has engaged QEM to undertake an internal audit in mid-November and is also liaising with an external auditor to conduct an audit in early December.

2 Introduction

2.1 Background

The Kerosene Vale Ash Repository (KVAR) is located at Skelly Road, Lidsdale NSW (the Project Area) which is approximately 15 kilometres (km) north-west of Lithgow and 2.5 km north-east of former Wallerawang Power Station (WPS).

The WPS was separated into two separate ownership parcels in 2020 with the land north of the Castlereagh Highway purchased by Generator Property Management (GPM) in September 2020 from EnergyAustralia NSW. GPM continues to operate the site, which comprises an area of approximately 528 hectares (ha) and is situated on Lot 2 in Deposited Plan (DP) 1139982 and Lot 5 DP 1284934.

The Project Area comprises:

- the Kerosene Vale Dry Ash Repository (KVAR) and underlying former Kerosene Vale Ash Dam (KVAD)
- Sawyers Swamp Creek Ash Dam (SSCAD)
- The associated heavy vehicle access route
- KVAR and SSCAD private access routes.

The Project Area has a long history of being used for disposal of power station waste from the WPS since the late 1950s, and for disposal of other mining and industrial waste. The Project Area has been historically known as the Wallerawang Ash Repository, and the Lidsdale Ash Dam Area. Since the closure of WPS in 2014, the KVAR has been placed in care and maintenance. GPM's objectives within the Project Area include management of ongoing regulatory and contractual obligations during decommissioning, demolition, rehabilitation and closure of the site.

2.2 Site history

The original ash placement operations were conducted at the KVAD. The void was filled with ash transported from the WPS as slurry (i.e. wet ash placement). When the KVAD was full, it was capped clay and then ash placement operations began at the SSCAD, which saw wet ash placement take place between 1980 to 2003.

The need to further develop the KVAR area to maintain power-generation operations at WPS was identified in 2001. The existing wet ash storage area (i.e. SSCAD) was approaching its design capacity and the placement of dry ash at the KVAR was identified as a viable alternative. The extent of both the KVAR and SSCAD ash placement areas is depicted in Figure 2.1.

Conversion from wet to dry ash placement aimed to minimise environmental and social impacts potentially resulting from heavy metal accumulation. Key benefits of a dry ash handling facility included:

- the potential for ash to be beneficially reused in its dry form
- an approximate 80% decrease in the water required to transport ash
- discharges to the Coxs River are decreased in the long term
- the SSCAD can be progressively rehabilitated
- there would be a decreased flood risk for Kerosene Vale and surrounding areas (Hyder Consulting, 2002).

In 2002, Project Approval was granted by the then Minister of Planning to change from wet to dry ash-producing activities and to use the KVAR area for dry ash storage.

On 26 November 2008, Project Approval was granted by the then Minister of Planning for the extension of the existing KVAR area to permit the continued disposal of ash generated by the WPS under Part 3A (now repealed) of the *Environmental Planning and Assessment Act 1979*. The KVAR Stage 1 placement works were completed and capped in February 2009. The KVAR Stage 2 placement works commenced soon after in April 2009.

In August 2018, a modification (MOD 1) was approved to allow for the importation of clean fill to the Kerosene Vale Ash Repository (former Wallerawang Ash Repository) from off-site sources outside of the Lithgow Local Government Area (LGA).

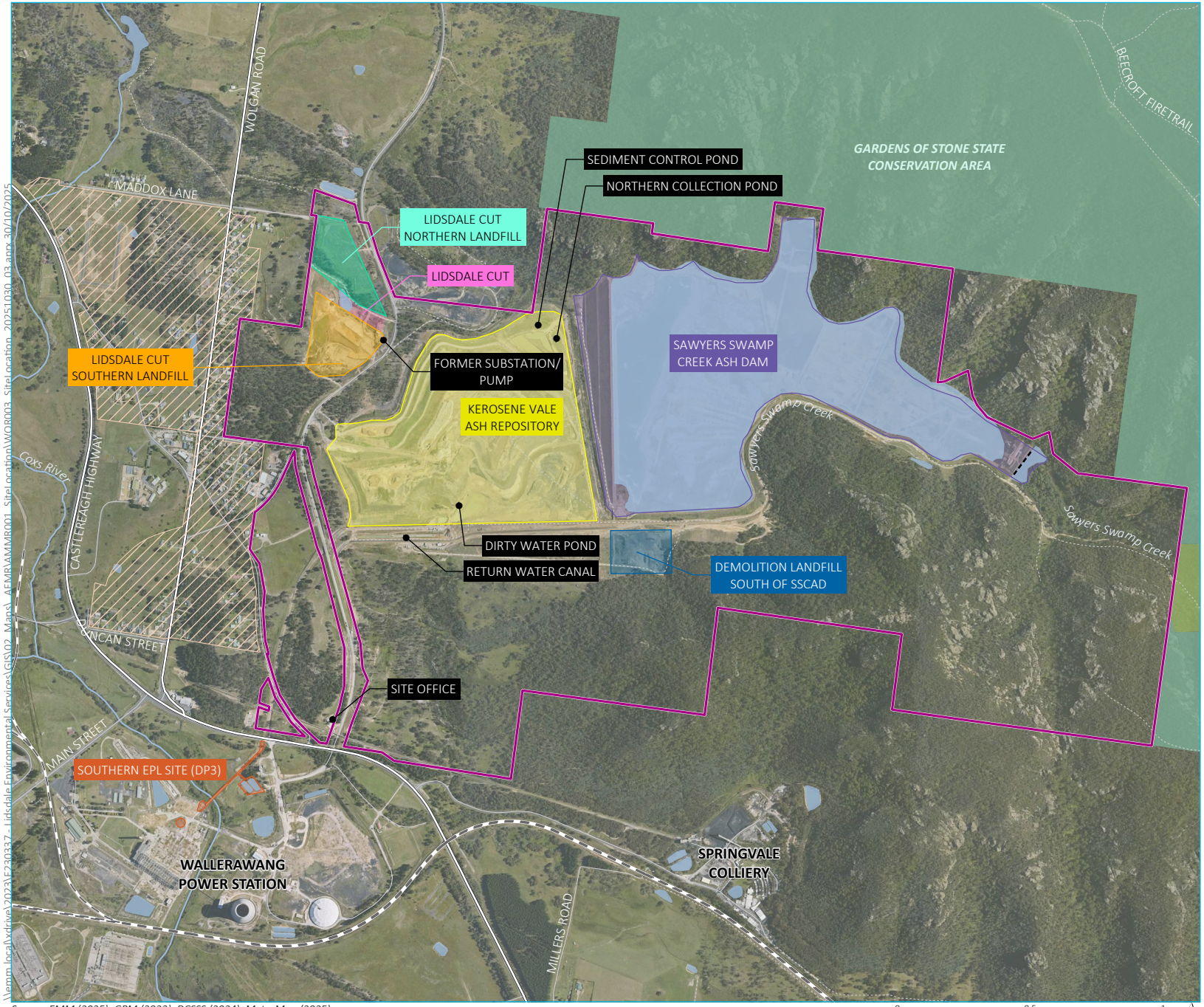
The original ash placement strategy, as outlined within the OEMP (EnergyAustralia, 2018), was as follows:

- Stage 2A as an extension of Stage 1.
- Stage 2B to allow time for the re-alignment of Sawyer's Swamp Creek and for material to be obtained from the pine plantation area to reinforce the stabilisation berm to the north of KVAR Stage 1.
- Stage 2C as a final ash placement area once reinforcements of a proposed stabilisation berm with creek realignment had been carried out.
- Since the first AEMR was submitted in 2011, the ash placement strategy for KVAR Stage 2 has been updated to reflect changes from the three-stage process outlined above, to a two-staged approach. This change in strategy was in response to Centennial Coal relinquishing their right to extract coal from the areas of mining interest within the KVAR Stage 2 proposal.
- WPS ceased energy production in April 2014 with the closure of the WPS outlined in a three-phase plan that involves the decommissioning, deconstruction and repurposing (DDR) of the power station including KVAR. In 2014 the closure and demolition of the WPS was approved which included the development of an asbestos repository for the disposal of material from WPS. The selected asbestos repository site is located immediately south of the return water canal near the southwestern corner of the KVAR/KVAD.
- In 2018, approval was granted to import virgin excavated natural material (VENM) and excavated natural material (ENM) to use as capping material from sources outside of the Project Area and Lithgow LGA at the site, pursuant to former section 75W of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act).
- In 2020 when ownership was transferred to GPM, the Project Area had minimal active management since closure of the WPS and had been heavily impacted by bushfires in the summer of 2019 and again in 2020.

The site has been placed in care and maintenance with no ash received from WPS during the AEMR reporting. Environmental studies and investigations are currently underway to support GPM's safe decommissioning, demolition, rehabilitation and management of ongoing regulatory and contractual obligations associated with the Project Area.

On 22 August 2022, the EPA agreed to a voluntary declaration and declared the site under a Contaminated Land Declaration Notice which declares the Site as significantly contaminated land under Division 2 the *Contaminated Land Management Act 1997* (CLM Act). GPM has submitted a VMP to the NSW EPA that establishes a proposed investigation and remediation approach (Section 9.5).

In October 2023, a modification (MOD 2) was approved to allow for an extension of time by ten years to continue transporting capping material to the project site. This extension of time accounts for the significant volumes of suitable capping material required to fully rehabilitate the Project Area, and the inherent supply limitations of suitable excavated material from large infrastructure projects within a reasonable haulage distance to the site.





KEY

- Site boundary
- Nearest sensitive (residential) receivers
- 2018 proposed asbestos disposal area
- Demolition landfill south of SSCAD
- Kerosene Vale ash repository
- Lidsdale cut northern landfill
- Lidsdale cut southern landfill
- Lidsdale cut
- Sawyers Swamp Creek ash dam
- Southern EPL site
- Diversion dam

Existing environment

- Rail line
- Major road
- Minor road
- Vehicular track
- Named watercourse
- Named waterbody
- Waterbody
- NPWS reserve
- State forest

INSET KEY

- NPWS reserve
- State forest

Source: EMM (2025); GPM (2023); DCSSS (2024); MetroMap (2025)

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Site layout and location

Kerosene Vale Ash Repositories
Annual Environmental Management Report
Figure 2.1

EMM
creating opportunities

2.3 Purpose of this AEMR

This AEMR has been prepared to satisfy Schedule 2, Condition 7.3 of Project Approval 07_0005 (see Table 2.1). This report covers the operations and environment and community performance of the site from 1 September 2025 to 31 August 2026 (the AEMR reporting period).

Table 2.1 Relevant condition of PA 07_0005

Condition	Detail	Section where addressed
7.3	The Applicant shall, throughout the life of the project, prepare and submit for the approval of the Secretary, an **Annual Environmental Management Report** (AEMR). The AEMR shall review the performance of the project against the Operation Environmental Management Plan (refer to condition 6.4 of this approval) and the conditions of this approval. The AEMR shall include, but not necessarily be limited to:	This report
7.3 (a)	details of compliance with the conditions of this approval	This table and Appendix A
7.3 (b)	a copy of the Complaints Register (refer to condition 5.4 of this approval) for the preceding twelve-month period (exclusive of personal details), and details of how these complaints were addressed and resolved	Section 8.5
7.3 (c)	identification of any circumstances in which the environmental impacts and performance of the project during the year have not been generally consistent with the environmental impacts and performance predicted in the documents listed under condition 1.1 of this approval, with details of additional mitigation measures applied to the project to address recurrence of these circumstances	Section 9 and Appendix A
7.3 (d)	results of all environmental monitoring required under conditions 3.3 to 3.8 of this approval, including interpretations and discussion by a suitably qualified person	Section 5 and Section 6.2
7.3 (e)	a list of all occasions in the preceding twelve-month period when environmental goals/objectives/impact assessment criteria for the project have not been achieved, indicating the reason for failure to meet the criteria and the action taken to prevent recurrence of that type of failure.	Section 9 (EPL non-compliances) Table 6.3 (SSTV exceedances)

2.4 Actions required from previous AEMR

The 2024–2025 AEMR was submitted via the DPHI Portal. Acknowledgement and approval reference was provided 5 December 2025 from DPHI. There were no outstanding actions requested from DPHI which were required to be addressed within the 2025–2026 reporting period.

2.5 Project contacts

The contact details for the Kerosene Vale Ash Repository Areas are:

Mr Marlon Frost
Western Region Manager
M: 0423 127 030
E: marlon.frost@gpmco.com.au

Mr John Pola
Manager, Environment & Regulatory
M: 0429 205 290
E: john.pola@gpmco.com.au

3 Approvals

This document has been prepared to review compliance with the Project's Approval PA 07_0005 and associated conditions, together with the Statement of Commitments.

Applicable project approvals and licences are listed in Table 3.1.

Table 3.1 Key consents, leases and permits

Approval/Lease/Licence	Issue date	Expiry date	Details/comments
Project Approval 07_0005	29 July 2005 (Renewed: 26 November 2008)	Works physically commenced in 2005 prior to GPM ownership in September 2020; therefore Condition 1.4 is satisfied, and there is no expiry date for the consent.	Granted by the then Minister for (former) Department of Planning (DoP), Section 75J of the EP&A Act.
	9 August 2018 (MOD 1)	No expiry date	Import of clean fill.
	13 October 2023 (MOD 2)	October 2033 for Condition 2.36A	Extension Time for import of capping material for 10 years.
Environment Protection Licence (EPL) No. 21185	14 September 2023	14 September (annual anniversary date)	Granted by NSW EPA.
Variation to EPL 21185	27 January 2023	14 September (annual anniversary date)	Variation to Licence No. 21185 was approved on 27 January 2022, to allow for asbestos disposal at the site.
Variation to EPL 21185	18 July 2023	14 September (annual anniversary date)	Variation to Licence No. 21185 was approved on 18 July 2022, to allow for the licence to capture a series of water monitoring and operational conditions, characterisation studies and a Pollution Reduction Program to achieve improved environmental outcomes at the Premises.
Variation to EPL 21185	19 December 2023	14 September (annual anniversary date)	Variation to Licence No. 21185 was approved on 19 December 2023, to update various conditions associated with water management.
Variation to EPL 21185	22 October 2025		The EPA supports the recommendations within the Water Treatment Management Suitability and Feasibility Assessment, requested assessment of boron treatment incorporation and the relocation of LDP 20 (S5) [read: EPL 20].

3.1 Operational Environmental Management Plan

The OEMP provides a framework for managing environmental aspects associated with the operation of the project as stipulated in the relevant provisions of Project Approval 07_0005, EPL 21185 and Statement of Commitments (SoC) (Parsons Brinkerhoff, 2008a).

The OEMP scope covers the routine operations of the site outside the specific construction activities identified in Section 3.2. As part of this OEMP, the implementation of the following plans occurs:

- Operational Noise Management Plan (ONMP)
- Operational Groundwater Management Plan (OGWMP)
- Operational Surface Water Management Plan (OSWMP)
- Operational Air Quality Management Plan (OAQMP)
- Operational Landscape / Revegetation Management Plan (OLRMP)
- Operational Transport Management Plan (OTMP).

The OEMP was approved by DPHI during the AEMR 2025-2026 reporting period on 9 April 2026.

3.2 Construction Environmental Management Plan

The CEMP outlines the environmental management practices and procedures to be followed during construction, and includes implementation of the following plans as part of the CEMP:

- Construction Traffic Management Plan (CTMP)
- Construction Noise Management Plan (CNMP)
- Construction Erosion and Sediment Control Plan (CESCP).

The CEMP was approved by DPHI during the AEMR 2025–2026 reporting period on 9 April 2026. The OEMP has been implemented since approval.

A breakdown of the activities covered by each of the management plans is contained in Table 3.2.

Table 3.2 Activities covered by OEMP and CEMP

Environmental management plan	Activities covered
OEMP – care and maintenance operations	• ash management • management of on-site water systems • capping material haulage, placement and management • landscaping and revegetation/rehabilitation of the site • upgrading and maintaining internal access roads in the project area
CEMP – construction activities	• Sawyers Swamp Creek realignment • construction of stability berms around the perimeter of the KVAR • excavation of the former pine plantation area • sediment controls and surface water dams associated with construction of the KVAR stability berm and realignment of the Sawyers Swamp Creek • establishment of freshwater collection ponds and diversion pipes/drains on the northern edges of SSCAD • rearrangement of water flows around the KVAR • establishment of access roads onto the surface of the SSCAD and associated roads across the dam surface • reinstatement of environmental controls for historic landfill areas including capping of slumped areas, reprofiling for water management and control of sediment runoff during these activities • concurrent construction activities

4 Operations during reporting period

Due to the closure of WPS in 2014, the Kerosene Vale Ash Repository has been placed in care and maintenance while ongoing investigations and studies are undertaken to inform the safe closure of the site including contamination investigations, remediation, decommissioning, demolition, rehabilitation.

To ensure ongoing compliance when in care and maintenance, GPM manage a team of contractors to undertake regular, ongoing maintenance activities. The contractors primarily maintain surface water management structures, water treatment plants, road and access points, dust suppression measures, vegetation and weed management, rehabilitation and any other care and maintenance works required.

There was no ash delivered to site or reused during the reporting period. The total ash footprint has remained the same from the previous reporting period. A significant portion of the ash has been covered by soil materials, most of which is vegetated. The rehabilitation is an effective dust prevention and visual amelioration measure. The rehabilitation activities undertaken during the reporting period is provided in Chapter 7.

A summary of activities during the reporting period is provided in Table 4.1.

Table 4.1 Operations summary

Activity	Previous reporting period	This reporting period	Next reporting period
Ash delivered to site (T)	0	0	0
Ash reused (T)	0	0	0
Total Ash footprint (ha)	131.7	131.7	131.7
Area capped (ha)	Nil	Nil	Nil -capping to occur following final landform shaping. Contingent on RAP approvals
Stabilisation works on KVAR/KVAD (ha)	Stabilisation of 920 stockpile buttress commenced in July 2025	Stabilisation of Section 5 buttress	Subject to availability of materials
Temporary cover application (ha)	10	21.5	Subject to availability of materials

4.1 Operation hours

The normal hours of operation for the site are between 7:00 am and 10:00 pm Monday to Sunday, in accordance with Condition 2.8 of PA 07_0005.

No works occurred at the Project Area outside the normal operating hours during the reporting period.

Abnormal or emergency operation hours were not triggered during the reporting period.

4.2 Site activities

The following construction and operational activities have been undertaken during the reporting period:

- Topsoil of CIP embankments, Open Asbestos Dump, Section 5 buttress, KVAR batters, North Pond and Wetland.
- Hydromulch application of SSCAD concrete dump.
- Remediation and topsoil of asbestos disposal area for asbestos management.

- Construction of Section 5 Butress
- Completion of containment and diversion works to reduce stormwater runoff from northern escarpment from entering SSCAD (CP1-CP4).
- Construct vehicular access over CP3 and CP4.
- Interception trench maintained and cleared out on the downstream side of the embankment to investigate the volume of water seeping under the embankment.
- Construction of water level access road on SSCAD Cells A.
- Construction of access road below North Pond buttress for two-way access/ site traffic management.
- Regrade access roads: Skelly Road and North Pond Road, roads along Return Water Canal, access roads and stockpile areas on KVAR tops and at Blackhole.
- Commence construction of weighbridge.
- Remove vegetative waste from Red Swamp / Junction / Security (Wolgan Road Paddocks).
- Remediation of a sinkhole located above the north pond on the KVAD by backfilling and repair of the capping layer.
- Care and maintenance activities including road management, surface water management, sediment management, treatment of contaminated water, mobile plant daily servicing, stockpile management.
- Installed and maintained erosion and sediment controls.
- Increased irrigation capacity including installations at old pine forest area, KVAR Section 5 buttress, Springvale Hill, southern paddock, Lidsdale Cut and Open and Closed Asbestos dump.
- Continued improvement, upgrades and expansion of SCADA system for real time monitoring of site water management parameters.
- Irrigation of treated site water.
- Ongoing works to install more irrigation and evaporation units at SSCAD to manage un-treated water from the Site and reduce reliance on discharge to Coxs River via EPL discharge point, LDP3.
- Installation of v-notch weirs (diversion dam and spillway).
- Undertake tracer tests in sink hole near Northpond.
- Desludging of the return water canal.
- Upgrades to the water treatment plant including integration of two clarifiers to remove/reduce metal contaminants in discharge water to meet EPL requirements and reduce sludge production to reduce operational management requirements.
- Optimisation of flocculant type and volumes to enhance removal of metal contaminants in discharge water when paired with clarifier.
- Atomiser sprayers installed in Cell A for water transferred from Lidsdale Cut.
- Weed management of various weeds across the Site and vegetation management.



Photograph 4.1 KVAR top access ramp drainage and erosion control



Photograph 4.2 SSCAD water access ramp



Photograph 4.3 KVAD and KVAR vegetation establishment

4.3 Ash delivery and placement

Due to the closure of WPS, no ash has been placed at Kerosene Vale Ash Repository within the reporting period. The ash footprint is understood to be approximately 131.7 ha, within the broader 528 ha total area. There have been no changes to the ash footprint areas during the reporting period. Therefore, the management and mitigation measures specified in the OEMP were assessed to be compliant.

4.4 Import of capping material

Modification 1 to Project Approval 07_0005 was granted in August 2018 for the import of capping material from areas outside of the Lithgow local government area to the Kerosene Vale Ash Repository (formerly Wallerawang Ash Dam Area). Capping material continues to be sourced from various locations in the Metropolitan and Central Tablelands regions and comprises of VENM and ENM. A second modification (MOD 2) was approved on 13 October 2023 to allow for an extension of time by ten years to continue transporting capping material to the Site until 2033.

Import of ENM and VENM to the ash repositories continued to be undertaken during the reporting period. These materials were sourced from Nepean LGA. Due diligence testing of the ENM/VENM is conducted monthly by an external consultant. The material is tested for a suite of analytes (metals, pH, EC) and hydrocarbons to ensure they meet the NSW EPA Resource Recovery Order (RRO) and Resource Recovery Exemptions (RRE) for ENM and/or the Waste Classification guidelines for VENM. Tests and inspections are undertaken prior to and following import of materials to ensure materials are compliant with requirements of the RRO and RRE. Where materials are not considered to meet these requirements, they are rejected.

Quarried materials were sourced from Walkers Quarries, ADBRI Quarries, Middle Creek Quarry, Metromix Quarries. Truck numbers are provided in Table 4.2.

Table 4.2 Imported material truck numbers

Month	Number of trips	Average truck deliveries per day	RRO/RRE material volume received (tonnes*)	Due diligence tests undertaken	Quarried material (tonnes)
September 2025	1,039	35	0	0	30, 280
October 2025	1,244	40	0	0	14,870
November 2025	1,201	40	4,380	4	29,780
December 2025	795	26	1,580	4	18,830
January 2026	923	30	0	0	25,620
February 2026	1,557	55	0	0	43,400
March 2026	546	17	0	0	19,830
April 2026	239	8	0	0	8,070
May 2026	660	21	0	0	25,520
June 2026	491	16	0	0	19,430
July 2026	0	0	0	0	0
August 2026	81	3	0	0	3090

Note: * estimated amounts for ENM and VENM based on 30 tonnes per delivery

Records for capping materials are tracked and uploaded to the project teams' document management system. The materials management register, monthly truck movement register, were provided to EMM from GPM to facilitate the drafting of this AEMR. In reviewing the material provided, EMM identified the following:

- the truck movements to facilitate the import of capping material was well within the limit of 100 heavy vehicle loads per day
- all RRO/RRE material delivered to the Site from new sources provided due diligence testing of the material.

In October 2024, EMM prepared and issued a memo to the NSW EPA and on behalf of GPM requesting to modify the EPL to allow additional material types to be imported to the Site for rehabilitation activities. In response to EPL 21185 variation notice 1645855, a materials management framework document has been developed, and forms an attachment to the Remediation Action Plan, and is under review by the Site Auditor. In October 2025 a meeting was held with the EPA, who advised that RRO materials that comply with the general conditions of the RRE will need to be listed on the EPL. In November 2025, EMM prepared a memo assessing the intended use of each proposed RRO material against the conditions on the exemption. This was discussed with the EPA in a follow-up meeting held in March 2026. In August 2026, GPM submitted an EPL variation requesting additional RRO/RRE materials to be added to EPL21185 comprising Coal Washery Rejects (RRE 2014), Pasteurised Garden Organics (RRE 2016), Compost (RRE 2016), Recovered Railway Ballast (RRE 2014), Basalt Fines (RRE, 2014), Coal Ash (RRE, 2014) and Blended ECORR Recovered Soil (RRE, 2024). A response from the EPL was received outside the reporting period.

Within the reporting period, only ENM and VENM, both listed on EPL 21185, and commercial quarried material were imported to site.

4.5 Asbestos disposal areas

4.5.1 Operational asbestos disposal areas

The asbestos disposal areas enable disposal of asbestos and asbestos-contaminated materials arising from the demolition of WPS, permitted via EPL (21185). Asbestos waste ceased to be received from the demolition of WPS in December 2022 and the main areas are now capped. Approved areas have been set aside to receive additional asbestos materials, as required.

Within the reporting period, GPM engaged EMM to undertake a targeted investigation to assess the potential extent of asbestos contamination outside the existing northern and southern landfill footprints. The investigation comprised a desktop review, followed by an intrusive investigation comprising advancement of 50 test pits and five trenched transects.

The investigation identified that asbestos impacts beyond the managed landfill areas are predominantly limited to an historical disposal area (referred to as the "old dump") located west of the southern landfill – which was identified during the desktop review. Friable asbestos in soil (five locations) and bonded asbestos containing material (ACM) fragments (three locations) were identified within the old dump area, including shallow occurrences. Subsequent required management strategies comprised additional investigations, updating the Site Remediation Action Plan (RAP) and asbestos management documentation, maintain and enhance management controls for the old dump area, and ensure any future excavation of the old dump area comply with the approved asbestos management procedure and appropriate occupational hygiene controls.

4.5.2 Historic disposal areas

The areas around the Lidsdale Cut which potentially stretch across the property boundary to the west were investigated as part of the Detailed Site Investigation under the supervision of an NSW EPA Auditor. These areas have the potential to contain historical waste landfills containing fly ash, asbestos, metals and other waste materials. Other areas within Lidsdale Cut have been identified to contain waste ash and other materials and are actively managed through reshaping and profiling to create stable landforms.

5 Environmental management performance

GPM hold EPL No. 21185. The licence requires extensive monitoring of water discharges, groundwater, ambient surface water, noise, complaints and associated reporting. More specifically this includes:

- Discharge Monitoring:
  - Weekly sampling during wet weather discharges to Coxs River for a wide range of parameters, including metals (e.g. aluminium, cadmium, zinc), nutrients (nitrogen, phosphorus, ammonia), general water quality indicators (pH, turbidity, total suspended solids (TSS), dissolved oxygen (DO), conductivity), and other dissolved solids. Continuous flow monitoring (ML/day) is also required.
- Groundwater Monitoring:
  - Every six months, representative sampling for dissolved metals (arsenic, cadmium, chromium, copper, manganese, nickel, lead, zinc, selenium, boron), hydrocarbons (benzo[a]pyrene), total dissolved solids, pH, EC, and standing water levels.
- Ambient Surface Water Monitoring:
  - Monthly sampling upstream and downstream of the site in Coxs River, Sawyers Swamp Creek, Dump Creek, and within SSCAD. Parameters include dissolved metals, nutrients, general water quality indicators (pH, conductivity, DO, turbidity, alkalinity, total dissolved solids (TDS), TSS, hardness, redox potential), and major ions.
- Flow Monitoring: Continuous measurement of discharge volumes and streamflows using flow meters and loggers to ensure wet-weather-only discharges comply with required flow ratios.
- Noise Monitoring: monitoring to assess compliance with the operational noise criteria of below 40 dB(A) LAeq (15 min) at the nearest sensitive receptor, under specified meteorological conditions is required.
- Dust/Air Monitoring: dust generation must be minimised through operational controls, and any associated complaints must be recorded.
- Complaints Monitoring: A 24/7 complaints line must be operated, with all complaints logged, investigated, and retained for at least four years.
- Reporting: An Annual Return must be submitted, including compliance statements, monitoring summaries, and records of pollution complaints.

5.1 Meteorology data

A summary of the measured meteorology data recorded for the site and surrounds has been provided below.

5.1.1 Monitoring data resources

Meteorological measurements are recorded by the onsite automatic weather station (AWS) located within the Project area. The onsite AWS is the primary resource adopted for analysing meteorological conditions at the Project area for the AEMR reporting period.

5.1.2 Overview of data for reporting period

A summary of meteorological data has been compiled from the onsite AWS for the period between 1 September 2025 and 31 August 2026 and is presented in Table 5.1.

The onsite AWS recorded a minimum temperature of -5.1°C in August, and a maximum temperature of 36.8°C in January.

The highest total monthly rainfall recorded over the period was in March 2026 with 136.8 millimetres (mm) and the lowest recorded monthly rainfall was in April 2026 with 5 mm. Total annual rainfall for the reviewed period was 620.2 mm.

Table 5.1 Statistics for temperature and rainfall – Onsite AWS – September 2025 - August-2026

Month	Minimum temperature (°C)	Maximum temperature (°C)	Total rainfall (mm)	Cumulative Rainfall (mm)
Sep-25	-2.3	24	51.4	51.4
Oct-25	2.4	30.1	16.2	67.6
Nov-25	1.7	30.9	33.2	100.8
Dec-25	2.6	33.5	48.4	149.2
Jan-26	8.4	36.8	72.4	221.6
Feb-26	9.7	36.5	71.8	293.4
Mar-26	2.9	28.8	136.8	430.2
Apr-26	-1.3	25.7	5	435.2
May-26	-0.5	21	67.8	503
Jun-26	-3.3	16.7	42.2	545.2
Jul-26	-5	19.4	29.8	575
Aug-26	-5.1	18.9	45.2	620.2

An annual wind rose created from wind speed and direction data collected at the onsite AWS from September 2025 to August 2026 is presented in Figure 5.1. The winds recorded were predominately from the south-easterly and westerly direction. Annual average wind speeds were 2.8 metres per second (m/s), and the annual average frequency of calm conditions (windspeeds less than 0.5 m/s) were 5.1%.

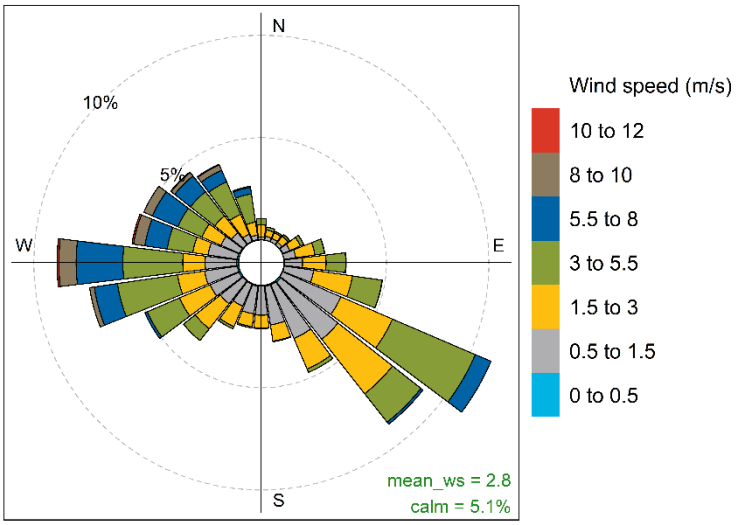


Figure 5.1 Annual wind speed and direction – Onsite AWS – September 2025 – August 2026

Monthly wind roses for the onsite AWS from September 2025 to August 2026 are presented in Figure 5.2. Monthly average wind speeds ranged from 2.2 m/s to 3.8 m/s. The monthly average frequency of calm conditions ranged from 2.2% to 7.7%. The predominant wind direction patterns recorded during the spring months were from the west to north-westerly direction. Prevailing winds during the summer and autumn months (i.e. December to May) were from the south-east.

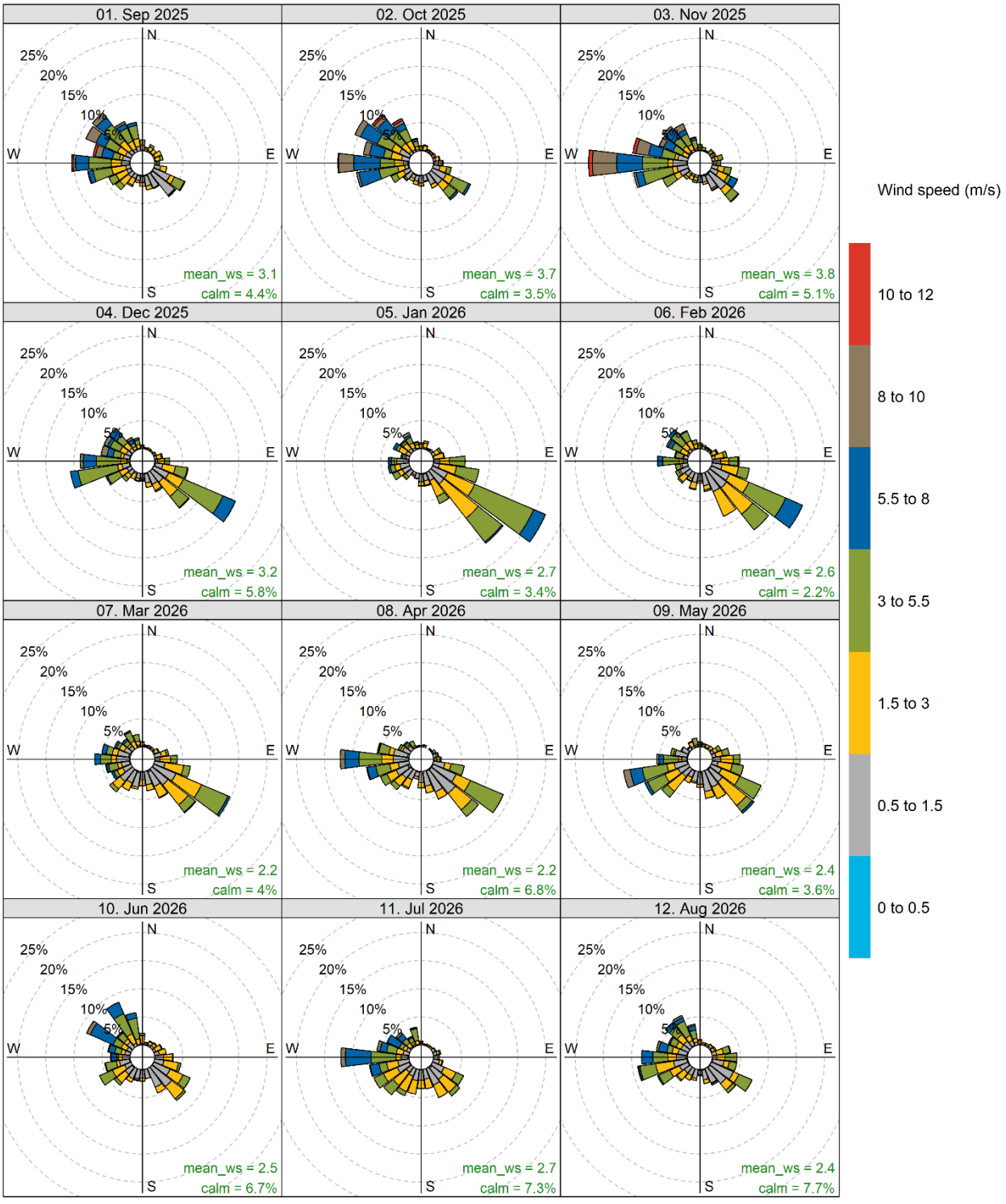


Figure 5.2 **Monthly wind speed and direction – Onsite AWS – September 2025 - August 2026**

5.2 Noise monitoring

5.2.1 Environmental management

An Operational Noise Management Sub-plan (ONMP) is included in the OEMP and has been developed in accordance with Condition 6.5 of PA 07_005.

The ONMP outlines identified measures to minimise and mitigate noise impacts on surrounding land uses from the proposed works. The level of noise generated during the proposed works program will depend on the location of the receiver, the type and duration of works and intervening topography, between the noise emission source and receiver.

The nearest identified residential receivers are located to the west of the private haul road and ash repository site, in the residential community of Kerosene Vale. The residential receivers are located approximately 300 metres (m) from the private haul road and are identified in Table 5.2 and depicted in Figure 5.3.

Table 5.2 Noise monitoring locations

Monitoring location	Distance to Haulage Road (m)
Location A - 60 Skelly Road, Lidsdale	300
Location B – Corner Sawyers Road and Skelly Road, Lidsdale	270
Location C – End of Neubeck Street, Lidsdale	145
Location D – End of Maddox Lane, Lidsdale	730

During the reporting period compliance monitoring was undertaken as per the requirements outlined in the ONMP. The relevant noise criteria from the Project Approval and EPL is summarised below:

> The cumulative operational noise from the ash placement area and ash haulage activity shall not exceed a $LA_{eq\ (15\ minutes)}$ of 40 dBA at the nearest most affected sensitive receiver during normal operating hours as defined in condition 2.8.
>
> The criterion applies under the following meteorological conditions:
>
> a) Wind speeds up to 3 m/s at 10 m above ground; and/or
>
> b) Temperature inversion conditions of up to 3°C/100 m (or alternatively stability category F temperature inversion conditions) and source to receiver gradient winds up to 2 m/s at 10 m height above ground.

Meteorological data was obtained from the Marrangaroo (Defence) Bureau of Meteorology (BoM) AWS which allowed correlation of atmospheric parameters with measured noise levels. Vertical temperature gradient and/or sigma theta data required to determine temperature inversion conditions was not available from this AWS. As the KVAR area operates solely during the day and evening periods, it was assumed that temperature inversion conditions were not present during monitoring.

5.2.2 Environmental performance

Normal operational and construction activities were undertaken during the reporting period which may have the potential to cause noise impacts to sensitive receivers (as identified in Figure 5.3). Due to the closure of the WPS, no ash trucks have been hauling to the ash placement area during the reporting period. Trucks delivering capping and other engineering fill materials are active during normal working hours.

Figure 5.3 Environmental Monitoring locations

Noise monitoring was undertaken by EMM over the reporting period during the day and evening periods of 4 to 5 August 2024 (Quarter 3 - 2025), 30 October 2025 (Quarter 4 - 2025), 17 to 18 March 2026 (Quarter 1 - 2026) and 15 to 16 June 2026 (Quarter 2 - 2026).

A summary of the noise generating activities during each of the reporting periods is provided below in Table 5.3.

Table 5.3 Noise generating activities during the reporting period

Noise monitoring (day and evening)	Noise generating activities
Quarter 3 – 2025	General construction continuum and occasional impact noises from site occurred as part of normal site activity during the day at Location A, generating a site only L_{Aeq} of less than 20 dB. The observed impact noises are of short duration but do not rise significantly above the general site noise to be considered impulsive or isolated in nature. Noise from site was inaudible at Location A during the evening period, and at all other locations during both periods. Noise from road traffic, animals, and aeroplanes were primarily responsible for generating measured noise levels during the evening period.
Quarter 4 – 2025	Trucks travelling along the haul road to site were audible during the day at Location A, generating a site only L_{Aeq} of less than 20 dB. Noise from site was inaudible at Location A during the evening period, and at all other locations during both periods. Noise from animals, road traffic, and general neighbourhood activities were primarily responsible for generating measured noise levels during the evening period.
Quarter 1 – 2026	General construction continuum including mobile plant and site vehicles were audible during the day at Location A, generating a site only L_{Aeq} of 34 dB, Location B, generating a site only L_{Aeq} of less than 25 dB, Location C, generating a site only L_{Aeq} of 32 dB, and Location D (notated as Maddox Lane during Q1), generating a site only L_{Aeq} of 29 dB. A pump or generator from site was audible during the evening at Location D, generating a site only L_{Aeq} of 39 dB. Noise from site was not audible at Locations A, B, and C during the evening period. Noise from animals and road traffic noise were primarily responsible for generating measured noise levels during the evening period.
Quarter 2 – 2026	General construction continuum including vehicles on site and occasional impact noises from site occurred as part of normal site activity during the day period at Location A, generating a site only L_{Aeq} of less than 25 dB,Location B, generating a site only L_{Aeq} of 33 dB, Location C, generating a site only L_{Aeq} of less than 25 dB, and Location D, generating a site only L_{Aeq} of less than 25 dB. The observed impact noises are of short duration but do not rise significantly above the general site noise to be considered impulsive or isolated in nature. A pump or generator was audible during the evening period at Location D, generating a site only L_{Aeq} of less than 25 dB. Noise from site was not audible during the evening period at any other location. Noise from animals and local traffic were primarily responsible for generating measured noise levels during the evening period.

Based on site observations and information reviewed, potential noise impacts from the operation and construction activities at the project are considered to have been effectively mitigated and managed. No noise complaints were received during the reporting period. Monitoring reports are provided in Appendix B.

5.2.3 Reportable incidents

No reportable incidents have been recorded against operation noise for the reporting period.

5.2.4 Further improvements

No exceedances of noise criteria were recorded during the reporting period, as such there are no further improvements required.

The scope of the noise monitoring is commensurate with the level of activity at the Site.

5.3 Ecological monitoring

Ecological monitoring is required, as part of Condition 3.7 of the Project Approval, following a realignment of Sawyers Swamp Creek (SSC). The realignment of SSC will now be completed in two stages:

- Stage 1 - minor works to facilitate construction of the KVAR northern buttress whilst maintaining flow passage for SSC
- Stage 2 - realignment of creek associated with the final landform of the site as a whole. which is dependent upon detailed site investigation associated with contamination studies.

Stage 1 SSC realignment, along the northern side of the KVAR, was initially planned to be undertaken during the reporting period to facilitate structural stabilisation works for the Stage 2 KVAR. The realignment is intended to reduce sediment loads and increase filtration/treatment of runoff from the Project Area through establishment of a riparian zone, resulting in "an overall beneficial effect on long term water quality within SSC".

EMM notes that a progressive rehabilitation plan has been developed in consultation with the relevant agencies and approved by DPHI on 10 April 2026. Based on a review by GPM of the stability buttress design required for KVAR as part of the Lidsdale Ash Repository Conceptual Closure Plan (Phase 3) (WSP, 2026) the requirement for the realignment of SSC is being reassessed.

As there has been no realignment of SSC, ecological monitoring required under Condition 3.7 of the Project Approval was not required during this reporting period.

5.4 Air quality monitoring

5.4.1 Environmental management

The Air Quality Monitoring Program, as outlined in the OEMP Air Quality sub-plan (section 6.6), identifies site specific actions to manage dust generated through transportation, stockpiling and placement of materials. These measures include the use of an extensive sprinkler system and water cart applications to control dust from operations within the Project Area and depositional dust gauge monitoring occurs for dust/airborne particulates.

Dust management is included in the responsibilities associated with all activities, as per the Air Quality Monitoring Program, including:

- wash-down of roadways, haul road/s and vehicle access roads
- use of perimeter sprays at the ash placement area
- mobile sprinkler system
- final and temporary capping of ash and other materials
- general maintenance of the Project Area.

i Dust suppression

A dedicated water sprinkler and surface irrigation system is in operation for the site. Water application rates are managed to ensure there are no visible dust emissions from the Project Area.

Water carts are available onsite to undertake additional dust suppression as required. The water used during dust suppression is sourced from the treated water system, no additional clean water is used in this application. Over 73 megalitres (ML) of water has been used for irrigation/water cart over the AEMR period.

Additionally, the haul road to the Site is sealed and a truck wash facility is available.

ii Dust deposition monitoring

Air quality was monitored at four locations during the AEMR reporting period. The data is collected from the dust gauges and reviewed to ensure compliance with the Project Approval conditions.

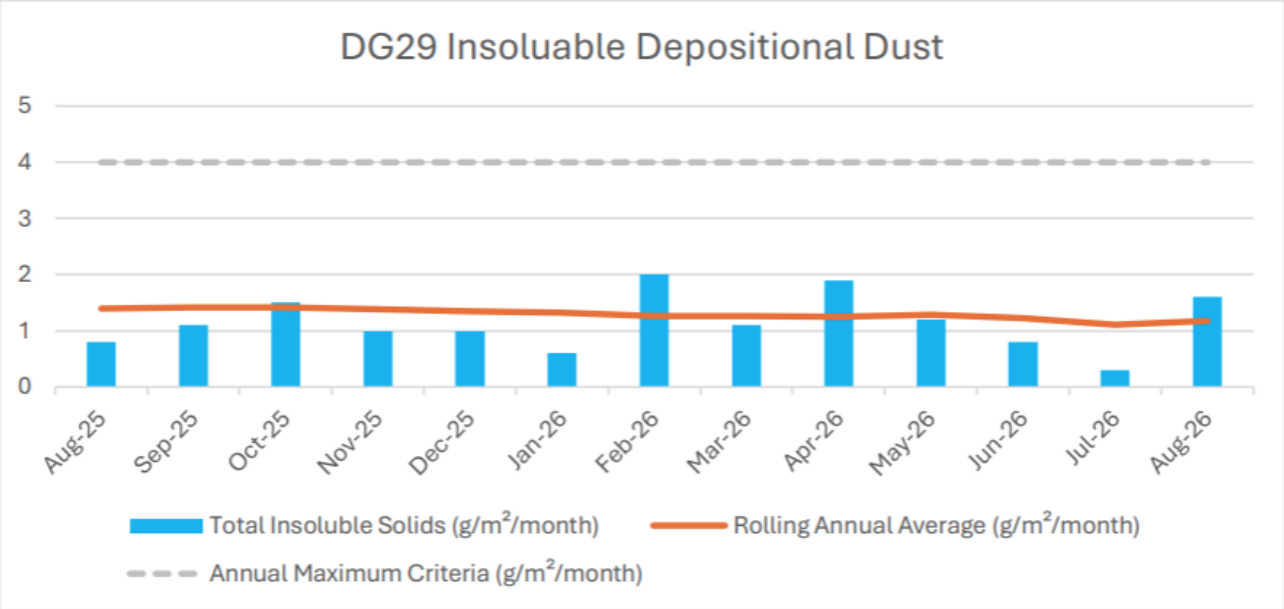
The collected data provides an indicative assessment of potential air quality impacts from Project Area, and it should be noted that data collected from these locations include dust from all land use practices in the local area.

5.4.2 Environmental performance

i Dust deposition monitoring

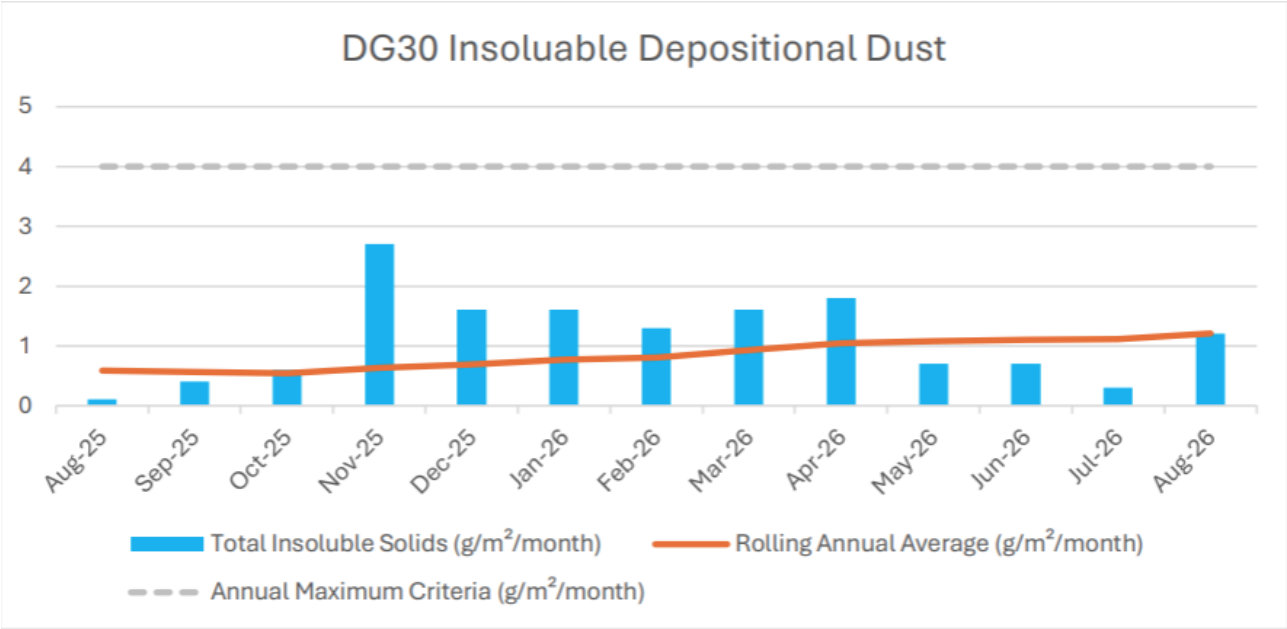
Dust gauge data obtained for the reporting period is reviewed to confirm emissions have complied with annual compliance criteria.

Annual average depositional dust data for each of the four dust deposition gauges presented over the AEMR reporting period is presented in Figure 5.4 to Figure 5.7. All dust gauges had levels of insoluble solids and rolling annual averages below the OEMP threshold.



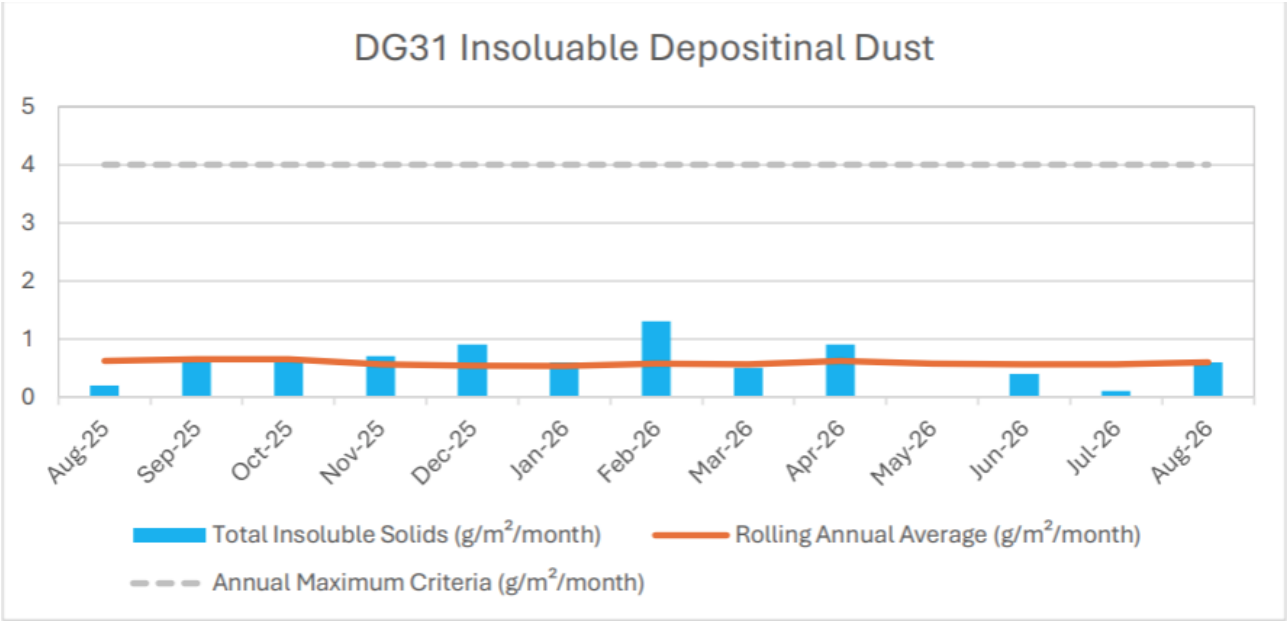
Source: Barson (2026)

Figure 5.4 Depositional dust summary – Dust Gauge 29



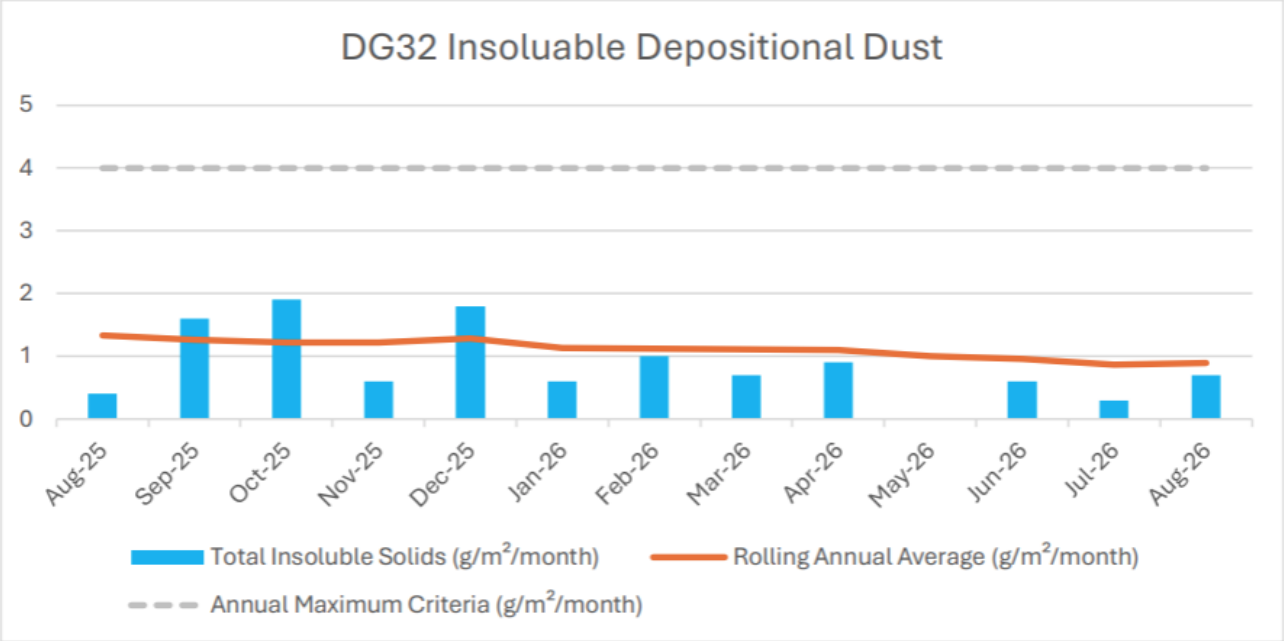
Source: Barson (2026)

Figure 5.5 Depositional dust summary – Dust Gauge 30



Source: Barson (2026)

Figure 5.6 Depositional dust summary – Dust Gauge 31



Source: Barson (2026)

Figure 5.7 Depositional dust summary – Dust Gauge 32

Monthly Depositional dust monitoring air quality reports are presented in Appendix D.

It is noted during the May 2026 monitoring period, the containers for DG31 and DG32 were damaged in transport to laboratory, and the contents couldn't be recovered and analysed. Based on consistent historically conforming depositional dust monitoring results, this incident it is unlikely the missing result would have resulted in a non-conformance of the annual maximum criteria.

5.4.3 Reportable incidents

There were no reportable incidents in relation to air quality management for the reporting period.

5.4.4 Further improvements

No exceedances of air quality criteria were recorded during the reporting period, as such there no further improvements required.

5.5 Waste

5.5.1 Environmental management

Waste disposal practices are managed in accordance with EPL 21185 and the OEMP Waste management sub-plan (section 6.2.1 of the OEMP). Waste materials are assessed, classified, managed, and disposed of in accordance with Waste Classification Guidelines (EPA, 2014).

GPM and associated contractors are not to cause, permit or allow any waste generated outside the ash repository to be received at the ash repository for storage, treatment, processing, reprocessing or disposal, including no wastes other than those as stated on the licence approval to be kept on the site. Waste generated by site personnel shall (including maintenance wastes such as oils and greases) is collected on a regular basis and recycled or disposed of to an appropriate licenced facility.

All staff and contractors on Site are informed of the waste management procedures. Further guidance and detail on specific waste streams and applicable management measures are identified in the OEMP Waste Management sub-plan (section 6.2.1).

i Asbestos

In accordance with EPL 21185, asbestos waste from the demolition of WPA may be received and disposed of in the approved asbestos disposal areas (as per the development consents MP07-0005).

Asbestos waste from the WPS demolition project was largely complete as of December 2022 and some areas have been capped in accordance with approved plans.

No material was received for disposal during the reporting period.

5.5.2 Environmental performance

Nil other wastes were received and placed at the KVAR during the reporting period. The activities within the Project Area were deemed to have met compliance obligations for waste management for the reporting period.

5.5.3 Reportable incidents

No reportable incidents have been recorded against waste management for the reporting period.

5.5.4 Further improvements

No further waste management improvements are proposed.

5.6 Heritage

5.6.1 Environmental management

An Environmental Assessment was performed by Parsons Brinckerhoff (2008b) for KVAR Stage 2 and included a preliminary archaeology and heritage assessment. The assessment concluded that the KVAR Stage 2 works pose no threat to the Aboriginal archaeological or heritage values and would not result in any further impact on Aboriginal archaeological potential. Based on these findings, the following statements of commitment, in regard to heritage sites, were made:

- Disturbance to the eastern portion of the ash repository shall be limited to reduce the potential for inadvertent disturbance of the Aboriginal heritage values of the area.
- In the event that any heritage sites or items be discovered during operation, all works likely to affect the area are to cease immediately. The GPM Environmental Representative is to be notified immediately and relevant stakeholders including the Office of Environment and Heritage (OEH) Regional Archaeologist, the Bathurst Local Aboriginal Land Council, or the NSW Heritage Office, so that an appropriate course of action can be determined.

The OEMP outlines the management methods and guidance to protect Aboriginal and non-Aboriginal heritage sites in accordance with CoAs 2.37 to 2.38.

All construction and earthworks personnel are informed on their obligations in respect of the protection of Aboriginal and non-indigenous heritage sites and items as part of the Site induction.

A Review of Environmental Factors (REF) is being undertaken for stormwater management works proposed in the Southern Paddock. An Aboriginal Cultural Heritage Assessment (ACHA) has been prepared to inform the REF (EMM, 2026). This ACHA, which included consultation with the Aboriginal community and a field survey, confirms and validates this locale, with access to intermittent water and other stone and plant resources, would likely have supported ephemeral and transient Aboriginal occupation. The field survey resulted in the identification of six Aboriginal artefactual sites across the proposed construction area. Spatially, these artefactual sites have been identified on the ground surface in areas of good ground surface exposure, on relatively level and slightly elevated spurs above low-order watercourses, especially near confluences.

5.6.2 Environmental performance

No known Aboriginal or non-indigenous heritage sites were impacted during the reporting period.

Three Aboriginal artefactual sites and three isolated artefacts were identified as part of the ACHA in the Southern paddock region. Aboriginal Heritage Information Management System (AHIMS) Site Recording Forms for the six newly identified Aboriginal objects and/or sites within the proposed disturbance area were submitted to the AHIMS database on 9 June 2026 and accepted for registration on AHIMS on 10 June 2026. A copy of the final ACHA has been lodged with AHIMS and provided to each of the Registered Aboriginal Parties for their records.

5.6.3 Reportable incidents

No incidents have been recorded in relation to heritage management during the reporting period.

5.6.4 Continual improvement and management

GPM has revisited the design of the stormwater management works proposed in the Southern Paddock and its indicative disturbance footprint, as needed, to avoid direct impacts to the six newly identified Aboriginal archaeological sites, and any previously unidentified archaeological sites, within the project area.

GPM have implemented practical measures for the immediate and ongoing protection of the six identified sites, including the implementation of “Active Protection” measures including demarcation and barricading of sites. These measures will be maintained and improved as required during the preparation and construction of the stormwater and sediment retention and detention ponds.

6 Water management

This chapter addresses surface and groundwater management over the AEMR Period. It includes descriptions of:

- the water management system
- water management actions over the period
- environmental performance
- reportable incidents and further improvements.

An Annual Water Quality Review (AWQR) which addresses the surface and groundwater monitoring and reporting requirements as established in the OEMP. The AWQR is provided in Appendix C.

6.1 Environmental management

This section provides an overview of the water management system and describes water management actions and water monitoring undertaken over the AEMR Period.

6.1.1 Water management system

Surface water at the site is described using the following nomenclature:

- **Sawyers Swamp Creek Ash Dam (SSCAD)** is an ash dam that was formed in the Sawyers Swamp Creek valley. It is divided into four sections (A, B, C and D) and has a total area of 82 ha. Each section is separated by earthen embankments. Section A comprises an open water body that is referred to as the SSCAD Pond and has areas of exposed ash. Sections B, C and D are referred to as the Upper Dam. A perched groundwater system exists within the placed ash (the perched SSCAD groundwater system).

  The SSCAD Pond is a large water body and is a central feature of the site's overall water management system. It has historically received contaminated water from the KVAR/KVAD water management area and the SSCAD embankment drainage system. This assisted in minimising incidental surface and groundwater discharges from the site. SSCAD Pond also receives runoff from direct rainfall and overflows from the SSCAD Upper Dam (sections B, C and D). Works were completed during the 2025–2026 AEMR period to divert remaining northern clean water catchments around SSCAD.

  Water accumulation in the SSCAD Pond is managed via irrigation to exposed ash areas (when possible) and at times via controlled discharges to the Coxs River at a licensed discharge point located within the Power Station site (referred to as LDP3). Controlled discharges are treated in the LDP3 Treatment System which adjusts pH and reduces metal concentrations. Controlled discharges at LDP3 are regulated by EPL no. 21185, which has restrictions on when discharge can occur.

  Investigations are on-going to understand the effectiveness of the clean water diversion structures north of SSCAD.

  During wet conditions, clean water runoff and groundwater inflows from the vegetated escarpments located to the north of SSCAD accumulate on the surface of sections B, C and D. Water quality testing has identified this water as being clean (as it has not infiltrated through the ash). Accordingly, during wet conditions, this water is pumped from Section B into Sawyers Swamp Creek. This practice has been successful in preventing overflows of clean water from the Upper Dam into SSCAD Pond.

- **KVAR/KVAD water management area** is located to the west (downgradient) of SSCAD. KVAD is the Power Station's original ash dam which used to be an open cut mine void and KVAR is the dry ash compacted stockpile situated on top of the capped KVAD water management area. The combined area now has an associated water management system. A perched groundwater system exists within the KVAR (the perched KVAR groundwater system). Surface water runoff and seepage from this area drains to several water storage areas. Captured water that is known to be contaminated is pumped to the SSCAD Pond.

- **Sawyers Swamp Creek Diversion** is a clean water system that manages streamflow from Sawyers Swamp Creek and runoff from catchment areas to the south of SSCAD. The system diverts clean water around SSCAD and the KVAR/KVAD water management area. The diversion joins what is thought to be the original Sawyers Swamp Creek channel to the north-west of the Project Area.

- The following ancillary areas are located within the site or are relevant to the Site's overall water management system:

    - **Investigation Area** is a 24-ha area located in the western portion of the site, downgradient from the KVAR/KVAD water management area. Parts of this area have been disturbed by mining that is understood to have occurred prior to the 1950s. There are known deposits of coal ash, chitter and a rubbish dump in this area. Vegetation has re-established within most of the investigation area. GPM are investigating the potential for surface and groundwater contamination to occur from this area as part of the VMP process (see Section 9.5)

    - **Upgradient clean water catchments** refer to clean water catchment areas that are upgradient of either the SSCAD or the Sawyers Swamp Creek Diversion. Runoff from these catchments has potential to interact with the water management system via either direct inflows or system overflows during certain high flow events. Incidental discharge from the Site's water management system (discussed above) may also enter the Sawyers Swamp Creek Diversion at several locations.

    - **Downgradient clean water areas** refer to parts of the site that are not known to have been previously disturbed by mining operations or ash placement and drain away from the water management system.

    - **Dump Creek** is a first order watercourse that is located to the west of the Site. Parts of the Investigation Area are within the Dump Creek Catchment. There is also potential for some groundwater from the Site to flow to the north-west towards Dump Creek.

Figure 6.1 shows the abovementioned features.

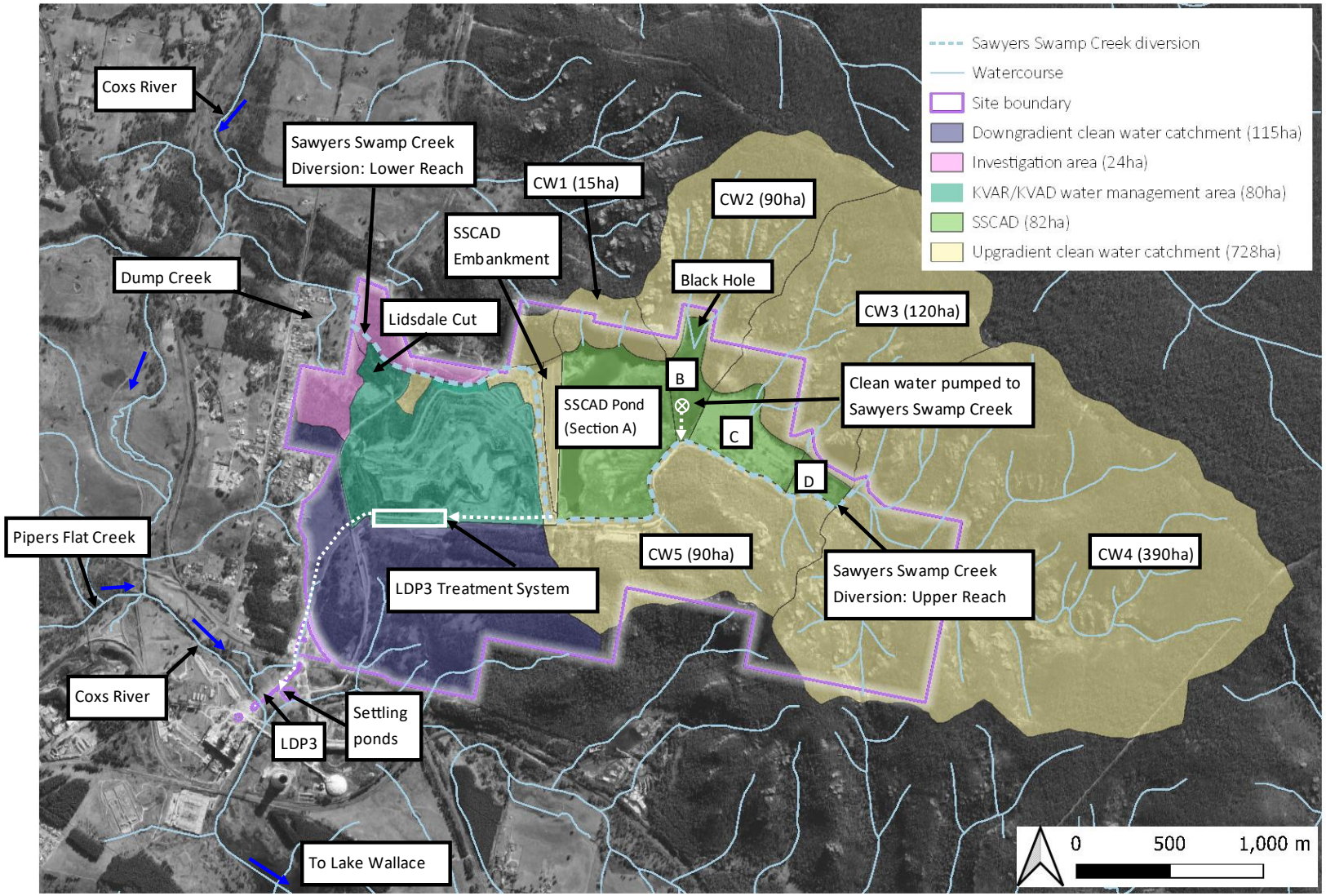


Figure 6.1 **Water management features**

6.1.2 Water management actions over the period

During the AEMR reporting period, GPM and the NSW EPA have had ongoing discussions regarding water management improvements at the site. GPM have been and continue to progressively improve the water management system to:

- comply with dam safety management obligations
- improve the capture and containment of contaminated water
- improve the treatment of water discharged at LDP3
- reduce the volume of contaminated water that requires management
- improve clean water separation and stormwater management.

These improvements require numerous works at various locations within the Site. Many works have been completed to date which have resulted in significant improvements, with further improvements expected over time.

During the AEMR Period, a review of progress against the Action Plan was included in Water Quality Monitoring Reports that were submitted to the NSW EPA in March and September 2026. These plans provided an update on the progress of the improvement works, including anticipated implementation timeframes.

The water management actions for the AEMR reporting period are provided in Table 6.1.

Table 6.1 Water management system operations

Water management area	Description of operations during the current period
KVAR/KVAD Water Management Area	• All known seepage and subsurface drainage discharges from KVAD were collected in the seepage collection system which reticulates all captured water to Lidsdale Cut. Lidsdale Cut was dewatered to SSCAD, where it is irrigated. In July 2026 atomizer sprayer system was modified at Section A of SSCAD to irrigate collected leachate from Lidsdale Cut. The objective of this system is to enhance evaporation of contaminated water not compatible with the water treatment plant. • The majority of stormwater runoff from KVAD and KVAR was managed into the stormwater system of the Wetland Pond. However, there is no active management of water from the red swamp area (i.e. runoff and seepage from the area still drains into Lidsdale Cut).
SSCAD embankment drainage system	• Seepage from the SSCAD embankment foundation and abutment drains was collected and pumped into the KVAR/KVAD contaminated water system, which is dewatered via atomizer sprayers to Cell A of SSCAD.
SSCAD Upper Dam	• During the current reporting period, the gravity diversion works (referred to as CP1 to CP4) transferred clean water runoff that enters the northern portion of SSCAD Sections B, C and D into the Sawyers Swamp Creek Diversion. Clean water runoff was also pumped from Black Hole and SSCAD Section C (CP2) into Sawyers Swamp Creek prior to the Black Hole area being regraded. • The diversions to the Sawyers Swamp Creek from upstream of SSCAD Section C (CP2) and the Black Hole (CP3 and CP4) have been constructed during the 2025–2026 AEMR period – completed in December 2025.

Water management area	Description of operations during the current period
SSCAD Pond	• Water accumulation in SSCAD Pond was managed by evaporation from the pond, irrigation atomizer dust suppression sprayers of exposed ash in SSCAD Section A and discharges at LDP3 via the water treatment system. 178 ML of treated water from SSCAD Pond was discharged at LDP3 in the AEMR Period. The discharges occurred between September and early-November 2025 (68 ML) late January (21 ML), March (31 ML) and then throughout June and August 2026 (58 ML). • An automated system is used to improve irrigation of treated water from SSCAD Pond in the western portion of the Site. Irrigation activities were undertaken intermittently during the current reporting period. • The SSCAD pond level was on a steady decline since December 2024, dropping from 938.5 m AHD to 935.8 m AHD in February 2026. In response to a wet March the level increased and was reported at 936.6 in July 2026. • Methods of enhanced evaporation are being trialled on site currently.
LDP3	• During the AEMR Period, discharge of treated water at LDP3 occurred in 148 out of 365 days. The total discharge at LDP3 between September 2025 and August 2026 was 178 ML: – the minimum streamflow to discharge ratio of 10:1 was maintained, and most discharges occurred at a higher ratio (i.e. the discharge rate was less than 10% of the streamflow rate) – discharges only occurred when the Coxs River streamflow was above 10 ML/day, which is the minimum streamflow rate for which discharge can occur: ▪ the streamflow gauge was out of service for several weeks during the period and there was some uncertainty with flow within Coxs River and therefore discharges were avoided during this time. Streamflow data has since been processed for the period with isolated periods in January when estimates were made rather than a measurement taken, based data quality coding provided by WaterNSW. • During the Period, desludging occurred in the Canal during October 2025, February and April 2026 as part of ongoing maintenance. To mitigate future sludge accumulation in the Return Canal, GPM has implemented a clarification step to the treatment process upstream of the Return Canal in April. The upgraded treatment system with clarifier was commissioned from June 2026 with monitoring of changes to treatment efficacy ongoing. • Ammonia exceedances against a limit of 0.1 milligrams per litre (mg/L) were recorded at LDP3 on 25 September 2025 and three occasions between 4 February and 16 March 2026. The non-compliances were reported to the NSW EPA. Subsequently an EPL variation was provided to include a Water Quality Discharge Assessment (WQDA) to evaluate the appropriateness of the future ammonia concentration discharge limit. Additional monitoring at LDP3 has been undertaken since June to inform the WQDA, which is under development, due 20 October 2026. • Weekly sample of analytical suite required of LDP3 for licence condition M2.1 was not undertaken during week commencing 15 June 2026. Non-compliance was reported to NSW EPA.

6.1.3 Water monitoring over the period

The AWQR addresses the surface and groundwater monitoring and reporting requirements established in the OEMP. Table 6.2 provides a summary of these requirements and notes where each requirement is addressed in the AWQR.

Table 6.2 OEMP – water monitoring and reporting requirements

	Description	OEMP reference[1]	Report reference
Surface water			
Monitoring	Monthly monitoring was undertaken at the following locations: <u>Coxs River:</u> • **WX12** – upstream of Sawyers Swamp Creek confluence • **S1** – downstream of Sawyers Swamp Creek confluence <u>Sawyers Swamp Creek:</u> • **SS5** – upstream of SSCAD • **S6** – downstream of SSCAD, upstream of SSCAD embankment and KVAR / KVAD water management area • **S5** – downstream of SSCAD, SSCAD embankment and the eastern part of KVAR / KVAD water management area • **WX5** – downstream of SSCAD, SSCAD embankment and KVAR / KVAD water management area, adjacent to Lidsdale Cut • **WX7** – downstream of the Site <u>Dump Creek:</u> • **WX11** – immediately upstream of the confluence with Sawyers Swamp Creek <u>Water Management System:</u> • **BLKH** – located in the Black Hole which is a waterbody that has formed adjacent to placed ash in SSCAD section B • **SSCAD Pond (WMS1)** – a large water body located to the east of the SSCAD embankment • **Lidsdale Cut (WMS3)**– a former open cut mine. Contaminated water from the KVAR / KVAD Water Management Area is reticulated to Lidsdale Cut Weekly monitoring was undertaken when LDP3 was discharging at the following locations: <u>Coxs River:</u> • **WX9** – Downstream of Sawyers Swamp Creek confluence, upstream of LDP3 • **LDP3** – Controlled discharge location from the LDP3 Water Treatment System, which treats water from SSCAD Pond • WX10A - Downstream of Sawyers Swamp Creek confluence, downstream of LDP3	Appendix E (of OEMP) Section 4.1 – Surface water quality sub-plan Table B.2	Chapter 4.1.1
Analysis	Surface water quality results will be compared to: • Guideline Values (GVs) for a slightly-to-moderately disturbed upland river system • Water quality trends at each sampling location (where available) since July 2019. Earlier data is not considered to be relevant due to the water quality in Sawyers Swamp Creek being strongly influenced by discharges from Springvale Colliery that occurred between 2013 and July 2019. The results will be interpreted by a suitably qualified professional who will describe any deviations from GVs and changes to water quality trends.	Appendix E (of OEMP) Section 4.1 – Surface water quality sub-plan Table A.2	Chapter 4.1.2

[1] EMM (2026) Operational Environmental Management Plan: Lidsdale Ash Repository, REF: E230337RP1v8, March 2026

	Description	OEMP reference[1]	Report reference
Reporting	An Annual Surface Water Quality Review (ASWQR) will be prepared as part of the AEMR. The ASWQR will include: • a description of weather and streamflow conditions over the AEMR period (the period) • a description of the water management system that was operated over the period • all water quality data and analysis.	Appendix E (of OEMP) Section 4.1 – Surface water quality sub-plan	Chapters 4.2 and 4.3
Groundwater			
Monitoring	6-monthly groundwater quality and level monitoring at 21 locations: • WGM1/D1 • WGM1/D2 [1] • WGM1/D3 [1] • WGM1/D4 [1] • WGM1/D5 • WGM1/D6 [1] • CA1 • CA2 • CB1 • CB2 • CB3 • WH_MW02 [1] • WH_MW03 [1] • WI_MW03 [12] • WJ_MW03 [1] • WK_MW01 [1] • WK_MW04 [1] • WK_MW06 [1] • MW102S • MW102D • MW109D [1] *Sites nominated in EPL21185* [2] *Replaced by MW118* *Note that shallow seepage bore sites GW10, GW11, A9(AP09) and A17 (AP17) are not included in the OEMP but should continue to be sampled on a 6-monthly basis* *6-monthly groundwater level monitoring at 13 locations:* • WWD1A • WWD1B • WWD2A • WWD2B • WWD5A • WWD5B • WH_MW04 • WWD6A • WWD6B • WWD10 • WWD12 • WWD14A • WWD14B	Appendix D (of OEMP) – Table B2 Groundwater sub-plan [2]	Chapter 5.2.1
Analysis	Groundwater quality results will be compared to: • water quality trends at each location (where available) using recent data (since 2019). Earlier data is not considered to be relevant due to the water quality being influenced by discharges from Springvale Colliery that occurred between 2013 and July 2019 • site specific trigger values derived using available, appropriate baseline data • 95% level of species protection (LOSP) default guideline values (DGVs), as presented in the ANZG 2018 Australian and New Zealand guidelines for Fresh and Marine Water Quality (ANZG, 2018).	Appendix D (of OEMP) – Table B1 and B4 Groundwater sub-plan	Chapter 5.2.2
Reporting	The groundwater quality monitoring data and associated analysis is to be reported in the AEMR.	Appendix D (of OEMP) – Section 5.2 Groundwater sub-plan	Chapter 5.3 and 5.4

6.2 Environmental performance

6.2.1 Surface water

During the reporting period, a number of recommended actions from Environmental Representative inspections were actioned. These included investigating sources of turbidity in Sawyer Swamp Creek, repairing erosion channels, stabilising inlet works, and installing or formalising drainage controls to manage runoff, dust management and prevent erosion. Sediment removal and check dams and road resheeting and surface reshaping were prioritised during low-flow periods, with ongoing monitoring during rainfall to assess effectiveness and identify further control needs. Water quality results are being verified against CEMP/SWMP criteria, while reviews of creek sediment sources, drainage design, and clean water diversions (including CPESC input) remain ongoing.

The review of surface water quality data documented in the AWQR concluded that:

- Water quality trends in Lidsdale Cut and the SSCAD are consistent with recent AEMR periods (i.e. 2018 to the current period). Lidsdale Cut and SSCAD are part of the Site's contaminated water management system and hold water that is known to be ash affected.

- Dump Creek, which contributes to Sawyers Swamp Creek, outside of wet weather generally has standing water but no visible flow. The water quality over the AEMR period was variable with pH, salinity and metal concentrations, in some samples, exceeding DGVs. Water quality results over the AEMR period, similar to Sawyers Swamp Creek, indicated poor water quality conditions during drier months, where groundwater seepage to the creek is in a higher proportion than better quality surface water.

- Sawyers Swamp Creek was observed to have perennial streamflow therefore ambient water quality conditions were influenced by what portions of groundwater and surface water contributed during the period. Due to the predominately wet conditions in the AEMR period, water quality downstream of the Site in Sawyers Swamp Creek was generally consistent with the understood surface water characteristics.

- The water quality in the Coxs River is not affected by the inflows from Sawyers Swamp Creek.

In August 2022, GPM issued a Water Management Assessment (EMM, 2022) to the NSW EPA. This assessment included an Action Plan that described water management system improvements that were either underway or proposed. The plan included a description of each improvement, expected outcome once implemented and an estimated completion timeframe. GPM continue to progressively improve the water management system through implementing the Action Plan commitments. During the AEMR Period, a review of progress against the Action Plan was included within the two Water Quality Monitoring Reports that were submitted to the NSW EPA in March 2026 (EMM, 2026) and September 2026 (EMM, 2026).

6.2.2 Groundwater

An additional eight wells have been included in the Operational groundwater monitoring program. These locations comprise monitoring wells in Cell A and B of SSCAD (CA1, CA2, CB1, CB2 and CB3), targeting water within the ash and monitoring wells in the vicinity of the irrigation systems at the cottage paddock (MW109) and the southern paddock (MW102S and MW102D). Given the limited available data available for these locations, SSTV have not yet been developed, and they have been assessed against 95% level of species protection (LOSP) default guideline values (DGVs), as presented in the Australian and New Zealand guidelines for Fresh and Marine Water Quality (ANZG 2018).

One well (D3) was observed to be damaged during the November round and could not be sampled as a result. Following repairs the well was monitored and sampled in January.

The groundwater monitoring results for the 2025-2026 AEMR period reported SSTV exceedances as identified in Table 6.3. In line with the Trigger Action Response Plan, following SSTV exceedances repeat monitoring was undertaken and where results exceeded SSTVs again, a Stage 1 Trigger investigation was undertaken.

Table 6.3 SSTV exceedances

Location	Date	SSTV exceedance	Repeat sampling within SSTV	Stage 1 Trigger Investigation developed
WJ_MW03	19 November 2025	Nickel	No	Yes
WJ_MW03		Zinc	Yes	NA
D3	19 November 2025	Groundwater level	Yes	NA
D3	20 January 2026	Lead	No	Yes
D3	12 May 2026	Groundwater level	No	As per November
D4	11May 2026	Boron	No	Yes
WWD2A	20 January 2026	Groundwater level	Continual monitoring	NA
	11 May 2026			
WWD2B	20 January 2026			
	11 May 2026			
WWD5B	18 November 2025			
	11 May 2026			
WWD6A	11 May 2026			
WWD6B	11 May 2026			
WWD14B	18 November 2025			

The review of groundwater quality data documented in the AWQR concluded that:

- groundwater quality trends during the AEMR Period were generally consistent with recent AEMR periods (i.e. 2018 to the current period)
- groundwater collected from wells within the SSCAD reported the highest concentrations of metals that are known to occur in ash affected water (copper, nickel and zinc)
- groundwater quality at monitoring bore WGM1/D3 (located between SSCAD and the KVAR/KVAD), continues to report degraded water quality relative to water quality trends at upgradient bores, however this is consistent with previous results
- groundwater quality at monitoring bore WGM1/D6 (located downgradient of KVAR/KVAD) is consistent with ash affected water
- groundwater quality at monitoring bore WGM1/D5 (located downgradient of KVAR/KVAD) has improved compared to the previous AEMR period (2024-2025). The water quality during the current AEMR period is comparable to the period between 2022-2023 and will be continued to be monitored to determine if the changes are attributed to site operations. Increases in concentrations of metals and EC may be indicative of KVAD seepages

- the groundwater level trends were consistent with historical trends and generally reflect the CRD.

Potential groundwater contamination sources, pathways and receptors are being investigated as part of the VMP process that GPM has negotiated with the NSW EPA.

6.2.3 Reportable incidents

The site had reportable incidents relating to Environmental Protection Licence 21185. These incidents comprised:

- four EPL limit condition (L2.4) non-compliances related to ammonia
- one monitoring and recording conditions (M2.1) non-compliances relating intermittent discharge.

Details of above EPL non-compliances presented in Table 9.1.

6.2.4 Further improvements

GPM is working through various Pollution Studies and Reduction Programs in consultation with NSW EPA including on water treatment and groundwater characterisation. GPM is undertaking an approval modification to allow construction of various environmental improvement projects planned over the next few years. Several projects are also being undertaken to inform the Remedial Action Plan (RAP) that will lead to environmental improvements for the site works.

7 Landscape and revegetation

7.1 Environmental management

The current scope of landscape and revegetation environmental management is provided in the Landscape and revegetation sub-plan of the OEMP (Appendix G). The current Landscape and Revegetation Plan is based on an overall requirement to return the site to a stable landform, provide a long lasting and non-invasive vegetative cover which allows the continued management of the site, rehabilitate areas outside of continuous management areas to native bushland areas or grazing land and control priority weeds across the site with current activities focussing on care and maintenance of the site. Approximately 21.5 ha have been shaped and had topsoil applied, seeded and are actively growing. These areas are considered to be land under active rehabilitation.

Further site investigations and environmental studies will be undertaken to inform the safe closure of the Site with the overarching final landform and rehabilitation objectives ensuring the site is safe, stable and non-polluting, and fit for intended land use/s.

7.2 Environmental performance

7.2.1 Rehabilitation

Rehabilitation activities were undertaken during the 2025-2026 reporting period, these included:

- KVAR stage 2 topsoiling and hydromulching (Photograph 7.1).
- SSCAD containment ponds (CP2, CP3 and CP4) hydromulching (Photograph 7.2).
- Topsoiled Lidsdale Cut Wetlands.
- Hydromulch SSCAD concrete dump.
- Topsoiled and hydromulched asbestos landfill for asbestos management.
- Topsoiled and hydromulched KVAR red swamp.
- Installed and maintained erosion and sediment controls.



Photograph 7.1 **Watering the hydromulched grass on the batter at KVAR**



Photograph 7.2 **Containment Pond 3 and 4 growing grass following completion of construction**

7.2.2 Stabilisation

Stabilisation activities during the AEMR reporting period have included ensuring the ongoing stability of the ash repositories, reshaping the landforms to provide reduced slope angles. Instability of the repositories is caused by steep batter slopes, saturation of exposed ash areas without capping, tree falls from fire and high winds and animal burrows. GPM has engaged technical specialists to design reinforcement options and a final landform and water drainage system to improve long term stability and thereby facilitate final capping and rehabilitation of the site. Works continued in the 2025 to 2026 period and will continue into 2027 to establish a reinforcement berm against the entire KVAR/KVAD which will ensure stability of the repository in the long term. During the reporting period section 5 (otherwise known as Stage 2B) of the stability berm were constructed on the eastern face of the KVAR.

GPM will continue to investigate suitable supply of material for the reinforcement and also investigate soil stabilisation techniques to enhance stability and reduce reliance on a mass earth wall solution.

7.2.3 Weed control

A summary of works completed during the reporting period is included in Table 7.1

The growth of weeds has been an ongoing problem that GPM has continued to resolve through active weed management. Weed treatment throughout the reporting period has targeted pampas grass, blackberry, St John's wort, purple top, broom, stink wort, cineraria, tussock and various broadleaf weeds. Weed spraying is undertaken by a licensed contractor and only conducted during low wind conditions to reduce the potential for impacts from spray drift. Mechanical (manual) removal of vegetation (fire weed, various broadleaf, lucerne) is also undertaken where access permits. A summary of weed control treatments applied is provided in Table 7.1.

Table 7.1 Summary of landscaping, revegetation and weed control during the reporting period

Reporting month	Landscaping, revegetation and rehabilitated area	Weed control
September 2025	Topsoiled and hydromulched Open Asbestos Dump, KVAR Red Swamp, Springvale Hill, KVAR West and area near CIP. **Total Area**– 2.0 ha	Multiple areas and zones across the site with species targeted including - Brassica, nodding thistle, Patersons Curse, Fleabane, skeleton weed and various broadleaf.
October 2025	Hydromulched Springvale Hill, topsoil and hydromulched West boundary of Open Asbestos Dump, and drill seed southern paddock and barn paddock **Total area**– 15.4.0 ha	Multiple areas and zones across the site with species targeted including - Pin Cushion, St John's wort, Broom, Biddy Bush, Brassica, Nettle, Purple Top, eucalyptus, blackberry and various broadleaf.
November 2025	Nil	Multiple areas and zones across the site with species targeted including - St John's wort, Brassica, Biddy bush, Blue Heliotrope, Sticky nightshade & various broadleaf. Small blackberry.
December 2025	Nil	Multiple areas and zones across the site with species targeted including - St John's wort, serrated tussock, pampas grass and various broadleaf.
January 2026	Hydomulched CP2, CP3 and CP4 batters **Total area**– 1 ha	Multiple areas and zones across the site with species targeted including - Sticky Nightshade and Pampas Grass, Blue Heliotrope, Cineraria, St John's wort, Blackberry, fire weed, fat hen, thistle, Patterson's curse, Bathurst Burr.

Reporting month	Landscaping, revegetation and rehabilitated area	Weed control
February 2026	Nil	Multiple areas and zones across the site with species targeted including – Flax leaf fleabane, Stink wort, Brassica, thistle, St John's wort, Blackberry, Sticky nightshade, Patterson's curse, Bathurst Burr, Blue Heliotrope, Cineraria, Biddy bush and various broadleaf.
March 2026	Nil	Multiple areas and zones across the site with species targeted including – Blackberry, Biddy Bush, broadleaf, stink wort, St Johns wort, Cineraria, Sticky nightshade, Blue Heliotrope and Pampas grass.
April 2026	Topsoiled and hydromulched Section 5 Buttress **Total area**– 2 ha	Multiple areas and zones across the site with species targeted including – Pampas grass, Fire weed, Sticky Nightshade, blackberry, Biddy bush, various broadleaf and stink wort.
May 2026	Topsoiled and hydromulched CIP/Clarifier area, Skelly Road pipeline and firebreak Boundary Rd crossing area. **Total area**– 0.1 ha	Multiple areas and zones across the site with species targeted including –Marshmallow plant, brassica, Biddy Bush, Nettle, Fire weed and various broadleaf.
June 2026	Topsoiled and hydromulched Pipeline Road shoulder **Total Area**– 0.15 ha	Multiple areas and zones across the site with species targeted including –Brassica, marshmallow plant, Sticky nightshade, Patterson's curse, Biddy bush, thistle, pincushion, fleabane, fireweed and various broadleaf.
July 2026	Topsoiled North Pond, Lidsdale Cut Wetland, Section 5 buttress **Total Area**– 0.15 ha	Multiple areas and zones across the site with species targeted including –serrated tussock, purple top and various broadleaf.
August 2026	Topsoiled and hydromulched North Pond, Lidsdale Cut Wetland batters, SSCAD road shoulders Total Area – 0.65	Nil.

In the next AEMR reporting period GPM will continue to investigate suitable long-term revegetation that excludes tree species as part of the longer-term site management activities, in line with the HHERA conducted as part of the site declaration VMP.

7.2.4 Final landform

No final rehabilitation has occurred due to ongoing contamination investigations and preparation of the final RAP under the VMP. Until these investigations are completed a final landform cannot be completed. Works during the reporting period have focussed on containment of the exposed ash areas and asbestos landfill areas to ensure these areas are safe and stable. These containment measures have focussed on shaping the exposed areas and locations with limited cover with imported quarried products and soil materials (VENM and ENM) to form stable landforms and thus limiting the potential for human health and environmental impacts from the site. Completion of these activities on exposed ash areas in the KVAR stage 2 area and completion of a stability containment berm has continued throughout the reporting period with these works now largely complete across the entire approval area.

Temporary cover in the form of grasses and mulches has been applied to the newly shaped areas.

7.3 Reportable incidents

No reportable incidents have been recorded against landscape and revegetation management for the reporting period.

7.4 Further improvements

Care and maintenance activities will continue to be undertaken within the Project Area to ensure landscape and revegetation areas progress across the site. A Stage 2 Long term rehabilitation strategy will be developed following the finalisation of the RAP and development of the Closure Plan/Closure strategy.

8 Community engagement

8.1 Community consultation group

The requirement for a community consultation group was triggered with the declaration of the site as an area of significant contamination under the CLM Act, and the preparation of the VMP.

The community consultation group allows community members access to the progress of the remediation and KVAR and allows suggestions on how the site may be used once all remediation is complete. To encourage community members to be involved in the Community Consultation Group, in 2023, advertisements were placed in local newspapers, hand delivered to Lidsdale residents, placed on the GPM website, included in news stories on the local television station and posters placed in local shops in Lidsdale, Wallerawang and Portland. As a result, several local residents registered to be included on the committee. There were three Community Consultation Group Meetings held during the reporting period. These meetings took place on 19 November 2025, 4 March 2026 and 17 June 2026.

8.2 Environmental Review Group

An Environmental Review Group was formed during the previous AEMR period with the first meeting taking place on 3 June 2025. The ERG consists of representatives from GPM, EMM, DPHI, NSW EPA, Lithgow Council, Water NSW and NSW Fisheries. ERG meetings took place during the reporting period on 11 November 2025, 24 February 2026, 19 May 2026. The ERG will meet each quarter in the next reporting period.

Minutes of the meetings are provided to participants following the meeting.

8.3 Website information

Copies of the following documents are made publicly available on the GPM website (https://gpmco.com.au/lidsdale/):

- Environment Protection Licence (EPL21185)
- Operational Environmental Management Plan (EMM, 2026)
- Construction Environmental Management Plan (EMM, 2026)
- Annual Environmental Management Reports (2021–2025)
- Voluntary management proposal (GPM, 2025)
- Pollution Incident Response Management Plan (GPM, 2025)

Links to the Planning Portal are available on the GPM website for the following:

- Environment Assessment
- Project Approval 07_0005 (MOD2)

8.4 Community complaints procedure

GPM maintains a Community Information and Complaints Line for the public to report incidents, complaints or enquiries with contact details available on GPM's website.

GPM records the details of all complaints received in a Complaints Register. The register records:

- the date and time of the complaint
- the means by which the complaint was made (e.g. telephone, email, mail, in person)
- any personal details of the complainant that were provided, or if no details were provided a note to that effect
- the nature of the complaint
- the time taken to respond to the complaint
- any investigations and actions taken by GPM and/or the Contractor in relation to the complaint
- any follow-up contacts with, and feedback from, the complainant
- if no action was taken by GPM the Contractor in relation to the complaint, the reason(s) why no action was taken.

The Site Manager and the Facility Environment Manager ensure that the community relations protocols are communicated to all project personnel involved in the complaints process and that appropriate training covering the protocols is established in site inductions.

The key elements of the on-site complaints' management protocol include the following:

- All persons wishing to register a complaint to operations personnel will be politely directed to the site Manager, in line with GPM complaints procedure.
- The Site Manager will deal with the complaint and take down particulars of the complaint as per the criteria listed on the complaints register. Action will then be taken to resolve the issue whilst ensuring that all correspondence relating to the issue is documented. All attempts will be made to resolve the issue on the same day, however if this is not possible, the complainant will be updated regularly on the progress of the matter where practical.

8.5 Community complaints

A review of the community complaints register was undertaken, and no complaints were received during the reporting period.

9 Compliance assessment

Since taking over the site, GPM have engaged a number of consultants and contractors to understand the history and current status to inform the safe closure of the site including decommissioning, demolition, rehabilitation. GPM has engaged an independent environmental representative (ER) under Schedule 2 Condition 6.1. The ER undertakes monthly inspections to ensure that all environmental programs are being implemented and that approval conditions are being complied with. The ER monthly report is prepared and provided to DPHI.

As part of each AEMR, a Compliance Assessment against the CoA is conducted. The 2025-2026 Compliance Assessment is available in Appendix A. The Compliance Assessment found the site was Compliant with the CoA for the AEMR Reporting Period with the exception of Condition 4.1 and Condition 4.2(c).

9.1 Environmental representative inspections

The ER for the Site was David Bone; EMM. On 8 May 2026 DPHI approved the appointment of Tracey Doczy as ER. In July 2026, Tracey Doczy from EMM replaced David Bone as the ER for the Site. Monthly reports are provided to DPHI within one month of undertaking each site inspection. A total of 12 reports were submitted to DPHI during the reporting period.

9.2 Compliance tracking program

Condition 4.2 of the project approval requires the development and implementation of a compliance tracking program. The Compliance tracking program is comprised the Compliance Matrix in Appendix A of this AEMR and section 3.7.3 of the OEMP and section 4.5/Table 4.4 of the CEMP as approved by the Secretary.

The CEMP, in section 4.5 and Table 4.4, outlines the requirements of compliance tracking and auditing. The three audit types outlined comprise:

- internal audits are completed fortnightly by the Environment Manager/ Safety Advisor to verify compliance with approval and legal requirements and construction documentation
- ER audits completed monthly by the ER to verify compliance with approval and legal requirements, construction documentation and any other commitments
- independent environmental audits completed for periodic review of the compliance status of the Project against CoAs and the Statement of Commitments detailed in the Submissions Report (Parsons Brinkerhoff, 2008a).

Condition 4.2(c) requires the compliance tracking program with independent environmental auditing in accordance with the *Independent Audit Post Approval Requirements (NSW Government 2020)*. The approval of the updated OEMP and CEMP was provided by DPHI on 9 April 2026. By the definitions within these documents, both construction and operational tasks are currently underway at the Site. Section 3.7.3 of the OEMP states "*As required by CoA 4.2 (c), independent audits of the project will be conducted in accordance with the Independent Audit Post Approval Requirements (NSW Government 2020) (IAPAR 2020). For projects in closure phase, this is at intervals no greater than 1 year or as otherwise agreed by the Secretary. Independent auditors will be agreed to by the Secretary prior to commencing the audit as required by the IAPAR 2020.*" Table 4.4 of the CEMP states an Independent Environmental Audit is required every three years as a *"Periodic review of the compliance status of the project against CoAs and the Statement of Commitments detailed in the Environmental Assessment"* (Parsons Brinckerfhoff, 2008b)

9.3 Incidents and non-compliances

There were no reportable incidents or non-compliances with the CoAs within the AEMR reporting period. As required by CoA 7.3e, Section 9.3.1 identifies the occasions in the preceding twelve-month period when environmental conditions for the Project have not been achieved.

9.3.1 Other approval and licences non-compliances

Non-compliances with EPL 21185 are reported to the EPA in the Annual Return. In accordance with CoA 7.3e, Table 9.1 presents the occasions in the preceding twelve-month period when environmental conditions for the Project have not been achieved.

Table 9.1 Environmental non-compliances

Date	Source	Non-compliance type	Reason for Failure	Action taken
25 September 2025 4 February 2026 9 March 2026 16 March 2026	EPL 21185	EPL limit condition (L2.4-ammonia)	Yet to determine what is contributing to elevations in ammonia levels however it may be due to a slight trending increase in the Sawyers Swamp creek ash dam. Current limit condition L2.4 based on historical nil detections of ammonia. The limit condition is significantly lower than the ANZECC species protection limit 0.72 milligrams per litre (mg/L) (95th percentile).	Reported to NSW EPA as non-compliance. Discharge stopped 18 March 2026 until Department advice received. Proposed to have License variation which was provided on 16 April 2026. The variation now includes 100 percentile concentration for ammonia of 0.10 to 0.72 mg/L for LDP3 and the addition of a PRP (U3) to assist in determining a revised ammonia concentration limit. Commence Water Quality Discharge Assessment (WQDA) to evaluate the appropriateness of the future ammonia concentration discharge limit.
15-19 June 2026	EPL 21185	Monitoring and recording conditions compliance (M2.1)	The sample was not collected due to intermittent flows occurring and the sampling field officer did not report when attending the site sampling location. GPM became aware of this when the results came back for the other samples collected during that sampling round without results for LDP3.	Reported to NSW EPA as non-compliance. Ensure better communication between staff when discharging so that a sample is collected weekly when required as per condition M2.1.

9.4 Associated studies and investigations

To date, GPM has commissioned the following site studies and investigations:

- Continued engagement of a NSW EPA accredited Site Auditor to provide independent reviews of investigation, remediation, and validation work undertaken by GPM's consultants.
- Soil testing of historical mining stockpiled materials within and adjacent to GPM landholding.
- Monthly compliance review and monthly site inspections by the ER.
- A progressive rehabilitation plan for Stage 1 SSC realignment has been developed in consultation with the relevant agencies and submitted to DPHI.
- Site closure planning consultants develop and refine develop closure strategy for the site.
- Water Quality Discharge Assessments under the EPL were developed in draft, communicated with EPA with an extension provided to facilitate collection of a more robust data set.
- Water Management Assessments (including a Site Action Plan), submitted to the NSW EPA.
- Six-monthly Water Quality Monitoring Reports prepared and submitted to NSW EPA.
- Numerical water model for the site.
- Installation of additional groundwater monitoring points and real time data logging.
- Upgrades of the water treatment plant and water management telemetry across the site.
- Update of the site weed management program.
- Routine dam safety audits of the SSCAD.
- Internal fortnightly work practice site safety audits.
- Detailed Site Investigation.
- Human Health and Environmental Risk Assessment.
- Irrigation Assessment.
- Lateral asbestos delineation investigations around landfills.

9.5 Contamination declaration

Contamination within the Project Area was notified to the EPA by GPM under section 60 of the CLM Act on 10 March 2021. Following review of available information, the EPA advised (on 27 June 2022), that the contamination is significant enough to warrant regulation under the CLM Act.

On 22 August 2022, the NSW EPA issued GPM with a Contaminated Land Declaration Notice which declares the site as significantly contaminated land under Division 2 the CLM Act. GPM has submitted a VMP to the NSW EPA that establishes a proposed investigation and remediation approach. Key elements in determining the extent of remediation required will be the ultimate end use of the property, the extent of any contamination beyond the Project Area boundary and long-term stability of the contaminants so they are contained in perpetuity.

The following sequence of events were proposed:

- A Sampling, Analysis and Quality Plan (SAQP) was developed to outline the protocols for sampling, analysis, monitoring and reporting to inform the scope of the DSI, in accordance with the NEPM (NEPC, 2013) and NSW EPA (2020)guidelines.

- The Detailed Site Investigation (DSI) was undertaken with the objective of assessing the nature and extent of contamination within the Declared Site. To meet the objective of the DSI, works comprised conversion of multiple boreholes to groundwater wells for groundwater assessment and ongoing groundwater monitoring. The DSI report included relevant data from the Initial Groundwater Characterisation Report (EMM, 2023a) and the Surface Water Characterisation Report (EMM, 2023b). The draft DSI was issued to the Site Auditor on 6 May 2025. The Auditor comments were provided on 25 August 2026. The revised draft DSI was issued to the Site Auditor on 13 February 2026. A second round of Auditor comments were provided on 18 May 2026. EMM completed a data gap assessment to address the Auditor comments to delineate PFOS and PFAS concentrations in soil and to evaluate PFAS concentrations and delineate metals concentrations in surface water through the remainder of the monitoring period.

- A Human Health and Ecological Risk Assessment (HHERA) has been prepared to identify specific soil and groundwater acceptance criteria for the site and for the remediation works. The draft HHERA was issued to the Site Auditor 30 June 2025. The Auditor provided comments on 25 August 2025. An updated draft was issued to the Auditor on 10 December 2025. A second round of comments was provided on 26 May 2026. EMM are currently addressing the comments of the second round of Auditor comments.

- EPA provided an amendment order to the VMP on 16 July 2026. This amendment order modified the requirements of the VMP to combine the Remedial Options Assessment (ROA) and Remedial Action Plan (RAP) deliverables (Task T7 and Task T8) and prepare a consolidated RAP that will be applicable to the period in which the Site transitions from active to passive management. It also provided an extension of the milestone date of the draft RAP report for Auditor review to 14 August 2026.

- The RAP was prepared to inform remediation requirements. Draft issued 14 August 2026. At the end of the reporting period, GPM is awaiting the Site Auditor's comments or endorsement of the RAP. The next steps following Auditor input will be obtaining the Site Auditor's endorsement of/or confirmation that she/he has no objection to the ROA and RAP and the NSW EPA's approval of the RAP will be obtained.

GPM will continue to liaise with the NSW EPA regarding the VMP in the next AEMR reporting period.

10 Recommendations

In-line with CoA 6.6(b), GPM recommend that the EPL, CEMP and OEMP and subplans are updated improve the environmental performance of the development.

10.1 Studies, strategies and plan updates

CoA 6.6(b) states:

> Within three months of the submission of an Annual Review under condition 7.3 the Applicant must review 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 Non-Compliance Notification the revised document must be submitted to the Secretary for approval, unless otherwise agreed with the Secretary.
>
> Note: This is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the development.

In accordance with this condition, a review has been undertaken of the plans and Table 10.1 presents updates that are recommended following the AEMR.

Table 10.1 Proposed updates to studies, strategies and plans

Studies, strategies or plans	Section or report element	Shortfall/ Issue	Recommended action
EPL	P1.2	Several monitoring points of the EPL are producing potentially unrepresentative results based on age, condition, and outdated or missing construction methods.	Complete a rationalization of the EPL monitoring point list, in consultation with EPA and update the monitoring points to reflect well network and well condition understanding.
	L4.1	The EPL does not reflect the current rehabilitation and capping strategy.	Update the waste permitted to be received to include RRE 2016 materials for use in rehabilitation and capping activities.
	U1.1, U1.2, U2.1, U2.2, E1.1, E1.2	Scopes, or part thereof, completed.	Remove completed components of the EPL to reflect the current studies and understanding of the site.
OEMP	Section 3.7	Table 3.7.3 refers to closure phase project and differs from CEMP frequency.	Update Section 3.7.3 to include *Independent Audit Post Approval Requirements (2026) requirements* for operational phase works (frequency of three years).
	Section 3.8.2	Ash identified outside the current understanding of the Ash footprint by the current definition in the OEMP would be considered an environmental incident, initiating the incident response procedure.	Update the OEMP with an unexpected finds protocol for known and internally managed contaminated material.
OSWMP	Table 4.1 and Appendix B	Project remains in data collection SSTV development stage. Contradictory inputs presented for SSTV development.	Update the SSTVs to include most recent data set and include baseline for newly updated ANZG guideline values for Iron in freshwater. Update Table 4.1 and Appendix B to reflect SSTV development inputs.

Studies, strategies or plans	Section or report element	Shortfall/ Issue	Recommended action
OGWMP	Appendix B Groundwater monitoring program	Specifies only method for groundwater sampling as hydrasleeve.	Update to sampling method to reflect current industry standards, NEPM (NEPC, 2013) or similar.
		Reflective of current version of EPL which is under revision.	Update EPL monitoring locations following the update of the EPL.
		Project remains in data collection SSTV development stage.	Update the SSTVs to include most recent data.
OLRP	Table 4.1	The management measure to meet CoA 6.5(e)(v) includes species diversity and vegetation assessment records current project phase is short term rehabilitation for the care and maintenance phase (weed management and short-term stabilisation) of the site until remediation plans are finalised.	Update Table 4.1 to be reflective of interim site goals targeted around stabilisation and weed control, and relevant records/ monitoring to be reflective of current project phase. OLRP should be updated to identify that following finalization of the remediation plans, long-term revegetation strategy to be reflective of final landform and land use.
CEMP	Section 2.10.2	Ash identified outside the current understanding of the Ash footprint by the current definition in the CEMP would be considered an environmental incident, managed in accordance with the Site Pollution Incident Response Management Plan (PIRMP)	Update the CEMP with an unexpected finds protocol for known and internally managed contaminated material.

References

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Appendix A

Conditions of Approval compliance assessment

EMM
creating opportunities

Condition	Compliance assessment finding
Administrative Conditions	
Terms of Approval	
Condition of Approval 1.1	**Compliant**
The Applicant must carry out the project: *a) In compliance with the conditions of this approval;* b) *In accordance with all written directions of the Secretary;* c) Generally in accordance with the EA; and d) Generally in accordance with the Project Area.	
Compliance Assessment Observations and Comments Based on the review undertaken, the Kerosene Vale Ash Repository operations have been carried out generally in accordance with the above requirements with the exception of CoA 4.1 and CoA 4.2c. No written directions from the Secretary were received within the reporting period.	
Condition of Approval 1.2	**Compliant**
Consistent with the requirements in this approval, the Secretary may make written directions to the Applicant including in relation to: *a) the content of any strategy, study, system, plan, program, review, audit, notification, report or correspondence submitted under or otherwise made in relation to this consent, including those that are required to be, and have been, approved by the Secretary; and* b) *the implementation of any actions or measures contained in any such document referred to in condition 1.2a.*	
Compliance Assessment Observations and Comments DPHI were provided the Operational Environmental Management Plan (OEMP) and Construction Environmental Management Plan (CEMP) for review during the reporting period. DPHI approved the OEMP and CEMP during the reporting period on 9 April 2026.	
Condition of Approval 1.3	**Compliant**
The conditions of this approval and directions of the Secretary prevail to the extent of any inconsistency, ambiguity or conflict between them and the document/s listed in condition 1.1c). In the event of an inconsistency, ambiguity or conflict between any of the document/s listed in condition 1.1c), the most recent document prevails to the extent of the inconsistency, ambiguity or conflict.	
Compliance Assessment Observations and Comments EMM have referred to the most recent documentation in the preparation of the AEMR and no inconsistencies have been noted.	

Condition	Compliance assessment finding
Limits of Approval	
Condition of Approval 1.4	**Compliant**
This approval shall lapse five years after the date on which it is granted, unless the works that are the subject of this approval are physically commenced on or before that time.	
Compliance Assessment Observations and Comments Works physically commenced in September 2020; therefore Condition 1.4 is satisfied, and there is no expiry date for the consent.	
Statutory Requirements	
Condition of Approval 1.5	**Compliant**
The Applicant shall ensure that all licences, permits and approvals are obtained as required by law and maintained as required with respect to the project. No condition of this approval removes the obligation for the Applicant to obtain, renew or comply with such licences, permits or approvals.	
Compliance Assessment Observations and Comments The project operates in accordance with the requirements of Generator Property Management Pty Limited EPL 21185. There are no Water Access Licences, AHIPS, Council Consents, or other licences held by GPM for the Site. Imported material comprised ENM and VENM in accordance with the EPL and commercial quarry material.	
Specific Environmental Conditions	
Ash Management	
Condition of Approval 2.1	**Compliant**
The Applicant shall prepare a long-term ash-management strategy including a program for investigation and assessment of alternative ash management measures with a goal of 40% reuse of ash by 31 December 2013. The report shall be submitted to the Secretary within six months of the commencement of operations. The Applicant shall report on the status and outcomes of its investigations to the Secretary every two years from the commencement of the operation of the project, unless otherwise agreed by the Director-General.	
Compliance Assessment Observations and Comments As per the OEMP, approved by DPHI (Section 2.3) ash is no longer required to be delivered to Lidsdale Ash Repository and hence the requirement for an ash management strategy and updates is no longer required.	
Condition of Approval 2.2	**Not triggered**
To facilitate assessment of the viability of coal resources in the project area and provide a finite opportunity for their extraction, the Applicant shall undertake revised staging of ash placement activities as described in the document referred to in condition 1.1c) of this approval	

Condition	Compliance assessment finding
Compliance Assessment Observations and Comments Ash has not been placed over the coal resource in the project area during the reporting period.	
Noise Impacts	
Construction hours	
Condition of Approval 2.3	**Not triggered**
Construction activities associated with the project shall only be undertaken during the following hours: *a) 7:00am to 6:00pm, Mondays to Fridays, inclusive;* *b) 8:00am to 1:00pm on Saturdays; and* *c) at no time on Sundays or public holidays.*	
Compliance Assessment Observations and Comments No construction activities have occurred outside the hours stipulated in condition 2.3 of this approval during the reporting period.	
Condition of Approval 2.4	**Not triggered**
Activities resulting in impulsive or tonal noise emission (such as rock breaking or rock hammering) shall be limited to 8:00 am to 12:00 pm, Monday to Saturday and 2:00 pm to 5:00 pm Monday to Friday. The Applicant shall not undertake such activities for more than three continuous hours and must provide a minimum one-hour respite period.	
Compliance Assessment Observations and Comments No activities resulting in tonal or impulsive noise emission have occurred during the monitoring period.	
Condition of Approval 2.5	**Not triggered**
Construction outside the hours stipulated in condition 2.3 of this approval is permitted in the following circumstances: *a) where construction works do not cause audible noise at any sensitive receiver; or* *b) for the delivery of materials required outside these hours by the Police or other authorities for safety reasons; or* *c) where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm.*	
Compliance Assessment Observations and Comments No construction activities outside the hours stipulated in condition 2.3 of this approval have taken place during the reporting period.	

Condition	Compliance assessment finding
Condition of Approval 2.6	**Not triggered**
The hours of construction activities specified under condition 2.3 of this approval may be varied with the prior written approval of the Secretary. Any request to alter the hours of construction specified under condition 2.3 shall be: *a) considered on a case-by-case basis;* *b) accompanied by details of the nature and need for activities to be conducted during the varied construction hours; and* *c) accompanied by any information necessary for the Secretary to reasonably determine that activities undertaken during the varied construction hours will not adversely impact on the acoustic amenity of sensitive receivers in the vicinity of the site.*	
Compliance Assessment Observations and Comments No construction activities outside the hours stipulated in condition 2.3 of this approval have taken place during the reporting period.	
Construction Noise	
Condition of Approval 2.7	**Compliant**
The construction noise objective for the Applicant is to manage noise from construction activities (as measured by LA10 (15minute) descriptor) so as not to exceed the background LA90 noise level by more than 10dB(A) at any sensitive receiver. *Any activities that have the potential for noise emissions that exceed the objective must be identified and managed in accordance with the Construction Noise Management Plan (as referred under condition 6.3B) of this approval). The Applicant shall implement all reasonable and feasible noise mitigation measures with the aim of achieving the construction noise objective.*	
Compliance Assessment Observations and Comments Measured noise levels during the 2025-26 reporting period indicate Kerosene Vale Ash Repository is compliant with construction noise criteria (See section 5.2 and Appendix B).	
Operational hours	
Condition of Approval 2.8	**Compliant**
Operational activities associated with the project shall only be undertaken from 7:00am to 10:00pm Monday to Sunday.	
Compliance Assessment Observations and Comments Operational activities were only undertaken between 7:00am and 10:00pm Monday to Sunday for the duration of the reporting period.	
Condition of Approval 2.9	**Not triggered**
Within six months of commencement of operation of the project the Applicant shall prepare and submit to the Secretary a review of the logistical arrangements for ash haulage and placement to determine the feasibility of reducing the hours of operation. If, as a result of the review, it is determined that ash haulage and placement times can commence later and/or finish earlier, the Applicant shall aim to observe the reduced hours whenever possible.	

Condition	Compliance assessment finding
Compliance assessment Observations and Comments No ash placement occurred during the AEMR reporting period.	
Conditions of Approval 2.10	**Not triggered**
Operations outside the hours stipulated in condition 2.8 of this approval are only permitted in the following emergency situations: *a) where it is required to avoid the loss of life, property and/or to prevent environmental harm; or* *b) breakdown of plant and/or equipment at the repository or the Wallerawang Power Station with the effect of limiting or preventing ash storage at the power station outside the operating hours defined in condition 2.8; or* *c) a breakdown of an ash haulage truck(s) preventing haulage during the operating hours stipulated in condition 2.8 combined with insufficient storage capacity at the Wallerawang Power Station to store ash outside of the project operating hours; or* *d) in the event that the National Electricity Market Management Company (NEMMCO), or a person authorised by NEMMCO, directs the Applicant (as a licensee) under the National Electricity Rules to maintain, increase or be available to increase power generation forsystem security and there is insufficient ash storage capacity at the Wallerawang Power Station to allow for the ash to be stored.* *In the event of conditions 2.10b) or 2.10c) arising, the Applicant is to take all reasonable and feasible measures to repair the breakdown in the shortest time possible.*	
Compliance assessment Observations and comments No operational activities have taken place outside of the approved hours. These works only relate to activities at the 'repository'. As the WPS has been largely demolished it has not been part of the GPM controlled activities since 2020.	
Conditions of approval 2.11, 2.12, 2.13 and 2.14	**Not triggered**
2.11 – *In the event that an emergency situation as referred to under condition 2.10b) or 2.10c) occurs more than once in any two month period, the Applicant shall prepare and submit to the Secretary for approval a report including, but not limited to:* *a) the dates and a description of the emergency situations;* *b) an assessment of all reasonable and feasible mitigation measures to avoid recurrence of the emergency situations;* *c) identification of a preferred mitigation measure(s); and* *d) timing and responsibility for implementation of the mitigation measure(s).* *The report is to be submitted to the Secretary within 60 days of the second exceedance occurring. The Applicant shall implement all reasonable and feasible mitigation measures in accordance with the requirements of the Secretary.* 2.12 - *The Applicant shall notify the EPA prior to undertaking any emergency ash haulage or placement operations outside of the hours of operation stipulated in condition 2.8 of this approval and keep a log of such operations.* 2.13 – *The Applicant shall notify the Secretary in writing within seven days of undertaking any emergency ash haulage or placement operations outside of the hours of operation stipulated in condition 2.8 of this approval.* 2.14 - *The Applicant shall notify nearby sensitive receivers (as defined in the Operational Noise Management Plan required under condition 6.5a) of this approval) prior to 8.00 pm where it is known that emergency ash haulage or placement operations will be required outside of the hours of operation stipulated in condition 2.8 of this approval.*	

Condition	Compliance assessment finding
Compliance Assessment Observations and comments No emergency situations have occurred during the reporting period, therefore conditions 2.11- 2.14 were not triggered.	
Operational noise	
Conditions of Approval 2.15	**Compliant**
The cumulative operational noise from the ash placement area and ash haulage activity shall not exceed an LAeq (15 minute) of 40 dB(A) at the nearest most affected sensitive receiver during normal operating hours as defined in condition 2.8 of this approval. *This noise criterion applies under the following meteorological conditions:* • *wind speeds up to 3 m/s at 10 metres above ground; and/or* • *temperature inversion conditions of up to 3oC/100 m and source to receiver gradient winds of up to 2 m/s at 10 m above ground level.* *This criterion does not apply where the Applicant and the affected landowner have reached a negotiated agreement in regard to noise, and a copy of the agreement has been forwarded to the Secretary and the EPA.*	
Compliance Assessment Observations and comments Measured noise levels during the 2025-26 reporting period indicate Kerosene Vale Ash Repository is compliant with operational noise criteria (See section 523 and Appendix B).	
Condition of Approval 2.16	**Compliant**
The Applicant shall implement measures to ensure noise attenuation of trucks. These measures may include, but are not limited to, installation of residential class mufflers, engine shrouds, body dampening, speed limiting, fitting of rubber stoppers to tail gates, limiting the use of compression breaking, and ensuring trucks operate in a one-way system at the ash repository where feasible.	
Compliance Assessment Observations and Comments No fly ash trucks have been hauling to the ash placement area during the reporting period, due to the closure of Wallerawang Power Station. Measured noise levels during the 2025-26 AEMR reporting period indicate Kerosene Vale Ash Repository is compliant with operational noise criteria (See section 5.2 and Appendix B).	
Condition of Approval 2.17	**Not triggered**
The Applicant shall liaise with the owner/operator of Angus Place Coal Mine with the aim of preparing a protocol which provides for a co-operative approach for the management and mitigation of noise impacts associated with coal and ash truck movements along the private haul road.	
Compliance Assessment Observations and Comments In 2015, Angus Place Coal Mine was placed into Care and Maintenance. As a result, no coal truck movements have occurred on the private haul road. In addition, no ash truck movements have occurred along the private haul road during the reporting period due to the closure of Wallerawang Power Station.	

Condition	Compliance assessment finding
Condition of Approval 2.18	**Not triggered**
Where noise monitoring (as required by conditions 3.2 or 3.3 of this approval) identifies any non-compliance with the operational noise criterion specified under condition 2.15 of this approval the Applicant shall prepare and submit to the Secretary for approval a report including, but not limited to: *a) an assessment of all reasonable and feasible physical and other mitigation measures for reducing noise at the source including, but not limited to –* *i) construction of a noise barrier along the haulage road* *ii) alternative ash haulage routes, and* *iii) alternative methods of ash conveyance to the repository; and* *b) Identification of the preferred measure(s) for reducing noise at the source;* *c) Feedback from directly affected property owners and the EPA on the proposed noise mitigation measures; and* *d) Location, type, timing and responsibility for implementation of the noise mitigation measure(s).* *The report is to be submitted to the Secretary within 60 days of undertaking the noise monitoring which has identified exceedances of the operational noise criterion specified under condition 2.15, unless otherwise agreed to by the Secretary. The Applicant shall implement all reasonable and feasible mitigation measures in accordance with the requirements of the Secretary.*	
Compliance Assessment Observations and Comments The requirement for a noise investigation report was not triggered. Measured noise levels during the 2025-26 AEMR reporting period indicate Kerosene Vale Ash Repository is compliant with operational noise criteria (See section 6.3 and Appendix C).	
Additional Noise Mitigation Measures	
Condition of Approval 2.19	**Not triggered**
Compliance Assessment Observations and Comments The requirement for a noise investigation report and additional noise mitigation measures was not triggered. Measured noise levels during the 2025-26 AEMR reporting period indicate Kerosene Vale Ash Repository is compliant with operational noise criteria (See section 6.3 and Appendix C), therefore the Conditions of Approval relating to Additional Noise Mitigation Measures are not applicable.	
Land Acquisition Criteria	
Condition of Approval 2.20, 2.21, 2.22,2.23, 2.24, 2.25	**Not triggered**
Compliance Assessment Observations and Comments The requirement for a noise investigation report or land acquisition was not triggered during the reporting period. No landholders have applied for approval to subdivide their land according to the land acquisition rights, therefore the Conditions of Approval relating to Land Acquisition Criteria are not applicable.	

Condition	Compliance assessment finding
Sawyers Swamp Creek Realignment	
Condition of Approval 2.26	**Not triggered**
The Applicant shall prepare and submit to the Secretary for approval a Rehabilitation Plan addressing the restoration of the in-stream area (i.e. bed and bank) of Sawyers Swamp Creek and the associated riparian corridor at least two months prior to the realignment of the creek, unless otherwise agreed by the Secretary. The Plan shall be developed in consultation with, and to the satisfaction of, Fisheries NSW and shall include, but not necessarily be limited to: *a) the objectives and outcomes that would be sought through the implementation of the Plan;* *b) performance criteria for the realigned creek and associated riparian zone against which the impact of the project on the ecological health of Sawyers Swamp Creek will be assessed;* **c)** *methodology used in developing the realignment planform;* *d) details of the final creek realignment including bank, meander, depth and slope characteristics (including pool-riffle sequences), flow and channel capacity characteristics, scour potential, and in-stream vegetation;* *e) timing of the creek realignment;* *f) a description of the proposed riparian zone and restoration works along the entire length of the creek realignment, including details of plant species to be used in rehabilitation;* *g) details of any proposed riparian and in-stream controls to be implemented in the reach upstream of the alignment to ensure the effectiveness of the proposed creek realignment and rehabilitation;* *h) a description of the initial and ongoing weed control measures;* *i) the methodology and timing of post realignment monitoring of the hydrology and ecological health of the aquatic and riparian vegetation as required under conditions 3.6 and 3.7 of this approval, respectively;* *j) mitigation measures to be implemented in the event of an identified decline in ecosystem health as a direct result of the realignment of the creek or construction or operation of the project, including a timetable for implementation;* *k) program for ongoing maintenance of the realigned creek system and associated riparian zone;* *l) any compensatory measures to offset the impacts of the project on the aquatic habitat and local waterways, if and as required by Fisheries NSW and* *m) provisions for periodic reporting of monitoring results to Fisheries NSW.* *The Applicant shall not commence any construction work that would result in the disturbance of Sawyers Swamp Creek until the Rehabilitation Plan has been approved by the Secretary.*	
Compliance Assessment Observations and Comments The Sawyers Swamp Creek Realignment Progressive Rehabilitation Plan has been approved by DPHI during the reporting period. Construction phase of the Sawyer Swamp Creek Realignment has not commenced.	

Condition	Compliance assessment finding
Condition of Approval 2.27, 2.28 and 2.29	**Compliant**
2.27 *The rehabilitation and restoration of Sawyers Swamp Creek and associated riparian zone are to be consistent with the Works and Watercourse Design Guideline (DWE, April 2007) and Guidelines for Controlled Activities: Vegetation Management Plans (DWE, February 2008).* 2.28 *A riparian zone consisting of local native plant species shall be established and maintained in and adjacent to Swayers Swamp Creek, for the entirety of the site and be a minimum width of 20 m on both sides of the creek. Seed and propagule sources are to be from local botanical provenance and same general habitat.* 2.29 *The riparian zone referred to under condition 2.28 of this approval shall be maintained for a period of at least five years after final planting.*	
Compliance Assessment Observations and Comments The requirements of 2.27, 2.28 and 2.29 have been incorporated into the Sawyers Swamp Creek Realignment Progressive Rehabilitation Plan, which was approved by DPHI during the reporting period.	
Surface water quality	
Condition of Approval 2.30	**Compliant**
The Applicant shall take all reasonable and feasible measures to prevent discharge of sediments and pollutants from the construction and operation of the project entering waterways. *Note: Section 120 of the Protection of the Environment Operations Act 1997 prohibits the pollution of water except where expressly provided by an Environmental Protection Licence.*	
Compliance Assessment Observations and Comments Prior to discharging offsite, water is treated at the onsite water treatment facilities, then discharged via the Licensed Discharge Point (LDP3) to the Coxs River. The Onsite Water Treatment facility was upgraded in June2026, with further commissioning activities recommended to improve water management on the Site, including optimisation of the flocculant for metals reduction in discharge water at LDP3. See Table 6.1 of the AEMR for details of the water management system operation during the AEMR reporting period. Four instances of non-compliance with the EPL with respect to discharge of water above the Ammonia discharge limit were identified and reported to the EPA. One instance of intermittent discharge without monitoring and recording conditions occurred and was reported to the EPA. No instances of *pollution of water* were identified within the reporting period. Instances of non-compliance with the EPL are reported in CoA 7.3(e) in this Appendix and Section 9.3.3 of the AEMR.	
Condition of Approval 2.31	**Compliant**
Earthworks not associated with the realignment of Sawyer Swamp Creek shall not be undertaken within 50m of the creek where reasonable and feasible.	
Compliance Assessment Observations and Comments Sawyer Swamp Creek is a heavily disturbed waterway. The entire Project Area is within 50m of Sawyer Swamp Creek; therefore, it is not reasonable or feasible for earthworks to be conducted greater than 50m away from the Creek.	

Condition	Compliance assessment finding
Condition of Approval 2.32	**Compliant**
All equipment, machinery and vehicles associated with the construction and operation of the project shall be operated and maintained in a manner that minimises the potential for oil and grease spills/leaks.	
Compliance Assessment Observations and Comments PRJH Mining supply GPM with a Lidsdale Site Operations Monthly Report detailing site safety, operations, environmental and maintenance aspects of site management. The maintenance records include general site operations and inspections of monitoring stations, site water usage, pre-start inspections, records of incidents /near misses, training and safety inspections. Spill kits are available on plant and equipment for the management of unexpected spills. *Monthly PRJH Client Service Reports may be viewed upon request.*	
Air Quality	
Condition of Approval 2.33	**Compliant**
The Applicant shall construct and operate the project in a manner that minimises dust impacts generated by construction works and operational activities, including wind-blown and traffic generated dust, on the receiving environment. All activities on the site shall be undertaken with the objective of preventing visible emissions of dust from the site. Should such visible dust emissions occur at any time, the Applicant shall identify and implement all practicable dust mitigation measures, including cessation of relevant works, as appropriate, at emissions of visible dust cease.	
Compliance Assessment Observations and Comments Dust management is a key focus for the Site. Dust mitigation measures include: • use of perimeter sprays at the ash placement area • water carts (12,000L and 20,000 L capacity) on site during all operations 8 am to 5 pm Mondays to Sundays • final capping of ash, and • general maintenance and rehabilitation of the ash placement area Depositional dust results for the period were below the annual assessment criteria at all gauges during the AEMR reporting period.	
Condition of Approval 2.34	**Compliant**
The Applicant shall ensure that the load carrying compartment(s) of all ash haulage trucks are covered at all times except when loading or unloading ash material.	
Compliance Assessment Observations and Comments No issues with load coverings were recorded for the 2025-26 reporting period. All loads which enter site are monitored by security cameras and gatehouse staff.	

Condition	Compliance assessment finding
Lighting Emissions	
Condition of Approval 2.35	**Compliant**
The Applicant shall take all practicable measures to mitigate off-site lighting impacts from the project and ensure all external lighting associated with the project complies with Australian Standard AS4282 1997 – Control of the Obtrusive Effects of Outdoor Lighting.	
Compliance Assessment Observations and Comments No mobile lighting plants are utilised at Kerosene Vale operations. In the event that Lighting Plants are utilised, the lights must face south or east, operators must ensure the horizontal distance of the illuminated area is not less than 40m and must be extinguished by 10pm.	
Construction Traffic and Transport Impacts	
Condition of Approval 2.36	**Compliant**
The Applicant shall ensure that construction vehicles associated with the project: *a) minimise the use of local roads (though residential streets and town centres) to gain access to the site;* *b) adhere to any nominated haulage routes identified in the Construction Traffic Management Plan as referred to in condition 6.3a) ofthis approval; and* c) *adhere to a Construction Vehicle Code of Conduct prepared to manage driver behaviour along the local road network to address traffic impacts (and associated noise) along nominated haulage routes.*	
Compliance Assessment Observations and Comments A Construction and Operational Transport Management Plan was approved and implemented as part of the CEMP and OEMP in the 2025-2026 AEMR reporting period.	
Capping Material Transport Impacts	
Condition of approval 2.36A	**Compliant**
The Applicant must: *a) not import more than 100 heavy vehicle loads of capping material to the site per day;* *b) cover all heavy vehicle loads of capping material;* *c) not transport capping material on local roads in the Lithgow local government area;* *d) notify the Department before commencing the importation of capping material from sources outside of the Lithgow local government area; and* e) *not import capping material to the site for more than 10 years following the date of approval of Modification application 07_0005 Mod 2.*	
Compliance, Assessment and Observation Import of capping materials has complied with condition a). to e) during the reporting period.	

Condition	Compliance assessment finding
Condition of Approval 2.36B	**Compliant**
The Applicant must implement warning signage on the Castlereagh Highway on the approaches to the Castlereagh Highway/Wallerawang Power Station Haul Road intersection prior to importing capping material to the site from sources outside of the Lithgow local government area to the satisfaction of TfNSW.	
Compliance, Assessment and Observation A Construction and Operational Transport Management Plan was approved and implemented as part of the CEMP and OEMP in the 2025-2026 AEMR reporting period. Signage is erected on the approaches to the Castlereagh Highway.	
Heritage Impacts	
Condition of Approval 2.37	**Compliant**
The Applicant shall ensure that all construction personnel are educated on their obligations in respect of the protection of Aboriginal and non-indigenous heritage sites and items.	
Compliance Assessment Observations and Comments The PRJH Mining Works Procedure Manual includes Environmental Management Controls for Cultural Heritage and applies to all personnel. Heritage obligations (Aboriginal and non-indigenous heritage) are included in the GPM Induction for all personnel entering and conducting works on the Site.	
Condition of Approval 2.38	**Compliant**
If any previously unidentified heritage sites or items (Aboriginal and/or non-indigenous) are discovered during construction works or operational activities, all work likely to affect the heritage sites or item(s) is to cease immediately and the discovery of the objects shall be reported to OEH or the Department as relevant.	
Compliance Assessment Observations and Comments Six Aboriginal artefactual sites were identified during an Aboriginal Cultural Heritage Assessment within the Southern Paddock region of the site as part of a Review of Environmental Factors being undertaken for stormwater management works proposed. No known Aboriginal or non-indigenous heritage sites were impacted during the reporting period. AHIMS Site Recording Forms for the six newly identified Aboriginal objects and/or sites within the project area have been submitted and approved to the AHIMS database in June 2026.	

Condition	Compliance assessment finding
Waste Management	
Condition of Approval 2.39	**Compliant**
All waste materials shall be assessed, classified, managed and disposed of in accordance with the EPA's Waste Classification Guidelines (or its latest version).	
Compliance Assessment Observations and Comments Site waste generation is minimal and disposed of at appropriately licenced landfills or recycling facilities.	
Condition of Approval 2.40	**Compliant**
All waste materials removed from the site shall only be directed to a waste management facility lawfully permitted to accept the materials.	
Compliance Assessment Observations and Comments All waste material removed from the site was disposed of at appropriately licenced landfills or recycling facilities during the reporting period.	
Condition of Approval 2.41	**Compliant**
The Applicant shall not cause, permit or allow any waste generated outside the site to be received at the site for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by a licence under the Protection of the Environment Operations Act 1997, if such a licence is required in relation to that waste.	
Compliance Assessment Observations and Comments No wastes generated outside the Kerosene Vale Ash Repository site are allowed to enter the area. Within the reporting period, only ENM and VENM, both listed on EPL 21185, and commercial quarried material were imported to site. To prevent the unlawful access to the repository area, regular security patrols are conducted across the site. Both PRJH Mining and GPM security personnel are required to report if they encounter any rubbish or wastes outside those that are allowed during routine operations. No wastes of this nature were observed during monthly environmental compliance inspections during the reporting period.	

Condition	Compliance assessment finding
Environmental Monitoring	
Construction Noise Monitoring	
Condition of Approval 3.1	**Compliant**
The Applicant shall prepare and implement a Construction Noise Monitoring Program to confirm the predictions of the noise assessment detailed in the document referred to under condition 1.1b) of this approval and assess compliance against the construction noise criterion stipulated in condition 2.7 of this approval. The noise monitoring program shall be prepared in consultation with, and to the satisfaction of,the DECC. The monitoring program shall form part of the Construction Noise Management Plan referred to in condition 6.3b) of this approval and must include monitoring of the construction noise generated during: *a) The realignment of Sawyers Swamp Creek;* *b) Construction of the stabilisation berm;* *c) Excavation of the former pine plantation area;* *d) Relocation and construction of surface water management structures; and* *e) Concurrent construction activities.* *The Applicant shall forward to the EPA and the Secretary a report containing the results of each noise assessment and describingany non-compliance within 14 days of conducting a noise assessment.*	
Compliance Assessment Observations and Comments A Construction Noise Monitoring Program (CNMP) has been produced, approved by DPHI and implemented. The CNMP is presented in Appendix A of the Construction Noise Monitoring Plan and details noise monitoring methods, locations, criteria, frequency and reporting requirements. Noise monitoring compliant with the CNMP requirements was undertaken on four occasions during the monitoring period. Based on site observations and information reviewed, potential noise impacts from the operation and construction activities at the project are considered to have been effectively mitigated and managed.	
Condition of Approval 3.2	**Compliant**
*Within 60 days of the commencement of operation of the project, unless otherwise agreed to by the Director-General, the Applicant shall submit for the approval of the Secretary an **Operational Noise Review** to confirm the operational noise impacts of the project. The Operational Noise Review must be prepared in consultation with, and to the satisfaction of, the EPA. The Review shall:* *a) Identify the appropriate operational noise objectives and level for sensitive receivers;* *b) Describe the methodologies for noise monitoring including the frequency of measurements and location of monitoring sites;* *c) Document the operational noise levels at sensitive receivers as ascertained by the noise monitoring program;* *d) Assess the noise performance of the project against the noise criterion specified in condition 2.15 of this approval and the predictednoise levels as detailed in the report referred to under condition 1.1b) of this approval; and* *e) Provide details of any entries in the Complaints Register (as required under condition 5.4 of this approval) relating to noise impacts.* *Where monitoring indicates noise levels in excess of the operational noise criterion specified in condition 2.15 of this approval, theApplicant shall prepare a report as required by condition 2.18 of this approval.*	

Condition	Compliance assessment finding
Compliance Assessment Observations and Comments The Operational Noise Review (Parsons Brinckerhoff, 2009) was submitted to the DPE on 16 September 2009, and the Department acknowledged its satisfaction that Conditions of Approval 3.2 had been met on 18 September 2009.	
Ongoing Operational Noise Monitoring	
Condition of Approval 3.3	**Compliant**
The Applicant shall prepare and implement an Operational Noise Monitoring Program to assess compliance against the operational noise criterion stipulated in condition 2.15 of this approval, throughout the life of the project. The noise monitoring program shall be prepared inconsultation with, and to the satisfaction of, the EPA. *The noise monitoring program shall be prepared in accordance with the requirements of the NSW Noise Policy for Industry (EPA, 2017) (or its latest version) and must include, but not be limited to:* *a) Monitoring during ash placement in the far western area of the site adjacent to the haul road; and* *b) Monitoring of the effectiveness of any noise mitigation measures implemented under condition 2.18 of this approval, against the noise criterion specified in condition 2.15 of this approval.* *Noise from the project is to be measured at the most affected point on or within the residential boundary, or at the most affected point within 30 metres of a dwelling where the dwelling is more than 30 metres from the boundary, to determine compliance with the noise criterion stipulated in condition 2.15 of this approval. Where it can be demonstrated that direct measurement of noise from the project is impractical, the EPA may accept alternative means of determining compliance and the modifying factors shall also be applied to the measured noise levels where applicable in accordance with the NSW Noise Policy for Industry (EPA, 2017) (or its latest version).* *The Applicant shall forward to the EPA and the Secretary a report containing the results of any non-compliance within 14 days ofconducting a noise assessment.* *Where monitoring indicates noise levels in excess of the operational noise criterion specified in condition 2.15 of this approval, the Applicant shall prepare a report as required by condition 2.18 of this approval.* *The monitoring program shall form part of the Operational Noise Management Plan referred to in condition 6.5a) of this approval.*	
Compliance Assessment Observations and Comments A Noise Monitoring Program is detailed in the Operational Noise Management Plan, which is a sub-plan of the OEMP. This plan was approved by DPHI during the 2025-26 monitoring period and implemented by GPM. GPM continue to implement the required noise monitoring assessments. No non-compliances were identified during the reporting period, and no community complaints were received during the AEMR reporting period.	

Condition	Compliance assessment finding
Groundwater Monitoring	
Condition of Approval 3.4	**Compliant**
The Applicant shall prepare and implement a Groundwater Monitoring Program to monitor the impacts of ash placement activities on local groundwater quality and hydrology. The program shall be developed in consultation with, and to the satisfaction of, WaterNSW, and shall describe the location, frequency, rationale and procedures and protocols for collecting groundwater samples, as well as the parameters analysed and methods of analysis. The monitoring program shall be ongoing for the life of the project and include, but not be limited to: *a) monitoring at established bore sites (or replacement bore sites in the event that existing sites are damaged or lost) as described in the document referred to under condition 1.1b) of this approval; and* *b) a schedule for periodic monitoring of groundwater quality, depth and flow at all monitoring sites, at an initial frequency of no less than once every month for the first 12 months of operation.* *The monitoring program shall form part of the Groundwater Management Plan referred to in condition 6.5b) of this approval.*	
Compliance Assessment Observations and Comments A Groundwater Monitoring Program is detailed in the Operational Groundwater Management Plan, which is a subplan to the OEMP. This plan was approved by DPHI during the 2025-26 monitoring period and implemented by GPM. Groundwater monitoring requirements are also within EPL 21185. Groundwater quality, levels and trends for the AEMR reporting period are reported in Section 6.2.2 and Appendix D.	
Surface Water Quality Monitoring	
Condition of Approval 3.5	**Compliant**
The *Applicant is to implement a surface water quality monitoring program to monitor the impacts of the ash placement activities on, and the realignment of, Sawyers Swamp Creek. The Program shall be developed in consultation with and to the satisfaction of Fisheries NSW and Water NSW, and shall describe the location, frequency, rationale and the procedures and protocols for collecting water samples as well as theparameters analysed and methods of analysis. The program shall include, but not necessarily be limited to:* *a) monitoring at the four-existing water quality monitoring sites as described in the document referred to under 1.1b) of this approval;* *b) monitoring downstream of the realigned section of Sawyers Swamp Creek;* *c) monitoring at groundwater discharge points into Sawyers Swamp Creek;* *d) wet weather monitoring with a minimum of two events recorded within the first 12 months of both the operation of the project andpost realignment of Sawyers Swamp Creek; and* *e) a schedule for periodic monitoring of surface quality at all sites throughout the life of the project, at an initial frequency of no less than once every month for the first 12 months and must include, but not be limited to, dissolved oxygen, turbidity, total phosphorusand total nitrogen.* *The monitoring program shall form part of the Surface Water Management Plan referred to in condition 6.5c) of this approval.*	

Condition	Compliance assessment finding
Compliance Assessment Observations and Comments A Surface Water Monitoring Program is detailed in the Operational Surface Water Management Plan, which is a subplan to the OEMP. This was approved by DPHI during the 2025-26 monitoring period and implemented by GPM. Surface water monitoring requirements are also within EPL 21185. Water management and the results of surface water monitoring throughout the AEMR reporting period is provided in Section 6.2.2 and Appendix D.	
Sawyers Swamp Creek Realignment Monitoring	
Condition of approval 3.6 and 3.7	**Compliant**
3.6 - *The Applicant is to implement a **Hydrological Monitoring Program** to assess and quantify the impacts and effectiveness of the realigned section of Sawyers Swamp Creek in consultation with and to the satisfaction of Fisheries NSW. Monitoring is to be undertaken for a period of five (5) years upon completion of the creek realignment and is to include scour and erosion monitoring. The program must include sampling before and after the realignment works and include a sampling site downstream of the realigned section of creek. In the first 12 months following completion of the realignment, monitoring is to be undertaken at least every three (3) months upon completion of the creek realignment and after any wet weather/bankful flow event.* *The monitoring program shall form part of the Rehabilitation Plan for the project as referred to in condition 2.26 of this approval.* 3.7 - *The Applicant shall prepare an **Ecological Monitoring Program**, in consultation with, and to the satisfaction of, Fisheries NSW, to monitor and quantify the impacts of the realignment of Sawyers Swamp Creek on the ecology and ecosystems of the creek and the associated riparian environment. The Program shall include, but not necessarily be limited to:* *a) a sampling, data collection and assessment regime to establish baseline ecological health and for ongoing monitoring of ecological health of the in-stream environment during construction and throughout the life of the project;* *b) at least one in-stream sampling period prior to the realignment of Sawyers Swamp Creek and at least two (2) sampling periods following the realignment of Sawyers Swamp Creek; and* *c) an assessment regime for monitoring the ecological health of the riparian environment for a period of at least five (5) years after final planting.* *The monitoring program shall form part of the Rehabilitation Plan for the project as referred to in condition 2.26 of this approval.*	
Compliance Assessment Observations and Comments Sawyers Swamp Creek was not realigned within the reporting period. The Sawyers Swamp Creek Realignment Progressive Rehabilitation Plan has been submitted to DPHI for review during the reporting period.	
Air Quality Monitoring	
Condition of Approval 3.8	**Compliant**
*The Applicant shall prepare an **Air Quality Monitoring Program**, in consultation with, and to the satisfaction of, the EPA. The Program shall include but not necessarily be limited to, monitoring for dust at the monitoring sites identified in the document referred to under condition1.1b) of this approval. The air quality monitoring program shall be ongoing for the life of the project, including final rehabilitation and stabilisation of the site. The monitoring program shall form part of the Air Quality Management Plan referred to in condition 6.5d) of this approval.*	

Condition	Compliance assessment finding
Compliance Assessment Observations and Comments An air quality monitoring program is detailed in the Operational Air Quality Management Plan, a sub-plan of the OEMP. This plan was approved by DPHI during the 2025-26 monitoring period and implemented by GPM. Depositional dust results for the period were below the annual assessment criteria at all gauges during the AEMR reporting period. No community complaints pertaining to dust were received during the AEMR reporting period. These results indicate that the Site is effectively managing dust levels.	
Compliance Monitoring and Tracking	
Condition of Approval 4.1	**Compliant**
Prior to each of the events listed below, the Applicant shall certify in writing to the satisfaction of the Secretary that it has complied with all conditions of this approval applicable prior to that event: *d) commencement of any construction works on the land subject of this approval; and* *e) commencement of operation of the project.*	
Compliance Assessment Observations and Comments GPM advised that construction commenced in September 2025. GPM's Annual Review for 1 September 2023 to 31 August 2024 reported on compliance and DPHI accepted it on 27 November 2024 as generally satisfying the reporting requirements. Energy Australia addressed CoA 4.1 when operations commenced, so this condition item has been met.	
Condition of Approval 4.2	**Compliant**
The Applicant shall develop and implement a Compliance Tracking Program for the project, prior to commencing operations, to track compliance with the requirements of this approval and shall include, but not necessarily be limited to: *a) Provisions for periodic review of the compliance status of the project against the requirements of this approval and the Statementof Commitments detailed in the document referred to in condition 1.1c) of this approval;* *b) provisions for periodic reporting of the compliance status to the Secretary;* *c) a program for independent environmental auditing in accordance with the Independent Audit Post Approval Requirements (NSW Government 2020);* *d) procedures for rectifying any non-compliance identified during environmental auditing or review of compliance;* *e) mechanisms for recording environmental incidents and actions taken in response to those incidents;* *f) provisions for reporting environmental incidents to the Director-General during construction and operation; and* *g) provisions for ensuring all employees, contractors and sub-contractors are aware of, and comply with, the conditions of this approval relevant to their respective activities.* *The Compliance Tracking Program shall be implemented prior to operation of the project with a copy submitted to the Secretary for approval within four weeks of commencement of the project, unless otherwise agreed by the Secretary.*	

Condition	Compliance assessment finding
Compliance Assessment Observations and Comments Energy Australia's Compliance Tracking Program was included in Annual Returns and the GPM Compliance Tracking Program is addressed via OEMP s3.7 and CEMP s4.1, which were approved by DPHI in April 2026. Compliance against the Conditions of Approval is audited annually and appended to the AEMR. Monthly inspections are conducted by the Environmental Representatives, and recommended actions to ensure ongoing compliance are provided to GPM in a monthly report. Further, GPM conducts independent compliance inspections of the Site weekly and records in an internal monthly report. OEMP s3.7.3 and CEMP s4.5 / Table 4.4 set out the audit schedule and frequency (OEMP: no greater than 1 year; CEMP: every 3 years). GPM are currently liaising with Independent Environmental Auditors to undertake within the next annual reporting period. Environmental incidents that may occur at the Kerosene Vale Ash Repository site are reported in accordance with the approved OEMP and are captured within GPM's Incident Register. DPHI's April 2026 approval of both plans is the Secretary's agreement for the purposes of "*unless otherwise agreed by the Secretary*". Employees, contractors and sub-contractors are made aware of the conditions of approval via site Inductions.	
Conditions of Approval 4.3 and 4.4	**Compliant**
Conditions of Approval 4.3 – Nothing in this approval restricts the Applicant from utilising any existing compliance tracking programs administered by the Applicant to satisfy the requirements of condition 4.2. In doing so, the Applicant must demonstrate to the Secretary how these systems address the requirements and/or have been amended to comply with the requirements of the condition. *Conditions of Approval 4.4 – The Applicant shall meet the requirements of the Secretary in respect of the implementation of any measure necessary to ensure compliance with the conditions of this approval, and general consistency with the documents listed under condition 1.1 of this approval.*	
Compliance Assessment Observations and Comments This project had a Minister approved OEMP (EANSW, 2018). The OEMP included review of the existing Compliance Tracking Program. GPM was not aware of any requests to implement any additional measures to ensure compliance with the relevant Conditions of Approvals for the Kerosene Vale Ash Repository. An updated CEMP and OEMP have been developed for the site and the compliance tracking program is provided in Table 9.1 of this AEMR.	

Condition	Compliance assessment finding
Community Information Complaints Management	
Provision of Information	
Conditions of Approval 5.1 and 5.2	**Compliant**
5.1 - *Prior to the commencement of the project, the Applicant shall establish and maintain a website for the provision of electronic information associated with the project. The Applicant shall, subject to confidentiality, publish and maintain up-to-date information on this website or dedicated pages including, but not necessarily limited to:* *a) the documents referred to under condition 1.1 of this approval;* *b) this project approval, Environment Protection Licence and any other relevant environmental approval, licence or permit required and obtained in relation to the project;* *c) all strategies, plans and program required under this project approval, or details of where this information can be viewed;* *d) information on construction and operational progress;* *e) the outcomes of compliance tracking in accordance with the requirements of this project approval.* *5.2 – The Applicant shall make all documents required to be provided under condition 5.1 of this approval publicly available.*	
Compliance Assessment Observations and Comments Copies of the following documents are made publicly available on the GPM website (https://gpmco.com.au/lidsdale/): • Environment Protection Licence (EPL21185) • Operation Environmental Management Plan (GPM, 2026) • Annual Environmental Management Reports (2021- 2025) • Construction Environmental Management Plan (GPM, 2026) • Pollution Incident Response Management Plan Links to the Planning Portal are available for the following: • Environment Assessment • Project Approval 07_0005 (MOD2)	

Condition	Compliance assessment finding
Complaints and Enquiries Procedure	
Condition of Approval 5.3	**Compliant**
Prior to the commencement of the project, the Applicant shall ensure that the following are available for community complaints andenquiries during construction and operation: *a) A 24-hour contact number(s) on which complaints and enquiries about construction and operational activities may be registered;* *b) A postal address to which written complaints and enquiries may be sent; and* *c) An email address to which electronic complaints and enquiries may be sent; and* *d) An email address to which electronic complaints and enquiries may be transmitted.* e) *The telephone number, postal address and email address shall be published in a newspaper circulating in the local area prior to thecommencement of the project. The above details shall also be provided on the website required by condition 5.1 of this approval.*	
Compliance Assessment Observations and Comments The website: https://gpmco.com.au/contact-us/ lists the following contact details: Community Information & Complaints Line: 02 4390 8994 Postal address: Generator Property Management, PO Box 132 Budgewoi NSW 2262 Email: info@gpmco.com.au There is also a dedicated enquiry form provided on the GPM Contact page for enquiries.	
Condition of Approval 5.4	**Compliant**
The Applicant shall record the details of all complaints received through the means listed under condition 5.3 of this approval in an up-to-date Complaints Register. The Register shall record, but not necessarily be limited to: *a) the date and time of the complaint;* *b) the means by which the complaint was made (e.g. telephone, email, mail, in person);* *c) any personal details of the complainant that were provided, or if no details were provided a note to that effect;* *d) the nature of the complaint;* *e) the time taken to respond to the complaint;* *f) any investigations and actions taken by the Applicant in relation to the complainant; and* *g) if no action was taken by the Applicant in relation to the complaint, the reason(s) why no action was taken.* *The Complaints Register shall be made available for inspection by the Director-General upon request.*	

Condition	Compliance assessment finding
Compliance Assessment Observations and Comments GPM maintains a Community Information and Complaints Line for the public to report incidents, complaints or enquiries with contact details available on GPM's website. Any complaints received by GPM are recorded in the Complaints Register with all details captured including action to be taken if necessary. If actions were necessary, a review of those actions is undertaken before the work order is closed. No complaints were received regarding the Kerosene Vale Ash Repositories within the AEMR reporting period.	
Environmental Management	
Environmental Representative	
Condition of Approval 6.1	**Compliant**
Prior to the commencement of any construction or operational activities, or as otherwise agreed by the Secretary, the Applicant shall nominate for the approval of the Secretary a suitably qualified and experienced Environmental Representative(s) independentof the design, construction and operation personnel. The Applicant shall engage the Environmental Representative(s) during any construction activities, and throughout the life of the project, or as otherwise agreed by the Secretary. The Environmental Representative(s) shall: *a) oversee the implementation of all environmental management plans and monitoring programs required under this approval, and advise the Applicant upon the achievements of these plans/programs;* *b) have responsibility for considering and advising the Applicant on matters specified in the conditions of this approval and the Statement of Commitments as referred to under condition 1.1c) in the EA;* *c) oversee the implementation of the environmental auditing of the project in accordance with the requirements of condition 4.2 of this approval and all relevant project Environmental Management System(s); and* d) *be given the authority and independence to recommend to the Applicant reasonable steps to be taken to avoid or minimise unintended or adverse environmental impacts, and, failing the effectiveness of such steps, to recommend to the Applicant that relevant activities are to be ceased as soon as reasonably practicable if there is a significant risk that an adverse impact on the environment will be likely to occur.*	
Compliance Assessment Observations and Comments GPM has nominated Tracey Doczy as the replacement *Environmental Representative* for David Bone. Tracey's appointment was approved on 8 May by DPHI. Monthly reports are provided to DPHI within one month of undertaking each site inspection. A total of 12 reports were submitted to DPHI during the reporting period.	
Construction Environmental Management	
Conditions of Approval 6.2 and 6.3	**Compliant**
Compliance Assessment Observations and Comments Conditions of Approval 6.2 and 6.3 relate to a Construction Environmental Management Plan (CEMP). A revised CEMP for KVAR was developed and approved by the DPI in April 2026. The revised CEMP contains a Construction Traffic Management Plan, Construction Noise Management Plan, Erosion and Sediment Control Plan compliant with CoA 6.3.	

Condition	Compliance assessment finding
Operational Environmental Management	
Conditions of Approval 6.4 and 6.5	**Compliant**
Conditions 6.4 and 6.5 relate to the detailed requirements of the OEMP.	
Compliance Assessment Observations and Comments Conditions of Approval 6.4 and 6.5 relate to an Operational Environmental Management Plan (OEMP). A revised OEMP for KVAR was developed and approved by the DPI in April 2026. The revised OEMP contains an Operational Noise Management Plan, Operational Groundwater Management Plan, Operational Surface Water Management Plan, Operational Air Quality Management Plan and Operational Transport Management Plan compliant with CoA 6.5.	
Condition of Approval 6.5A	**Compliant**
The Applicant shall update the Operation Environment Management Plan (as referred to in condition 6.4 of this approval) and associated monitoring programs (as referred to in conditions 3.4 to 3.8 inclusive) prior to the importation of capping material to the site from sources outside of the Lithgow local government area, to the satisfaction of the Secretary. The updated plan and associated monitoring programs must reflect all operational activities, monitoring and management practices for the Kerosene Vale Ash Dam and the Sawyers Swamp Creek Ash Dam.	
Compliance Assessment Observation and Comments GPM is in the process of review and revision of the approved OEMP with DPHI to ensure it still reflects the current care and maintenance activities. The revised OEMP includes an Operational Transport Management Plan, consistent with Conditions of Approval 36A, & 6.5A.	
Revision of Strategies and Plans	
Condition of Approval 6.6	**Compliant**
The Applicant must review and, if necessary, revise the plans required under this approval within 2 months of: • *the submission of an audit report in accordance with condition 4.2(c) of this approval;* • *the submission of an incident report in accordance with condition 7.1 of this approval; or* • *an approved modification to the conditions of approval, to the satisfaction of the Secretary.*	
Compliance Assessment Observation and Comments The site OEMP and CEMP were approved by DPHI to ensure it reflects current construction and operational activities. The review and revision have taken place throughout the AEMR reporting period. As part of the review and potential update to the OEMP, GPM have updated the Site's Compliance Tracking Program as set out in Table 9.1 of the AEMR. Additional recommended updates to the EPL, CEMP, OEMP and respective sub-plans are provided in Section 10.2 of the AEMR.	

Condition	Compliance assessment finding
Environmental Reporting	
Environmental Incident Reporting	
Conditions of Approval 7.1 and 7.2	**Compliant**
7.1 – The Applicant shall notify the Secretary of any environmental incident within 12 hours of becoming aware of the incident. TheApplicant shall provide full written details of the incident to the Director-General within seven days of the date on which the incident occurred. *7.2 – The Applicant shall meet the requirements of the Secretary to address the cause or impact of any environmental incident, asit related to this approval, reported in accordance with condition 7.1 of this approval, within such period as the Secretary may require.*	
Compliance Assessment Observations and Comments There were no reportable environmental incidents during the 2025-2026 AEMR reporting period.	
Annual Performance Reporting	
Condition of Approval 7.3	**Compliant**
The Applicant shall, throughout the life of the project, prepare and submit for the approval of the Secretary, an Annual EnvironmentalManagement Report (AEMR). The AEMR shall review the performance of the project against the Operation Environmental Management Plan (efer to condition 6.4 of this approval) and the conditions of this approval. The AEMR shall include, but not necessarily by limited to: *a) details of compliance with the conditions of this approval;* *b) a copy of the complaints register (refer to 5.4 of this approval) for the preceding twelve-month period (exclusive of personal details), and details of how these complaints were addressed and resolved;* *c) identification of any circumstances in which the environmental impacts and performance of the project during the year have not been generally consistent with the environmental impacts and performance predicted in the documents listed under condition 1.1 of this approval, with details of additional mitigation measures applied to the project to address recurrence of these circumstances;* *d) results of all environmental monitoring required under conditions 3.3 to 3.8 of this approval, including interpretations and discussion by a suitably qualified person; and* *e) a list of all occasions in the preceding twelve-month period when environmental goals/objectives/impact assessment criteria for the project have not been achieved, indicating the reason for failure to meet the criteria and the action taken to prevent recurrence of that type of failure.* *The Applicant shall submit a copy of the AEMR to the Director-General every year, with the first AEMR to be submitted no later than twelve months after the commencement of operation of the project. The Director-General may require the Applicant to address certain matters inrelation to the environmental performance of the project in response to review of the Annual Environmental Report. Any action required to be undertaken shall be completed within such period as the Director-General may require. The Applicant shall make copies of each AEMR available for public inspection on request*.	

Condition	Compliance assessment finding
Compliance Assessment Observations and Comments This AEMR satisfies the requirements of Conditions of Approval 7.3. All historic AEMRs are available on the GPM website. Throughout the reporting period, EPL non-compliances were reported for the following: • limit conditions (ammonia- 4 occasions) • Monitoring and recording conditions (2 occasions) • SSTV exceedances for: – Boron (2 occasions) – Nickel (2 occasions) – Lead (2 occasions) – Zinc (1 occasion) – Groundwater level (2 occasions) Non-compliances were reported to EPA, where appropriate, and Trigger Action Response Plan initiated. Development of Stage 1 Investigation report for boron based on repeat SSTV exceedance. Further details on EPL non-compliances presented in Section 9.3.3 of this AEMR.	

Appendix B
Noise reports

EMM
creating opportunities

Kerosene Vale Ash Repository

Environmental noise monitoring - Q3 2025

Prepared for Generator Property Management Pty Ltd

August 2025

Kerosene Vale Ash Repository

Environmental noise monitoring - Q3 2025

Generator Property Management Pty Ltd

E250518 RP1

August 2025

Version	Date	Prepared by	Reviewed by	Comments
1	14/08/2025	Will Moore	Amanda Buckeridge	Final

Approved by



Amanda Buckeridge
Associate, Acoustics
14 August 2025

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This report has been prepared in accordance with the brief provided by Generator Property Management Pty Ltd and, in its preparation, EMM has relied upon the information collected at the times and under the conditions specified in this report. All findings, conclusions or recommendations contained in this report are based on those aforementioned circumstances. This report is to only be used for the purpose for which it has been provided. Except as permitted by the Copyright Act 1968 (Cth) and only to the extent incapable of exclusion, any other use (including use or reproduction of this report for resale or other commercial purposes) is prohibited without EMM's prior written consent. Except where expressly agreed to by EMM in writing, and to the extent permitted by law, EMM will have no liability (and assumes no duty of care) to any person in relation to this document, other than to Generator Property Management Pty Ltd (and subject to the terms of EMM's agreement with Generator Property Management Pty Ltd).

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ABN: 28 141 736 558

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1 Introduction

1.1 Background

EMM Consulting Pty Ltd (EMM) was engaged by Generator Property Management Pty Ltd to conduct a quarterly noise survey of construction activities and operations at Kerosene Vale Ash Repository (KVAR, the site) located near Lidsdale, NSW. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

Attended environmental noise monitoring described in this report was done during the day and evening periods of 4/5 August 2025 at three monitoring locations.

1.2 Attended monitoring locations

Site monitoring locations are detailed in Table 1.1 and shown on Figure 1.1. It should be noted that Figure 1.1 shows actual monitoring positions, not necessarily the location of residences.

Table 1.1 Attended noise monitoring locations

Descriptor	Description	Coordinates (MGA 56)	
		Easting	Northing
Location A	Skelly Road, Lidsdale NSW	229052	6301209
Location B	Corner Sawyers Road and Skelly Road, Lidsdale NSW	228899	6301470
Location C	End of Nuebeck Street, Lidsdale NSW	228982	6301813

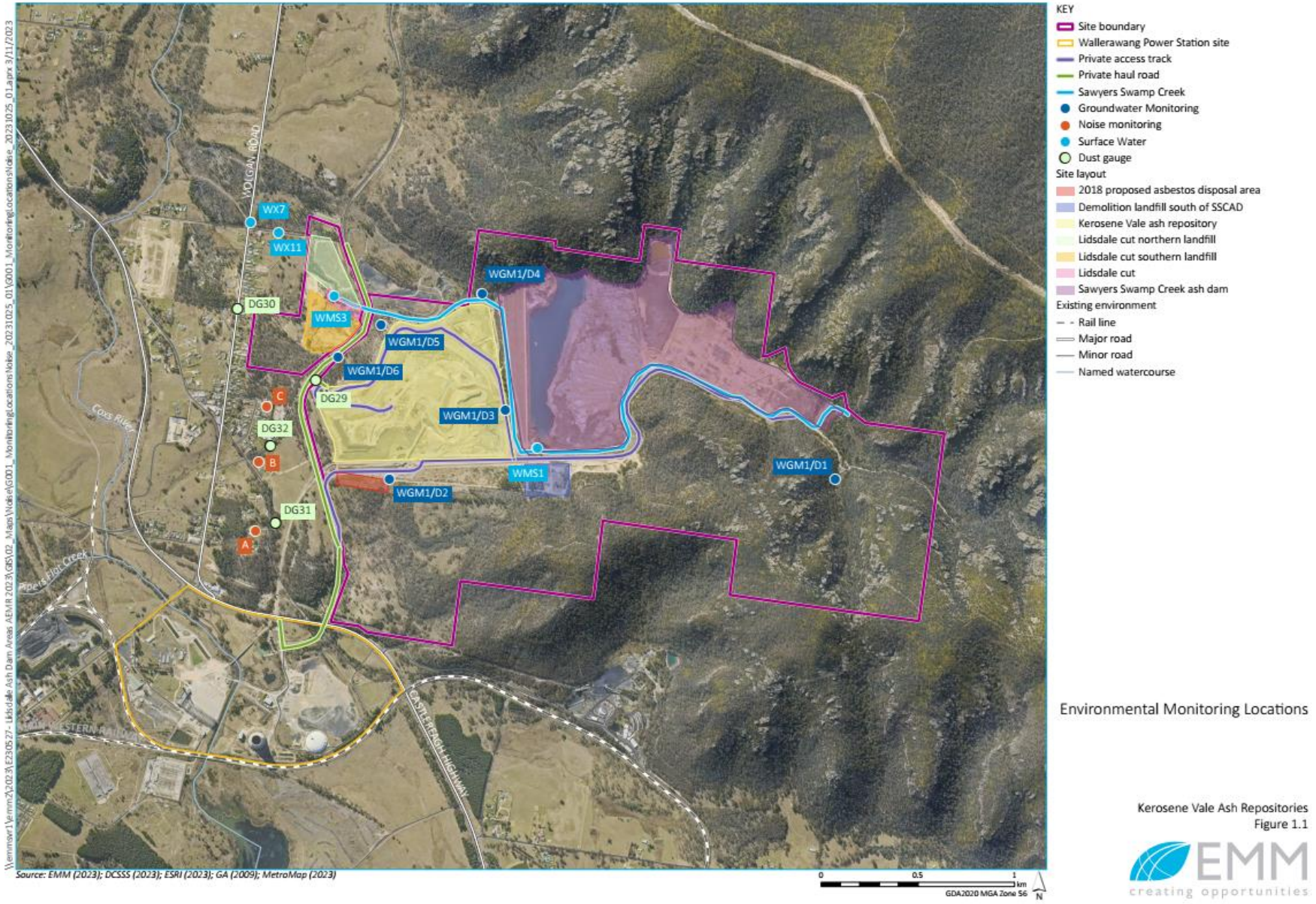

Figure 1.1 Environmental monitoring locations

1.3 Terminology and abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2 Terminology and abbreviations

Term/descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The "A" weighting scale is used to approximate how humans hear noise.
L_{Amax}	The maximum root mean squared A-weighted noise level over a time period.
L_{A1}	The A-weighted noise level which is exceeded for 1 per cent of the time.
$L_{A1,1minute}$	The A-weighted noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
L_{A10}	The A-weighted noise level which is exceeded for 10 percent of the time.
L_{Aeq}	The energy average A-weighted noise level.
L_{A50}	The A-weighted noise level which is exceeded for 50 per cent of the time, also the median noise level during a measurement period.
L_{A90}	The A-weighted noise level exceeded for 90 percent of the time, also referred to as the "background" noise level and commonly used to derive noise limits.
L_{Amin}	The minimum A-weighted noise level over a time period.
L_{Ceq}	The energy average C-weighted noise energy during a measurement period. The "C" weighting scale is used to take into account low-frequency components of noise within the audibility range of humans.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	Monday – Saturday: 7 am to 6 pm, on Sundays and Public Holidays: 8 am to 6 pm.
Evening	Monday – Saturday: 6 pm to 10 pm, on Sundays and Public Holidays: 6 pm to 10 pm.
Night	Monday – Saturday: 10 pm to 7 am, on Sundays and Public Holidays: 10 pm to 8 am.

Appendix A provides further information that gives an indication as to how an average person perceives changes in noise level, and examples of common noise levels.

2 Noise limits

2.1 Development consent

The current development consent for KVAR is MP07_0005 (MOD 2, October 2023). Section 2 of the consent details specific conditions relating to operational and construction noise generated by KVAR. Relevant sections of that document are reproduced in Appendix B.1.

2.2 Environment protection licence

KVAR holds Environment Protection Licence (EPL) No. 21185 issued by the Environment Protection Authority (EPA) most recently on 19 December 2023. Relevant sections of the EPL are reproduced in Appendix B.2.

2.3 Noise management plan

The KVAR Operational Environmental Management Plan (OEMP) was most recently updated in October 2018. Section 6.3 of the OEMP contains a noise and vibration management sub-plan. Appendix A of the OEMP provides the Operational Noise and Vibration Management Plan. Relevant sections of the OEMP are reproduced Appendix B.3.

2.4 Noise limits

2.4.1 Operational noise limits

Operational noise impact limits based on the EPL are shown in Table 2.1.

Table 2.1 Operational noise impact limits, $L_{Aeq,15minute}$ dB

Location	Day	Evening
Location A	40	40
Location B	40	40
Location C	40	40

2.4.2 Construction noise targets

Condition 2.7 of the consent details construction noise objectives as follows:

> The construction noise objective for the project is to manage noise from construction activities (as measured by a $L_{A10,15minute}$ descriptor) so as not to exceed the background L_{A90} noise level by more than 10 dB(A) at any sensitive receiver.

In accordance with Condition 3.1 of the consent, construction noise monitoring must occur during the following activities:

a) the realignment of Sawyers Swamp Creek;

b) construction of the stabilisation berm;

c) excavation of the former pine plantation area;

d) relocation and construction of surface water management structures; and

e) concurrent construction activities.

However, due to the difficulty of differentiating noise from construction and operational activities, all noise measured from the site has been assessed against operational noise impact limits as per condition 2.15 of the consent.

2.5 Meteorological conditions

As detailed in the development consent and EPL, noise criteria apply under the following meteorological conditions:

- wind speeds up to 3 m/s at 10 metres height above ground; and/or
- temperature inversion conditions of up to 3°C/100m and source to receiver gradient winds of up to 2 m/s at 10 metres height above ground.

2.6 Additional requirements

The NSW EPA 'Industrial Noise Policy' (INP, 2000) was replaced by the 'Noise Policy for Industry' (NPfI) in October 2017. Noise conditions in the EPL and project approval still reference the INP exclusively, so monitoring has been conducted in accordance with the INP.

For assessment of modifying factors, the NPfI immediately superseded the INP, as outlined in the EPA document 'Implementation and transitional arrangements for the Noise Policy for Industry' (2017). Therefore, assessment and reporting of modifying factors have been done in accordance with Fact Sheet C of the NPfI.

Monitoring and reporting have been done in accordance with the EPA 'Approved methods for the measurement and analysis of environmental noise in NSW' issued in January 2022.

3 Methodology

3.1 Overview

Attended environmental noise monitoring was done in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise' and relevant NSW EPA requirement.

3.2 Attended noise monitoring

During this survey, attended noise monitoring was conducted during the day and evening period at each location. The duration of each measurement was 15 minutes. Atmospheric conditions were measured at each monitoring location.

Measured sound levels from various sources were noted during each measurement, and particular attention was paid to the extent of site's contribution (if any) to measured levels. At each monitoring location, the site-only $L_{Aeq,15minute}$ and L_{Amax} were measured directly or determined by other methods detailed in Section 7.1 of the NPfI.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may be used in this report. When site noise is noted as IA, it was inaudible at the monitoring location. When site noise is noted as NM, this means it was audible but could not be quantified. All results noted as IA or NM in this report were due to one or more of the following:

- Site noise levels were very low, typically more than 10 dB below the measured background (L_{A90}), and unlikely to be noticed.
- Site noise levels were masked by more dominant sources that are characteristic of the environment (such as breeze in foliage or continuous road traffic noise) that cannot be eliminated by monitoring at an alternate or intermediate location.
- It was not feasible or reasonable to employ methods, such as to move closer and back calculate. Cases may include rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

If exact noise levels from site could not be established due to masking by other noise sources in a similar frequency range but were determined to be at least 5 dB lower than relevant limits, then a maximum estimate of may be provided. This is expressed as a 'less than' quantity, such as <20 dB or <30 dB.

For this assessment, the measured L_{Amax} has been used as a conservative estimate of $L_{A1,1minute}$. The EPA accepts sleep disturbance analysis based on either the $L_{A1,1minute}$ or L_{Amax} metrics, with the L_{Amax} representing a more conservative assessment of site noise emissions.

3.3 Meteorological data

Meteorological data was obtained from the Bureau of Meteorology (BOM) automatic weather station (AWS) at Marrangaroo which allowed correlation of atmospheric parameters with measured noise levels. Vertical temperature gradient and/or sigma theta data required to determine temperature inversion conditions was not available from this AWS.

As KVAR operates solely during the day and evening periods, it has been assumed that temperature inversion conditions were not present during monitoring.

3.4 Modifying factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. Assessment of modifying factors is undertaken at the time of measurement if the site was audible and directly quantifiable. If applicable, modifying factor penalties have been reported and added to measured site-only L_{Aeq} noise levels.

Low-frequency modifying factor penalties have only been applied to site-only L_{Aeq} levels if the site was the only contributing low-frequency noise source. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

3.5 Instrumentation and personnel

Attended noise monitoring was conducted by Will Moore. Qualifications, experience and demonstration of competence is in accordance with the Approved methods and is available upon request.

Equipment used to measure environmental noise levels is detailed in Table 3.1. Calibration certificates are provided in Appendix C.

Table 3.1 Attended noise monitoring equipment

Item	Serial number	Calibration due date	Relevant standard
Rion NA-28 sound level meter	00701424	21/05/2027	IEC 61672-1:2013
Pulsar 105 acoustic calibrator	78226	04/03/2027	IEC 60942:2017

4 Results

4.1 Total measured noise levels and atmospheric conditions

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

Table 4.1 Total measured noise levels, dB – Q3 2025 [1]

Location	Start date and time	L_{Amax}	L_{A1}	L_{A10}	L_{Aeq}	L_{A50}	L_{A90}	L_{Amin}
A	4/08/2025 19:10	44	42	39	38	37	36	35
A	5/08/2025 08:30	65	58	47	46	41	39	36
B	4/08/2025 18:50	55	49	48	46	46	44	42
B	5/08/2025 08:10	62	54	49	46	44	40	36
C	4/08/2025 18:30	51	42	41	40	40	38	35
C	5/08/2025 07:48	66	61	46	47	39	37	34

Notes: 1. Levels in this table are not necessarily the result of activity at site.

Atmospheric condition data measured by the operator during each measurement using a hand-held weather meter is shown in Table 4.2. The wind speed, direction and temperature were measured at approximately 1.5 metres above ground. Attended noise monitoring is not done during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.2 Measured atmospheric conditions – Q3 2025

Location	Start date and time	Temperature °C	Wind speed m/s	Wind direction °Magnetic north[1]	Cloud cover 1/8s
A	4/08/2025 19:10	11	<0.5	-	1
A	5/08/2025 08:30	7	<0.5	-	0
B	4/08/2025 18:50	10	<0.5	-	4
B	5/08/2025 08:10	6	<0.5	-	0
C	4/08/2025 18:30	14	<0.5	-	8
C	5/08/2025 07:48	6	<0.5	-	0

Notes: 1. "-" indicates calm conditions at monitoring location.

4.2 Construction activities

KVAR has advised that normal operations were occurring during monitoring, and relocation and construction of surface water management structures as defined in Section 2.4.2 of this report and Condition 3.1 of the consent was occurring at the time of monitoring.

4.3 Site only noise levels

4.3.1 Modifying factors

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.3.2 Site noise levels

Table 4.3 provides site noise levels in the absence of other sources, where possible, and includes weather data from the site AWS. Limits are applicable if weather conditions were within specified parameters during each measurement.

Table 4.3 Site noise levels and limits – Q3 2025

Location	Start date and time	Wind speed m/s	Limits apply? [1]	KVAR limit, $L_{Aeq,15minute}$ dB	KVAR level, $L_{Aeq,15minute}$ dB [2,3]	Exceedance, dB
A	4/08/2025 19:10	1.7	Yes	40	IA	Nil
A	5/08/2025 08:30	0.0	Yes	40	<20	Nil
B	4/08/2025 18:50	1.9	Yes	40	IA	Nil
B	5/08/2025 08:10	0.0	Yes	40	IA	Nil
C	4/08/2025 18:30	1.1	Yes	40	IA	Nil
C	5/08/2025 07:48	0.0	Yes	40	IA	Nil

Notes: 1. Noise emission limits do not apply during periods of rainfall or winds greater than 3 metres per second (at a height of 10 metres).

2. Site-only $L_{Aeq,15minute}$, includes modifying factor penalties if applicable.

3. When site noise is noted as IA, it was inaudible at the monitoring location. When site noise is noted as NM, this means it was audible but could not be quantified as per the notes in Section 3.2.

5 Discussion

5.1 Noted noise sources

During attended monitoring, the time variations (temporal characteristics) of noise sources are considered in each measurement via statistical descriptors. From these observations, summaries have been derived for the location and provided in this section. Statistical 1/3 octave-band analysis of environmental noise was conducted, and the following figures display frequency ranges of various noise sources at each location for L_{A1}, L_{A10}, L_{Aeq}, L_{A50}, and L_{A90} descriptors. These figures also provide, graphically, statistical information for these noise levels.

An example is provided as Figure 5.1, where frogs and insects are seen to be generating noise at frequencies above 1000 Hz, while industrial noise is observed at frequencies less than 1000 Hz.

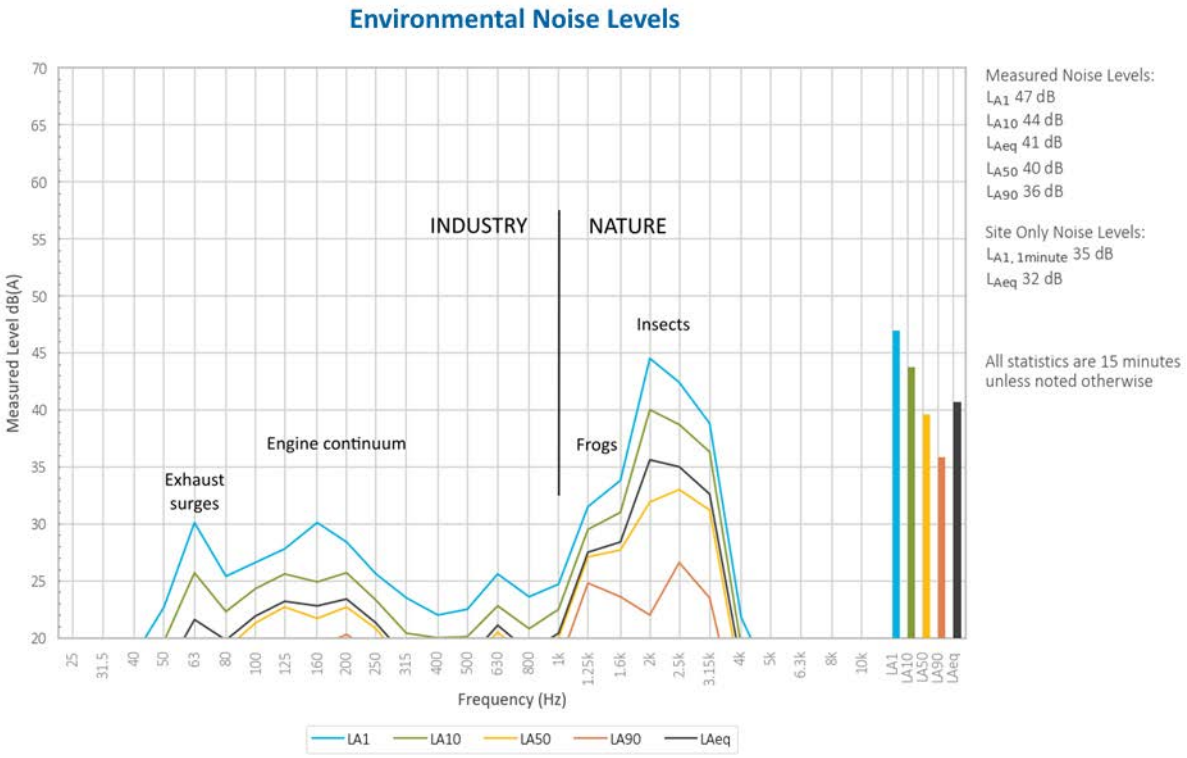

Figure 5.1 Example graph (refer to Section 5.1 for explanatory note)

5.2 Location A – Day

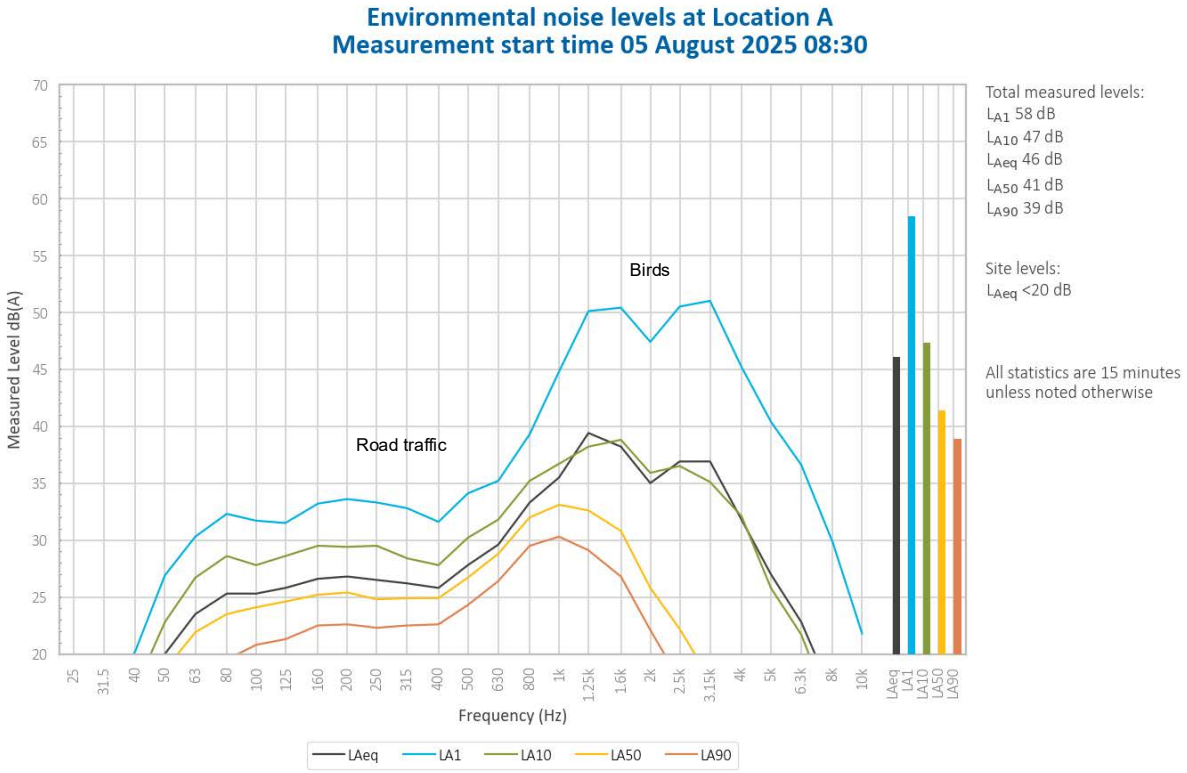

Figure 5.2 Environmental noise levels – Location A

Construction continuum and some impact noises from KVAR were audible occasionally during the measurement and generated a measured site-only L_{Aeq} of less than 20 dB.

Birds generated the measured L_{A1}, L_{A10} and L_{Aeq}. Road traffic generated the measured L_{A50} and L_{A90}.

5.3 Location A – Evening

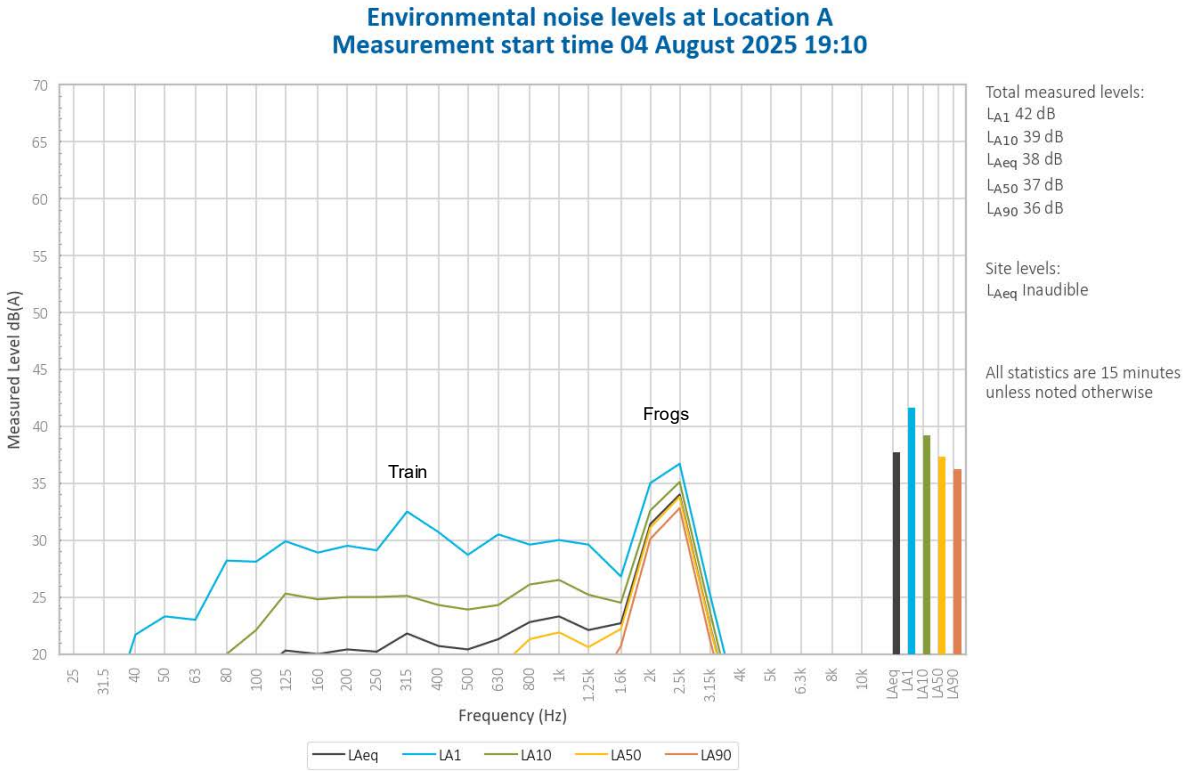

Figure 5.3 Environmental noise levels – Location A

KVAR was inaudible during the measurement.

Frogs generated total measured levels.

Noise from dogs, a train and road traffic was also noted.

5.4 Location B – Day

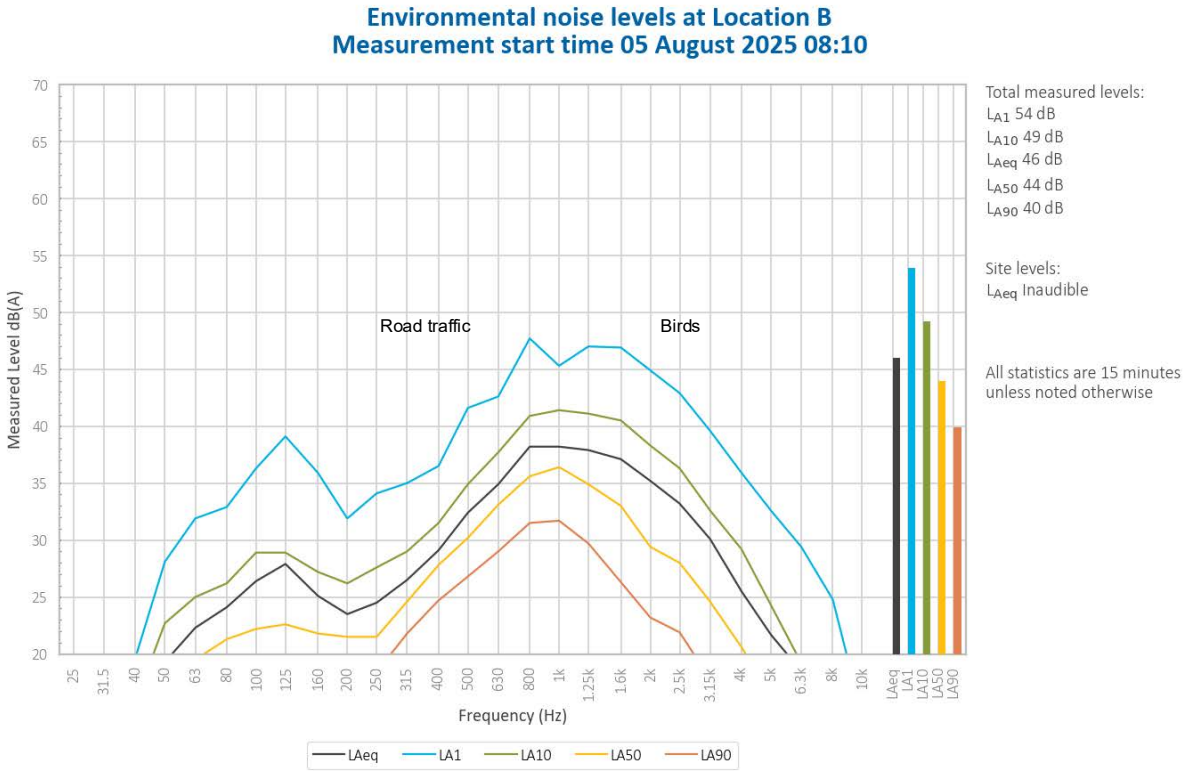

Figure 5.4 Environmental noise levels – Location B

KVAR was inaudible during the measurement.

Road traffic and birds generated total measured levels.

Noise from frogs was also noted.

5.5 Location B – Evening

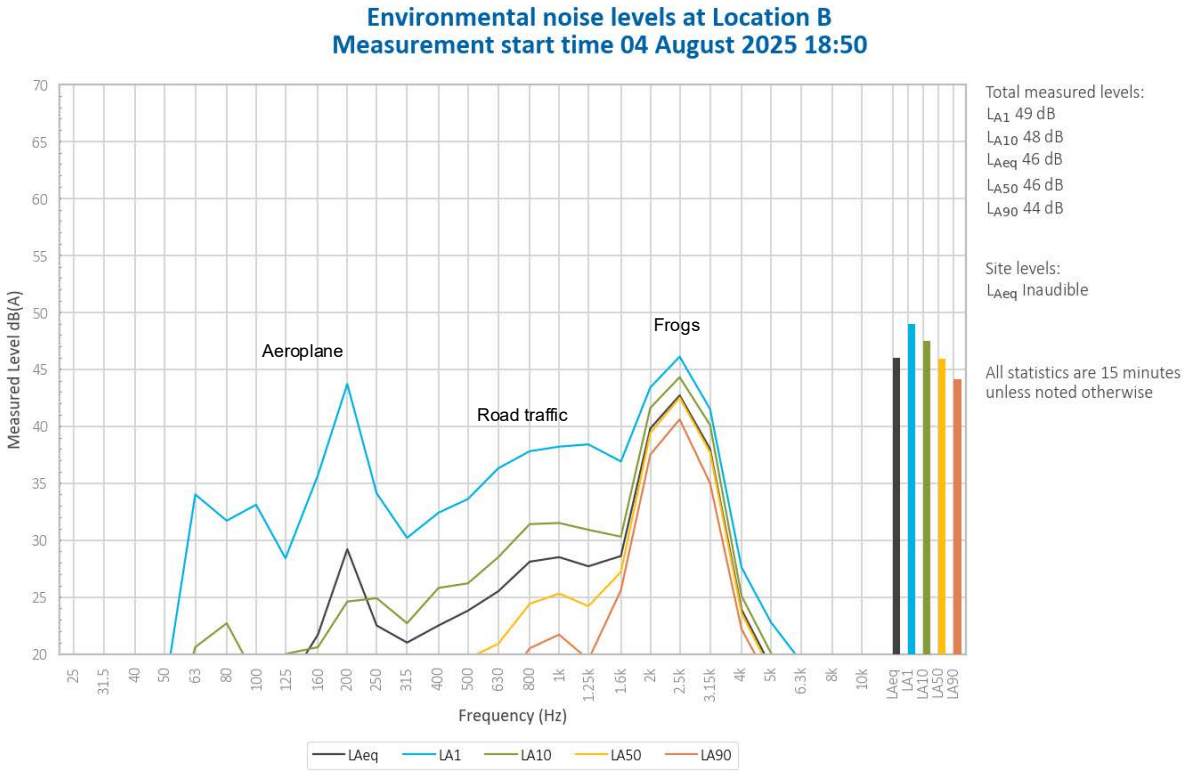

Figure 5.5 Environmental noise levels – Location B

KVAR was inaudible during the measurement.

Frogs generated total measured levels.

Noise from an aeroplane, dogs and road traffic was also noted.

5.6 Location C – Day

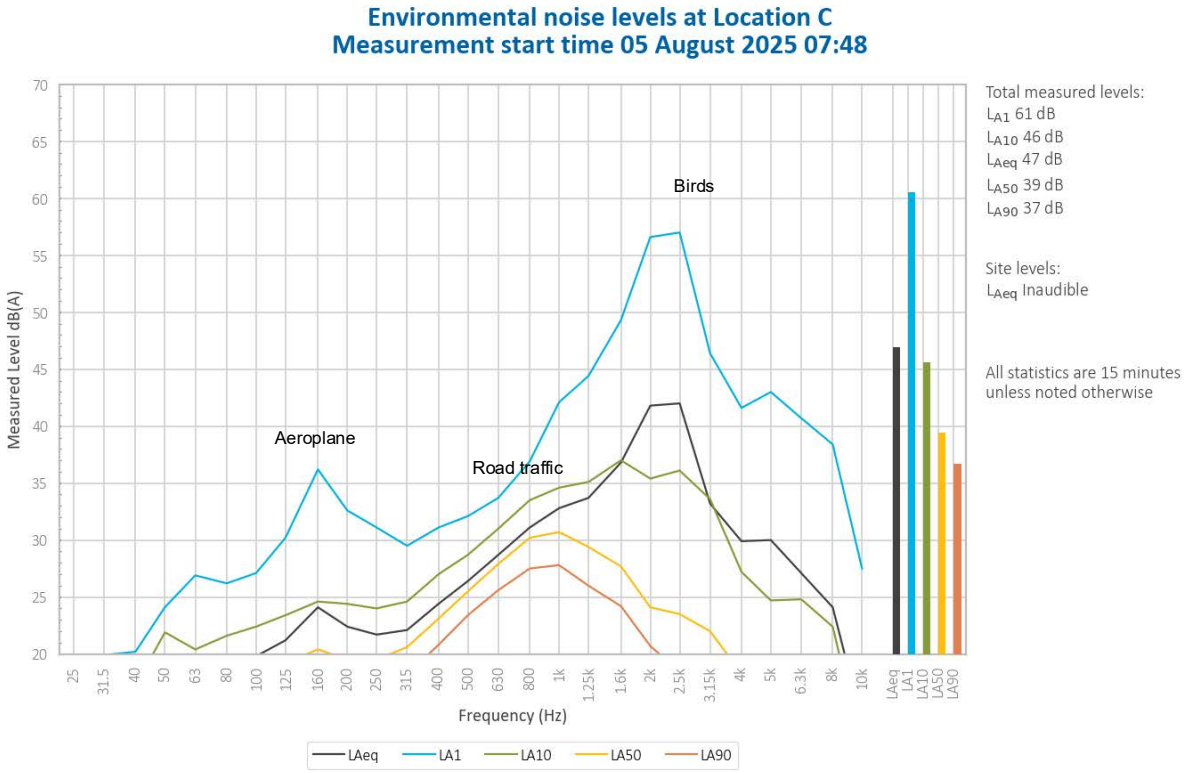

Figure 5.6 Environmental noise levels – Location C

KVAR was inaudible during the measurement.

Birds generated the measured L_{A1}, L_{A10} and L_{Aeq}. Road traffic generated the measured L_{A50} and L_{A90}.

Noise from an aeroplane was also noted.

5.7 Location C – Evening

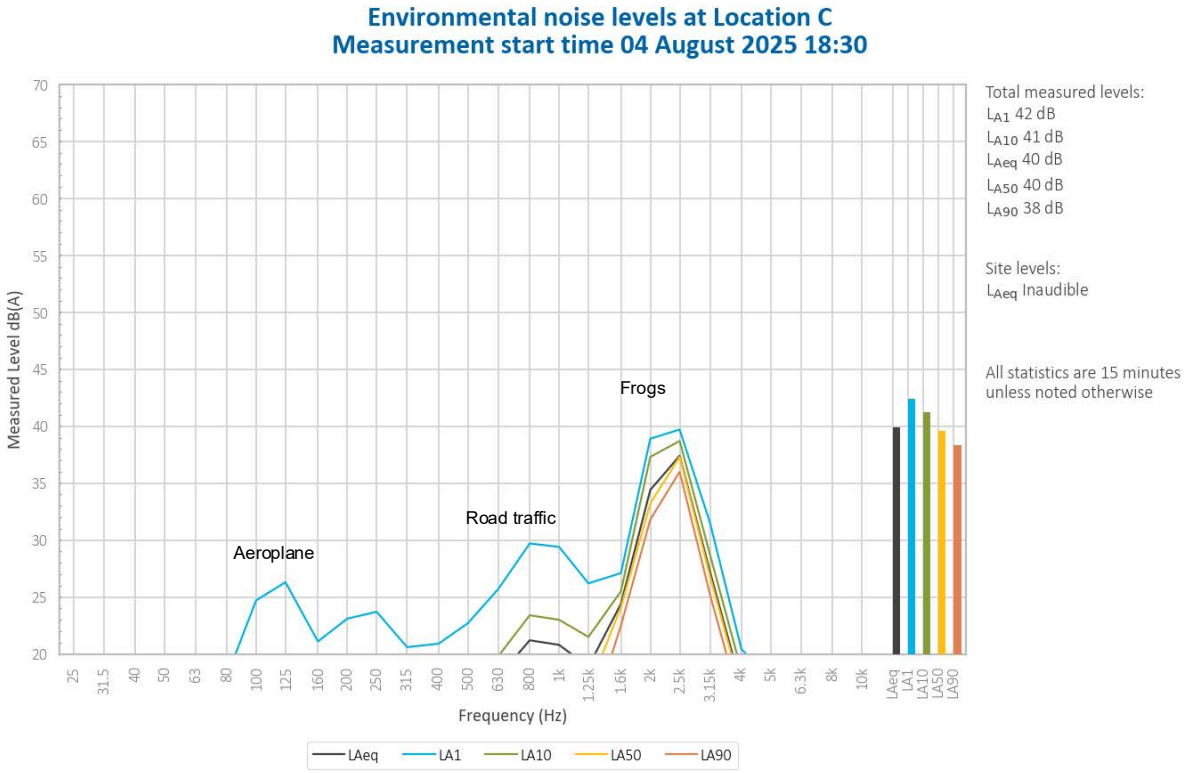

Figure 5.7 Environmental noise levels – Location C

KVAR was inaudible during the measurement.

Frogs generated total measured levels.

Noise from an aeroplane, dogs and road traffic was also noted.

6 Summary

EMM was engaged by Generator Property Management Pty Ltd to conduct quarterly noise survey of construction activities and operations at KVAR. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

Attended environmental noise monitoring described in this report was undertaken during the day and evening periods of 4/5 August 2025 at three monitoring locations.

Noise levels from site complied with relevant limits at all monitoring locations during the Q3 2025 survey.

Appendix A
Noise perception and examples

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A.1 Noise levels

Table A.1 gives an indication as to how an average person perceives changes in noise level. Examples of common noise levels are provided in Figure A.1.

Table A.1 Perceived change in noise

Change in sound pressure level (dB)	Perceived change in noise
up to 2	Not perceptible
3	Just perceptible
5	Noticeable difference
10	Twice (or half) as loud
15	Large change
20	Four times (or quarter) as loud

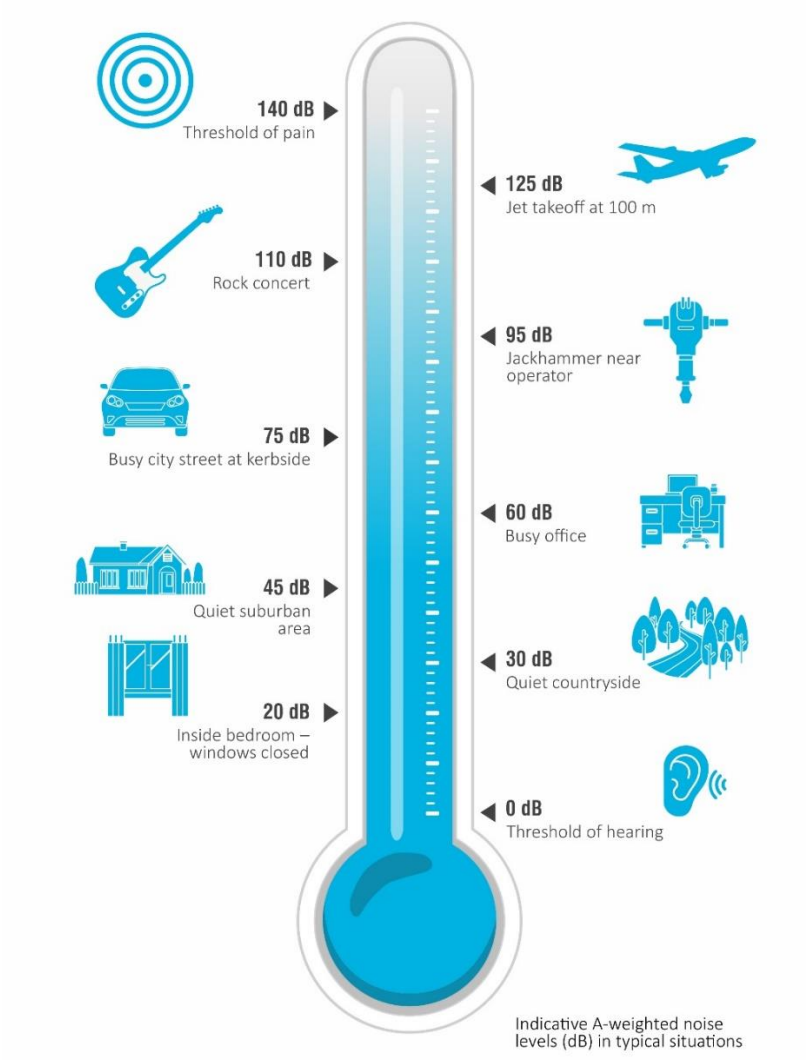

Figure A.1 Common noise levels

Appendix B
Regulator documents

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B.1 Development consent

Noise Impacts

Construction Hours

2.3 Construction activities associated with the project shall only be undertaken during the following hours:

a) 7:00 am to 6:00 pm, Mondays to Fridays, inclusive;
b) 8:00 am to 1:00 pm on Saturdays; and
c) at no time on Sundays or public holidays.

2.4 Activities resulting in impulsive or tonal noise emission (such as rock breaking or rock hammering) shall be limited to 8:00 am to 12:00 pm, Monday to Saturday and 2:00 pm to 5:00 pm, Monday to Friday. The Proponent shall not undertake such activities for more than three continuous hours and must provide a minimum one-hour respite period.

2.5 Construction outside the hours stipulated in condition 2.3 of this approval is permitted in the following circumstances:

a) where construction works do not cause audible noise at any sensitive receiver; or
b) for the delivery of materials required outside these hours by the Police or other authorities for safety reasons; or
c) where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm.

2.6 The hours of construction activities specified under condition 2.3 of this approval may be varied with the prior written approval of the Secretary. Any request to alter the hours of construction specified under condition 2.3 shall be:

a) considered on a case-by-case basis;
b) accompanied by details of the nature and need for activities to be conducted during the varied construction hours; and
c) accompanied by any information necessary for the Secretary to reasonably determine that activities undertaken during the varied construction hours will not adversely impact on the acoustic amenity of sensitive receivers in the vicinity of the site.

Construction Noise

2.7 The construction noise objective for the project is to manage noise from construction activities (as measured by a $L_{A10\ (15\ minute)}$ descriptor) so as not to exceed the background L_{A90} noise level by more than 10 dB(A) at any sensitive receiver.

Any activities that have the potential for noise emissions that exceed the objective must be identified and managed in accordance with the Construction Noise Management Plan (as referred to under condition 6.3b) of this approval). The Proponent shall implement all reasonable and feasible noise mitigation measures with the aim of achieving the construction noise objective.

Operational Noise

2.15 The cumulative operational noise from the ash placement area and ash haulage activity shall not exceed an $L_{Aeq\ (15\ minute)}$ of 40 dB(A) at the nearest most affected sensitive receiver during normal operating hours as defined in condition 2.8 of this approval.

This noise criterion applies under the following meteorological conditions:

a) wind speeds up to 3 m/s at 10 metres above ground; and/or
b) temperature inversion conditions of up to 3°C/100 m and source to receiver gradient winds of up to 2 m/s at 10 m above ground level.

This criterion does not apply where the Proponent and the affected landowner have reached a negotiated agreement in regard to noise, and a copy of the agreement has been forwarded to the Secretary and the EPA.

2.16 The Proponent shall implement measures to ensure noise attenuation of trucks. These measures may include, but are not necessarily limited to, installation of residential class mufflers, engine shrouds, body dampening, speed limiting, fitting of rubber stoppers to tail gates, limiting the use of compression braking, and ensuring trucks operate in a one-way system at the ash repository where feasible.

2.17 The Proponent shall liaise with the owner/operator of Angus Place Coal Mine with the aim of preparing a protocol which provides for a co-operative approach for the management and mitigation of noise impacts associated with coal and ash truck movements along the private haul road.

2.18 Where noise monitoring (as required by conditions 3.2 or 3.3 of this approval) identifies any non-compliance with the operational noise criterion specified under condition 2.15 of this approval the Proponent shall prepare and submit to the Secretary for approval a report including, but not limited to:

a) an assessment of all reasonable and feasible physical and other mitigation measures for reducing noise at the source including, but not limited to -
    i) construction of a noise barrier along the haulage road,
    ii) alternative ash haulage routes, and
    iii) alternative methods of ash conveyance to the repository; and
b) identification of the preferred measure(s) for reducing noise at the source;
c) feedback from directly affected property owners and the EPA on the proposed noise mitigation measures; and
d) location, type, timing and responsibility for implementation of the noise mitigation measure(s).

The report is to be submitted to the Secretary within 60 days of undertaking the noise monitoring which has identified exceedances of the operational noise criterion specified under condition 2.15, unless otherwise agreed to by the Secretary. The Proponent shall implement all reasonable and feasible mitigation measures in accordance with the requirements of the Secretary.

3. ENVIRONMENTAL MONITORING

Construction Noise Monitoring

3.1 The Proponent shall prepare and implement a **Construction Noise Monitoring** Program to confirm the predictions of the noise assessment detailed in the document referred to under condition 1.1 of this approval and assess compliance against the construction noise criterion stipulated in condition 2.7 of this approval. The noise monitoring program shall be prepared in consultation with, and to the satisfaction of, the EPA. The monitoring program shall form part of the Construction Noise Management Plan referred to in condition 6.3b) of this approval and must include monitoring of the construction noise generated during:

a) the realignment Sawyers Swamp Creek;
b) construction of the stabilisation berm;
c) excavation of the former pine plantation area;
d) relocation and construction of surface water management structures; and
e) concurrent construction activities.

The Proponent shall forward to the EPA and the Secretary a report containing the results of each noise assessment and describing any non-compliance within 14 days of conducting a noise assessment.

Operational Noise Review

3.2 Within 60 days of the commencement of operation of the project, unless otherwise agreed to by the Director-General, the Proponent shall submit for the approval of the Secretary an **Operational Noise Review** to confirm the operational noise impacts of the project. The Operational Noise Review must be prepared in consultation with, and to the satisfaction of, the EPA. The Review shall:

a) identify the appropriate operational noise objectives and level for sensitive receivers;
b) describe the methodologies for noise monitoring including the frequency of measurements and location of monitoring sites;
c) document the operational noise levels at sensitive receivers as ascertained by the noise monitoring program;
d) assess the noise performance of the project against the noise criterion specified in condition 2.15 of this approval and the predicted noise levels as detailed in the report referred to under condition 1.1 of this approval; and
e) provide details of any entries in the Complaints Register (as required under condition 5.4 of this approval) relating to noise impacts.

Where monitoring indicates noise levels in excess of the operational noise criterion specified in condition 2.15 of this approval, the Proponent shall prepare a report as required by condition 2.18 of this approval.

Ongoing Operational Noise Monitoring

3.3 The Applicant shall prepare and implement an **Operational Noise Monitoring Program** to assess compliance against the operational noise criterion stipulated in condition 2.15 of this approval, throughout the life of the project. The noise monitoring program shall be prepared in consultation with, and to the satisfaction of, the EPA.

The noise monitoring program shall be prepared in accordance with the requirements of the *NSW Noise Policy for Industry* (EPA, 2017) (or its latest version) and must include, but not be limited to:

a) monitoring during ash placement in the far western area of the site adjacent to the haul road; and
b) monitoring of the effectiveness of any noise mitigation measures implemented under condition 2.18 of this approval, against the noise criterion specified in condition 2.15 of this approval.

Noise from the project is to be measured at the most affected point on or within the residential boundary, or at the most affected point within 30 metres of a dwelling where the dwelling is more than 30 metres from the boundary, to determine compliance with the noise criterion stipulated in condition 2.15 of this approval. Where it can be demonstrated that direct measurement of noise from the project is impractical, the EPA may accept alternative means of determining compliance and the modifying factors shall also be applied to the measured noise levels where applicable in accordance with the *NSW Noise Policy for Industry* (EPA, 2017) (or its latest version).

The Applicant shall forward to the EPA and the Secretary a report containing the results of any non-compliance within 14 days of conducting a noise assessment.

Where monitoring indicates noise levels in excess of the operational noise criterion specified in condition 2.15 of this approval, approval, the Applicant shall prepare a report as required by condition 2.18 of this approval.

The monitoring program shall form part of the Operational Noise Management Plan referred to in condition 6.5a) of this approval.

INFORMATION

B.2 Environmental protection licence

L5 Noise limits

L5.1 Operational noise from the Kerosene Vale Ash Repository area must not exceed:

40dB(A) LAeq(15 minute) , at the nearest most affected noise sensitive location.

Note: LAeq means the equivalent continuous noise level – the level of noise equivalent to the energy-average of noise levels occurring over a measurement period.

L5.2 To determine compliance with condition(s) L4.1 noise must be measured at, or computed for, the most affected location within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural setting) where the dwelling is more than 30 metres from the boundary. A modifying factor correction must be applied for tonal, impulsive or intermittent noise in accordance with the "Environmental Noise Management - NSW Industrial Noise Policy (January 2000)".

L5.3 The noise emission limits identified in this licence apply under the following meteorological conditions:
a) wind speeds up to 3 m/s at 10 metres height above ground; and/or
b) temperature inversion conditions of up to 30C/100m and source to receiver gradient winds of up to 2 m/s at 10 metres height above ground.

Note: The noise emission limits identified in this licence do not apply at a noise sensitive location, where the licensee and the affected noise sensitive location have reached a negotiated agreement in regards to noise, and a copy of that agreement has been provided to the Environment Protection Authority.

L6 Hours of operation

L6.1 Operational activities associated with the Kerosene Vale Ash Repository must only be carried out between the hours of 0700 and 2200 Monday to Sunday.

L6.2 This condition does not apply to the delivery of material outside the hours of operation permitted by condition L6.1, if that delivery is required by police or other authorities for safety reasons; and/or the operation or personnel or equipment are endangered. In such circumstances, prior notification must be provided to the EPA and affected residents as soon as possible or within a reasonable period in the case of emergency.

B.3 Noise management plan

5.2 Environmental monitoring program

An overview of the environmental monitoring activities that have been specified by the respective sub-plans under Section 6 of the OEMP is provided in Table 5-1. Please refer to specific sub-plans under Section 6 for further details.

Table 5-1 Environmental monitoring program

Potential impact	Locations	Parameters	Frequency	Technique	Reporting	Responsibility	OEMP Sub-plan Reference
Noise – Initial 60 day reporting period	4 main locations adopted for a total of 5 monitoring sites: ▪ Skelly Road ▪ Maddox Lane ▪ Neubeck Street ▪ Wolgan Road. (Refer to Figure 5-1)	L_{Aeq}, L_{A10}, L_{A90} and L_{Amax}	4 separate days – 3 week days and a Sunday	Attended monitoring using hand held sound level meter Monitoring to be continuous throughout full day of operations for each 15 minute period, including 30 mins prior to and following normal operating hours (7am to 10pm). Nearest potentially affected receiver to be monitored at 07.00 and at least once between 20.30 – 22.30.	Report to be submitted to EPA within 1 week of monitoring COMPLETE	Specialist Consultant on behalf of EnergyAustralia NSW	Section 6.3 Operational Noise and Vibration Management Plan – Appendix A
Noise - Normal conditions	Minimum of 3 most affected locations as per the 60 day post commissioning assessment. To include periods of ash placement at far western area of the site and where noise mitigation measures are in place. (as per COA 2.15) (Refer to Figure 5-1)	Noise levels shall not exceed an LAeq of 40dB(A) at the nearest most affected receiver	During daytime (7am-6pm) and evening time (6pm-10am) Every 6 months or more frequent if adverse trends are noted	Ongoing attended monitoring using hand held sound level meter.	6 monthly noise monitoring report If non-compliance, report is to be forwarded to DPE and EPA within 14-days of conducting monitoring	Specialist Consultant on behalf of EnergyAustralia NSW	Section 6.5 Operational Noise and Vibration Management Plan – Appendix A
Noise - Emergency conditions	At the complainant's property or nearest available representative location.	Noise levels shall not exceed an LAeq of 40dB(A) at the nearest most affected receiver	As required	Attended monitoring using hand held sound level meter	6 monthly noise monitoring report	Specialist Consultant on behalf of EnergyAustralia NSW	Section 6.3 Operational Noise and Vibration Management Plan – Appendix A

6.3 Noise and vibration management sub-plan

Targets	▪ Achieve compliance with the noise criterion of L_{Aeq} of 40dB(A) at the nearest most affected receiver during normal operations. ▪ Achieve a significant reduction in the number of noise-related complaints during emergency operations (less than 5 per year, stretch target = zero complaints per year).
Indicators	▪ The number of noise-related complaints. ▪ Noise monitoring data obtained from the sensitive receiver locations ▪ Compliance indicators as assessed by the specialist noise consultant and the Environmental Representative, as required. ▪ Observed and monitored reduction in noise generation due to adaptation where necessary of engineering measures on trucks, the implementation of operating techniques such as limited compression braking and speed limit restrictions.
Supporting documentation	
Appendix A: - KVAR Stage 2 Operations- Operational Noise and Vibration Management Plan Australian Standard AS 2436 – Guide to noise control on construction, maintenance and demolition sites	
Key issues/constraints/strategies	
Wallerawang Ash Repositories activities are not anticipated to result in impacts at the nearest potentially affected receivers. Noise impacts in varying conditions can be assessed and used to predict similar scenarios in the future to determine which measures are most effective and when. Wallerawang Ash Repositories activities are not anticipated to result in perceived vibration-related impacts at the nearest potentially affected receivers. Appendix A provides procedures to be implemented should vibration-related non-conformances occur. A Specialist Consultant will be undertaking the prescribed monitoring and analysis of noise results, as per this plan.	

Appendix C
Calibration certificates

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C.1 Calibration certificates

Acoustic Research Labs Pty Ltd
Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Level Meter
IEC 61672-3:2013

Calibration Certificate
Calibration Number C25320-V1

Client Details	EMM Consulting Level 3, 175 Scott Street Newcastle NSW, 2300

Equipment Tested :	*Manufacturer*	*Model*	*Serial*
Instrument :	Rion	NA-28	00701424
Microphone :	Rion	UC-59	01916
Pre-amplifier :	Rion	NH-23	01463
Firmware Version :	2.0		

Pre-Test Atmospheric Conditions		**Post-Test Atmospheric Conditions**	
Ambient Temperature :	20 °C	**Ambient Temperature :**	21 °C
Relative Humidity :	62.1 %	**Relative Humidity :**	60.2 %
Barometric Pressure :	101.61 kPa	**Barometric Pressure :**	101.62 kPa

Calibration Technician :	Emanuel Eid	**Secondary Check:**	Cooper Sallway
Calibration Date :	21-May-2025	**Report Issue Date :**	22-May-2025

Approved Signatory : Ken Williams

Clause and Characteristic Tested	**Result**	**Clause and Characteristic Tested**	**Result**
12: Acoustical Sig. tests of a frequency weighting	*Pass*	17: Level linearity incl. the level range control	*Pass*
13: Electrical Sig. tests of frequency weightings	*Pass*	18: Toneburst response	*Pass*
14: Frequency and time weightings at 1 kHz	*Pass*	19: C Weighted Peak Sound Level	*Pass*
15: Long Term Stability	*Pass*	20: Overload Indication	*Pass*
16: Level linearity on the reference level range	*Pass*	21: High Level Stability	*Pass*

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

However, no general statement or conclusion can be made about conformance of the sound level meter to the full requirements of IEC 61672-1:2013 because evidence was not publicly available, from an independent testing organisation responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013 and because the periodic tests of IEC 61672-3:2013 cover only a limited subset of the specifications in IEC 61672-1:2013.

Uncertainties of Measurement -

Acoustic Tests		Environmental Conditions	
125Hz	*±0.13 dB*	*Temperature*	*±0.1 °C*
1kHz	*±0.13 dB*	*Relative Humidity*	*±1.9 %*
8kHz	*±0.14 dB*	*Barometric Pressure*	*±0.11 kPa*
Electrical Tests	*±0.13 dB*		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

NATA
WORLD RECOGNISED ACCREDITATION

This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - Calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

PAGE 1 OF 1

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: C53021

EQUIPMENT TESTED : Acoustic Calibrator

Manufacturer: Pulsar
Type No: 105 **Serial No:** 78226
Class: 1
Owner: EMM Consulting
Level 1, 175 Scott Street
Newcastle, NSW 2300
Tests Performed: Measured Output Pressure level, Frequency & Distortion
See Details and Class Tolerance overleaf.
Comments:
CONDITION OF TEST:

Ambient Pressure	1008	hPa ±1 hPa	**Date of Receipt :**	27/02/2025
Temperature	24	°C ±1° C	**Date of Calibration :**	04/03/2025
Relative Humidity	53	% ±5%	**Date of Issue :**	04/03/2025

Acu-Vib Test Procedure: AVP02 (Calibrators)
Test Method: AS IEC 60942 - 2017

CHECKED BY: ..... **AUTHORISED SIGNATURE:** .....

Accredited for compliance with ISO/IEC 17025 - Calibration

Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

This report applies only to the item identified in the report and may not be reproduced in part.

The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.

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Kerosene Vale Ash Repository

Environmental noise monitoring - Q4 2025

Prepared for Generator Property Management Pty Ltd

November 2025

Kerosene Vale Ash Repository

Environmental noise monitoring - Q4 2025

Generator Property Management Pty Ltd

E250518 RP1

November 2025

Version	Date	Prepared by	Reviewed by	Comments
1	6/11/2025	Ingrid Smith	Robert Kirwan	Final

Approved by



Robert Kirwan
Senior Associate Acoustics Consultant
6 November 2025

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This report has been prepared in accordance with the brief provided by Generator Property Management Pty Ltd and, in its preparation, EMM has relied upon the information collected at the times and under the conditions specified in this report. All findings, conclusions or recommendations contained in this report are based on those aforementioned circumstances. This report is to only be used for the purpose for which it has been provided. Except as permitted by the Copyright Act 1968 (Cth) and only to the extent incapable of exclusion, any other use (including use or reproduction of this report for resale or other commercial purposes) is prohibited without EMM's prior written consent. Except where expressly agreed to by EMM in writing, and to the extent permitted by law, EMM will have no liability (and assumes no duty of care) to any person in relation to this document, other than to Generator Property Management Pty Ltd (and subject to the terms of EMM's agreement with Generator Property Management Pty Ltd).

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ABN: 28 141 736 558

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1 Introduction

1.1 Background

EMM Consulting Pty Ltd (EMM) was engaged by Generator Property Management Pty Ltd to conduct a quarterly noise survey of construction activities and operations at Kerosene Vale Ash Repository (KVAR, the site) located near Lidsdale, NSW. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

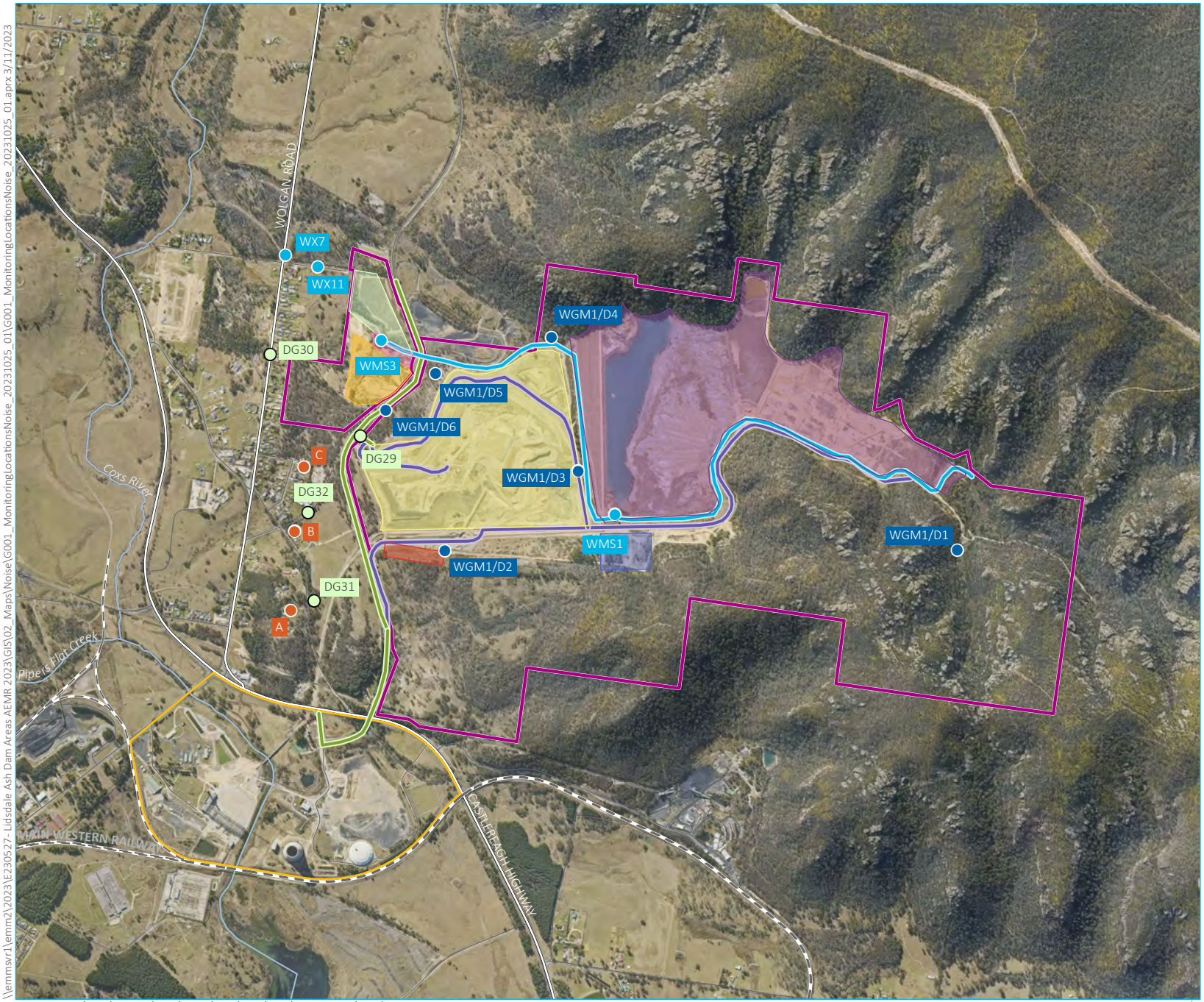
Attended environmental noise monitoring described in this report was done during the day and evening periods of 30 October 2025 at three monitoring locations.

1.2 Attended monitoring locations

Site monitoring locations are detailed in Table 1.1 and shown on Figure 1.1. It should be noted that Figure 1.1 shows actual monitoring positions, not necessarily the location of residences.

Table 1.1 Attended noise monitoring locations

Descriptor	Description	Coordinates (MGA 56)	
		Easting	Northing
Location A	Skelly Road, Lidsdale NSW	229052	6301209
Location B	Corner Sawyers Road and Skelly Road, Lidsdale NSW	228899	6301470
Location C	End of Nuebeck Street, Lidsdale NSW	228982	6301813



KEY

- Site boundary
- Wallerawang Power Station site
- Private access track
- Private haul road
- Sawyers Swamp Creek
- Groundwater Monitoring
- Noise monitoring
- Surface Water
- Dust gauge

Site layout

- 2018 proposed asbestos disposal area
- Demolition landfill south of SSCAD
- Kerosene Vale ash repository
- Lidsdale cut northern landfill
- Lidsdale cut southern landfill
- Lidsdale cut
- Sawyers Swamp Creek ash dam

Existing environment

- Rail line
- Major road
- Minor road
- Named watercourse

\\emmsvr1\emm2\2023\E230527 - Lidsdale Ash Dam Areas AEMR 2023\GIS\02_Maps\Noise\G001_MonitoringLocationsNoise_20231025_01\G001_MonitoringLocationsNoise_20231025_01.aprx 3/11/2023

Source: EMM (2023); DCSSS (2023); ESRI (2023); GA (2009); MetroMap (2023)

0 0.5 1 km

GDA2020 MGA Zone 56

N

Environmental Monitoring Locations

Kerosene Vale Ash Repositories
Figure 1.1

EMM creating opportunities

1.3 Terminology and abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2 Terminology and abbreviations

Term/descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The "A" weighting scale is used to approximate how humans hear noise.
L_{Amax}	The maximum root mean squared A-weighted noise level over a time period.
L_{A1}	The A-weighted noise level which is exceeded for 1 per cent of the time.
$L_{A1,1minute}$	The A-weighted noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
L_{A10}	The A-weighted noise level which is exceeded for 10 percent of the time.
L_{Aeq}	The energy average A-weighted noise level.
L_{A50}	The A-weighted noise level which is exceeded for 50 per cent of the time, also the median noise level during a measurement period.
L_{A90}	The A-weighted noise level exceeded for 90 percent of the time, also referred to as the "background" noise level and commonly used to derive noise limits.
L_{Amin}	The minimum A-weighted noise level over a time period.
L_{Ceq}	The energy average C-weighted noise energy during a measurement period. The "C" weighting scale is used to take into account low-frequency components of noise within the audibility range of humans.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	Monday – Saturday: 7 am to 6 pm, on Sundays and Public Holidays: 8 am to 6 pm.
Evening	Monday – Saturday: 6 pm to 10 pm, on Sundays and Public Holidays: 6 pm to 10 pm.
Night	Monday – Saturday: 10 pm to 7 am, on Sundays and Public Holidays: 10 pm to 8 am.

Appendix A provides further information that gives an indication as to how an average person perceives changes in noise level, and examples of common noise levels.

2 Noise limits

2.1 Development consent

The current development consent for KVAR is MP07_0005 (MOD 2, October 2023). Section 2 of the consent details specific conditions relating to operational and construction noise generated by KVAR. Relevant sections of that document are reproduced in Appendix B.1.

2.2 Environment protection licence

KVAR holds Environment Protection Licence (EPL) No. 21185 issued by the Environment Protection Authority (EPA) most recently on 19 December 2023. Relevant sections of the EPL are reproduced in Appendix B.2.

2.3 Noise management plan

The KVAR Operational Environmental Management Plan (OEMP) was most recently updated in October 2018. Section 6.3 of the OEMP contains a noise and vibration management sub-plan. Appendix A of the OEMP provides the Operational Noise and Vibration Management Plan. Relevant sections of the OEMP are reproduced Appendix B.3.

2.4 Noise limits

2.4.1 Operational noise limits

Operational noise impact limits based on the EPL are shown in Table 2.1.

Table 2.1 Operational noise impact limits, $L_{Aeq,15minute}$ dB

Location	Day	Evening
Location A	40	40
Location B	40	40
Location C	40	40

2.4.2 Construction noise targets

Condition 2.7 of the consent details construction noise objectives as follows:

> The construction noise objective for the project is to manage noise from construction activities (as measured by a $L_{A10,15minute}$ descriptor) so as not to exceed the background L_{A90} noise level by more than 10 dB(A) at any sensitive receiver.

In accordance with Condition 3.1 of the consent, construction noise monitoring must occur during the following activities:

a) the realignment of Sawyers Swamp Creek;

b) construction of the stabilisation berm;

c) excavation of the former pine plantation area;

d) relocation and construction of surface water management structures; and

e) concurrent construction activities.

However, due to the difficulty of differentiating noise from construction and operational activities, all noise measured from the site has been assessed against operational noise impact limits as per condition 2.15 of the consent.

2.5 Meteorological conditions

As detailed in the development consent and EPL, noise criteria apply under the following meteorological conditions:

- wind speeds up to 3 m/s at 10 metres height above ground; and/or
- temperature inversion conditions of up to 3°C/100m and source to receiver gradient winds of up to 2 m/s at 10 metres height above ground.

2.6 Additional requirements

The NSW EPA 'Industrial Noise Policy' (INP 2000) was replaced by the 'Noise Policy for Industry' (NPfI) in October 2017. Noise conditions in the EPL and project approval still reference the INP exclusively, so monitoring has been conducted in accordance with the INP.

For assessment of modifying factors, the NPfI immediately superseded the INP, as outlined in the EPA document 'Implementation and transitional arrangements for the Noise Policy for Industry' (2017). Therefore, assessment and reporting of modifying factors have been done in accordance with Fact Sheet C of the NPfI.

Monitoring and reporting have been done in accordance with the EPA 'Approved methods for the measurement and analysis of environmental noise in NSW' issued in January 2022.

3 Methodology

3.1 Overview

Attended environmental noise monitoring was done in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise' and relevant NSW EPA requirement.

3.2 Attended noise monitoring

During this survey, attended noise monitoring was conducted during the day and evening period at each location. The duration of each measurement was 15 minutes. Atmospheric conditions were measured at each monitoring location.

Measured sound levels from various sources were noted during each measurement, and particular attention was paid to the extent of site's contribution (if any) to measured levels. At each monitoring location, the site-only $L_{Aeq,15minute}$ and L_{Amax} were measured directly or determined by other methods detailed in Section 7.1 of the NPfI.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may be used in this report. When site noise is noted as IA, it was inaudible at the monitoring location. When site noise is noted as NM, this means it was audible but could not be quantified. All results noted as IA or NM in this report were due to one or more of the following:

- Site noise levels were very low, typically more than 10 dB below the measured background (L_{A90}), and unlikely to be noticed.
- Site noise levels were masked by more dominant sources that are characteristic of the environment (such as breeze in foliage or continuous road traffic noise) that cannot be eliminated by monitoring at an alternate or intermediate location.
- It was not feasible or reasonable to employ methods, such as to move closer and back calculate. Cases may include rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

If exact noise levels from site could not be established due to masking by other noise sources in a similar frequency range but were determined to be at least 5 dB lower than relevant limits, then a maximum estimate of may be provided. This is expressed as a 'less than' quantity, such as <20 dB or <30 dB.

For this assessment, the measured L_{Amax} has been used as a conservative estimate of $L_{A1,1minute}$. The EPA accepts sleep disturbance analysis based on either the $L_{A1,1minute}$ or L_{Amax} metrics, with the L_{Amax} representing a more conservative assessment of site noise emissions.

3.3 Meteorological data

Meteorological data was obtained from the Bureau of Meteorology (BOM) automatic weather station (AWS) at Marrangaroo which allowed correlation of atmospheric parameters with measured noise levels. Vertical temperature gradient and/or sigma theta data required to determine temperature inversion conditions was not available from this AWS.

As KVAR operates solely during the day and evening periods, it has been assumed that temperature inversion conditions were not present during monitoring.

3.4 Modifying factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. Assessment of modifying factors is undertaken at the time of measurement if the site was audible and directly quantifiable. If applicable, modifying factor penalties have been reported and added to measured site-only L_{Aeq} noise levels.

Low-frequency modifying factor penalties have only been applied to site-only L_{Aeq} levels if the site was the only contributing low-frequency noise source. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

3.5 Instrumentation and personnel

Attended noise monitoring was conducted by Ingrid Smith. Qualifications, experience and demonstration of competence is in accordance with the Approved methods and is available upon request.

Equipment used to measure environmental noise levels is detailed in Table 3.1. Calibration certificates are provided in Appendix C.

Table 3.1 Attended noise monitoring equipment

Item	Serial number	Calibration due date	Relevant standard
Bruel & Kjaer 2250 sound level meter	3008201	27/08/2027	IEC 61672-1:2013
SVAN SV36 calibrator	154613	16/06/2026	IEC 60942:2017

4 Results

4.1 Total measured noise levels and atmospheric conditions

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

Table 4.1 Total measured noise levels, dB – Q4 2025 [1]

Location	Start date and time	L_{Amax}	L_{A1}	L_{A10}	L_{Aeq}	L_{A50}	L_{A90}	L_{Amin}
A	30/10/2025 16:47	58	48	41	39	37	34	58
A	30/10/2025 18:37	58	43	35	34	32	30	58
B	30/10/2025 16:28	56	48	42	39	36	32	56
B	30/10/2025 18:19	53	46	41	38	37	33	53
C	30/10/2025 16:07	59	47	40	38	34	30	59
C	30/10/2025 18:00	63	55	37	41	29	26	63

Notes: 1. Levels in this table are not necessarily the result of activity at site.

Atmospheric condition data measured by the operator during each measurement using a hand-held weather meter is shown in Table 4.2. The wind speed, direction and temperature were measured at approximately 1.5 metres above ground. Attended noise monitoring is not done during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.2 Measured atmospheric conditions – Q4 2025

Location	Start date and time	Temperature °C	Wind speed m/s	Wind direction °Magnetic north[1]	Cloud cover 1/8s
A	30/10/2025 16:47	27	<0.5	-	5
A	30/10/2025 18:37	17	0.7	58	5
B	30/10/2025 16:28	22	0.6	96	6
B	30/10/2025 18:19	18	0.8	89	4
C	30/10/2025 16:07	27	<0.5	-	5
C	30/10/2025 18:00	21	<0.5	-	6

Notes: 1. "-" indicates calm conditions at monitoring location.

4.2 Construction activities

KVAR has advised that normal operations were occurring during monitoring, and relocation and construction of surface water management structures as defined in Section 2.4.2 of this report and Condition 3.1 of the consent was occurring at the time of monitoring.

4.3 Site only noise levels

4.3.1 Modifying factors

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.3.2 Site noise levels

Table 4.3 provides site noise levels in the absence of other sources, where possible, and includes weather data from the site AWS. Limits are applicable if weather conditions were within specified parameters during each measurement.

Table 4.3 Site noise levels and limits – Q4 2025

Location	Start date and time	Wind speed m/s	Limits apply? [1]	KVAR limit, $L_{Aeq,15minute}$ dB	KVAR level, $L_{Aeq,15minute}$ dB [2,3]	Exceedance, dB
A	30/10/2025 16:47	2.1	Yes	40	<20	Nil
A	30/10/2025 18:37	1.0	Yes	40	IA	Nil
B	30/10/2025 16:28	2.1	Yes	40	IA	Nil
B	30/10/2025 18:19	1.0	Yes	40	IA	Nil
C	30/10/2025 16:07	2.1	Yes	40	IA	Nil
C	30/10/2025 18:00	1.5	Yes	40	IA	Nil

Notes: 1. Noise emission limits do not apply during periods of rainfall or winds greater than 3 metres per second (at a height of 10 metres).

2. Site-only $L_{Aeq,15minute}$, includes modifying factor penalties if applicable.

3. When site noise is noted as IA, it was inaudible at the monitoring location. When site noise is noted as NM, this means it was audible but could not be quantified as per the notes in Section 3.2.

5 Discussion

5.1 Noted noise sources

During attended monitoring, the time variations (temporal characteristics) of noise sources are considered in each measurement via statistical descriptors. From these observations, summaries have been derived for the location and provided in this section. Statistical 1/3 octave-band analysis of environmental noise was conducted, and the following figures display frequency ranges of various noise sources at each location for L_{A1}, L_{A10}, L_{Aeq}, L_{A50}, and L_{A90} descriptors. These figures also provide, graphically, statistical information for these noise levels.

An example is provided as Figure 5.1, where frogs and insects are seen to be generating noise at frequencies above 1000 Hz, while industrial noise is observed at frequencies less than 1000 Hz.

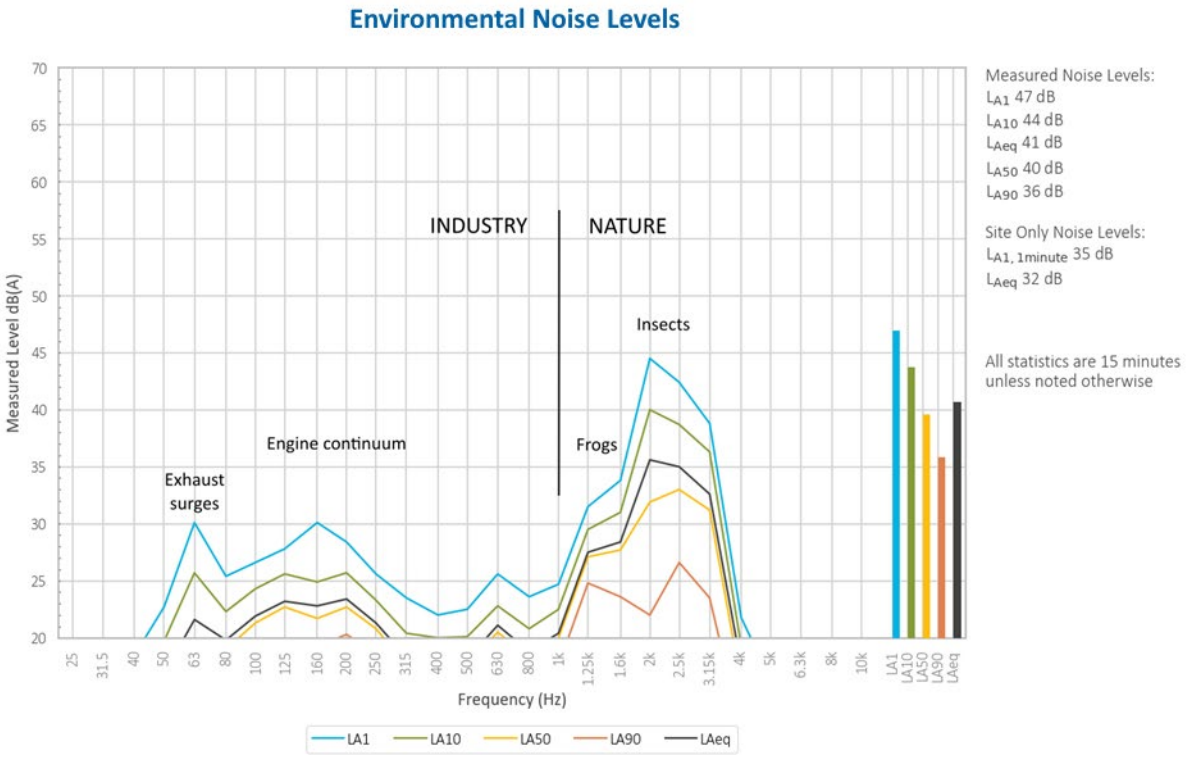


Figure 5.1 Example graph (refer to Section 5.1 for explanatory note)

5.2 Location A – Day

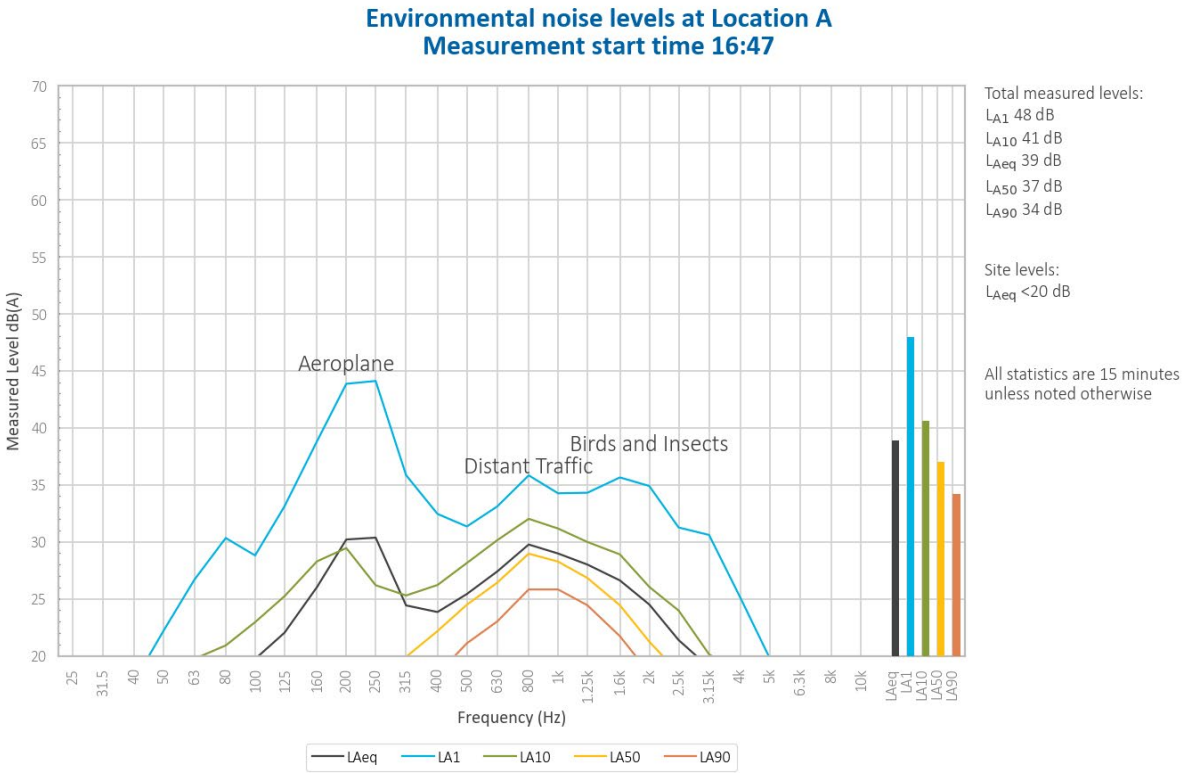


Figure 5.2 Environmental noise levels – Location A

Intermittent light vehicles travelling along the haul road from KVAR were audible occasionally during the measurement and generated a measured site-only L_{Aeq} of less than 20 dB.

Distant traffic generated the measured L_{A10}, L_{Aeq}, L_{A90}, and L_{A50}. An aeroplane generated the L_{A1} and contributed to the L_{A10} and L_{Aeq}.

Birds and insects were also noted.

5.3 Location A – Evening

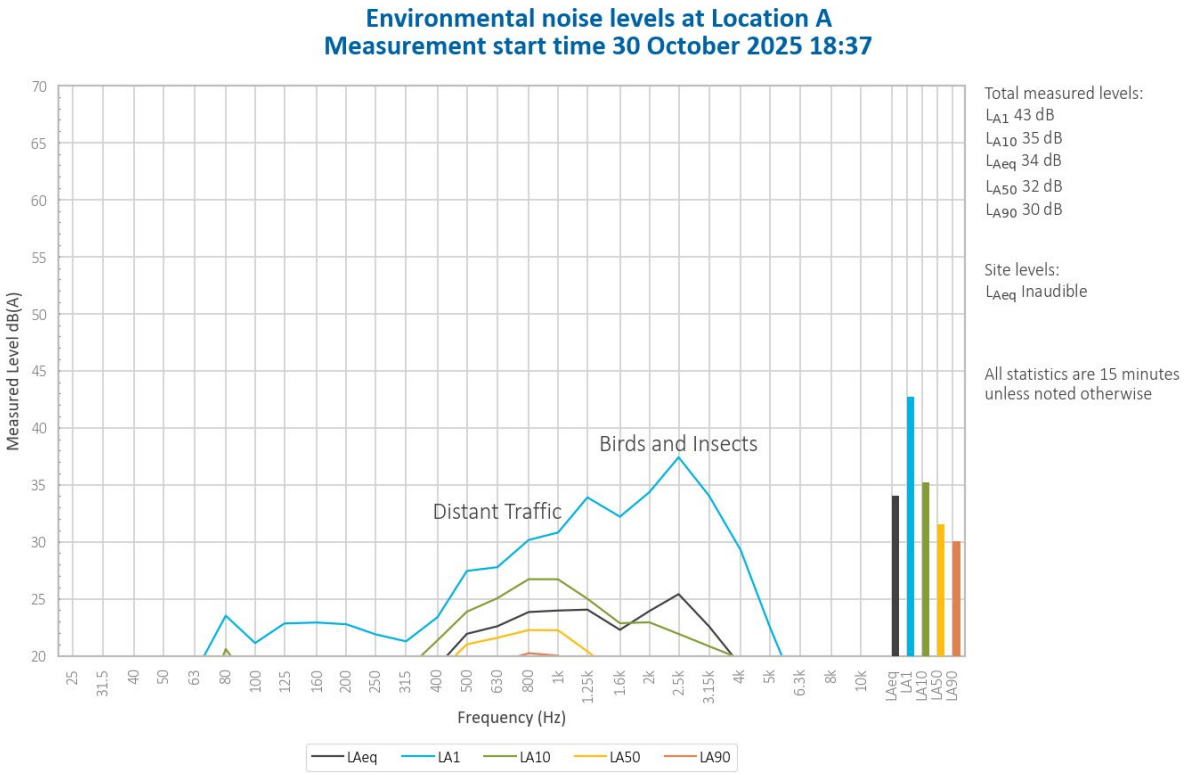


Figure 5.3 Environmental noise levels – Location A

KVAR was inaudible during the measurement.

Distant traffic generated the L_{A10}, L_{A90}, and L_{A50}. Birds and insects generated the L_{A1} and contributed to the L_{A10} and L_{Aeq}.

5.4 Location B – Day

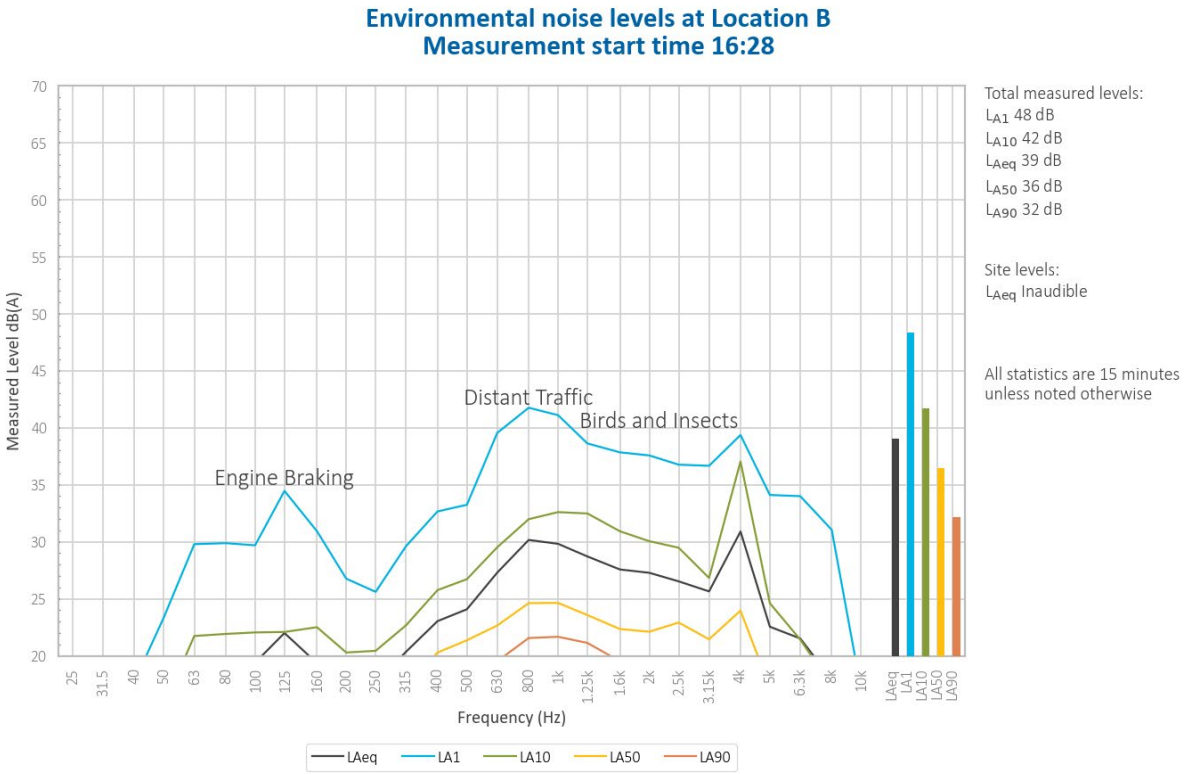


Figure 5.4 Environmental noise levels – Location B

KVAR was inaudible during the measurement.

Birds and distant traffic generated the measured levels.

Noise from engine braking was also noted.

5.5 Location B – Evening

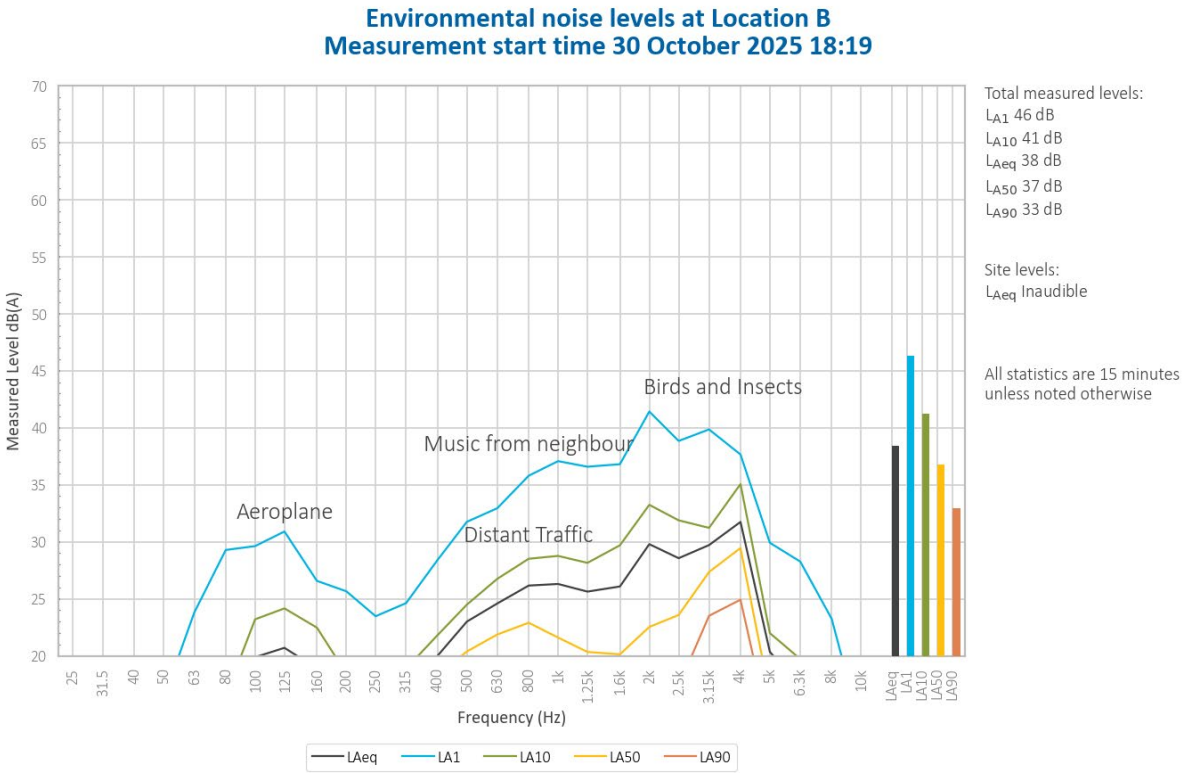


Figure 5.5 Environmental noise levels – Location B

KVAR was inaudible during the measurement.

Birds and insects primarily generated the measured levels. Music from a nearby neighbour contributed to the L_{A1} and road traffic contributed to the L_{A1}, L_{A10}, L_{Aeq}, and L_{A50}.

Noise from an aeroplane and nearby woodworking was also noted.

5.6 Location C – Day

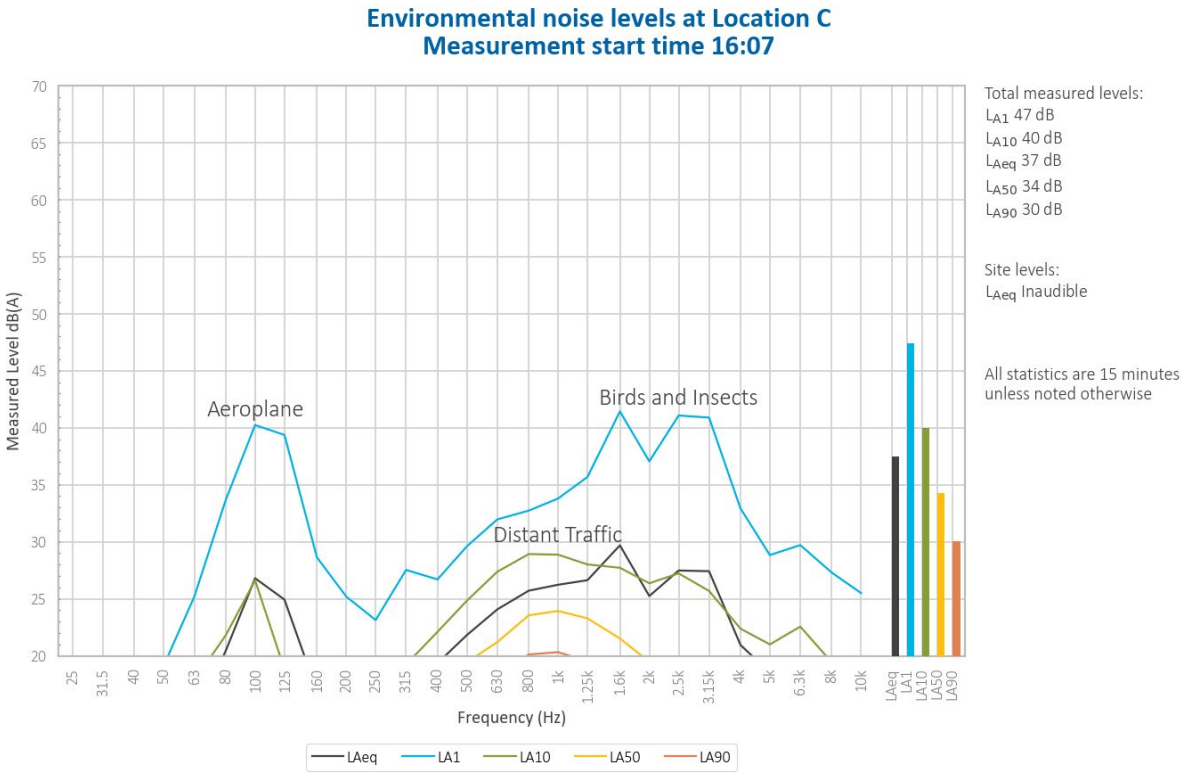


Figure 5.6 Environmental noise levels – Location C

KVAR was inaudible during the measurement.

Road traffic and birds primarily generated the measured levels. Noise from an aeroplane contributed to the L_{A1}, L_{A10}, and L_{Aeq}.

Noise from dogs and nearby house activities were also noted.

5.7 Location C – Evening

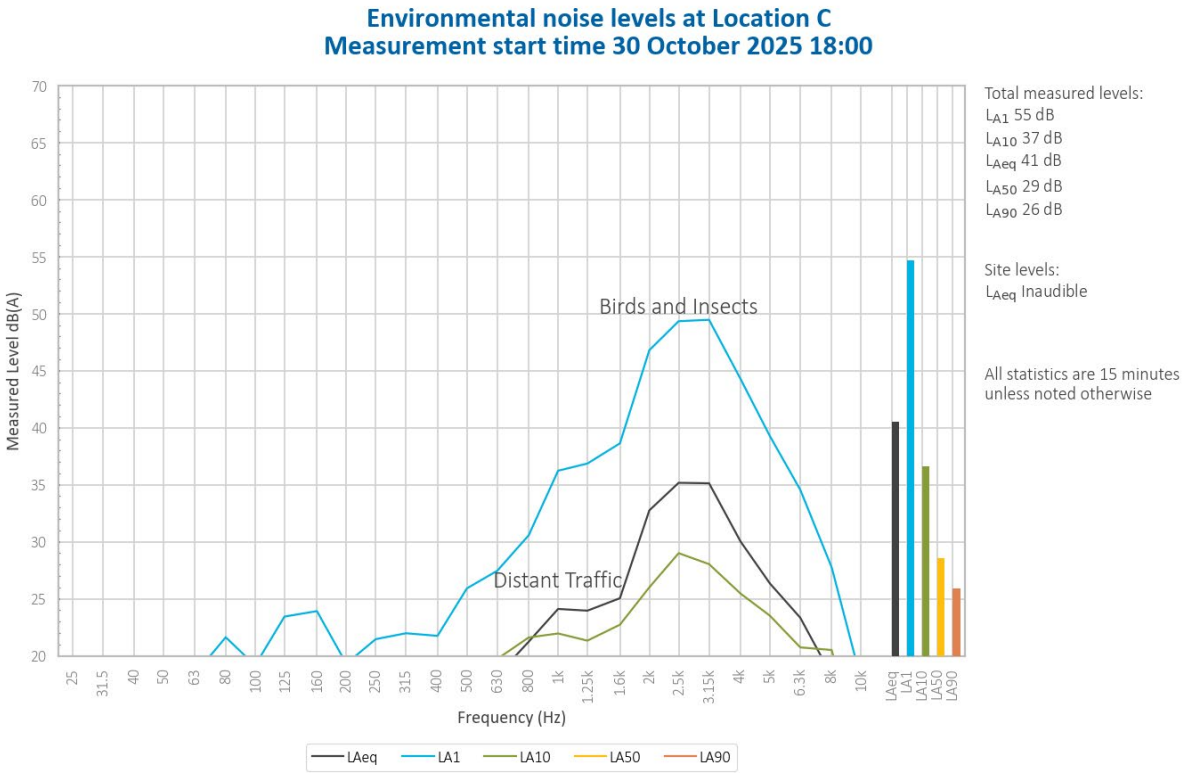


Figure 5.7 Environmental noise levels – Location C

KVAR was inaudible during the measurement.

Birds and insects generated total measured levels.

Noise from distant traffic, dogs and nearby neighbourhood activities were also noted.

6 Summary

EMM was engaged by Generator Property Management Pty Ltd to conduct quarterly noise survey of construction activities and operations at KVAR. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

Attended environmental noise monitoring described in this report was undertaken during the day and evening periods of 30 October 2025 at three monitoring locations.

Noise levels from site complied with relevant limits at all monitoring locations during the Q4 2025 survey.

Appendix A
Noise perception and examples

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A.1 Noise levels

Table A.1 gives an indication as to how an average person perceives changes in noise level. Examples of common noise levels are provided in Figure A.1.

Table A.1 Perceived change in noise

Change in sound pressure level (dB)	Perceived change in noise
up to 2	Not perceptible
3	Just perceptible
5	Noticeable difference
10	Twice (or half) as loud
15	Large change
20	Four times (or quarter) as loud

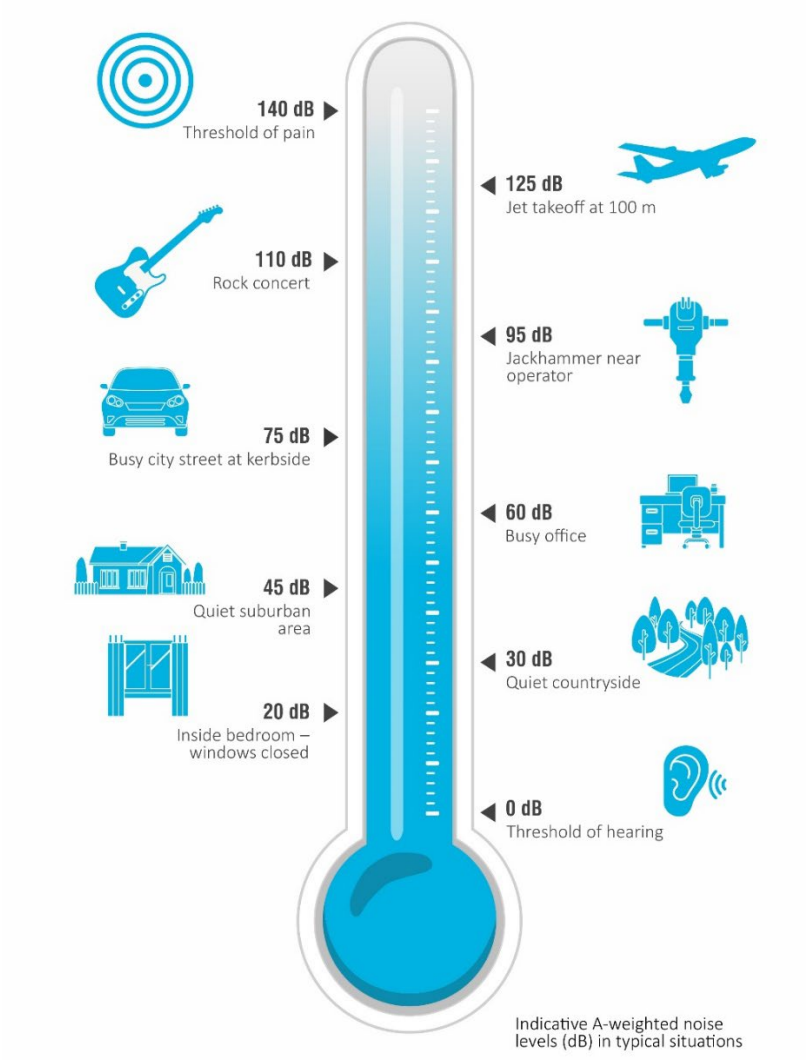


Figure A.1 Common noise levels

Appendix B
Regulator documents

EMM
creating opportunities

B.1 Development consent

Noise Impacts

Construction Hours

2.3 Construction activities associated with the project shall only be undertaken during the following hours:

a) 7:00 am to 6:00 pm, Mondays to Fridays, inclusive;
b) 8:00 am to 1:00 pm on Saturdays; and
c) at no time on Sundays or public holidays.

2.4 Activities resulting in impulsive or tonal noise emission (such as rock breaking or rock hammering) shall be limited to 8:00 am to 12:00 pm, Monday to Saturday and 2:00 pm to 5:00 pm, Monday to Friday. The Proponent shall not undertake such activities for more than three continuous hours and must provide a minimum one-hour respite period.

2.5 Construction outside the hours stipulated in condition 2.3 of this approval is permitted in the following circumstances:

a) where construction works do not cause audible noise at any sensitive receiver; or
b) for the delivery of materials required outside these hours by the Police or other authorities for safety reasons; or
c) where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm.

2.6 The hours of construction activities specified under condition 2.3 of this approval may be varied with the prior written approval of the Secretary. Any request to alter the hours of construction specified under condition 2.3 shall be:

a) considered on a case-by-case basis;
b) accompanied by details of the nature and need for activities to be conducted during the varied construction hours; and
c) accompanied by any information necessary for the Secretary to reasonably determine that activities undertaken during the varied construction hours will not adversely impact on the acoustic amenity of sensitive receivers in the vicinity of the site.

Construction Noise

2.7 The construction noise objective for the project is to manage noise from construction activities (as measured by a $L_{A10\ (15\ minute)}$ descriptor) so as not to exceed the background L_{A90} noise level by more than 10 dB(A) at any sensitive receiver.

Any activities that have the potential for noise emissions that exceed the objective must be identified and managed in accordance with the Construction Noise Management Plan (as referred to under condition 6.3b) of this approval). The Proponent shall implement all reasonable and feasible noise mitigation measures with the aim of achieving the construction noise objective.

Operational Noise

2.15 The cumulative operational noise from the ash placement area and ash haulage activity shall not exceed an $L_{Aeq\ (15\ minute)}$ of 40 dB(A) at the nearest most affected sensitive receiver during normal operating hours as defined in condition 2.8 of this approval.

This noise criterion applies under the following meteorological conditions:

a) wind speeds up to 3 m/s at 10 metres above ground; and/or
b) temperature inversion conditions of up to 3°C/100 m and source to receiver gradient winds of up to 2 m/s at 10 m above ground level.

This criterion does not apply where the Proponent and the affected landowner have reached a negotiated agreement in regard to noise, and a copy of the agreement has been forwarded to the Secretary and the EPA.

2.16 The Proponent shall implement measures to ensure noise attenuation of trucks. These measures may include, but are not necessarily limited to, installation of residential class mufflers, engine shrouds, body dampening, speed limiting, fitting of rubber stoppers to tail gates, limiting the use of compression braking, and ensuring trucks operate in a one-way system at the ash repository where feasible.

2.17 The Proponent shall liaise with the owner/operator of Angus Place Coal Mine with the aim of preparing a protocol which provides for a co-operative approach for the management and mitigation of noise impacts associated with coal and ash truck movements along the private haul road.

2.18 Where noise monitoring (as required by conditions 3.2 or 3.3 of this approval) identifies any non-compliance with the operational noise criterion specified under condition 2.15 of this approval the Proponent shall prepare and submit to the Secretary for approval a report including, but not limited to:

a) an assessment of all reasonable and feasible physical and other mitigation measures for reducing noise at the source including, but not limited to -
    i) construction of a noise barrier along the haulage road,
    ii) alternative ash haulage routes, and
    iii) alternative methods of ash conveyance to the repository; and
b) identification of the preferred measure(s) for reducing noise at the source;
c) feedback from directly affected property owners and the EPA on the proposed noise mitigation measures; and
d) location, type, timing and responsibility for implementation of the noise mitigation measure(s).

The report is to be submitted to the Secretary within 60 days of undertaking the noise monitoring which has identified exceedances of the operational noise criterion specified under condition 2.15, unless otherwise agreed to by the Secretary. The Proponent shall implement all reasonable and feasible mitigation measures in accordance with the requirements of the Secretary.

3. ENVIRONMENTAL MONITORING

Construction Noise Monitoring

3.1 The Proponent shall prepare and implement a **Construction Noise Monitoring** Program to confirm the predictions of the noise assessment detailed in the document referred to under condition 1.1 of this approval and assess compliance against the construction noise criterion stipulated in condition 2.7 of this approval. The noise monitoring program shall be prepared in consultation with, and to the satisfaction of, the EPA. The monitoring program shall form part of the Construction Noise Management Plan referred to in condition 6.3b) of this approval and must include monitoring of the construction noise generated during:

a) the realignment Sawyers Swamp Creek;
b) construction of the stabilisation berm;
c) excavation of the former pine plantation area;
d) relocation and construction of surface water management structures; and
e) concurrent construction activities.

The Proponent shall forward to the EPA and the Secretary a report containing the results of each noise assessment and describing any non-compliance within 14 days of conducting a noise assessment.

Operational Noise Review

3.2 Within 60 days of the commencement of operation of the project, unless otherwise agreed to by the Director-General, the Proponent shall submit for the approval of the Secretary an **Operational Noise Review** to confirm the operational noise impacts of the project. The Operational Noise Review must be prepared in consultation with, and to the satisfaction of, the EPA. The Review shall:

a) identify the appropriate operational noise objectives and level for sensitive receivers;
b) describe the methodologies for noise monitoring including the frequency of measurements and location of monitoring sites;
c) document the operational noise levels at sensitive receivers as ascertained by the noise monitoring program;
d) assess the noise performance of the project against the noise criterion specified in condition 2.15 of this approval and the predicted noise levels as detailed in the report referred to under condition 1.1 of this approval; and
e) provide details of any entries in the Complaints Register (as required under condition 5.4 of this approval) relating to noise impacts.

Where monitoring indicates noise levels in excess of the operational noise criterion specified in condition 2.15 of this approval, the Proponent shall prepare a report as required by condition 2.18 of this approval.

Ongoing Operational Noise Monitoring

3.3 The Applicant shall prepare and implement an **Operational Noise Monitoring Program** to assess compliance against the operational noise criterion stipulated in condition 2.15 of this approval, throughout the life of the project. The noise monitoring program shall be prepared in consultation with, and to the satisfaction of, the EPA.

The noise monitoring program shall be prepared in accordance with the requirements of the *NSW Noise Policy for Industry* (EPA, 2017) (or its latest version) and must include, but not be limited to:

a) monitoring during ash placement in the far western area of the site adjacent to the haul road; and
b) monitoring of the effectiveness of any noise mitigation measures implemented under condition 2.18 of this approval, against the noise criterion specified in condition 2.15 of this approval.

Noise from the project is to be measured at the most affected point on or within the residential boundary, or at the most affected point within 30 metres of a dwelling where the dwelling is more than 30 metres from the boundary, to determine compliance with the noise criterion stipulated in condition 2.15 of this approval. Where it can be demonstrated that direct measurement of noise from the project is impractical, the EPA may accept alternative means of determining compliance and the modifying factors shall also be applied to the measured noise levels where applicable in accordance with the *NSW Noise Policy for Industry* (EPA, 2017) (or its latest version).

The Applicant shall forward to the EPA and the Secretary a report containing the results of any non-compliance within 14 days of conducting a noise assessment.

Where monitoring indicates noise levels in excess of the operational noise criterion specified in condition 2.15 of this approval, approval, the Applicant shall prepare a report as required by condition 2.18 of this approval.

The monitoring program shall form part of the Operational Noise Management Plan referred to in condition 6.5a) of this approval.

INFORMATION

B.2 Environmental protection licence

L5 Noise limits

L5.1 Operational noise from the Kerosene Vale Ash Repository area must not exceed:

40dB(A) LAeq(15 minute) , at the nearest most affected noise sensitive location.

Note: LAeq means the equivalent continuous noise level – the level of noise equivalent to the energy-average of noise levels occurring over a measurement period.

L5.2 To determine compliance with condition(s) L4.1 noise must be measured at, or computed for, the most affected location within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural setting) where the dwelling is more than 30 metres from the boundary. A modifying factor correction must be applied for tonal, impulsive or intermittent noise in accordance with the "Environmental Noise Management - NSW Industrial Noise Policy (January 2000)".

L5.3 The noise emission limits identified in this licence apply under the following meteorological conditions:
a) wind speeds up to 3 m/s at 10 metres height above ground; and/or
b) temperature inversion conditions of up to 30C/100m and source to receiver gradient winds of up to 2 m/s at 10 metres height above ground.

Note: The noise emission limits identified in this licence do not apply at a noise sensitive location, where the licensee and the affected noise sensitive location have reached a negotiated agreement in regards to noise, and a copy of that agreement has been provided to the Environment Protection Authority.

L6 Hours of operation

L6.1 Operational activities associated with the Kerosene Vale Ash Repository must only be carried out between the hours of 0700 and 2200 Monday to Sunday.

L6.2 This condition does not apply to the delivery of material outside the hours of operation permitted by condition L6.1, if that delivery is required by police or other authorities for safety reasons; and/or the operation or personnel or equipment are endangered. In such circumstances, prior notification must be provided to the EPA and affected residents as soon as possible or within a reasonable period in the case of emergency.

B.3 Noise management plan

5.2 Environmental monitoring program

An overview of the environmental monitoring activities that have been specified by the respective sub-plans under Section 6 of the OEMP is provided in Table 5-1. Please refer to specific sub-plans under Section 6 for further details.

Table 5-1 Environmental monitoring program

Potential impact	Locations	Parameters	Frequency	Technique	Reporting	Responsibility	OEMP Sub-plan Reference
Noise – Initial 60 day reporting period	4 main locations adopted for a total of 5 monitoring sites: ▪ Skelly Road ▪ Maddox Lane ▪ Neubeck Street ▪ Wolgan Road. (Refer to Figure 5-1)	L_{Aeq}, L_{A10}, L_{A90} and L_{Amax}	4 separate days – 3 week days and a Sunday	Attended monitoring using hand held sound level meter Monitoring to be continuous throughout full day of operations for each 15 minute period, including 30 mins prior to and following normal operating hours (7am to 10pm). Nearest potentially affected receiver to be monitored at 07.00 and at least once between 20.30 – 22.30.	Report to be submitted to EPA within 1 week of monitoring COMPLETE	Specialist Consultant on behalf of EnergyAustralia NSW	Section 6.3 Operational Noise and Vibration Management Plan – Appendix A
Noise - Normal conditions	Minimum of 3 most affected locations as per the 60 day post commissioning assessment. To include periods of ash placement at far western area of the site and where noise mitigation measures are in place. (as per COA 2.15) (Refer to Figure 5-1)	Noise levels shall not exceed an LAeq of 40dB(A) at the nearest most affected receiver	During daytime (7am-6pm) and evening time (6pm-10am) Every 6 months or more frequent if adverse trends are noted	Ongoing attended monitoring using hand held sound level meter.	6 monthly noise monitoring report If non-compliance, report is to be forwarded to DPE and EPA within 14-days of conducting monitoring	Specialist Consultant on behalf of EnergyAustralia NSW	Section 6.5 Operational Noise and Vibration Management Plan – Appendix A
Noise - Emergency conditions	At the complainant's property or nearest available representative location.	Noise levels shall not exceed an LAeq of 40dB(A) at the nearest most affected receiver	As required	Attended monitoring using hand held sound level meter	6 monthly noise monitoring report	Specialist Consultant on behalf of EnergyAustralia NSW	Section 6.3 Operational Noise and Vibration Management Plan – Appendix A

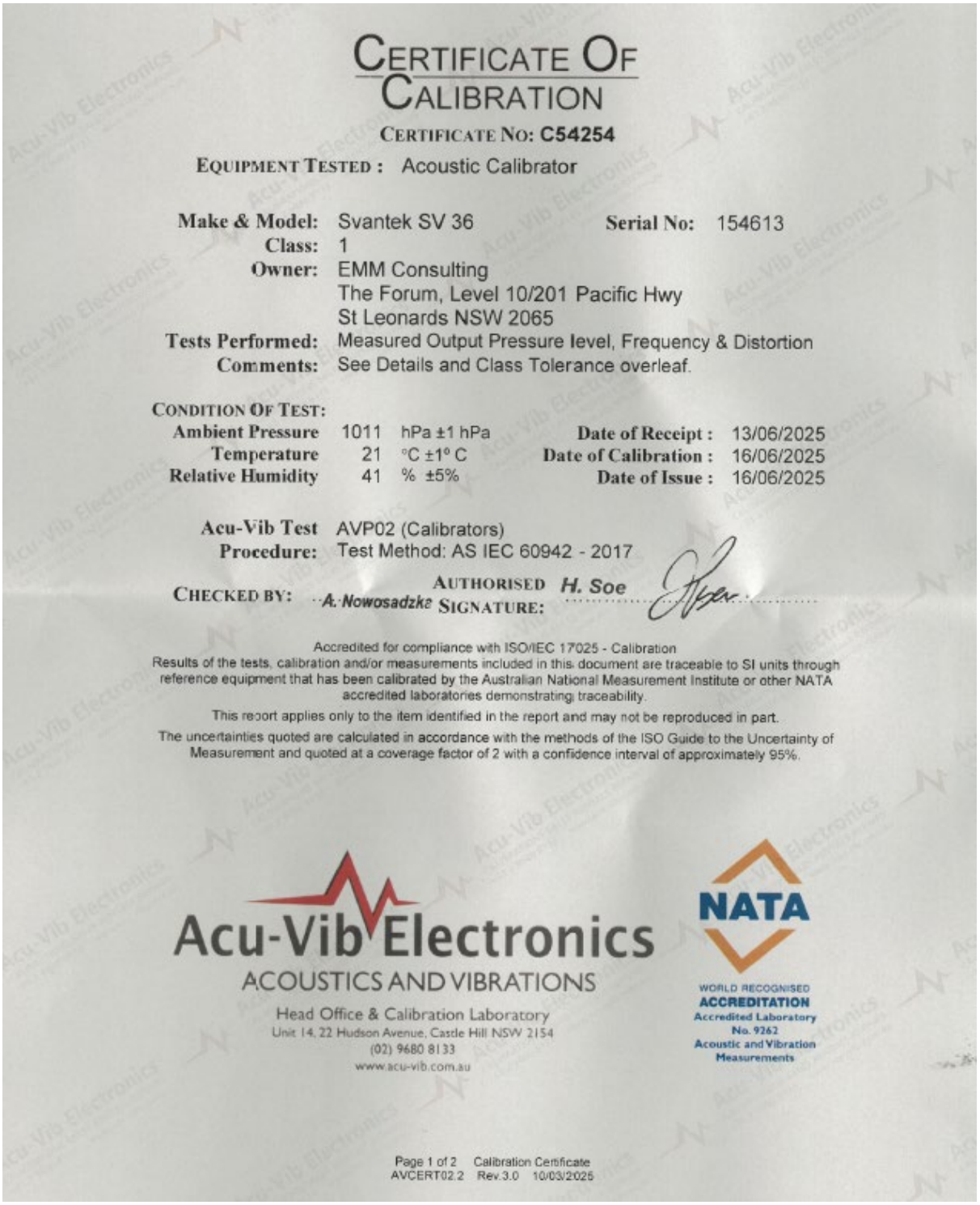
6.3 Noise and vibration management sub-plan

Targets	▪ Achieve compliance with the noise criterion of L_{Aeq} of 40dB(A) at the nearest most affected receiver during normal operations. ▪ Achieve a significant reduction in the number of noise-related complaints during emergency operations (less than 5 per year, stretch target = zero complaints per year).
Indicators	▪ The number of noise-related complaints. ▪ Noise monitoring data obtained from the sensitive receiver locations ▪ Compliance indicators as assessed by the specialist noise consultant and the Environmental Representative, as required. ▪ Observed and monitored reduction in noise generation due to adaptation where necessary of engineering measures on trucks, the implementation of operating techniques such as limited compression braking and speed limit restrictions.
Supporting documentation	
Appendix A: - KVAR Stage 2 Operations- Operational Noise and Vibration Management Plan Australian Standard AS 2436 – Guide to noise control on construction, maintenance and demolition sites	
Key issues/constraints/strategies	
Wallerawang Ash Repositories activities are not anticipated to result in impacts at the nearest potentially affected receivers. Noise impacts in varying conditions can be assessed and used to predict similar scenarios in the future to determine which measures are most effective and when. Wallerawang Ash Repositories activities are not anticipated to result in perceived vibration-related impacts at the nearest potentially affected receivers. Appendix A provides procedures to be implemented should vibration-related non-conformances occur. A Specialist Consultant will be undertaking the prescribed monitoring and analysis of noise results, as per this plan.	

Appendix C
Calibration certificates

EMM
creating opportunities

C.1 Calibration certificates



CERTIFICATE OF CALIBRATION

CERTIFICATE NO: C54254

EQUIPMENT TESTED : Acoustic Calibrator

Make & Model:	Svantek SV 36	**Serial No:**	154613
Class:	1		
Owner:	EMM Consulting The Forum, Level 10/201 Pacific Hwy St Leonards NSW 2065		
Tests Performed:	Measured Output Pressure level, Frequency & Distortion		
Comments:	See Details and Class Tolerance overleaf.		

CONDITION OF TEST:

Ambient Pressure	1011	hPa ±1 hPa	**Date of Receipt :**	13/06/2025
Temperature	21	°C ±1° C	**Date of Calibration :**	16/06/2025
Relative Humidity	41	% ±5%	**Date of Issue :**	16/06/2025

Acu-Vib Test Procedure: AVP02 (Calibrators)
Test Method: AS IEC 60942 - 2017

CHECKED BY: A. Nowosadzka **AUTHORISED SIGNATURE:** H. Soe

Accredited for compliance with ISO/IEC 17025 - Calibration
Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

This report applies only to the item identified in the report and may not be reproduced in part.

The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.

Acu-Vib Electronics
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NATA
WORLD RECOGNISED ACCREDITATION
Accredited Laboratory No. 9262
Acoustic and Vibration Measurements

Page 1 of 2 Calibration Certificate
AVCERT02.2 Rev.3.0 10/03/2025

Sydney Calibration Laboratory
Unit 21, 1 Talavera Road, Macquarie Park NSW 2113, Australia
Accredited for compliance with ISO/IEC 17025 - Calibration. Laboratory No. 1301

CERTIFICATE OF CALIBRATION

Certificate No: CAU2500985

CALIBRATION OF:

Sound Level Meter:	Brüel & Kjær	2250	No: 3008201
Microphone:	Brüel & Kjær	4189	No: 2888134
Preamplifier:	Brüel & Kjær	ZC-0032	No: 33295
Supplied Calibrator:	N/A		
Software version:	BZ7223 Version 4.7.6	Pattern Approval:	-
Instruction manual:	BE1712-22	Identification:	N/A

CUSTOMER:

EMM Consulting Pty Limited
The Forum, Level 10
201 Pacific Highway
St Leonards NSW 2065

CALIBRATION CONDITIONS:

Preconditioning:	4 hours at 23 °C
Environment conditions:	*see actual values in **Environmental conditions** sections*

SPECIFICATIONS:

The Sound Level Meter has been calibrated in accordance with the requirements as specified in IEC61672-1:2013 class 1. Procedures from IEC 61672-3:2013 were used to perform the periodic tests. The measurements included in this document are traceable to Australian / International standards through accredited calibration of all relevant reference equipment.

PROCEDURE:

The measurements have been performed with the assistance of Brüel & Kjær Sound Level Meter Calibration System B&K 3630 with application software type 7763 (version 8.6 - DB: 8.60) and test procedure 2250-4189.

RESULTS:

	Initial calibration		Calibration prior to repair/adjustment
	Calibration without repair/adjustment	x	Calibration after repair/adjustment

The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor $k = 2$ providing a level of confidence of approximately 95 %. The uncertainty evaluation has been carried out in accordance with EA-4/02 from elements originating from the standards, calibration method, effect of environmental conditions and any short time contribution from the device under calibration.

Date of Calibration: 27/08/2025

Certificate issued: 28/08/2025

Barath Chandar Rajendran
Calibration Technician

Sajeeb Tharayil
Approved signatory

Reproduction of the complete certificate is allowed. Parts of the certificate may only be reproduced after written permission.

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Kerosene Vale Ash Repository

Environmental noise monitoring - Q1 2026

Prepared for Generator Property Management Pty Ltd

April 2026

Kerosene Vale Ash Repository

Environmental noise monitoring - Q1 2026

Generator Property Management Pty Ltd

E250518 RP1

April 2026

Version	Date	Prepared by	Reviewed by	Comments
V1	02/04/2026	Ingrid Smith	Jesse Tribby	Final

Approved by



Jesse Tribby
Senior Associate, Acoustics
2 April 2026

Level 10 201 Pacific Highway
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1 Introduction

1.1 Background

EMM Consulting Pty Ltd (EMM) was engaged by Generator Property Management Pty Ltd to conduct a quarterly noise survey of construction activities and operations at Kerosene Vale Ash Repository (KVAR, the site) located near Lidsdale, NSW. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

Attended environmental noise monitoring described in this report was done during the day and evening periods of 17 and 18 March 2026 at four monitoring locations.

1.2 Attended monitoring locations

Site monitoring locations are detailed in Table 1.1 and shown on Figure 1.1. It should be noted that Figure 1.1 shows actual monitoring positions, not necessarily the location of residences.

Table 1.1 Attended noise monitoring locations

Descriptor	Description	Coordinates (MGA 56)	
		Easting	Northing
Location A	Skelly Road, Lidsdale NSW	229052	6301209
Location B	Corner Sawyers Road and Skelly Road, Lidsdale NSW	228899	6301470
Location C	End of Nuebeck Street, Lidsdale NSW	228982	6301813
Maddox Lane	End of Maddox Lane, Lidsdale NSW	229111	6302676

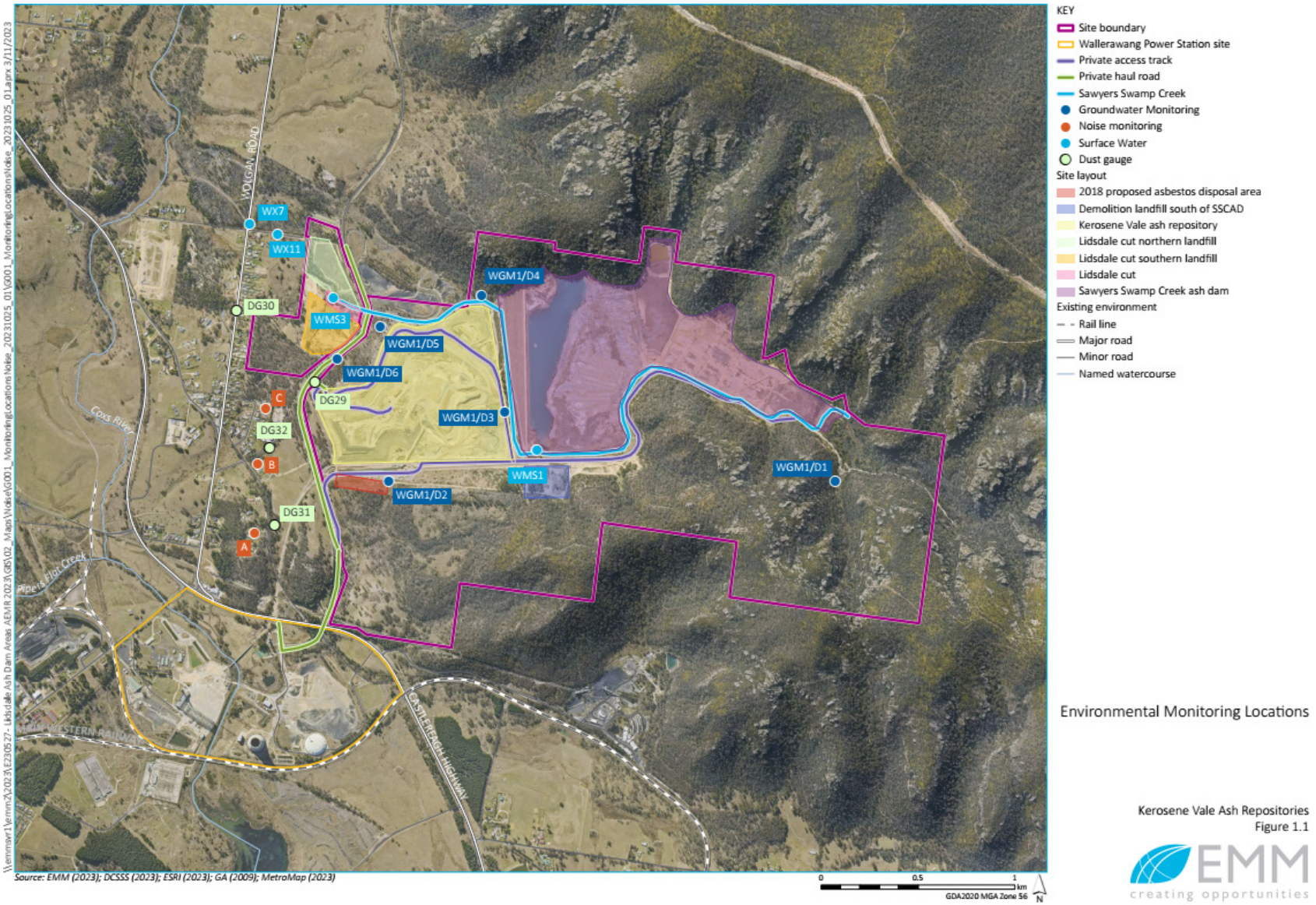

Figure 1.1 Environmental monitoring locations

1.3 Terminology and abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2 Terminology and abbreviations

Term/descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The "A" weighting scale is used to approximate how humans hear noise.
L_{Amax}	The maximum root mean squared A-weighted noise level over a time period.
L_{A1}	The A-weighted noise level which is exceeded for 1% of the time.
$L_{A1,1minute}$	The A-weighted noise level which is exceeded for 1% of the specified time period of 1 minute.
L_{A10}	The A-weighted noise level which is exceeded for 10% of the time.
L_{Aeq}	The energy average A-weighted noise level.
L_{A50}	The A-weighted noise level which is exceeded for 50% of the time, also the median noise level during a measurement period.
L_{A90}	The A-weighted noise level exceeded for 90% of the time, also referred to as the "background" noise level and commonly used to derive noise limits.
L_{Amin}	The minimum A-weighted noise level over a time period.
L_{Ceq}	The energy average C-weighted noise energy during a measurement period. The "C" weighting scale is used to take into account low-frequency components of noise within the audibility range of humans.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	Monday–Saturday: 7 am to 6 pm, on Sundays and Public Holidays: 8 am to 6 pm.
Evening	Monday–Saturday: 6 pm to 10 pm, on Sundays and Public Holidays: 6 pm to 10 pm.
Night	Monday–Saturday: 10 pm to 7 am, on Sundays and Public Holidays: 10 pm to 8 am.

Appendix A provides further information that gives an indication as to how an average person perceives changes in noise level, and examples of common noise levels.

2 Noise limits

2.1 Development consent

The current development consent for KVAR is MP07_0005 (MOD 2, October 2023). Section 2 of the consent details specific conditions relating to operational and construction noise generated by KVAR. Relevant sections of that document are reproduced in Appendix B.1.

2.2 Environment protection licence

KVAR holds Environment Protection Licence (EPL) No. 21185 issued by the Environment Protection Authority (EPA) most recently on 19 December 2023. Relevant sections of the EPL are reproduced in Appendix B.2.

2.3 Noise management plan

The KVAR Operational Environmental Management Plan (OEMP) was most recently updated in October 2018. Section 6.3 of the OEMP contains a noise and vibration management sub-plan. Appendix A of the OEMP provides the Operational Noise and Vibration Management Plan. Relevant sections of the OEMP are reproduced Appendix B.3.

2.4 Noise limits

2.4.1 Operational noise limits

Operational noise impact limits based on the EPL are shown in Table 2.1.

Table 2.1 Operational noise impact limits, $L_{Aeq,15minute}$ dB

Location	Day	Evening
Location A	40	40
Location B	40	40
Location C	40	40
Maddox Lane	40	40

2.4.2 Construction noise targets

Condition 2.7 of the consent details construction noise objectives as follows:

> The construction noise objective for the project is to manage noise from construction activities (as measured by a $L_{A10,15minute}$ descriptor) so as not to exceed the background L_{A90} noise level by more than 10 dB(A) at any sensitive receiver.

In accordance with Condition 3.1 of the consent, construction noise monitoring must occur during the following activities:

a) the realignment of Sawyers Swamp Creek;

b) construction of the stabilisation berm;

c) excavation of the former pine plantation area;

d) relocation and construction of surface water management structures; and

e) concurrent construction activities.

However, due to the difficulty of differentiating noise from construction and operational activities, all noise measured from the site has been assessed against operational noise impact limits as per condition 2.15 of the consent.

2.5 Meteorological conditions

As detailed in the development consent and EPL, noise criteria apply under the following meteorological conditions:

- wind speeds up to 3 m/s at 10 metres height above ground; and/or
- temperature inversion conditions of up to 3°C/100m and source to receiver gradient winds of up to 2 m/s at 10 metres height above ground.

2.6 Additional requirements

The NSW EPA 'Industrial Noise Policy' (INP 2000) was replaced by the 'Noise Policy for Industry' (NPfI) in October 2017. Noise conditions in the EPL and project approval still reference the INP exclusively, so monitoring has been conducted in accordance with the INP.

For assessment of modifying factors, the NPfI immediately superseded the INP, as outlined in the EPA document 'Implementation and transitional arrangements for the Noise Policy for Industry' (2017). Therefore, assessment and reporting of modifying factors have been done in accordance with Fact Sheet C of the NPfI.

Monitoring and reporting have been done in accordance with the EPA 'Approved methods for the measurement and analysis of environmental noise in NSW' issued in January 2022.

3 Methodology

3.1 Overview

Attended environmental noise monitoring was done in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise' and relevant NSW EPA requirement.

3.2 Attended noise monitoring

During this survey, attended noise monitoring was conducted during the day and evening period at each location. The duration of each measurement was 15 minutes. Atmospheric conditions were measured at each monitoring location.

Measured sound levels from various sources were noted during each measurement, and particular attention was paid to the extent of site's contribution (if any) to measured levels. At each monitoring location, the site-only $L_{Aeq,15minute}$ and L_{Amax} were measured directly or determined by other methods detailed in Section 7.1 of the NPfI.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may be used in this report. When site noise is noted as IA, it was inaudible at the monitoring location. When site noise is noted as NM, this means it was audible but could not be quantified. All results noted as IA or NM in this report were due to one or more of the following:

- Site noise levels were very low, typically more than 10 dB below the measured background (L_{A90}), and unlikely to be noticed.
- Site noise levels were masked by more dominant sources that are characteristic of the environment (such as breeze in foliage or continuous road traffic noise) that cannot be eliminated by monitoring at an alternate or intermediate location.
- It was not feasible or reasonable to employ methods, such as to move closer and back calculate. Cases may include rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

If exact noise levels from site could not be established due to masking by other noise sources in a similar frequency range but were determined to be at least 5 dB lower than relevant limits, then a maximum estimate of may be provided. This is expressed as a 'less than' quantity, such as <20 dB or <30 dB.

For this assessment, the measured L_{Amax} has been used as a conservative estimate of $L_{A1,1minute}$. The EPA accepts sleep disturbance analysis based on either the $L_{A1,1minute}$ or L_{Amax} metrics, with the L_{Amax} representing a more conservative assessment of site noise emissions.

3.3 Meteorological data

Meteorological data was obtained from the Bureau of Meteorology (BOM) automatic weather station (AWS) at Marrangaroo which allowed correlation of atmospheric parameters with measured noise levels. Vertical temperature gradient and/or sigma theta data required to determine temperature inversion conditions was not available from this AWS.

As KVAR operates solely during the day and evening periods, it has been assumed that temperature inversion conditions were not present during monitoring.

3.4 Modifying factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. Assessment of modifying factors is undertaken at the time of measurement if the site was audible and directly quantifiable. If applicable, modifying factor penalties have been reported and added to measured site-only L_{Aeq} noise levels.

Low-frequency modifying factor penalties have only been applied to site-only L_{Aeq} levels if the site was the only contributing low-frequency noise source. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

3.5 Instrumentation and personnel

Attended noise monitoring was conducted by Ingrid Smith. Qualifications, experience and demonstration of competence is in accordance with the Approved methods and is available upon request.

Equipment used to measure environmental noise levels is detailed in Table 3.1. Calibration certificates are provided in Appendix C.

Table 3.1 Attended noise monitoring equipment

Item	Serial number	Calibration due date	Relevant standard
Bruel & Kjaer 2250 sound level meter	3008201	27/08/2027	IEC 61672-1:2013
SVAN SV36 calibrator	154613	16/06/2026	IEC 60942:2017

4 Results

4.1 Total measured noise levels and atmospheric conditions

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

Table 4.1 Total measured noise levels, dB – Q1 2026 [1]

Location	Start date and time	L_{Amax}	L_{A1}	L_{A10}	L_{Aeq}	L_{A50}	L_{A90}	L_{Amin}
A	17/03/2026 19:48	56	47	40	38	36	35	33
A	18/03/2026 12:05	67	56	43	44	38	34	32
B	17/03/2026 19:29	60	58	57	52	49	36	33
B	18/03/2026 11:44	76	50	44	42	35	31	28
C	17/03/2026 19:09	61	60	59	55	53	34	29
C	18/03/2026 12:25	59	44	39	37	35	32	29
Maddox Lane	17/03/2026 18:49	51	45	41	40	40	39	38
Maddox Lane	18/03/2026 12:45	59	45	39	37	35	33	30

Notes: 1. Levels in this table are not necessarily the result of activity at site.

Atmospheric condition data measured by the operator during each measurement using a hand-held weather meter is shown in Table 4.2. The wind speed, direction and temperature were measured at approximately 1.5 metres above ground. Attended noise monitoring is not done during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.2 Measured atmospheric conditions – Q1 2026

Location	Start date and time	Temperature °C	Wind speed m/s	Wind direction °Magnetic north[1]	Cloud cover 1/8s
A	17/03/2026 19:48	21	<0.5	-	8
A	18/03/2026 12:05	24	0.9	124	6
B	17/03/2026 19:29	21	<0.5	-	8
B	18/03/2026 11:44	31	<0.5	-	6
C	17/03/2026 19:09	22	<0.5	-	8
C	18/03/2026 12:25	22	0.6	125	7
Maddox Lane	17/03/2026 18:49	21	<0.5	-	8
Maddox Lane	18/03/2026 12:45	23	<0.5	-	8

Notes: 1. "-" indicates calm conditions at monitoring location.

4.2 Construction activities

KVAR has advised that normal operations were occurring during monitoring, and relocation and construction of surface water management structures as defined in Section 2.4.2 of this report and Condition 3.1 of the consent was occurring at the time of monitoring.

4.3 Site only noise levels

4.3.1 Modifying factors

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.3.2 Site noise levels

Table 4.3 provides site noise levels in the absence of other sources, where possible, and includes weather data from the site AWS. Limits are applicable if weather conditions were within specified parameters during each measurement.

Table 4.3 Site noise levels and limits – Q1 2026

Location	Start date and time	Wind speed m/s	Limits apply? [1]	KVAR limit, $L_{Aeq,15minute}$ dB	KVAR level, $L_{Aeq,15minute}$ dB [2,3]	Exceedance, dB
A	17/03/2026 19:48	0.4	Yes	40	IA	Nil
A	18/03/2026 12:05	2.3	Yes	40	34	Nil
B	17/03/2026 19:29	0.2	Yes	40	IA	Nil
B	18/03/2026 11:44	1.9	Yes	40	<25	Nil
C	17/03/2026 19:09	0.0	Yes	40	IA	Nil
C	18/03/2026 12:25	2.3	Yes	40	32	Nil
Maddox Lane	17/03/2026 18:49	1.0	Yes	40	39	Nil
Maddox Lane	18/03/2026 12:45	2.6	Yes	40	29	Nil

Notes: 1. Noise emission limits do not apply during periods of rainfall or winds greater than 3 metres per second (at a height of 10 metres).
2. Site-only $L_{Aeq,15minute}$, includes modifying factor penalties if applicable.
3. When site noise is noted as IA, it was inaudible at the monitoring location. When site noise is noted as NM, this means it was audible but could not be quantified as per the notes in Section 3.2.

5 Discussion

5.1 Noted noise sources

During attended monitoring, the time variations (temporal characteristics) of noise sources are considered in each measurement via statistical descriptors. From these observations, summaries have been derived for the location and provided in this section. Statistical 1/3 octave-band analysis of environmental noise was conducted, and the following figures display frequency ranges of various noise sources at each location for L_{A1}, L_{A10}, L_{Aeq}, L_{A50}, and L_{A90} descriptors. These figures also provide, graphically, statistical information for these noise levels.

An example is provided as Figure 5.1, where frogs and insects are seen to be generating noise at frequencies above 1,000 Hz, while industrial noise is observed at frequencies less than 1,000 Hz.

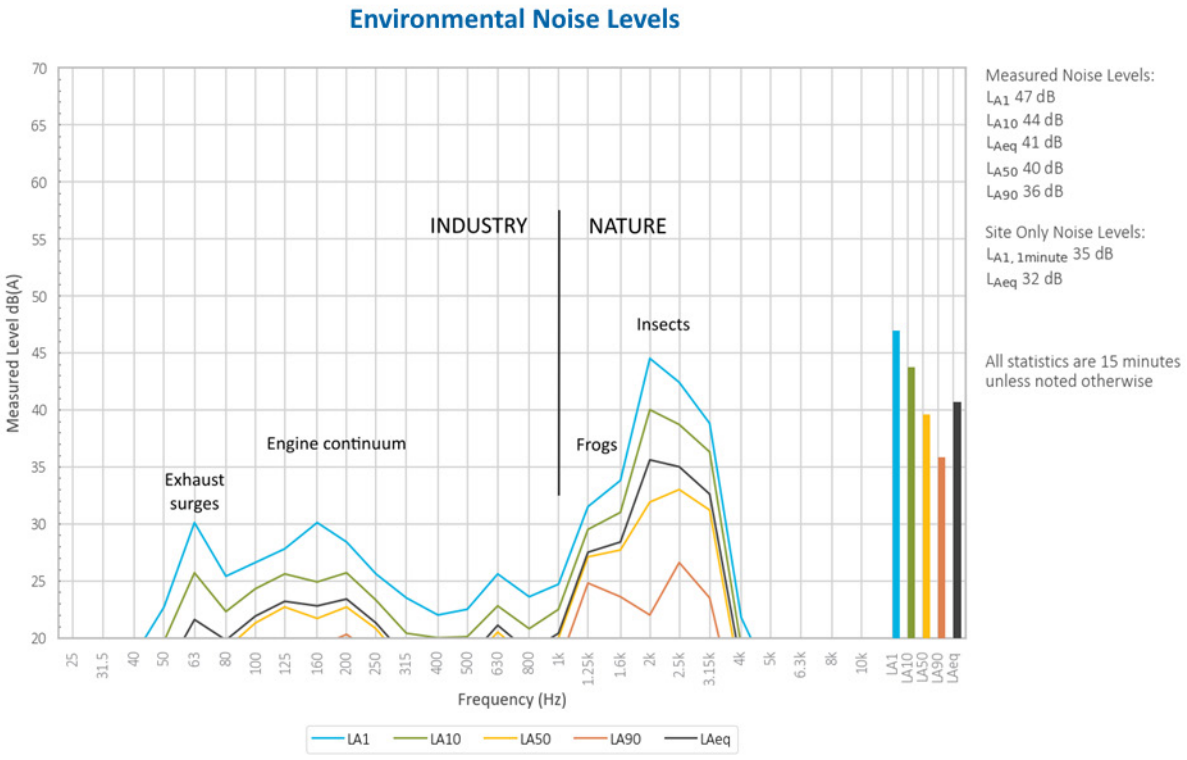

Figure 5.1 Example graph (refer to Section 5.1 for explanatory note)

5.2 Location A – Day

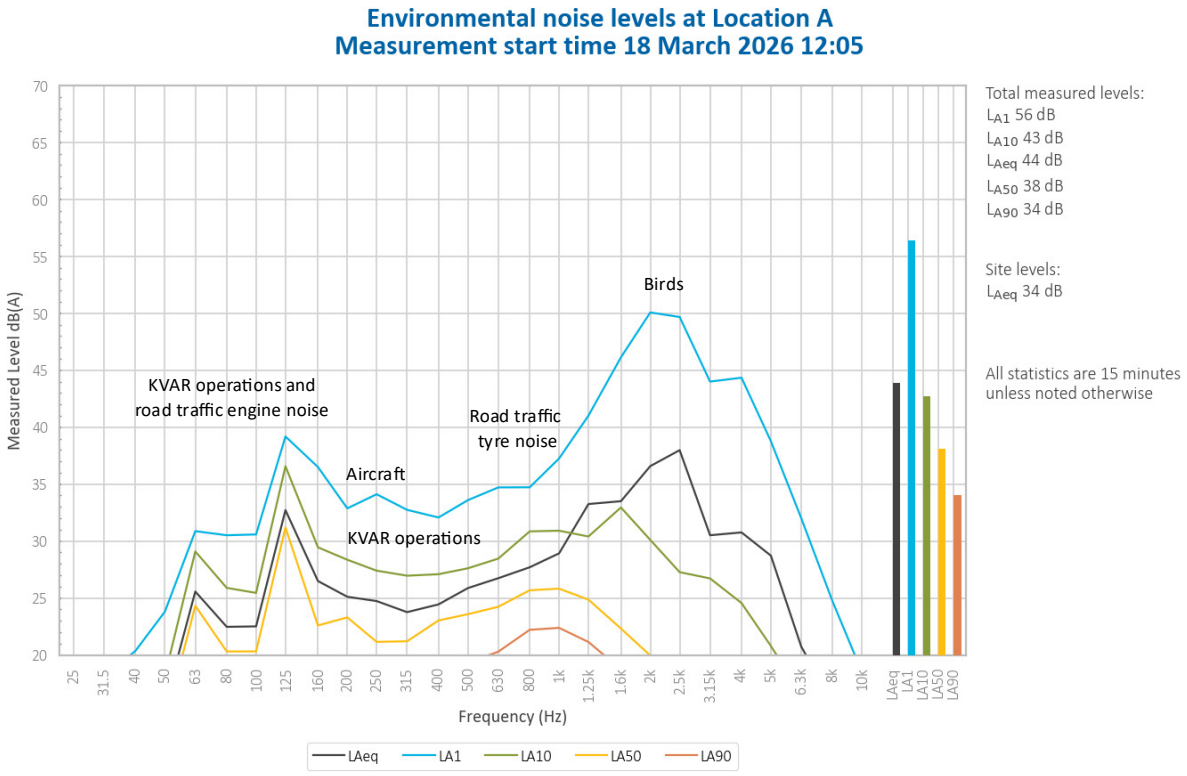

Figure 5.2 Environmental noise levels – Location A

KVAR operations, including a dozer and trucks, were audible throughout the measurement and generated a measured site-only L_{Aeq} of 34 dB.

Birds generated the L_{A1} and contributed to the L_{A10} and L_{Aeq}. KVAR operations and road traffic contributed to the measured L_{A10} and L_{Aeq} and were responsible for the measured L_{A50} and L_{A90}.

Noise from dogs, aircraft, and local residents were also noted.

5.3 Location A – Evening

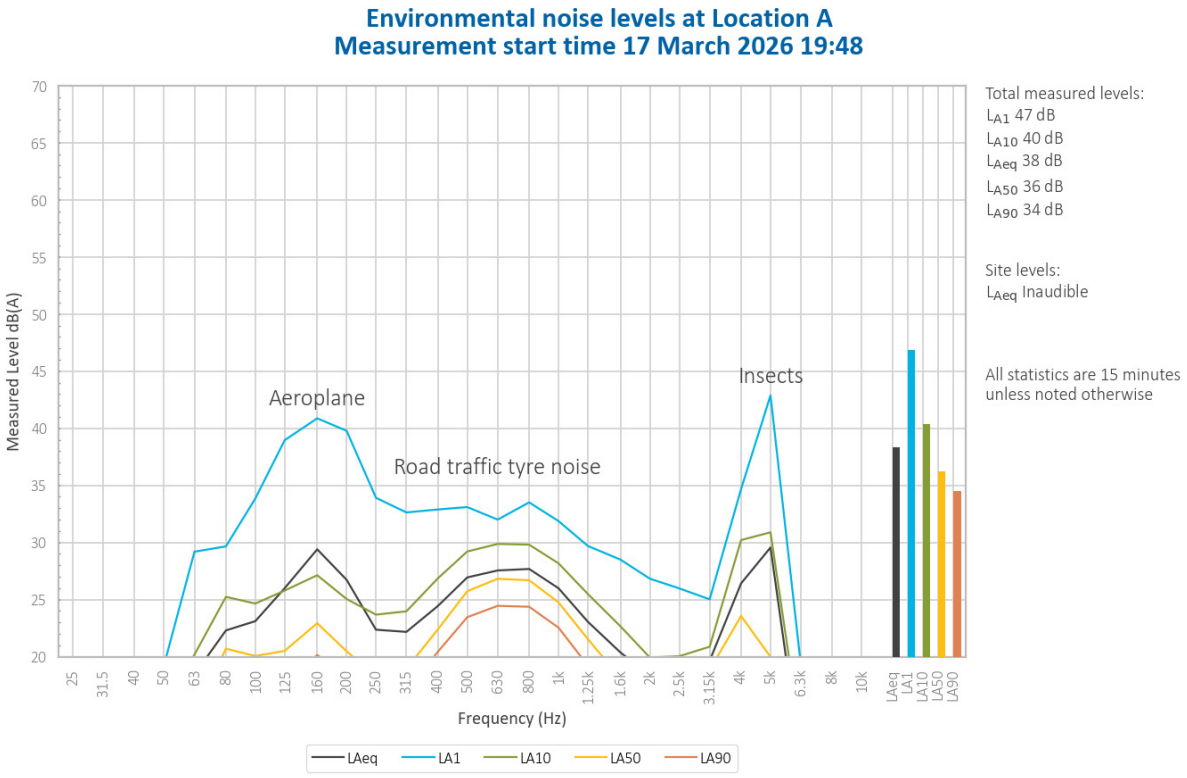

Figure 5.3 Environmental noise levels – Location A

KVAR was inaudible during the measurement.

Insects and aircraft generated the measured L_{A1} and contributed to the measured L_{A10} and L_{Aeq}. Road traffic also contributed to the measured L_{A10} and L_{Aeq}. Road traffic and insects generated the measured L_{A50} and L_{A90}.

5.4 Location B – Day

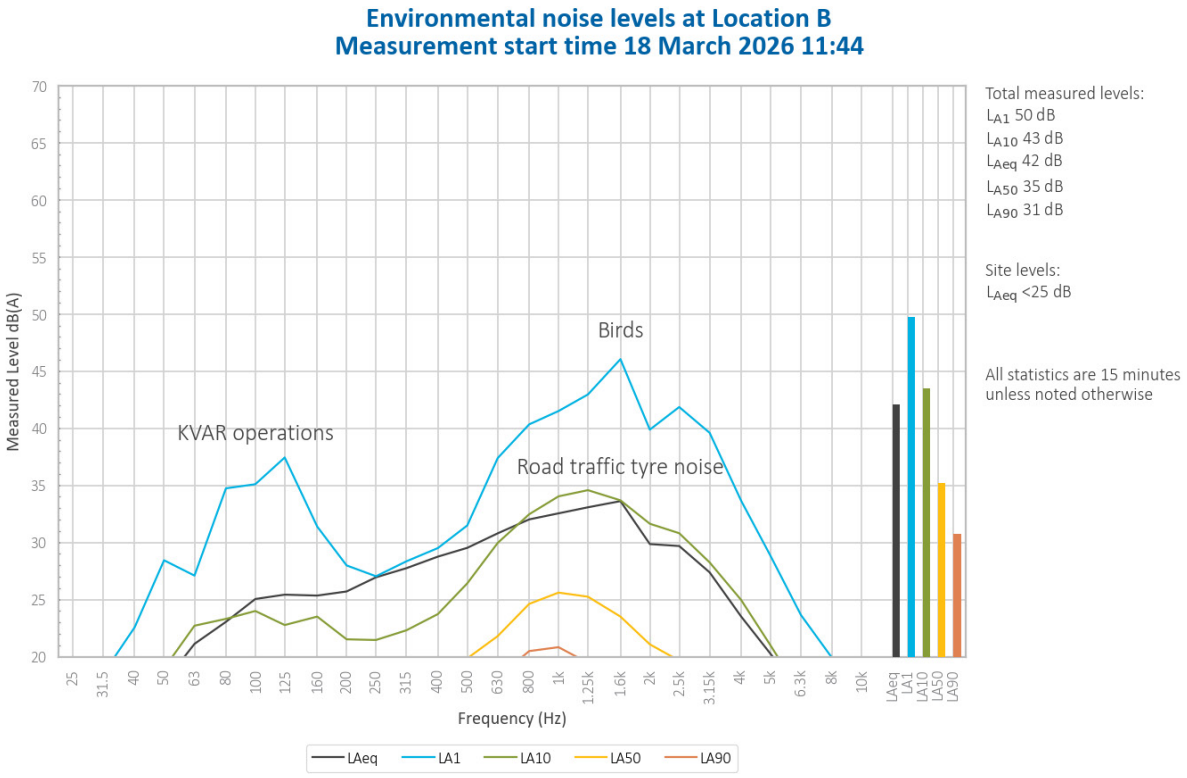

Figure 5.4 Environmental noise levels – Location B

KVAR operations, including water cart, dozer, and vehicles on site, were audible at low levels throughout the measurement and generated a site-only L_{Aeq} of less than 25 dB.

Birds generated the measured L_{A1}. Road traffic tyre noise generated the measured L_{A10}, L_{Aeq}, L_{A50}, and L_{A90}.

Noise from dogs was also noted.

5.5 Location B – Evening

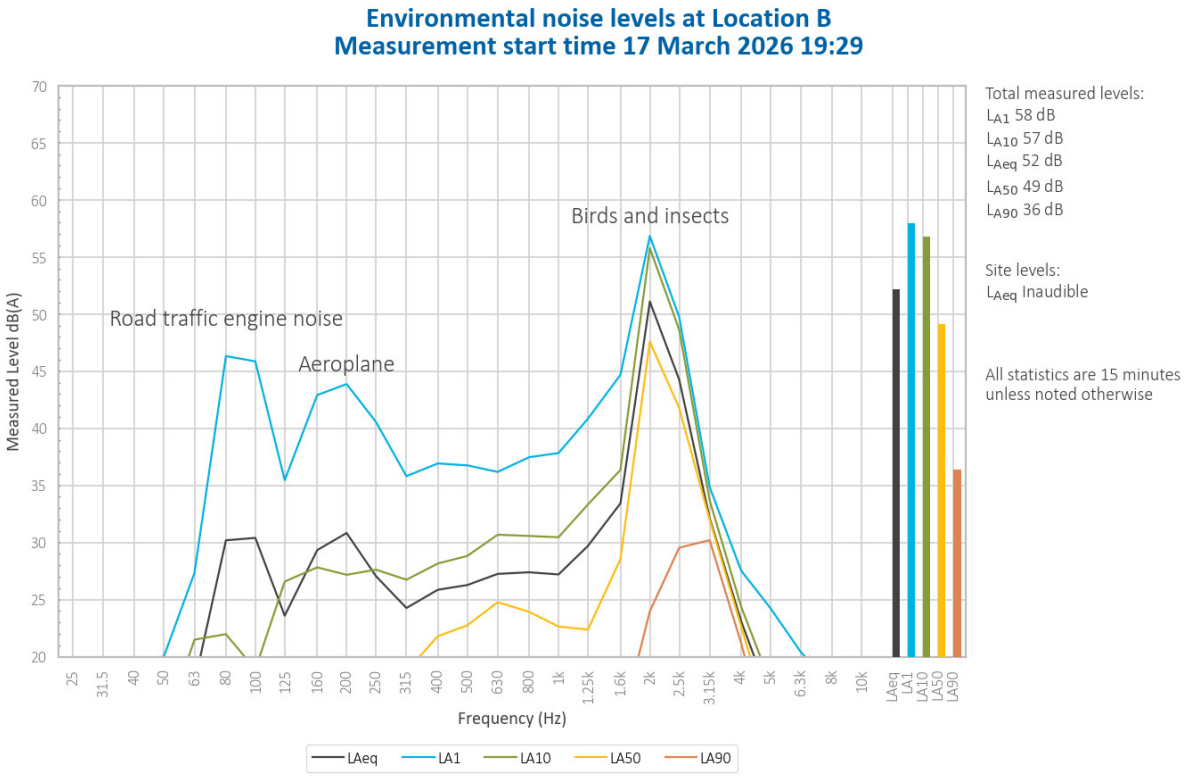

Figure 5.5 Environmental noise levels – Location B

KVAR was inaudible during the measurement.

Birds and insects generated the measured levels.

Noise from traffic and aircraft was also noted.

5.6 Location C – Day

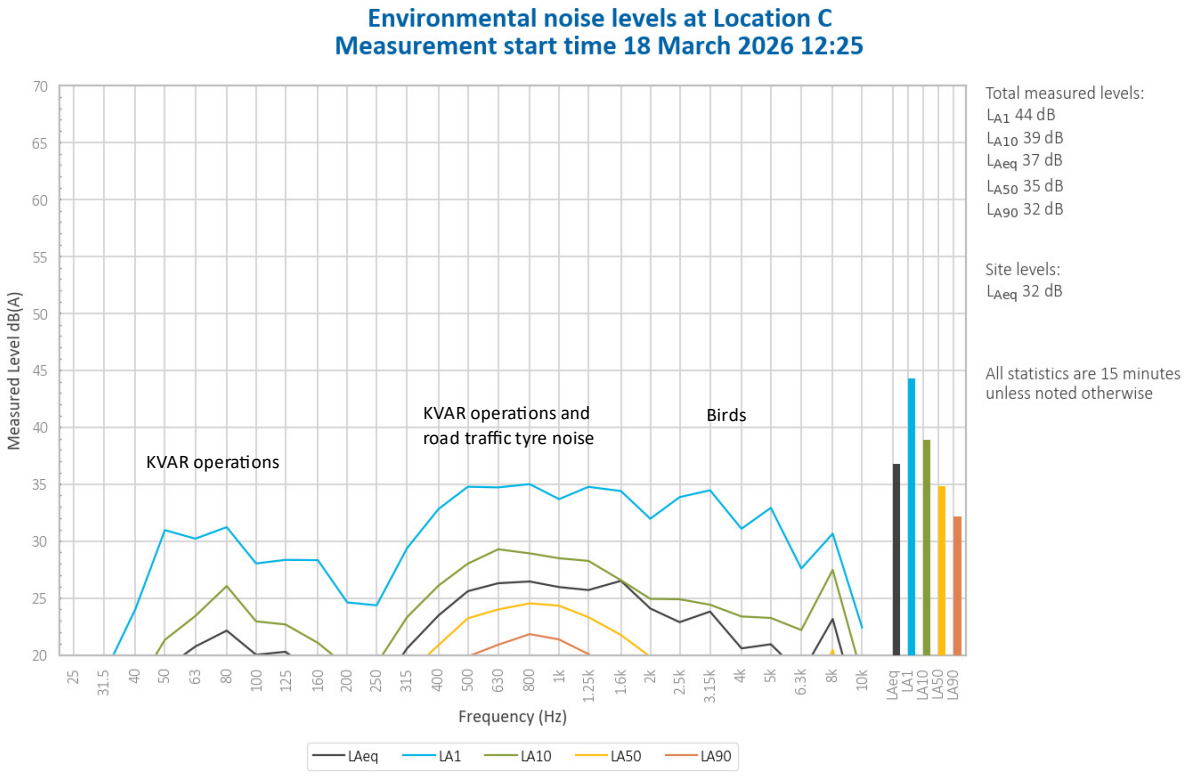

Figure 5.6 Environmental noise levels – Location C

KVAR operations, including a dozer, trucks, impact noise, and reverse alarms, were audible throughout the measurement and generated a site-only L_{Aeq} of 32 dB.

Birds, road traffic, and KVAR operations were responsible for total measured levels.

Noise from dogs and a train horn were also noted.

5.7 Location C – Evening

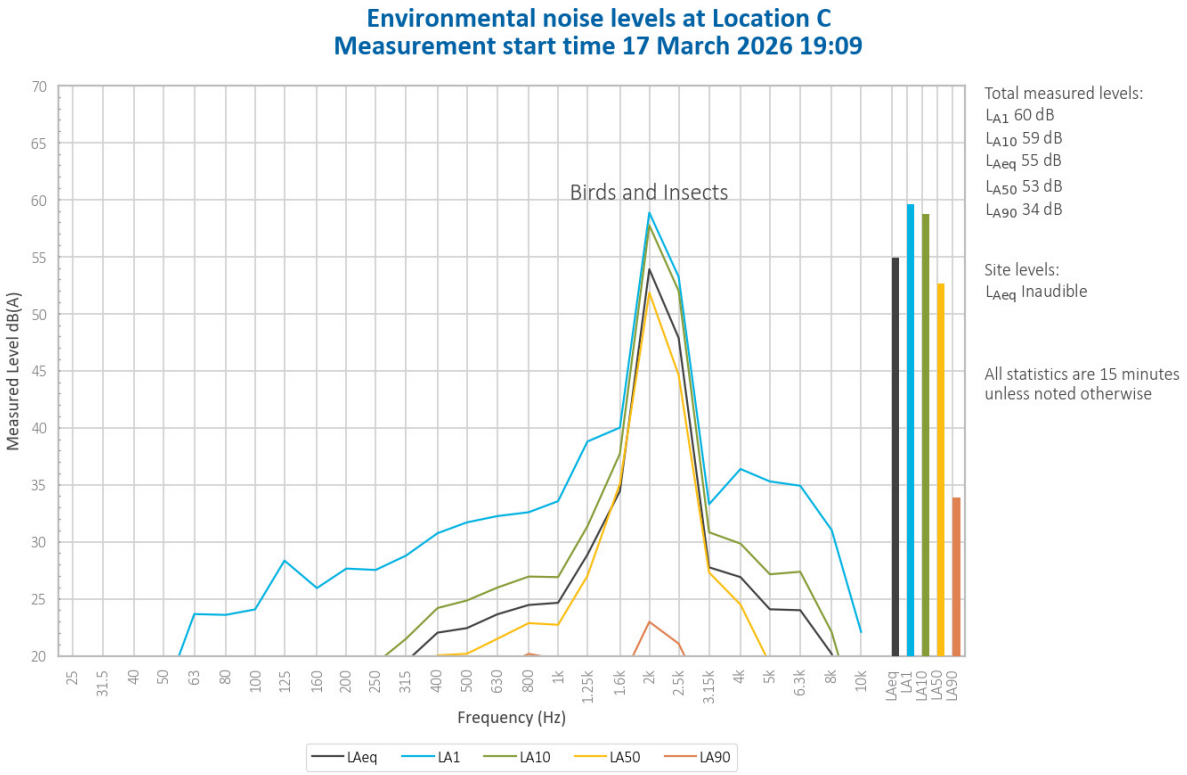

Figure 5.7 Environmental noise levels – Location C

KVAR was inaudible during the measurement.

Birds and insects generated total measured levels.

Noise from dogs and road traffic was also noted.

5.8 Maddox Lane – Day

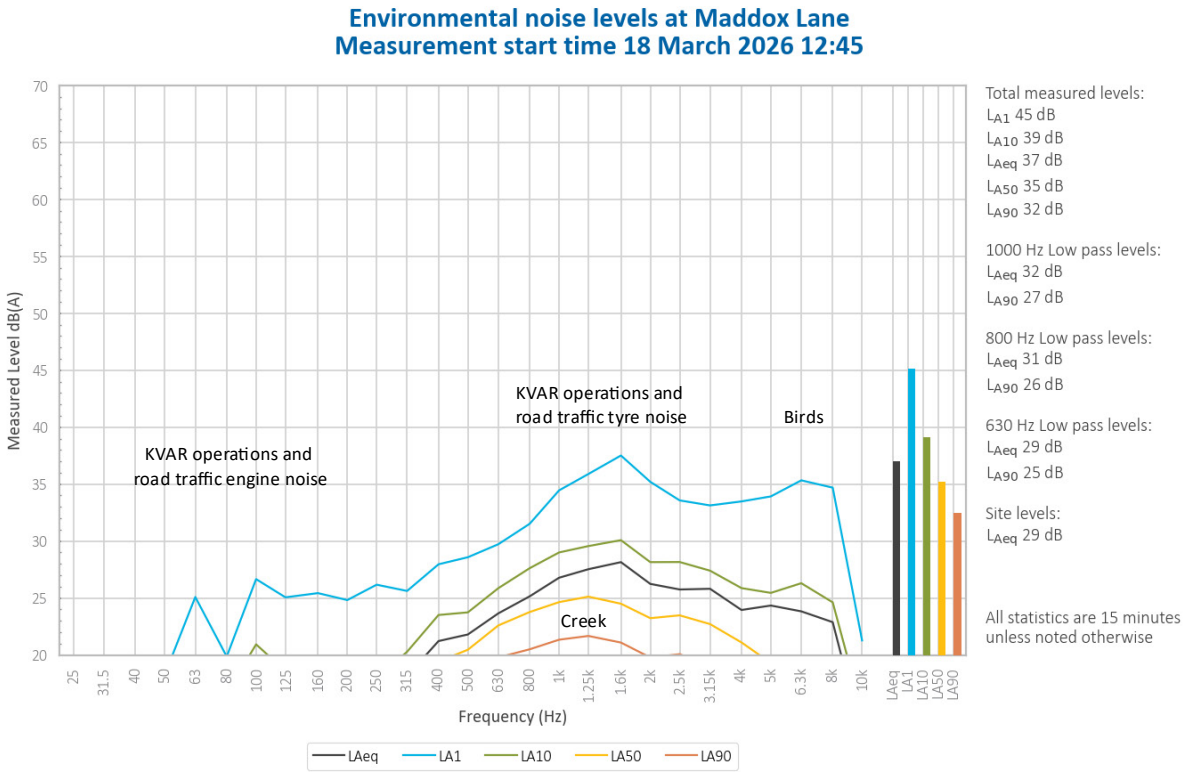

Figure 5.8 Environmental noise levels – Maddox Lane

KVAR operations, including dozers, trucks, and light vehicles, were audible throughout the measurement and generated a site-only L_{Aeq} of 29 dB.

Birds and road traffic tyre noise generated the measured L_{A1}. Road traffic tyre noise, KVAR operations, and birds were responsible for the measured L_{A10} and L_{Aeq}. Road traffic tyre noise and a nearby creek generated the measured L_{A50} and L_{A90}.

5.9 Maddox Lane – Evening

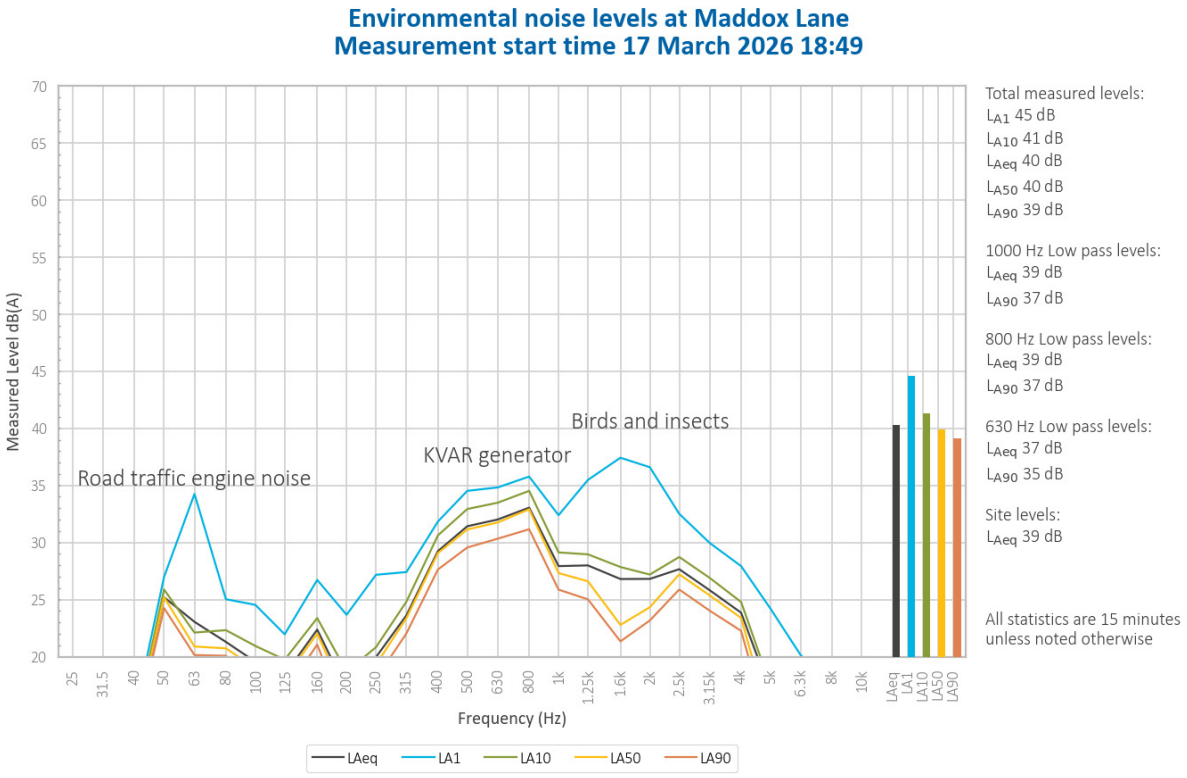

Figure 5.9 Environmental noise levels – Maddox Lane

A generator or pump was audible from KVAR throughout the measurement and generated a site-only L_{Aeq} of 39 dB.

KVAR generator/pump noise was primarily responsible for total measured levels. Birds and insects were a minor contributor to total measured levels. Engine braking from the nearby highway also contributed to the measured L_{A1}.

6 Summary

EMM was engaged by Generator Property Management Pty Ltd to conduct quarterly noise survey of construction activities and operations at KVAR. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

Attended environmental noise monitoring described in this report was undertaken during the day and evening periods of 17 and 18 March 2026 at three monitoring locations.

Noise levels from site complied with relevant limits at all monitoring locations during the Q1 2026 survey.

Appendix A
Noise perception and examples

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A.1 Noise levels

Table A.1 gives an indication as to how an average person perceives changes in noise level. Examples of common noise levels are provided in Figure A.1.

Table A.1 Perceived change in noise

Change in sound pressure level (dB)	Perceived change in noise
Up to 2	Not perceptible
3	Just perceptible
5	Noticeable difference
10	Twice (or half) as loud
15	Large change
20	Four times (or quarter) as loud

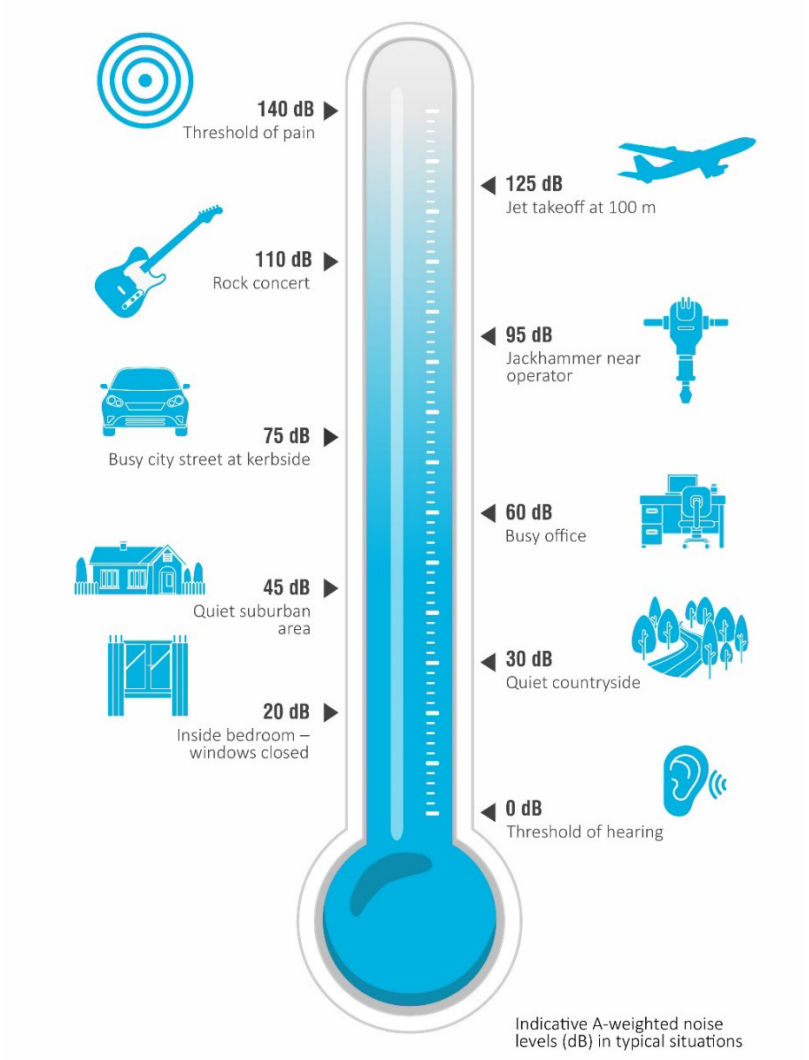

Figure A.1 Common noise levels

Appendix B
Regulator documents

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B.1 Development consent

Noise Impacts

Construction Hours

2.3 Construction activities associated with the project shall only be undertaken during the following hours:

a) 7:00 am to 6:00 pm, Mondays to Fridays, inclusive;
b) 8:00 am to 1:00 pm on Saturdays; and
c) at no time on Sundays or public holidays.

2.4 Activities resulting in impulsive or tonal noise emission (such as rock breaking or rock hammering) shall be limited to 8:00 am to 12:00 pm, Monday to Saturday and 2:00 pm to 5:00 pm, Monday to Friday. The Proponent shall not undertake such activities for more than three continuous hours and must provide a minimum one-hour respite period.

2.5 Construction outside the hours stipulated in condition 2.3 of this approval is permitted in the following circumstances:

a) where construction works do not cause audible noise at any sensitive receiver; or
b) for the delivery of materials required outside these hours by the Police or other authorities for safety reasons; or
c) where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm.

2.6 The hours of construction activities specified under condition 2.3 of this approval may be varied with the prior written approval of the Secretary. Any request to alter the hours of construction specified under condition 2.3 shall be:

a) considered on a case-by-case basis;
b) accompanied by details of the nature and need for activities to be conducted during the varied construction hours; and
c) accompanied by any information necessary for the Secretary to reasonably determine that activities undertaken during the varied construction hours will not adversely impact on the acoustic amenity of sensitive receivers in the vicinity of the site.

Construction Noise

2.7 The construction noise objective for the project is to manage noise from construction activities (as measured by a $L_{A10\ (15\ minute)}$ descriptor) so as not to exceed the background L_{A90} noise level by more than 10 dB(A) at any sensitive receiver.

Any activities that have the potential for noise emissions that exceed the objective must be identified and managed in accordance with the Construction Noise Management Plan (as referred to under condition 6.3b) of this approval). The Proponent shall implement all reasonable and feasible noise mitigation measures with the aim of achieving the construction noise objective.

Operational Noise

2.15 The cumulative operational noise from the ash placement area and ash haulage activity shall not exceed an $L_{Aeq\ (15\ minute)}$ of 40 dB(A) at the nearest most affected sensitive receiver during normal operating hours as defined in condition 2.8 of this approval.

This noise criterion applies under the following meteorological conditions:

a) wind speeds up to 3 m/s at 10 metres above ground; and/or
b) temperature inversion conditions of up to 3°C/100 m and source to receiver gradient winds of up to 2 m/s at 10 m above ground level.

This criterion does not apply where the Proponent and the affected landowner have reached a negotiated agreement in regard to noise, and a copy of the agreement has been forwarded to the Secretary and the EPA.

2.16 The Proponent shall implement measures to ensure noise attenuation of trucks. These measures may include, but are not necessarily limited to, installation of residential class mufflers, engine shrouds, body dampening, speed limiting, fitting of rubber stoppers to tail gates, limiting the use of compression braking, and ensuring trucks operate in a one-way system at the ash repository where feasible.

2.17 The Proponent shall liaise with the owner/operator of Angus Place Coal Mine with the aim of preparing a protocol which provides for a co-operative approach for the management and mitigation of noise impacts associated with coal and ash truck movements along the private haul road.

2.18 Where noise monitoring (as required by conditions 3.2 or 3.3 of this approval) identifies any non-compliance with the operational noise criterion specified under condition 2.15 of this approval the Proponent shall prepare and submit to the Secretary for approval a report including, but not limited to:

a) an assessment of all reasonable and feasible physical and other mitigation measures for reducing noise at the source including, but not limited to -
    i) construction of a noise barrier along the haulage road,
    ii) alternative ash haulage routes, and
    iii) alternative methods of ash conveyance to the repository; and
b) identification of the preferred measure(s) for reducing noise at the source;
c) feedback from directly affected property owners and the EPA on the proposed noise mitigation measures; and
d) location, type, timing and responsibility for implementation of the noise mitigation measure(s).

The report is to be submitted to the Secretary within 60 days of undertaking the noise monitoring which has identified exceedances of the operational noise criterion specified under condition 2.15, unless otherwise agreed to by the Secretary. The Proponent shall implement all reasonable and feasible mitigation measures in accordance with the requirements of the Secretary.

3. ENVIRONMENTAL MONITORING

Construction Noise Monitoring

3.1 The Proponent shall prepare and implement a **Construction Noise Monitoring** Program to confirm the predictions of the noise assessment detailed in the document referred to under condition 1.1 of this approval and assess compliance against the construction noise criterion stipulated in condition 2.7 of this approval. The noise monitoring program shall be prepared in consultation with, and to the satisfaction of, the EPA. The monitoring program shall form part of the Construction Noise Management Plan referred to in condition 6.3b) of this approval and must include monitoring of the construction noise generated during:

a) the realignment Sawyers Swamp Creek;
b) construction of the stabilisation berm;
c) excavation of the former pine plantation area;
d) relocation and construction of surface water management structures; and
e) concurrent construction activities.

The Proponent shall forward to the EPA and the Secretary a report containing the results of each noise assessment and describing any non-compliance within 14 days of conducting a noise assessment.

Operational Noise Review

3.2 Within 60 days of the commencement of operation of the project, unless otherwise agreed to by the Director-General, the Proponent shall submit for the approval of the Secretary an **Operational Noise Review** to confirm the operational noise impacts of the project. The Operational Noise Review must be prepared in consultation with, and to the satisfaction of, the EPA. The Review shall:

a) identify the appropriate operational noise objectives and level for sensitive receivers;
b) describe the methodologies for noise monitoring including the frequency of measurements and location of monitoring sites;
c) document the operational noise levels at sensitive receivers as ascertained by the noise monitoring program;
d) assess the noise performance of the project against the noise criterion specified in condition 2.15 of this approval and the predicted noise levels as detailed in the report referred to under condition 1.1 of this approval; and
e) provide details of any entries in the Complaints Register (as required under condition 5.4 of this approval) relating to noise impacts.

Where monitoring indicates noise levels in excess of the operational noise criterion specified in condition 2.15 of this approval, the Proponent shall prepare a report as required by condition 2.18 of this approval.

Ongoing Operational Noise Monitoring

3.3 The Applicant shall prepare and implement an **Operational Noise Monitoring Program** to assess compliance against the operational noise criterion stipulated in condition 2.15 of this approval, throughout the life of the project. The noise monitoring program shall be prepared in consultation with, and to the satisfaction of, the EPA.

The noise monitoring program shall be prepared in accordance with the requirements of the *NSW Noise Policy for Industry* (EPA, 2017) (or its latest version) and must include, but not be limited to:

a) monitoring during ash placement in the far western area of the site adjacent to the haul road; and
b) monitoring of the effectiveness of any noise mitigation measures implemented under condition 2.18 of this approval, against the noise criterion specified in condition 2.15 of this approval.

Noise from the project is to be measured at the most affected point on or within the residential boundary, or at the most affected point within 30 metres of a dwelling where the dwelling is more than 30 metres from the boundary, to determine compliance with the noise criterion stipulated in condition 2.15 of this approval. Where it can be demonstrated that direct measurement of noise from the project is impractical, the EPA may accept alternative means of determining compliance and the modifying factors shall also be applied to the measured noise levels where applicable in accordance with the *NSW Noise Policy for Industry* (EPA, 2017) (or its latest version).

The Applicant shall forward to the EPA and the Secretary a report containing the results of any non-compliance within 14 days of conducting a noise assessment.

Where monitoring indicates noise levels in excess of the operational noise criterion specified in condition 2.15 of this approval, approval, the Applicant shall prepare a report as required by condition 2.18 of this approval.

The monitoring program shall form part of the Operational Noise Management Plan referred to in condition 6.5a) of this approval.

INFORMATION

B.2 Environmental protection licence

L5 Noise limits

L5.1 Operational noise from the Kerosene Vale Ash Repository area must not exceed:

40dB(A) LAeq(15 minute) , at the nearest most affected noise sensitive location.

Note: LAeq means the equivalent continuous noise level – the level of noise equivalent to the energy-average of noise levels occurring over a measurement period.

L5.2 To determine compliance with condition(s) L4.1 noise must be measured at, or computed for, the most affected location within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural setting) where the dwelling is more than 30 metres from the boundary. A modifying factor correction must be applied for tonal, impulsive or intermittent noise in accordance with the "Environmental Noise Management - NSW Industrial Noise Policy (January 2000)".

L5.3 The noise emission limits identified in this licence apply under the following meteorological conditions:
a) wind speeds up to 3 m/s at 10 metres height above ground; and/or
b) temperature inversion conditions of up to 30C/100m and source to receiver gradient winds of up to 2 m/s at 10 metres height above ground.

Note: The noise emission limits identified in this licence do not apply at a noise sensitive location, where the licensee and the affected noise sensitive location have reached a negotiated agreement in regards to noise, and a copy of that agreement has been provided to the Environment Protection Authority.

L6 Hours of operation

L6.1 Operational activities associated with the Kerosene Vale Ash Repository must only be carried out between the hours of 0700 and 2200 Monday to Sunday.

L6.2 This condition does not apply to the delivery of material outside the hours of operation permitted by condition L6.1, if that delivery is required by police or other authorities for safety reasons; and/or the operation or personnel or equipment are endangered. In such circumstances, prior notification must be provided to the EPA and affected residents as soon as possible or within a reasonable period in the case of emergency.

B.3 Noise management plan

5.2 Environmental monitoring program

An overview of the environmental monitoring activities that have been specified by the respective sub-plans under Section 6 of the OEMP is provided in Table 5-1. Please refer to specific sub-plans under Section 6 for further details.

Table 5-1 Environmental monitoring program

Potential impact	Locations	Parameters	Frequency	Technique	Reporting	Responsibility	OEMP Sub-plan Reference
Noise – Initial 60 day reporting period	4 main locations adopted for a total of 5 monitoring sites: ▪ Skelly Road ▪ Maddox Lane ▪ Neubeck Street ▪ Wolgan Road. (Refer to Figure 5-1)	L_{Aeq}, L_{A10}, L_{A90} and L_{Amax}	4 separate days – 3 week days and a Sunday	Attended monitoring using hand held sound level meter Monitoring to be continuous throughout full day of operations for each 15 minute period, including 30 mins prior to and following normal operating hours (7am to 10pm). Nearest potentially affected receiver to be monitored at 07.00 and at least once between 20.30 – 22.30.	Report to be submitted to EPA within 1 week of monitoring COMPLETE	Specialist Consultant on behalf of EnergyAustralia NSW	Section 6.3 Operational Noise and Vibration Management Plan – Appendix A
Noise - Normal conditions	Minimum of 3 most affected locations as per the 60 day post commissioning assessment. To include periods of ash placement at far western area of the site and where noise mitigation measures are in place. (as per COA 2.15) (Refer to Figure 5-1)	Noise levels shall not exceed an LAeq of 40dB(A) at the nearest most affected receiver	During daytime (7am-6pm) and evening time (6pm-10am) Every 6 months or more frequent if adverse trends are noted	Ongoing attended monitoring using hand held sound level meter.	6 monthly noise monitoring report If non-compliance, report is to be forwarded to DPE and EPA within 14-days of conducting monitoring	Specialist Consultant on behalf of EnergyAustralia NSW	Section 6.5 Operational Noise and Vibration Management Plan – Appendix A
Noise - Emergency conditions	At the complainant's property or nearest available representative location.	Noise levels shall not exceed an LAeq of 40dB(A) at the nearest most affected receiver	As required	Attended monitoring using hand held sound level meter	6 monthly noise monitoring report	Specialist Consultant on behalf of EnergyAustralia NSW	Section 6.3 Operational Noise and Vibration Management Plan – Appendix A

6.3 Noise and vibration management sub-plan

Targets	▪ Achieve compliance with the noise criterion of L_{Aeq} of 40dB(A) at the nearest most affected receiver during normal operations. ▪ Achieve a significant reduction in the number of noise-related complaints during emergency operations (less than 5 per year, stretch target = zero complaints per year).
Indicators	▪ The number of noise-related complaints. ▪ Noise monitoring data obtained from the sensitive receiver locations ▪ Compliance indicators as assessed by the specialist noise consultant and the Environmental Representative, as required. ▪ Observed and monitored reduction in noise generation due to adaptation where necessary of engineering measures on trucks, the implementation of operating techniques such as limited compression braking and speed limit restrictions.
Supporting documentation	
Appendix A: - KVAR Stage 2 Operations- Operational Noise and Vibration Management Plan Australian Standard AS 2436 – Guide to noise control on construction, maintenance and demolition sites	
Key issues/constraints/strategies	
Wallerawang Ash Repositories activities are not anticipated to result in impacts at the nearest potentially affected receivers. Noise impacts in varying conditions can be assessed and used to predict similar scenarios in the future to determine which measures are most effective and when. Wallerawang Ash Repositories activities are not anticipated to result in perceived vibration-related impacts at the nearest potentially affected receivers. Appendix A provides procedures to be implemented should vibration-related non-conformances occur. A Specialist Consultant will be undertaking the prescribed monitoring and analysis of noise results, as per this plan.	

Appendix C
Calibration certificates

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C.1 Calibration certificates



CERTIFICATE OF CALIBRATION

CERTIFICATE NO: C54254

EQUIPMENT TESTED : Acoustic Calibrator

Make & Model:	Svantek SV 36	**Serial No:**	154613
Class:	1		
Owner:	EMM Consulting The Forum, Level 10/201 Pacific Hwy St Leonards NSW 2065		
Tests Performed:	Measured Output Pressure level, Frequency & Distortion		
Comments:	See Details and Class Tolerance overleaf.		

CONDITION OF TEST:

Ambient Pressure	1011	hPa ±1 hPa	**Date of Receipt :**	13/06/2025
Temperature	21	°C ±1° C	**Date of Calibration :**	16/06/2025
Relative Humidity	41	% ±5%	**Date of Issue :**	16/06/2025

Acu-Vib Test Procedure: AVP02 (Calibrators)
Test Method: AS IEC 60942 - 2017

CHECKED BY: A. Nowosadzka **AUTHORISED SIGNATURE:** H. Soe

Accredited for compliance with ISO/IEC 17025 - Calibration
Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

This report applies only to the item identified in the report and may not be reproduced in part.

The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.

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ACOUSTICS AND VIBRATIONS
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WORLD RECOGNISED ACCREDITATION
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Acoustic and Vibration Measurements

Page 1 of 2 Calibration Certificate
AVCERT02.2 Rev.3.0 10/03/2025

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NATA

CERTIFICATE OF CALIBRATION

Certificate No: CAU2500985

CALIBRATION OF:

Sound Level Meter:	Brüel & Kjær	2250	No: 3008201
Microphone:	Brüel & Kjær	4189	No: 2888134
Preamplifier:	Brüel & Kjær	ZC-0032	No: 33295
Supplied Calibrator:	N/A		
Software version:	BZ7223 Version 4.7.6	Pattern Approval:	-
Instruction manual:	BE1712-22	Identification:	N/A

CUSTOMER:

EMM Consulting Pty Limited
The Forum, Level 10
201 Pacific Highway
St Leonards NSW 2065

CALIBRATION CONDITIONS:

Preconditioning:	4 hours at 23 °C
Environment conditions:	*see actual values in **Environmental conditions** sections*

SPECIFICATIONS:

The Sound Level Meter has been calibrated in accordance with the requirements as specified in IEC61672-1:2013 class 1. Procedures from IEC 61672-3:2013 were used to perform the periodic tests. The measurements included in this document are traceable to Australian / International standards through accredited calibration of all relevant reference equipment.

PROCEDURE:

The measurements have been performed with the assistance of Brüel & Kjær Sound Level Meter Calibration System B&K 3630 with application software type 7763 (version 8.6 - DB: 8.60) and test procedure 2250-4189.

RESULTS:

	Initial calibration		Calibration prior to repair/adjustment
	Calibration without repair/adjustment	X	Calibration after repair/adjustment

The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor $k = 2$ providing a level of confidence of approximately 95 %. The uncertainty evaluation has been carried out in accordance with EA-4/02 from elements originating from the standards, calibration method, effect of environmental conditions and any short time contribution from the device under calibration.

Date of Calibration: 27/08/2025

Certificate issued: 28/08/2025

Barath Chandar Rajendran
Calibration Technician

Sajeeb Tharayil
Approved signatory

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Kerosene Vale Ash Repository

Environmental noise monitoring - Q2 2026

Prepared for Generator Property Management Pty Ltd

June 2026

Kerosene Vale Ash Repository

Environmental noise monitoring - Q2 2026

Generator Property Management Pty Ltd

E250518 RP2

June 2026

Version	Date	Prepared by	Reviewed by	Comments
V1	02/07/2026	Ingrid Smith	Robert Kirwan	Final

Approved by



Robert Kirwan
Senior Associate, Acoustics
2 July 2026

Level 10 201 Pacific Highway
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ABN: 28 141 736 558

This report has been prepared in accordance with the brief provided by Generator Property Management Pty Ltd and, in its preparation, EMM has relied upon the information collected at the times and under the conditions specified in this report. All findings, conclusions or recommendations contained in this report are based on those aforementioned circumstances. This report is to only be used for the purpose for which it has been provided. Except as permitted by the Copyright Act 1968 (Cth) and only to the extent incapable of exclusion, any other use (including use or reproduction of this report for resale or other commercial purposes) is prohibited without EMM's prior written consent. Except where expressly agreed to by EMM in writing, and to the extent permitted by law, EMM will have no liability (and assumes no duty of care) to any person in relation to this document, other than to Generator Property Management Pty Ltd (and subject to the terms of EMM's agreement with Generator Property Management Pty Ltd).

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ABN: 28 141 736 558

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1 Introduction

1.1 Background

EMM Consulting Pty Ltd (EMM) was engaged by Generator Property Management Pty Ltd to conduct a quarterly noise survey of construction activities and operations at Kerosene Vale Ash Repository (KVAR, the site) located near Lidsdale, NSW. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

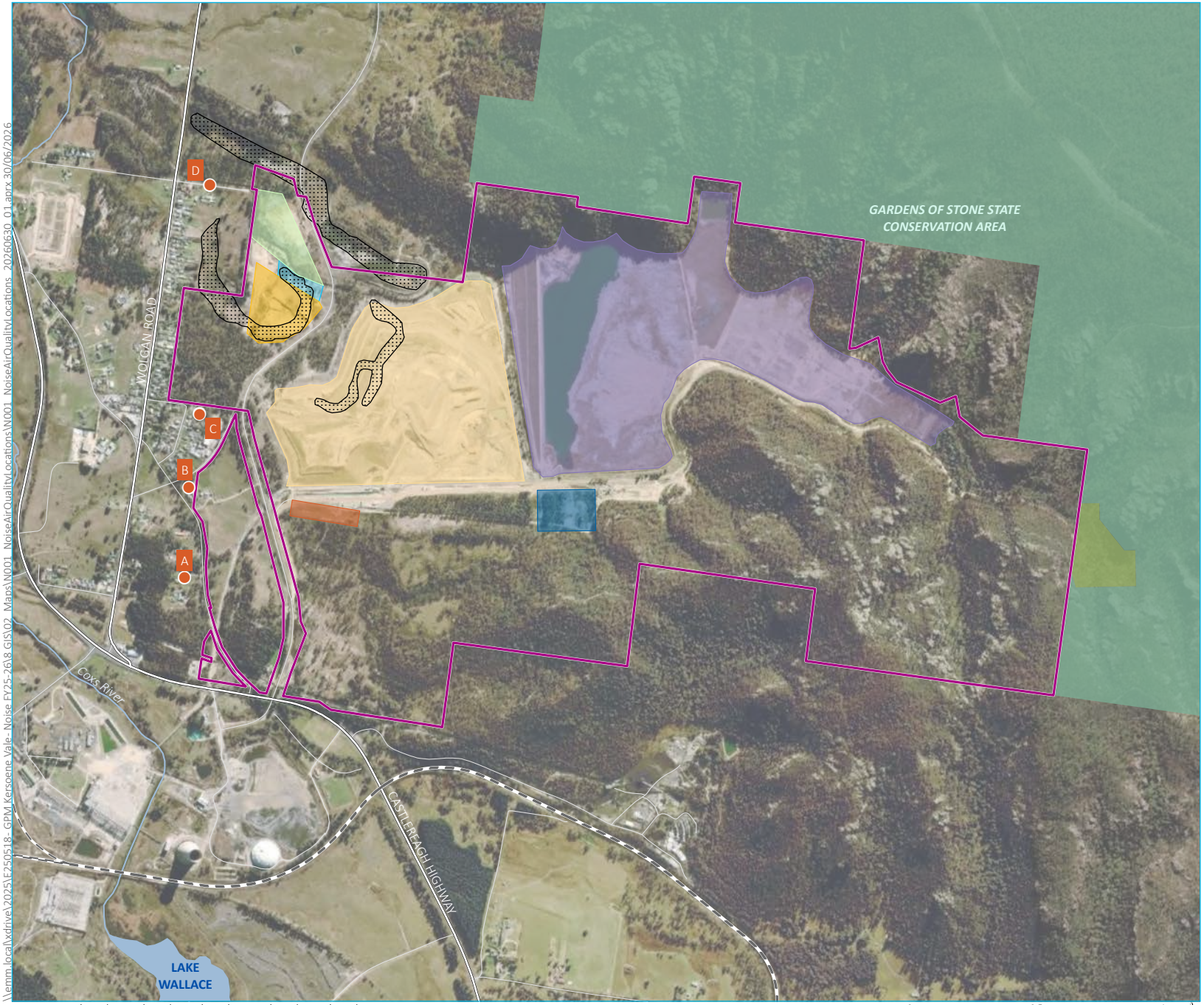
Attended environmental noise monitoring described in this report was done during the day and evening periods of 15 and 16 June 2026 at four monitoring locations.

1.2 Attended monitoring locations

Site monitoring locations are detailed in Table 1.1 and shown on Figure 1.1. It should be noted that Figure 1.1 shows actual monitoring positions, not necessarily the location of residences.

Table 1.1 Attended noise monitoring locations

Descriptor	Description	Coordinates (MGA 56)	
		Easting	Northing
Location A	Skelly Road, Lidsdale NSW	229052	6301209
Location B	Corner Sawyers Road and Skelly Road, Lidsdale NSW	228899	6301470
Location C	End of Nuebeck Street, Lidsdale NSW	228982	6301813
Location D	End of Maddox Lane, Lidsdale NSW	229111	6302676



KEY

- Site boundary
- Historical open cut pit
- Noise monitoring

Site layout

- 2018 proposed asbestos disposal area
- Demolition landfill south of SSCAD
- Kerosene Vale ash repository
- Lidsdale cut northern landfill
- Lidsdale cut southern landfill
- Lidsdale cut
- Sawyers Swamp creek ash dam

Existing environment

- Rail line
- Major road
- Minor road
- Named watercourse
- Named waterbody
- NPWS reserve
- State forest

\\emm.local\xdrive\2025\E250518 - GPM Kersoene Vale - Noise FY25-26\8 GIS\02 Maps\N001 NoiseAirQuality\Locations\N001 NoiseAirQualityLocations 20260630 01.aprx 30/06/2026

Source: EMM (2026); GPM (2023); DPE (2024); DCSSS (2023); ESRI (2026)

0 0.5 1 km

GDA2020 MGA Zone 56

N

Noise monitoring locations

Kerosene Vale Ash Repositories
Figure 1.1

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1.3 Terminology and abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2 Terminology and abbreviations

Term/descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The "A" weighting scale is used to approximate how humans hear noise.
L_{Amax}	The maximum root mean squared A-weighted noise level over a time period.
L_{A1}	The A-weighted noise level which is exceeded for 1% of the time.
$L_{A1,1minute}$	The A-weighted noise level which is exceeded for 1% of the specified time period of 1 minute.
L_{A10}	The A-weighted noise level which is exceeded for 10% of the time.
L_{Aeq}	The energy average A-weighted noise level.
L_{A50}	The A-weighted noise level which is exceeded for 50% of the time, also the median noise level during a measurement period.
L_{A90}	The A-weighted noise level exceeded for 90% of the time, also referred to as the "background" noise level and commonly used to derive noise limits.
L_{Amin}	The minimum A-weighted noise level over a time period.
L_{Ceq}	The energy average C-weighted noise energy during a measurement period. The "C" weighting scale is used to take into account low-frequency components of noise within the audibility range of humans.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	Monday–Saturday: 7 am to 6 pm, on Sundays and Public Holidays: 8 am to 6 pm.
Evening	Monday–Saturday: 6 pm to 10 pm, on Sundays and Public Holidays: 6 pm to 10 pm.
Night	Monday–Saturday: 10 pm to 7 am, on Sundays and Public Holidays: 10 pm to 8 am.

Appendix A provides further information that gives an indication as to how an average person perceives changes in noise level, and examples of common noise levels.

2 Noise limits

2.1 Development consent

The current development consent for KVAR is MP07_0005 (MOD 2, October 2023). Section 2 of the consent details specific conditions relating to operational and construction noise generated by KVAR. Relevant sections of that document are reproduced in Appendix B.1.

2.2 Environment protection licence

KVAR holds Environment Protection Licence (EPL) No. 21185 issued by the Environment Protection Authority (EPA) most recently on 19 December 2023. Relevant sections of the EPL are reproduced in Appendix B.2.

2.3 Noise management plan

The KVAR Operational Environmental Management Plan (OEMP) was most recently updated in March 2026. Section 5.2 of the OEMP contains a noise and vibration management sub-plan. Appendix C of the OEMP provides the Operational Noise and Vibration Management Plan. Relevant sections of the OEMP are reproduced Appendix B.3.

2.4 Noise limits

2.4.1 Operational noise limits

Operational noise impact limits based on the EPL are shown in Table 2.1.

Table 2.1 Operational noise impact limits, $L_{Aeq,15minute}$ dB

Location	Day	Evening
Location A	40	40
Location B	40	40
Location C	40	40
Location D	40	40

2.4.2 Construction noise targets

Condition 2.7 of the consent details construction noise objectives as follows:

> The construction noise objective for the project is to manage noise from construction activities (as measured by a $L_{A10,15minute}$ descriptor) so as not to exceed the background L_{A90} noise level by more than 10 dB(A) at any sensitive receiver.

In accordance with Condition 3.1 of the consent, construction noise monitoring must occur during the following activities:

a) the realignment of Sawyers Swamp Creek;

b) construction of the stabilisation berm;

c) excavation of the former pine plantation area;

d) relocation and construction of surface water management structures; and

e) concurrent construction activities.

However, due to the difficulty of differentiating noise from construction and operational activities, all noise measured from the site has been assessed against operational noise impact limits as per condition 2.15 of the consent.

2.5 Meteorological conditions

As detailed in the development consent and EPL, noise criteria apply under the following meteorological conditions:

- wind speeds up to 3 m/s at 10 metres height above ground; and/or
- temperature inversion conditions of up to 3°C/100m and source to receiver gradient winds of up to 2 m/s at 10 metres height above ground.

2.6 Additional requirements

The NSW EPA 'Industrial Noise Policy' (INP 2000) was replaced by the 'Noise Policy for Industry' (NPfI) in October 2017. Noise conditions in the EPL and project approval still reference the INP exclusively, so monitoring has been conducted in accordance with the INP.

For assessment of modifying factors, the NPfI immediately superseded the INP, as outlined in the EPA document 'Implementation and transitional arrangements for the Noise Policy for Industry' (2017). Therefore, assessment and reporting of modifying factors have been done in accordance with Fact Sheet C of the NPfI.

Monitoring and reporting have been done in accordance with the EPA 'Approved methods for the measurement and analysis of environmental noise in NSW' issued in January 2022.

3 Methodology

3.1 Overview

Attended environmental noise monitoring was done in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise' and relevant NSW EPA requirement.

3.2 Attended noise monitoring

During this survey, attended noise monitoring was conducted during the day and evening period at each location. The duration of each measurement was 15 minutes. Atmospheric conditions were measured at each monitoring location.

Measured sound levels from various sources were noted during each measurement, and particular attention was paid to the extent of site's contribution (if any) to measured levels. At each monitoring location, the site-only $L_{Aeq,15minute}$ and L_{Amax} were measured directly or determined by other methods detailed in Section 7.1 of the NPfI.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may be used in this report. When site noise is noted as IA, it was inaudible at the monitoring location. When site noise is noted as NM, this means it was audible but could not be quantified. All results noted as IA or NM in this report were due to one or more of the following:

- Site noise levels were very low, typically more than 10 dB below the measured background (L_{A90}), and unlikely to be noticed.
- Site noise levels were masked by more dominant sources that are characteristic of the environment (such as breeze in foliage or continuous road traffic noise) that cannot be eliminated by monitoring at an alternate or intermediate location.
- It was not feasible or reasonable to employ methods, such as to move closer and back calculate. Cases may include rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

If exact noise levels from site could not be established due to masking by other noise sources in a similar frequency range but were determined to be at least 5 dB lower than relevant limits, then a maximum estimate of may be provided. This is expressed as a 'less than' quantity, such as <20 dB or <30 dB.

For this assessment, the measured L_{Amax} has been used as a conservative estimate of $L_{A1,1minute}$. The EPA accepts sleep disturbance analysis based on either the $L_{A1,1minute}$ or L_{Amax} metrics, with the L_{Amax} representing a more conservative assessment of site noise emissions.

3.3 Meteorological data

Meteorological data was obtained from the Bureau of Meteorology (BOM) automatic weather station (AWS) at Marrangaroo which allowed correlation of atmospheric parameters with measured noise levels. Vertical temperature gradient and/or sigma theta data required to determine temperature inversion conditions was not available from this AWS.

As KVAR operates solely during the day and evening periods, it has been assumed that temperature inversion conditions were not present during monitoring.

3.4 Modifying factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. Assessment of modifying factors is undertaken at the time of measurement if the site was audible and directly quantifiable. If applicable, modifying factor penalties have been reported and added to measured site-only L_{Aeq} noise levels.

Low-frequency modifying factor penalties have only been applied to site-only L_{Aeq} levels if the site was the only contributing low-frequency noise source. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

3.5 Instrumentation and personnel

Attended noise monitoring was conducted by Ingrid Smith. Qualifications, experience and demonstration of competence is in accordance with the Approved methods and is available upon request.

Equipment used to measure environmental noise levels is detailed in Table 3.1. Calibration certificates are provided in Appendix C.

Table 3.1 Attended noise monitoring equipment

Item	Serial number	Calibration due date	Relevant standard
Nti XL3 sound level meter	A3A-01349-F0	16/04/2028	IEC 61672-1:2002
SVAN SV36 calibrator	139193	15/12/2026	IEC 60942:2017

4 Results

4.1 Total measured noise levels and atmospheric conditions

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

Table 4.1 Total measured noise levels, dB – Q2 2026 [1]

Location	Start date and time	L_{Amax}	L_{A1}	L_{A10}	L_{Aeq}	L_{A50}	L_{A90}	L_{Amin}
A	15/06/2026 18:38	52	41	37	35	34	31	28
A	16/06/2026 11:16	61	48	44	42	40	37	34
B	15/06/2026 18:57	57	55	48	44	39	37	33
B	16/06/2026 11:35	74	58	46	50	41	36	33
C	15/06/2026 18:20	52	40	33	30	27	24	21
C	16/06/2026 10:57	66	55	43	43	37	34	31
D	15/06/2026 18:00	52	42	36	35	34	33	32
D	16/06/2026 10:37	55	45	41	39	38	35	33

Notes: 1. Levels in this table are not necessarily the result of activity at site.

Atmospheric condition data measured by the operator during each measurement using a hand-held weather meter is shown in Table 4.2. The wind speed, direction and temperature were measured at approximately 1.5 metres above ground. Attended noise monitoring is not done during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.2 Measured atmospheric conditions – Q2 2026

Location	Start date and time	Temperature °C	Wind speed m/s	Wind direction °Magnetic north[1]	Cloud cover 1/8s
A	15/06/2026 18:38	13	<0.5	-	8
A	16/06/2026 11:16	16	1.8	329	1
B	15/06/2026 18:57	11	<0.5	-	8
B	16/06/2026 11:35	16	1.2	304	1
C	15/06/2026 18:20	13	<0.5	-	8
C	16/06/2026 10:57	15	<0.5	-	0
D	15/06/2026 18:00	16	<0.5	-	8
D	16/06/2026 10:37	15	1.5	232	0

Notes: 1. "-" indicates calm conditions at monitoring location.

4.2 Construction activities

KVAR has advised that normal operations were occurring during monitoring, and relocation and construction of surface water management structures as defined in Section 2.4.2 of this report and Condition 3.1 of the consent was occurring at the time of monitoring.

4.3 Site only noise levels

4.3.1 Modifying factors

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.3.2 Site noise levels

Table 4.3 provides site noise levels in the absence of other sources, where possible, and includes weather data from the site AWS. Limits are applicable if weather conditions were within specified parameters during each measurement.

Table 4.3 Site noise levels and limits – Q2 2026

Location	Start date and time	Wind speed m/s	Limits apply? [1]	KVAR limit, $L_{Aeq,15minute}$ dB	KVAR level, $L_{Aeq,15minute}$ dB [2,3]	Exceedance, dB
A	15/06/2026 18:38	0.5	Yes	40	IA	N/A
A	16/06/2026 11:16	2.1	Yes	40	<25	Nil
B	15/06/2026 18:57	<0.5	Yes	40	IA	N/A
B	16/06/2026 11:35	2.1	Yes	40	33	Nil
C	15/06/2026 18:20	1	Yes	40	IA	N/A
C	16/06/2026 10:57	2.1	Yes	40	<25	Nil
D	15/06/2026 18:00	<0.5	Yes	40	<25	Nil
D	16/06/2026 10:37	2.1	Yes	40	<25	Nil

Notes: 1. Noise emission limits do not apply during periods of rainfall or winds greater than 3 metres per second (at a height of 10 metres).
2. Site-only $L_{Aeq,15minute}$, includes modifying factor penalties if applicable.
3. When site noise is noted as IA, it was inaudible at the monitoring location. When site noise is noted as NM, this means it was audible but could not be quantified as per the notes in Section 3.2.

5 Discussion

5.1 Noted noise sources

During attended monitoring, the time variations (temporal characteristics) of noise sources are considered in each measurement via statistical descriptors. From these observations, summaries have been derived for the location and provided in this section. Statistical 1/3 octave-band analysis of environmental noise was conducted, and the following figures display frequency ranges of various noise sources at each location for L_{A1}, L_{A10}, L_{Aeq}, L_{A50}, and L_{A90} descriptors. These figures also provide, graphically, statistical information for these noise levels.

An example is provided as Figure 5.1, where frogs and insects are seen to be generating noise at frequencies above 1,000 Hz, while industrial noise is observed at frequencies less than 1,000 Hz.

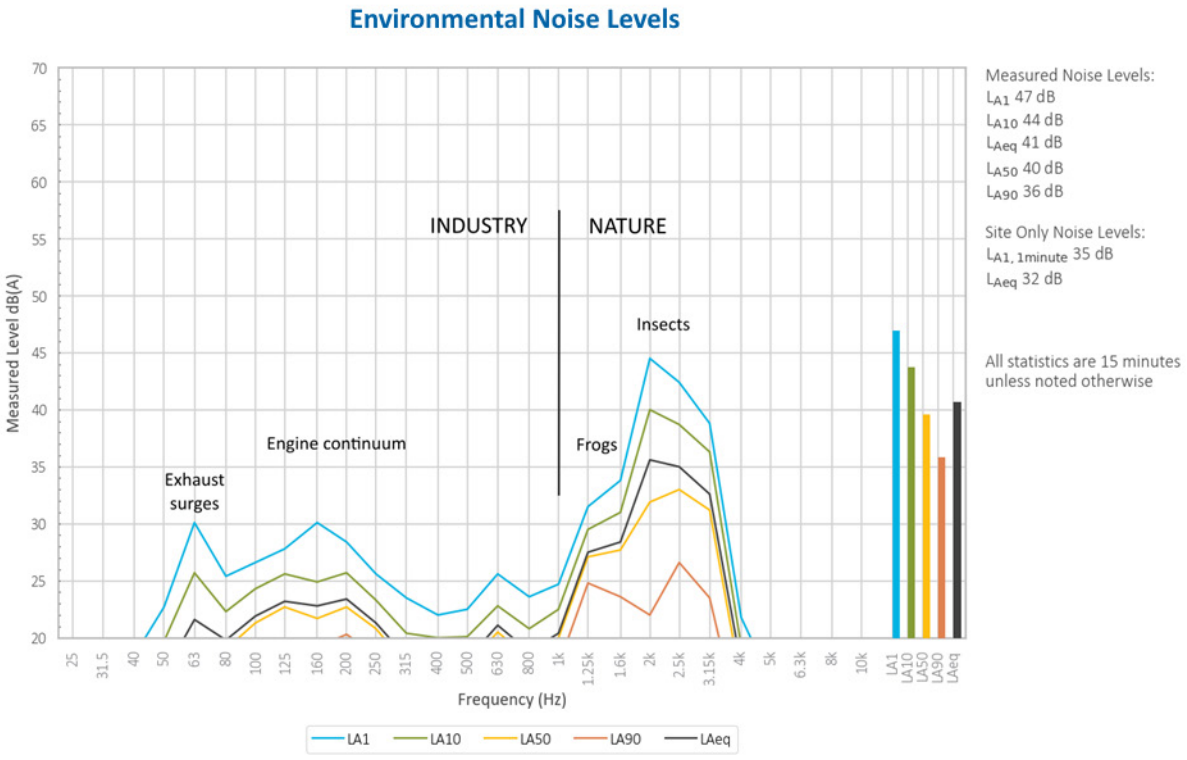

Figure 5.1 Example graph (refer to Section 5.1 for explanatory note)

5.2 Location A – Day

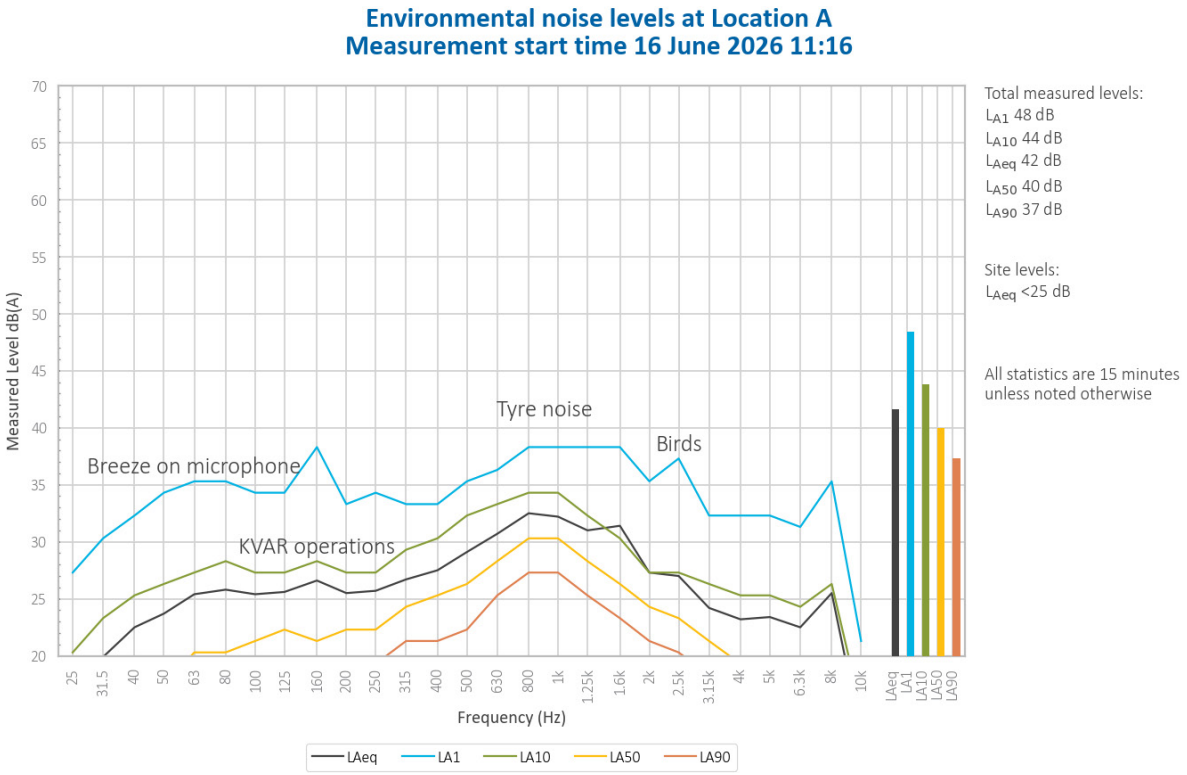

Figure 5.2 Environmental noise levels – Location A

KVAR operations, including vehicles on site, were audible throughout the measurement and generated a measured site-only L_{Aeq} of less than 25 dB.

Tyre noise from the nearby highway generated the L_{A1}, L_{A10}, L_{A50}, L_{A90}, and L_{Aeq}. Birds and KVAR operations contributed to the measured L_{A1}, L_{A10}, L_{A50} and L_{Aeq}.

Breeze on the microphone and neighbourhood activities were also noted.

5.3 Location A – Evening

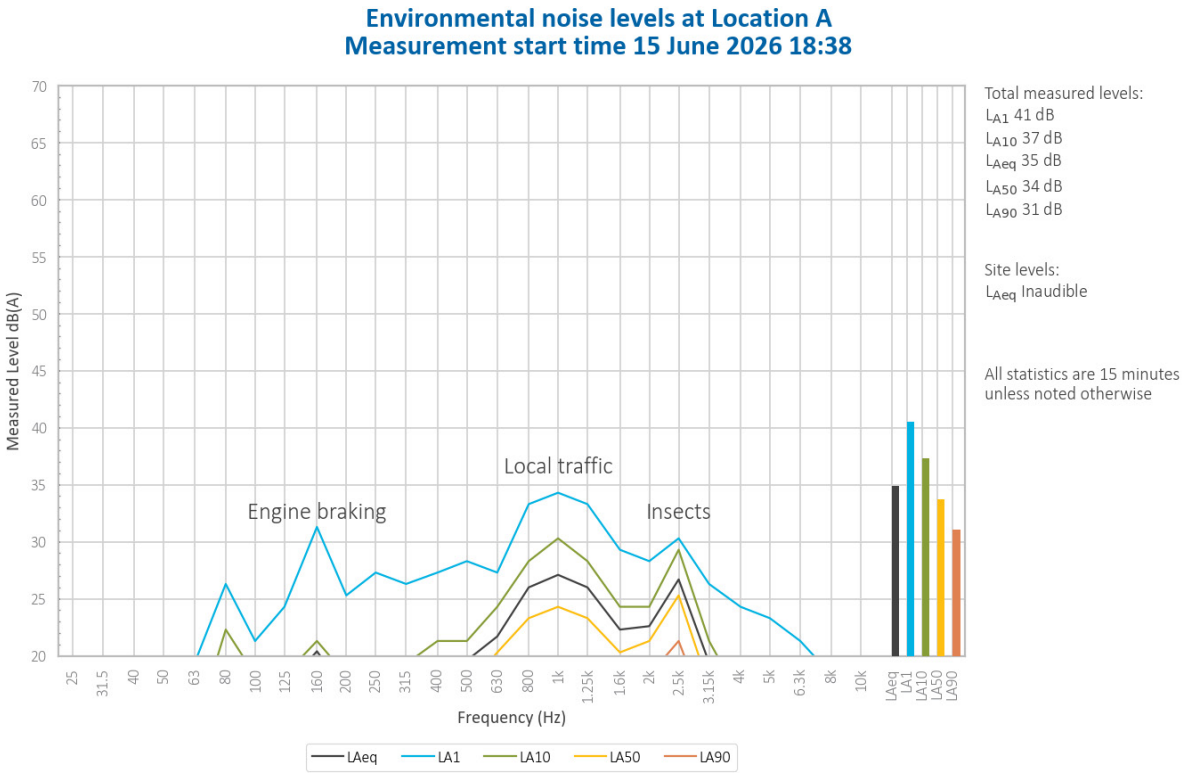

Figure 5.3 Environmental noise levels – Location A

KVAR was inaudible during the measurement.

Local traffic generated the measured L_{A1} and contributed to the measured L_{A10}, L_{A50}, and L_{Aeq}. Engine braking from the highway contributed to the measured L_{A1} and insects generated the measured L_{A90} and L_{A50} and contributed to the L_{A1}, L_{A10}, and L_{Aeq}.

Noise from dogs was also noted.

5.4 Location B – Day

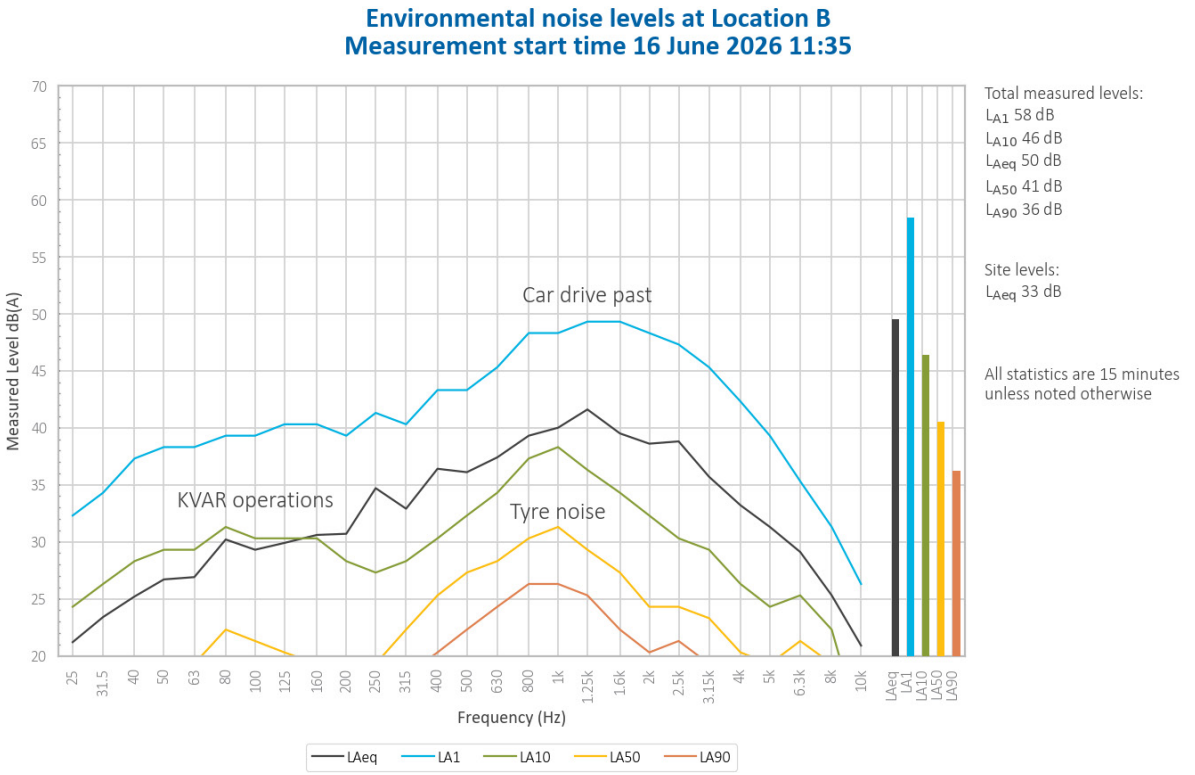

Figure 5.4 Environmental noise levels – Location B

KVAR operations, including vehicles on site, were audible throughout the measurement and generated a site-only L_{Aeq} of 33 dB.

Local vehicles generated the measured L_{A1} and contributed to the measured L_{A10}, L_{Aeq}, L_{A50}, and L_{A90}. Tyre noise from the highway contributed to the measured L_{A50} and L_{A90}. KVAR operations contributed to the measured L_{A10}, L_{Aeq}, and L_{A50}.

Noise from dogs, engine braking, birds, and insects were also noted.

5.5 Location B – Evening

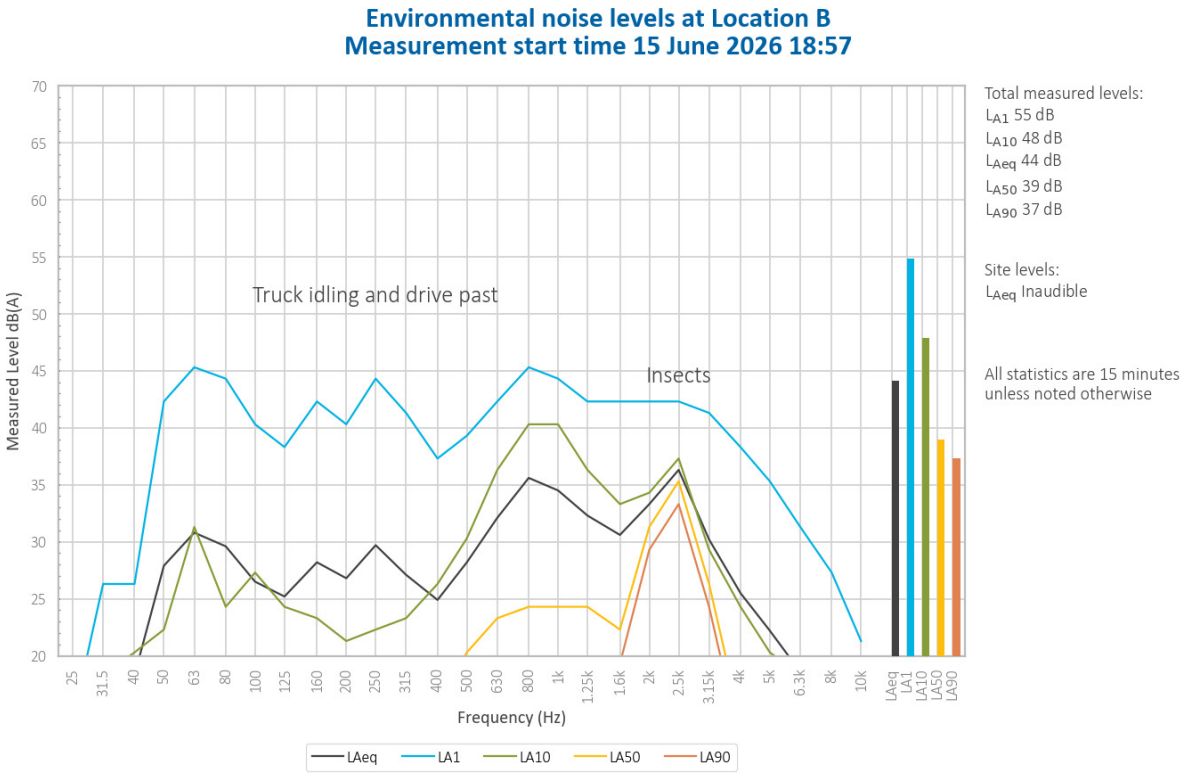

Figure 5.5 Environmental noise levels – Location B

KVAR was inaudible during the measurement.

A truck travelling along local roads and idling generated the measured L_{A1}, L_{A10}, and L_{Aeq}. Insects generated the measured L_{A50} and L_{A90} and contributed to the measured L_{A1}, L_{A10}, and L_{Aeq}.

Tyre noise from the highway was also noted.

5.6 Location C – Day

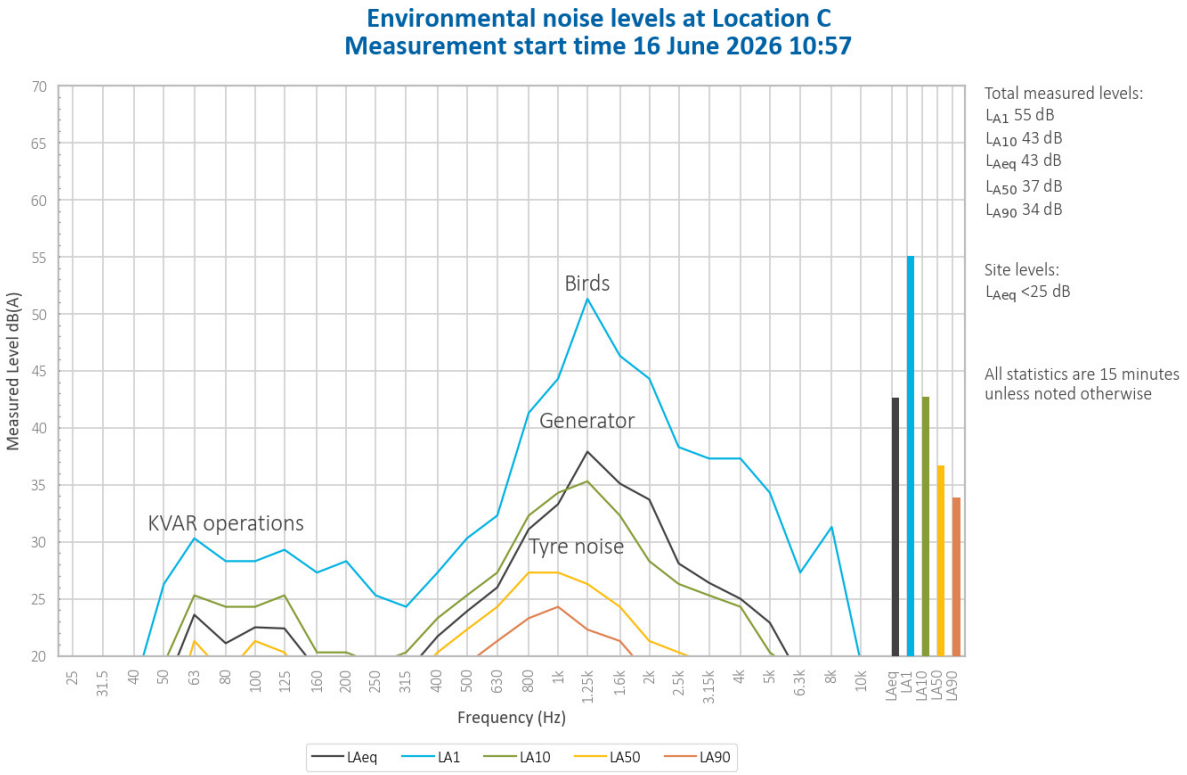

Figure 5.6 Environmental noise levels – Location C

KVAR operations, including vehicles on site, reverse alarms, and bangs were audible throughout the measurement and generated a site-only L_{Aeq} of less than 25 dB.

Birds generated the measured L_{A1}, L_{A10}, and L_{Aeq}. Tyre noise from the highway generated the measured L_{A50} and L_{A90}. KVAR operations contributed to the measured L_{A1}, L_{A10}, L_{Aeq}, and L_{A50}.

Noise from neighbourhood activities were also noted.

5.7 Location C – Evening

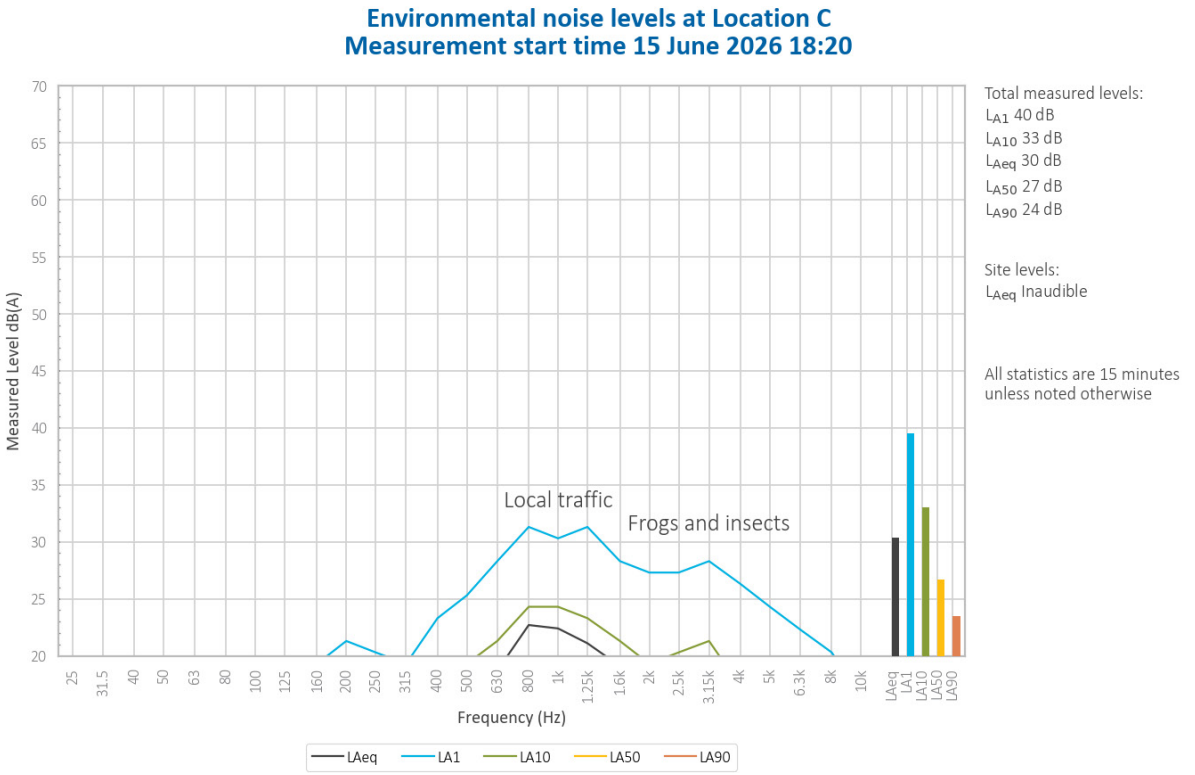

Figure 5.7 Environmental noise levels – Location C

KVAR was inaudible during the measurement.

Local traffic insects generated total measured levels. Frogs and insects contributed to the measured L_{A1} and L_{A10}.

Noise from dogs was also noted.

5.8 Location D – Day

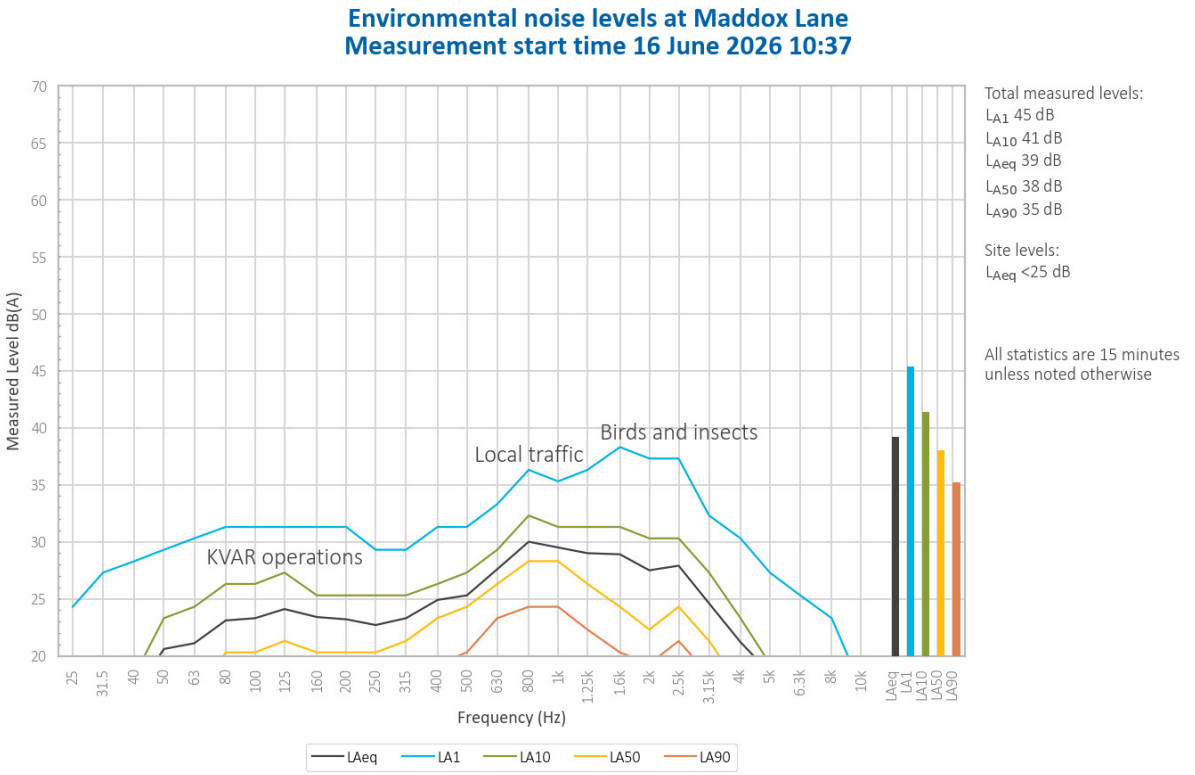

Figure 5.8 Environmental noise levels – Location D

KVAR operations, including a generator of pump, were audible at low levels throughout the measurement and generated a site-only L_{Aeq} of less than 25 dB.

Birds and insects generated the measured L_{A1}. Local traffic generated the L_{A10}, L_{Aeq}, L_{A50} and L_{A90}, and contributed to the measured L_{A1}. KVAR operations contributed to the measured L_{A1}, L_{A10}, L_{Aeq}, and L_{A50}.

Noise from a nearby stream and distant lawnmower were also noted.

5.9 Location D – Evening

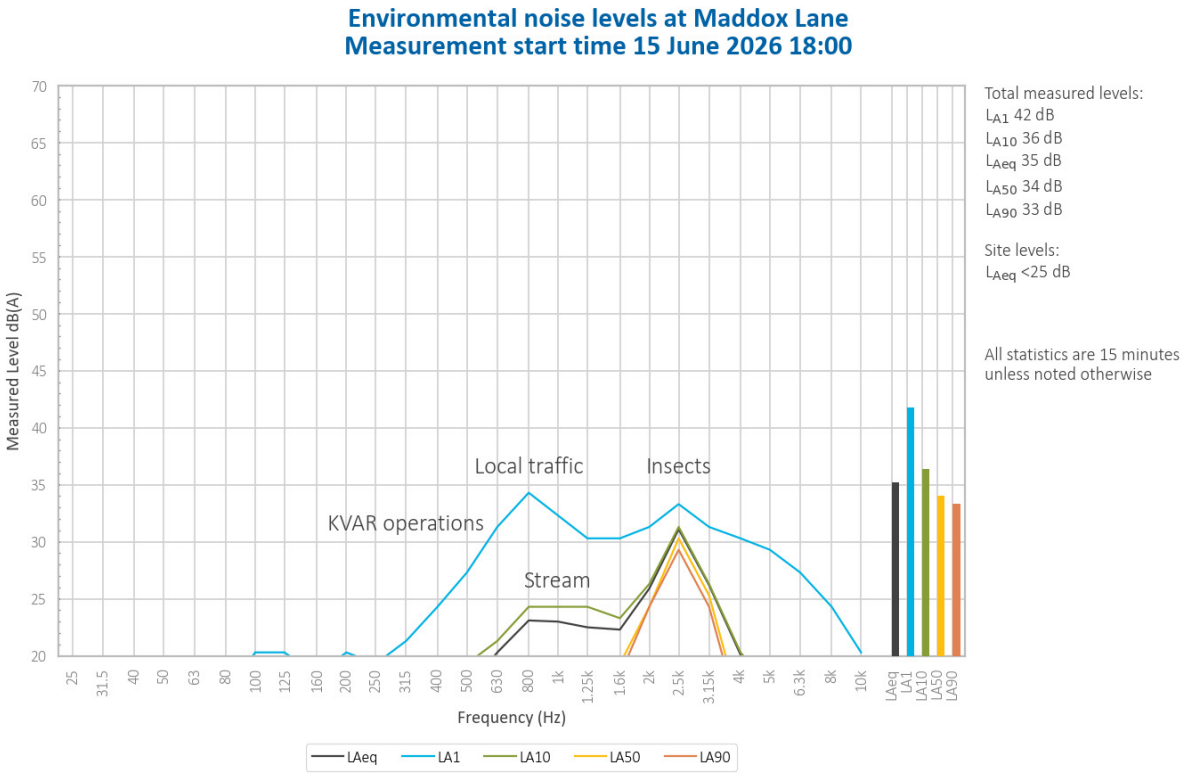

Figure 5.9 Environmental noise levels – Location D

KVAR operations, including a generator or pump, were audible at low levels throughout the measurement and generated a site-only L_{Aeq} of less than 25 dB.

Noise from insects generated the measured L_{A10}, L_{Aeq}, L_{A50} and L_{A90}, and contributed to the measured L_{A1}. Local traffic generated the measured L_{A1} and a nearby stream contributed to the measured L_{A10}, and L_{Aeq}.

Noise from dogs and neighbourhood activity were also noted.

6 Summary

EMM was engaged by Generator Property Management Pty Ltd to conduct quarterly noise survey of construction activities and operations at KVAR. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

Attended environmental noise monitoring described in this report was undertaken during the day and evening periods of 15 and 16 June 2026 at three monitoring locations.

Noise levels from site complied with relevant limits at all monitoring locations during the Q2 2026 survey.

Appendix A
Noise perception and examples

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A.1 Noise levels

Table A.1 gives an indication as to how an average person perceives changes in noise level. Examples of common noise levels are provided in Figure A.1.

Table A.1 Perceived change in noise

Change in sound pressure level (dB)	Perceived change in noise
Up to 2	Not perceptible
3	Just perceptible
5	Noticeable difference
10	Twice (or half) as loud
15	Large change
20	Four times (or quarter) as loud

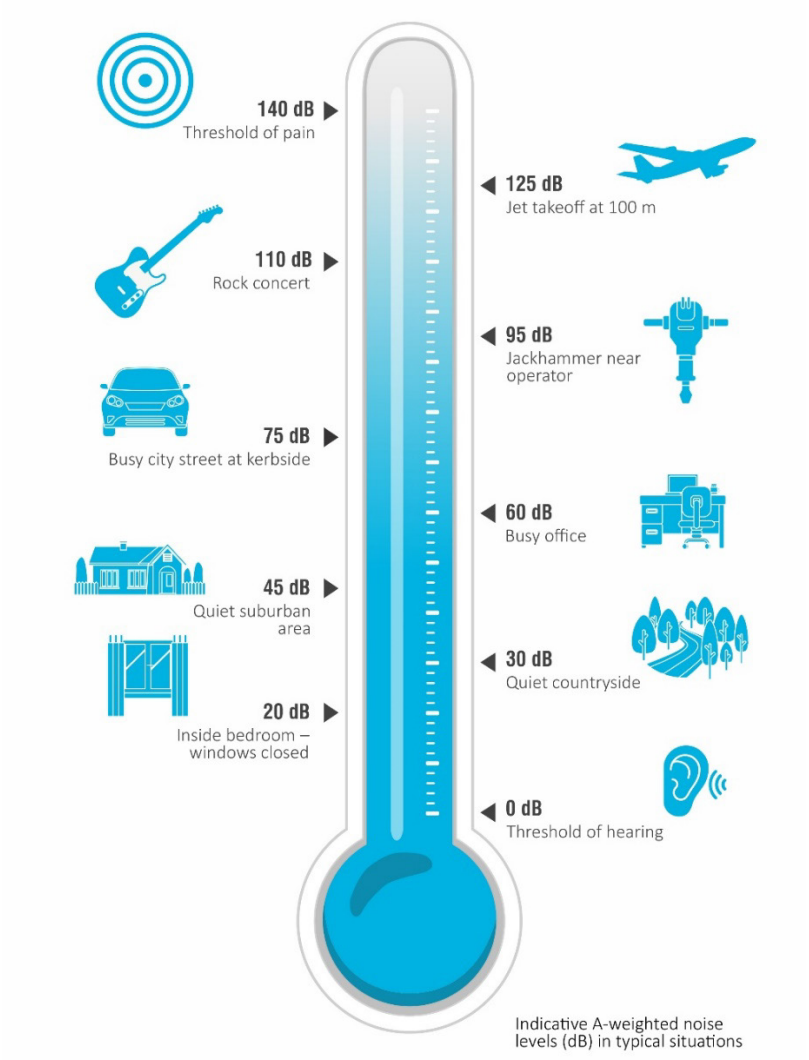

Figure A.1 Common noise levels

Appendix B
Regulator documents

EMM
creating opportunities

B.1 Development consent

Noise Impacts

Construction Hours

2.3 Construction activities associated with the project shall only be undertaken during the following hours:

a) 7:00 am to 6:00 pm, Mondays to Fridays, inclusive;
b) 8:00 am to 1:00 pm on Saturdays; and
c) at no time on Sundays or public holidays.

2.4 Activities resulting in impulsive or tonal noise emission (such as rock breaking or rock hammering) shall be limited to 8:00 am to 12:00 pm, Monday to Saturday and 2:00 pm to 5:00 pm, Monday to Friday. The Proponent shall not undertake such activities for more than three continuous hours and must provide a minimum one-hour respite period.

2.5 Construction outside the hours stipulated in condition 2.3 of this approval is permitted in the following circumstances:

a) where construction works do not cause audible noise at any sensitive receiver; or
b) for the delivery of materials required outside these hours by the Police or other authorities for safety reasons; or
c) where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm.

2.6 The hours of construction activities specified under condition 2.3 of this approval may be varied with the prior written approval of the Secretary. Any request to alter the hours of construction specified under condition 2.3 shall be:

a) considered on a case-by-case basis;
b) accompanied by details of the nature and need for activities to be conducted during the varied construction hours; and
c) accompanied by any information necessary for the Secretary to reasonably determine that activities undertaken during the varied construction hours will not adversely impact on the acoustic amenity of sensitive receivers in the vicinity of the site.

Construction Noise

2.7 The construction noise objective for the project is to manage noise from construction activities (as measured by a $L_{A10\ (15\ minute)}$ descriptor) so as not to exceed the background L_{A90} noise level by more than 10 dB(A) at any sensitive receiver.

Any activities that have the potential for noise emissions that exceed the objective must be identified and managed in accordance with the Construction Noise Management Plan (as referred to under condition 6.3b) of this approval). The Proponent shall implement all reasonable and feasible noise mitigation measures with the aim of achieving the construction noise objective.

Operational Noise

2.15 The cumulative operational noise from the ash placement area and ash haulage activity shall not exceed an $L_{Aeq\ (15\ minute)}$ of 40 dB(A) at the nearest most affected sensitive receiver during normal operating hours as defined in condition 2.8 of this approval.

This noise criterion applies under the following meteorological conditions:

a) wind speeds up to 3 m/s at 10 metres above ground; and/or
b) temperature inversion conditions of up to 3°C/100 m and source to receiver gradient winds of up to 2 m/s at 10 m above ground level.

This criterion does not apply where the Proponent and the affected landowner have reached a negotiated agreement in regard to noise, and a copy of the agreement has been forwarded to the Secretary and the EPA.

2.16 The Proponent shall implement measures to ensure noise attenuation of trucks. These measures may include, but are not necessarily limited to, installation of residential class mufflers, engine shrouds, body dampening, speed limiting, fitting of rubber stoppers to tail gates, limiting the use of compression braking, and ensuring trucks operate in a one-way system at the ash repository where feasible.

2.17 The Proponent shall liaise with the owner/operator of Angus Place Coal Mine with the aim of preparing a protocol which provides for a co-operative approach for the management and mitigation of noise impacts associated with coal and ash truck movements along the private haul road.

2.18 Where noise monitoring (as required by conditions 3.2 or 3.3 of this approval) identifies any non-compliance with the operational noise criterion specified under condition 2.15 of this approval the Proponent shall prepare and submit to the Secretary for approval a report including, but not limited to:

a) an assessment of all reasonable and feasible physical and other mitigation measures for reducing noise at the source including, but not limited to -
    i) construction of a noise barrier along the haulage road,
    ii) alternative ash haulage routes, and
    iii) alternative methods of ash conveyance to the repository; and
b) identification of the preferred measure(s) for reducing noise at the source;
c) feedback from directly affected property owners and the EPA on the proposed noise mitigation measures; and
d) location, type, timing and responsibility for implementation of the noise mitigation measure(s).

The report is to be submitted to the Secretary within 60 days of undertaking the noise monitoring which has identified exceedances of the operational noise criterion specified under condition 2.15, unless otherwise agreed to by the Secretary. The Proponent shall implement all reasonable and feasible mitigation measures in accordance with the requirements of the Secretary.

3. ENVIRONMENTAL MONITORING

Construction Noise Monitoring

3.1 The Proponent shall prepare and implement a **Construction Noise Monitoring** Program to confirm the predictions of the noise assessment detailed in the document referred to under condition 1.1 of this approval and assess compliance against the construction noise criterion stipulated in condition 2.7 of this approval. The noise monitoring program shall be prepared in consultation with, and to the satisfaction of, the EPA. The monitoring program shall form part of the Construction Noise Management Plan referred to in condition 6.3b) of this approval and must include monitoring of the construction noise generated during:

a) the realignment Sawyers Swamp Creek;
b) construction of the stabilisation berm;
c) excavation of the former pine plantation area;
d) relocation and construction of surface water management structures; and
e) concurrent construction activities.

The Proponent shall forward to the EPA and the Secretary a report containing the results of each noise assessment and describing any non-compliance within 14 days of conducting a noise assessment.

Operational Noise Review

3.2 Within 60 days of the commencement of operation of the project, unless otherwise agreed to by the Director-General, the Proponent shall submit for the approval of the Secretary an **Operational Noise Review** to confirm the operational noise impacts of the project. The Operational Noise Review must be prepared in consultation with, and to the satisfaction of, the EPA. The Review shall:

a) identify the appropriate operational noise objectives and level for sensitive receivers;
b) describe the methodologies for noise monitoring including the frequency of measurements and location of monitoring sites;
c) document the operational noise levels at sensitive receivers as ascertained by the noise monitoring program;
d) assess the noise performance of the project against the noise criterion specified in condition 2.15 of this approval and the predicted noise levels as detailed in the report referred to under condition 1.1 of this approval; and
e) provide details of any entries in the Complaints Register (as required under condition 5.4 of this approval) relating to noise impacts.

Where monitoring indicates noise levels in excess of the operational noise criterion specified in condition 2.15 of this approval, the Proponent shall prepare a report as required by condition 2.18 of this approval.

Ongoing Operational Noise Monitoring

3.3 The Applicant shall prepare and implement an **Operational Noise Monitoring Program** to assess compliance against the operational noise criterion stipulated in condition 2.15 of this approval, throughout the life of the project. The noise monitoring program shall be prepared in consultation with, and to the satisfaction of, the EPA.

The noise monitoring program shall be prepared in accordance with the requirements of the *NSW Noise Policy for Industry* (EPA, 2017) (or its latest version) and must include, but not be limited to:

a) monitoring during ash placement in the far western area of the site adjacent to the haul road; and
b) monitoring of the effectiveness of any noise mitigation measures implemented under condition 2.18 of this approval, against the noise criterion specified in condition 2.15 of this approval.

Noise from the project is to be measured at the most affected point on or within the residential boundary, or at the most affected point within 30 metres of a dwelling where the dwelling is more than 30 metres from the boundary, to determine compliance with the noise criterion stipulated in condition 2.15 of this approval. Where it can be demonstrated that direct measurement of noise from the project is impractical, the EPA may accept alternative means of determining compliance and the modifying factors shall also be applied to the measured noise levels where applicable in accordance with the *NSW Noise Policy for Industry* (EPA, 2017) (or its latest version).

The Applicant shall forward to the EPA and the Secretary a report containing the results of any non-compliance within 14 days of conducting a noise assessment.

Where monitoring indicates noise levels in excess of the operational noise criterion specified in condition 2.15 of this approval, approval, the Applicant shall prepare a report as required by condition 2.18 of this approval.

The monitoring program shall form part of the Operational Noise Management Plan referred to in condition 6.5a) of this approval.

INFORMATION

B.2 Environmental protection licence

L5 Noise limits

L5.1 Operational noise from the Kerosene Vale Ash Repository area must not exceed:

40dB(A) LAeq(15 minute) , at the nearest most affected noise sensitive location.

Note: LAeq means the equivalent continuous noise level – the level of noise equivalent to the energy-average of noise levels occurring over a measurement period.

L5.2 To determine compliance with condition(s) L4.1 noise must be measured at, or computed for, the most affected location within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural setting) where the dwelling is more than 30 metres from the boundary. A modifying factor correction must be applied for tonal, impulsive or intermittent noise in accordance with the "Environmental Noise Management - NSW Industrial Noise Policy (January 2000)".

L5.3 The noise emission limits identified in this licence apply under the following meteorological conditions:
a) wind speeds up to 3 m/s at 10 metres height above ground; and/or
b) temperature inversion conditions of up to 30C/100m and source to receiver gradient winds of up to 2 m/s at 10 metres height above ground.

Note: The noise emission limits identified in this licence do not apply at a noise sensitive location, where the licensee and the affected noise sensitive location have reached a negotiated agreement in regards to noise, and a copy of that agreement has been provided to the Environment Protection Authority.

L6 Hours of operation

L6.1 Operational activities associated with the Kerosene Vale Ash Repository must only be carried out between the hours of 0700 and 2200 Monday to Sunday.

L6.2 This condition does not apply to the delivery of material outside the hours of operation permitted by condition L6.1, if that delivery is required by police or other authorities for safety reasons; and/or the operation or personnel or equipment are endangered. In such circumstances, prior notification must be provided to the EPA and affected residents as soon as possible or within a reasonable period in the case of emergency.

B.3 Noise management plan

5.2 Environmental monitoring program

An overview of the environmental monitoring activities that have been specified by the respective sub-plans under Section 6 of the OEMP is provided in Table 5.1. Refer to specific sub-plans in the Appendices for further details.

Table 5.1 Environmental monitoring program

Potential impact	Locations	Parameters	Frequency	Technique	Reporting	Responsibility	OEMP sub-plan reference
Noise normal conditions	Based on the current operations at the Lidsdale Ash Repository the following 3 locations have been identified as the nearest sensitive receivers: • Location A: Skelly Road • Location B: Neubeck Street • Location C: Wolgan Road. • Location D: Maddox Lane Monitoring should be performed at locations on these roads representative of the closest (or most exposed) sensitive receivers (residences). Refer to Figure 5.1.	Noise levels shall not exceed an L_{Aeq} of 40dB(A) at the nearest most affected receiver	During daytime (7:00 am-6:00 pm) and evening time (6:00 pm-10:00 am). Every 3 months or more frequent if adverse trends are noted.	Short-term attended noise monitoring	Three monthly noise monitoring report. If non-compliance, report is to be forwarded to DPHI and EPA within 14 days of conducting monitoring. Further monitoring should be undertaken in the event of adverse community comment or complaint relevant to operational noise.	Specialist Consultant on behalf of GPM	Appendix C
Noise emergency conditions	At the complainant's property or nearest available representative location	Noise levels shall not exceed an L_{Aeq} of 40dB(A) at the nearest most affected receive	As required	Attended monitoring using handheld sound level meter	Six monthly noise monitoring report	Specialist Consultant on behalf of GPM	Section 2.4 Appendix C

6.1 Environmental targets and key indicators

The following environmental performance indicators will be used to assess the performance of the Lidsdale Ash Repository operations. If adverse trends are noted, a review of the relevant procedures and mitigation measures will be initiated by the Manager Environment in consultation with the Site Manager and site contractors, to address the issue in question and achieve acceptable performance.

Table 6.1 Environmental targets and performance indicators

Environmental issue	Performance target	Performance indicators
Noise impacts at sensitive receptors	• achieve compliance with the noise criterion of L_{Aeq} of 40dB(A) at the nearest most affected receiver during normal operations • continued mitigation of noise impacts associated with the Lidsdale Ash Repository	• the number of noise-related complaints • noise monitoring data obtained from the sensitive receiver locations • compliance indicators as assessed by the specialist noise consultant and the Environmental Representative, as required • observed and monitored reduction in noise generation due to adaptation where necessary of engineering measures on trucks, the implementation of operating techniques such as limited compression braking and speed limit restrictions

6.2 Environmental management sub-plans

Detailed management sub-plans have been developed to mitigate potential environmental impacts associated with the Lidsdale Ash Repository area. These provide operational management guidelines for environmental issues identified in the Conditions of Approval and identifies environmental mitigation measures and safeguards to be implemented. These environmental safeguards will form the basis of the environmental controls for the Lidsdale Ash Repository operations.

The sub-plans follow an issue-based format where the environmental impacts, management activities and controls are organised under each identified environmental issue. Each plan has a monitoring program to ensure all aspects are quantified and the requirements of the various conditions of approval or license requirements are met.

The following management plans have been prepared as sub-plans to the OEMP:

- Operational Noise and Vibration Management Plan

Appendix C
Calibration certificates

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C.1 Calibration certificates

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: C56555

EQUIPMENT TESTED : Acoustic Calibrator

Make & Model:	Svantek SV 36	**Serial No:**	139193
Class:	1		
Owner:	EMM Consulting Level 3, 175 Scott Street Newcastle NSW 2300		
Tests Performed:	Measured Output Pressure level, Frequency & Distortion		
Comments:	See Details and Class Tolerance overleaf.		

CONDITION OF TEST:

Ambient Pressure	999	hPa ±1 hPa	**Date of Receipt :**	10/12/2025
Temperature	23	°C ±1° C	**Date of Calibration :**	15/12/2025
Relative Humidity	48	% ±5%	**Date of Issue :**	16/12/2025

Acu-Vib Test Procedure: AVP02 (Calibrators)
Test Method: AS IEC 60942 - 2017

CHECKED BY: L. Gail

AUTHORISED SIGNATURE: H. Soe, Lab Manager

Accredited for compliance with ISO/IEC 17025 - Calibration

Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

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CERTIFICATE OF CALIBRATION

CERTIFICATE NO: SLM57886

EQUIPMENT TESTED: Sound Level Meter

Make & Model:	NTi Audio XL3	**Serial No:**	A3A-01349-F0
Mic. Model:	NTi Audio MC230A	**Serial No:**	A30692
Pre-Amp. Model:	NTi Audio MA220	**Serial No:**	15046
Band-Pass Filter:	1/3 Octave	**Test No:**	F057887

Owner: EMM Consulting
Level 10, 201 Pacific Highway
St Leonards NSW 2065

Tests Performed: IEC 61672-3:2013 & IEC 61260-3:2016
Designation: Class 1
Conformance: Conforms to quoted clauses or indicated tests.

CONDITIONS OF TEST:

Ambient Pressure	1002	hPa ±1 hPa	**Date of Receipt:**	02/04/2026
Temperature	23	°C ±1° C	**Date of Calibration:**	16/04/2026
Relative Humidity	50	% ±5%	**Date of Issue:**	18/04/2026

Acu-Vib Test Procedure: AVP10 (SLM) & AVP06 (Filters)

CHECKED BY: A. Nowosadzka

AUTHORISED SIGNATURE: H. Soe
Lab Manager

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Appendix C

Annual water quality review

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Kerosene Vale Ash Repositories

Annual Water Quality Review

Prepared for Generator Property Management Pty Ltd

November 2026

Kerosene Vale Ash Repositories

Annual Water Quality Review

Generator Property Management Pty Ltd

E230337 RP1

November 2026

Version	Date	Prepared by	Reviewed by	Comments
V1	30/10/2026	Tasman Coupe	Lachlan Hammersley	Draft for GPM review
V2	3/11/2026	Tasman Coupe	Lachlan Hammersley	Final

Approved by



Lachlan Hammersley
Associate Water Resources Engineer
3 November 2026

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This report has been prepared in accordance with the brief provided by Generator Property Management Pty Ltd and, in its preparation, EMM has relied upon the information collected at the times and under the conditions specified in this report. All findings, conclusions or recommendations contained in this report are based on those aforementioned circumstances. The contents of this report are private and confidential. This report is only for Generator Property Management Pty Ltd's use in accordance with its agreement with EMM and is not to be relied on by or made available to any other party without EMM's prior written consent. Except as permitted by the Copyright Act 1968 (Cth) and only to the extent incapable of exclusion, any other use (including use or reproduction of this report for resale or other commercial purposes) is prohibited without EMM's prior written consent. Except where expressly agreed to by EMM in writing, and to the extent permitted by law, EMM will have no liability (and assumes no duty of care) to any person in relation to this document, other than to Generator Property Management Pty Ltd (and subject to the terms of EMM's agreement with Generator Property Management Pty Ltd).

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Executive Summary

ES1 Report context

Generator Property Management Pty Ltd (GPM) own and operate the Kerosene Vale Ash Repositories and surrounds, located at Skelly Road, Lidsdale NSW (the Site). The Site comprises an area of approximately 528 hectares (ha) that has been used for a range of purposes including ash placement from the Wallerawang Power Station (the Power Station) that operated between 1957 to 2014. Prior the 1957, the Site was used for open cut coal mining and some of the voids were subsequently used as landfills. The Site includes:

- the Kerosene Vale Dry Ash Repository (KVAR) and underlying former Kerosene Vale Ash Dam (KVAD)
- Sawyers Swamp Creek Ash Dam (SSCAD)
- Lidsdale Cut and adjacent landfills
- demolition landfill south of the SSCAD.

Currently the Site is operated on a care and maintenance arrangement consistent with NSW Planning Approval 07_0005 (MOD2) and Environment Protection Licence (EPL) No. 21185 (the EPL). On 22 August 2022, the EPA issued GPM with a Contaminated Land Declaration Notice which declares the Site as significantly contaminated land under Division 2 the *Contaminated Land Management Act 1997* (CLM Act). In 2023, GPM worked with the EPA to prepare a Voluntary Management Proposal (VMP) that establishes a proposed investigation and remediation approach.

This report is an annual water quality review (AWQR) that has been developed to support the overarching annual environmental management report (AEMR) for the Site. The AEMR considers the period from 1 September 2025 – 31 August 2026 (the AEMR Period). The AWQR addresses the surface and groundwater monitoring and reporting requirements set out in the Lidsdale Ash Repository: Operation Environment Management Plan (OEMP) prepared by EMM Consulting in 2025. It includes:

- a description of the water management system and the AEMR Period
- a review of surface water quality, ground water quality and groundwater levels during the AEMR Period.

ES2 Surface water review summary

The review of surface water quality data documented in the AWQR concluded that:

- Water quality trends in Lidsdale Cut and the SSCAD are consistent with recent AEMR periods (i.e. 2018 to the current period). Lidsdale Cut and SSCAD are part of the Site's contaminated water management system and hold water that is known to be ash affected.
- Dump Creek, which contributes to Sawyers Swamp Creek, outside of wet weather generally has standing water but no visible flow. The water quality over the AEMR period was variable with pH, salinity and metal concentrations, in some samples, exceeding DGVs. Water quality results over the AEMR period, similar to Sawyers Swamp Creek, indicated poor water quality conditions during drier months, where groundwater seepage to the creek is in a higher proportion than better quality surface water.
- Sawyers Swamp Creek was observed to have perennial streamflow therefore ambient water quality conditions were influenced by what portions of groundwater and surface water contributed during the period. Due to the predominately wet conditions in the AEMR period, water quality downstream of the Site in Sawyers Swamp Creek was generally consistent with the understood surface water characteristics.

- The water quality in the Coxs River is not affected by the inflows from Sawyers Swamp Creek.

In August 2022, GPM issued a Water Management Assessment (EMM, 2022) to the NSW EPA. This assessment included an Action Plan that described water management system improvements that were either underway or proposed. The plan included a description of each improvement, expected outcome once implemented and an estimated completion timeframe. GPM continue to progressively improve the water management system through implementing the Action Plan commitments. During the AEMR Period, a review of progress against the Action Plan was included within the two Water Quality Monitoring Reports that were submitted to the NSW EPA in March 2026 (EMM, 2026) and September 2026 (EMM, 2026).

ES3 Groundwater review summary

An additional eight wells have been included in the Operational groundwater monitoring program. These locations comprise monitoring wells in Cell A and B of SSCAD (CA1, CA2, CB1, CB2 and CB3), targeting water within the ash and monitoring wells in the vicinity of the irrigation systems at the cottage paddock (MW109) and the southern paddock (MW102S and MW102D). Given the limited available data available for these locations, SSTV have not yet been developed, and they have been assessed against 95% level of species protection (LOSP) default guideline values (DGVs), as presented in the Australian and New Zealand guidelines for Fresh and Marine Water Quality (ANZG 2018).

One well (D3) was observed to be damaged during the November round and could not be sampled as a result. Following repairs the well was monitored and sampled in January.

The groundwater monitoring results for the 2025-2026 AEMR period reported SSTV exceedances as identified in Table 1.1. In line with the Trigger Action Response Plan, following SSTV exceedances repeat monitoring was undertaken and where results exceeded SSTVs again, a Stage 1 Trigger investigation was undertaken.

Table 1.1 SSTV exceedances

Location	Date	SSTV exceedance	Repeat sampling within SSTV	Stage 1 Trigger Investigation developed
WJ_MW03	19 November 2025	Nickel	No	Yes
WJ_MW03		Zinc	Yes	NA
D3	19 November 2025	Groundwater level	Yes	NA
D3	20 January 2026	Lead	No	Yes
D3	12 May 2026	Groundwater level	No	As per November
D4	11May 2026	Boron	No	Yes
WWD2A	20 January 2026	Groundwater level	Continual monitoring	NA
	11 May 2026			
WWD2B	20 January 2026			
	11 May 2026			
WWD5B	18 November 2025			
	11 May 2026			
WWD6A	11 May 2026			
WWD6B	11 May 2026			

Location	Date	SSTV exceedance	Repeat sampling within SSTV	Stage 1 Trigger Investigation developed
WWD14B	18 November 2025			

The review of groundwater quality data documented in the AWQR concluded that:

- groundwater quality trends during the AEMR Period were generally consistent with recent AEMR periods (i.e. 2018 to the current period)
- groundwater collected from wells within the SSCAD reported the highest concentrations of metals that are known to occur in ash affected water (copper, nickel and zinc)
- groundwater quality at monitoring bore WGM1/D3 (located between SSCAD and the KVAR/KVAD), continues to report degraded water quality relative to water quality trends at upgradient bores, however this is consistent with previous results
- groundwater quality at monitoring bore WGM1/D6 (located downgradient of KVAR/KVAD) is consistent with ash affected water
- groundwater quality at monitoring bore WGM1/D5 (located downgradient of KVAR/KVAD) has improved compared to the previous AEMR period (2024-2025). The water quality during the current AEMR period is comparable to the period between 2022-2023 and will be continued to be monitored to determine if the changes are attributed to site operations. Increases in concentrations of metals and EC may be indicative of KVAD seepages
- the groundwater level trends were consistent with historical trends and generally reflect the CRD.

Potential groundwater contamination sources, pathways and receptors are being investigated as part of the VMP process that GPM has negotiated with the NSW EPA.

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1 Introduction

1.1 Site background

Generator Property Management Pty Ltd (GPM) own and operate the Kerosene Ash Dam Areas, located at Skelly Road, Lidsdale NSW (the Site). The Site comprises an area of approximately 528 hectares (ha) that has been used for a range of purposes including ash placement from the Wallerawang Power Station (the Power Station) that operated between 1957 to 2014. Prior to 1957, the Site was used for open cut coal mining and some of the voids were subsequently used as landfills.

The Site includes:

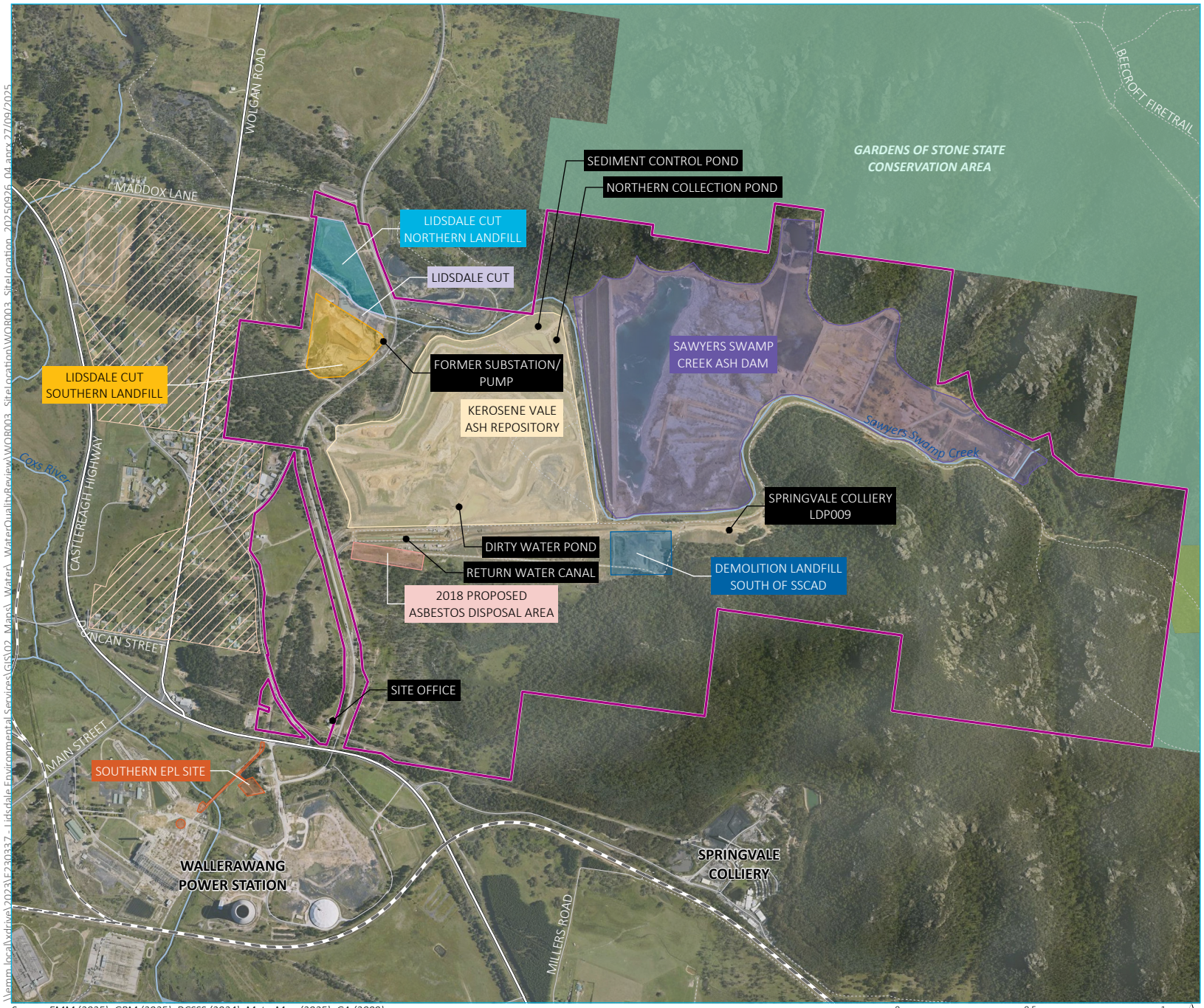
- the Kerosene Vale Dry Ash Repository (KVAR) and underlying former Kerosene Vale Ash Dam (KVAD)
- Sawyers Swamp Creek Ash Dam (SSCAD)
- The associated heavy vehicle access route
- KVAR and SSCAD private access routes.

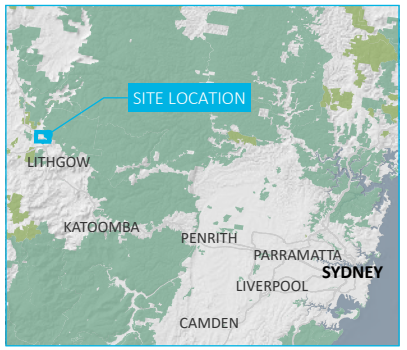
The primary ash repository areas are the KVAR, KVAD water management area and SSCAD. In 2014, the closure and demolition of the Wallerawang Power Station was approved. Currently the Site is operated on a care and maintenance arrangement consistent with NSW Planning Approval 07_0005 (MOD2) and Environment Protection Licence (EPL) No. 21185 (the EPL).

The Power Station was separated into two separate ownership parcels in 2020. GPM commenced ownership and responsibility for the land north of the Castlereagh Highway (referred to as the Kerosene Ash Dam Areas or 'the Site') in September 2020, taking over from Energy Australia NSW Pty Ltd. GPM's initial focus has been to manage the ongoing regulatory and contractual obligations for the Site. The longer-term objective is to plan for and then undertake the safe closure of the ash dams and repositories and appropriately remediate the Site for permanent closure.

Contamination at the Site was notified to the NSW Environment Protection Authority (EPA) by GPM under section 60 of the *Contaminated Land Management Act 1997* (CLM Act) on 10 March 2021. Following review of available information, the EPA advised on 27 June 2022, that the contamination is significant enough to warrant regulation under the CLM Act. Following this determination, the Site has been declared as significantly contaminated land under section 11 of the CLM Act. In 2023, GPM worked with the EPA to prepare a Voluntary Management Proposal (VMP) that establishes a proposed investigation and remediation approach (the VMP process).

Figure 1.1 shows the Site layout, noting the abovementioned features.





KEY

- Site boundary
- Nearest sensitive (residential) receivers

Site layout

- 2018 proposed asbestos disposal area
- Demolition landfill south of SSCAD
- Kerosene Vale ash repository
- Lidsdale cut northern landfill
- Lidsdale cut southern landfill
- Lidsdale cut
- Sawyers Swamp Creek ash dam
- Southern EPL site

Existing environment

- Rail line
- Major road
- Minor road
- Vehicular track
- Named watercourse
- Named waterbody
- NPWS reserve
- State forest

INSET KEY

- Major road
- NPWS reserve
- State forest

Site location

Source: EMM (2025); GPM (2025); DCSSS (2024); MetroMap (2025); GA (2009)

0 0.5 1 km

GDA2020 MGA Zone 56

N

Kerosene Vale Ash Repositories
Annual Water Quality Review
Figure 1.1

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\\emm.local\xdrive\2023\EF230337 - Lidsdale Environmental Services\GIS\02_Maps_Water_WaterQualityReview\WQR003_SiteLocation\WQR003_SiteLocation_20250926_04.aprx 27/09/2025

1.2 Report scope and structure

This report is an annual water quality review (AWQR) that has been developed to support the overarching annual environmental management report (AEMR) for the Site. The AEMR considers the period from 1 September 2025 to 31 August 2026 (the AEMR Period). The AWQR addresses the surface and groundwater monitoring and reporting requirements set out in the Lidsdale Ash Repository: Operation Environment Management Plan (OEMP) prepared by EMM Consulting in 2026. Detail of the groundwater and surface water requirements are presented in Appendix D (Operational Groundwater Management Plan (OGWMP)) and Appendix E (Operational Surface Water Management Plan (OSWMP)) of the OEMP.

Table 1.1 provides a summary of these requirements and notes where each requirement is addressed in this report.

This report is structured as follows:

- Chapter 2 describes the water management system
- Chapter 3 describes the AEMR Period
- Chapter 4 reviews surface water quality, and
- Chapter 5 reviews groundwater quality.

Table 1.1 OEMP – water monitoring and reporting requirements

	Description	OEMP reference	Report reference
Surface water			
Monitoring	Monthly monitoring was undertaken at the following locations: <u>Coxs River:</u> • **WX12** – upstream of Sawyers Swamp Creek confluence • **S1** – downstream of Sawyers Swamp Creek confluence <u>Sawyers Swamp Creek:</u> • **SS5** – upstream of SSCAD • **S6** – downstream of SSCAD, upstream of SSCAD embankment and KVAR / KVAD water management area • **S5** – downstream of SSCAD, SSCAD embankment and the eastern part of KVAR / KVAD water management area • **WX5** – downstream of SSCAD, SSCAD embankment and KVAR / KVAD water management area, adjacent to Lidsdale Cut • **WX7** – downstream of the Site <u>Dump Creek:</u> • **WX11** – immediately upstream of the confluence with Sawyers Swamp Creek <u>Water Management System:</u> • **BLKH** – located in the Black Hole which is a waterbody that has formed adjacent to placed ash in SSCAD section B. • **SSCAD Pond (WMS1)** – a large water body located to the east of the SSCAD embankment. • **Lidsdale Cut (WMS3)**– a former open cut mine. Contaminated water from the KVAR / KVAD Water Management Area is reticulated to Lidsdale Cut.	Appendix E (of OEMP) Section 4.1 – Surface water quality sub-plan Table B.2	Chapter 4

	Description	OEMP reference	Report reference
	Weekly monitoring was undertaken when LDP3 was discharging at the following locations: <u>Coxs River:</u> • **WX9** – Downstream of Sawyers Swamp Creek confluence, upstream of LDP3 • **LDP3** – Controlled discharge location from the LDP3 Water Treatment System, which treats water from SSCAD Pond. • **WX10A** - Downstream of Sawyers Swamp Creek confluence, downstream of LDP3.		
Analysis	Surface water quality results will be compared to: • Guideline Values (GVs) for a slightly-to-moderately disturbed upland river system • Water quality trends at each sampling location (where available) since July 2019. Earlier data is not considered to be relevant due to the water quality in Sawyers Swamp Creek being strongly influenced by discharges from Springvale Colliery that occurred between 2013 and July 2019. The results will be interpreted by a suitably qualified professional who will describe any deviations from GVs and changes to water quality trends.	Appendix E (of OEMP) Section 4.1 – Surface water quality sub-plan Table A.2	Chapter 4
Reporting	An Annual Surface Water Quality Review (ASWQR) will be prepared as part of the AEMR. The ASWQR will include: • a description of weather and streamflow conditions over the AEMR period (the period) • a description of the water management system that was operated over the period • all water quality data and analysis.	Appendix E (of OEMP) Section 4.1 – Surface water quality sub-plan	Chapter 4
Groundwater			
Monitoring	6-monthly groundwater quality and level monitoring at 21 locations: • WGM1/D1 • WGM1/D2 [1] • WGM1/D3 [1] • WGM1/D4 [1] • WGM1/D5 • WGM1/D6 [1] • CA1 • CA2 • CB1 • CB2 • CB3 • WH_MW02 [1] • WH_MW03 [1] • WI_MW03 [12] • WJ_MW03 [1] • WK_MW01 [1] • WK_MW04 [1] • WK_MW06 [1] • MW102S • MW102D • MW109D [1] *Sites nominated in EPL21185* [2] *Replaced by MW118* *Note that shallow seepage bore sites GW10, GW11, A9(AP09) and A17 (AP17) are not included in the OEMP but should continue to be sampled on a 6-monthly basis* *6-monthly groundwater level monitoring at 13 locations:*	Appendix D (of OEMP) – Table B2 Groundwater sub-plan [2]	Chapter 5

	Description	OEMP reference	Report reference
	• WWD1A • WWD1B • WWD2A • WWD2B • WWD5A • WWD5B • WH_MW04 • WWD6A • WWD6B • WWD10 • WWD12 • WWD14A • WWD14B		
Analysis	Groundwater quality results will be compared to: • water quality trends at each location (where available) using recent data (since 2019). Earlier data is not considered to be relevant due to the water quality being influenced by discharges from Springvale Colliery that occurred between 2013 and July 2019 • site specific trigger values derived using available, appropriate baseline data • 95% level of species protection (LOSP) default guideline values (DGVs), as presented in the Australian and New Zealand guidelines for Fresh and Marine Water Quality (ANZG 2018)	Appendix D (of OEMP) – Table B1 and B4 Groundwater sub-plan	Chapter 5
Reporting	The groundwater quality monitoring data and associated analysis is to be reported in the AEMR.	Appendix D (of OEMP) – Section 5.2 Groundwater sub-plan	Chapter 5

1.3 EPL requirements and studies

GPM and the EPA have had ongoing discussions regarding water management improvements at the Site. In February 2022, GPM prepared a table-form water management Action Plan (the Action Plan) that described water management improvements that were either underway or proposed. In a letter dated 20 May 2022, the EPA advised GPM that the Action Plan is an appropriate means to track progress and facilitate completion of the water management-related pollution reduction program that was under discussion at the time.

The EPA varied EPL 21185 on 19 December 2023 to include (among other things):

- **Condition L2.4** – the concentration limit for sulfate was removed and limits were added for ammonia, cadmium, manganese and turbidity. The concentration limit for suspended solids was reduced from 30 to 20 mg/L.
- **Condition L2.5** – the definition of wet weather discharge was changed from streamflow in the Coxs River being >= 20 ML/day to >= 10 ML/day.
- **Condition M2** – surface water monitoring requirements have has been revised so that:
  - weekly monitoring during discharge at EPL point 1 (known as LDP3) is now only required at the following monitoring locations: LDP3, WX9 and WX10A
  - monthly monitoring is undertaken at all other EPL surface water monitoring locations regardless of discharge or weather.

  It is noted that there were no changes to the surface water monitoring analytes or any groundwater monitoring requirements.

- **Condition U2** – the pollution reduction study focusing on Water Management was revised to:
  - acknowledge that short and medium-term measures have been implemented
  - replace the previous long-term measures with a new requirement to prepare a Water Treatment Management Suitability and Feasibility Assessment and submit to the EPA by 15 October 2024.
- **Condition U3** - Water Quality Discharge Assessment for Ammonia

The following sections describe reports that have been submitted to the EPA to address the above conditions.

1.3.1 Water management and discharge impact assessments

A Discharge Water Quality Assessment for LDP3 (DWQA) (EMM 2021) was prepared in 2021 to address special EPL conditions, focusing on interim measures for the Site over a two-year period. In August 2022, a Water Management Assessment (EMM 2022a) was submitted to the EPA, including an Action Plan for ongoing and proposed improvements, with a commitment to update the discharge impact assessment after the LDP3 Treatment System upgrade. In October 2022, a Discharge Impact Assessment (EMM 2022b) requested an EPL condition variation to set concentration limits for additional pollutants. Although the LDP3 Treatment System was upgraded in January 2023, further commissioning activities have been recommended to improve the water management on the Site (including irrigation of SSCAD pond, irrigation of contaminated water on to Section C of SSCAD and mechanical evaporation units on SSCAD pond). Section 3.2 describes the actions that were implemented, progressed, or completed during the AEMR period.

Due to exceedances in ammonia occurring at the LDP during the AEMR period, the EPA conditioned the need to prepare a Water Quality Discharge Assessment specific to ammonia. This report was drafted within the AEMR period. The report is expected to be issued to EPA in the next AEMR period.

1.3.2 6-monthly water quality monitoring reports

Condition R4 was added to the EPL when it was varied on 18 July 2022. GPM have prepared a Water Quality Monitoring Report for every six-month period since this date. The latest report issued was number eight, which addresses the 6-month period between 18 January 2026 and 17 July 2026. The reports include:

- a description of site conditions and GPM actions over the reporting period, including a progress update on the Action Plan that was provided to the EPA in the Water Management Assessment (EMM 2022), and
- a review of surface and groundwater monitoring data that was collected in accordance with EPL Condition M.

As the purpose of this AWQR is to address OEMP requirements, data from the EPL monitoring program is not reported unless relevant to the OEMP requirements.

1.3.3 Surface and groundwater characterisation report

In September 2023 GPM submitted an Initial Groundwater Characterisation Report (EMM 2023a) and a Surface Water Characterisation Report (EMM 2023b) to the EPA. These reports collated in line with EPL Conditions U1 and E1.2.

In April 2026 GPM drafted a Groundwater conceptualisation update (EMM2026e). The conceptual model update was undertaken to incorporate the additional data captured since delivery of the Initial Groundwater Characterisation Report (EMM 2023) and presents the updated conceptual groundwater model for the site. The report is expected to be issued to EPA in the next AEMR period.

1.3.4 Voluntary Management Proposal

Contamination at the Site was notified to the EPA by GPM under section 60 of the CLM Act on 10 March 2021. Following review of available information, the EPA advised on 27 June 2022, that the contamination is significant enough to warrant regulation under the CLM Act. On 22 August 2022, the EPA agreed to a voluntary declaration and declared the site under a Contaminated Land Declaration Notice which declares the Site as significantly contaminated land under division 2 of the *Contaminated Land Management Act 1997*. GPM has submitted a VMP to the EPA that establishes a proposed investigation and remediation approach. The status of the VMP is:

- The Detailed Site Investigation (DSI) was undertaken with the objective of identifying the nature and extent of contamination. Intrusive soil investigations have been undertaken at the site for the to meet the objective of the DSI with conversion of multiple boreholes to groundwater wells for groundwater assessment and ongoing groundwater monitoring. The DSI report included relevant data from the Initial Groundwater Characterisation Report (EMM 2023c) and the Surface Water Characterisation Report. The draft DSI was issued to the Site Auditor on 6 May 2025. The auditor's comments were provided on 25 August 2026. The revised draft DSI was issued to the Site Auditor on 13 February 2026. A second round of auditor's comments were provided on 18 May 2026. EMM completed a data gap assessment to address the auditors' comments to delineate PFOS and PFAS concentrations in soil and to evaluate PFAS concentrations and delineate metals concentrations in surface water through the remainder of the monitoring period.

- A Human Health and Ecological Risk Assessment (HHERA) has been prepared to identify specific soil and groundwater acceptance criteria for the site and for the remediation works. The draft HHERA was issued to the Site Auditor 30 June 2025. The auditor provided comments on 25 August 2025. An updated draft was issued to the auditor on 10 December 2025. A second round of comments was provided on 26 May 2026. EMM are currently addressing the comments of the second round of Auditor comments.

- EPA provided an amendment order to the VMP on 16 July 2026. This amendment order modified the requirements of the VMP to combine the Remedial Options Assessment (ROA) and Remedial Action Plan (RAP) deliverables (Task T7 and Task T8) and prepare a consolidated RAP that will be applicable to the period in which the Site transitions from active to passive management. It also provided an extension of the milestone date of the draft RAP report for Auditor review to 14 August 2026.

- The Remedial Action Plan(s) (RAP) was prepared to inform remediation requirements. Draft issued 14 August 2026. At the end of the reporting period, GPM is awaiting the site auditor's comments or endorsement of the RAP. The next steps following auditor input will be obtaining the site auditor's endorsement of/or confirmation that she/he has no objection to the ROA and RAP and the EPA's approval of the RAP will be obtained.

1.4 OEMP update

The OEMP (including Operational Surface Water Management Plan) has been approved in the AEMR reporting period by DPHI. The OEMP has been implemented since approval.

To comply with Condition of Approval (CoA) 6.5c), the results in previous annual water quality monitoring reports have used baseline data from July 2004 to January 2006 at the four surface water monitoring locations as per CoA 3.5. This report has not undertaken a comparison of current water quality against this baseline dataset. This baseline data relates to data collected immediately prior to wet ash placement in SSCAD ceasing. Dry ash was also being placed in Stage 1 of KVAR over the period. Hence, this data is no longer considered representative of pre-disturbance conditions and has little relevance to current site conditions.

2 Water management system overview

Surface water within the Site is described, in this Chapter, uses the following nomenclature:

- The Site's water management system includes:

  - **Sawyers Swamp Creek Ash Dam (SSCAD)** is an ash dam that was formed in the Sawyers Swamp Creek valley. It is divided into four sections (A, B, C and D) and has a total area of 82 ha. Each section is separated by earthen embankments. Section A comprises an open water body that is referred to as the SSCAD Pond and has areas of exposed ash. Sections B, C and D are referred to as the Upper Dam. A perched groundwater system exists within the placed ash (the perched SSCAD groundwater system).

    The SSCAD Pond is a large water body and is a central feature of the Site's overall water management system. It has historically received contaminated water from the KVAR/KVAD water management area and the SSCAD embankment drainage system. This has assisted in minimising incidental surface and groundwater discharges from the Site. SSCAD Pond also receives runoff from direct rainfall and overflows from the SSCAD Upper Dam (Section B, C and D). Works were completed (CP2, CP3 and CP4) during the previous monitoring period to divert remaining northern clean water catchments around SSCAD.

    In late 2023, GPM commenced irrigating contaminated water from the KVAR/KVAD water management area and the SSCAD embankment drainage system to SSCAD Section C as part of an irrigation trial. This trial ceased in July 2025 as Section C containment area reached capacity. In December 2025 this transfer was modified to atomizer dust suppression sprayers onto Section A of SSCAD which continued during the period.

    Water accumulation in SSCAD Pond is managed via irrigation to exposed ash areas (when possible) and at times via controlled discharges to the Coxs River at a licensed discharge point located within the historical Power Station site (referred to as LDP3). Controlled discharges are treated in the LDP3 Treatment System which adjusts pH and reduces metal concentrations. Controlled discharges at LDP3 are regulated by EPL no. 21185, which has restrictions on when discharge can occur.

  - **KVAR/KVAD water management area** is located to the west (downgradient) of SSCAD. KVAD is the Power Station's original ash dam which used to be an open cut mine void and KVAR is the dry ash compacted stockpile situated on top of the capped KVAD water management area. The combined area now has an associated water management system. A perched groundwater system exists within the KVAR (the perched KVAR groundwater system). Surface water runoff and seepage from this area drains to several water storage areas. Captured water that is known to be contaminated is reticulated to Lidsdale Cut (located downgradient of KVAD) where it is pumped to SSCAD. Stormwater that is not ash affected is managed in accordance with the methods described in Managing Urban Stormwater Soils and Construction: Volume 1 (Landcom 2004) and Volume 2E Mines and Quarries (DECC 2008).

  - **Sawyers Swamp Creek Diversion** is a clean water system that manages streamflow from Sawyers Swamp Creek and runoff from catchment areas to the south of SSCAD. The system diverts clean water around SSCAD and the KVAR/KVAD water management area. The diversion joins what is thought to be the original Sawyers Swamp Creek channel to the north-west of the Site.

- The following ancillary areas are located within the Site or are relevant to the Site's water management system:

    - **Investigation Area** is a 24-ha area located west of the Site, downgradient from the KVAR / KVAD water management area. Parts of this area have been disturbed by mining that is understood to have occurred prior to the 1950s. There are known deposits of coal ash, chitter and a potential landfill in this area. Vegetation has re-established within most of the Investigation Area. GPM investigating the potential for surface and groundwater contamination to occur from this area as part of the contaminated land investigations that are a separate process to this OEMP.

    - **Upgradient clean water catchments** refer to clean water catchment areas that are upgradient of either the SSCAD or the Sawyers Swamp Creek Diversion. Runoff from these catchments has potential to interact with the Site's water management system via either direct inflows or system overflows during certain high flow events. Incidental discharge from the Site's water management system (discussed above) may also enter the Sawyers Swamp Creek Diversion at several locations.

    - **Downgradient clean water** areas refer to parts of the Site that are not known to have been previously disturbed by mining operations or ash placement and drain away from the Site's water management system.

Figure 2.1 shows the locations of the above-mentioned water management areas and water management system features.

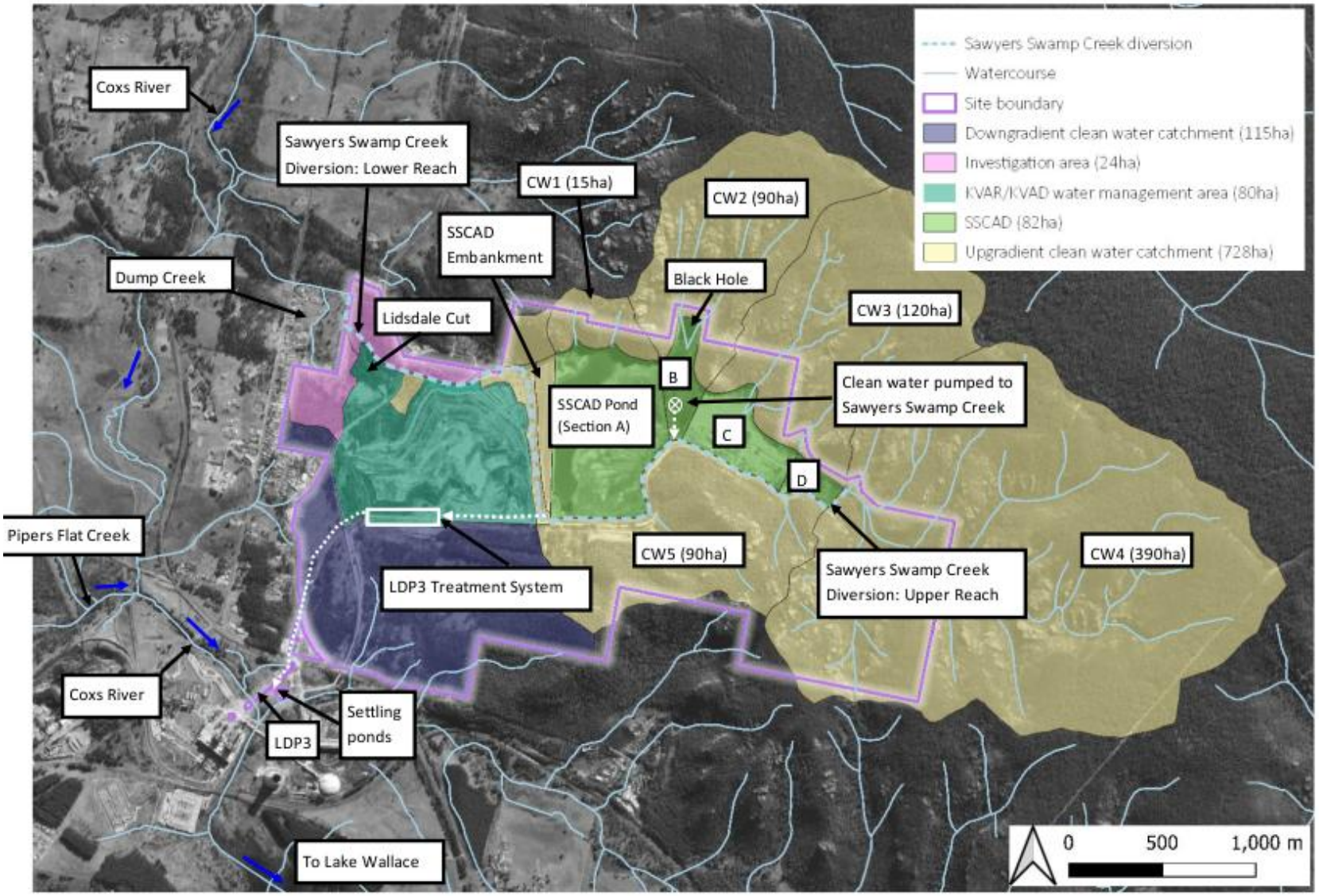


Figure 2.1 Water management areas

3 AEMR period

This chapter describes the weather and key water management actions undertaken by GPM over the AEMR Period (1 September 2025 to 31 August 2026).

3.1 Weather conditions

A total of 610 mm of rainfall was recorded over the AEMR Period at the Bureau of Meteorology (BoM) Station 63132 at Lidsdale (Maddox Lane), which is located 2 km north-west of the Site. Figure 3.1 compares the recorded rainfall (at Lidsdale (Maddox Lane)) to the median and the 90th percentile monthly rainfall calculated from the 60-year gauge record.

Weather during the spring and summer of the AEMR Period was characterised by generally dry conditions, with below median monthly rainfall. March, May June and August 2026 were characterised by generally wet conditions with above median rainfall occurring. As shown in Figure 3.1, the monthly median was exceeded throughout the AEMR period in 6 of the 12 months (September 2024, February 2026, May 2026, June 2026 and August 2026). The March 2026 rainfall total was 136.6 mm, above the 85th percentile. These The November 2024 rainfall total was 2 mm, below the 5th percentile. These conditions are described in this report as being relatively dry.

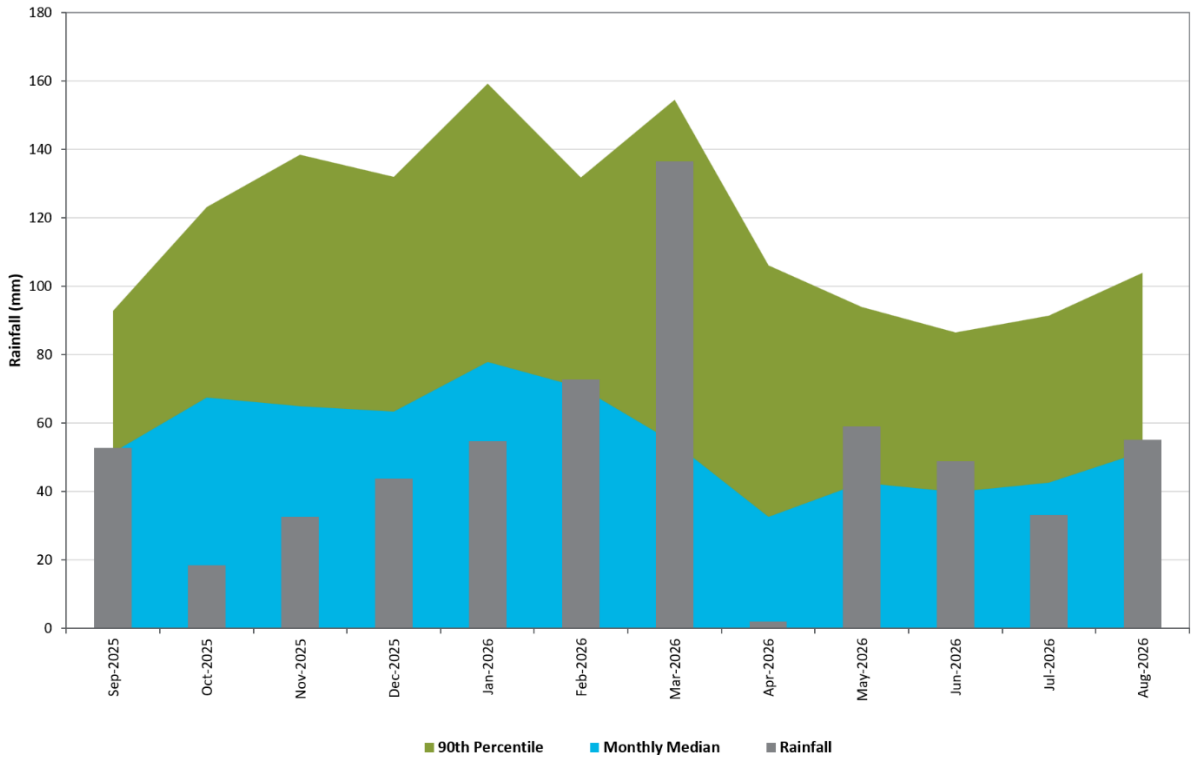


Figure 3.1 Monthly rainfall over the AEMR Period

3.2 Water management actions

GPM have been and continue to progressively improve the water management system to:

- comply with dam safety management obligations
- improve the capture and containment of contaminated water
- improve the treatment of water discharged at LDP3
- reduce the volume of contaminated water that requires management
- improve clean water separation and stormwater management.

These improvements require numerous works at various locations within the Site. Many works have been completed to date which have resulted in significant improvements, with further improvements expected over time. During the AEMR Period, a review of progress against the Action Plan was included in Water Quality Monitoring Reports that were submitted to the EPA in March and September 2026. These plans provided an update on the progress of the improvement works, including anticipated implementation timeframes.

The 6 monthly reports (EMM 2026a and b) have progressively tracked actions for the AWQR period seen in Table 3.1.

Table 3.1 Water management system operations

Water management area	Description of operations during the Current Period
KVAR/KVAD Water Management Area	• All known seepage and subsurface drainage discharges from KVAD were collected in the seepage collection system which reticulates all captured water to Lidsdale Cut. Lidsdale Cut was dewatered to SSCAD where it is irrigated. Multiple atomizer sprayers were installed at Section A of SSCAD in November 2025 and commissioned in December 2025. In July 2026 atomizer sprayer system was modified at Section A of SSCAD to irrigate collected leachate from Lidsdale Cut. The objective of this system is to enhance evaporation of contaminated water not compatible with the water treatment plant. • The majority of stormwater runoff from KVAR was managed into the stormwater system of the Wetland Pond. • There is minimal management of water from the red swamp area (i.e. runoff and seepage from KVAR/KVAD not captured by the current subsurface drainage system) with runoff draining overland to Lidsdale Cut.
SSCAD embankment drainage system	• Seepage from the SSCAD embankment foundation and abutment drains was collected and pumped into the KVAR/KVAD contaminated water system, which is dewatered via atomizer sprayers and fog nozzles to Cell A of SSCAD.
SSCAD Upper Dam	• The gravity diversion works (referred to as CP1) transferred clean water runoff that enters the northern portion of SSCAD Section D into the Sawyers Swamp Creek Diversion. • Construction of gravity diversion works for SSCAD Section C (CP2) and from the Black Hole to the Sawyers Swamp Creek Diversion (CP3 and CP4) were completed in December 2025. • Clean water runoff was also transferred from Black Hole and SSCAD Section C (via CP2) into Sawyers Swamp Creek prior to the Black Hole area being regraded • Management of water within the cut off trench along the toe of diversion dam to capture clean water seepage from diversion dam. • Water captured by the diversion dam continued to be conveyed to the Sawyers Swamp Diversion Channel.

Water management area	Description of operations during the Current Period
SSCAD Pond	• Water accumulation in SSCAD Pond was managed by evaporation from the pond, irrigation via atomizer dust suppression sprayers of exposed ash in SSCAD Section A and discharges at LDP3. 178 ML of treated water from SSCAD Pond was discharged at LDP3 in the AEMR Period. The discharges occurred between September and early-November 2025 (68 ML) late January (21 ML), March (31 ML) and then throughout June and August 2026 (58 ML). • An automated system is used to improve irrigation of treated water from SSCAD Pond in the western portion of the Site. Irrigation activities were undertaken intermittently during the current reporting period. • The SSCAD pond level was on a steady decline since December 2024, dropping from 938.5 m AHD to 935.8 m AHD in February 2026. In response to a wet March the level increased and was reported at 936.6 in July 2026. • Methods of enhanced evaporation are being trialled on site currently.
LDP3	• During the AEMR Period, discharge of treated water at LDP3 occurred in 148 out of 365 days. The total discharge at LDP3 between September 2025 and August 2026 was 178 ML. – the minimum streamflow to discharge ratio of 10:1 was generally maintained, and most discharges occurred at a higher ratio (i.e. the discharge rate was less than 10% of the streamflow rate). – discharges only occurred when the Coxs River streamflow was above 10 ML/day, which is the minimum streamflow rate for which discharge can occur ▪ The streamflow gauge was out of service for several weeks during the period and there was some uncertainty with flow within Coxs River and therefore discharges were avoided during this time. Streamflow data has since been processed for the period with isolated periods in January when estimates were made rather than a measurement taken, based data quality coding provided by WaterNSW. • During the Period, desludging occurred in the Canal during October 2025, February and April 2026 as part of ongoing maintenance. To mitigate future sludge accumulation in the Return Canal, GPM has implemented a clarification step to the treatment process upstream of the Return Canal in April. The upgraded treatment system with clarifier was commissioned from June 2026 with monitoring of changes to treatment efficacy ongoing. • Ammonia exceedances against a limit of 0.1 mg/L were recorded at LDP3 on 25 September 2025 and three occasions between 4 February and 16 March 2026. The non-compliances were reported to the EPA. Subsequently an EPL variation was provided to include a Water Quality Discharge Assessment (WQDA) to evaluate the appropriateness of the future ammonia concentration discharge limit. Additional monitoring at LDP3 has been undertaken since June to inform the WQDA, which is under development, due 20 October 2026. • Weekly sample of analytical suite required of LDP3 for licence condition M2.1 was not undertaken during week commencing 15 June 2026. Non-compliance was reported to EPA.

4 Surface water quality review

This chapter reviews surface water quality data from the OEMP monitoring locations over the AEMR Period. It includes a description of the monitoring requirements and assessment criteria established in the OEMP and presents and discusses the surface water quality data.

4.1 OEMP monitoring requirements

4.1.1 Monitoring requirements

The environmental monitoring plan established in the OEMP (EMM, 2026d) identifies 14 surface water monitoring locations. Table 4.1 describes each of these monitoring locations and associated monitoring requirements. Monitoring locations are provided in Figure 4.1.

Table 4.1 Surface water monitoring requirements

Monitoring location	Description	Monitoring frequency	Monitoring analytes
WMS3 – Lidsdale Cut	Lidsdale Cut is one of the storages in the KVAR water management system (see Chapter **2**). It receives runoff and collects seepage from the western portion of the KVAR water management area. Lidsdale Cut is dewatered to SSCAD Pond on an as-needed basis.	Monthly Monitoring	See Table 4.2
WX11 – Dump Creek	Dump Creek is a 1st order watercourse located to the west (down gradient) of the KVAR water management area (see Figure 4.1). It flows to the north and joins Sawyers Swamp Creek upstream of WX7 (see Figure 4.1).		
WMS1 – Sawyers Swamp Creek Ash Dam (SCCAD Pond)	This monitoring location is in the SSCAD Pond (see Figure 4.1) to characterise water quality and comply with CoA 3.5a.		
WX7 – Sawyers Swamp Creek	WX7 is located on Sawyers Swamp Creek approximately 500 m downstream of the Site.		
WX12 – Upstream of Sawyers Swamp Creek confluence	To characterise the quality of the water in the Coxs River upstream and downstream of the Sawyers Swamp Creek confluence and to enable an assessment of water quality impacts to the Coxs River.		
S1 – Downstream of Sawyers Swamp Creek confluence			
SS5 – Upstream of SSCAD	SS5 is located upstream of SSCAD and is therefore not potentially impacted by the Site's water management system. Water quality data from SS5 can be used to: • identify changes in Swayers Swamp Creek water quality within the Site (i.e. by comparison with downstream samples); and • categorise water quality within the Site's water management system. It is noted that historically S7 has been used as an upstream monitoring location. SS5 replaces S7 as it was recently discovered that S7 is on a tributary to Sawyers Swamp Creek.		

Monitoring location	Description	Monitoring frequency	Monitoring analytes
S6 – Downstream of SSCAD, upstream of SSCAD embankment and KVAR / KVAD water management area	To identify changes in water quality in the upper reach of the Sawyers Swamp Creek Diversion, which flows to the south of SSCAD.		
S5 - Downstream of SSCAD, SSCAD embankment and the eastern part of KVAR / KVAD water management area	To identify changes in water quality in the Sawyers Swamp Creek Diversion reach, that flows between the SSCAD embankment and the eastern portion of the KVAR/KVAD water management area. This reach may receive seepage from SCCAD and the eastern portion of KVAD.		
WX5 - Downstream of SSCAD, SSCAD embankment and KVAR / KVAD water management area, adjacent to Lidsdale Cut	To identify changes in water quality in the lower reach of the Sawyers Swamp Creek Diversion, which flows past the northern portion of the KVAR/KVAD water management area. This reach of the creek may receive seepage from western and northern portions of KVAD.		
BLKH - Located in the Black Hole which is a waterbody that has formed adjacent to placed ash in SSCAD section B.	To characterise water quality in the Black Hole which receives catchment runoff from the north of the site.		
WX9	Downstream of Sawyers Swamp Creek confluence, upstream of LDP3.	Weekly when discharge at LDP3 is occurring	
LDP3	Controlled discharge location from the LDP3 Water Treatment System, which treats water from SSCAD Pond.		
WX10A	Downstream of Sawyers Swamp Creek confluence, downstream of LDP3.		

Table 4.2 provides the surface water monitoring analytes that are established in the OEMP.

Table 4.2 Surface water monitoring analytes – OEMP

Category	Analytes[1]
Physico-chemical	pH, electrical conductivity (EC), dissolved oxygen, redox, turbidity, total suspended solids, total dissolved solids, total hardness, total alkalinity, ammonia as N, oxidised Nitrogen as N, total kjeldahl nitrogen (TKN) as N and total nitrogen as N total phosphorus as P, filterable reactive phosphate as P
Anions	Chloride, fluoride, sulfate
Cations	Sodium, potassium, calcium, magnesium
Metals[2]	Aluminium, antimony, arsenic, barium, beryllium, boron, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, selenium, silver, strontium, vanadium, zinc

Notes: 1. Sourced from OEMP Table B.1 in Appendix B plus additional analytes noted in the surface water quality sub-plan
2. Refers to total concentrations unless stated as filtered



KEY

- Site boundary
- Stream gauge

EPL routine monitoring network

- Groundwater
- Surface water
- Discharge

Existing environment

- Rail line
- Major road
- Minor road
- Vehicular track
- Named watercourse
- Named waterbody
- NPWS reserve
- State forest

Source: EMM (2025); GPM (2025); DCSSS (2024); MetroMap (2025)

0 0.5 1 km

GDA2020 MGA Zone 56

N

\\emm.local\xdrive\2023\EF230337-Lidsdale Environmental Services\GIS\02_Maps_Water_WaterQualityReview\WOR001_SWMonitoring\WOR001_SWMonitoring_20250926_05.aprx 27/09/2025

Surface water monitoring locations

Kerosene Vale Ash Repositories
Annual Water Quality Review
Figure 4.1

EMM
creating opportunities

4.1.2 Assessment criteria

The surface water quality sub-plan (surface water sub plan Section 4.1) specifies that surface water monitoring results are to be compared to:

- Guideline Values (DGVs) for a slightly-to-moderately disturbed upland river system. The GV are the default values for a slightly-to-moderately disturbed upland river system that are provided in ANZG 2018. Default guideline values (DGVs) are provided in Annexure A, Table A.2 of the Surface water management sub plan OEMP.

- The 80th percentile values at Sawyers Swamp Creek upstream of SSCAD (monitoring site SS5) have been calculated using data from 22 samples collected between 15 December 2021 to 21 July 2022 (all parameters); plus data from samples collected between 2013 to December 2021 that included pH (51 samples), EC (47 samples), turbidity (48 samples), boron (3 samples), copper (4 samples), manganese (45 samples), vanadium (28 samples) and zinc (28 samples), (note that these samples are in addition to the 22 samples mentioned above).

- Water quality trends at each sampling location (where available) since July 2019. Earlier data is not considered to be relevant due to the water quality in Sawyers Swamp Creek being strongly influenced by discharges from Springvale Colliery that occurred between 2013 and July 2019.

No baseline data for the Coxs River has been provided in the recent OEMP for use in comparisons. To maintain consistency with previous assessments, the comparison data relied on in this document are the DGVs for a slightly-to-moderately disturbed upland river system and ambient conditions monitored in the upstream of Coxs River. This includes:

- The 80th percentile values at Coxs River (monitoring site WX12) have been calculated using data from 59 samples collected between 16 August 2022 to 16 August 2026 (all parameters).

- The Coxs River is known to have water that has a moderate hardness (i.e. Ca CO_3 between 60 to 119 mg/L). Hence, hardness adjustments have been made to the DGVs for lead, cadmium, nickel and zinc using the ANZG 2018 / ANZECC 2000 methodology. In previous reports, a water hardness (mg/L of $CaCo_3$) of 99 was used to calculate the adjusted values. This was the median water hardness calculated from the Coxs River water quality monitoring location WX9 that is upstream of the LDP3 using data from the January 2022 to January 2023. During the current period, the median water hardness (mg/L of $CaCo_3$) at WX9 increased to 168 due to the drier conditions. To maintain consistency with previous reports, hardness adjustments for the Current Period (i.e. this report) were calculated using a water hardness of 99. This is a conservative approach given that using a higher hardness would increase the DGVs.

Table 4.3 describes the surface water assessment criteria for each monitoring location. It is noted that the baseline data is provided as a range.

Table 4.3 Surface water assessment criteria

		Guideline values (GVs)		Sawyers Swamp Creek upstream of SSCAD (SS5)	Coxs River upstream (WX12)[1]
Parameters	**Units**	**DGV**	**Source**	**80th percentile value**	
Physico-chemical parameters					
pH	-	6.5–8.0	Default Guideline Value (DGV) for upland river in south-east Australia (Table 3.3.2; ANZECC 2000)	5.5–6.8	6.6–7.1
EC	µS/cm	350	DGV for NSW upland rivers (Table 3.3.3; ANZECC 2000)	114	1,348
Turbidity	NTU	2–25	DGV for upland river in south-east Australia (Table 3.3.2; ANZECC 2000)	26	20
Metals (refers to results from 45 µm filtered samples only)					
Aluminium	mg/L	0.055	Low reliability DGV (pH > 6.5) (ANZG 2018)	0.160	0.030
Antimony	mg/L	0.009	Unknown reliability DGV (ANZG 2018)	<0.001	<0.001
Arsenic	mg/L	0.013	Moderate reliability DGV for As(V) (ANZG 2018)	<0.001	<0.001
Boron	mg/L	0.94	Very high reliability DGV (ANZG 2018)	<0.05	0.358
Cadmium[2]	mg/L	0.0002 (SSC) 0.001 (Coxs R)	Very high reliability DGV (ANZG 2018)	<0.0001	<0.0001
Chromium	mg/L	0.001	Very high reliability DGV for Cr(VI) (ANZG 2018)	<0.001	<0.001
Cobalt	mg/L	0.0014	Unknown reliability DGV (ANZG 2018)	0.005	0.009
Copper	mg/L	0.0014	Very high reliability DGV (ANZG 2018)	<0.001	<0.001
Iron	mg/L	0.28	Very high reliability DGV (ANZG 2025)	NC	NC
Lead[2]	mg/L	0.0034 (SSC) 0.0155 (Coxs R)	Moderate reliability DGV (ANZG 2018)	<0.001	<0.001
Manganese	mg/L	1.9	Moderate reliability DGV (ANZG 2018)	0.265	0.906
Mercury	mg/L	0.00006	Moderate reliability DGV for 99% species protection level recommended for slightly to moderately disturbed systems due to the potential for bioaccumulation (ANZG 2018)	<0.00004	<0.00005
Molybdenum	mg/L	0.034	Unknown reliability DGV (ANZG 2018)	<0.001	<0.001
Nickel[2]	mg/L	0.011 (SSC) 0.030 (Coxs R)	Low reliability DGV (ANZG 2018)	0.002	0.100

		Guideline values (GVs)		Sawyers Swamp Creek upstream of SSCAD (SS5)	Coxs River upstream (WX12)[1]
Parameters	**Units**	**DGV**	**Source**	**80th percentile value**	
Selenium	mg/L	0.005	Moderate reliability DGV for 99% species protection level recommended for slightly to moderately disturbed systems due to the potential for bioaccumulation (ANZG 2018)	<0.01	<0.001
Silver	mg/L	0.00005	Low reliability DGV (ANZG 2018)	<0.001	<0.001
Vanadium	mg/L	0.006	Unknown reliability DGV (ANZG 2018)	<0.01	<0.001
Zinc[2]	mg/L	0.008 (SSC) 0.022 (Coxs R)	Very high reliability DGV (ANZG 2018)	0.034	0.038

Notes:
1. 80th percentile values subject to update as additional data becomes available
2. Hardness corrected guideline value based on Coxs River having a median water hardness of approximately 99 mg/L as $CaCO_3$.
3. NC- Not calculated. To be updated for Iron with 80th percentile

4.2 Results

Surface water monitoring results for the AEMR Period are presented and discussed in this section. The results for each monitoring location are presented in table form and compared to the assessment criteria established in Section 4.1.2.

Results for key analytes from all surface water monitoring locations are also presented as time-series charts provided in Annexure A. These charts show all results from 1 September 2022 to the end of the AEMR Period and can be used to establish water quality trends (i.e. increasing or decreasing concentrations).

4.2.1 Lidsdale Cut – WMS3

Lidsdale Cut is one of the storages in the KVAR/KVAD water management system (see Figure 4.1). It receives collected seepage from the KVAD and runoff from the western portion of the KVAR/KVAD water management area. Captured water has historically been dewatered via pumping to SSCAD Pond however, following October 2023, water has been redirected to an irrigation scheme within Section C of SSCAD. The irrigation trial ceased in July 2025 as Section C of SSCAD reached capacity. It is noted that in previous AEMR reports, Lidsdale Cut was sampled as WX5 but was changed to WMS3 in 2022 following a review of surface water monitoring locations.

12 samples were collected from Lidsdale Cut over the AEMR Period. Table 4.4 provides the minimum, median and maximum values for each analyte and compares the results to DGVs and the baseline water quality range.

The results indicate that the water quality in Lidsdale Cut has an acidic pH, brackish, turbid and generally high metal concentrations. These characteristics are consistent with ash affected water at the Site and are expected given that Lidsdale Cut receives collected seepage from the KVAD contaminated water management system.

The water quality concentrations of aluminium, boron, cadmium, copper, iron, lead, manganese, nickel and zinc exceed the DGV and baseline range. The elevated concentrations of these metals are consistent with water quality in previous AEMR periods (see time-series charts in Annexure A).

The data confirms that the current management approach of dewatering Lidsdale Cut to the SSCAD for ongoing management is appropriate.

Table 4.4 Lidsdale Cut WMS3 – results summary

	Units	DGV	Baseline range[2]	No. samples	Minimum	Maximum	Median
Physico-chemical parameters							
pH	-	**6.5–8.0**	5.5 - 6.8	12	**2.9**	**5.53**	**3.255**
EC	µS/cm	**350**	114	12	**351**	**1959**	**1436**
DO	mg/L	-	NM	12	6.77	12.23	9.62
Turbidity	mg/L	-	25	12	164	547	432.2
Total dissolved solids	NTU	-	NM	12	286	1570	1040
Total nitrogen	mg/L	-	NM	12	0.6	1.3	0.85
Total phosphorus	mg/L	-	NM	12	<0.01	0.1	0.04
Anions							
Chloride	mg/L	-	NM	12	5	28	26.5
Fluoride	mg/L	-	NM	12	0.7	4	2.9
Sulfate	mg/L	-	NM	12	144	899	621.5
Cations							
Sodium	mg/L	-	NM	12	18	118	87.5
Potassium	mg/L	-	NM	12	12	77	51
Calcium	mg/L	-	NM	12	20	117	77.5
Magnesium	mg/L	-	NM	12	9	49	35.5
Metals[1]							
Aluminium	mg/L	**0.055**	0.160	12	**0.72**	**20.6**	**10.485**
Antimony	mg/L	**0.009**	<0.001	12	<0.001	<0.001	<0.001
Arsenic	mg/L	**0.013**	<0.001	12	<0.001	0.005	0.003
Barium	mg/L	-	NM	12	0.02	0.105	0.048
Boron	mg/L	**0.94**	<0.05	12	0.53	**3.95**	**2.57**
Cadmium	mg/L	**0.0002**	<0.0001	12	**0.0007**	**0.0046**	**0.00205**
Chromium	mg/L	**0.001**	<0.001	12	<0.001	0.002	<0.001
Copper	mg/L	**0.0014**	<0.001	12	<0.001	**0.047**	**0.004**
Iron	mg/L	**0.28**	NM	12	0.05	**9.3**	**2.925**
Lead	mg/L	**0.0034**	NM	12	<0.001	**0.031**	0.014
Manganese	mg/L	**1.9**	0.265	12	1.29	**6.45**	**4.465**
Mercury	mg/L	**0.00006**	<0.00004	12	<0.00005	<0.00005	<0.00005
Molybdenum	mg/L	**0.034**	<0.001	12	<0.001	<0.001	<0.001

	Units	DGV	Baseline range[2]	No. samples	Minimum	Maximum	Median
Nickel	mg/L	**0.011**	0.002	12	**0.057**	**0.425**	**0.3175**
Selenium	mg/L	**0.005**	<0.01	12	<0.004	0.02	<0.004
Silver	mg/L	**0.00005**	<0.001	12	<0.001	<0.001	<0.001
Zinc	mg/L	**0.008**	0.034	12	**0.151**	**1.35**	**0.7945**

Notes: **Bold** indicates DGV exceeded, underlined indicates baseline range exceeded. NM denotes not monitored or not provided in the baseline data set.

1. Reported metal concentrations for the current AEMR Period are from filtered samples.
2. The 80th percentile values at Sawyers Swamp Creek upstream of SSCAD (monitoring site SS5) calculated using data from 22 samples collected between 15 December 2021 to 21 July 2022 (all parameters); plus data from samples collected between 2013 to December 2021 that are available for pH (51 samples), EC (47 samples), turbidity (48 samples), boron (3 samples), copper (4 samples), manganese (45 samples), vanadium (28 samples) and zinc (28 samples) - note these samples are in addition to the 22 samples mentioned above.

4.2.2 SSCAD Pond – WMS1

SSCAD Pond refers to the waterbody that is in the western portion of the SSCAD, adjacent to the dam's embankment. It is a large water body and is a central feature of the Site's overall water management system. Water accumulation in the SSCAD Pond, from localised surface and groundwater sources, is managed via irrigation to exposed ash areas and at times via controlled discharges into the Coxs River at LDP3, following treatment.

Twelve samples were collected from SSCAD Pond, which was renamed as site WMS1 on 16 August 2022. Table 4.5 provides the minimum, median and maximum values for each analyte and compares the results to DGVs and the baseline water quality range. The results from the 12 samples have consistent water quality, which is characterised as having a pH ranging between 3.64 and 8.5 and elevated salinity and metal concentrations. The pH is typically lower than the baseline range. Aluminium, boron, cadmium, copper, manganese, nickel and zinc concentrations, all consistently exceed the respective DGVs. However, the reported metal concentrations have not changed significantly from previous AEMR periods.

Treated water from SSCAD Pond was discharged to the Coxs River via LDP3 over the period. Monitoring of discharges at LDP3 was undertaken in accordance with the requirements of the EPL. This data is not reported in this AWQR as the scope of this review is to address the OEMP. However, the data is provided in the various water quality reports issued to the EPA (see Section 1.3), the EPL annual return and on GPM's website.

Table 4.5 SSCAD Pond WMS1– results summary

	Units	DGV	Baseline range[2]	No. samples	Minimum	Maximum	Median
Physico-chemical parameters							
pH	-	**6.5–8.0**	5.5 - 6.8	10	**3.64**	**8.5**	**4.78**
EC	µS/cm	**350**	114	10	**1273**	**2396**	**1607**
DO	mg/L	-	NM	10	0.01	10.33	8.645
Turbidity	mg/L	-	25	10	47.3	436	249.5
Total dissolved solids	NTU	-	NM	12	966	1380	1150
Total nitrogen	mg/L	-	NM	12	0.3	2	0.6
Total phosphorus	mg/L	-	NM	12	0.01	0.05	0.03

	Units	DGV	Baseline range[2]	No. samples	Minimum	Maximum	Median
Anions							
Chloride	mg/L	-	NM	12	17	55	24
Fluoride	mg/L	-	NM	12	2.2	3.6	2.75
Sulfate	mg/L	-	NM	12	559	795	701.5
Cations							
Sodium	mg/L	-	NM	12	112	181	153.5
Potassium	mg/L	-	NM	12	43	71	58.5
Calcium	mg/L	-	NM	12	74	109	93
Magnesium	mg/L	-	NM	12	21	33	24.5
Metals[1]							
Aluminium	mg/L	**0.055**	0.160	12	**0.66**	**8.94**	**5.4**
Antimony	mg/L	**0.009**	<0.001	12	<0.001	0.002	<0.001
Arsenic	mg/L	**0.013**	<0.001	12	<0.001	0.003	0.002
Barium	mg/L	-	NM	12	0.033	0.06	0.048
Boron	mg/L	**0.94**	<0.05	12	**3.08**	**5.05**	**4.195**
Cadmium	mg/L	**0.0002**	<0.0001	12	**0.0016**	**0.0035**	**0.0023**
Chromium	mg/L	**0.001**	<0.001	12	<0.001	<0.001	<0.001
Copper	mg/L	**0.0014**	<0.001	12	<0.001	**0.057**	**0.0085**
Iron	mg/L	**0.28**	NM	12	0.05	**2.92**	**0.35**
Lead	mg/L	**0.0034**	NM	12	<0.001	**0.008**	<0.001
Manganese	mg/L	**1.9**	0.265	12	1.51	**4.33**	**3.39**
Mercury	mg/L	**0.00006**	<0.00004	12	<0.00005	<0.00005	<0.00005
Molybdenum	mg/L	**0.034**	<0.001	12	<0.001	0.026	0.004
Nickel	mg/L	**0.011**	0.002	12	**0.057**	**0.188**	**0.1465**
Selenium	mg/L	**0.005**	<0.01	12	<0.004	0.02	<0.004
Silver	mg/L	**0.00005**	<0.001	12	<0.001	<0.001	<0.001
Zinc	mg/L	**0.008**	0.034	12	**0.222**	**0.821**	**0.34**

Notes: Reported metal concentrations for the current AEMR Period are from filtered samples.

1. **Bold** indicates DGV exceeded, underlined indicates baseline range exceeded. NM denotes not monitored or not provided in the baseline data set.
2. The 80th percentile values at Sawyers Swamp Creek upstream of SSCAD (monitoring site SS5) calculated using data from 22 samples collected between 15 December 2021 to 21 July 2022 (all parameters); plus data from samples collected between 2013 to December 2021 that are available for pH (51 samples), EC (47 samples), turbidity (48 samples), boron (3 samples), copper (4 samples), manganese (45 samples), vanadium (28 samples) and zinc (28 samples) - note these samples are in addition to the 22 samples mentioned above.

4.2.3 Dump Creek – WX11

Dump Creek is located to the west (down gradient) of the KVAR/KVAD water management area and flows to the north and joins Sawyers Swamp Creek upstream of WX7 (see Figure 1.1).

Six samples were collected from Dump Creek over the AEMR Period. Table 4.6 provides the minimum, median and maximum values for each analyte and compares the results to DGVs and the baseline water quality range.

The results indicate that the water quality in Dump Creek is variable. The pH, salinity and metal concentrations in some samples exceed the DGV and ambient concentrations in Sawyers Swamp Creek at WX7 (see Section 4.2.4) indicating that some ash affected water is seeping via groundwater baseflow into Dump Creek. As some results have water quality that is consistent with clean water, it is interpreted that surface water runoff in the Dump Creek catchment is generally clean and that seep(s) of ash affected water may impact water quality during dry conditions when the streamflow is minimal.

The results during the reporting period for aluminium, copper, manganese, nickel and zinc concentrations were generally below reported concentration from May to July 2025.

The time-series results presented in Annexure A shows that the water quality in Dump Creek is generally consistent with the prior AEMR Periods.

Table 4.6 Dump Creek WX11 – results summary

	Units	DGV	Baseline range[2]	No. samples	Minimum	Maximum	Median
Physico-chemical parameters							
pH	-	**6.5–8.0**	5.5 - 6.8	6	**5.46**	6.51	**6.135**
EC	µS/cm	**350**	114	6	287	**902**	**408.65**
DO	mg/L	-	NM	6	2.7	7.58	4.115
Turbidity	mg/L	-	25	3	-54	115	50.75
Total dissolved solids	NTU	-	NM	6	220	432	278
Total nitrogen	mg/L	-	NM	6	1.2	16.8	2.65
Total phosphorus	mg/L	-	NM	6	<0.01	3.17	0.365
Anions							
Chloride	mg/L	-	NM	6	13	41	18.5
Fluoride	mg/L	-	NM	6	0.2	0.3	0.3
Sulfate	mg/L	-	NM	6	100	250	146.5
Cations							
Sodium	mg/L	-	NM	6	17	55	27
Potassium	mg/L	-	NM	6	7.6	12	9
Calcium	mg/L	-	NM	6	12	35	15.5
Magnesium	mg/L	-	NM	6	7.8	21	10

	Units	DGV	Baseline range[2]	No. samples	Minimum	Maximum	Median
Metals[1]							
Aluminium	mg/L	**0.055**	0.160	6	0.05	**0.18**	**0.11**
Antimony	mg/L	**0.009**	<0.001	6	<0.001	<0.001	<0.001
Arsenic	mg/L	**0.013**	<0.001	6	<0.001	0.003	<0.001
Barium	mg/L	-	NM	6	0.019	0.033	0.024
Boron	mg/L	**0.94**	<0.05	6	0.24	0.43	0.345
Cadmium	mg/L	**0.0002**	<0.0001	6	<0.0001	0.0003	0.00015
Chromium	mg/L	**0.001**	<0.001	6	<0.001	<0.001	<0.001
Copper	mg/L	**0.0014**	<0.001	6	**0.002**	**0.022**	**0.004**
Iron	mg/L	-	NM	6	**0.37**	**69.1**	**7.915**
Lead	mg/L	**0.0034**	NM	6	<0.001	<0.001	<0.001
Manganese	mg/L	**1.9**	0.265	6	0.128	**1.48**	**0.6795**
Mercury	mg/L	**0.00006**	<0.00004	6	<0.00005	<0.00005	<0.00005
Molybdenum	mg/L	**0.034**	<0.001	6	<0.001	<0.001	<0.001
Nickel	mg/L	**0.011**	0.002	6	**0.037**	**0.121**	**0.063**
Selenium	mg/L	**0.005**	<0.01	6	<0.001	<0.001	<0.001
Silver	mg/L	**0.00005**	<0.001	6	<0.001	<0.001	<0.001
Zinc	mg/L	**0.008**	0.034	6	0.015	**0.308**	**0.2**

Notes: Reported metal concentrations for the current AEMR Period are from filtered samples.

1. **Bold** indicates DGV exceeded, underlined indicates baseline range exceeded. NM denotes not monitored or not provided in the baseline data set.
2. The 80th percentile values at Sawyers Swamp Creek upstream of SSCAD (monitoring site SS5) calculated using data from 22 samples collected between 15 December 2021 to 21 July 2022 (all parameters); plus data from samples collected between 2013 to December 2021 that are available for pH (51 samples), EC (47 samples), turbidity (48 samples), boron (3 samples), copper (4 samples), manganese (45 samples), vanadium (28 samples) and zinc (28 samples) - note these samples are in addition to the 22 samples mentioned above.

4.2.4 Black Hole – BLKH

Black Hole is a waterbody that has formed adjacent to placed ash in SSCAD Section B. Construction of gravity diversions (CP3 and CP4) from the Black Hole to the Sawyers Swamp Creek Diversion commenced in Autumn 2023 and was complete in December 2025. The construction activities included dewatering the Black Hole and limited filling to create access to construct CP3 and CP4. Dewatering volumes were pumped into SSCAD Pond. Dewatering has now reduced to minimal levels to maintain a steady water level.

Eleven samples were collected from the Black Hole over the AEMR Period. Table 4.7 shows the minimum, median and maximum values for each analyte and compares the results to DGVs and the baseline water quality range.

The results indicate that the water quality in the Black Hole is variable. The salinity has remained relatively stable and generally below the DGV. The metal concentrations in some samples exceeded both the DGV and baseline concentrations at the Black Hole indicating that some ash affected water is seeping into the Black Hole. The Black Hole receives surface water runoff from clean water catchments north of SSCAD. During dewatering activities that significantly reduce the water level (such as those being undertaken during construction activities) within the waterbody, it has become evident that inflows increase from the SSCAD perched groundwater table which can lead to changes in water quality.

The time-series results presented in Annexure A show nickel and zinc concentrations during the current reporting period to exceed the DGV but consistent or reduced from results between 2023 and 2025. Boron concentrations remain below the DGV but have consistently been elevated in comparison to the 2022-2023 period.

Table 4.7 Black Hole BLKH – results summary

	Units	DGV	Baseline range[2]	No. samples	Minimum	Maximum	Median
Physico-chemical parameters							
pH	-	**6.5–8.0**	5.5 - 6.8	11	6.2	7.11	6.76
EC	µS/cm	**350**	114	11	150	330	282.5
DO	mg/L	-	NM	11	5.69	12.8	8.02
Turbidity	mg/L	-	25	11	40	167	104
Total dissolved solids	NTU	-	NM	11	70	244	140
Total nitrogen	mg/L	-	NM	11	0.1	1.1	0.5
Total phosphorus	mg/L	-	NM	11	0.01	1.76	0.03
Anions							
Chloride	mg/L	-	NM	11	4	16	10
Fluoride	mg/L	-	NM	11	0.2	0.8	0.4
Sulfate	mg/L	-	NM	11	17	83	42
Cations							
Sodium	mg/L	-	NM	11	10	34	20
Potassium	mg/L	-	NM	11	5	13	8
Calcium	mg/L	-	NM	11	4	13	7
Magnesium	mg/L	-	NM	11	4	10	7.3
Metals[1]							
Aluminium	mg/L	**0.055**	0.160	11	<0.01	**0.4**	<0.01
Antimony	mg/L	**0.009**	<0.001	11	<0.001	<0.001	<0.001
Arsenic	mg/L	**0.013**	<0.001	11	<0.001	0.002	<0.001
Barium	mg/L	-	NM	11	0.019	0.062	0.034
Boron	mg/L	**0.94**	<0.05	11	0.17	0.83	0.4
Cadmium	mg/L	**0.0002**	<0.0001	11	<0.0001	0.0001	<0.0001

	Units	DGV	Baseline range[2]	No. samples	Minimum	Maximum	Median
Chromium	mg/L	**0.001**	<0.001	11	<0.001	<0.001	<0.001
Copper	mg/L	**0.0014**	<0.001	11	<0.001	0.001	<0.001
Iron	mg/L	-	NM	11	0.1	**2.6**	**0.79**
Lead	mg/L	**0.0034**	NM	11	<0.001	<0.001	<0.001
Manganese	mg/L	**1.9**	0.265	11	0.035	**2.67**	0.69
Mercury	mg/L	**0.00006**	<0.00004	11	<0.00005	<0.00005	<0.00005
Molybdenum	mg/L	**0.034**	<0.001	11	0.002	0.019	0.003
Nickel	mg/L	**0.011**	0.002	11	0.005	**0.033**	**0.014**
Selenium	mg/L	**0.005**	<0.01	11	<0.001	<0.001	<0.001
Silver	mg/L	**0.00005**	<0.001	11	<0.001	<0.001	<0.001
Zinc	mg/L	**0.008**	0.034	11	0.002	**0.012**	0.007

Notes: Reported metal concentrations for the current AEMR Period are from filtered samples.

1. **Bold** indicates DGV exceeded, underlined indicates baseline range exceeded. NM denotes not monitored or not provided in the baseline data set.
2. The 80th percentile values at Sawyers Swamp Creek upstream of SSCAD (monitoring site SS5) calculated using data from 22 samples collected between 15 December 2021 to 21 July 2022 (all parameters); plus data from samples collected between 2013 to December 2021 that are available for pH (51 samples), EC (47 samples), turbidity (48 samples), boron (3 samples), copper (4 samples), manganese (45 samples), vanadium (28 samples) and zinc (28 samples) - note these samples are in addition to the 22 samples mentioned above.

4.2.5 Sawyers Swamp Creek

WX7 is located on Sawyers Swamp Creek approximately 500 m downstream of the Site. Sawyers Swamp Creek is a watercourse that flows through the Site in a westerly direction and joins the Coxs River approximately 1 km to the west of the Site. The creek was diverted from its original alignment early in the Site's history due to coal mining and has been further adjusted when the SSCAD was constructed. The diverted creek (the Sawyers Swamp Creek Diversion) is a clean water system that manages the natural streamflow from the creek's catchment. The system diverts clean water around SSCAD and the KVAR/KVAD water management area. The diversion joins what is thought to be the original Sawyers Swamp Creek to the north-west of the Site. The alignment of the Sawyers Swamp Creek Diversion is shown in Figure 2.1.

The Sawyers Swamp Creek Diversion receives inflows from the following sources:

- clean water runoff from naturally vegetated catchments to the east and south of the Site
- water pumped from the surface of Section B of the SSCAD (wet conditions only)
- stormwater discharges from the KVAR/KVAD water management area (wet conditions only)
- inflows from Dump Creek, which are minor compared to the streamflow in Sawyers Swamp Creek, and
- groundwater inflows, including potential inflows from the perched groundwater systems that are within the ash dams.

The creek has been observed to have a perennial streamflow, indicating that baseflows are maintained by groundwater inflows from the greater catchment. Various groundwater systems (refer to Section 5.1) exist throughout the Site which have different levels of impact from ash emplacements. This means that the ambient water quality can vary based on the groundwater inflow contribution as a percentage of total streamflow and water quality during wet and dry conditions can be markedly different.

Monitoring locations along Sawyers Swamp Creek Diversion, including the number of samples collected at each site are outlined below. Table 4.8 provides the minimum, median, and maximum values for each analyte, comparing them to DGVs and the baseline water quality range:

- **SS5**: Located upstream of SSCAD in a headwater dam to the Sawyers Swamp Creek Diversion and is an upstream reference site that is used to characterise ambient water quality in the Sawyers Swamp Creek Catchment. 12 samples were collected from SS5 over the AEMR Period.
- **S6**: Located on Sawyers Swamp Creek directly downstream from SSCAD pond. 12 samples were collected from S6 over the AEMR Period.
- **S5:** Located on Sawyers Swamp Creek adjacent to KAVAR and downstream to SSCAD pond. 12 samples were collected from S5 over the AEMR Period.
- **WX5:** Located on Sawyers Swamp Creek adjacent to Lidsdale Cut. 12 samples were collected from WX5 over the AEMR Period.
- **WX7:** Located on Sawyers Swamp Creek approximately 500 m downstream of the Site. 17 samples were collected from WX7 over the AEMR Period.

The results indicate the water quality in Sawyers Swamp Creek has a pH that ranges between 5.36 and 8.32, generally low salinity and metal concentrations. These characteristics are consistent with water unaffected by site operations. However, there was a trend of increasing concentrations of salinity, sulfate, total dissolved solids, boron, nickel and zinc between SS5 (upstream of SSCAD) and WX7 (downstream of the Site). The results at WX7 exceeded DGVs for pH, EC, boron, iron, manganese, molybdenum, nickel and zinc.

The time-series results presented in Annexure A shows that the water quality in Sawyers Swamp Creek is consistent with the prior AEMR Periods and varies between wet and dry conditions, with higher salinity and metal concentrations occurring during dry conditions. These results are consistent with historical trends and indicate that there is some incidental discharge of ash affected water entering the lower portion of the Sawyers Swamp Creek Diversion.

Table 4.8 Sawyer Swamp Creek – results summary

	Units	DGV	Base-line range[2]	SS5			S6			S5			WX5			WX7	
				Min	Max	Median	Min	Max	Median	Min	Max	Median	Min	Max	Median	Min	Max	Median
Physico-chemical parameters																		
pH	-	**6.5–8.0**	5.5 - 6.8	**5.36**	8.32	**6.3**	6.79	7.51	7.275	**6.41**	7.44	6.8	**6.04**	6.93	6.71	6.62	7.64	7.225
EC	µS/cm	**350**	114	54	**1986**	95.2	57.4	323	146.5	104.5	**509**	287	107.7	**403**	308	137.1	**379**	327.5
DO	mg/L	-	NM	0.07	11.78	5.13	7.06	12.4	9.18	7.27	12	9.04	6.76	12.6	9.98	5.61	12.52	9.34
Turbidity	mg/L	-	25	-14	190.2	137	63	181	109.6	-23	112	68	119	1992	232.5	-6	149.3	88.15
Total dissolved solids	NTU	-	NM	29	78	52	38	167	124	51	1300	196	57	260	183	72	216	193
Total nitrogen	mg/L	-	NM	0.1	0.4	0.3	0.1	0.6	0.4	0.1	0.5	0.3	0.2	0.5	0.3	0.1	1.1	0.2
Total phosphorus	mg/L	-	NM	0.01	0.07	0.03	<0.01	0.08	0.025	0.01	0.06	0.03	0.01	0.07	0.02	0.01	0.11	0.05
Anions																		
Chloride	mg/L	-	NM	6	9	7	7	20	13	3	25	19	4	23	18.5	9	24	19
Fluoride	mg/L	-	NM	0.1	0.2	0.1	0.1	0.4	0.2	0.1	0.6	0.2	0.2	0.5	0.3	0.1	0.3	0.3
Sulfate	mg/L	-	NM	2	12	7	9	57	25.5	17	85	55	20	84	60	26	76	60
Cations																		
Sodium	mg/L	-	NM	7	13	9.1	7	30	16.5	10	41	30	9	42	28	13	38	27
Potassium	mg/L	-	NM	1	2	1	1	7	3.5	2	7	5	2	8	5	2	7	5.8
Calcium	mg/L	-	NM	0.6	1	1	2	11	7	2	14	11	3	14	10.5	4	18	10
Magnesium	mg/L	-	NM	0.9	1	1	1	7	5	2	10	8.8	2	11	9	3	10	8

	Units	DGV	Base-line range[2]	SS5			S6			S5			WX5			WX7	
				Min	Max	Median	Min	Max	Median	Min	Max	Median	Min	Max	Median	Min	Max	Median
Metals[1]																		
Aluminium	mg/L	**0.055**	0.160	<0.01	0.04	0.03	<0.01	**0.08**	0.025	0.01	**0.07**	0.02	0.02	**0.06**	0.035	<0.01	0.02	0.02
Antimony	mg/L	**0.009**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	mg/L	**0.013**	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	mg/L	-	NM	0.01	0.044	0.03	0.012	0.055	0.025	0.015	0.06	0.047	0.014	0.056	0.035	0.015	0.072	0.03
Boron	mg/L	**0.94**	<0.05	<0.05	0.09	<0.05	<0.05	0.4	0.195	<0.05	0.66	0.205	<0.05	0.55	0.24	<0.05	0.41	0.27
Cadmium	mg/L	**0.0002**	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	mg/L	**0.001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	mg/L	**0.0014**	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Iron	mg/L	**0.28**	NM	0.07	**1.72**	**0.71**	0.06	**0.95**	**0.355**	0.15	**3.65**	**0.84**	0.08	**0.54**	0.17	0.08	**0.54**	0.23
Lead	mg/L	**0.0034**	NM	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	mg/L	**1.9**	0.265	0.085	**2.02**	0.329	0.053	0.486	0.1035	0.102	1.74	0.622	0.078	0.788	0.366	0.059	**3.45**	0.186
Mercury	mg/L	**0.00006**	<0.00004	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Molybdenum	mg/L	**0.034**	<0.001	<0.001	0.004	<0.001	<0.001	0.002	<0.001	<0.001	0.002	<0.001	<0.001	0.002	<0.001	<0.001	0.002	<0.001
Nickel	mg/L	**0.011**	0.002	0.001	0.003	0.001	0.001	0.007	0.002	0.001	0.005	0.003	0.002	0.009	0.004	0.002	**0.017**	0.004
Selenium	mg/L	**0.005**	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	mg/L	**0.00005**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	mg/L	**0.008**	0.034	0.001	**0.013**	0.001	0.006	**0.009**	0.006	0.002	0.003	0.002	0.003	**0.009**	0.003	0.004	**0.032**	**0.009**

Notes: Reported metal concentrations for the current AEMR Period are from filtered samples.

1. **Bold** indicates DGV exceeded, underlined indicates baseline range exceeded. NM denotes not monitored or not provided in the baseline data set.
2. The 80th percentile values at Sawyers Swamp Creek upstream of SSCAD (monitoring site SS5) calculated using data from 22 samples collected between 15 December 2021 to 21 July 2022 (all parameters); plus data from samples collected between 2013 to December 2021 that are available for pH (51 samples), EC (47 samples), turbidity (48 samples), boron (3 samples), copper (4 samples), manganese (45 samples), vanadium (28 samples) and zinc (28 samples) - note these samples are in addition to the 22 samples mentioned above.

4.2.6 Coxs River

The Coxs River is a major tributary to the Hawkesbury-Nepean system. The river flows generally in a southerly direction through parts of the Central Tablelands and Blue Mountains regions of NSW. It has a total catchment area of 1,450 km^2 and ultimately flows into the northern arm of Lake Burragorang (also known as Warragamba Dam). Lake Burragorang is a major water supply dam for the Sydney metropolitan region and is managed by WaterNSW. The Site and LDP3 are in the upper portion of the river's catchment. The catchment area upstream of LDP3 is 178 km^2 and is characterised by a series of valleys that are generally bound by rugged forested escarpments and have cleared valley floors. Key tributaries include Wangcol, Sawyers Swamp, Pipers Flat and Kangaroo Creeks. The river is unregulated and has a variable streamflow regime. Baseflow is known to occur year-round, even during severe droughts such as the 2018–2020 drought (albeit at minimal rates). Seasonally, streamflow is highest in late winter and spring and lowest in late summer and autumn. The streamflow regime fits the definition of a permanent or perennial stream.

The Coxs River flows in a southerly direction past the western and south-western portions of the Site. Inflows into the river from the Site can occur via incidental discharges to Sawyers Swamp Creek and LDP3 discharges.

S1 and WX12 are monitoring locations within the Coxs River. WX12 is located upstream of the Sawyers Swamp Creek confluence and is the upstream reference location. The water quality at WX12 is potentially impacted by anthropogenic influences in the upstream catchment, including coal mining, coal ash dams and agriculture. S1 is located downstream of the Sawyers Swamp Creek confluence, Sawyers Swamp Creek is the only material inflow between WX12 and S1. The water quality in the Coxs River between S1 and LDP3 monitoring points can potentially be impacted by inflows from Pipers Flat creek and stormwater runoff and seepage from the township of Lidsdale. A WaterNSW operated stream gauge (212054) is located immediately downstream of WX9.

14 samples were collected from WX12 and S1 over the AEMR Period. Table 4.9 provides the minimum, median and maximum values for each analyte and compares the results to DGVs and the baseline water quality range. DGVs had their hardness adjustment applied according to Section 4.1.2.

The results indicate that the water quality in Coxs River is similar at S1 and WX12. Inflows from Sawyers Swamp Creek are generally beneficial for Coxs River water quality. The basis for this is that the concentrations (or values) of all analytes shown in Table 4.8 at Sawyers Swamp Creek (WX7) are either below DGVs and/or are similar to or lower than at the upstream reference location (WX12).

The water quality concentrations generally do not exceed the DGV and baseline range, and are consistent with water quality in previous AEMR periods (see time-series charts in Annexure A).

Table 4.9 Coxs River – results summary

	Units	DGV	Baseline range[2]	WX12			S1		
				Min	Max	Median	Min	Max	Median
Physico-chemical parameters									
pH	-	6.5–8.0	5.6 – 7.0	6.73	7.19	7.02	6.86	7.39	7.165
EC	µS/cm	350	1,224	**700**	**2103**	**1508**	**627**	**1997**	**1462.5**
DO	mg/L	-	NM	6.53	12.38	8.115	6.89	12.2	8.375
Turbidity	mg/L	-	24	49	198.7	138.4	37	181	124
Total dissolved solids	NTU	-	NM	460	1520	1190	404	1670	1040
Total nitrogen	mg/L	-	NM	0.2	0.6	0.3	0.1	0.4	0.3
Total phosphorus	mg/L	-	NM	0.01	0.07	0.03	<0.01	0.06	0.03

	Units	DGV	Baseline range[2]	WX12			S1		
				Min	Max	Median	Min	Max	Median
Anions									
Chloride	mg/L	-	NM	38	124	85	35	118	75
Fluoride	mg/L	-	NM	0.1	0.5	0.2	0.1	0.3	0.2
Sulfate	mg/L	-	NM	250	817	658	226	806	564
Cations									
Sodium	mg/L	-	NM	73	259	180	65	241	157
Potassium	mg/L	-	NM	10	28	19	9	27	18
Calcium	mg/L	-	NM	31	108	81	27	102	69
Magnesium	mg/L	-	NM	21	76	56	19	72	49
Metals[1]									
Aluminium	mg/L	0.055	0.030	<0.01	0.01	<0.01	<0.01	0.01	<0.01
Antimony	mg/L	0.009	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	mg/L	0.013	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	mg/L	-	0.025	0.014	**0.027**	0.02	0.017	**0.03**	0.022
Boron	mg/L	0.94	0.300	0.14	0.6	0.41	0.13	0.58	0.345
Cadmium[2]	mg/L	0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	mg/L	0.0014	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Iron	mg/L	0.28	0.20	<0.05	0.14	0.08	<0.05	0.1	0.07
Lead[2]	mg/L	0.0155	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	mg/L	1.90	0.91	0.433	1.2	0.651	0.09	0.725	0.287
Mercury	mg/L	0.00006	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Molybdenum	mg/L	0.034	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel[2]	mg/L	0.030	0.091	**0.042**	**0.145**	**0.1**	**0.037**	**0.125**	**0.074**
Selenium	mg/L	0.005	<0.001	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
Silver	mg/L	0.00005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc[2]	mg/L	0.022	0.038	0.005	**0.047**	0.017	0.012	**0.028**	0.0155

Notes: Reported metal concentrations for the current AEMR Period are from filtered samples.

1. **Bold** indicates DGV exceeded, underlined indicates baseline range exceeded. NM denotes not monitored or not provided in the baseline data set.
2. DGV indicate analytes with hardness adjustment applied.
3. The 80th percentile values at Coxs River (monitoring site WX12) have been calculated using data from 22 samples collected between 16 August 2022 to 16 August 2024 (all parameters).

4.3 Summary

The surface water quality results for the AEMR Period indicate that:

- Water quality trends in Lidsdale Cut and the SSCAD are consistent with recent AEMR periods (i.e. 2018 to the current period). Lidsdale Cut and SSCAD are part of the Site's contaminated water management system and hold water that is known to be ash affected.
- The water quality in Dump Creek was consistent with ash affected water during dry conditions. It is interpreted that surface water runoff in the Dump Creek catchment is clean and that seep(s) of ash affected water may impact water quality during dry conditions when the streamflow is minimal.
- The water quality in Sawyers Swamp Creek downstream of the Site (WX7) is generally consistent with clean water. There is a variation to water quality monitored in the creek changing from upstream to downstream.
- The water quality in Coxs River is not affected by the inflows from Sawyers Swamp Creek.

GPM continue to progressively improve the water management system through implementing the Action Plan commitments and feasibility assessment recommendations.

5 Groundwater quality review

This chapter reviews groundwater quality data from the OEMP monitoring locations over the AEMR Period. It includes descriptions of the hydrogeological context of the Site, monitoring requirements and assessment criteria established in the OEMP and presents and discusses the groundwater quality data.

5.1 Hydrogeological context

The following sections provide an overview of the groundwater systems within the Site. A more detailed description of the groundwater systems is provided in the Initial Groundwater Characterisation Report (EMM 2023a) that was issued to the EPA in September 2023 to address EPL condition U1 and more recently the Groundwater conceptualisation update (EMM 2026e).

5.1.1 Regional

A regional groundwater system occurs in the Illawarra Coal Measures (ICM). Multiple aquifers occur within the different bedrock geologies. Immediately below the SSCAD and KVAR/KVAD ash emplacement areas, the primary aquifer is within the Lithgow coal seam (or at higher elevations potentially above the Lidsdale coal seam). Regional dip of the strata is to the east.

Previous studies suggest the groundwater flow direction through the Narrabeen Group Sandstones and Upper ICM across the Site is to the west towards the Lidsdale Cut and Sawyers Swamp Creek/Coxs River (EMM 2023a).

5.1.2 Local

A local aquifer exists within the alluvial/colluvial/weathered bedrock strata along the original line of Sawyers Swamp Creek. This system is more pronounced in the lower catchment areas of Sawyers Swamp Creek and Dump Creek towards the Coxs River. Groundwater flow is to the west. This system is naturally recharged by rainfall and losses from connected creeks and perched groundwater systems. Groundwater discharge is via evapotranspiration and baseflow losses to streams in lower catchment areas.

5.1.3 Perched

Perched groundwater systems are present in the SSCAD, KVAD and KVAR. The groundwater conceptualisation update (EMM 2026a) evaluated each of the ash emplacements with respect to groundwater interactions. A summary of the outcomes were documented:

For SSCAD:

- Groundwater generally flows east to west within the SSCAD groundwater system, generally following the natural fall of topography under the SSCAD ash deposits.
- The groundwater system within the SSCAD ash is highly connected to the underlying weathered ICM, evidenced by very similar groundwater level trends and limited (<0.5 m) vertical gradient.
- Groundwater levels in SSCAD ash and underlying weathered ICM show similar response to rainfall deviations (i.e. trending upward following above average rainfall events), suggesting groundwater levels are partly impacted by climate. Site water management is also a key mechanism for groundwater level fluctuations.

For KVAD:

- Flow within the KVAD groundwater system is highly localised, with minimal horizontal flow and discharge generally occurring downward to the connected Lidsdale Seam groundwater system. The ash within KVAR is typically dry, with minor percolated water present following large rainfall events.
- Ash within KVAD is saturated and groundwater flow is vertically downward to the Lidsdale Seam.
- The vertical gradient between KVAD and the Lidsdale Seam is approximately 1:4, indicating hydraulic connection is low but present, likely behaving like a 'leaky' connected system.
- Groundwater levels in the KVAD and Lidsdale Seam (near KVAD) show limited response to rainfall, suggesting water management measures (such as irrigation or dewatering) are key mechanisms for groundwater level changes.

For KVAR:

- The ash within KVAR is typically dry, with minor percolated water present following large rainfall events or prolonged irrigation.

In summary, groundwater recharge is via rainfall infiltration, possible upgradient groundwater inflows and leakage from any unlined ponds within the fill areas. Groundwater discharge is via evapotranspiration, seepages to catch drains and ponds, and leakage into watercourse and the local and regional groundwater systems.

5.2 OEMP monitoring requirements

The OEMP was approved by DPHI during the AEMR 2025-2026 reporting period on 9 April 2026.

5.2.1 Monitoring locations

The environmental monitoring plan established in the OEMP identifies 21 groundwater monitoring locations for 6-monthly water quality sampling and 13 bores are to be monitored for water level only. Table 5.1 describes each of these monitoring locations, their hydrogeological context and associated monitoring requirements. The monitoring locations are shown in Figure 5.1.

Table 5.1 Groundwater monitoring requirements

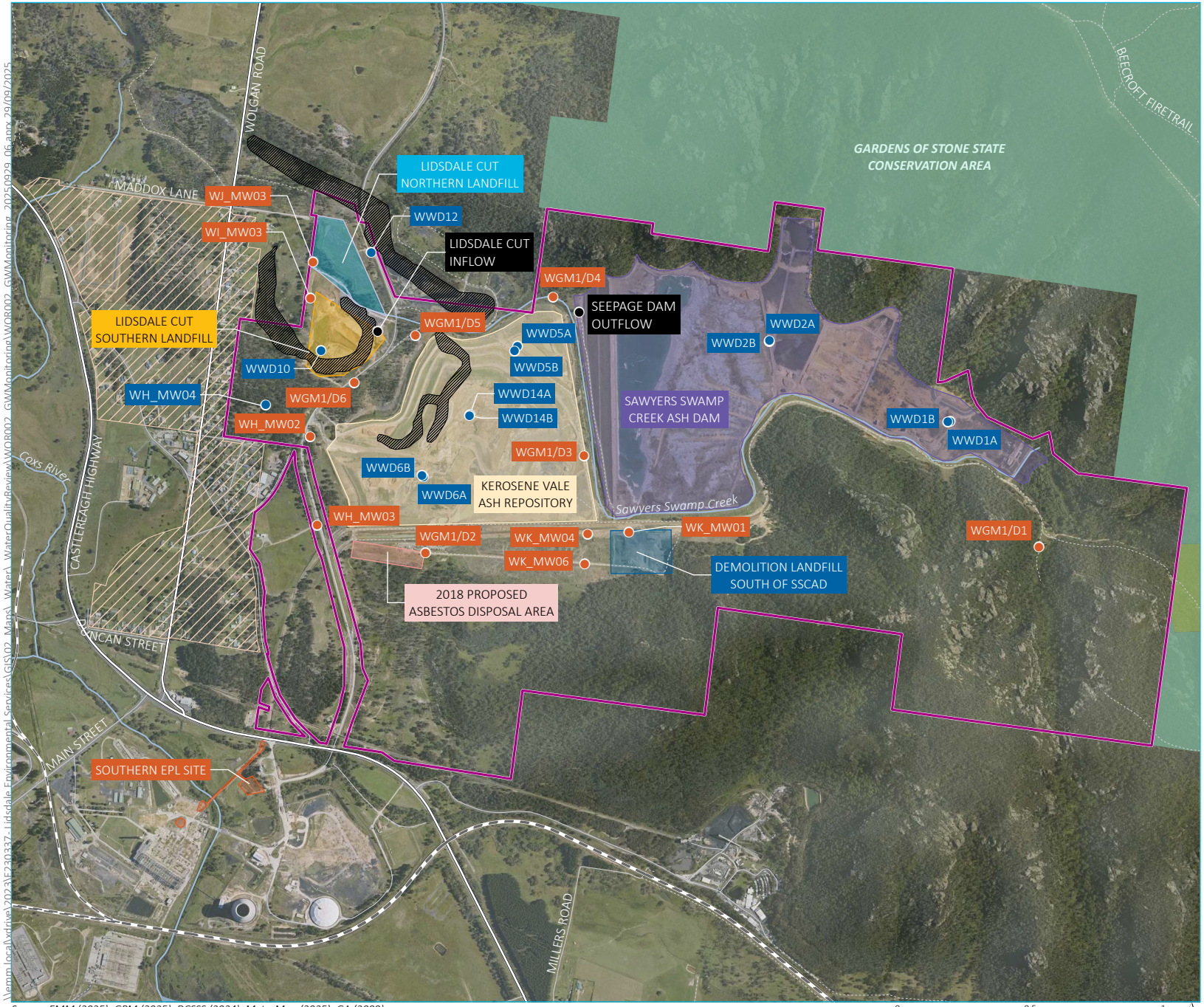
Monitoring location	Easting	Northing	Ground elevation ([2]mAHD)	Screen interval ([3]mbgl)	Description	Screened lithology and groundwater system	Monitoring frequency	Monitoring analytes
WGM1/D1	231988	6301410	954.50	2.6-9.0	Groundwater monitoring bore located to the south-east of SSCAD.	Clayey sand—local groundwater	6-monthly monitoring	Water quality (see Table 5.2) and water level via manual dips
WGM1/D2	229680	6301388	928.50	5.6-18.0	Groundwater monitoring bore located to the south of KVAR/KVAD.	Siltstone/sandstone—regional groundwater		
WGM1/D3	230276	6301753	930.19	4.1-17.5	Groundwater monitoring bore located between SSCAD and KVAR/KVAD.	Siltstone/sandstone/coal—regional groundwater		
WGM1/D4	230160	6302350	907.06	4.1-6.0	Groundwater monitoring bore located to the north of KVAR/KVAD and immediately to the west of the northern side of the SSCAD embankment.	Weathered sandstone —local groundwater		
WGM1/D5	229642	6302206	904.26	4.1-14.3	Groundwater monitoring bore located to the north-west of KVAR/KVAD.	Sandstone/coal—regional groundwater		
WGM1/D6	229412	6302028	907.04	2.5-14.9	Groundwater monitoring bore located to the west of KVAR/KVAD.	Sandstone/mudstone/coal—regional groundwater		
WH_MW02	229246	6301826	923.81	24.0-27.0	Groundwater monitoring bore located to the west of KVAR/KVAD.	Sandstone – regional groundwater		
WH_MW03	229272	6301492	920.62	16.0-19.0	Groundwater monitoring bore located to the south-west of KVAR/KVAD.	Coal/siltstone-regional aquifer		
WJ_MW03	229257	6302482	896.39	4.5-7.5	Groundwater monitoring bore located to the north-west of KVAR/KVAD and adjacent to Sawyers Swamp Creek.	Sandstone / siltstone – local groundwater		
WK_MW01	230445	6301466	944.38	5.0-9.0	Groundwater monitoring bore located to the south of SSCAD pond	Shale/siltstone-local groundwater		
WK_MW04	230290	6301459	936.59	3.0-6.0	Groundwater monitoring bore located to the south-east of KVAR/KVAD.	Shale-local groundwater		

Monitoring location	Easting	Northing	Ground elevation ([2]mAHD)	Screen interval ([3]mbgl)	Description	Screened lithology and groundwater system	Monitoring frequency	Monitoring analytes
WK_MW06	230279	6301346	948.31	26.0-30.0	Groundwater monitoring bore located to the south-east of KVAR/KVAD.	Siltstone/sandstone – regional groundwater		
WWD1A	231654	6301882	943.10	11.5-14.5	Groundwater nested monitoring bore located on the SSCAD	Ash – perched groundwater		Water level only (logger and manual dips)
WWD1B	231645	6301881	943.53	20.5-23.5	Groundwater nested monitoring bore located on the SSCAD	Siltstone – regional groundwater		
WWD2A	230974	6302184	943.04	20.5-23.5	Groundwater nested monitoring bore located on the SSCAD	Ash - perched groundwater		
WWD2B	230974	6302187	943.08	29.0-32.0	Groundwater nested monitoring bore located on the SSCAD	Shale- regional groundwater		
WWD5A	230026	6302165	917.60	4.5-7.5	Groundwater nested monitoring bore located on the KVAR adjacent the northern collection pond	Ash - perched groundwater		
WWD5B	230015	6302148	921.06	17.5-20.8	Groundwater nested monitoring bore located on the KVAR adjacent the northern collection pond	Siltstone - regional groundwater		
WWD6A	229672	6301674	942.21	26.7-29.7	Groundwater nested monitoring bore located on the KVAD	Ash - perched groundwater		
WWD6B	229667	6301680	942.03	30.3-34.3	Groundwater nested monitoring bore located on the KVAD	Coal - regional groundwater		
WWD10	229287	6302149	905.25	8.9-11.9	Groundwater monitoring bore located on Lidsdale cut southern landfill	Fill- Coal chitter		
WWD12	229476	6302519	901.42	6.6-9.6	Groundwater monitoring bore located near Lidsdale cut northern landfill	Coal - regional groundwater		
WWD14A	229847	6301909	940.90	17.6-20.6	Groundwater nested monitoring bore located on the KVAR/KVAD	Ash - perched groundwater		
WWD14B	229845	6301905	940.86	22.6-25.6	Groundwater nested monitoring bore located on the KVAR/KVAD	Siltstone - regional groundwater		

Monitoring location	Easting	Northing	Ground elevation ([2]mAHD)	Screen interval ([3]mbgl)	Description	Screened lithology and groundwater system	Monitoring frequency	Monitoring analytes
WH_MW04	229080	6301944	908.13	49.0-55.0	Groundwater monitoring bore located on the western property boundary	Siltstone – regional groundwater		
MW102S	229625	6300714	905.10	5.9-8.9	Groundwater monitoring bore located within the south western portion of Cell B of SSCAD			Water quality (see Table 5.2) and water level via manual dips
MW102D	229627	6300704	905.03	19.7-25.7				
MW109D	229061	6301498	898.73	23.2-29.2				
MW118[1]	229237	6302344	902.66	6.5-9.5	Groundwater monitoring bore located to the north-west of KVAR/KVAD.	Clayey sand – local groundwater		
CA1	230919	6301963	941.46	0.5-3.5	Groundwater monitoring bore located within the central eastern portion of Cell A of SSCAD	Sawyers Swamp Creek Ash Dam		
CA2	230818	6302012	941.84	0.5-3.5	Groundwater monitoring bore located within the central eastern portion of Cell A of SSCAD	Sawyers Swamp Creek Ash Dam		
CB1	231088	6302060	942.85	1.5-4.5	Groundwater monitoring bore located within the south eastern portion of Cell B of SSCAD	Sawyers Swamp Creek Ash Dam		
CB2	231134	6302152	942.74	1.25-4.25	Groundwater monitoring bore located within the south eastern portion of Cell B of SSCAD	Sawyers Swamp Creek Ash Dam		
CB3	231173	6302242	942.70	0.8-3.8	Groundwater monitoring bore located within the south eastern portion of Cell B of SSCAD	Sawyers Swamp Creek Ash Dam		

Notes:

1. WI_MW03 was damaged in November 2023 so a replacement EPL monitoring location was established in April 2024 (MW118) (EMM 2024b).
2. Meters above Australian Height Datum
3. Meters below ground level



KEY

- Site boundary
- Nearest sensitive (residential) receiver

Groundwater bore location

- Water level only- data logger
- Water quality and water level
- Groundwater flow meter
- Historical open cut pit

Site layout

- 2018 proposed asbestos disposal area
- Demolition landfill south of SSCAD
- Kerosene Vale ash repository
- Lidsdale cut northern landfill
- Lidsdale cut southern landfill
- Lidsdale cut
- Sawyers Swamp Creek ash dam
- Southern EPL site

Existing environment

- Rail line
- Major road
- Minor road
- Vehicular track
- Named watercourse
- Named waterbody
- NPWS reserve
- State forest

Source: EMM (2025); GPM (2025); DCSSS (2024); MetroMap (2025); GA (2009)

0 0.5 1 km

GDA2020 MGA Zone 56

N

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Groundwater monitoring locations

Kerosene Vale Ash Repositories
Annual Water Quality Review
Figure 5.1

EMM
creating opportunities

5.2.2 Monitoring approach

Table 5.2 provides the groundwater analytes that are established in the Groundwater sub-plan OEMP (Table B1 in Annexure B).

Table 5.2 Groundwater monitoring analytes – OEMP

Category	Analytes[1]	Sampling and analysis methods
Physio-chemical parameters	pH, dissolved oxygen (DO), Temperature, specific conductance (SPC), total dissolved solids (TDS), Redox Potential (ORP)	Analysis is to be undertaken in-situ using a calibrated water quality meter.
	Total dissolved solids (lab)	Analysis is to be undertaken by a NATA-certified laboratory.
Anions	Bicarbonate, carbonate, chloride, fluoride, sulfate	Analysis is to be undertaken by a NATA- certified laboratory.
Cations	Sodium, potassium, calcium, magnesium	Analysis is to be undertaken by a NATA- certified laboratory.
Dissolved metals and metalloids	Aluminium (Al), arsenic (As) [2], boron (B), cadmium (Cd), chromium (Cr) [α], copper (Cu), lead (Pb), manganese (Mn), mercury (Hg), nickel (Ni), selenium (Se), silver (Ag), and zinc (Zn)	Samples are to be filtered using a 0.45 µm filter. Analysis is to be undertaken by a NATA-certified laboratory.
PAHs	Benzo(a)pyrene	Analysis is to be undertaken by a NATA- certified laboratory.

Notes:

1. Sourced from OEMP Table B1 in Appendix B plus additional analytes noted in the surface and groundwater water quality sub-plans.
2. Speciation of arsenic and chromium will be undertaken in the following sampling round if significant arsenic or chromium contamination is identified in the dissolved metals and metalloids groundwater samples for a particular bore. *A significant level is defined by the ANZECC 2000 guideline value for 95% Freshwater species protection for the speciation of the lower guideline value. For arsenic this is defined by As(V) at 13 µg/L and for chromium this is defined by Cr(VI) at 1 µg/L.* Assessment criteria.

The groundwater quality sub-plan (Appendix B – Groundwater sub-plan OEMP) specifies that groundwater monitoring results are to be compared to the higher of:

- the baseline data (Appendix C – Groundwater sub-plan OEMP)) for the Trigger Action Response Plan (Appendix B Table B.5 - Groundwater sub-plan OEMP)
- the 95% level of species protection (LOSP) default guideline values (DGVs), as presented in the ANZG 2018 Australian and New Zealand guidelines for Fresh and Marine Water Quality (ANZG 2018).

There are insufficient sample points at monitoring locations CA1, CA2, CB1, CB2, CB3, MW102S, MW102D and MW109D) and two groundwater flow monitoring sites (Seepage Dam Outflow and Lidsdale Cut Inflow) to establish a baseline data range for comparison during the AEMR Period. As a result, data from these locations will be compared to the ANZG 2018 DGVs instead.

Table 5.3 describes the groundwater assessment criteria for each monitoring location. Those water quality parameters not monitored have not been shown.

Table 5.3 Groundwater assessment criteria

	Units	DGV	Baseline range (Groundwater sub-plan OEMP, Table B4 in Appendix B)												
			WGM1/D 1	WGM1/D 2	WGM1/D 3	WGM1/D 4	WGM1/D 5	WGM1/D 6	WH_MW 02	WH_MW 03	MW118[3]	WJ_MW 03	WK_MW 01	WK_MW 04	WK_MW 06
Physico-chemical parameters															
pH	-	6.5–8.0	4.0-5.6	3.7-5.5	4.8-5.7	5.8-6.2	5.1-5.9	3.8-5.1	5.4-5.9	4.3-6.0	5.6-6.0	3.9-5.1	6.2-6.6	6.2-6.5	6.3-6.7
EC	µS/cm	350	210	523	725	1,600	1,473	1,016	476	299	512	1,328	1,980	2,910	1,115
Dissolved Metals															
Aluminium	mg/L	0.055	0.22	2.96	0.6	[1]0.055	1.15	8.82	[1]0.055	0.16	0.06	1.22	[1]0.055	0.02	0.02
Arsenic (III)	mg/L	0.024	[1]0.024	[1]0.024	[1]0.024	[1]0.024	[1]0.024	[1]0.024	[1]0.024	[1]0.024	[1]0.024	[1]0.024	[1]0.024	[1]0.024	0.062
Arsenic (V)	mg/L	0.013	[1]0.013	[1]0.013	[1]0.013	[1]0.013	[1]0.013	[1]0.013	[1]0.013	[1]0.013	[1]0.013	[1]0.013	[1]0.013	[1]0.013	0.062
Boron	mg/L	0.94	[1]0.94	[1]0.94	[1]0.94	1.44	3.07	[1]0.94	[1]0.94	[1]0.94	[1]0.94	[1]0.94	[1]0.94	[1]0.94	[1]0.94
Cadmium	mg/L	0.0055	[1]0.0055	[1]0.0055	[1]0.0055	[1]0.0055	[1]0.0055	[1]0.0055	[1]0.0055	[1]0.0055	[1]0.0055	[1]0.0055	[1]0.0055	[1]0.0055	[1]0.0055
Chromium (VI)	mg/L	0.001	0.002	0.001	0.002	[1]0.001	[1]0.001	0.001	[1]0.001	[1]0.001	[1]0.001	[1]0.001	[1]0.001	[1]0.001	0.003
Copper	mg/L	0.0014	0.008	0.01	0.006	0.002	[1]0.0014	0.013	[1]0.0014	0.004	0.002	0.015	[1]0.0014	0.005	[1]0.0014
Lead	mg/L	0.0034	[1]0.0034	[1]0.0034	0.004	[1]0.0034	[1]0.0034	0.006	[1]0.0034	0.002	[1]0.0034	0.008	[1]0.0034	[1]0.0034	[1]0.0034
Manganese	mg/L	1.9	[1]1.9	[1]1.9	[1]1.9	7.98	8.14	[1]1.9	2.61	1.96	[1]1.9	2.4	[1]1.9	[1]1.9	[1]1.9
Mercury	mg/L	0.00006	[1]0.0006	[1]0.0006	[1]0.0006	[1]0.0006	[1]0.0006	[1]0.0006	[1]0.0006	[1]0.0006	[1]0.0006	[1]0.0006	[1]0.0006	[1]0.0006	[1]0.0006
Nickel	mg/L	0.011	0.037	0.089	0.277	0.042	0.229	0.472	[1]0.011	0.038	0.106	0.178	0.025	0.029	[1]0.011
Selenium	mg/L	0.005	[1]0.011	[1]0.011	[1]0.011	[1]0.011	[1]0.011	[1]0.011	[1]0.011	[1]0.011	[1]0.011	[1]0.011	[1]0.011	[1]0.011	[1]0.011
Silver	mg/L	0.00005	[2]0.001	[2]0.001	[2]0.001	[2]0.001	[2]0.001	[2]0.001	[2]0.001	[2]0.001	[2]0.001	[2]0.001	[2]0.001	[2]0.001	[2]0.001
Zinc	mg/L	0.008	0.199	0.136	0.315	0.046	0.017	1.42	0.01	0.142	0.27	1.03	0.01	0.072	[1]0.008

	Units	DGV	Baseline range (Groundwater sub-plan OEMP, Table B4 in Appendix B)												
			WGM1/D 1	WGM1/D 2	WGM1/D 3	WGM1/D 4	WGM1/D 5	WGM1/D 6	WH_MW 02	WH_MW 03	MW118[3]	WJ_MW 03	WK_MW 01	WK_MW 04	WK_MW 06
Polyaromatic Hydrocarbons															
Benzoapyrene	µg/L	0.2	[1]0.2	[1]0.2	[1]0.2	[1]0.2	[1]0.2	[1]0.2	[1]0.2	[1]0.2	[1]0.2	[1]0.2	[1]0.2	[1]0.2	[1]0.2

Notes: NM denotes not monitored or not provided in the baseline data set.
1. Value has been amended to 95% Default Guideline Value (DGV), noting baseline concentrations were lower than DGV. 2. Contaminant concentration is unlikely given site history, trigger value set to limit of reporting. 3. WI_MW03 was damaged and has been replaced by MW118, the SSTV considers the dataset from both locations.

5.3 Results

Groundwater monitoring results for the AEMR Period are presented in Annexure C and discussed in this section. The groundwater quality results for each monitoring location are presented in table form and compared to the assessment criteria established in Section 5.2. The groundwater level results are presented as hydrographs in Annexure B. Assessment criteria for water levels have been established and are presented in the OEMP.

Results for key analytes from all groundwater monitoring locations are also presented as time-series charts that are provided in Annexure B. These charts show all results from 1 January 2018 to the end of the AEMR Period (recent AEMR periods) and can be used to establish water quality and level trends (i.e. increasing or decreasing concentrations and levels). The water quality results are presented and discussed for each groundwater monitoring location and the general water level trends are discussed on a site wide basis in the following sections.

5.3.1 Groundwater monitoring location WGM1/D1

Groundwater monitoring bore WGM1/D1 is located to the south-east of SSCAD (see Figure 5.1). The bore is screened in the local groundwater system (Table 5.1). The groundwater flow direction at this bore is interpreted to be to the north-west, towards SSCAD (EMM 2023a).

Two samples were collected from D1 over the period with required analytes being sampled and analysed.

The results indicate that the groundwater quality has a pH ranging between 4.59 to 5.6 and low salinity, which indicates surface water influences. No analytes exceeded SSTVs with the exception of electrical conductivity (EC) in May 2026.

The time-series charts provided in Annexure B indicate that the water quality over the AEMR Period was generally consistent with water quality in recent AEMR periods (i.e. 2018 to the current period).

5.3.2 Groundwater monitoring location WGM1/D2

Groundwater monitoring bore WGM1/D2 is located to the south of KVAR/KVAD (see Figure 5.1). The bore is screened in the regional groundwater system (Table 5.1). The groundwater flow direction at this bore is interpreted to be to the west (EMM 2023a). As the bore is located near the KVAR and downgradient from SSCAD, there is potential for groundwater quality impacts.

Two samples were collected from WGM1/D2 over the AEMR Period with required analytes analysed.

The groundwater quality is characterised as having a pH of 5.2 to 5.58 and salinity that is elevated relative to the DGV but within the baseline range. No analytes exceeded SSTVs with the exception of pH and EC in November 2025 and EC in May 2026. Concentrations of total dissolved solids (TDS), anions and cations and some metals were reported significantly higher than concentrations at monitoring bore D1 (which is located upgradient of SSCAD). Accordingly, groundwater at WGM1/D2 may be degraded, relative to baseline water quality.

The time-series charts provided in Annexure B indicate that the water quality over the AEMR Period was generally consistent with water quality in recent AEMR periods (i.e. 2018 to the current period).

5.3.3 Groundwater monitoring location WGM1/D3

Groundwater monitoring bore WGM1/D3 is located between SSCAD and KVAR (see Figure 5.1). The bore is screened in the regional groundwater system (Table 5.1). There is potential for groundwater quality impacts at this location due to its proximity to both the KVAR/KVAD and SSCAD.

The location was unable to be sampled in November 2025 due to monitoring equipment blocking the well. Well repairs and integrity investigations were undertaken in January with subsequent sampling. Three samples were collected from WGM1/D3 over the AEMR Period with required analytes analysed.

The groundwater quality is characterised as having a pH that ranges between 5.0 to 5.66 and salinity that is elevated relative to the DGV but within the baseline range. Lead and EC concentrations exceeded the SSTV in January 2026 with follow-up sampling in March reporting consistent EC and a reduced lead concentration that still exceeded the SSTV. The investigation report, completed in accordance with the trigger action response plan is presented in Section 6.2.3 of the AEMR. Given no SSTV has been developed for Iron, concentrations exceeded the DGV, with results reported within historical ranges. Concentrations of TDS, anions and cations and some metals were reported significantly higher than concentrations at monitoring bore WGM1/D1 (which is located upgradient of SSCAD). The groundwater at WGM1/D3 may be degraded relative to baseline water quality. It is noted that the parameters have been elevated relative to the baseline since 2017 when monitoring resumed.

Annexure B indicate that the water quality over the AEMR Period was generally consistent with water quality in recent AEMR periods (i.e. 2018 to the current period).

5.3.4 Groundwater monitoring location WGM1/D4

Groundwater monitoring bore WGM1/D4 is located to the north-east of the KVAD, to the west of the northern end of the SSCAD embankment and near the Sawyers Swamp Creek Diversion (see Figure 5.1). The bore is shallow and is screened in the local groundwater system (Figure 5.1). The groundwater flow direction at this bore is interpreted to be to the south-west, towards Sawyers Swamp Creek (EMM 2023a). There is potential for groundwater quality impacts at this location due to its proximity to the SSCAD embankment.

Three samples were collected from WGM1/D4 over the AEMR Period with required analytes analysed. The groundwater quality is characterised as having a pH that ranges between 6.1 and 6.2 and salinity that is elevated relative to the DGV but within the baseline range.

The concentration of boron exceeded the SSTVs in May 2026 and during follow-up investigations in July 2026. The investigation report, completed in accordance with the trigger action response plan is presented in Section 6.2.3 of the AEMR. Given no SSTV has been developed for Iron, concentrations exceeded the DGV, with results reported within historical ranges. Time-series charts provided in Annexure B indicate that the water quality over the AEMR Period was generally consistent with water quality in recent AEMR periods (i.e. 2018 to the current period).

5.3.5 Groundwater monitoring location WGM1/D5

Groundwater monitoring bore WGM1/D5 is located to the north-west of the KVAD and is near the Sawyers Swamp Creek Diversion (see Figure 5.1). The bore is screened in the regional groundwater system (see Figure 5.1) downgradient of the KVAR/KVAD and SSCAD, but upgradient from Lidsdale Cut. The groundwater flow direction at this bore is interpreted to be to the north-west, away from the KVAR/KVAD (EMM 2023b). There is potential for groundwater quality impacts at this location due to its proximity to the KVAR/KVAD.

Two samples were collected from WGM1/D5 over the AEMR Period with required analytes being tested on all occasions.

The groundwater quality is characterised as having a pH between 5.31 to 5.4 and salinity that is elevated relative to the DGV but within the baseline range. Concentrations of iron exceeded DGVs during both November 2025 and May 2026 rounds, with all other analytes within the SSTVs. Concentrations of chloride, fluoride, sulfate, sodium, potassium, calcium, magnesium and iron remained relatively elevated however most analytes reported decreased concentrations from the previous annual review period. The sustained elevated parameters suggest the groundwater quality at the bore location may be affected by KVAD seepage.

There is significant change in the recent groundwater quality compared to the previous AEMR periods (i.e. 2022 to 2024) with increases in concentrations of metals and salinity. However, the water quality is comparable to earlier AEMR periods between 2017 to 2022. This site will be continued to be monitored to determine if the water quality changes are attributed to changes in site operations.

5.3.6 Groundwater monitoring location WGM1/D6

Groundwater monitoring bore WGM1/D6 is located to the west of the KVAR/KVAD (see Figure 5.1). The bore is screened in the regional system (see Figure 5.1), downgradient of the KVAR/KVAD and SSCAD, but upgradient from Lidsdale Cut. The groundwater flow direction at this bore is interpreted to be to the west, away from the KVAR/KVAD (EMM 2023a). There is potential for groundwater quality impacts at this location due to its proximity to the KVAR/KVAD.

Two samples were collected from WGM1/D6 over the AEMR Period with required analytes being tested on both occasions.

The groundwater quality is characterised as having a pH ranging between 4.4 to 4.74 and salinity (as indicated by EC) that is elevated relative to the DGV but within the baseline range. Concentrations of iron exceeded DGVs during the May 2026 round, with all other analytes within the SSTVs. The water quality is consistent with ash affected water.

The time-series charts provided in Annexure B indicate that the water quality over the AEMR Period was generally consistent with water quality in recent AEMR periods (i.e. 2018 to the current period).

5.3.7 Groundwater monitoring location WH_MW02

Groundwater monitoring bore WH_MW02 is located on the down gradient western boundary of KVAR/KVAD (see Figure 5.1). The bore is screened in the regional – upper ICM groundwater system (Table 5.1). The groundwater flow direction at this bore is interpreted to be to the north-west (EMM 2023a).

Two samples were collected from WH_MW02 over the period with required analytes being tested on both occasions.

The results indicate that groundwater pH ranged from 5.7 to 5.72, and salinity was elevated relative to the DGV and baseline monitoring. Concentrations of iron exceeded DGVs and concentrations of EC exceeded SSTVs during both November 2025 and May 2026 rounds, with all other analytes within the SSTVs. The time-series charts provided in Annexure B indicate that the water quality over the AEMR Period was generally consistent with water quality in previous periods (i.e. 2018 to the current period).

5.3.8 Groundwater monitoring location WH_MW03

Groundwater monitoring bore WH_MW03 is located on the down gradient western boundary of KVAR/KVAD (see Figure 5.1). The bore is screened in the regional – upper ICM groundwater system (Table 5.1). The groundwater flow direction at this bore is interpreted to be to the north-west (EMM 2023a).

Two samples were collected from WH_MW02 over the period with required analytes being tested on both occasions.

The results indicate that groundwater pH ranged from 4.6 to 5.77, and salinity was elevated relative to the DGV and baseline monitoring. Concentrations of iron exceeded DGVs during both November 2025 and May 2026 rounds, with all other analytes within the SSTVs. The time-series charts provided in Annexure B indicate that the water quality over the AEMR Period was generally consistent with water quality in previous AEMR periods (i.e. 2018 to the current period).

5.3.9 Groundwater monitoring location MW118

Groundwater monitoring bore WI_MW03 was located on the down gradient northwestern boundary of KVAR/KVAD (see Figure 5.1). The bore is screened in the local groundwater system (Table 5.1). The groundwater flow direction at this bore is interpreted to be to the north-west (EMM 2023a). WI_MW03 was found to be damaged in November 2023 and was replaced in June 2024 and the new borehole is referred to as MW118.

Two samples were collected from MW118 over the period with required analytes being tested on both occasions.

The groundwater quality is characterised as having a pH of 5.6-5.71 and salinity (as indicated by EC) that is elevated relative to the DGV and baseline monitoring. Concentrations of EC exceeded SSTVs during the November 2025 round and concentrations of iron exceeded DGVs during the November 2025 round, with all other analytes within the SSTVs. The time-series charts provided in Annexure B indicate that the water quality over the AEMR Period was generally consistent with water quality in previous AEMR period.

5.3.10 Groundwater monitoring location WJ_MW03

Groundwater monitoring bore WJ_MW03 is located on the down gradient northwestern boundary of KVAR/KVAD (see Figure 5.1). The bore is screened in the local groundwater system (Table 5.1). The groundwater flow direction at this bore is interpreted to be to the north-west (EMM 2023a).

Three samples were collected from WJ_MW03 over the period with required analytes analysed.

The results indicate that groundwater pH of 4.45-5.1 and salinity (as indicated by EC) that is elevated relative to the DGV and during January 2026, baseline ranges. The concentrations of nickel and zinc exceeded the SSTVs in November 2025. The concentration of zinc was reported below SSTVs during follow-up investigations in January 2026 but the concentration of nickel exceeded the SSTV upon repeat sampling. The investigation report, completed in accordance with the trigger action response plan is presented in Section 6.2.3 of the AEMR. It is noted the nickel result was reported below the SSTV in May 2026. The time-series charts provided in Annexure B indicate that the water quality over the AEMR Period was generally consistent with water quality in previous 2024 AEMR period.

5.3.11 Groundwater monitoring location WK_MW01

Groundwater monitoring bore WK_MW01 is located on the down gradient southern boundary of SCCAD (see Figure 5.1). The bore is screened in the local - upper ICM groundwater system (Table 5.1). The groundwater flow direction at this bore is interpreted to be to the north-west (EMM 2023a).

Three samples were collected from WK_MW01 over the period with required analytes analysed. In November 2025, WK_MW01 had insufficient sample volume for field parameters and hence was resampled in January 2026.

The results indicate that groundwater pH ranged from 6.5 to 6.6 and salinity (as indicated by EC) that is elevated relative to the DGV. The concentration of iron exceeded DGVs during the May 2026 round, with all other analytes within the SSTVs. The time-series charts provided in Annexure B indicate that the water quality over the AEMR Period was generally consistent with water quality in previous 2025 AEMR period.

5.3.12 Groundwater monitoring location WK_MW04

Groundwater monitoring bore WK_MW04 is located on the down gradient southern boundary of KVAR/KVAD (see Figure 5.1). The bore is screened in the local - upper ICM groundwater system (Table 5.1). The groundwater flow direction at this bore is interpreted to be to the north-west (EMM 2023a).

Two samples were collected from WK_MW04 over the period with required analytes analysed.

The results indicate that groundwater pH ranged from 6 to 6.25 and salinity (as indicated by EC) that is elevated relative to the DGV but within the baseline range. The pH was lower that the baseline range and the concentration of iron exceeded DGVs during the May 2026 round, with all other analytes within the SSTVs. The time-series charts provided in Annexure B indicate that the water quality over the AEMR Period was generally consistent with water quality in previous 2025 AEMR period.

5.3.13 Groundwater monitoring location WK_MW06

Groundwater monitoring bore WK_MW06 is located in the vicinity of the demolition landfill south of the SCCAD (see Figure 5.1). The bore is screened in the local - upper ICM groundwater system (Table 5.1). The groundwater flow direction at this bore is interpreted to be to the north-west (EMM 2023a).

Two samples were collected from WK_MW06 over the period with required analytes analysed.

The results indicate that groundwater pH ranged from 6.1 to 6.55 and salinity (as indicated by EC) that is elevated relative to the DGV but within the baseline range. The bore has historically recorded a high concentration of arsenic and may be attributed the nearby landfill. Concentrations of arsenic were below the DGV and LOR throughout the annual reporting period. The concentration of iron exceeded DGVs during the May 2026 round, with all other analytes within the SSTVs. The time-series charts provided in Annexure B indicate that the water quality over the AEMR Period was generally consistent with water quality in the previous 2025 AEMR period.

5.3.14 Groundwater monitoring location MW102S

Groundwater monitoring bore MW102S is located south of KVAR and south-west of the SSCAD in the southern paddock (see Figure 5.1). The bore is screened in the regional groundwater system (Table 5.1).

Two samples were collected from MW102S over the period with required analytes analysed.

The results indicate that groundwater pH ranged from 5.4 to 5.6 and salinity (as indicated by EC) that is elevated relative to the DGV. The bore has limited historical records and as such, SSTVs have not been developed. Concentrations of pH, EC, iron, manganese, nickel and zinc (November 2025 only) were reported above the DGV throughout the annual reporting period. Insufficient data has been collected at the site to undertake analysis via time-series charts.

5.3.15 Groundwater monitoring location MW102D

Groundwater monitoring bore MW102D is located southwest of KVAR in the cottage paddock (see Figure 5.1). The bore is screened in the regional groundwater system (Table 5.1).

Two samples were collected from MW102D over the period with required analytes analysed.

The results indicate that groundwater pH ranged from 4.3 to 6.58 and salinity (as indicated by EC) that is elevated relative to the DGV. The bore has limited historical records and as such, SSTVs have not been developed. Concentrations of pH (May 2026 only), EC, aluminium (May 2026 only), iron (May 2026 only), and zinc were reported above the DGV throughout the annual reporting period. Insufficient data has been collected at the site to undertake analysis via time-series charts.

5.3.16 Groundwater monitoring location MW109D

Groundwater monitoring bore MW109D is located south of KVAR and south-west of the SSCAD in the southern paddock (see Figure 5.1). The bore is screened in the regional groundwater system (Table 5.1).

Two samples were collected from MW109D over the period with required analytes analysed.

The results indicate that groundwater pH ranged from 6.88 to 7.1 and salinity (as indicated by EC) that is elevated relative to the DGV. The bore has limited historical records and as such, SSTVs have not been developed. Concentrations of EC and iron (May 2026 only) were reported above the DGV throughout the annual reporting period. Insufficient data has been collected at the site to undertake analysis via time-series charts.

5.3.17 Groundwater monitoring location CA1

Groundwater monitoring bore CA1 is located in the central eastern portion Cell A of the SSCAD (see Figure 5.1). The bore is screened in the ash (Table 5.1).

Two samples were collected from CA1 over the period with required analytes analysed.

The results indicate that groundwater pH ranged from 4.39 to 6 and salinity (as indicated by EC) that is elevated relative to the DGV. The bore has limited historical records and as such, SSTVs have not been developed. Concentrations of pH, EC, fluoride, aluminium, arsenic (November 2025 only), boron, cadmium (November 2025 only), copper (November 2025 only), iron (May 2026 only), manganese, nickel, selenium (November 2025 only), and zinc were reported above the DGV throughout the annual reporting period. Insufficient data has been collected at the site to undertake analysis via time-series charts.

5.3.18 Groundwater monitoring location CA2

Groundwater monitoring bore CA2 is located in the central eastern portion Cell A of the SSCAD (see Figure 5.1). The bore is screened in the ash (Table 5.1).

Two samples were collected from CA2 over the period with required analytes analysed.

The results indicate that groundwater pH was 5.1 and salinity (as indicated by EC) that is elevated relative to the DGV. The bore has limited historical records and as such, SSTVs have not been developed. Concentrations of pH, EC, fluoride, aluminium, boron, cadmium, copper, manganese, nickel and zinc were reported above the DGV throughout the annual reporting period. Insufficient data has been collected at the site to undertake analysis via time-series charts.

5.3.19 Groundwater monitoring location CB1

Groundwater monitoring bore CB1 is located in the south-eastern portion Cell B of the SSCAD (see Figure 5.1). The bore is screened in the ash (Table 5.1).

Two samples were collected from CB1 over the period with required analytes analysed.

The results indicate that groundwater pH ranged from 5.47 to 8.3 and salinity (as indicated by EC) that is elevated relative to the DGV. The bore has limited historical records and as such, SSTVs have not been developed. Concentrations of pH, EC, fluoride (May 2026 only), aluminium, boron, iron (May 2026 only), manganese, nickel and zinc were reported above the DGV throughout the annual reporting period. Insufficient data has been collected at the site to undertake analysis via time-series charts.

5.3.20 Groundwater monitoring location CB2

Groundwater monitoring bore CB2 is located in the central eastern portion Cell B of the SSCAD (see Figure 5.1). The bore is screened in the ash (Table 5.1).

Two samples were collected from CB2 over the period with required analytes analysed.

The results indicate that groundwater pH ranged from 5.2 to 5.22 and salinity (as indicated by EC) that is elevated relative to the DGV. The bore has limited historical records and as such, SSTVs have not been developed. Concentrations of pH, EC, fluoride (May 2026 only), aluminium, boron, copper (May 2026 only), iron (May 2026 only), manganese, nickel, selenium (November 2025 only) and zinc were reported above the DGV throughout the annual reporting period. Insufficient data has been collected at the site to undertake analysis via time-series charts.

5.3.21 Groundwater monitoring location CB3

Groundwater monitoring bore CB3 is located in the north-eastern portion Cell B of the SSCAD (see Figure 5.1). The bore is screened in the ash (Table 5.1).

Two samples were collected from CB3 over the period with required analytes analysed.

The results indicate that groundwater pH ranged from 5.3 to 6 and salinity (as indicated by EC) that is elevated relative to the DGV. The bore has limited historical records and as such, SSTVs have not been developed. Concentrations of pH, EC, aluminium, boron, copper (May 2026 only), iron, manganese, nickel, selenium (November 2025 only) and zinc were reported above the DGV throughout the annual reporting period. Insufficient data has been collected at the site to undertake analysis via time-series charts.

5.3.22 Groundwater levels

Groundwater levels are manually monitored at all monitoring bores with 13 bores additionally monitored with a data level logger (refer to Table 5.1). Groundwater level monitoring results for the reporting period are presented in Table C2 in the hydrographs (refer to Annexure B) are presented along with the cumulative rainfall departure (CRD) which shows how much total rainfalls deviate from the long-term average, showing trends of above average or below average rainfall.

Groundwater levels were reported below the SSTV range during:

- The November 2025 round at WGM1/D3, WWD14B, WWD5B.
- The January 2026 round at WGM1/D4, WWD2A, WWD2B.
- The May 2025 round at WGM1/D3, WWD2A, WWD2B, WWD5B, WWD6A and WWD6B.

The groundwater level trends indicate the following:

- Groundwater levels were consistent with historical trends and generally followed the CRD rainfall trend showing a decrease from September through to January 2026, increasing between February and March 2026 corresponding to the above average rainfalls, declining in April and stabilising again to the end of the AEMR period.
- WWD5A and WWD14A were predominantly dry during the AEMR period.
- At bores equipped with loggers, a more pronounced response to rainfall events were observed in bores in the SSCAD (WWD1A/B and WWD2A/B) and at WWD12.

5.4 Summary

With the approval by DPHI of the updated OEMP, an additional eight (8) monitoring locations have been included in the Operational groundwater monitoring program. These locations comprise monitoring wells in Cell A and B of SSCAD, targeting water within the ash and monitoring wells in the vicinity of the irrigation systems at the cottage paddock and the southern paddock. Given the limited available data available for these locations, SSTV have not yet been developed, and they have been assessed against 95% level of species protection (LOSP) default guideline values (DGVs), as presented in the Australian and New Zealand guidelines for Fresh and Marine Water Quality (ANZG 2018). The groundwater quality results for the AEMR Period indicate that

- The groundwater chemistry varied across the 21 groundwater monitoring bores. The salinity levels ranged from 184 to 2,733 µS/cm and pH ranged from 4.3 to 8.3. This variability is consistent with expectations given the bores are screened in multiple lithologies (refer to Figure 5.1) and is also consistent with the results from the prior AEMR Period (refer to time series graphs provided in Annexure B).

- The concentrations of several metals that are known to occur in ash affected water (copper, nickel and zinc) exceeded the DGVs at most groundwater monitoring bores. The highest concentrations of nickel, copper and zinc occurred at CA1 (located in the central eastern portion of Cell A of SSCAD). The pH bore CA1 was acidic, varying between 4.39 and 6. Previous identified trends comprising elevated nickel at WGM1/D6 and copper and zinc WJ_MW03 are consistent with previous results of AEMR periods.

- The arsenic concentration at CA1 was elevated in November 2025 (0.025 mg/L) relative to the DGV of 0.024 mg/L. Arsenic is not known to occur in ash affected water (EMM 2023a). The arsenic concentration was either below detection or the DGV at all other locations.

- The groundwater quality at bore WGM1/D3, located between SSCAD and KVAR, continues to show a degraded water quality compared to the baseline with elevated salinity and metal concentrations.

- The groundwater quality at bore WGM1/D5, located to the north-west and downgradient of the KVAD, has improved compared to the previous AEMR period (2024-2025) where it was reported with elevated EC and elevated concentrations of aluminium, nickel, zinc, manganese, boron, chloride fluoride, sulfate, sodium, potassium, calcium, magnesium and iron. The water quality during the current AEMR period is comparable to the period between 2022-2023 and will be continued to be monitored to determine if the changes are attributed to site operations.

- The groundwater level trends were consistent with historical trends and generally reflect the CRD. Twelve instances of groundwater level reported less than the SSTV (5th percentile) occurred across the November 2025, January and May 2026 monitoring rounds.

In summary, the groundwater quality trends during the AEMR Period were generally consistent with recent AEMR periods (i.e. 2018 to the current period).

Potential groundwater contamination sources, pathways and receptors are being investigated as part of the VMP process (see Section 1.3.4).

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EMM 2026b, *Kerosene Vale Ash Repositories and Surrounds: Water quality monitoring report (18 January 2026 to 17 July 2026)* prepared for Generator Property Management, EMM Consulting Pty Ltd, Newcastle

EMM 2026c. *Lidsdale Ash Repository: Construction Environmental Management Plan.*

EMM 2026d. *Lidsdale Ash Repository: Operational Environmental Management Plan.*

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Energy Australia 2018, *Wallerawang Ash Repository, Operational Environmental Management Plan October 2018*, Revision 3

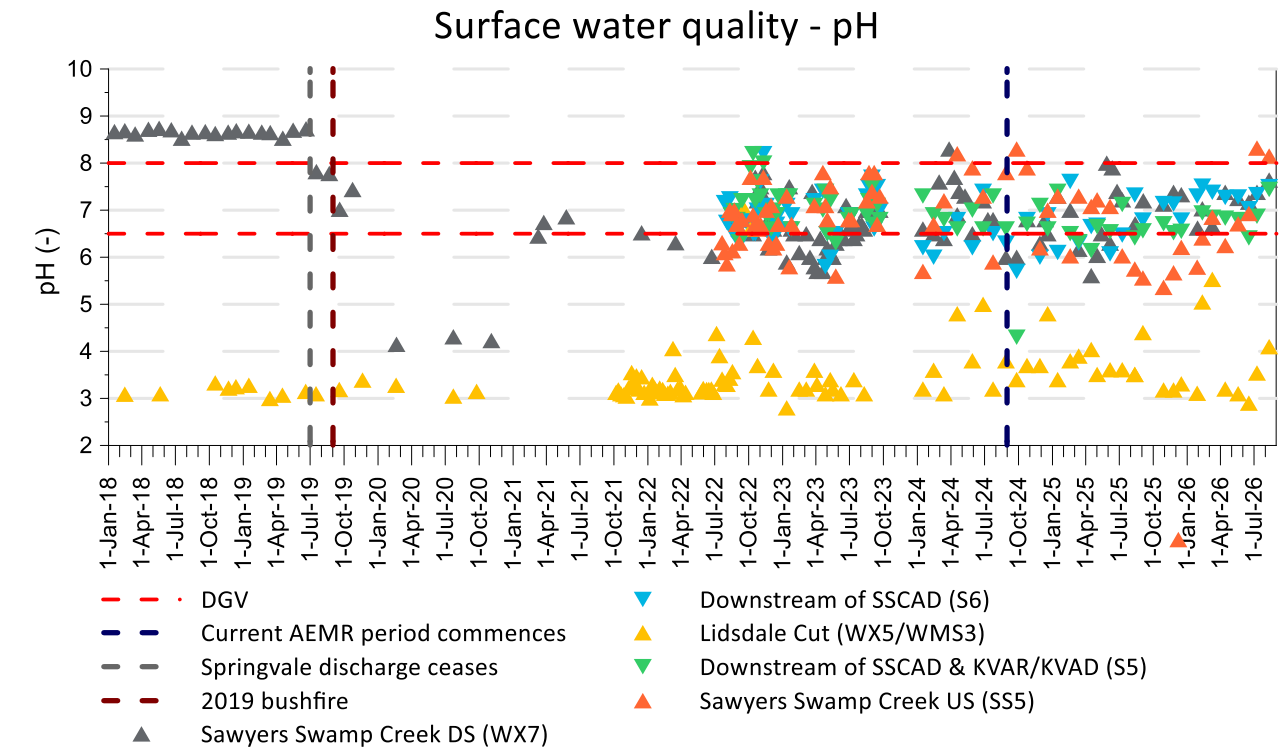
Annexure A

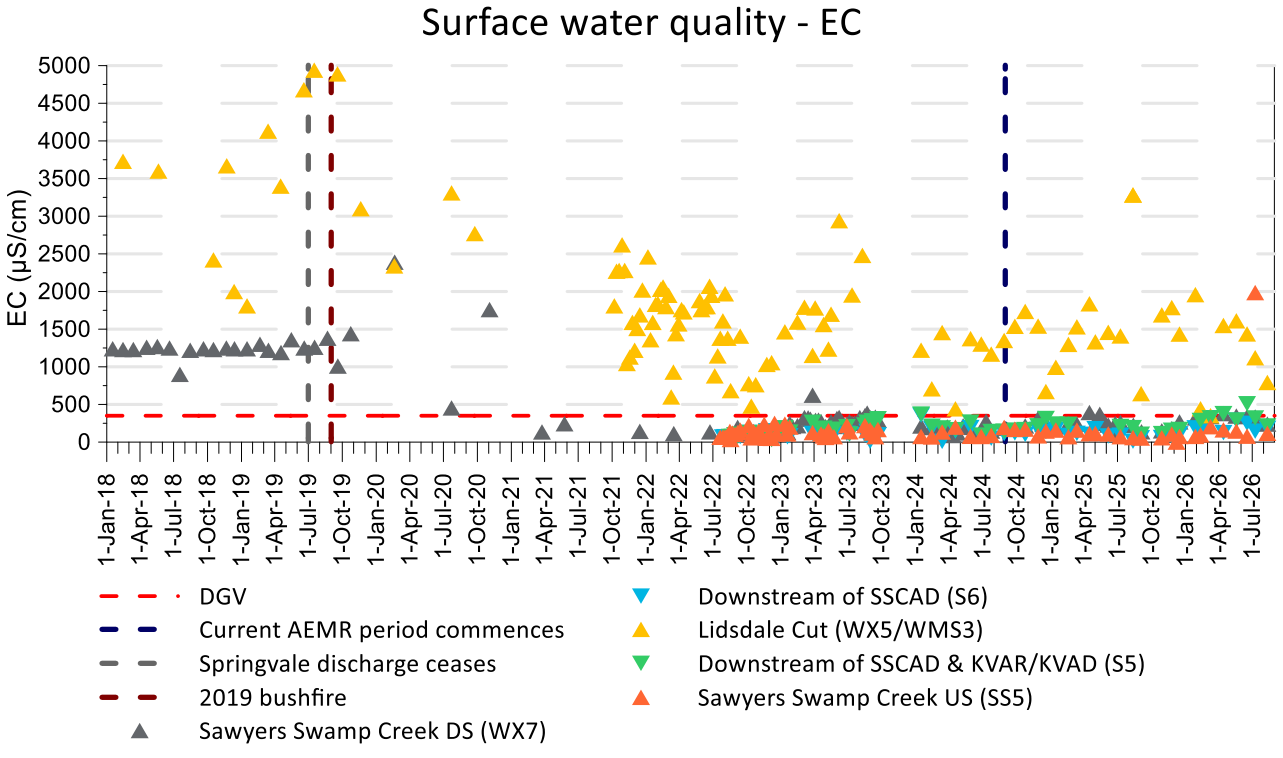
Surface water quality charts

EMM
creating opportunities

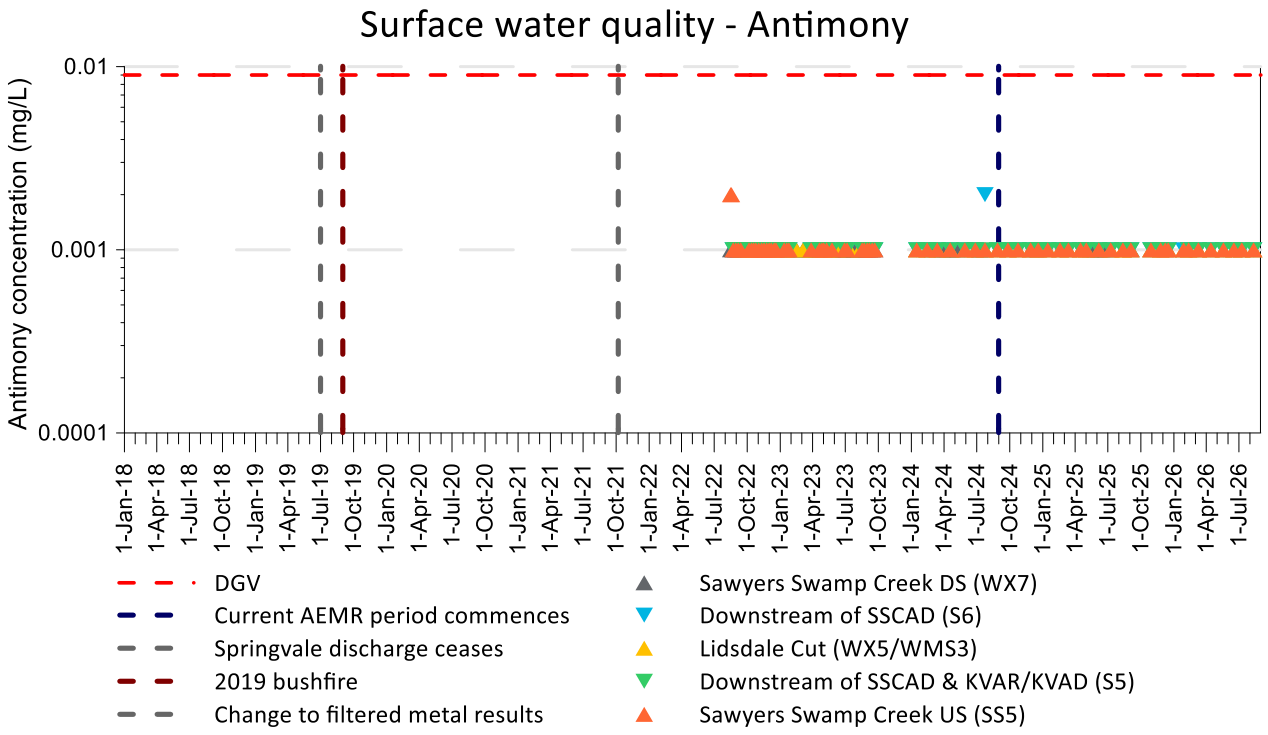
A.1 Sawyer Swamp Creek

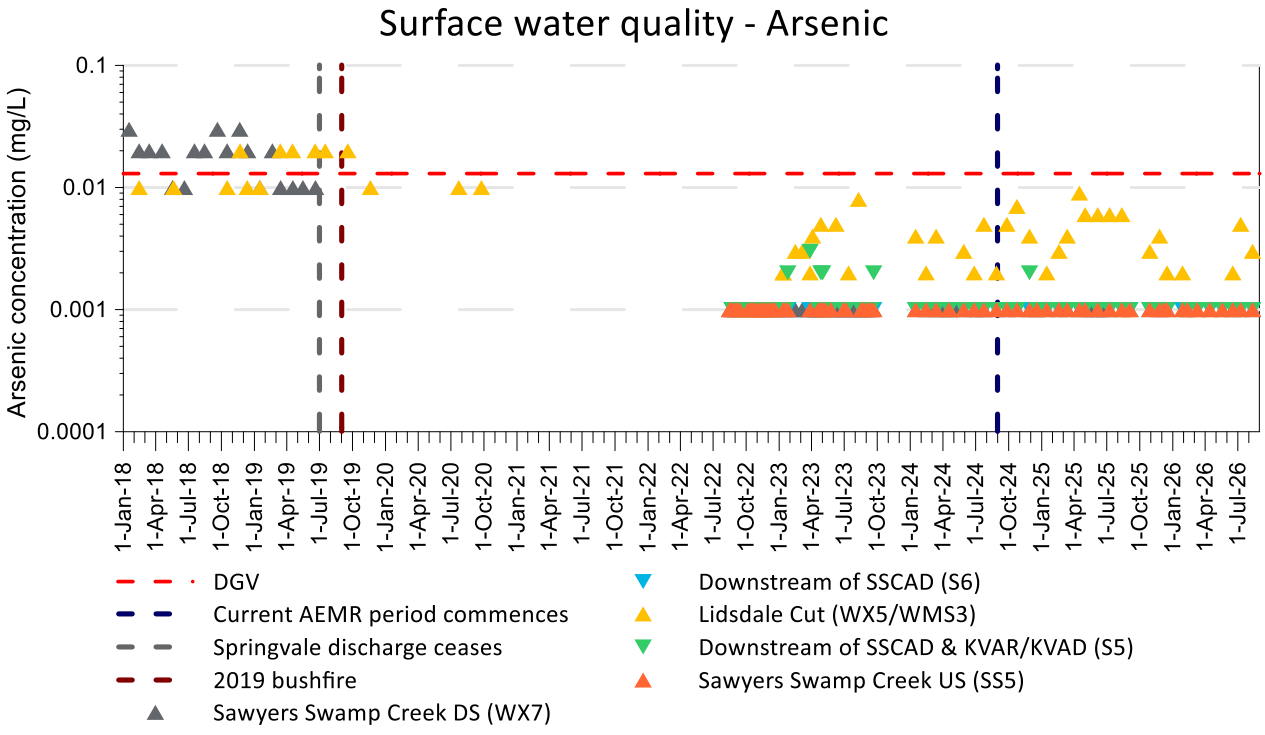
A.1.1 Physico-chemical parameters charts



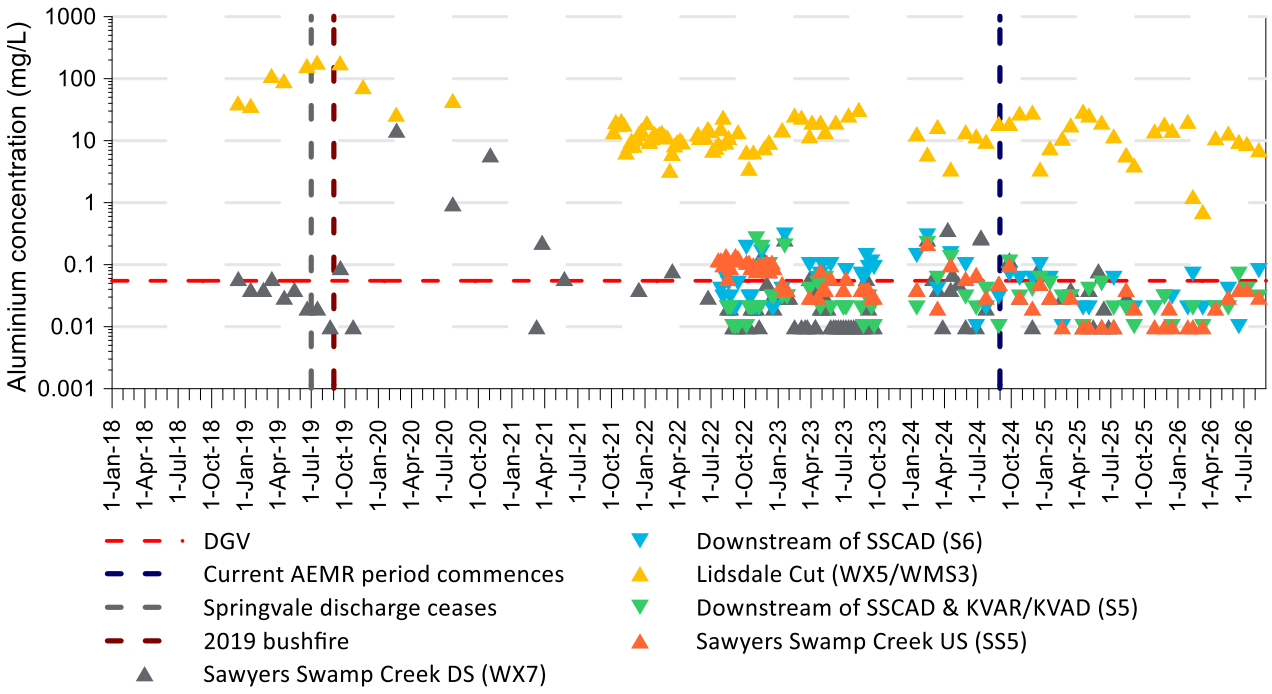


A.1.2 Metal charts

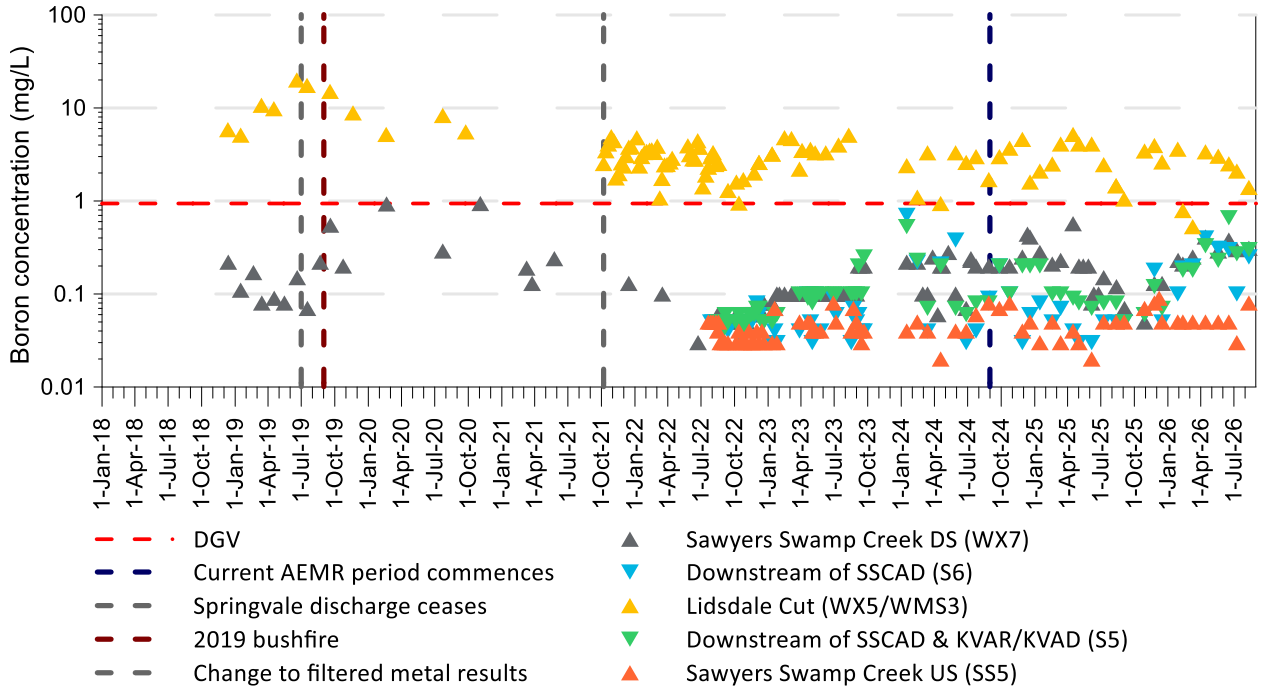


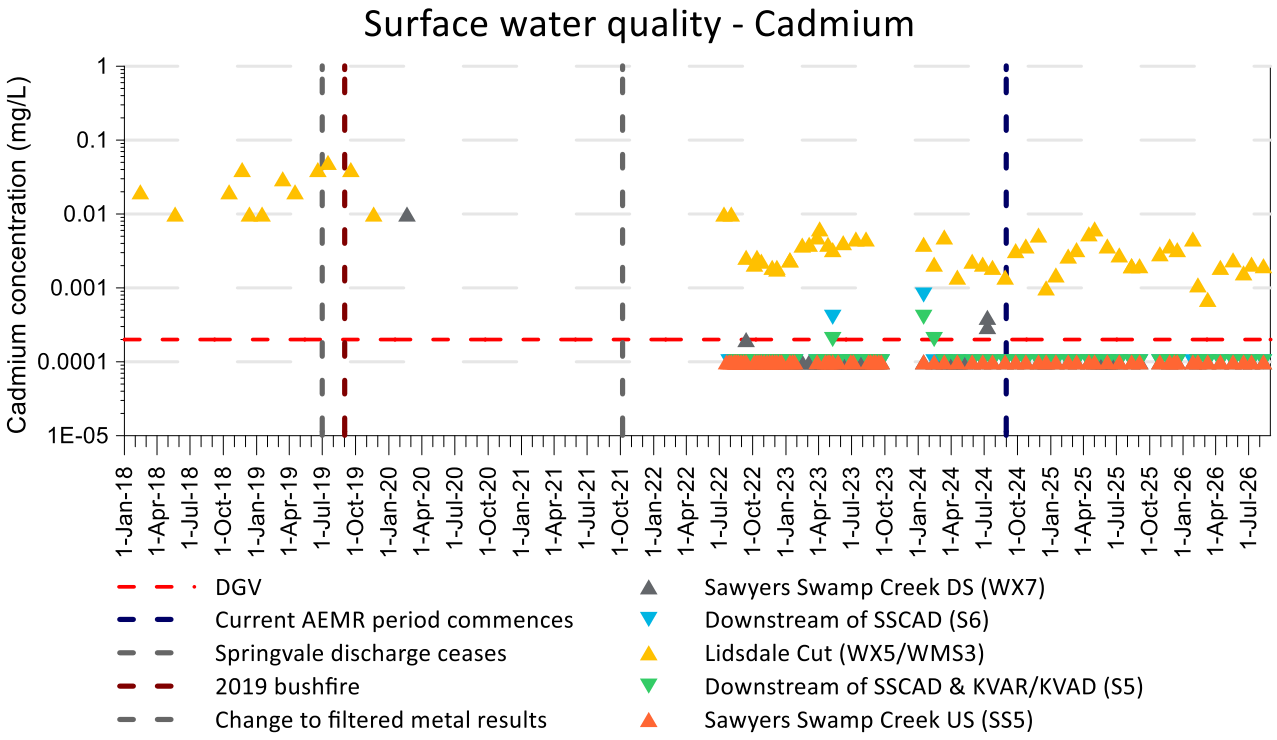


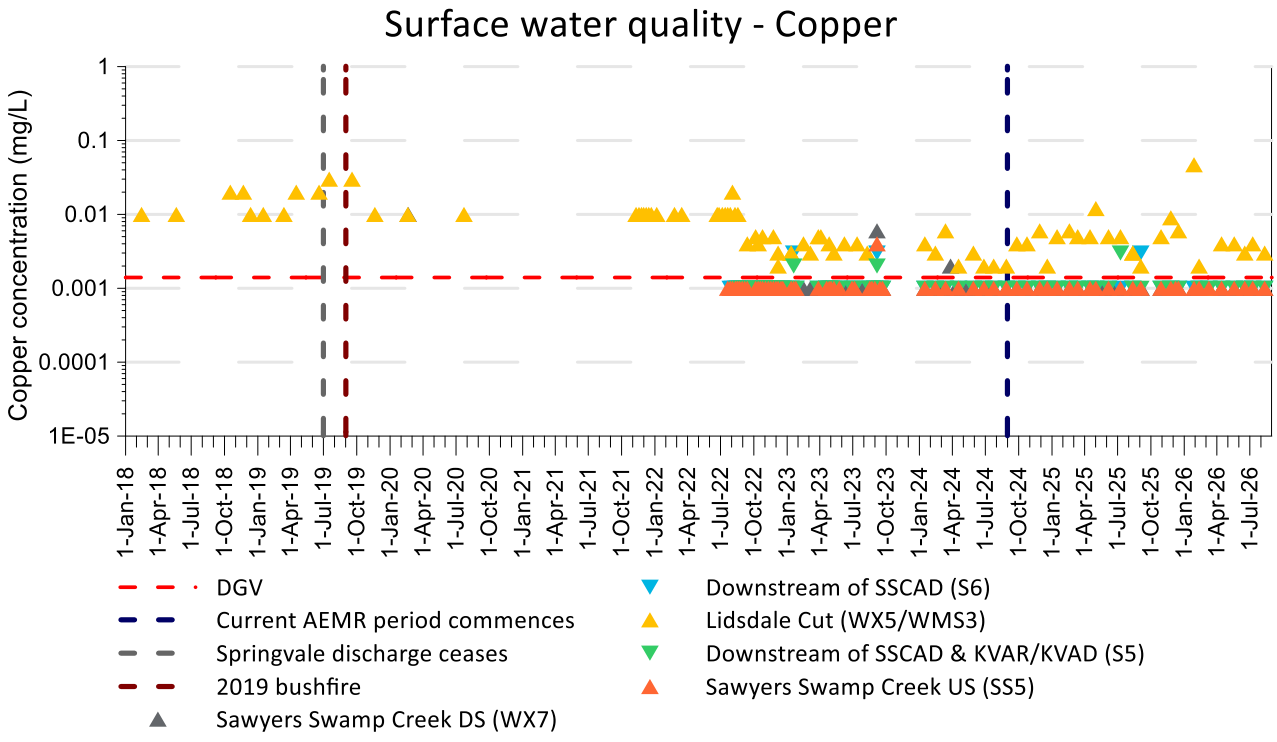
Surface water quality - Aluminium



Surface water quality - Boron




Surface water quality - Cadmium
Cadmium concentration (mg/L)
1
0.1
0.01
0.001
0.0001
1E-05
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
1-Jul-20
1-Oct-20
1-Jan-21
1-Apr-21
1-Jul-21
1-Oct-21
1-Jan-22
1-Apr-22
1-Jul-22
1-Oct-22
1-Jan-23
1-Apr-23
1-Jul-23
1-Oct-23
1-Jan-24
1-Apr-24
1-Jul-24
1-Oct-24
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
Change to filtered metal results
Sawyers Swamp Creek DS (WX7)
Downstream of SSCAD (S6)
Lidsdale Cut (WX5/WMS3)
Downstream of SSCAD & KVAR/KVAD (S5)
Sawyers Swamp Creek US (SS5)


Surface water quality - Copper
Copper concentration (mg/L)
1
0.1
0.01
0.001
0.0001
1E-05
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
1-Jul-20
1-Oct-20
1-Jan-21
1-Apr-21
1-Jul-21
1-Oct-21
1-Jan-22
1-Apr-22
1-Jul-22
1-Oct-22
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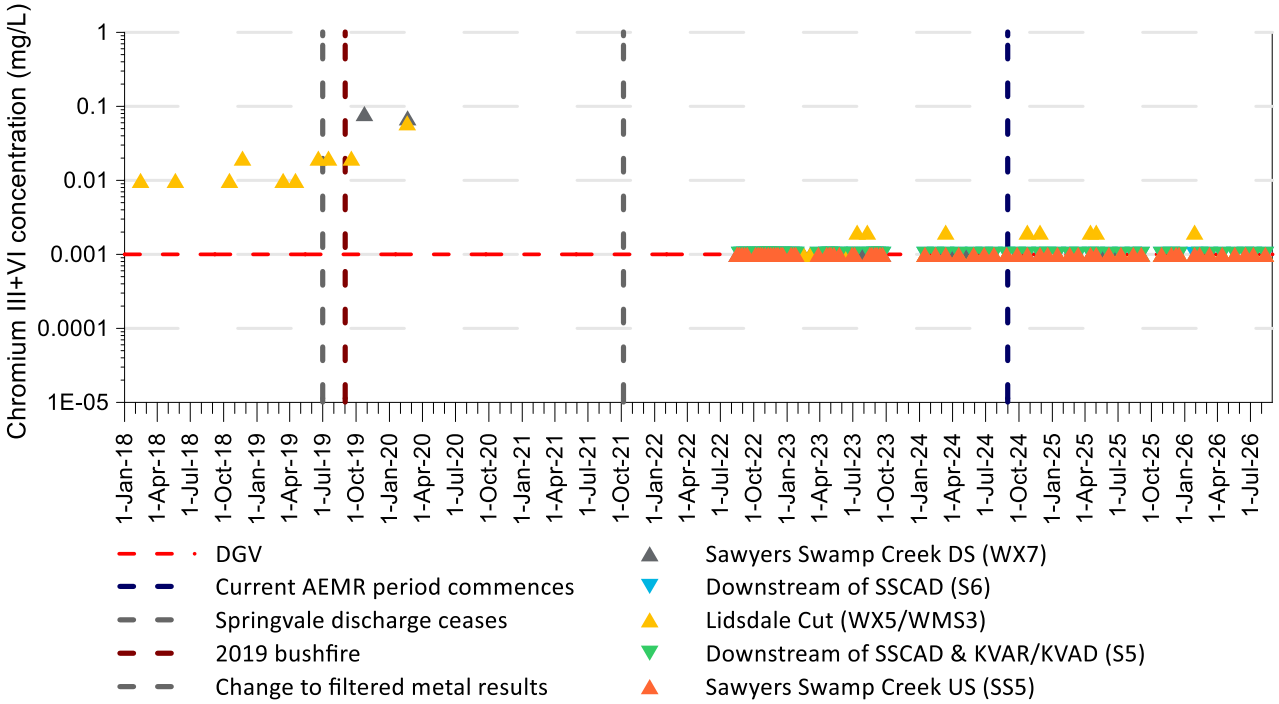
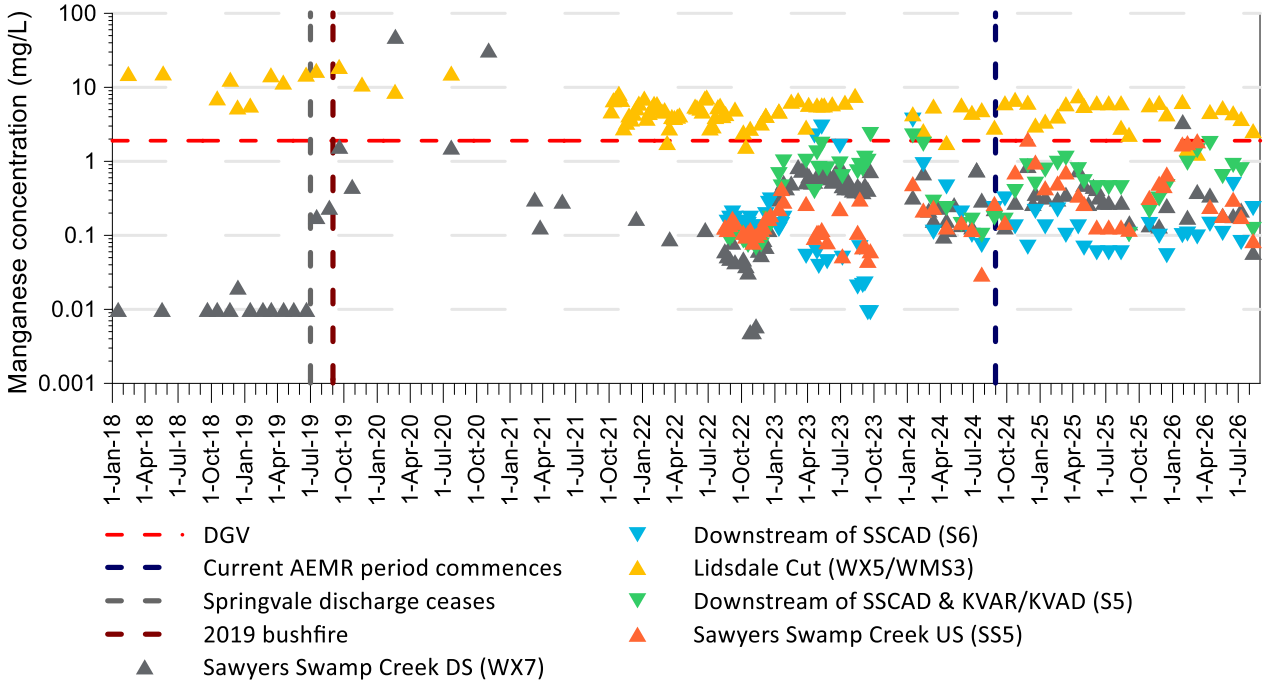
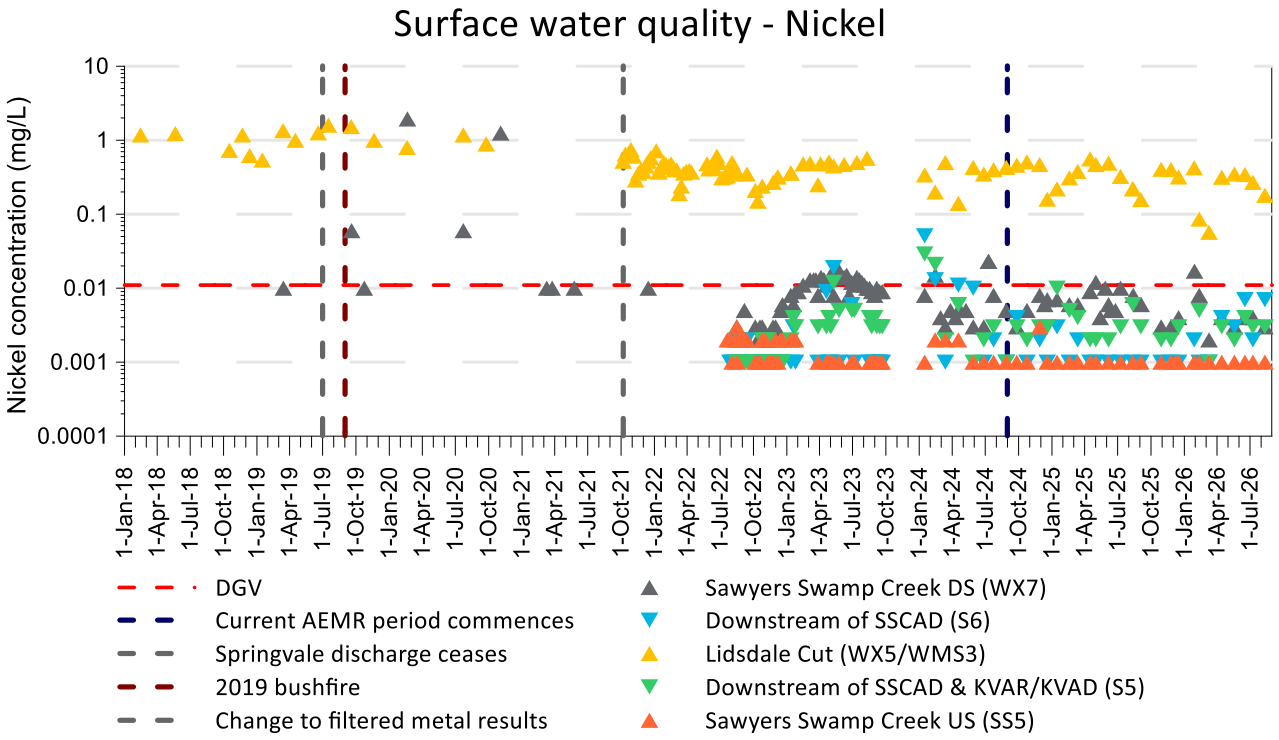
1-Apr-23
1-Jul-23
1-Oct-23
1-Jan-24
1-Apr-24
1-Jul-24
1-Oct-24
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
Sawyers Swamp Creek DS (WX7)
Downstream of SSCAD (S6)
Lidsdale Cut (WX5/WMS3)
Downstream of SSCAD & KVAR/KVAD (S5)
Sawyers Swamp Creek US (SS5)

Surface water quality - Chromium



Surface water quality - Manganese




Surface water quality - Nickel
Nickel concentration (mg/L)
10
1
0.1
0.01
0.001
0.0001
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
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1-Jul-20
1-Oct-20
1-Jan-21
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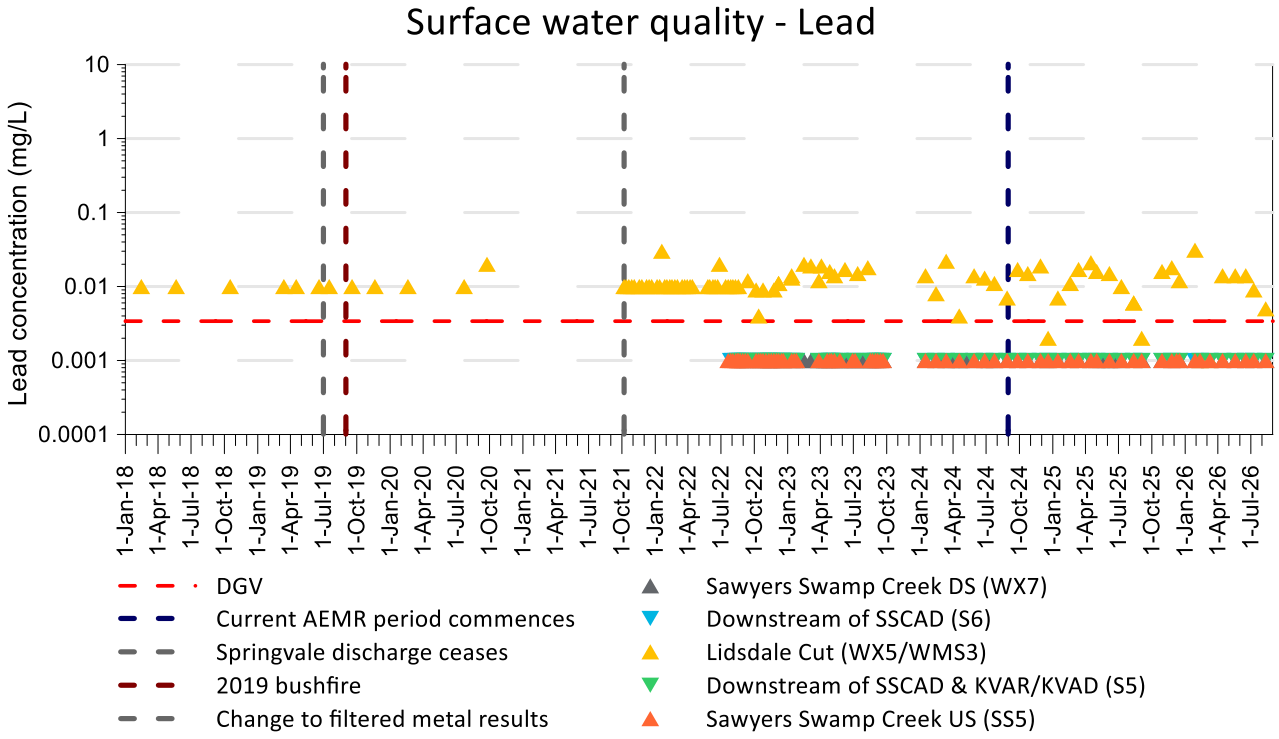
1-Oct-24
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
Change to filtered metal results
Sawyers Swamp Creek DS (WX7)
Downstream of SSCAD (S6)
Lidsdale Cut (WX5/WMS3)
Downstream of SSCAD & KVAR/KVAD (S5)
Sawyers Swamp Creek US (SS5)


Surface water quality - Lead
Lead concentration (mg/L)
10
1
0.1
0.01
0.001
0.0001
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
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1-Jul-20
1-Oct-20
1-Jan-21
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1-Oct-21
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1-Jul-22
1-Oct-22
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1-Jul-23
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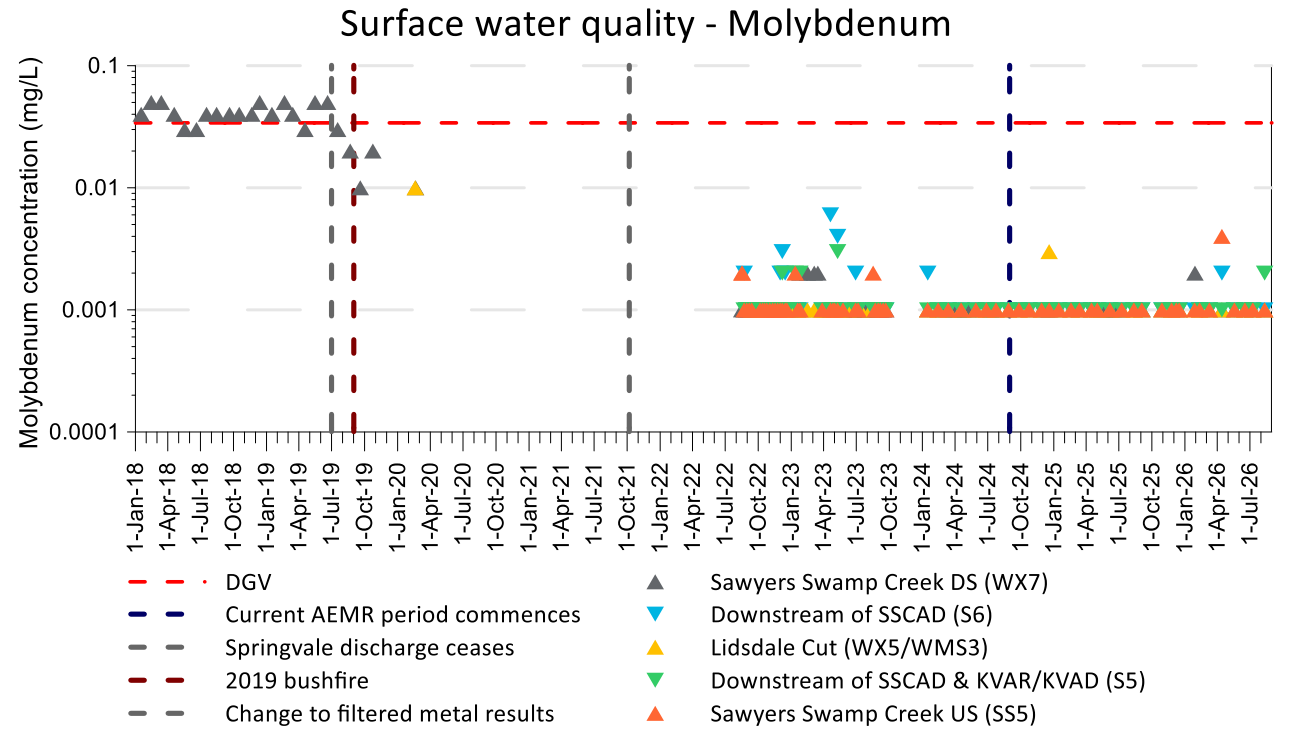
1-Jul-24
1-Oct-24
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
Change to filtered metal results
Sawyers Swamp Creek DS (WX7)
Downstream of SSCAD (S6)
Lidsdale Cut (WX5/WMS3)
Downstream of SSCAD & KVAR/KVAD (S5)
Sawyers Swamp Creek US (SS5)


Surface water quality - Molybdenum
Molybdenum concentration (mg/L)
0.1
0.01
0.001
0.0001
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
1-Jul-20
1-Oct-20
1-Jan-21
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1-Jul-23
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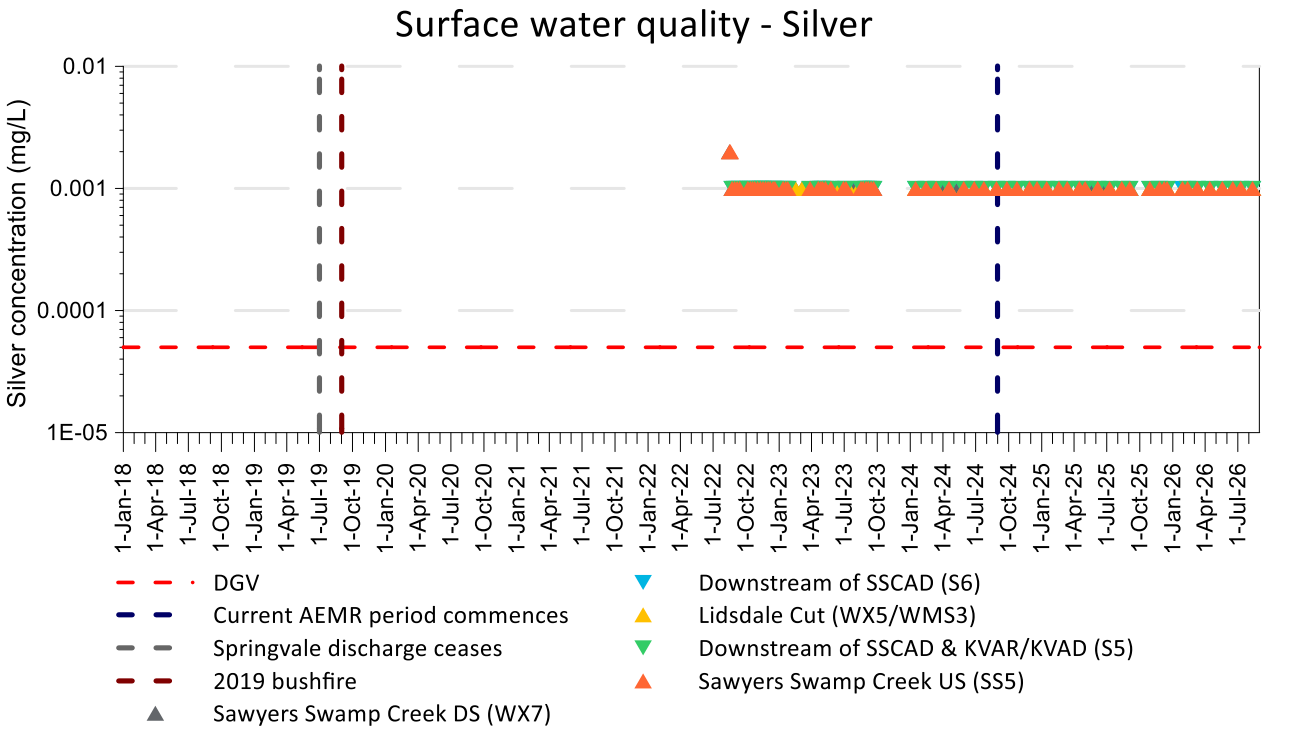
1-Jul-24
1-Oct-24
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
Change to filtered metal results
Sawyers Swamp Creek DS (WX7)
Downstream of SSCAD (S6)
Lidsdale Cut (WX5/WMS3)
Downstream of SSCAD & KVAR/KVAD (S5)
Sawyers Swamp Creek US (SS5)


Surface water quality - Silver
Silver concentration (mg/L)
0.01
0.001
0.0001
1E-05
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
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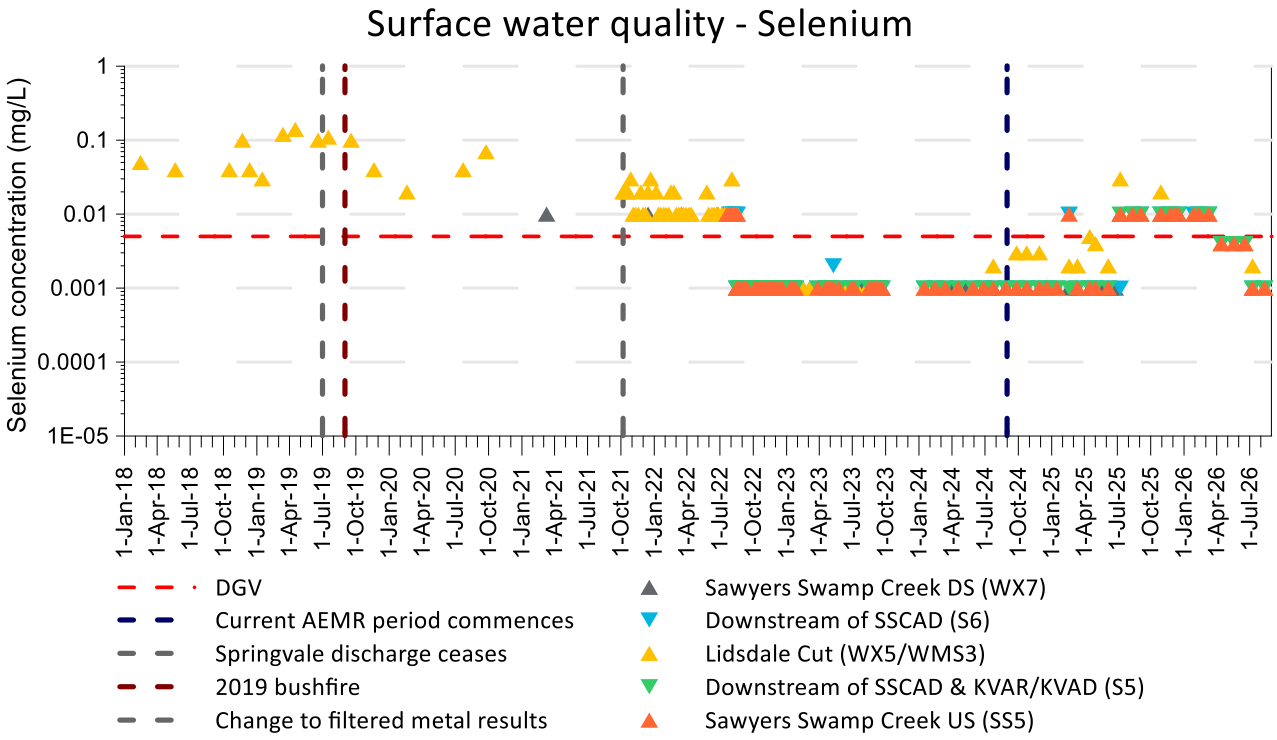
1-Oct-24
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
Sawyers Swamp Creek DS (WX7)
Downstream of SSCAD (S6)
Lidsdale Cut (WX5/WMS3)
Downstream of SSCAD & KVAR/KVAD (S5)
Sawyers Swamp Creek US (SS5)


Surface water quality - Selenium
Selenium concentration (mg/L)
1
0.1
0.01
0.001
0.0001
1E-05
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
1-Jul-20
1-Oct-20
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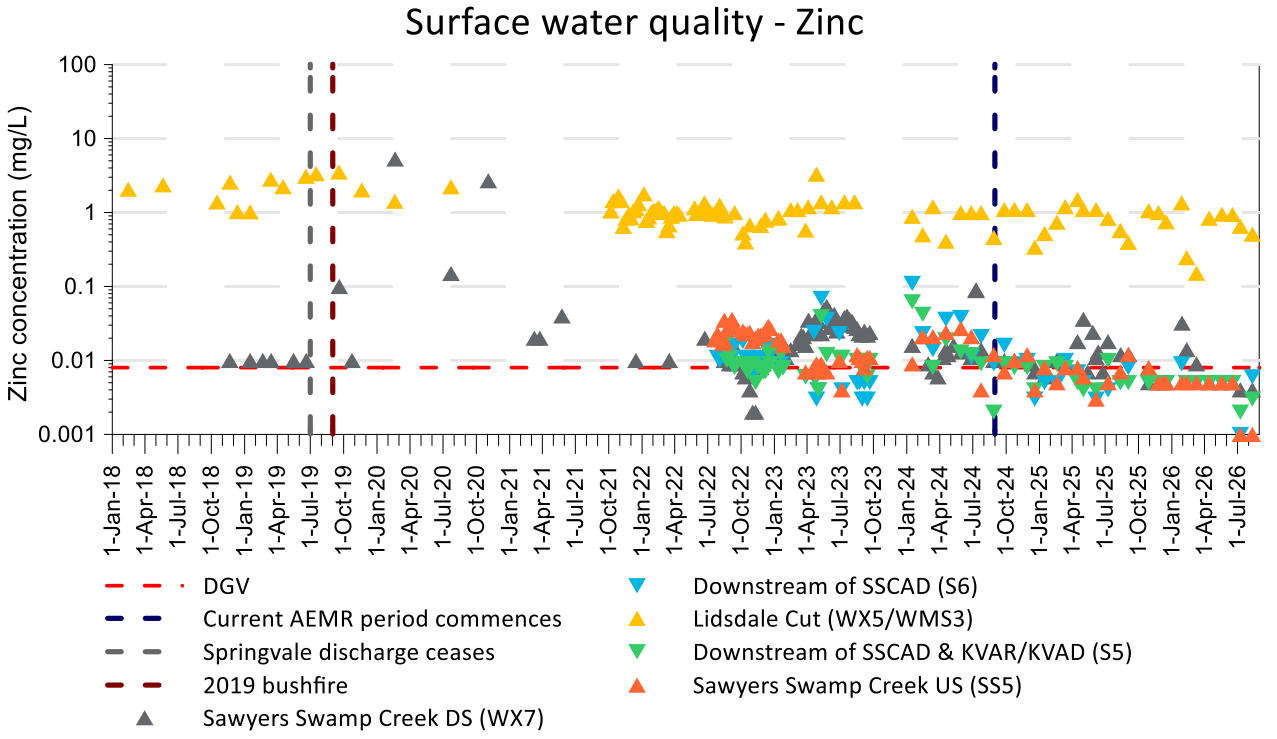
1-Oct-24
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
Change to filtered metal results
Sawyers Swamp Creek DS (WX7)
Downstream of SSCAD (S6)
Lidsdale Cut (WX5/WMS3)
Downstream of SSCAD & KVAR/KVAD (S5)
Sawyers Swamp Creek US (SS5)


Surface water quality - Zinc
Zinc concentration (mg/L)
100
10
1
0.1
0.01
0.001
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
1-Jul-20
1-Oct-20
1-Jan-21
1-Apr-21
1-Jul-21
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1-Jul-23
1-Oct-23
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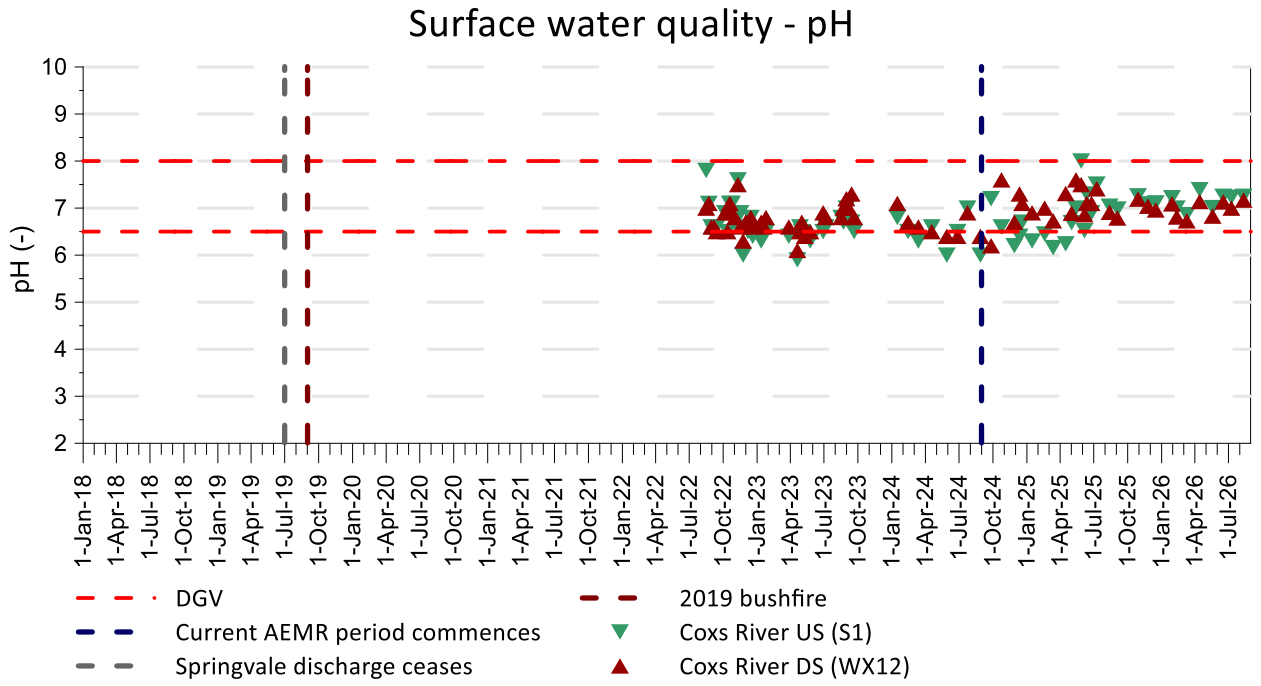
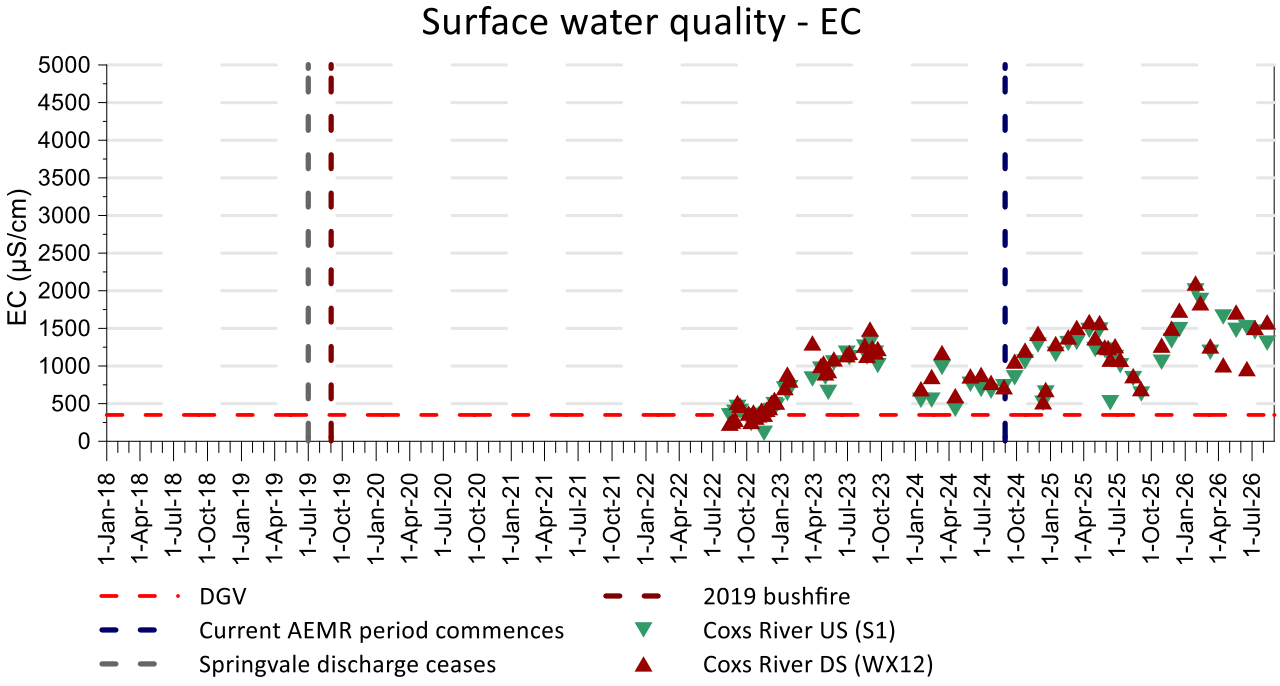
1-Jul-24
1-Oct-24
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
Sawyers Swamp Creek DS (WX7)
Downstream of SSCAD (S6)
Lidsdale Cut (WX5/WMS3)
Downstream of SSCAD & KVAR/KVAD (S5)
Sawyers Swamp Creek US (SS5)

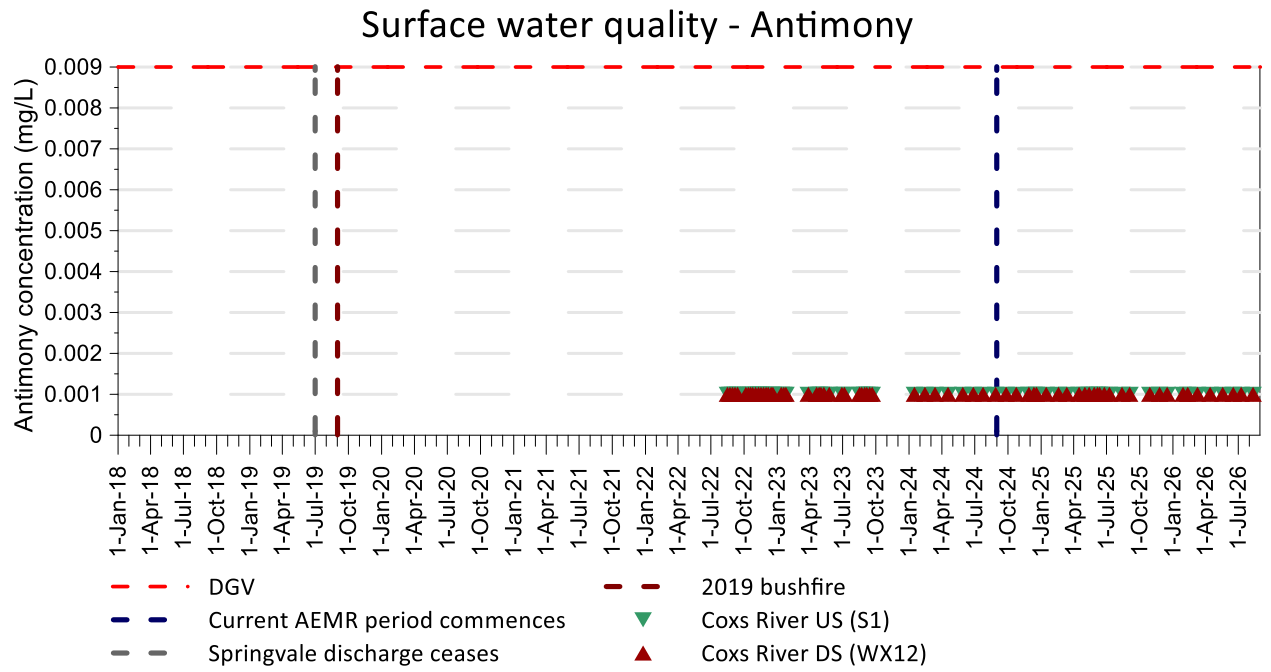
A.2 Coxs River

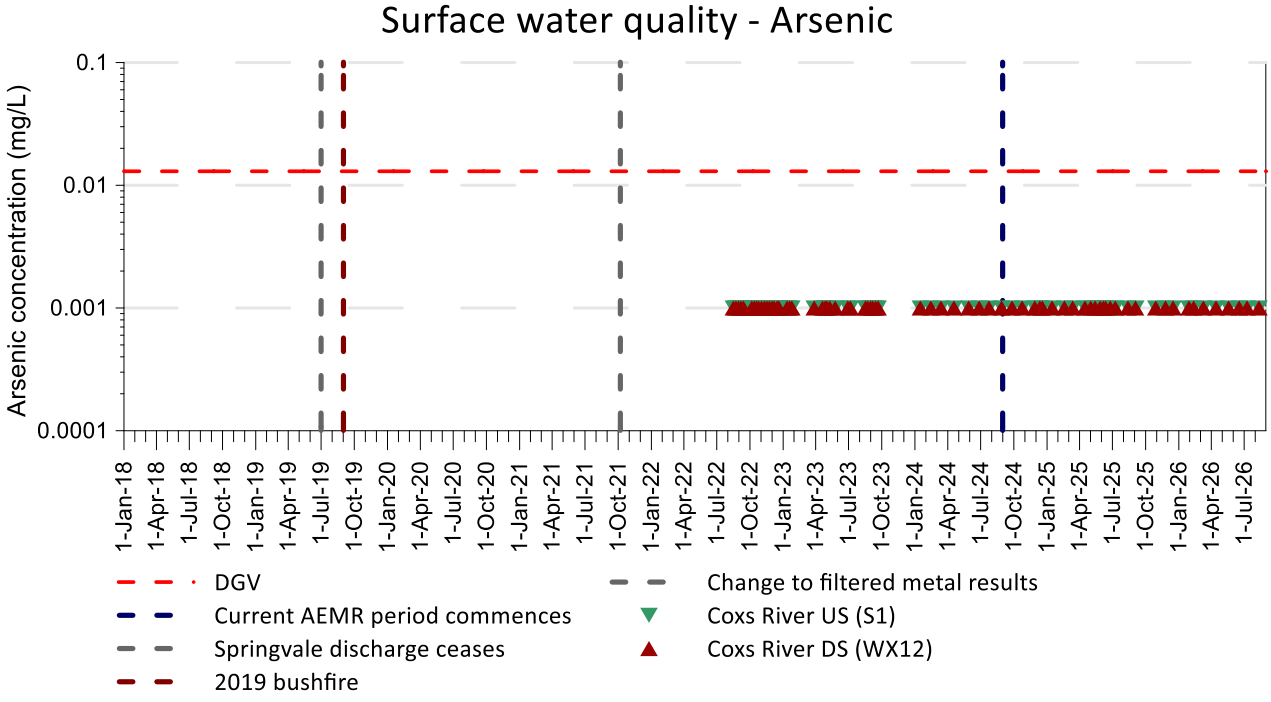
A.2.1 Physico-chemical parameters charts

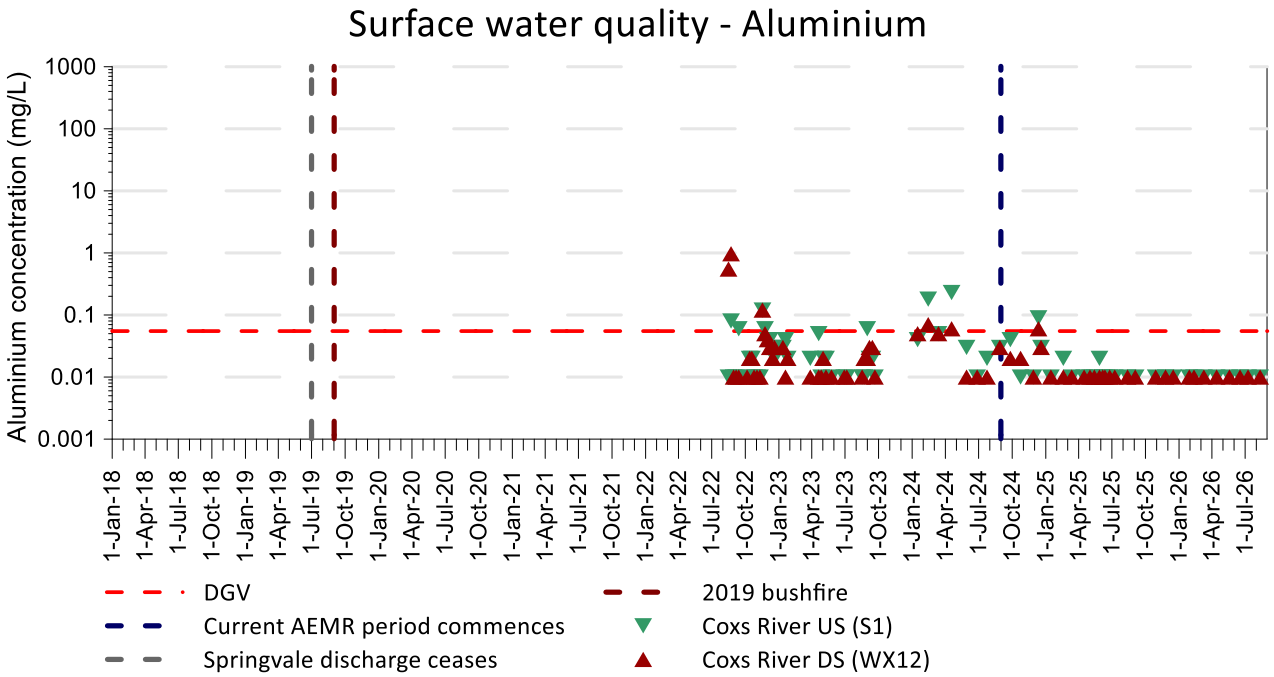




A.2.2 Metal charts






Surface water quality - Aluminium
Aluminium concentration (mg/L)
1000
100
10
1
0.1
0.01
0.001
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
1-Jul-20
1-Oct-20
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1-Jan-24
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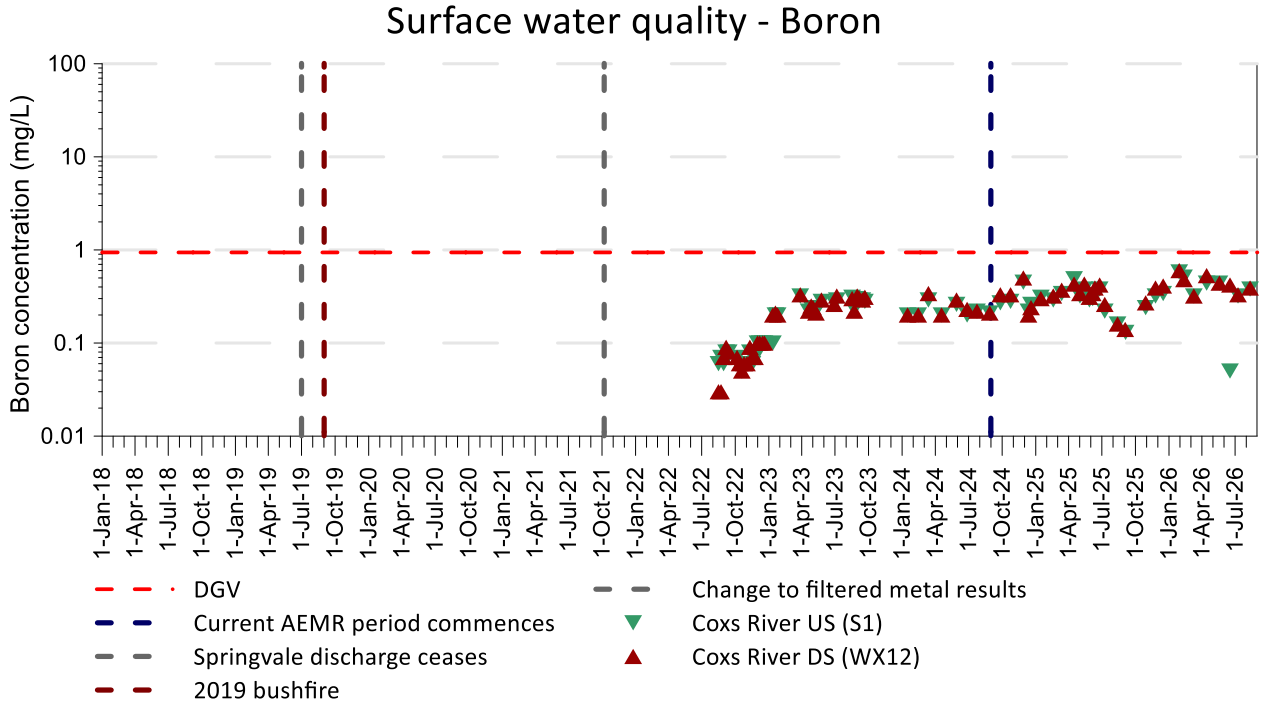
1-Jul-24
1-Oct-24
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
Coxs River US (S1)
Coxs River DS (WX12)


Surface water quality - Boron
Boron concentration (mg/L)
100
10
1
0.1
0.01
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
1-Jul-20
1-Oct-20
1-Jan-21
1-Apr-21
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1-Oct-22
1-Jan-23
1-Apr-23
1-Jul-23
1-Oct-23
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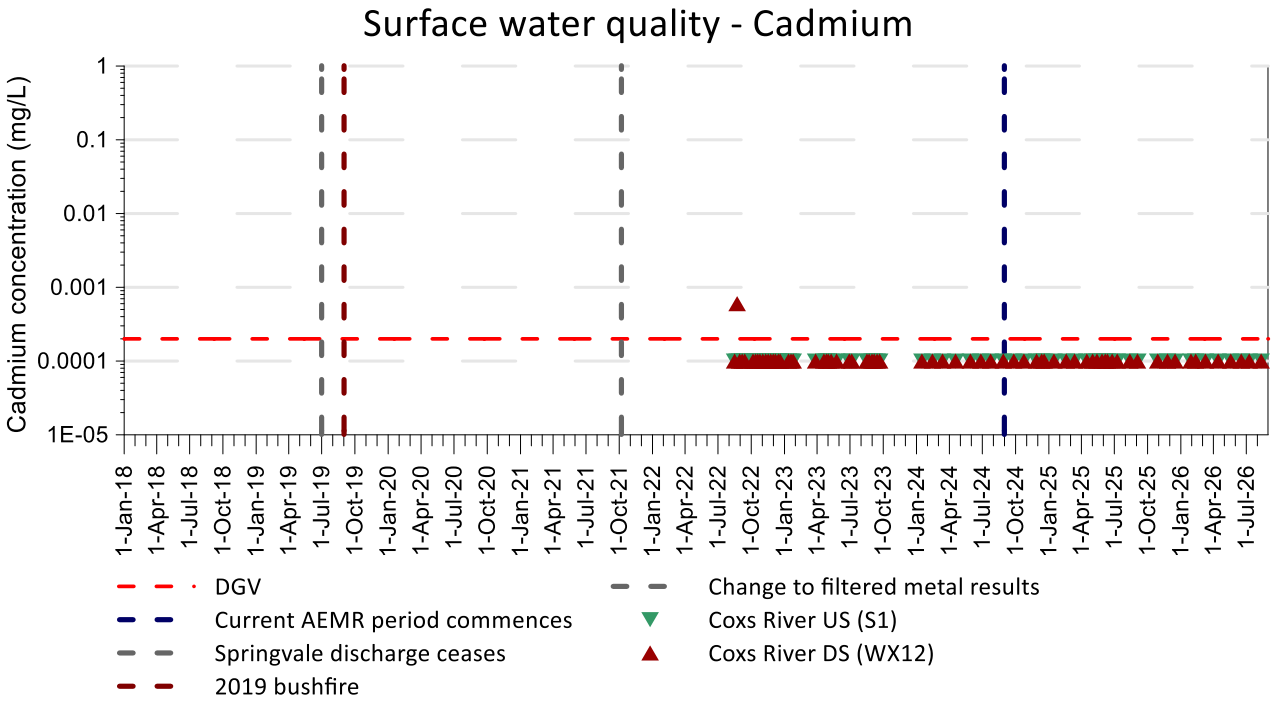
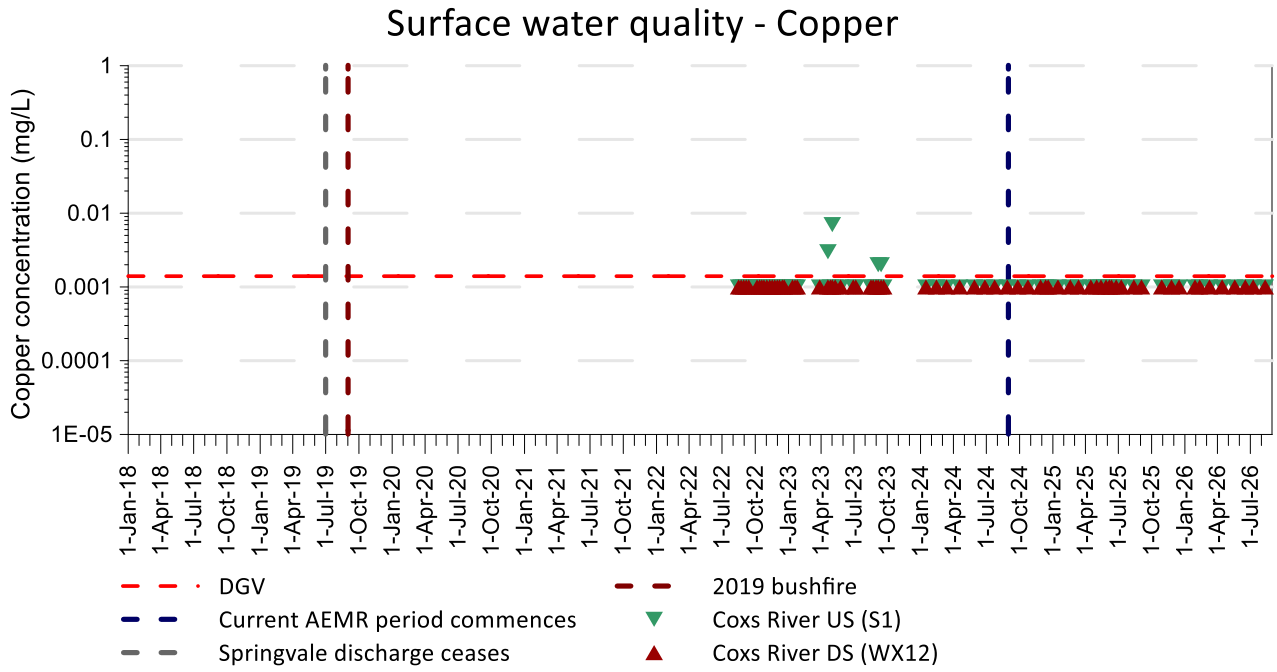
1-Apr-24
1-Jul-24
1-Oct-24
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
Change to filtered metal results
Coxs River US (S1)
Coxs River DS (WX12)


Surface water quality - Cadmium
Cadmium concentration (mg/L)
1
0.1
0.01
0.001
0.0001
1E-05
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
1-Jul-20
1-Oct-20
1-Jan-21
1-Apr-21
1-Jul-21
1-Oct-21
1-Jan-22
1-Apr-22
1-Jul-22
1-Oct-22
1-Jan-23
1-Apr-23
1-Jul-23
1-Oct-23
1-Jan-24
1-Apr-24
1-Jul-24
1-Oct-24
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
Change to filtered metal results
Coxs River US (S1)
Coxs River DS (WX12)


Surface water quality - Copper
Copper concentration (mg/L)
1
0.1
0.01
0.001
0.0001
1E-05
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
1-Jul-20
1-Oct-20
1-Jan-21
1-Apr-21
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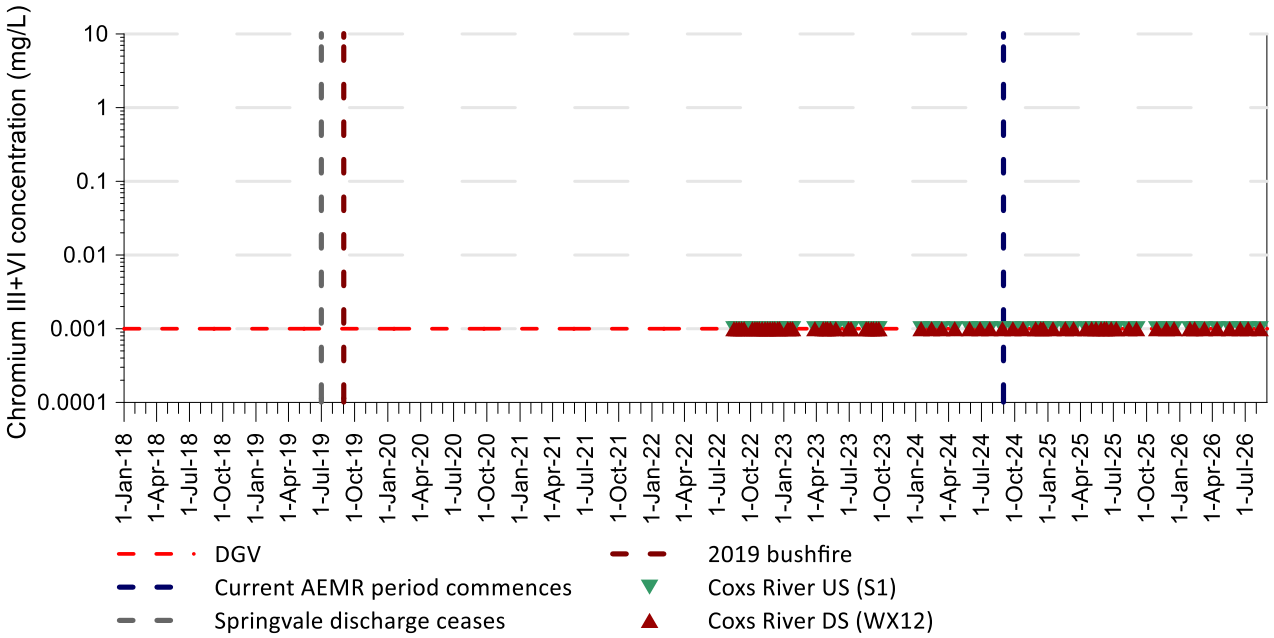
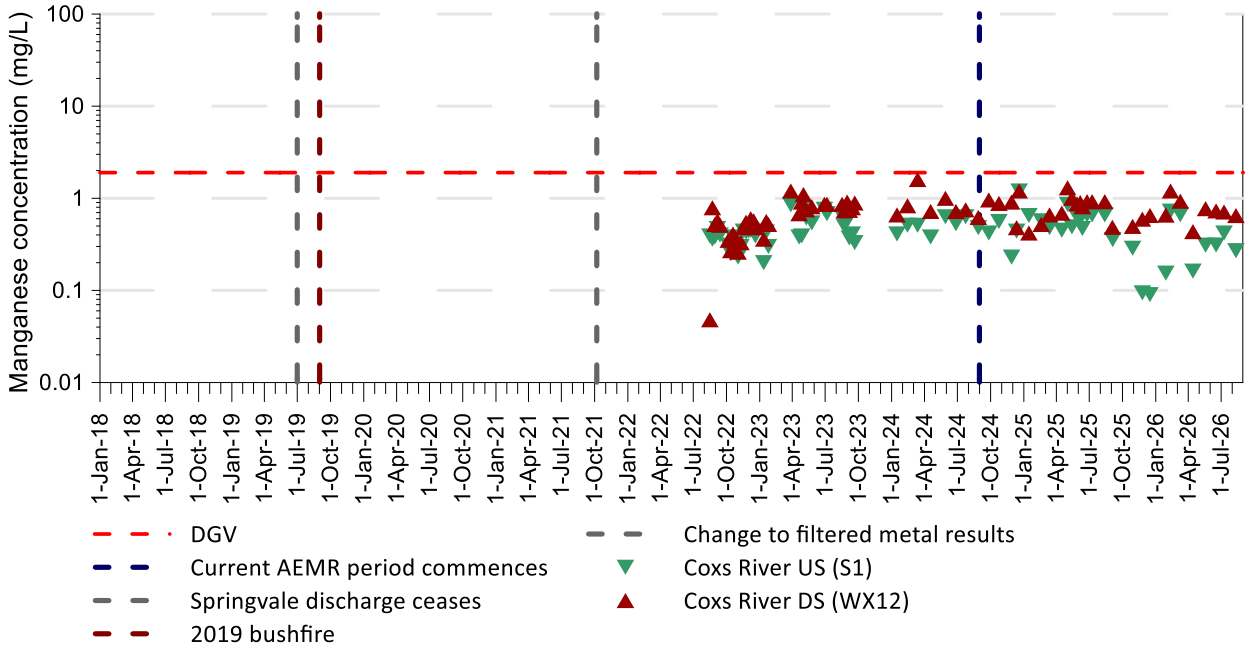
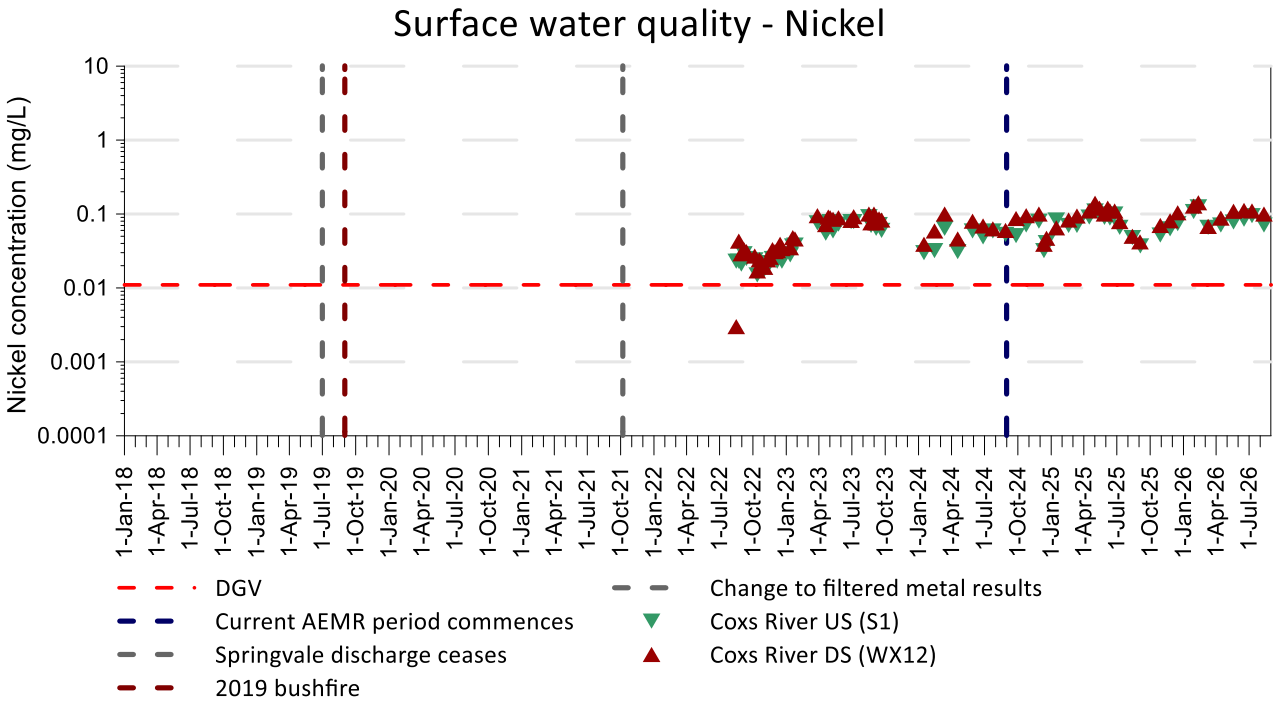
1-Jul-24
1-Oct-24
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
Coxs River US (S1)
Coxs River DS (WX12)

Surface water quality - Chromium



Surface water quality - Manganese




Surface water quality - Nickel
Nickel concentration (mg/L)
10
1
0.1
0.01
0.001
0.0001
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
1-Jul-20
1-Oct-20
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1-Jul-23
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1-Apr-24
1-Jul-24
1-Oct-24
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
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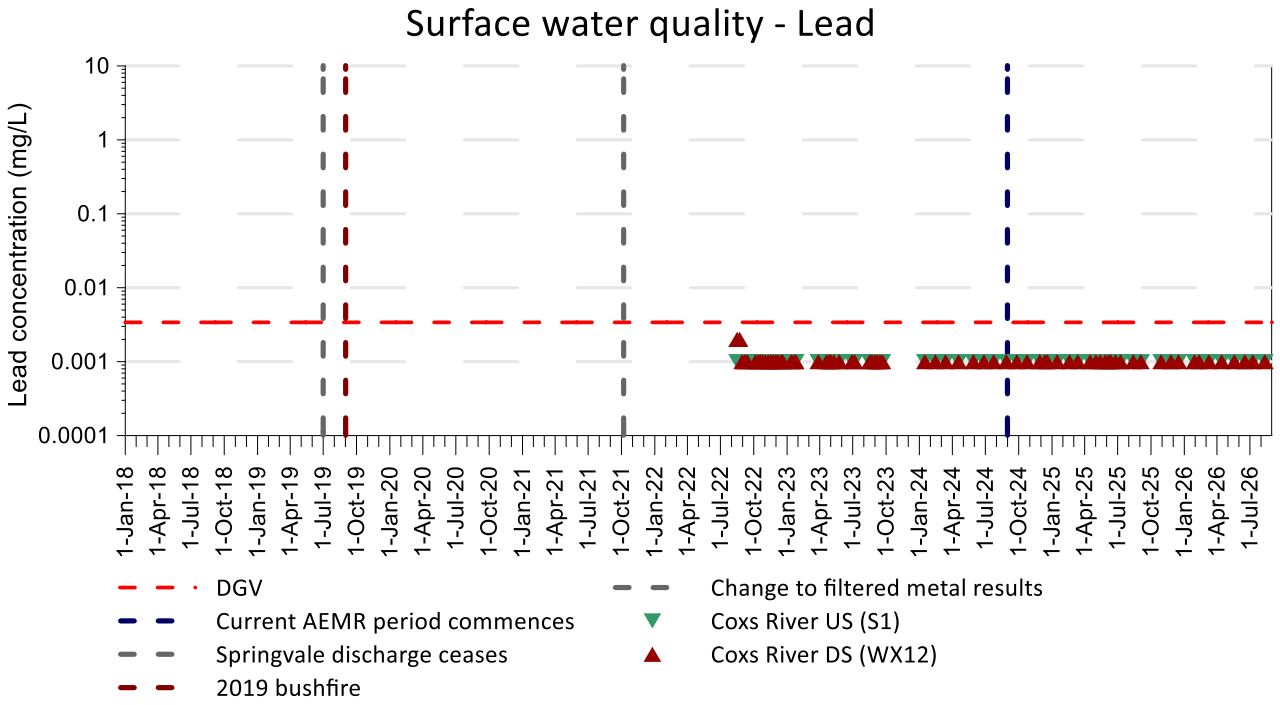
2019 bushfire
Change to filtered metal results
Coxs River US (S1)
Coxs River DS (WX12)


Surface water quality - Lead
Lead concentration (mg/L)
10
1
0.1
0.01
0.001
0.0001
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
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1-Oct-20
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1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
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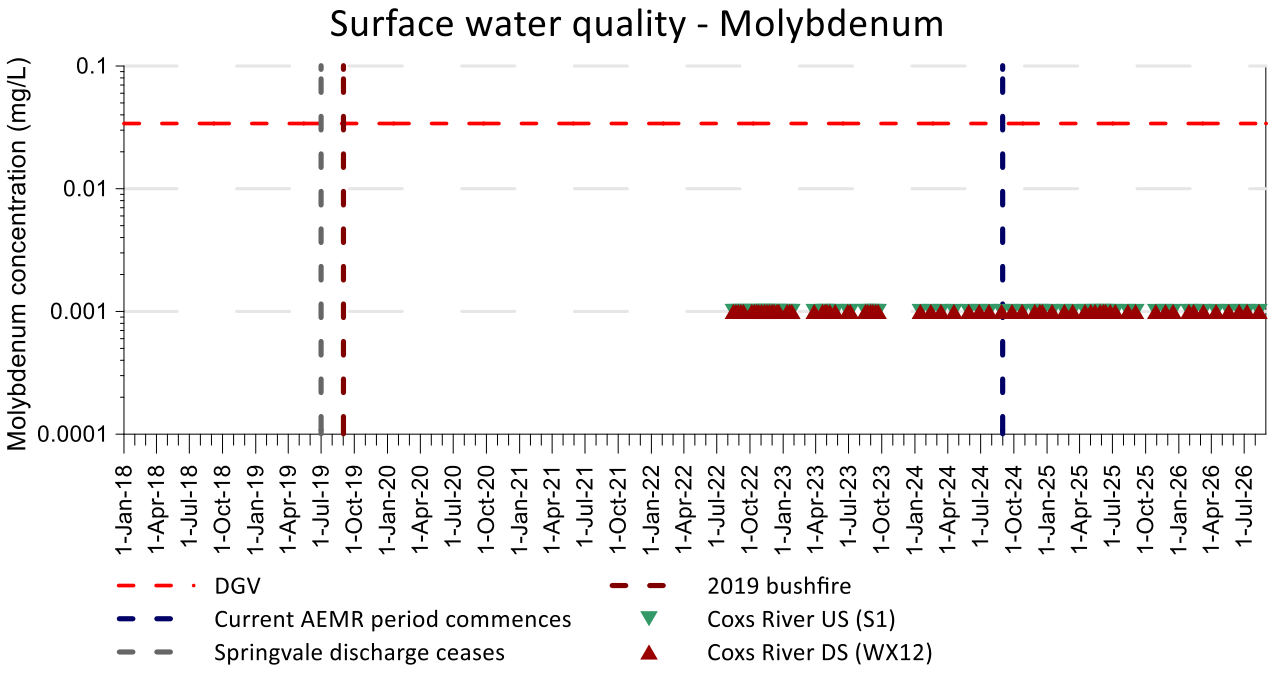
Springvale discharge ceases
2019 bushfire
Change to filtered metal results
Coxs River US (S1)
Coxs River DS (WX12)


Surface water quality - Molybdenum
Molybdenum concentration (mg/L)
0.1
0.01
0.001
0.0001
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
1-Jul-20
1-Oct-20
1-Jan-21
1-Apr-21
1-Jul-21
1-Oct-21
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1-Oct-23
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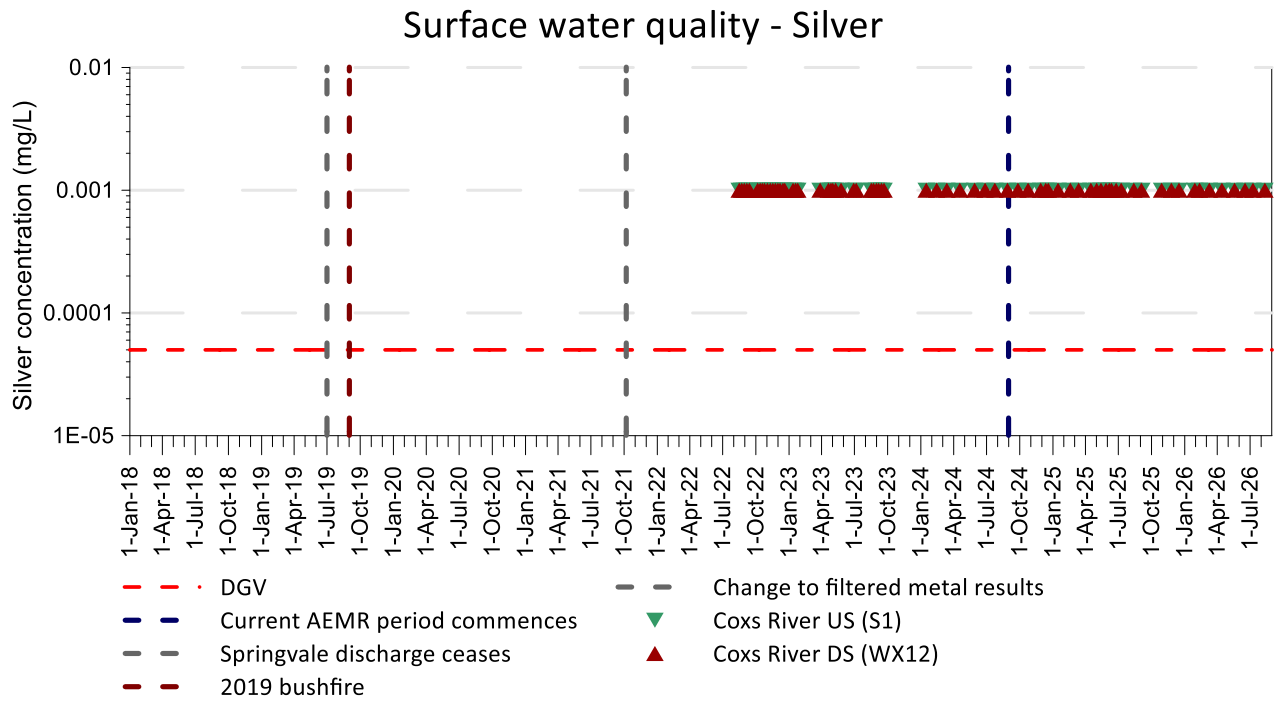
1-Apr-24
1-Jul-24
1-Oct-24
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
Coxs River US (S1)
Coxs River DS (WX12)


Surface water quality - Silver
Silver concentration (mg/L)
0.01
0.001
0.0001
1E-05
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
1-Jul-20
1-Oct-20
1-Jan-21
1-Apr-21
1-Jul-21
1-Oct-21
1-Jan-22
1-Apr-22
1-Jul-22
1-Oct-22
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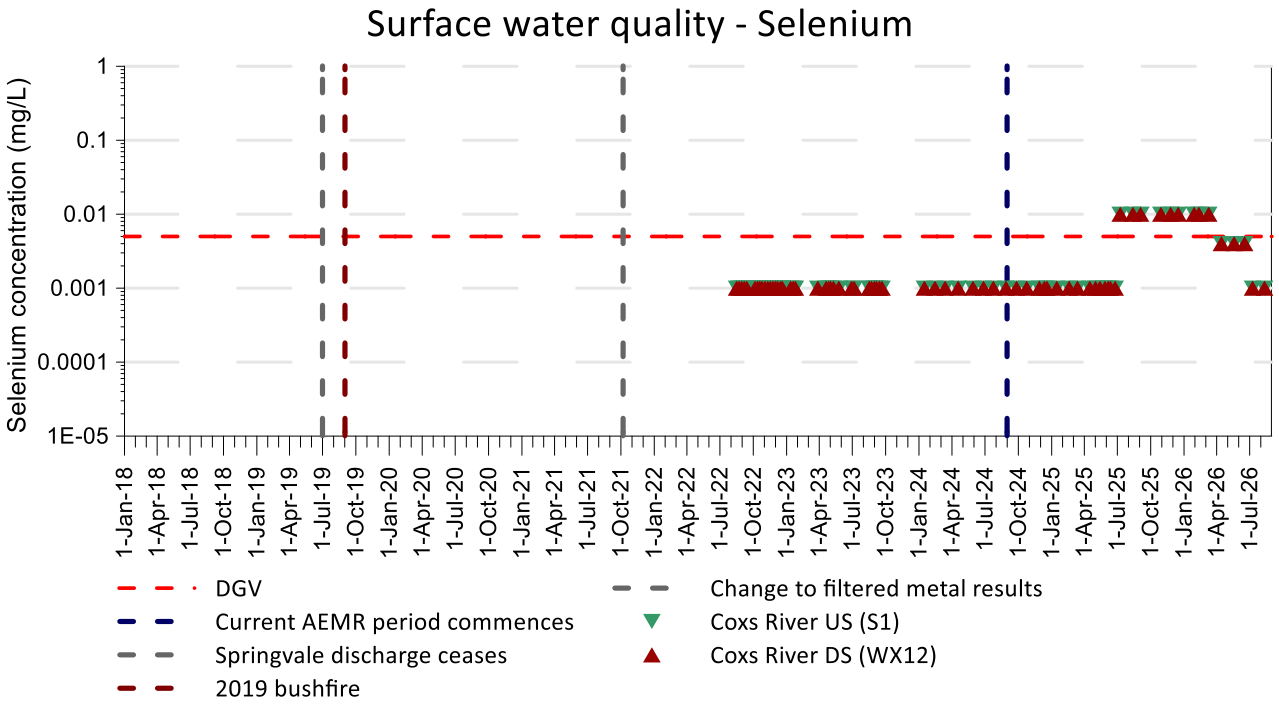
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
Change to filtered metal results
Coxs River US (S1)
Coxs River DS (WX12)


Surface water quality - Selenium
Selenium concentration (mg/L)
1
0.1
0.01
0.001
0.0001
1E-05
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
1-Jul-20
1-Oct-20
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1-Jul-21
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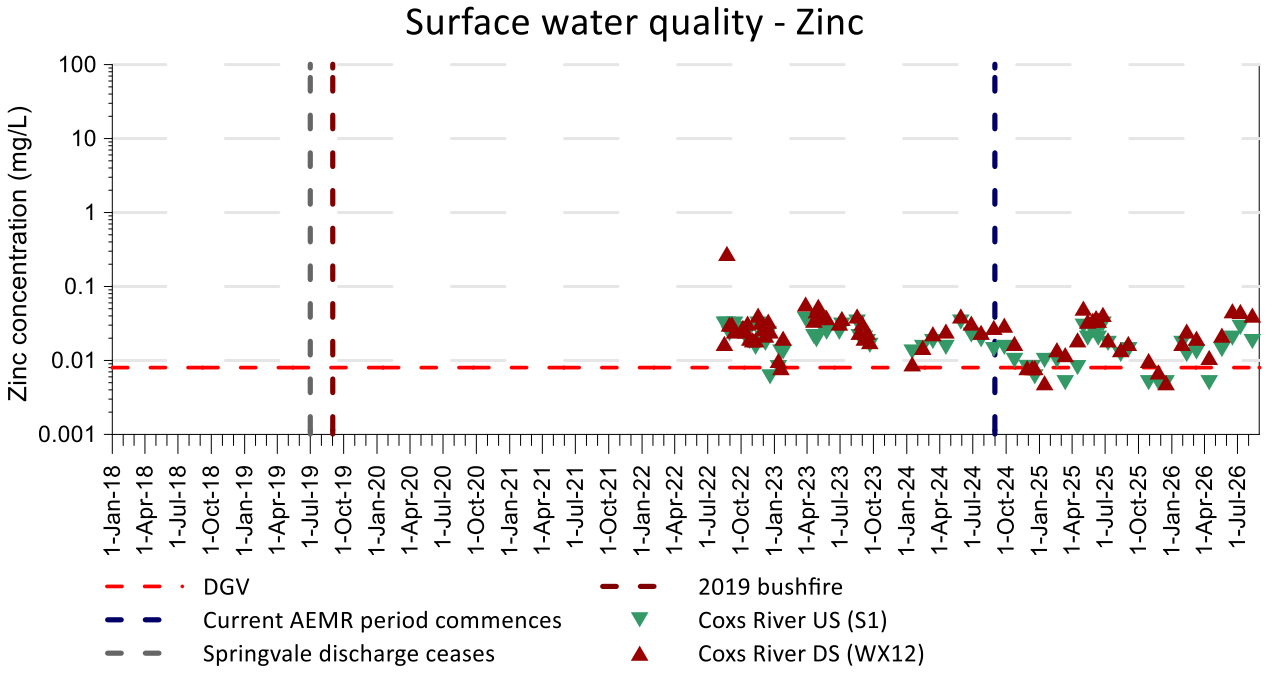
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
Change to filtered metal results
Coxs River US (S1)
Coxs River DS (WX12)


Surface water quality - Zinc
Zinc concentration (mg/L)
100
10
1
0.1
0.01
0.001
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
1-Jul-20
1-Oct-20
1-Jan-21
1-Apr-21
1-Jul-21
1-Oct-21
1-Jan-22
1-Apr-22
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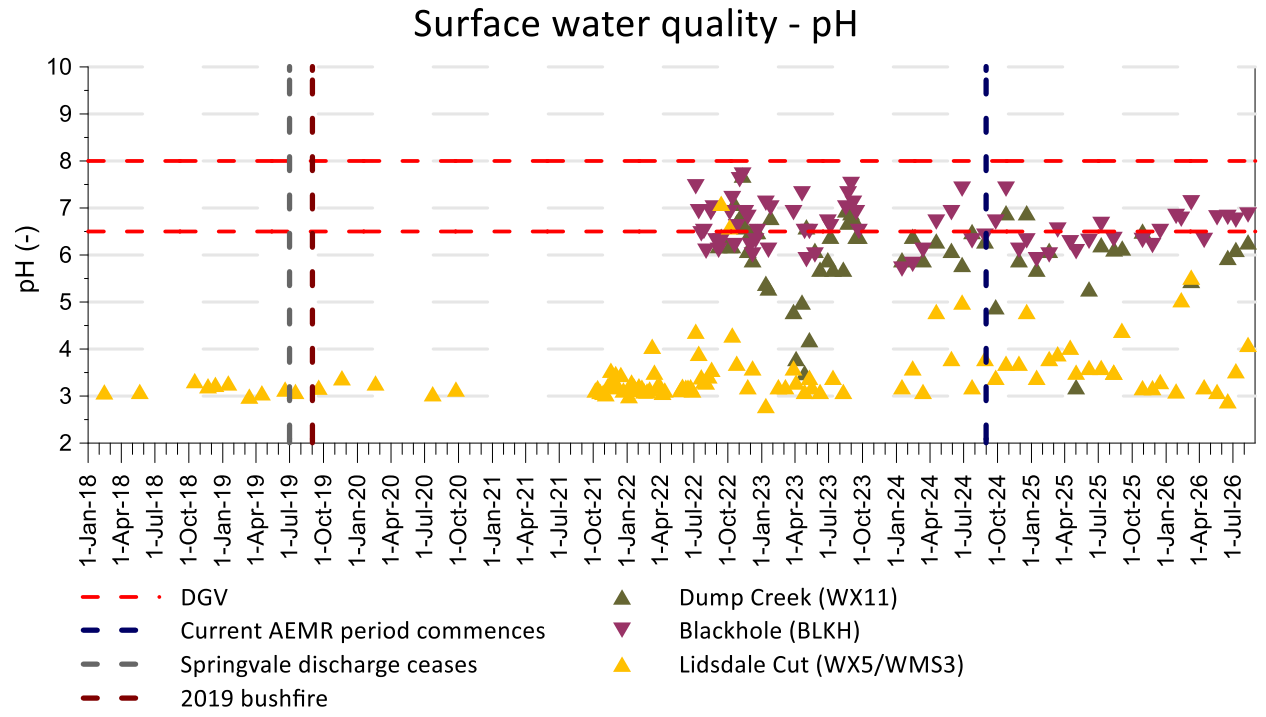
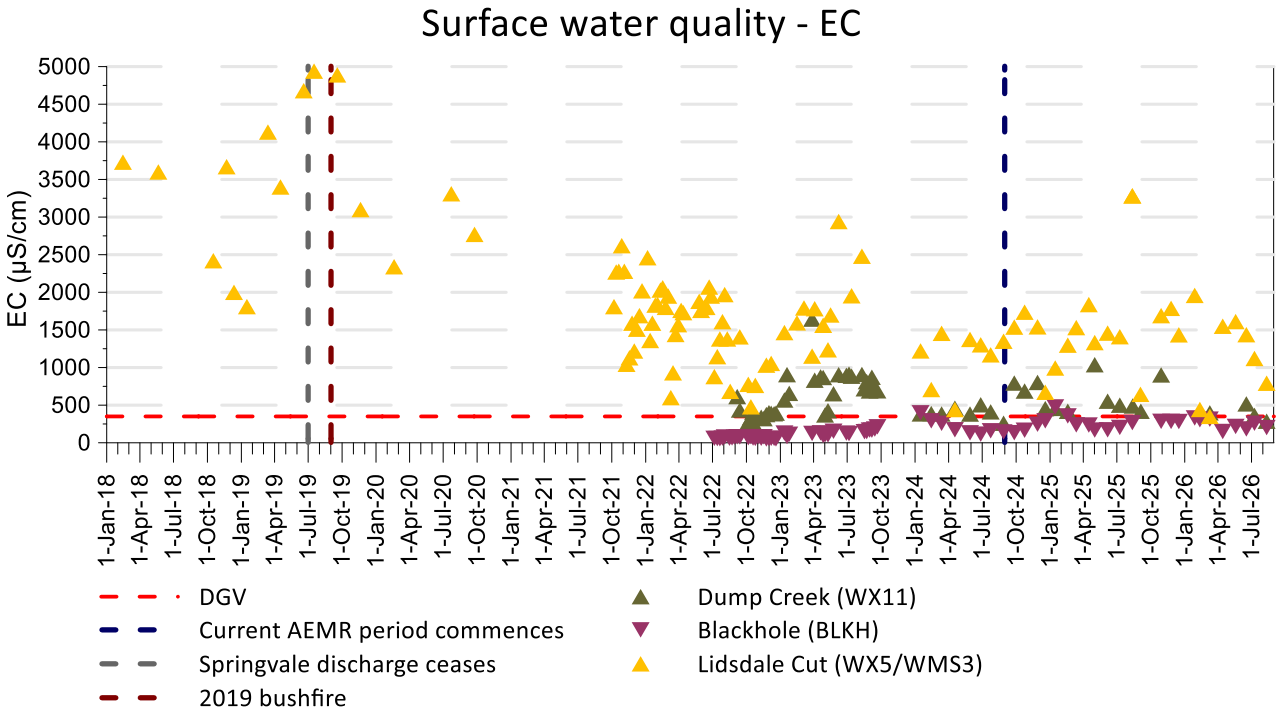
1-Oct-23
1-Jan-24
1-Apr-24
1-Jul-24
1-Oct-24
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
Coxs River US (S1)
Coxs River DS (WX12)

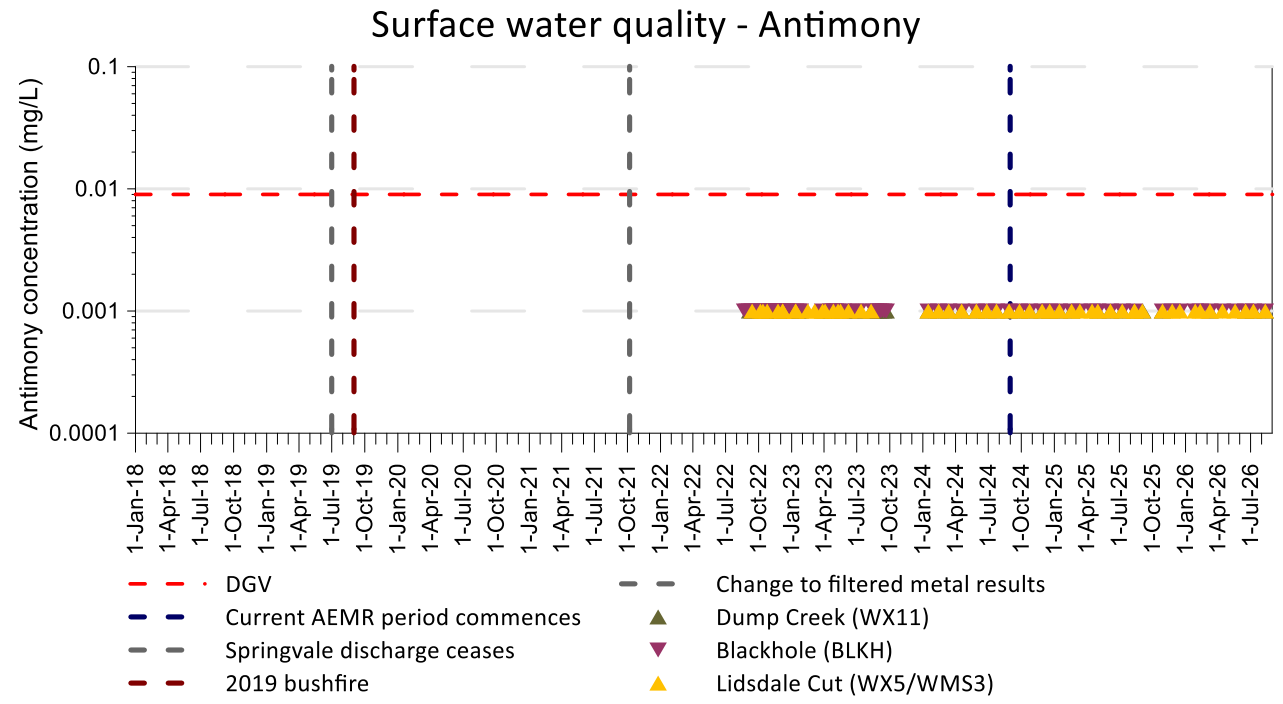
A.3 Water management systems

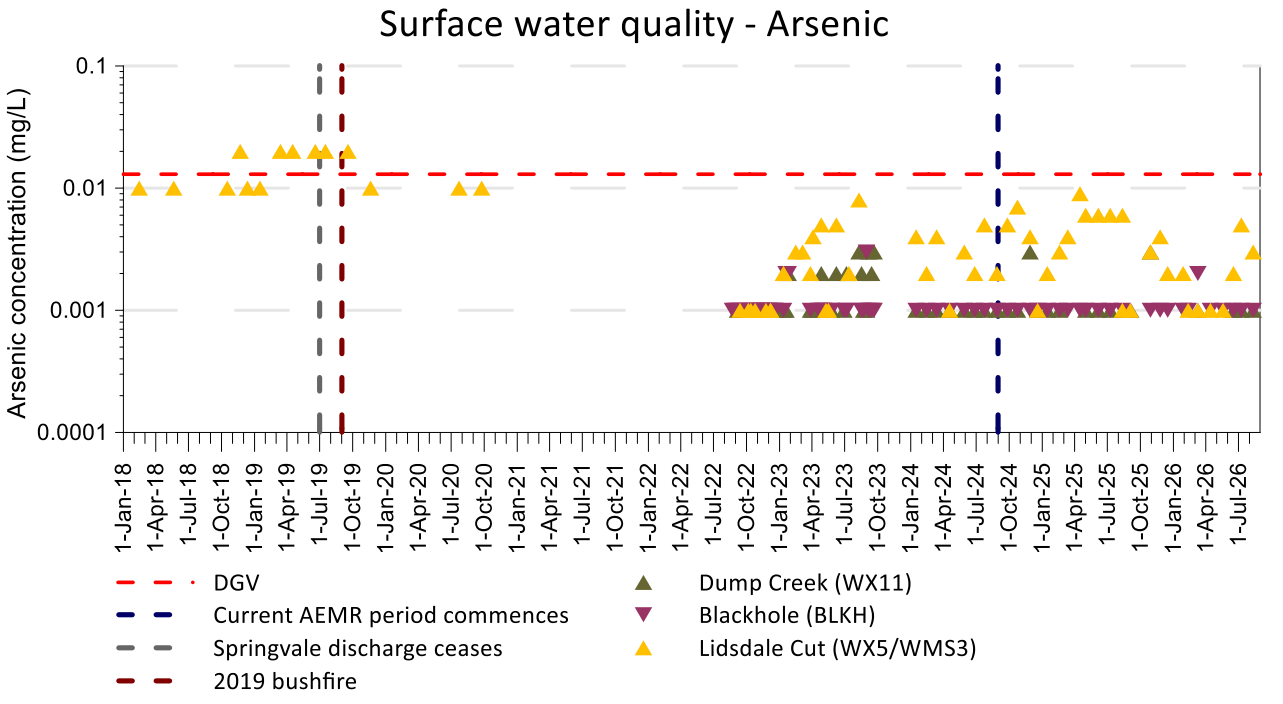
A.3.1 Physico-chemical parameters charts

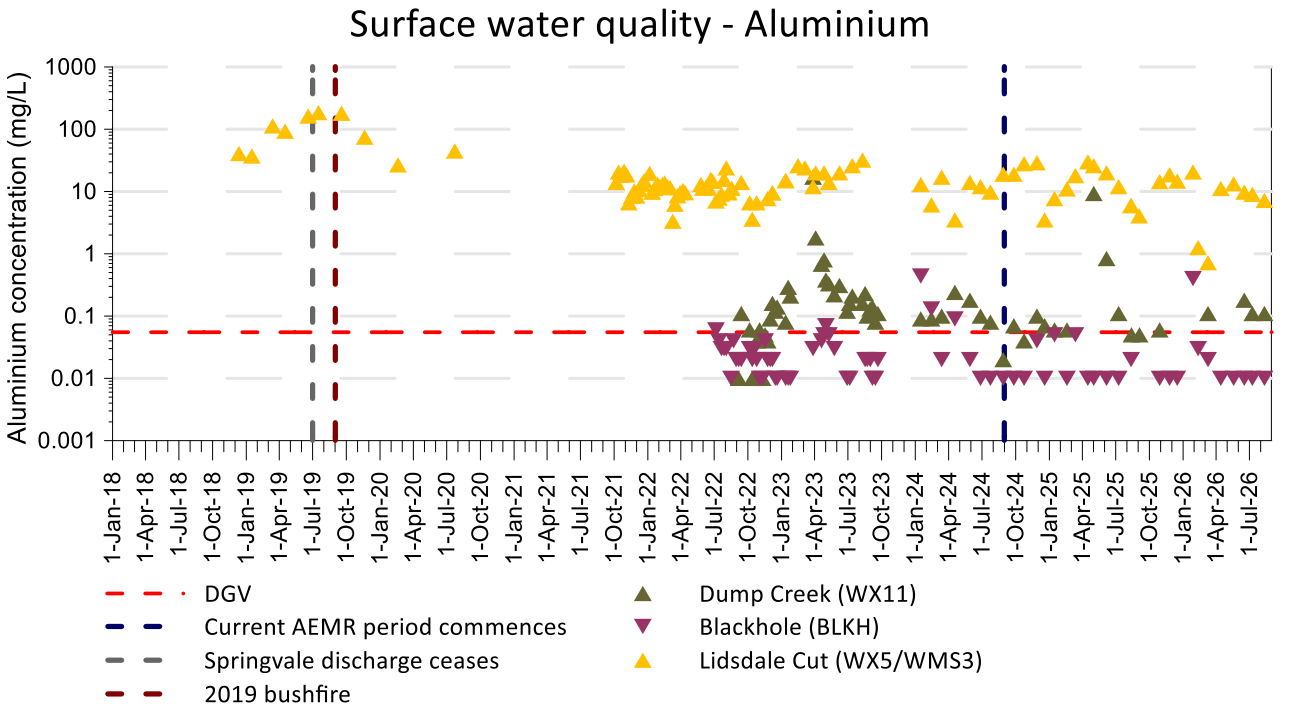




A.3.2 Metals charts






Surface water quality - Aluminium
Aluminium concentration (mg/L)
1000
100
10
1
0.1
0.01
0.001
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
1-Jul-20
1-Oct-20
1-Jan-21
1-Apr-21
1-Jul-21
1-Oct-21
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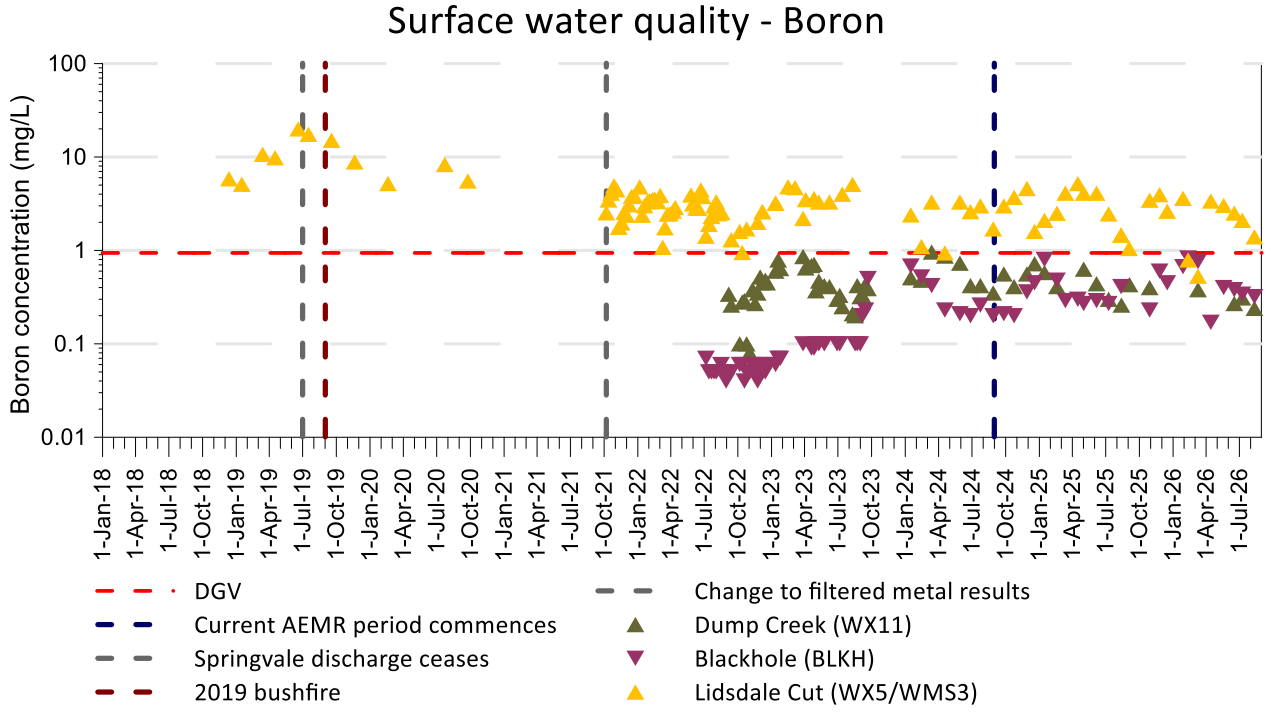
1-Oct-22
1-Jan-23
1-Apr-23
1-Jul-23
1-Oct-23
1-Jan-24
1-Apr-24
1-Jul-24
1-Oct-24
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
Dump Creek (WX11)
Blackhole (BLKH)
Lidsdale Cut (WX5/WMS3)


Surface water quality - Boron
Boron concentration (mg/L)
100
10
1
0.1
0.01
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
1-Jul-20
1-Oct-20
1-Jan-21
1-Apr-21
1-Jul-21
1-Oct-21
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1-Apr-22
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1-Apr-23
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1-Jul-24
1-Oct-24
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
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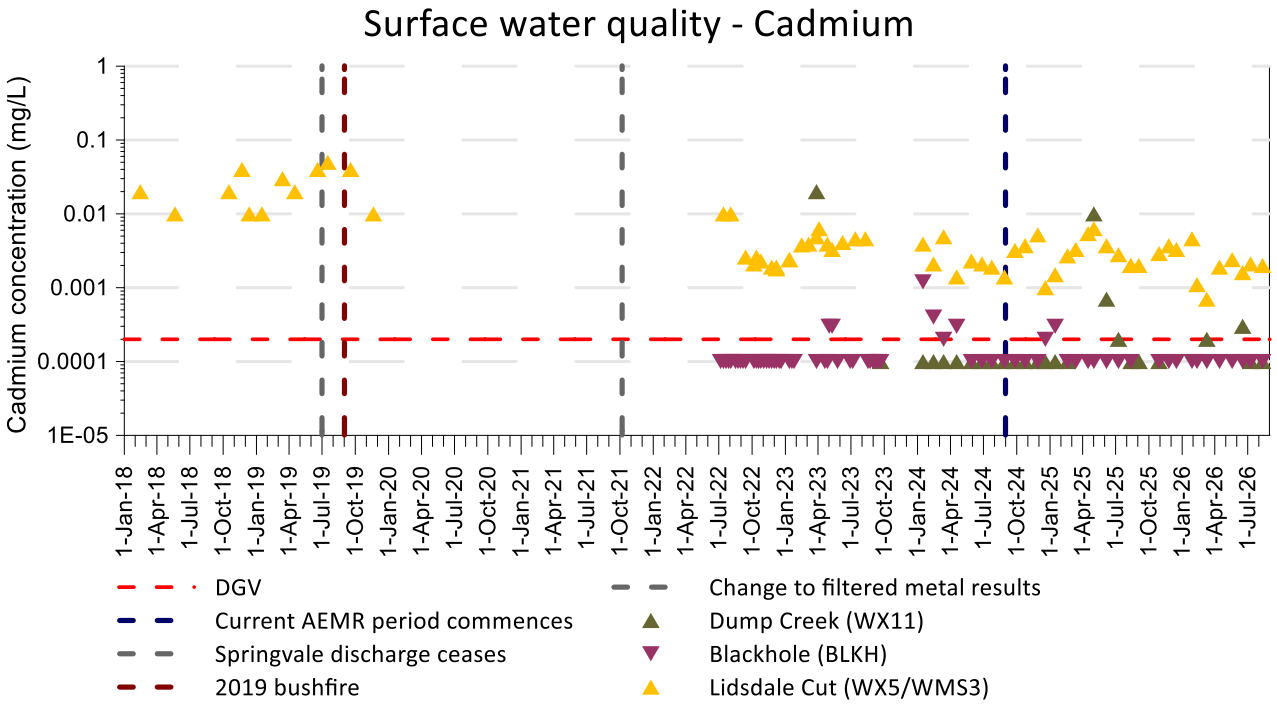
Blackhole (BLKH)
Lidsdale Cut (WX5/WMS3)


Surface water quality - Cadmium
Cadmium concentration (mg/L)
1
0.1
0.01
0.001
0.0001
1E-05
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
1-Jul-20
1-Oct-20
1-Jan-21
1-Apr-21
1-Jul-21
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1-Jul-24
1-Oct-24
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
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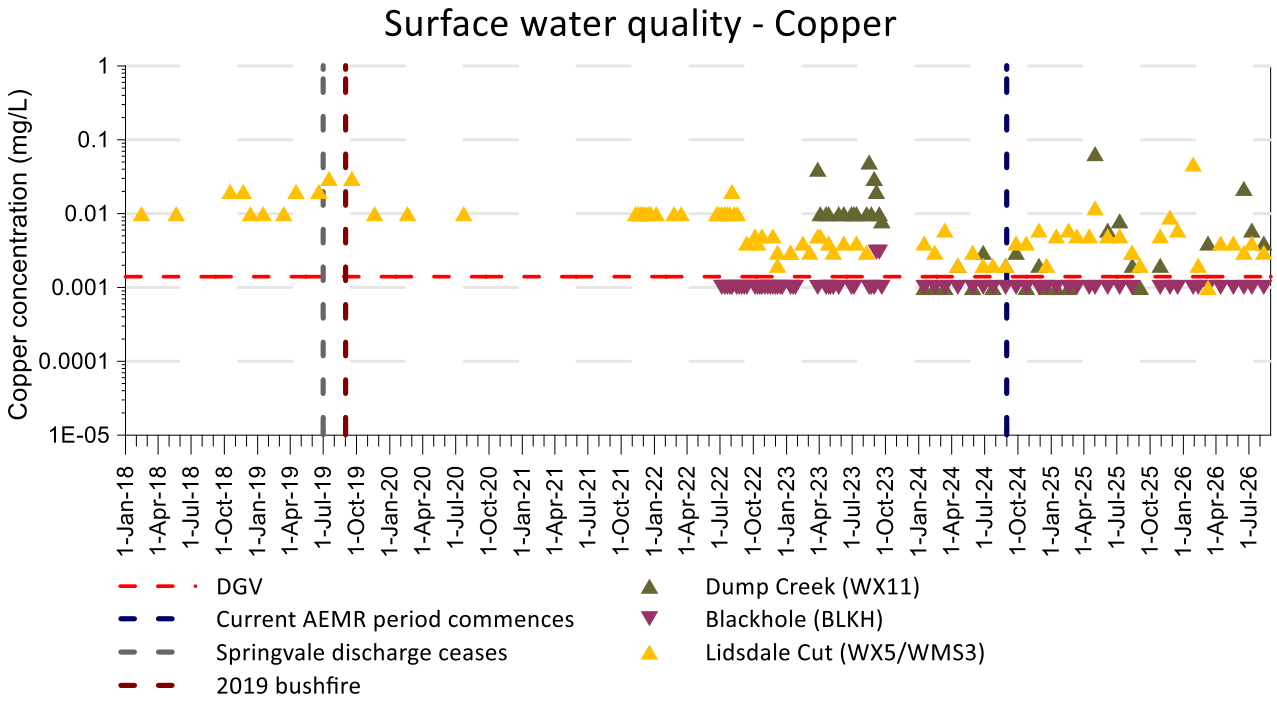
Blackhole (BLKH)
Lidsdale Cut (WX5/WMS3)


Surface water quality - Copper
Copper concentration (mg/L)
1
0.1
0.01
0.001
0.0001
1E-05
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
1-Jul-20
1-Oct-20
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1-Jan-25
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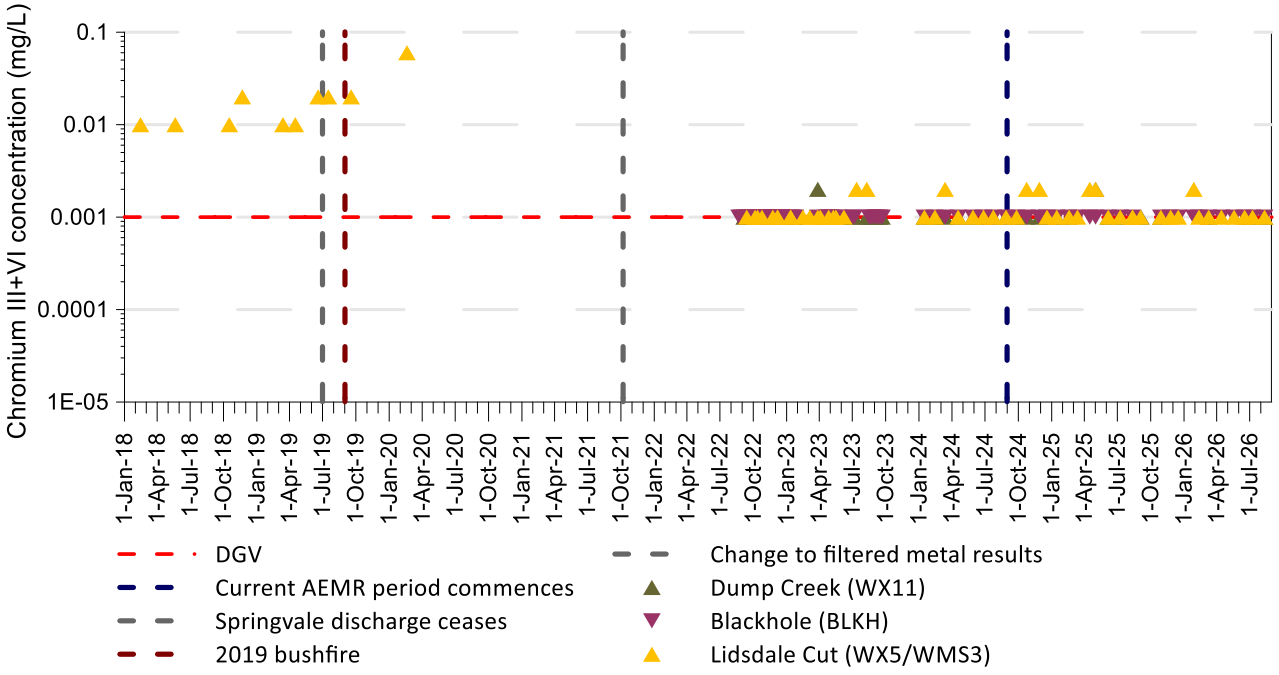
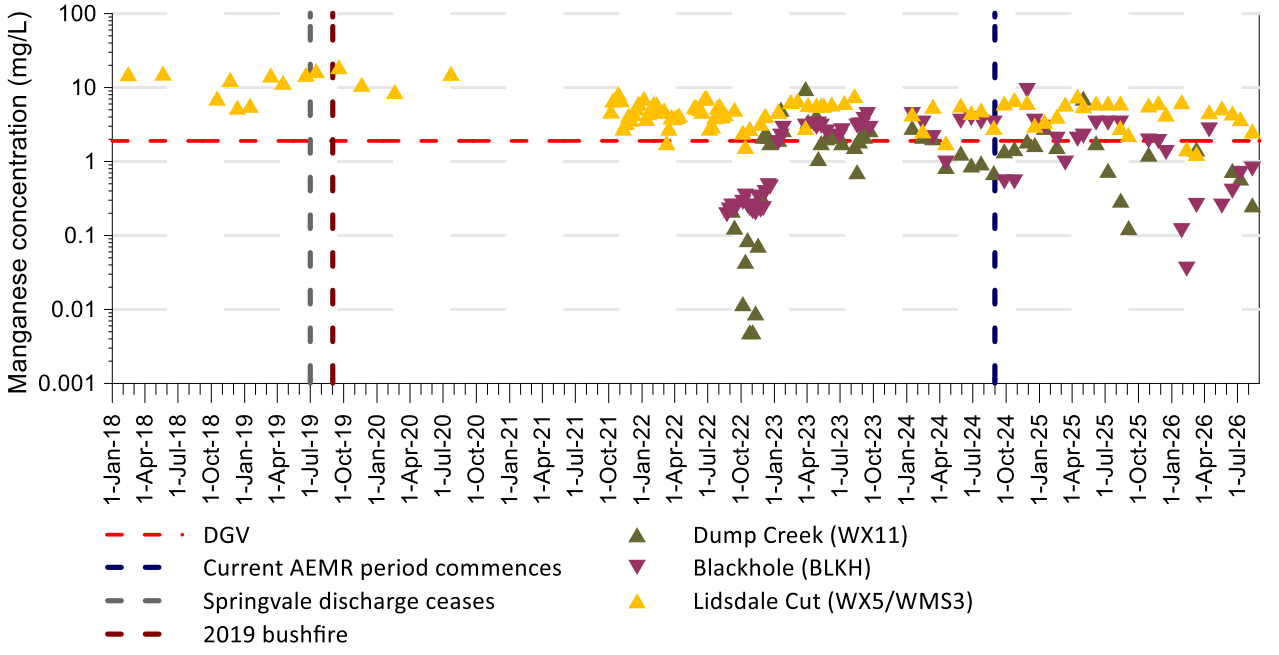
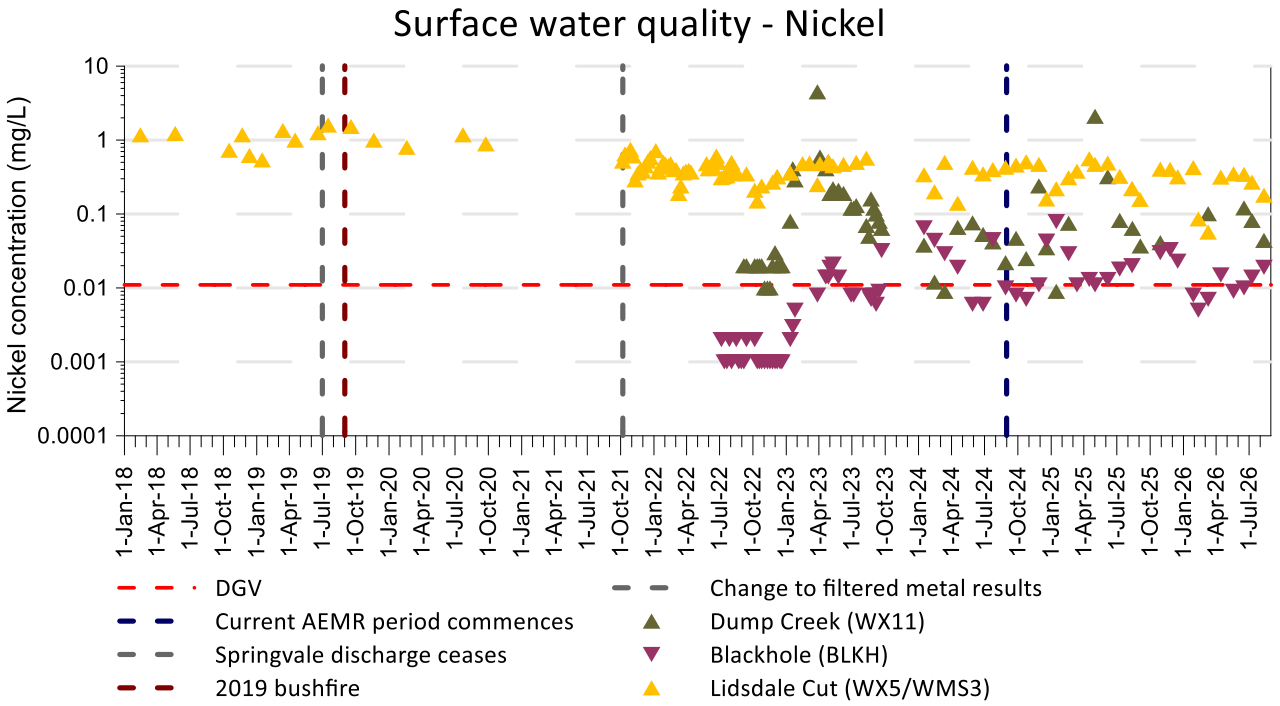
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
Dump Creek (WX11)
Blackhole (BLKH)
Lidsdale Cut (WX5/WMS3)

Surface water quality - Chromium



Surface water quality - Manganese




Surface water quality - Nickel
Nickel concentration (mg/L)
10
1
0.1
0.01
0.001
0.0001
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
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1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
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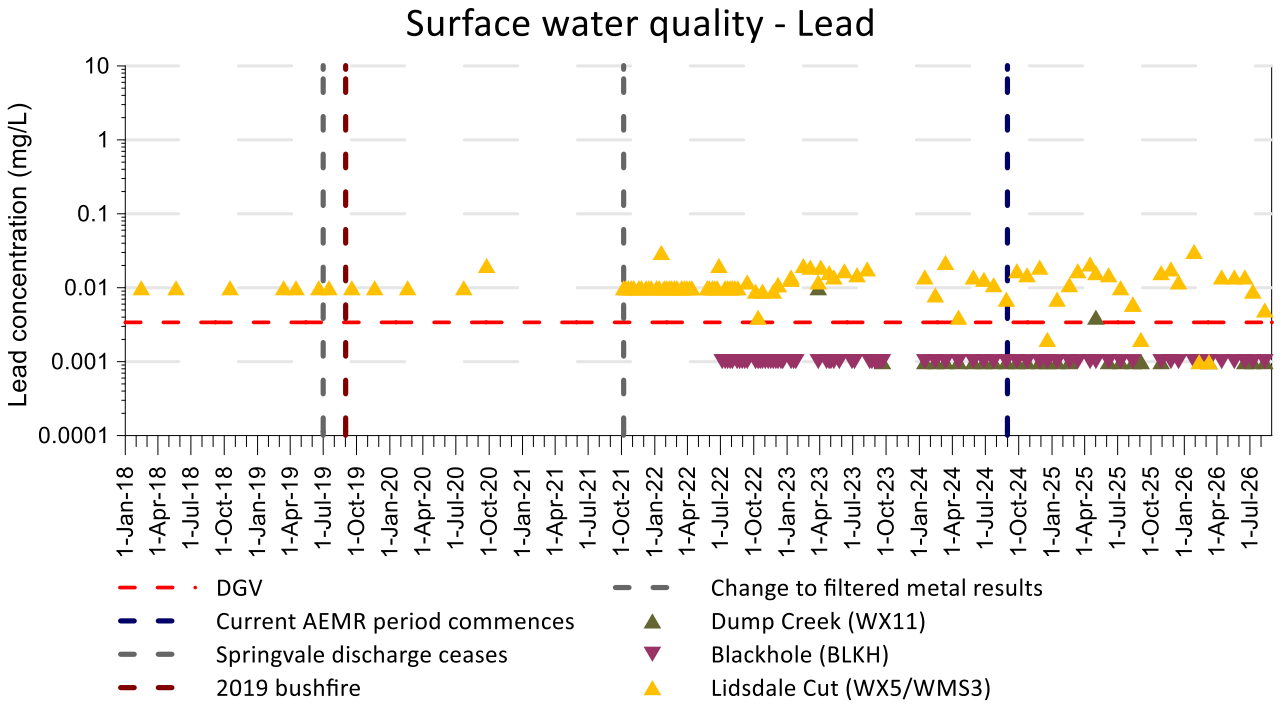
Surface water quality - Lead
Lead concentration (mg/L)
10
1
0.1
0.01
0.001
0.0001
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
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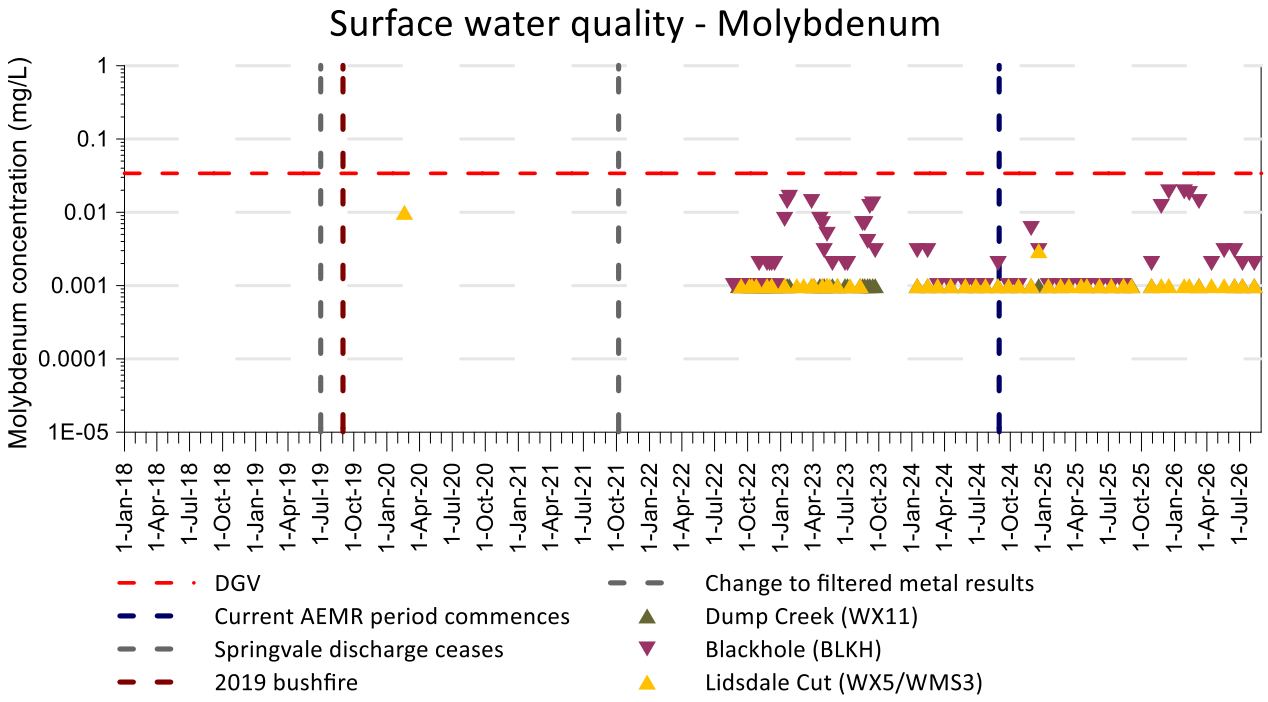
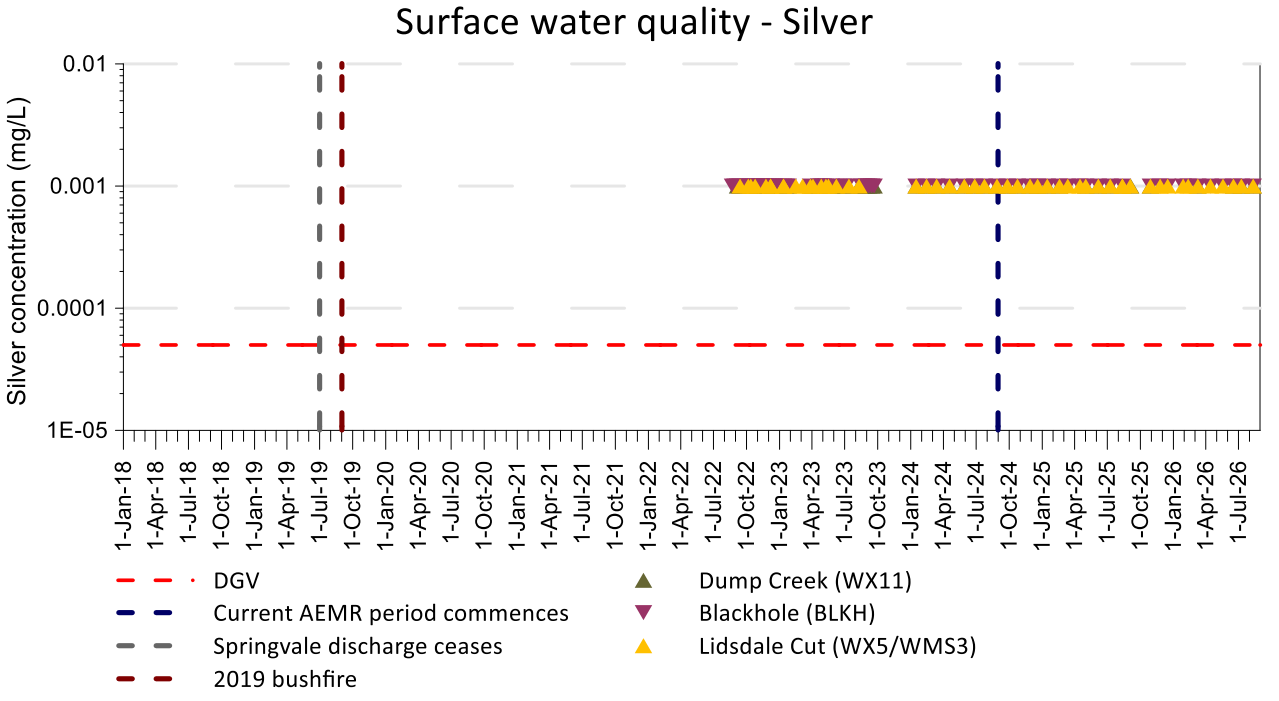
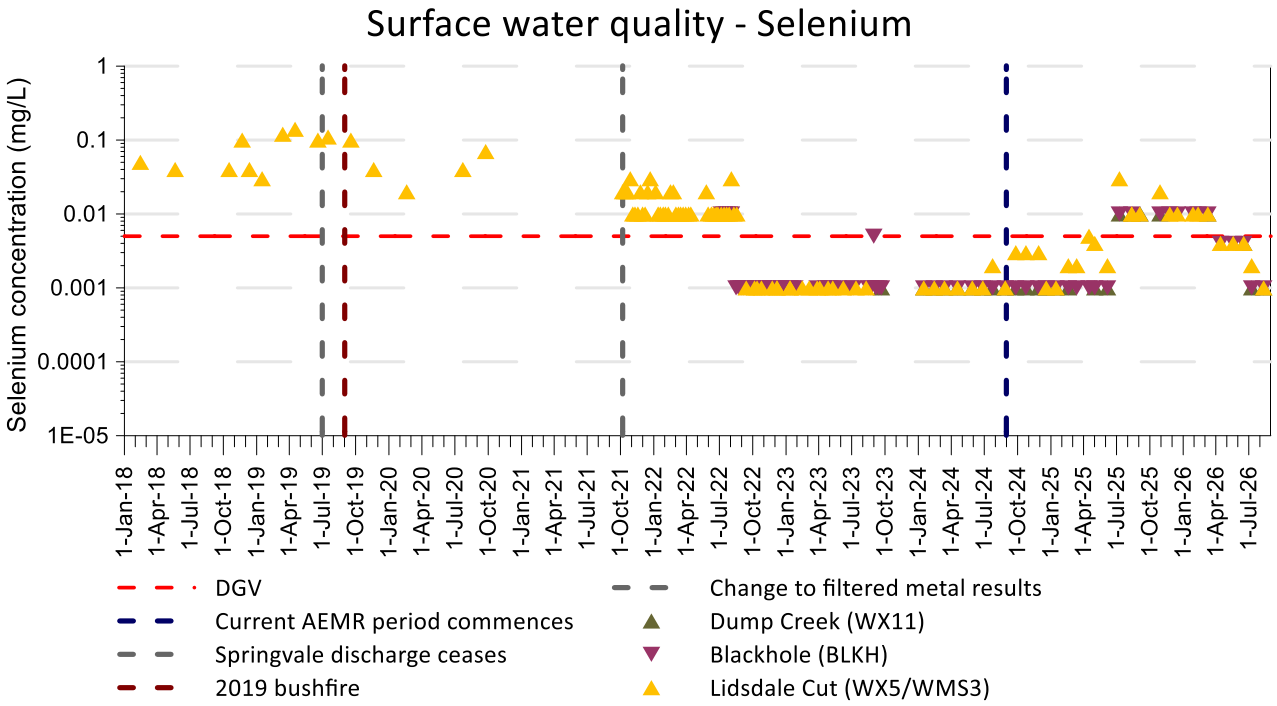
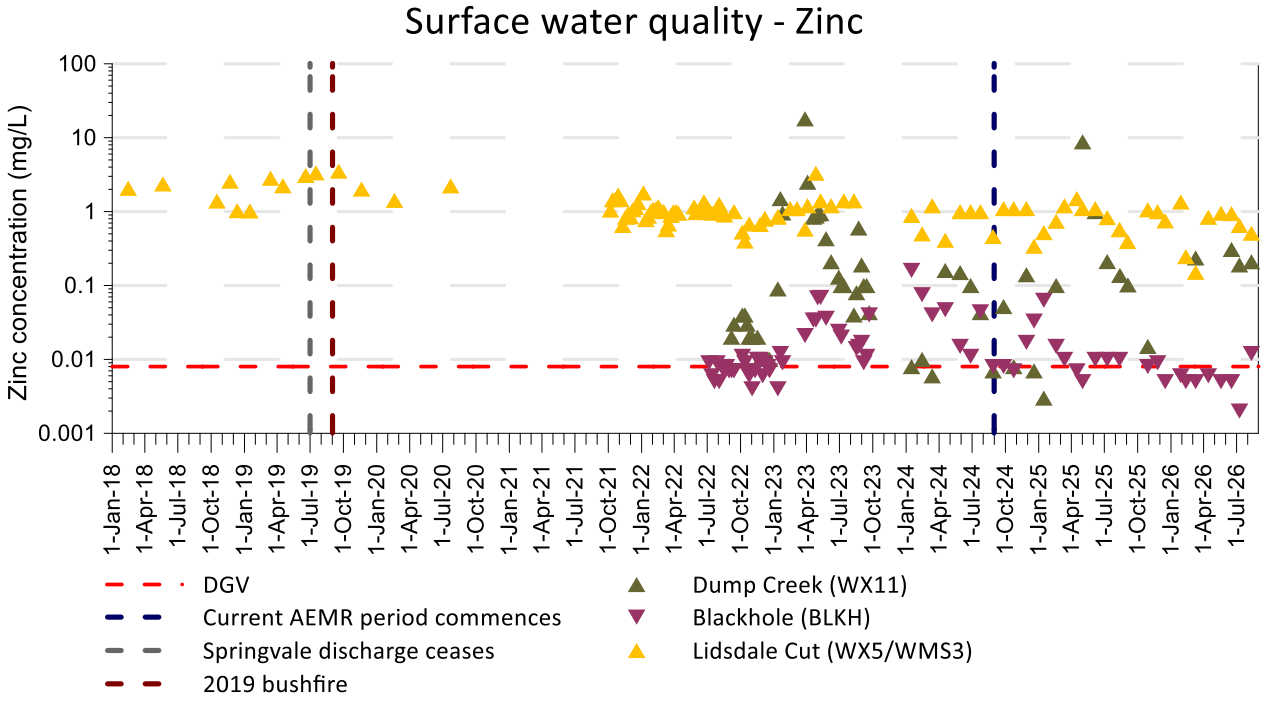
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
Change to filtered metal results
Dump Creek (WX11)
Blackhole (BLKH)
Lidsdale Cut (WX5/WMS3)


Surface water quality - Molybdenum
Molybdenum concentration (mg/L)
1
0.1
0.01
0.001
0.0001
1E-05
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
1-Jul-20
1-Oct-20
1-Jan-21
1-Apr-21
1-Jul-21
1-Oct-21
1-Jan-22
1-Apr-22
1-Jul-22
1-Oct-22
1-Jan-23
1-Apr-23
1-Jul-23
1-Oct-23
1-Jan-24
1-Apr-24
1-Jul-24
1-Oct-24
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
Change to filtered metal results
Dump Creek (WX11)
Blackhole (BLKH)
Lidsdale Cut (WX5/WMS3)


Surface water quality - Silver
Silver concentration (mg/L)
0.01
0.001
0.0001
1E-05
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
1-Jul-20
1-Oct-20
1-Jan-21
1-Apr-21
1-Jul-21
1-Oct-21
1-Jan-22
1-Apr-22
1-Jul-22
1-Oct-22
1-Jan-23
1-Apr-23
1-Jul-23
1-Oct-23
1-Jan-24
1-Apr-24
1-Jul-24
1-Oct-24
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
Dump Creek (WX11)
Blackhole (BLKH)
Lidsdale Cut (WX5/WMS3)


Surface water quality - Selenium
Selenium concentration (mg/L)
1
0.1
0.01
0.001
0.0001
1E-05
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
1-Jul-20
1-Oct-20
1-Jan-21
1-Apr-21
1-Jul-21
1-Oct-21
1-Jan-22
1-Apr-22
1-Jul-22
1-Oct-22
1-Jan-23
1-Apr-23
1-Jul-23
1-Oct-23
1-Jan-24
1-Apr-24
1-Jul-24
1-Oct-24
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
Change to filtered metal results
Dump Creek (WX11)
Blackhole (BLKH)
Lidsdale Cut (WX5/WMS3)


Surface water quality - Zinc
Zinc concentration (mg/L)
100
10
1
0.1
0.01
0.001
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
1-Jul-20
1-Oct-20
1-Jan-21
1-Apr-21
1-Jul-21
1-Oct-21
1-Jan-22
1-Apr-22
1-Jul-22
1-Oct-22
1-Jan-23
1-Apr-23
1-Jul-23
1-Oct-23
1-Jan-24
1-Apr-24
1-Jul-24
1-Oct-24
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
Dump Creek (WX11)
Blackhole (BLKH)
Lidsdale Cut (WX5/WMS3)

Annexure B

Groundwater quality charts

EMM
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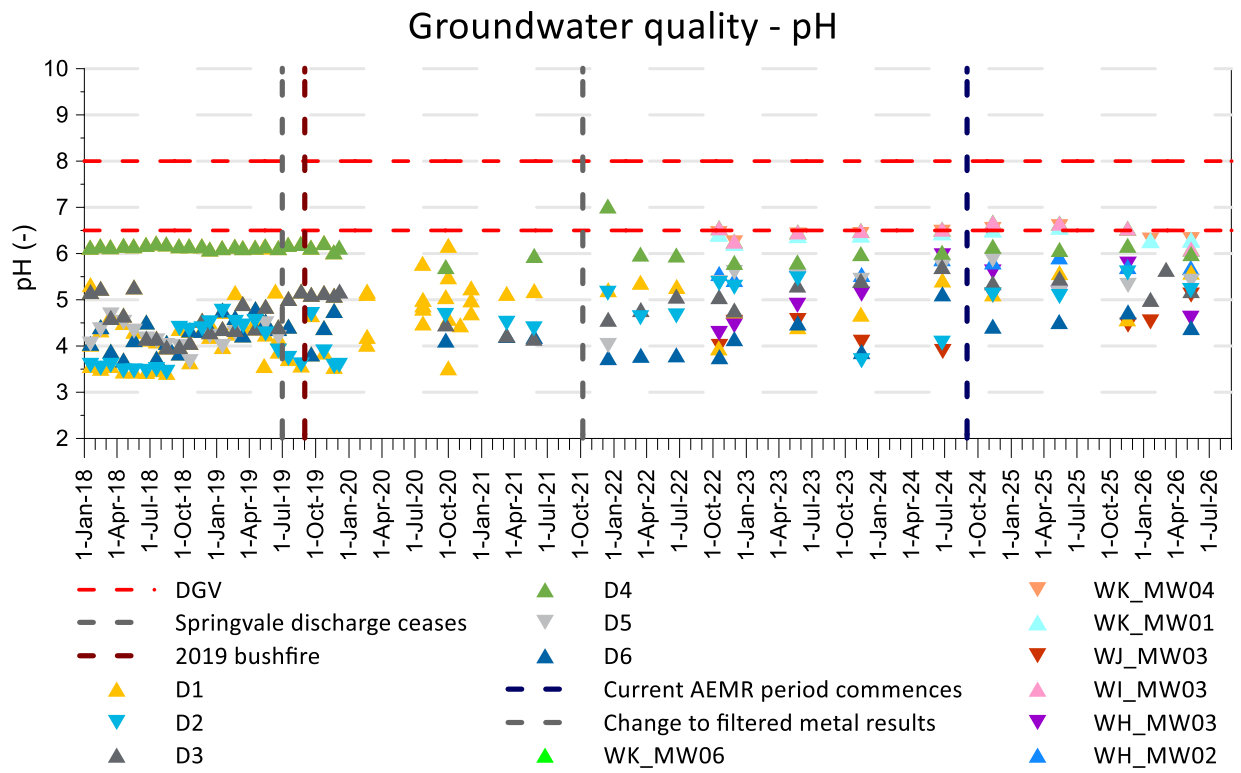
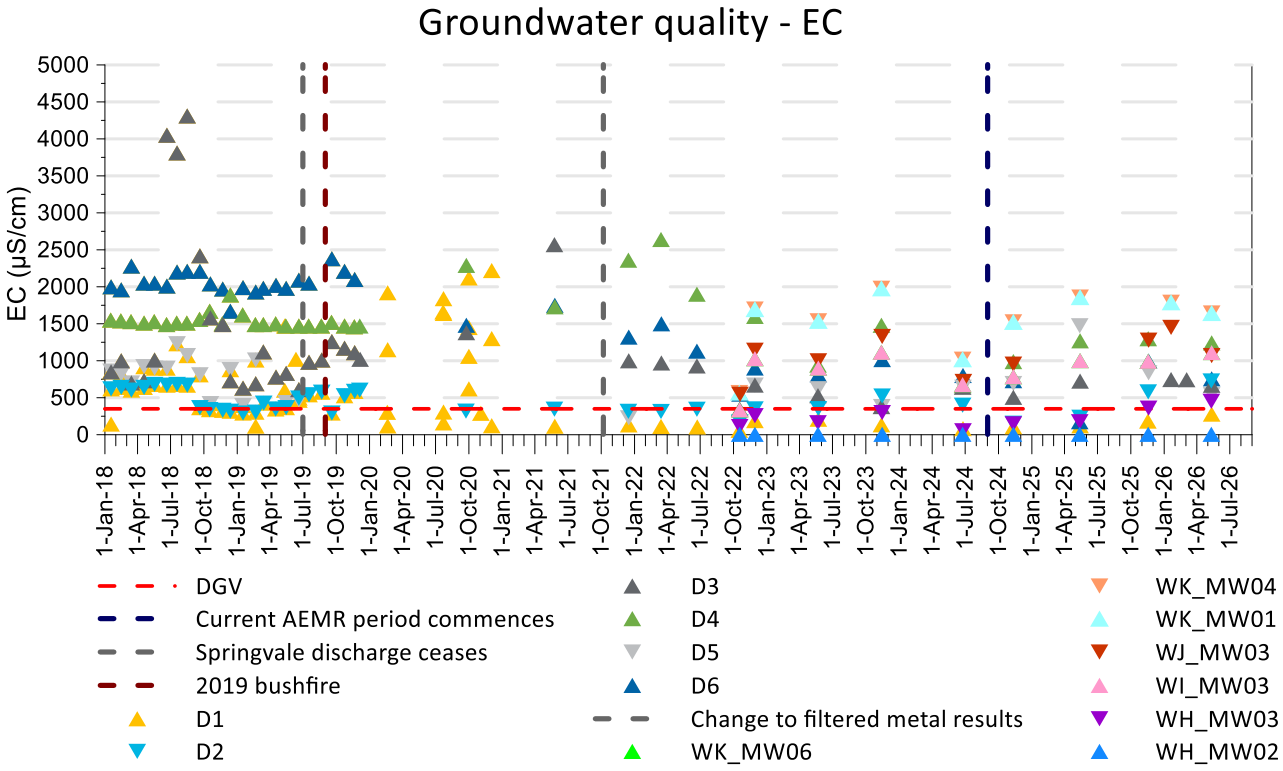
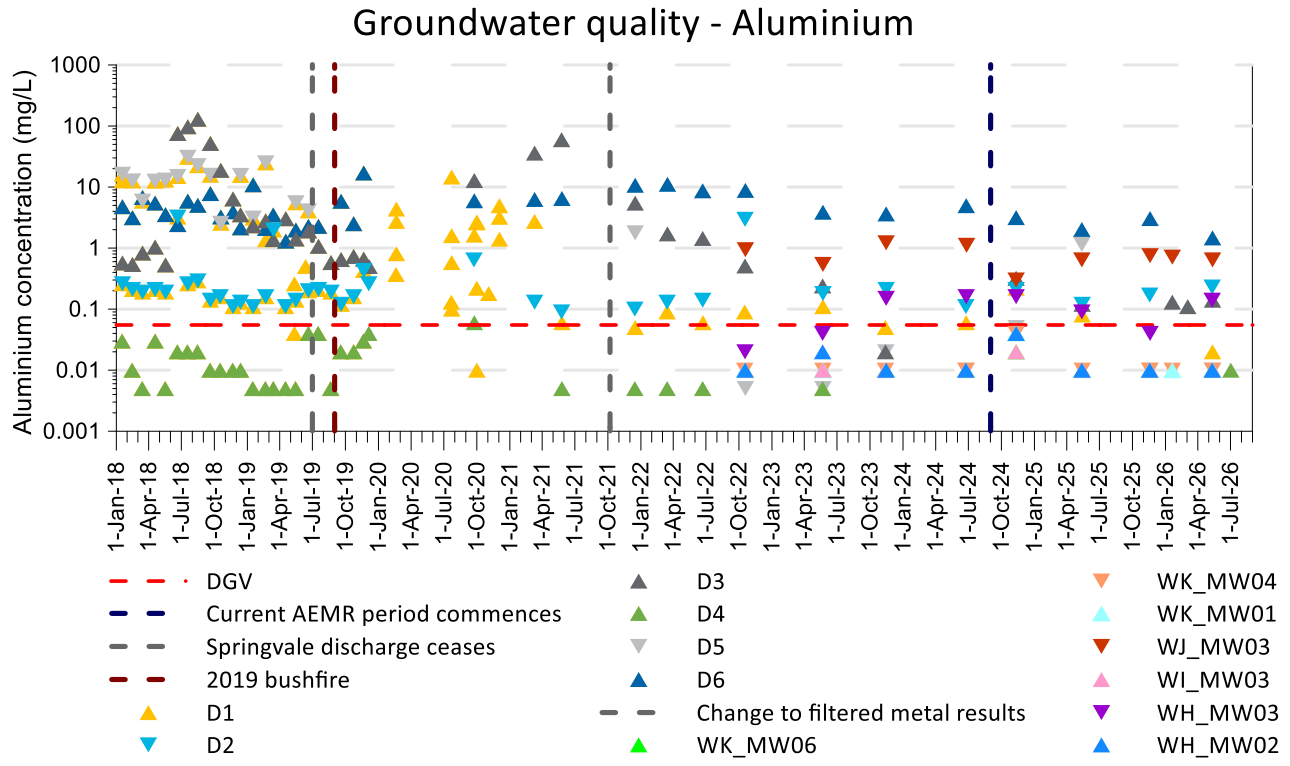
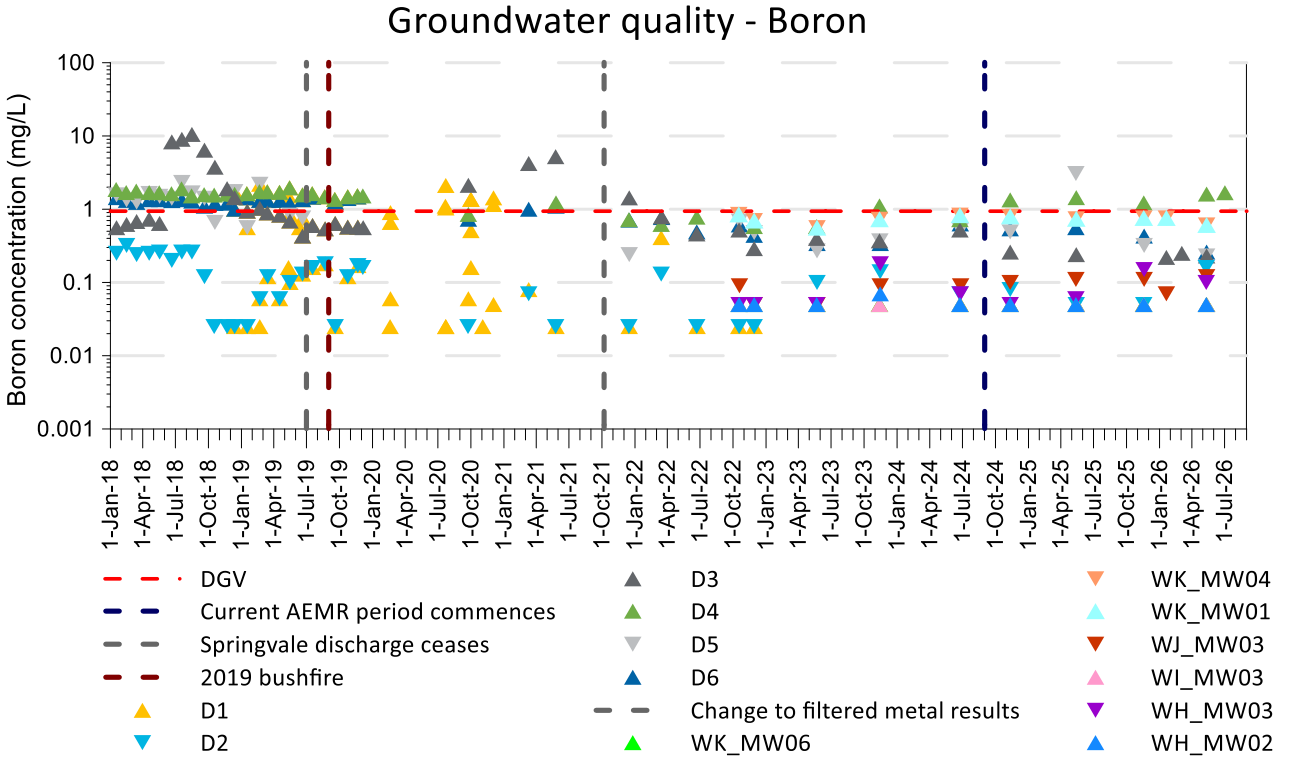
B.1 Physico-chemical parameter chart



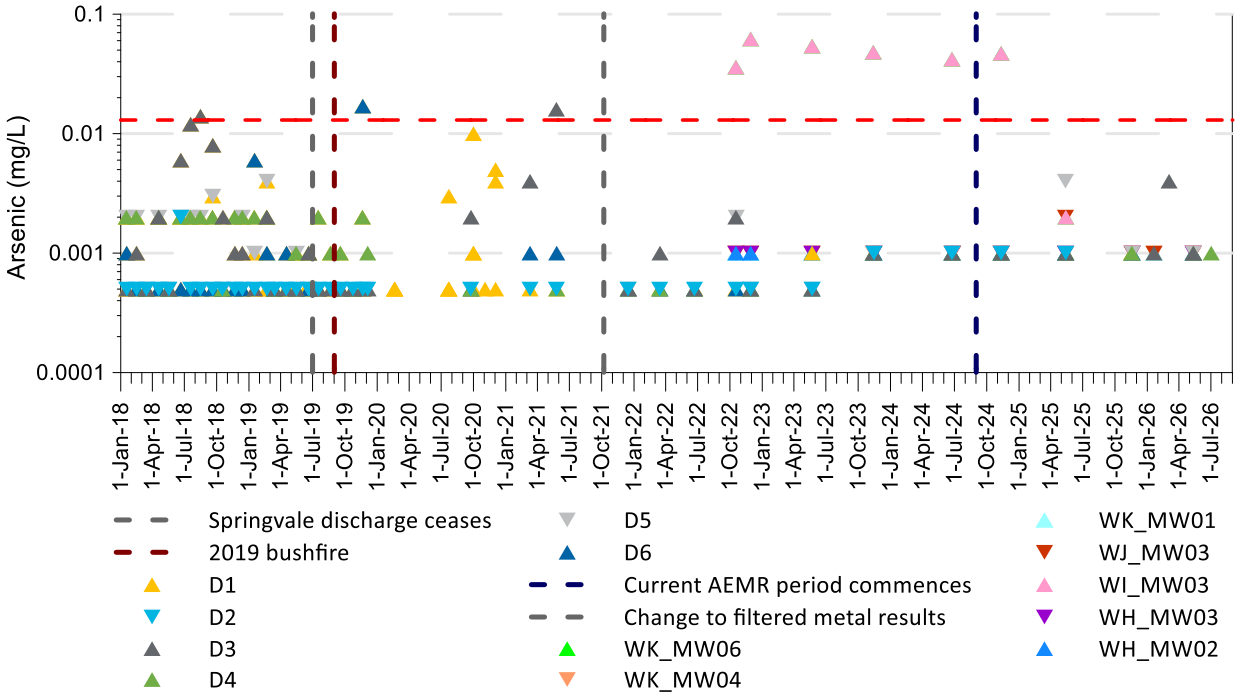


B.2 Metals charts

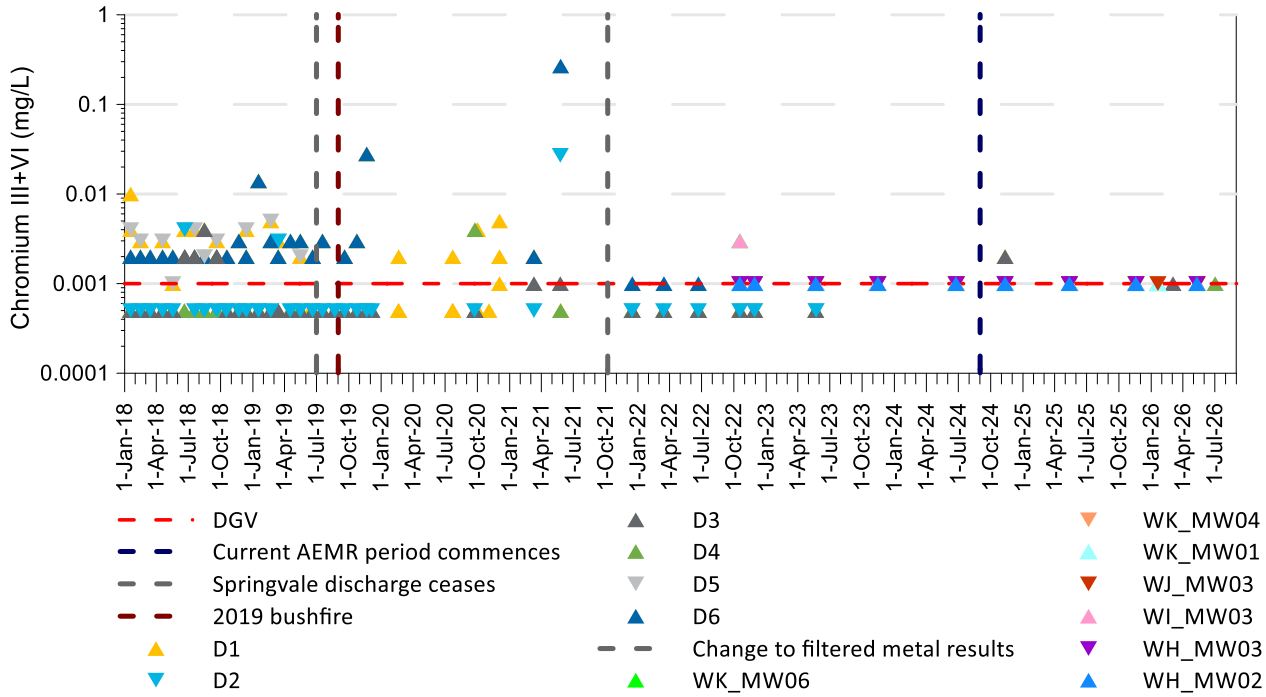




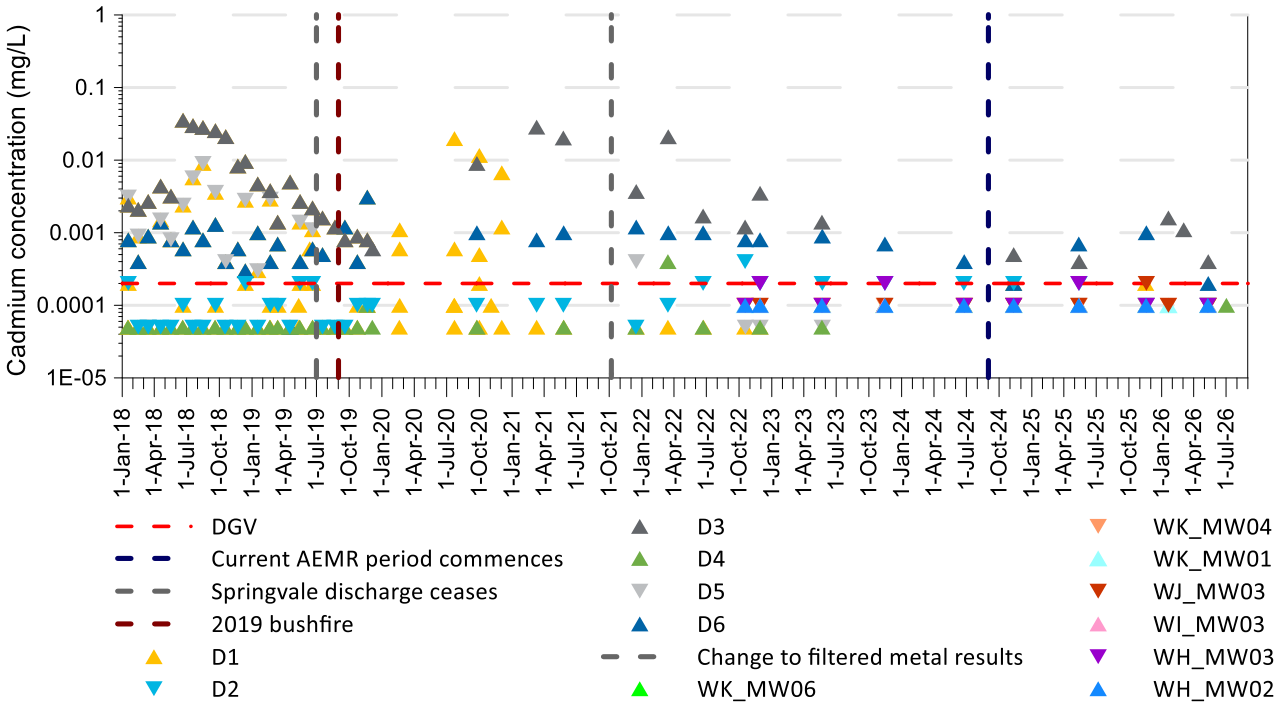
Groundwater quality - Arsenic



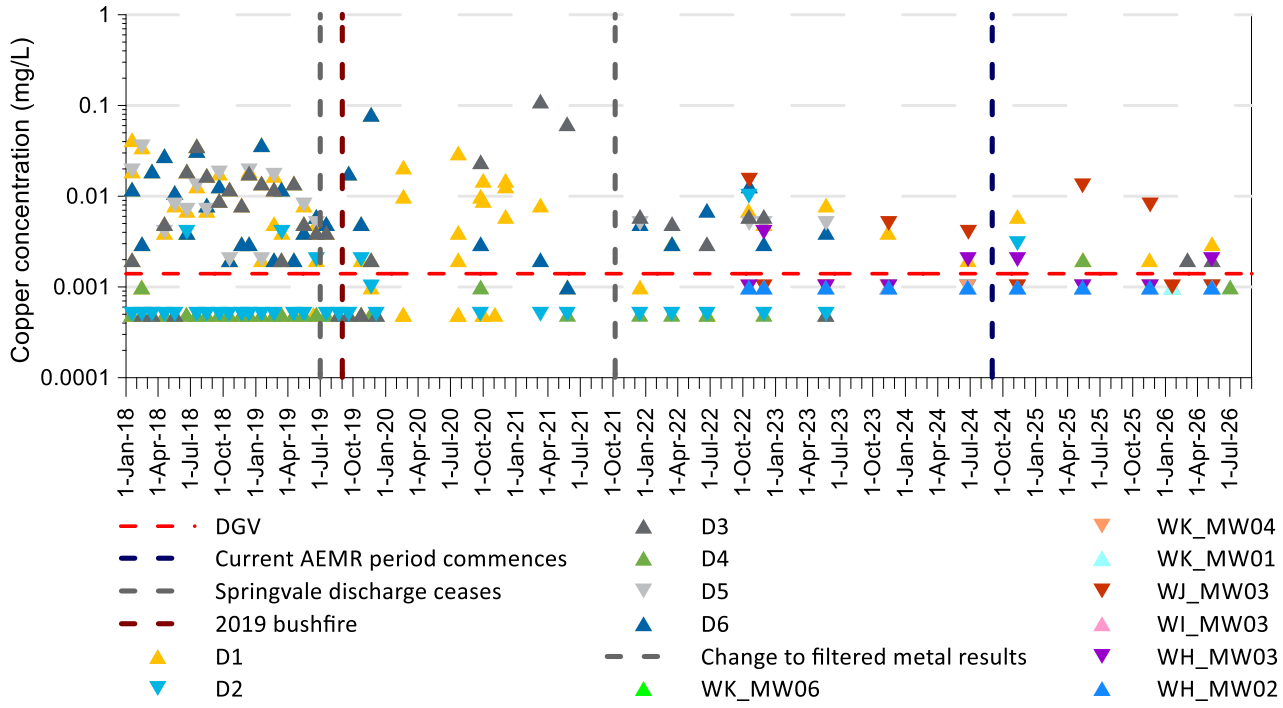
Groundwater quality - Chromium



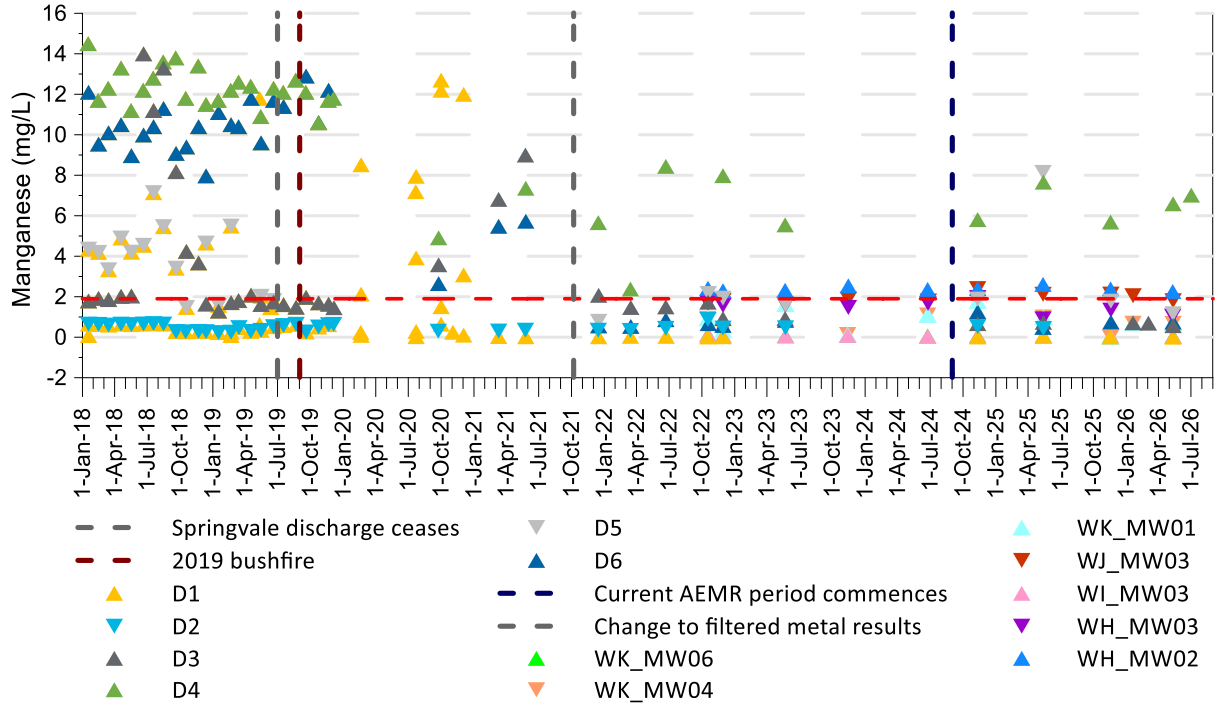
Groundwater quality - Cadmium



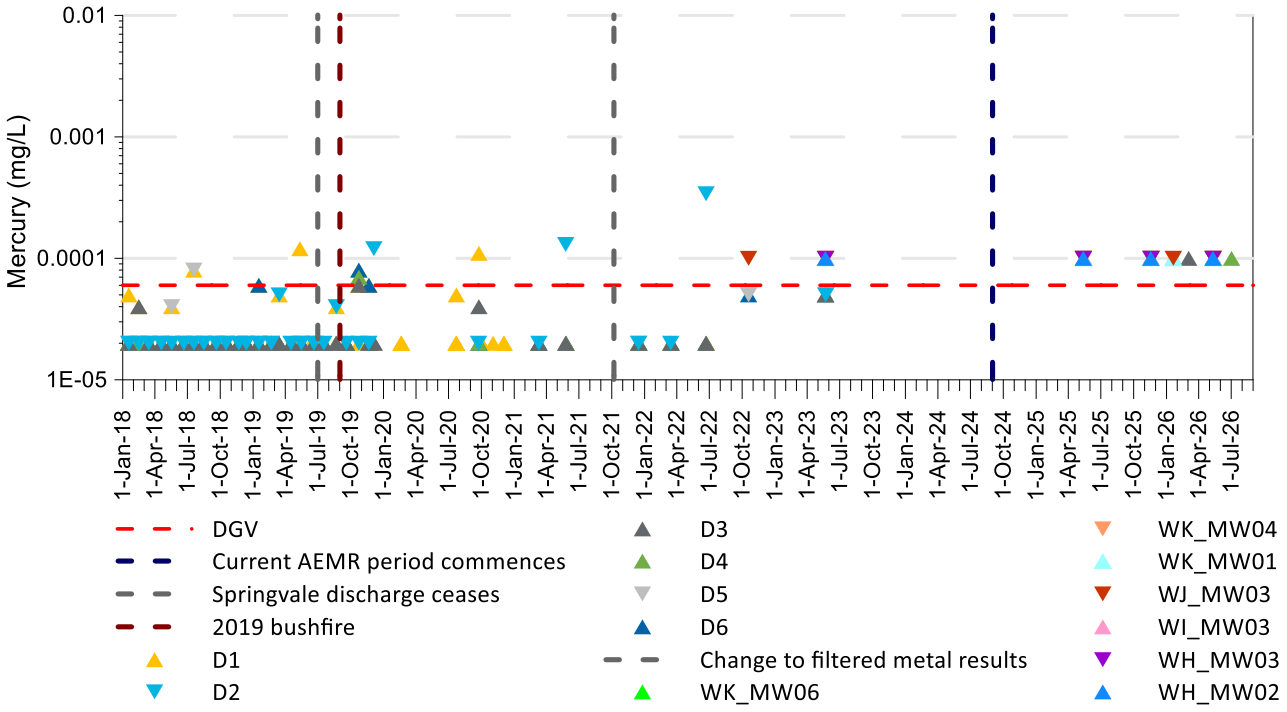
Groundwater quality - Copper

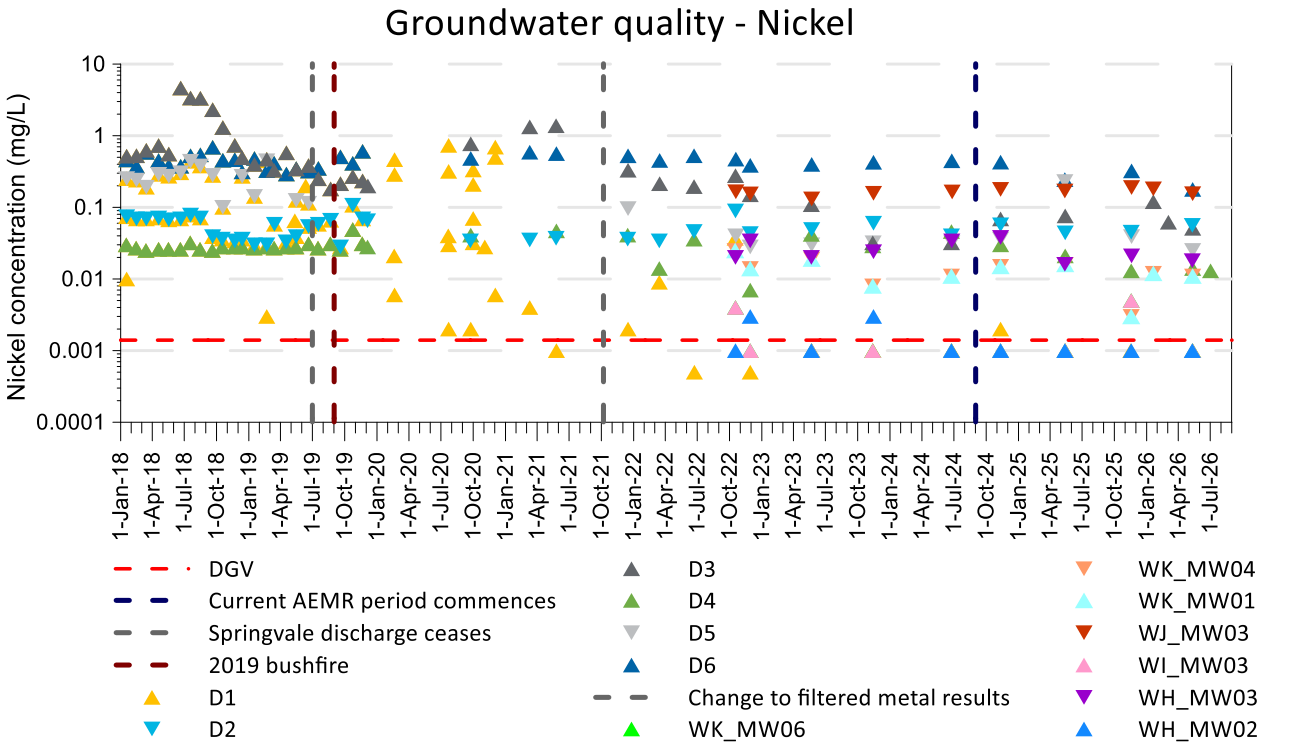


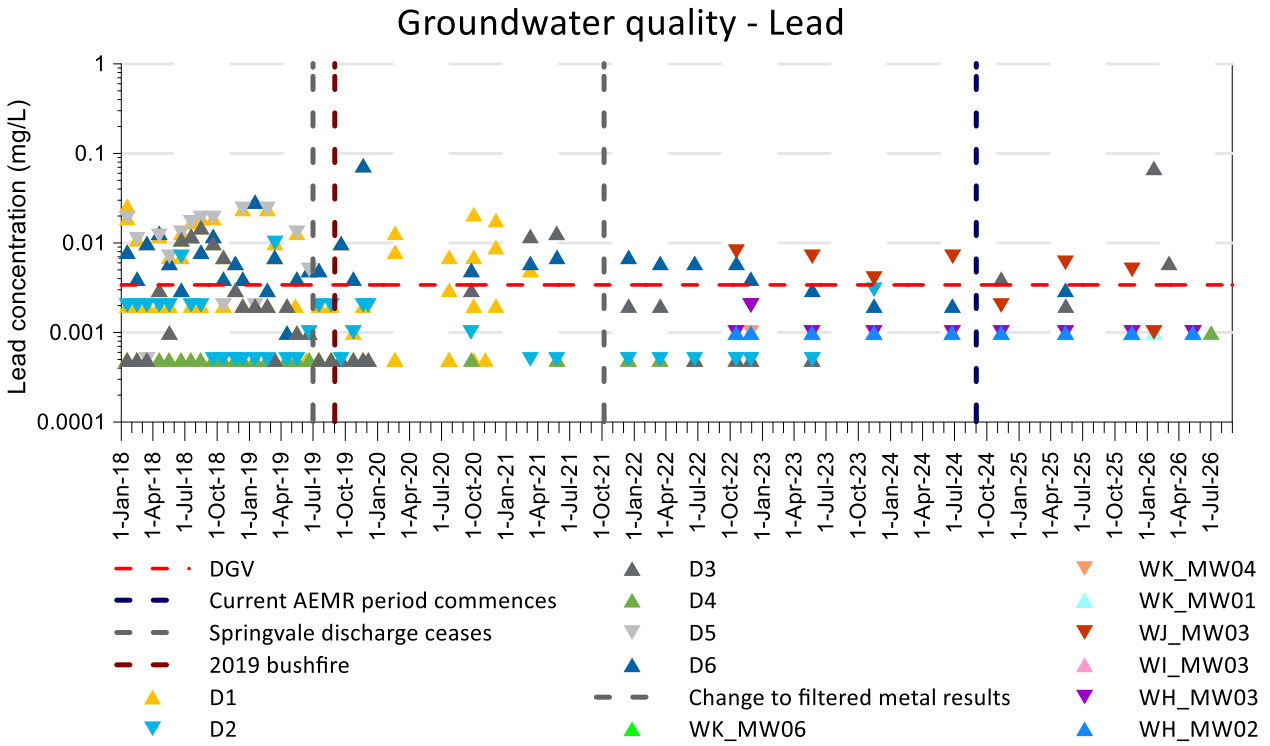
Groundwater quality - Manganese

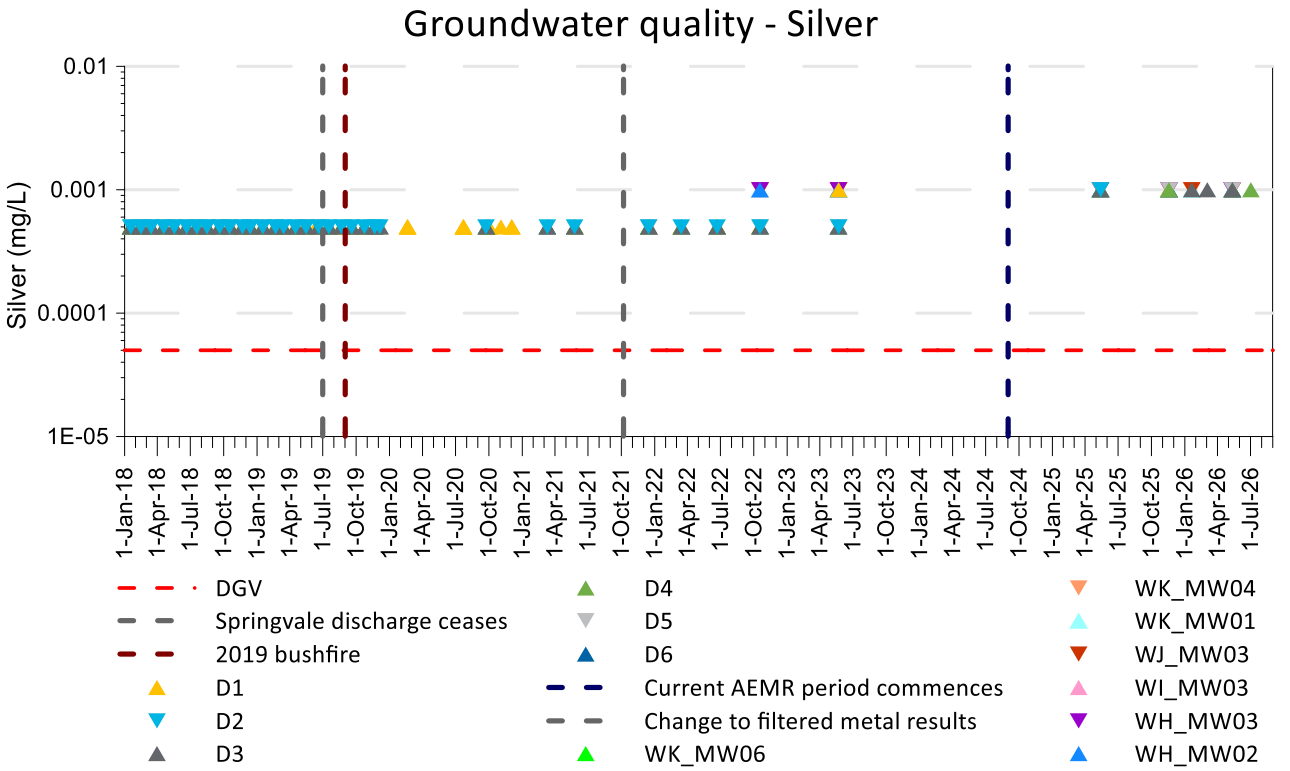


Groundwater quality - Mercury




Groundwater quality - Nickel
Nickel concentration (mg/L)
10
1
0.1
0.01
0.001
0.0001
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
1-Jul-20
1-Oct-20
1-Jan-21
1-Apr-21
1-Jul-21
1-Oct-21
1-Jan-22
1-Apr-22
1-Jul-22
1-Oct-22
1-Jan-23
1-Apr-23
1-Jul-23
1-Oct-23
1-Jan-24
1-Apr-24
1-Jul-24
1-Oct-24
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
D1
D2
D3
D4
D5
D6
Change to filtered metal results
WK_MW06
WK_MW04
WK_MW01
WJ_MW03
WI_MW03
WH_MW03
WH_MW02


Groundwater quality - Lead
Lead concentration (mg/L)
1
0.1
0.01
0.001
0.0001
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
1-Jul-20
1-Oct-20
1-Jan-21
1-Apr-21
1-Jul-21
1-Oct-21
1-Jan-22
1-Apr-22
1-Jul-22
1-Oct-22
1-Jan-23
1-Apr-23
1-Jul-23
1-Oct-23
1-Jan-24
1-Apr-24
1-Jul-24
1-Oct-24
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
D1
D2
D3
D4
D5
D6
Change to filtered metal results
WK_MW06
WK_MW04
WK_MW01
WJ_MW03
WI_MW03
WH_MW03
WH_MW02


Groundwater quality - Silver
Silver (mg/L)
0.01
0.001
0.0001
1E-05
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
1-Jul-20
1-Oct-20
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1-Oct-21
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1-Apr-22
1-Jul-22
1-Oct-22
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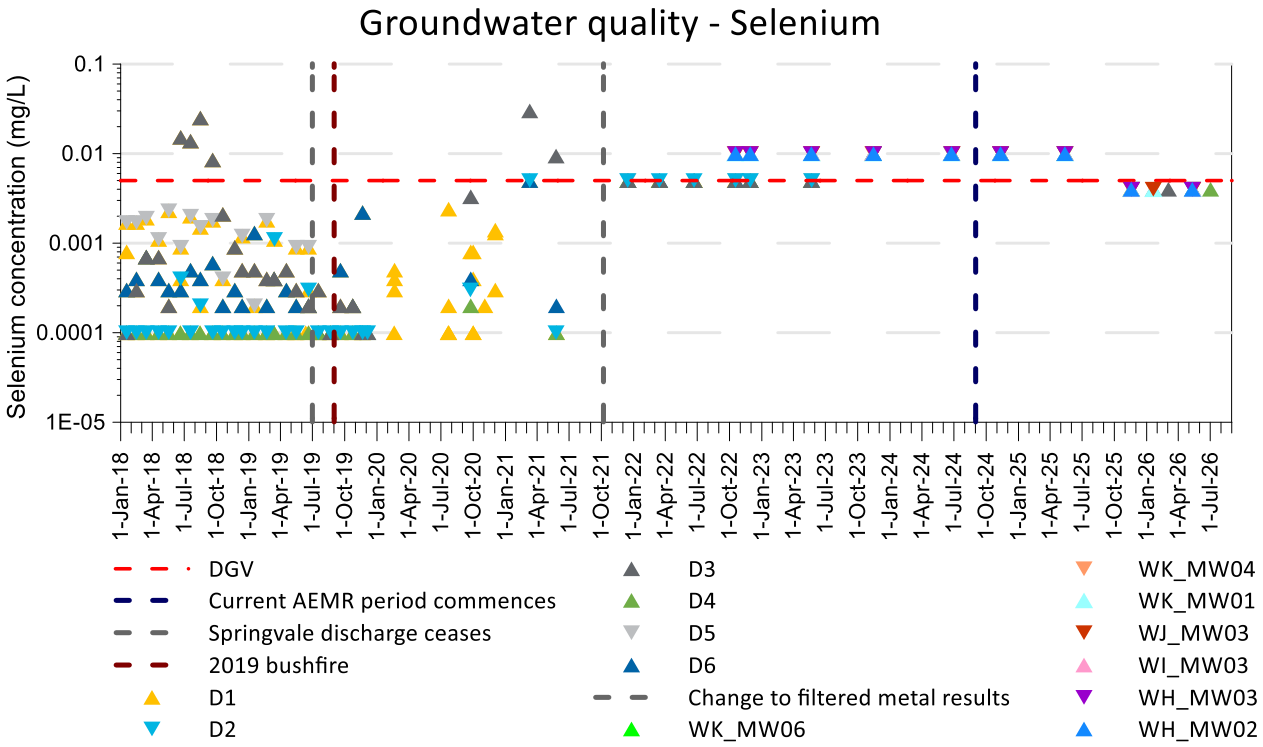
1-Apr-23
1-Jul-23
1-Oct-23
1-Jan-24
1-Apr-24
1-Jul-24
1-Oct-24
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Springvale discharge ceases
2019 bushfire
D1
D2
D3
D4
D5
D6
Current AEMR period commences
Change to filtered metal results
WK_MW06
WK_MW04
WK_MW01
WJ_MW03
WI_MW03
WH_MW03
WH_MW02


Groundwater quality - Selenium
Selenium concentration (mg/L)
0.1
0.01
0.001
0.0001
1E-05
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
1-Jul-20
1-Oct-20
1-Jan-21
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1-Oct-21
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1-Jul-24
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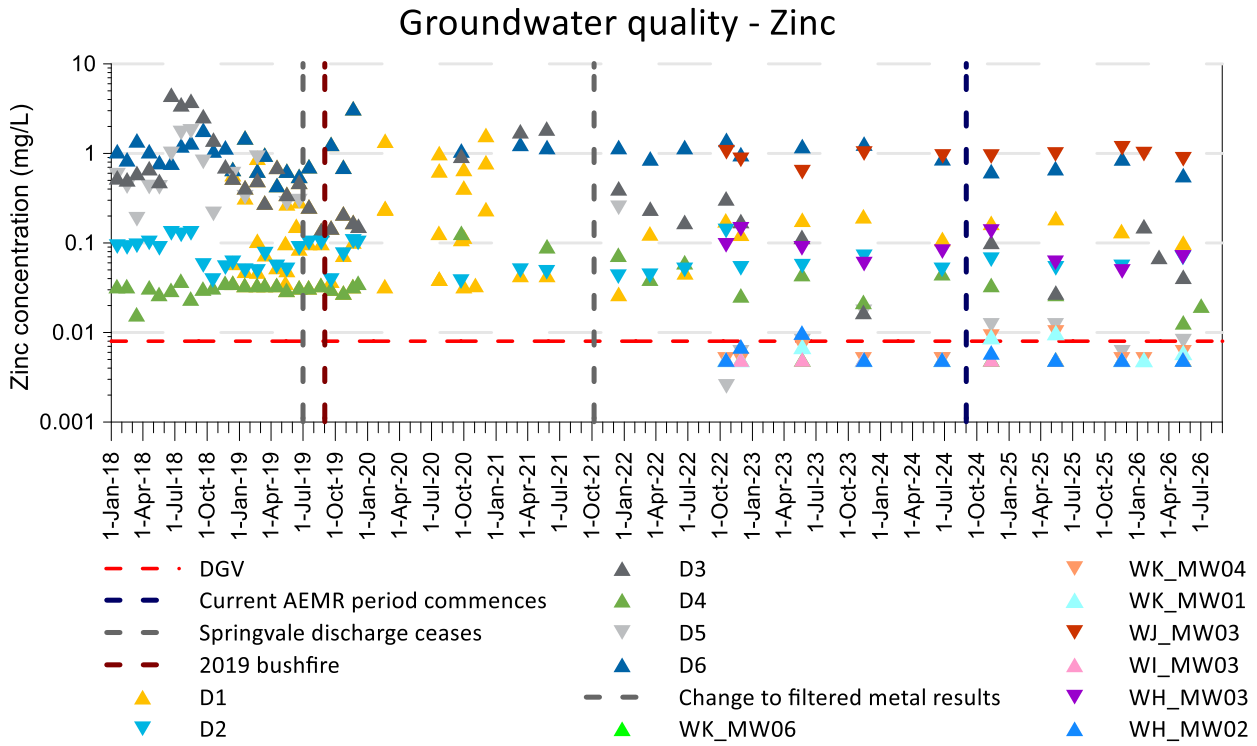
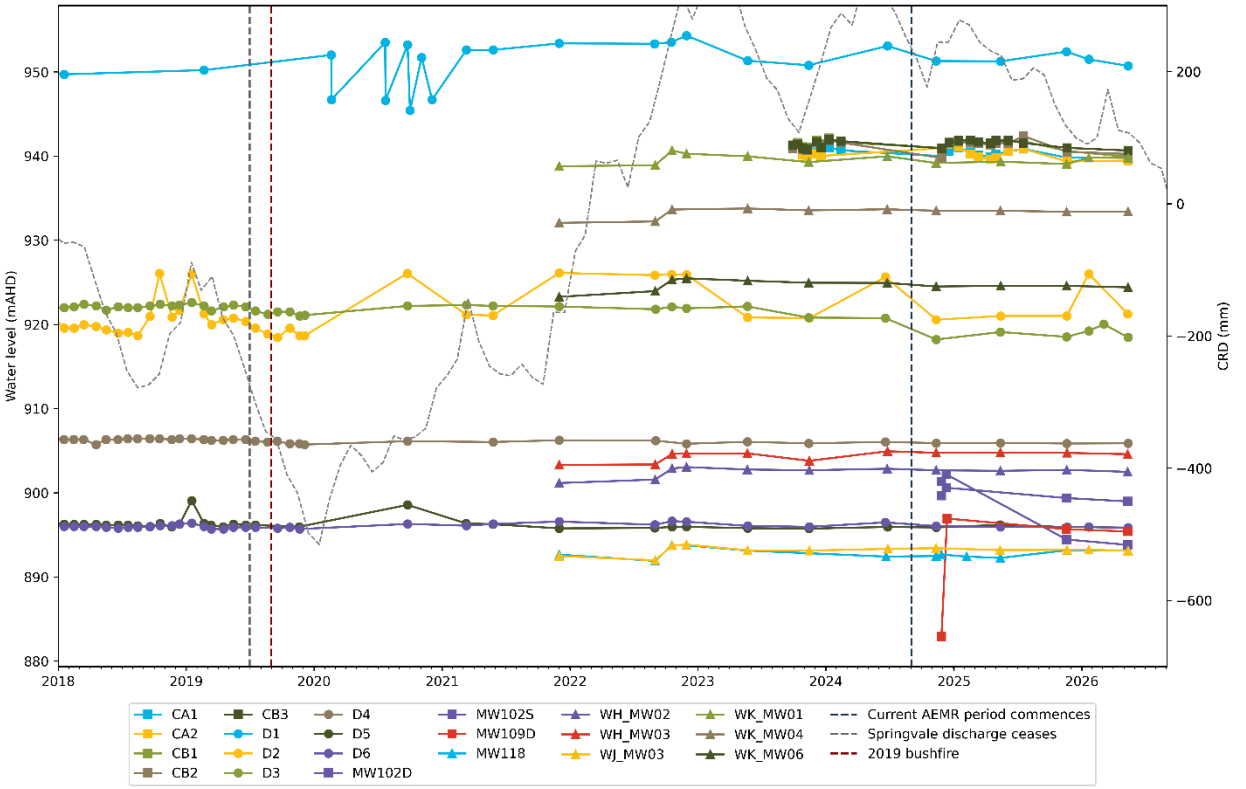
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
D1
D2
D3
D4
D5
D6
Change to filtered metal results
WK_MW06
WK_MW04
WK_MW01
WJ_MW03
WI_MW03
WH_MW03
WH_MW02

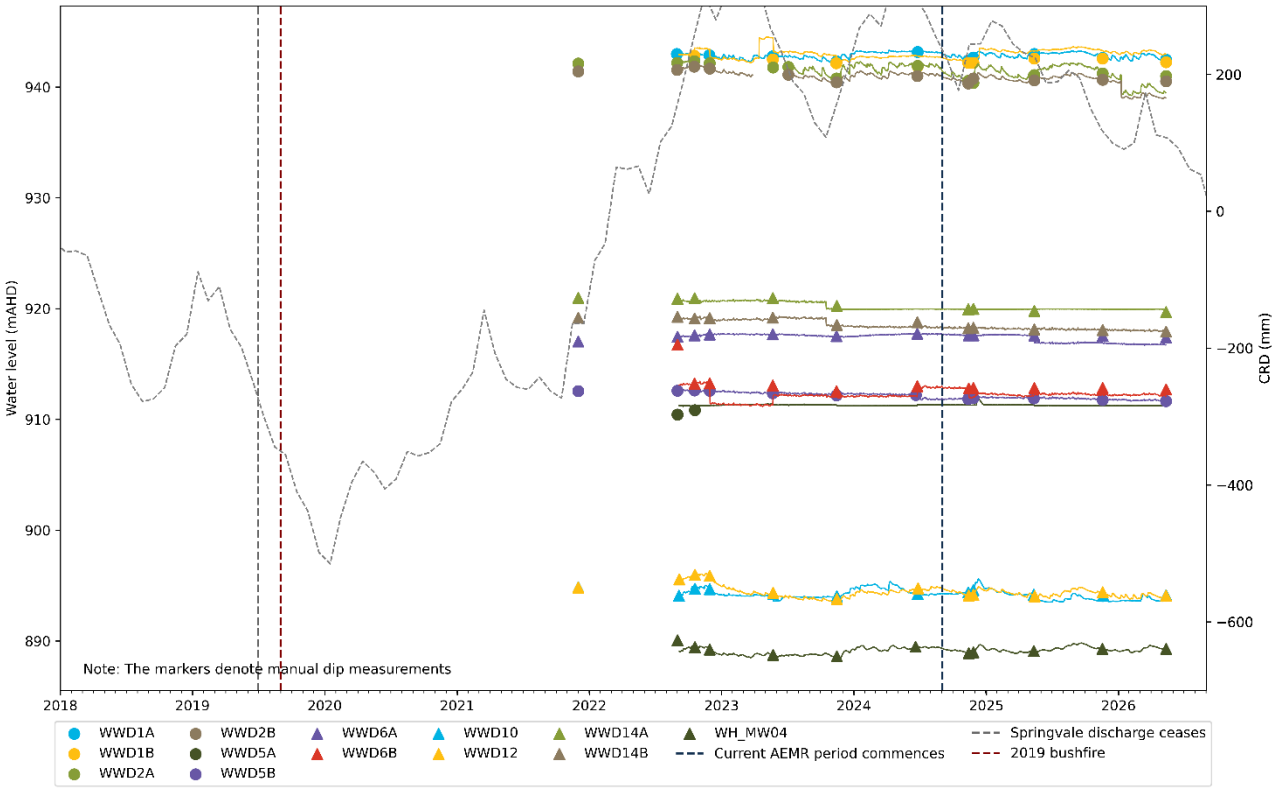

Groundwater quality - Zinc
Zinc concentration (mg/L)
10
1
0.1
0.01
0.001
1-Jan-18
1-Apr-18
1-Jul-18
1-Oct-18
1-Jan-19
1-Apr-19
1-Jul-19
1-Oct-19
1-Jan-20
1-Apr-20
1-Jul-20
1-Oct-20
1-Jan-21
1-Apr-21
1-Jul-21
1-Oct-21
1-Jan-22
1-Apr-22
1-Jul-22
1-Oct-22
1-Jan-23
1-Apr-23
1-Jul-23
1-Oct-23
1-Jan-24
1-Apr-24
1-Jul-24
1-Oct-24
1-Jan-25
1-Apr-25
1-Jul-25
1-Oct-25
1-Jan-26
1-Apr-26
1-Jul-26
DGV
Current AEMR period commences
Springvale discharge ceases
2019 bushfire
D1
D2
D3
D4
D5
D6
Change to filtered metal results
WK_MW06
WK_MW04
WK_MW01
WJ_MW03
WI_MW03
WH_MW03
WH_MW02

B.3 Hydrographs

B.3.1 Manual water level measurements



B.3.2 Level logger measurements



Annexure C

Groundwater Results Tables

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C.1 Groundwater analytical tables

				Field							Inorganics												
				Temperature (Field)	pH (Field)	Electrical Conductivity (Field)	DO (Field)	DO % Saturation (Field)	Total Dissolved Solids (Field)	Redox Potential (Field)	Hardness as CaCO3 (filtered)	Sulfate as SO4 - Turbidimetric (filtered)	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3	Anions Total	Cations Total	Chloride	Fluoride	Ionic Balance	Sodium (filtered)	Total Dissolved Solids (Lab)
				°C	-	µS/cm	mg/L	%	mg/L	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	mg/L	mg/L	%	mg/L	mg/L
EQL											1	1	1	1	1	1	0.01	0.01	1	0.1	0.01	0.5	5
ANZG Freshwater Toxicant DGVs LOSP 95% (July 2026)					**6.5-8.0**	**350**														**1.7**			
Location Code	**Field ID**	**Date**	**Lab Report**																				
CA1	CA1	15 Apr 2025	378657	18.2	5.94	832	1.19			14	130		150	<5	<5	150			35	5.7	-3.0	90	620
CA1	CA1	01 May 2025	379555	16.2	6.01	785	3.13			77	140		14	<5	<5	14			42	5.8	15	86	580
CA1	**CA1**	**18 Nov 2025**	**ES2536608**	24.1	4.39	2,733	3.09	38.9	1,777	165.8	899	1,480	<1	<1	<1	<1	31.8	31.0	36	25.0	1.26	207	2,540
CA1	**CA1**	**12 May 2026**	**ES2615273**	13.4	6	1,303	2.82	27.6	847	59.2	222	392	102	<1	<1	102	11.5	10.4	45	7.6	4.72	109	830
CA2	CA2	15 Apr 2025	378657	15.4	5.22	1,031	1.52			57	220		13	<5	<5	13			12	5.7	-1.0	98	680
CA2	CA2	01 May 2025	379555	16.2	5.06	1,205	2.67			245	260		140	<5	<5	140			15	6.6	-10	110	1,100
CA2	**CA2**	**18 Nov 2025**	**ES2536608**								210	416	6	<1	<1	6	9.26	9.17	17	3.8	0.47	84	710
CA2	**CA2**	**12 May 2026**	**ES2615273**	15.2	5.1	1,609	5.22	52.2	1,043	229.6	341	786	<1	<1	<1	<1	16.8	14.7	15	6.5	6.57	140	1,310
CB1	CB1	15 Apr 2025	378657	17	5.91	515	0.93			48	59		31	<5	<5	31			23	1.7	-8.0	46	400
CB1	CB1	01 May 2025	379555	15.3	5.13	324	1.64			263	44		30	<5	<5	30			18	1.2	2.0	38	260
CB1	**CB1**	**18 Nov 2025**	**ES2536608**	19.5	5.47	1,298	1.14	12.5	844	165	314	465	14	<1	<1	14	10.9	12.1	34	1.4	5.20	106	833
CB1	**CB1**	**12 May 2026**	**ES2615273**	13.9	8.3	1,485	1.73	17.7	966	-9.3	283	523	13	<1	<1	13	11.9	10.3	25	1.8	6.86	82	840
CB2	CB2	15 Apr 2025	378657	18.2	5.51	778	0.69			62	180		13	<5	<5	13			24	0.3	-5.0	60	600
CB2	CB2	01 May 2025	379555	15.8	5.14	680	1.03			321	210		15	<5	<5	15			23	0.5	-7.0	62	750
CB2	**CB2**	**18 Nov 2025**	**ES2536608**	20.1	5.22	1,037	1.62	18.4	674	200.7	230	387	6	<1	<1	6	8.83	9.34	23	1.2	2.83	83	688
CB2	**CB2**	**12 May 2026**	**ES2615273**	14.9	5.2	2,106	2.98	29.8	1,564	120.9	686	1,030	<1	<1	<1	<1	22.9	24.6	52	5.5	3.57	194	2,020
CB3	CB3	15 Apr 2025	378657	17.7	6.71	388	0.86			3	46		18	<5	<5	18			21	1	-2.0	31	190
CB3	CB3	01 May 2025	379555	16.3	5.31	280	1.99			199	40		18	<5	<5	18			18	0.8	1.0	32	250
CB3	**CB3**	**18 Nov 2025**	**ES2536608**	17.7	5.35	2,101	1.14	12.2	1,365	135.4	647	957	<1	<1	<1	<1	21.0	21.2	37	0.9	0.64	153	1,560
CB3	**CB3**	**12 May 2026**	**ES2615273**	15.4	6	1,322	2.53	25.2	859	55.5	305	524	5	<1	<1	5	11.9	11.2	30	0.7	2.99	86	885
MW102D	MW102D_241210	10 Dec 2024	ES2440637									236	135	<1	<1	135	7.95	7.54	12		2.64	19	579
MW102D	**MW102D**	**17 Nov 2025**	**ES2536608**	15	6.58	837	1.26	12.6	544	-98.9	347	137	269	<1	<1	269	8.59	7.79	13	0.3	4.91	14	496
MW102D	**MW102D**	**11 May 2026**	**ES2615273**	17.2	4.3	759	1.54	16.1	493	-94.6	369	135	268	<1	<1	268	8.73	8.28	20	0.2	2.66	15	551
MW102S	MW102S_241210	10 Dec 2024	ES2440637									991	94	<1	<1	94	23.4	20.7	33		6.22	53	1,620
MW102S	**MW102S**	**17 Nov 2025**	**ES2536608**	14.8	5.4	1,617	1.49	15.1	1,052	12	862	789	84	<1	<1	84	19.0	19.5	32	0.1	1.34	48	1,440
MW102S	**MW102S**	**11 May 2026**	**ES2615273**	17	5.6	1,914	1.6	16.7	1,244	-56.2	895	985	56	<1	<1	56	22.5	20.2	31	<0.1	5.46	48	1,910
MW109D	MW109D_241212	12 Dec 2024	ES2440944									111	320	<1	<1	320	9.86	10.4	41		2.60	47	560
MW109D	**MW109D**	**19 Nov 2025**	**ES2536608**	18.3	6.88	928	0.94	10.3	603	-111.4	368	25	414	<1	<1	414	9.92	9.41	40	0.7	2.65	39	513
MW109D	**MW109D**	**11 May 2026**	**ES2615273**	17	7.1	1,249	1.23	12.8	811	-95.1	336	90	332	<1	<1	332	9.92	9.44	50	0.6	2.48	54	570
D1 SSTVs					*4.0-5.6*	*210*	*NM*		*NM*			*NM*							*NM*	*NM*		*NM*	
D1	D1	11 Nov 2024	ES2437097								17	13	9	<1	<1	9	0.90	1.14	16	<0.1		16	86
D1	D1_250514	14 May 2025	ES2514194								13	11	13	<1	<1	13	0.91	0.95	15	<0.1		14	73
D1	**D1**	**17 Nov 2025**	**ES2536608**	14	4.59	184	2.91	29.1	119.5	177.4	13	12	13	<1	<1	13	0.88	0.91	13	<0.1		13	64
D1	**D1**	**12 May 2026**	**ES2615273**	14.9	5.6	278.7	3.64	36.1	181.1	99.9	13	9	27	<1	<1	27	1.07	0.78	12	<0.1		10	72
D2 SSTVs					*3.7-5.5*	*523*	*NM*		*NM*			*NM*							*NM*	*NM*		*NM*	
D2	D2	11 Nov 2024	ES2437097								83	152	7	<1	<1	7	4.21	3.72	32	<0.1	6.10	45	282
D2	D2_241129	29 Nov 2024	ES2439148									112	2	<1	<1	2	3.05	3.16	24		1.83	34	243
D2	QC145_241129	29 Nov 2024	ES2439148									206	40	<1	<1	40	5.31	4.05	8		13.4	33	360
D2	D2_250514	14 May 2025	ES2514194								67	120	<1	<1	<1	<1	3.37	3.26	31	<0.1	1.65	42	268
D2	**D2**	**18 Nov 2025**	**ES2536608**	18.1	5.58	579	3.68	39.7	375	121.2	63	106	1	<1	<1	1	3.19	2.89	34	0.1	4.79	36	244
D2	**D2**	**11 May 2026**	**ES2615273**	18.3	5.2	727	3.17	33.7	472.9	153.8	79	142	2	<1	<1	2	3.98	4.12	35	<0.1	1.67	56	352

				Field							Inorganics												
				Temperature (Field)	pH (Field)	Electrical Conductivity (Field)	DO (Field)	DO % Saturation (Field)	Total Dissolved Solids (Field)	Redox Potential (Field)	Hardness as CaCO3 (filtered)	Sulfate as SO4 - Turbidimetric (filtered)	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3	Anions Total	Cations Total	Chloride	Fluoride	Ionic Balance	Sodium (filtered)	Total Dissolved Solids (Lab)
				°C	-	µS/cm	mg/L	%	mg/L	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	mg/L	mg/L	%	mg/L	mg/L
EQL											1	1	1	1	1	1	0.01	0.01	1	0.1	0.01	0.5	5
ANZG Freshwater Toxicant DGVs LOSP 95% (July 2026)					**6.5-8.0**	**350**														**1.7**			
Location Code	**Field ID**	**Date**	**Lab Report**																				
D3 SSTVs					*4.8-5.7*	*725*	*NM*		*NM*				*NM*						*NM*	*NM*		*NM*	
D3	D3	11 Nov 2024	ES2437097								157	217	25	<1	<1	25	6.20	6.10	42	0.2	4.55	58	413
D3	WGM1/D3_20241202	02 Dec 2024	ES2439571									232	27	<1	<1	27	6.61	6.19	44		3.30	60	536
D3	D3_250514	14 May 2025	ES2514194								164	219	26	<1	<1	26	6.32	6.26	44	0.2	0.47	64	388
D3	**D3**	**20 Jan 2026**	**ES2602224**	19.9	5.01	746	0.8	8.8	487.5	182.5	164	224	28	<1	<1	28	6.41	6.26	42	0.2	1.16	64	448
D3	**D3**	**04 Mar 2026**	**ES2606823**	17.9	5.66	744	3.46	36.6	481	93.6	191	221	64	<1	<1	64	7.15	7.05	45	0.2	0.68	69	506
D3	**D3**	**12 May 2026**	**ES2615273**	14.7	5.2	669	2.84	29.7	435.4	110.5	152	200	30	<1	<1	30	6.00	5.92	44	0.2	0.67	61	434
D4 SSTVs					*5.8-6.2*	*1,600*	*NM*		*NM*				*NM*						*NM*	*NM*		*NM*	
D4	D4	11 Nov 2024	ES2437097								348	528	58	<1	<1	58	13.2	11.7	38	<0.1	6.21	104	924
D4	WGM1/D4_241210	10 Dec 2024	ES2440637									1,070	95	<1	<1	95	26.3	29.3	76		5.42	262	2,030
D4	D4_250515	15 May 2025	ES2514194								362	473	31	<1	<1	31	11.5	12.6	37	<0.1	4.72	119	800
D4	**D4**	**18 Nov 2025**	**ES2536608**	18.3	6.18	1,298	2.45	28.7	843	-14	389	532	59	<1	<1	59	13.4	14.0	39	<0.1	2.20	138	942
D4	**D4**	**12 May 2026**	**ES2615273**	14.5	6	1,242	0.98	9.9	807	133.6	287	434	78	<1	<1	78	11.4	10.6	27	<0.1	3.45	107	731
D4	**D4**	**02 Jul 2026**	**ES2621386**								276	417	86	<1	<1	86	11.1	10.5	24	<0.1	2.69	109	730
D5 SSTVs					*5.1-5.9*	*1,473*	*NM*		*NM*				*NM*						*NM*	*NM*		*NM*	
D5	D5	11 Nov 2024	ES2437097								190	306	11	<1	<1	11	8.42	8.66	65	<0.1	1.39	58	532
D5	WGM1/D5_241212	12 Dec 2024	ES2440944									230	<1	<1	<1	<1	4.99	3.66	7		15.3	24	580
D5	D5_250513	13 May 2025	ES2514194								402	574	<1	<1	<1	<1	12.6	13.2	24	1.1	2.31	94	940
D5	**D5**	**19 Nov 2025**	**ES2536608**	18	5.31	837	0.92	6.7	544	95.7	179	264	21	<1	<1	21	7.41	7.48	53	<0.1	0.43	60	540
D5	**D5**	**12 May 2026**	**ES2615273**	14.1	5.4	540	1.92	19	351	54.9	136	166	16	<1	<1	16	5.24	4.97	52	<0.1	2.69	48	460
D6 SSTVs					*3.8-5.1*	*1,016*	*NM*		*NM*				*NM*						*NM*	*NM*		*NM*	
D6	D6	11 Nov 2024	ES2437097								232	444	<1	<1	<1	<1	9.86	9.59	22	0.4	1.41	80	646
D6	WGM1/D6_241129	29 Nov 2024	ES2439148									168	39	<1	<1	39	4.50	5.22	8		7.43	37	380
D6	D6_250513	13 May 2025	ES2514194								158	296	<1	<1	<1	<1	6.90	6.28	26	0.4	4.69	60	456
D6	**D6**	**19 Nov 2025**	**ES2536608**	21.6	4.74	996	1.97	23	648	222	226	382	<1	<1	<1	<1	8.97	8.67	36	0.4	1.68	92	650
D6	**D6**	**12 May 2026**	**ES2615273**	13.9	4.4	756	1.01	9.8	492	208.2	186	355	<1	<1	<1	<1	8.15	7.82	27	0.3	2.07	78	565
MW118 (WI_MW03) SSTVs					*5.6-6.0*	*512*	*NM*		*NM*				*NM*						*NM*	*NM*		*NM*	
MW118	WI_MW03	11 Nov 2024	ES2437097								154	129	97	<1	<1	97	4.88	4.45	9	0.6	4.59	24	308
MW118	MW118_241127	27 Nov 2024	ES2439148									122	83	<1	<1	83	4.48	4.70	10		2.40	26	288
MW118	WI_MW03_250513	13 May 2025	ES2514194								156	147	72	<1	<1	72	4.81	4.78	11	0.8	0.24	30	276
MW118	**MW118**	**19 Nov 2025**	**ES2536608**	21.6	5.71	631	1.55	17.7	409.9	-45.5	122	128	98	<1	<1	98	4.96	3.89	12	0.6	12.2	27	294
MW118	**MW118**	**12 May 2026**	**ES2615273**	14.9	5.6	501	1.35	13.7	325.5	-3.8	138	119	90	<1	<1	90	4.61	4.18	12	0.6	4.95	25	306
WH_MW02 SSTVs					*5.4-5.9*	*476*	*NM*		*NM*				*NM*						*NM*	*NM*		*NM*	
WH_MW02	WH_MW02	11 Nov 2024	ES2437097								111	108	81	<1	<1	81	4.66	5.31	28	<0.1	6.55	21	292
WH_MW02	WH_MW02_241129	29 Nov 2024	ES2439148									92	62	<1	<1	62	3.89	3.22	26		9.37	21	288
WH_MW02	QC245_241129	29 Nov 2024	1166640										45	<20	<20	45			23				230
WH_MW02	WH_MW02_250513	13 May 2025	ES2514194								113	116	46	<1	<1	46	4.15	4.55	29	<0.1	4.55	20	240
WH_MW02	**WH_MW02**	**18 Nov 2025**	**ES2536608**	18.9	5.72	542	1.01	11	352.7	-6.4	105	112	65	<1	<1	65	4.45	3.10	29	<0.1	17.9	20	290
WH_MW02	**QC100**	**18 Nov 2025**	**ES2536608**								109	105	70	<1	<1	70	4.46	4.60	31	<0.1	1.05	21	286
WH_MW02	**WH_MW02**	**11 May 2026**	**ES2615273**	18.7	5.7	807	2.35	25.9	525	-60.7	107	100	61	<1	<1	61	4.01	4.08	25	<0.1	0.94	19	306
WH_MW02	**QC100**	**11 May 2026**	**ES2615273**								107	81	68	<1	<1	68	3.86	3.63	29	<0.1	3.10	19	279

				Field							Inorganics												
				Temperature (Field)	pH (Field)	Electrical Conductivity (Field)	DO (Field)	DO % Saturation (Field)	Total Dissolved Solids (Field)	Redox Potential (Field)	Hardness as CaCO3 (filtered)	Sulfate as SO4 - Turbidimetric (filtered)	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3	Anions Total	Cations Total	Chloride	Fluoride	Ionic Balance	Sodium (filtered)	Total Dissolved Solids (Lab)
				°C	-	µS/cm	mg/L	%	mg/L	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	mg/L	mg/L	%	mg/L	mg/L
EQL											1	1	1	1	1	1	0.01	0.01	1	0.1	0.01	0.5	5
ANZG Freshwater Toxicant DGVs LOSP 95% (July 2026)					**6.5-8.0**	**350**														**1.7**			
Location Code	**Field ID**	**Date**	**Lab Report**																				
WH_MW03 SSTVs					*4.3-6.0*	*299*	*NM*		*NM*		*NM*								*NM*	*NM*		*NM*	
WH_MW03	WH_MW03	11 Nov 2024	ES2437097								69	116	<1	<1	<1	<1	2.95	2.38	19	<0.1		20	309
WH_MW03	WH_MW03_241127	27 Nov 2024	ES2439148									91	<1	<1	<1	<1	2.40	2.42	18			20	
WH_MW03	WH_MW03_250513	13 May 2025	ES2514194								47	66	6	<1	<1	6	1.78	1.57	10	0.2		12	118
WH_MW03	**WH_MW03**	**19 Nov 2025**	**ES2536608**	18	5.77	359.2	1.07	11.5	233.4	-18.2	75	85	8	<1	<1	8	2.24	2.31	11	0.2		16	187
WH_MW03	**WH_MW03**	**11 May 2026**	**ES2615273**	15.9	4.6	452	313.2	43.5	313	270.7	54	71	3	<1	<1	3	1.90	1.90	13	0.1		16	264
WJ_MW03 SSTVs					*3.9-5.1*	*1,328*	*NM*		*NM*		*NM*								*NM*	*NM*		*NM*	
WJ_MW03	WJ_MW03	11 Nov 2024	ES2437097								392	577	<1	<1	<1	<1	13.1	11.6	40	<0.1	6.05	81	896
WJ_MW03	WJ_MW03_240028	28 Nov 2024	ES2439148									490	<1	<1	<1	<1	11.6	11.0	49		2.70	79	884
WJ_MW03	WJ_WM03_250513	13 May 2025	ES2514194								344	409	<1	<1	<1	<1	11.3	11.4	98	<0.1	0.35	96	758
WJ_MW03	**WJ_MW03**	**19 Nov 2025**	**ES2536608**	15.6	4.45	1,278	2.54	27.3	831	201.8	352	454	<1	<1	<1	<1	11.9	11.6	88	<0.1	1.48	98	842
WJ_MW03	**WJ_MW03**	**20 Jan 2026**	**ES2602224**	17.1	4.52	1,451	1.56	16.2	942.5	171.1	317	474	<1	<1	<1	<1	13.3	12.1	120	0.2	4.58	92	842
WJ_MW03	**WJ_MW03**	**12 May 2026**	**ES2615273**	14.9	5.1	1,070	1.65	16.4	796	53.4	309	423	<1	<1	<1	<1	11.3	9.86	88	<0.1	6.78	78	844
WK_MW01 SSTVs					*6.2-6.6*	*1,980*	*NM*		*NM*		*NM*								*NM*	*NM*		*NM*	
WK_MW01	WK_MW01	11 Nov 2024	ES2437097								854	536	356	<1	<1	356	22.5	21.6	150	0.2	1.93	94	1,440
WK_MW01	WK_MW01_20241202	02 Dec 2024	ES2439571									549	337	<1	<1	337	22.9	22.8	168		0.32	94	1,460
WK_MW01	WK_MW01_250514	14 May 2025	ES2514194								864	425	359	<1	<1	359	20.6	22.4	161	0.2	4.16	105	1,290
WK_MW01	**WK_MW01**	**18 Nov 2025**	**ES2536608**								682	466	352	<1	<1	352	20.5	18.5	133	0.1	5.09	101	1,220
WK_MW01	**WK_MW01**	**20 Jan 2026**	**ES2602224**	15.9	6.29	1,791	4.75	43.2	1,163	82.9	805	538	379	<1	<1	379	22.9	20.7	145	0.2	4.92	96	1,270
WK_MW01	**WK_MW01**	**12 May 2026**	**ES2615273**	14.1	6.3	1,646	1.75	17.2	1,070	121.6	639	376	321	<1	<1	321	17.5	16.9	114	0.1	1.75	84	1,100
WK_MW04 SSTVs					*6.2-6.5*	*2,910*	*NM*		*NM*		*NM*								*NM*	*NM*		*NM*	
WK_MW04	WK_MW04	11 Nov 2024	ES2437097								759	133	344	<1	<1	344	27.6	25.9	635	0.2	3.15	236	1,720
WK_MW04	WK_MW04_20241202	02 Dec 2024	ES2439571									112	318	<1	<1	318	27.2	26.6	658		1.22	242	1,840
WK_MW04	WK_MW04_250513	13 May 2025	ES2514194								836	116	353	<1	<1	353	25.9	28.3	584	0.2	4.32	255	1,690
WK_MW04	**WK_MW04**	**18 Nov 2025**	**ES2536608**	14.5	6.25	2,507	1.12	11.5	1,629	16.5	766	107	375	<1	<1	375	26.3	26.2	586	0.2	0.05	241	1,520
WK_MW04	**WK_MW04**	**12 May 2026**	**ES2615273**	14	6	2,194	1.61	15.4	1,622	119.7	733	97	381	<1	<1	381	27.3	25.3	628	0.2	3.89	234	1,770
WK_MW06 SSTVs					*6.3-6.7*	*1,115*	*NM*		*NM*		*NM*								*NM*	*NM*		*NM*	
WK_MW06	WK_MW06	11 Nov 2024	ES2437097								506	12	457	<1	<1	457	10.5	11.2	41	0.2	3.28	13	581
WK_MW06	WK_MW06_240028	28 Nov 2024	ES2439148																				
WK_MW06	WK_MW06_250514	14 May 2025	ES2514194								512	6	458	<1	<1	458	10.2	11.4	33	0.3	5.56	14	527
WK_MW06	**WK_MW06**	**18 Nov 2025**	**ES2536608**	15.2	6.55	993	2.58	25.8	646	-87.1	452	9	481	<1	<1	481	10.8	10.1	34	0.2	3.33	12	525
WK_MW06	**WK_MW06**	**12 May 2026**	**ES2615273**	13.2	6.1	1,111	1.75	16.8	723	108.4	472	10	499	<1	<1	499	11.0	10.6	28	0.2	1.93	13	547

Bold	Exceeds ANZG, July 2026, ANZG Freshwater Toxicant DGVs LOSP 95% (July 2026)
	Exceeds OGMP(2026) baseline data SSTV

Grey	Previous AEMR reporting period (2024-2025)
Black	Current AEMR reporting period (2025-2026)

Environmental Standards
ANZG, July 2026, ANZG Freshwater Toxicant DGVs LOSP 95% (July 2026)

				Metals																		PAH
				Aluminium (filtered)	Arsenic (filtered)	Barium (filtered)	Boron (filtered)	Cadmium (filtered)	Calcium (filtered)	Chromium (III+VI) (filtered)	Copper (filtered)	Iron (filtered)	Lead (filtered)	Magnesium (filtered)	Manganese (filtered)	Mercury (filtered)	Nickel (filtered)	Potassium (filtered)	Selenium (filtered)	Silver (filtered)	Zinc (filtered)	Benzo(a) pyrene
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
EQL				0.01	0.001	0.001	0.02	0.0001	0.5	0.001	0.001	0.01	0.001	0.5	0.001	0.00005	0.001	0.5	0.001	0.001	0.001	0.5
ANZG Freshwater Toxicant DGVs LOSP 95% (July 2026)				**0.055**	**0.024**		**0.94**	**0.0055**		**0.0067**	**0.0014**	**0.28**	**0.0034**		**1.9**	**0.0006**	**0.011**		**0.011**	**0.00005**	**0.008**	**0.2**
Location Code	**Field ID**	**Date**	**Lab Report**																			
CA1	CA1	15 Apr 2025	378657	0.88	<0.001	0.041	1.7	0.0001	29	<0.001	0.001	12	<0.001	13	1.9	<0.00005	0.095	33	<0.001	<0.001	0.16	
CA1	CA1	01 May 2025	379555	0.69	<0.001	0.037	1.8	0.0003	32	<0.001	<0.001	8.6	<0.001	15	2.5	<0.00005	0.13	37	<0.001	<0.001	0.12	
CA1	**CA1**	**18 Nov 2025**	**ES2536608**	**44.7**	**0.025**	0.028	**7.32**	**0.0538**	238	<0.001	**0.003**	<0.05	<0.001	74	**9.60**	**<0.0001**	**0.914**	159	**0.037**	<0.001	**3.16**	<1.0
CA1	**CA1**	**12 May 2026**	**ES2615273**	**3.16**	<0.001	0.022	**2.64**	0.0002	56	<0.001	<0.001	**16.0**	<0.001	20	**2.90**	**<0.0001**	**0.211**	49	<0.004	<0.001	**0.507**	<0.5
CA2	CA2	15 Apr 2025	378657	4.3	0.001	0.031	2.4	0.0056	58	<0.001	<0.001	0.24	<0.001	18	3.4	<0.00005	0.29	44	0.003	<0.001	0.74	
CA2	CA2	01 May 2025	379555	5	0.001	0.031	3	0.0063	70	<0.001	0.005	2	<0.001	22	3.9	<0.00005	0.35	59	**0.007**	<0.001	0.88	
CA2	**CA2**	**18 Nov 2025**	**ES2536608**	**8.12**	0.002	0.028	**2.10**	**0.0355**	51	<0.001	**0.004**	<0.05	<0.001	20	**2.68**	**<0.0001**	**0.251**	52	**0.006**	<0.001	**0.915**	<1.0
CA2	**CA2**	**12 May 2026**	**ES2615273**	**7.58**	<0.001	0.018	**3.63**	**0.0437**	92	<0.001	**0.014**	0.17	<0.001	27	**4.36**	**<0.0001**	**0.418**	71	**0.006**	<0.001	**1.30**	<0.5
CB1	CB1	15 Apr 2025	378657	0.25	<0.001	0.028	1.2	0.0006	14	<0.001	<0.001	0.1	<0.001	6.0	0.96	<0.00005	0.04	26	<0.001	<0.001	0.14	
CB1	CB1	01 May 2025	379555	0.4	<0.001	0.032	0.77	0.0007	10	<0.001	0.001	0.17	<0.001	5	0.75	<0.00005	0.038	21	<0.001	<0.001	0.088	
CB1	**CB1**	**18 Nov 2025**	**ES2536608**	**0.44**	<0.001	0.023	**1.66**	0.0029	78	<0.001	<0.001	<0.05	<0.001	29	**3.72**	**<0.0001**	**0.103**	48	<0.004	<0.001	**0.325**	<1.0
CB1	**CB1**	**12 May 2026**	**ES2615273**	**0.32**	<0.001	0.036	**2.29**	<0.0001	69	<0.001	<0.001	**8.87**	<0.001	27	**4.36**	**<0.0001**	**0.146**	43	<0.004	<0.001	**0.069**	<0.5
CB2	CB2	15 Apr 2025	378657	0.14	<0.001	0.027	0.63	0.0006	42	<0.001	0.007	0.07	<0.001	20	2.2	<0.00005	0.04	28	0.018	<0.001	0.12	
CB2	CB2	01 May 2025	379555	0.25	<0.001	0.023	1.1	0.0007	49	<0.001	0.002	0.06	<0.001	21	3.4	<0.00005	0.03	31	0.029	<0.001	0.093	
CB2	**CB2**	**18 Nov 2025**	**ES2536608**	**0.57**	<0.001	0.020	**2.17**	0.0015	56	<0.001	<0.001	<0.05	<0.001	22	**3.72**	**<0.0001**	**0.112**	44	**0.017**	<0.001	**0.188**	<1.0
CB2	**CB2**	**12 May 2026**	**ES2615273**	**6.18**	<0.001	0.012	**4.73**	0.0044	166	<0.001	**0.009**	**1.42**	<0.001	66	**9.41**	**<0.0001**	**0.443**	96	**0.007**	<0.001	**0.805**	<0.5
CB3	CB3	15 Apr 2025	378657	0.08	0.048	0.03	0.65	<0.0001	11	<0.001	0.002	3.7	<0.001	5	0.57	<0.00005	0.03	18	<0.001	<0.001	0.076	
CB3	CB3	01 May 2025	379555	0.12	0.009	0.037	0.47	<0.0001	9.4	<0.001	0.008	0.77	<0.001	4	0.51	<0.00005	0.03	18	<0.001	<0.001	0.071	
CB3	**CB3**	**18 Nov 2025**	**ES2536608**	**0.37**	0.002	0.017	**2.54**	0.0002	160	<0.001	<0.001	**13.8**	<0.001	60	**8.90**	**<0.0001**	**0.138**	65	<0.004	<0.001	**0.220**	<1.0
CB3	**CB3**	**12 May 2026**	**ES2615273**	**0.12**	0.011	0.015	**2.24**	0.0011	76	<0.001	**0.005**	**5.38**	<0.001	28	**3.79**	**<0.0001**	**0.062**	52	<0.004	<0.001	**0.120**	<0.5
MW102D	MW102D_241210	10 Dec 2024	ES2440637		0.003	0.066	0.09	<0.0001	75	<0.001	<0.001		<0.001	33	1.46	**<0.0001**	0.029	10	**<0.01**		0.044	<2
MW102D	**MW102D**	**17 Nov 2025**	**ES2536608**	<0.01	<0.001	0.080	<0.05	<0.0001	86	<0.001	<0.001	0.08	<0.001	32	0.469	**<0.0001**	0.003	10	<0.004	<0.001	**0.012**	<1.0
MW102D	**MW102D**	**11 May 2026**	**ES2615273**	**0.06**	<0.001	0.073	0.07	<0.0001	85	<0.001	<0.001	**3.66**	<0.001	38	0.901	**<0.0001**	0.010	10	<0.004	<0.001	**0.027**	<0.5
MW102S	MW102S_241210	10 Dec 2024	ES2440637		0.002	0.019	<0.05	<0.0001	149	<0.001	<0.001		<0.001	130	15.0	**<0.0001**	0.313	10	**<0.01**		0.420	<2
MW102S	**MW102S**	**17 Nov 2025**	**ES2536608**	<0.01	<0.001	0.011	<0.05	0.0001	121	<0.001	<0.001	**26.8**	<0.001	136	**17.4**	**<0.0001**	**0.091**	8	<0.004	<0.001	**0.013**	<1.0
MW102S	**MW102S**	**11 May 2026**	**ES2615273**	0.03	<0.001	0.010	0.14	<0.0001	134	<0.001	<0.001	**92.0**	<0.001	136	**17.0**	**<0.0001**	**0.112**	8	<0.004	<0.001	<0.005	<0.5
MW109D	MW109D_241212	12 Dec 2024	ES2440944		0.003	0.121	0.18	<0.0001	99	0.003	<0.001		0.002	37	0.478	**<0.0001**	0.003	14	**<0.01**		0.015	<2
MW109D	**MW109D**	**19 Nov 2025**	**ES2536608**	<0.01	<0.001	0.523	<0.05	<0.0001	88	<0.001	<0.001	<0.05	<0.001	36	0.233	**<0.0001**	0.002	14	<0.004	<0.001	<0.005	<1.0
MW109D	**MW109D**	**11 May 2026**	**ES2615273**	0.02	<0.001	0.365	0.05	<0.0001	75	<0.001	<0.001	**0.47**	<0.001	36	0.198	**<0.0001**	<0.001	15	<0.004	<0.001	<0.005	<0.5
D1 SSTVs				*0.22*	*0.024*		*0.94*	*0.0055*	*NM*		*0.008*		*0.0034*	*NM*	*1.9*	*0.0006*	*0.037*	*NM*	*0.011*	*0.001*	*0.199*	*0.2*
D1	D1	11 Nov 2024	ES2437097	0.22	<0.001	0.036	<0.05	0.0002	2	0.002	0.006	0.22	<0.001	3	0.014		0.002	4	**<0.01**		0.168	<0.5
D1	D1_250514	14 May 2025	ES2514194	0.08	<0.001	0.037	<0.05	<0.0001	2	<0.001	0.002	0.22	<0.001	2	0.088	**<0.0001**	<0.001	3	**<0.01**	<0.001	0.190	<0.5
D1	**D1**	**17 Nov 2025**	**ES2536608**	0.01	<0.001	0.035	<0.05	0.0002	2	<0.001	0.002	<0.05	<0.001	2	0.014	**<0.0001**	0.001	3	<0.004	<0.001	0.136	<1.0
D1	**D1**	**12 May 2026**	**ES2615273**	0.02	<0.001	0.024	<0.05	<0.0001	2	<0.001	0.003	<0.05	<0.001	2	0.003	**<0.0001**	<0.001	3	<0.004	<0.001	0.101	<0.5
D2 SSTVs				*2.96*	*0.024*		*0.94*	*0.0055*	*NM*		*0.01*		*0.0034*	*NM*	*1.9*	*0.0006*	*0.089*	*NM*	*0.011*	*0.001*	*0.136*	*0.2*
D2	D2	11 Nov 2024	ES2437097	0.21	<0.001	0.031	0.08	0.0002	2	0.001	0.003	0.14	0.001	19	0.523		0.057	4	**<0.01**		0.065	<0.5
D2	D2_241129	29 Nov 2024	ES2439148		<0.001	0.033	0.08	0.0002	2	<0.001	<0.001		<0.001	18	0.490		0.052	4	**<0.01**		0.064	
D2	QC145_241129	29 Nov 2024	ES2439148		<0.001	0.019	0.37	0.0005	16	<0.001	0.002		0.006	19	1.33		0.146	10	**<0.01**		0.576	
D2	D2_250514	14 May 2025	ES2514194	0.12	<0.001	0.034	0.05	0.0002	2	<0.001	<0.001	<0.05	<0.001	15	0.431	**<0.0001**	0.044	4	**<0.01**	<0.001	0.052	<0.5
D2	**D2**	**18 Nov 2025**	**ES2536608**	0.17	<0.001	0.027	<0.05	<0.0001	2	<0.001	<0.001	<0.05	<0.001	14	0.401	**<0.0001**	0.045	3	<0.004	<0.001	0.054	<1.0
D2	**D2**	**11 May 2026**	**ES2615273**	0.23	<0.001	0.033	0.16	<0.0001	2	<0.001	<0.001	<0.05	<0.001	18	0.548	**<0.0001**	0.056	4	<0.004	<0.001	0.068	<0.5

				Metals																		PAH
				Aluminium (filtered)	Arsenic (filtered)	Barium (filtered)	Boron (filtered)	Cadmium (filtered)	Calcium (filtered)	Chromium (III+VI) (filtered)	Copper (filtered)	Iron (filtered)	Lead (filtered)	Magnesium (filtered)	Manganese (filtered)	Mercury (filtered)	Nickel (filtered)	Potassium (filtered)	Selenium (filtered)	Silver (filtered)	Zinc (filtered)	Benzo(a) pyrene
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
EQL				0.01	0.001	0.001	0.02	0.0001	0.5	0.001	0.001	0.01	0.001	0.5	0.001	0.00005	0.001	0.5	0.001	0.001	0.001	0.5
ANZG Freshwater Toxicant DGVs LOSP 95% (July 2026)				**0.055**	**0.024**		**0.94**	**0.0055**		**0.0067**	**0.0014**	**0.28**	**0.0034**		**1.9**	**0.0006**	**0.011**		**0.011**	**0.00005**	**0.008**	**0.2**
Location Code	**Field ID**	**Date**	**Lab Report**																			
D3 SSTVs				*0.6*	*0.024*		*0.94*	*0.0055*	*NM*		*0.006*		*0.004*	*NM*	*1.9*	*0.0006*	*0.277*	*NM*	*0.011*	*0.001*	*0.315*	*0.2*
D3	D3	11 Nov 2024	ES2437097	0.32	<0.001	0.022	0.26	0.0005	25	0.002	0.001	**3.19**	0.004	23	0.671		0.069	9	**<0.01**		0.103	<0.5
D3	WGM1/D3_20241202	02 Dec 2024	ES2439571		<0.001	0.024	0.24	0.0005	27	<0.001	<0.001		<0.001	24	0.751	**<0.0001**	0.102	10	**<0.01**		0.059	
D3	D3_250514	14 May 2025	ES2514194	0.12	<0.001	0.026	0.24	0.0004	26	<0.001	<0.001	**8.50**	0.002	24	0.737	**<0.0001**	0.076	8	**<0.01**	<0.001	0.028	<0.5
D3	**D3**	**20 Jan 2026**	**ES2602224**	0.13	<0.001	0.024	0.22	0.0016	26	<0.001	<0.001	0.18	**0.069**	24	0.714	**<0.0001**	0.120	8	<0.004	<0.001	0.154	<0.5
D3	**D3**	**04 Mar 2026**	**ES2606823**	0.11	0.004	0.026	0.25	0.0011	37	<0.001	0.002	**2.76**	**0.006**	24	0.695	**<0.0001**	0.062	9	<0.004	<0.001	0.070	<0.5
D3	**D3**	**12 May 2026**	**ES2615273**	0.14	<0.001	0.016	0.23	0.0004	23	<0.001	0.002	**0.35**	0.001	23	0.571	**<0.0001**	0.051	9	<0.004	<0.001	0.042	<0.5
D4 SSTVs				*0.055*	*0.024*		*1.44*	*0.0055*	*NM*		*0.002*		*0.0034*	*NM*	*7.98*	*0.0006*	*0.042*	*NM*	*0.011*	*0.001*	*0.046*	*0.2*
D4	D4	11 Nov 2024	ES2437097	0.04	<0.001	0.015	1.34	<0.0001	70	<0.001	<0.001	**66.2**	<0.001	42	5.81		0.030	8	**<0.01**		0.034	<0.5
D4	WGM1/D4_241210	10 Dec 2024	ES2440637		<0.001	0.021	0.90	<0.0001	197	<0.001	<0.001		<0.001	97	4.00	**<0.0001**	0.013	5	**<0.01**		0.016	
D4	D4_250515	15 May 2025	ES2514194	<0.01	<0.001	0.024	1.44	<0.0001	71	<0.001	0.002	**44.4**	<0.001	45	7.66	**<0.0001**	0.021	9	**<0.01**	<0.001	0.027	<0.5
D4	**D4**	**18 Nov 2025**	**ES2536608**	<0.01	<0.001	0.009	1.22	<0.0001	75	<0.001	<0.001	0.22	<0.001	49	5.69	**<0.0001**	0.013	7	<0.004	<0.001	<0.005	<1.0
D4	**D4**	**12 May 2026**	**ES2615273**	<0.01	<0.001	0.010	**1.61**	<0.0001	54	<0.001	<0.001	**24.1**	<0.001	37	6.59	**<0.0001**	0.014	8	<0.004	<0.001	0.013	<0.5
D4	**D4**	**02 Jul 2026**	**ES2621386**	<0.01	<0.001	0.012	**1.68**	<0.0001	53	<0.001	<0.001	**14.9**	<0.001	35	7.02	**<0.0001**	0.013	9	<0.004	<0.001	0.020	<0.5
D5 SSTVs				*1.15*	*0.024*		*3.07*	*0.0055*	*NM*		*0.0014*		*0.0034*	*NM*	*8.14*	*0.0006*	*0.229*	*NM*	*0.011*	*0.001*	*0.017*	*0.2*
D5	D5	11 Nov 2024	ES2437097	0.05	<0.001	0.034	0.49	<0.0001	30	<0.001	0.001	**40.1**	<0.001	28	1.88		0.036	7	**<0.01**		0.012	<0.5
D5	WGM1/D5_241212	12 Dec 2024	ES2440944		<0.001	0.033	1.15	0.0011	20	<0.001	**0.002**		**0.004**	16	1.78	**<0.0001**	0.156	12	**<0.01**		**0.414**	
D5	D5_250513	13 May 2025	ES2514194	1.15	0.004	0.095	3.07	0.0001	72	<0.001	<0.001	**15.5**	<0.001	54	8.14	**<0.0001**	0.229	43	**<0.01**	<0.001	0.012	<0.5
D5	**D5**	**19 Nov 2025**	**ES2536608**	<0.01	<0.001	0.034	0.32	<0.0001	27	<0.001	<0.001	**20.8**	<0.001	27	1.78	**<0.0001**	0.039	7	<0.004	<0.001	0.006	<1.0
D5	**D5**	**12 May 2026**	**ES2615273**	0.01	<0.001	0.028	0.23	<0.0001	20	<0.001	<0.001	**15.2**	<0.001	21	1.16	**<0.0001**	0.025	6	<0.004	<0.001	0.008	<0.5
D6 SSTVs				*8.82*	*0.024*		*0.94*	*0.0055*	*NM*		*0.013*		*0.006*	*NM*	*1.9*	*0.0006*	*0.472*	*NM*	*0.011*	*0.001*	*1.42*	*0.2*
D6	D6	11 Nov 2024	ES2437097	3.16	<0.001	0.018	0.54	0.0002	12	0.001	<0.001	**18.6**	<0.001	49	1.26		0.428	5	**<0.01**		0.635	<0.5
D6	WGM1/D6_241129	29 Nov 2024	ES2439148		<0.001	0.010	0.40	0.0003	33	<0.001	0.010		<0.001	23	0.142		0.083	3	**<0.01**		0.226	
D6	D6_250513	13 May 2025	ES2514194	2.02	<0.001	0.018	0.56	0.0007	14	<0.001	<0.001	**1.42**	0.003	30	0.485	**<0.0001**	0.244	6	**<0.01**	<0.001	0.685	<0.5
D6	**D6**	**19 Nov 2025**	**ES2536608**	3.05	<0.001	0.016	0.43	0.0010	13	<0.001	0.001	0.27	0.001	47	0.749	**<0.0001**	0.323	6	<0.004	<0.001	0.880	<1.0
D6	**D6**	**12 May 2026**	**ES2615273**	1.47	<0.001	0.007	0.26	0.0002	12	<0.001	<0.001	**10.7**	<0.001	38	0.747	**<0.0001**	0.178	5	<0.004	<0.001	0.573	<0.5
MW118 (WI_MW03) SSTVs				*0.06*	*0.024*		*0.94*	*0.0055*	*NM*		*0.002*		*0.0034*	*NM*	*1.9*	*0.0006*	*0.106*	*NM*	*0.011*	*0.001*	*0.27*	*0.2*
MW118	WI_MW03	11 Nov 2024	ES2437097	0.06	<0.001	0.037	0.45	<0.0001	22	<0.001	<0.001	**9.52**	<0.001	24	1.39		0.102	13	**<0.01**		0.107	<0.5
MW118	MW118_241127	27 Nov 2024	ES2439148		0.001	0.038	0.60	<0.0001	22	<0.001	<0.001		<0.001	26	1.58		**0.122**	13	**<0.01**		0.009	<2
MW118	WI_MW03_250513	13 May 2025	ES2514194	0.04	<0.001	0.042	0.61	<0.0001	23	<0.001	<0.001	**16.0**	<0.001	24	1.62	**<0.0001**	0.106	14	**<0.01**	<0.001	0.012	<0.5
MW118	**MW118**	**19 Nov 2025**	**ES2536608**	<0.01	<0.001	0.013	0.52	<0.0001	19	<0.001	<0.001	0.15	<0.001	18	0.777	**<0.0001**	0.020	11	<0.004	<0.001	<0.005	<1.0
MW118	**MW118**	**12 May 2026**	**ES2615273**	0.05	<0.001	0.026	0.54	<0.0001	19	<0.001	<0.001	**10.4**	<0.001	22	1.26	**<0.0001**	0.082	13	<0.004	<0.001	0.045	<0.5
WH_MW02 SSTVs				*0.055*	*0.024*		*0.94*	*0.0055*	*NM*		*0.0014*		*0.0034*	*NM*	*2.61*	*0.0006*	*0.011*	*NM*	*0.011*	*0.001*	*0.01*	*0.2*
WH_MW02	WH_MW02	11 Nov 2024	ES2437097	0.04	<0.001	0.025	<0.05	<0.0001	13	<0.001	<0.001	**38.3**	<0.001	19	2.40		<0.001	5	**<0.01**		0.006	<0.5
WH_MW02	WH_MW02_241129	29 Nov 2024	ES2439148		<0.001	0.025	0.07	<0.0001	14	<0.001	<0.001		<0.001	18	2.54		<0.001	5	**<0.01**		<0.005	
WH_MW02	QC245_241129	29 Nov 2024	1166640		<0.001	0.02	<0.05	<0.0002		<0.001	<0.001		<0.001		2.1	**<0.0001**	<0.001				<0.005	
WH_MW02	WH_MW02_250513	13 May 2025	ES2514194	<0.01	<0.001	0.024	<0.05	<0.0001	14	<0.001	<0.001	**37.8**	<0.001	19	2.61	**<0.0001**	<0.001	5	**<0.01**	<0.001	<0.005	<0.5
WH_MW02	**WH_MW02**	**18 Nov 2025**	**ES2536608**	<0.01	<0.001	0.015	<0.05	<0.0001	14	<0.001	<0.001	**18.6**	<0.001	17	2.39	**<0.0001**	<0.001	5	<0.004	<0.001	<0.005	<1.0
WH_MW02	**QC100**	**18 Nov 2025**	**ES2536608**	<0.01	<0.001	0.016	<0.05	<0.0001	14	<0.001	<0.001	**21.1**	<0.001	18	2.32	**<0.0001**	<0.001	5	<0.004	<0.001	<0.005	<1.0
WH_MW02	**WH_MW02**	**11 May 2026**	**ES2615273**	<0.01	<0.001	0.019	<0.05	<0.0001	13	<0.001	<0.001	**34.0**	<0.001	18	2.26	**<0.0001**	<0.001	5	<0.004	<0.001	<0.005	<0.5
WH_MW02	**QC100**	**11 May 2026**	**ES2615273**	<0.01	<0.001	0.019	<0.05	<0.0001	13	<0.001	<0.001	**34.7**	<0.001	18	2.32	**<0.0001**	<0.001	5	<0.004	<0.001	<0.005	<0.5

				Metals																	PAH
				Aluminium (filtered)	Arsenic (filtered)	Barium (filtered)	Boron (filtered)	Cadmium (filtered)	Calcium (filtered)	Chromium (III+VI) (filtered)	Copper (filtered)	Iron (filtered)	Lead (filtered)	Magnesium (filtered)	Manganese (filtered)	Mercury (filtered)	Nickel (filtered)	Potassium (filtered)	Selenium (filtered)	Silver (filtered)	Zinc (filtered)	Benzo(a) pyrene
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
EQL				0.01	0.001	0.001	0.02	0.0001	0.5	0.001	0.001	0.01	0.001	0.5	0.001	0.00005	0.001	0.5	0.001	0.001	0.001	0.5
ANZG Freshwater Toxicant DGVs LOSP 95% (July 2026)				**0.055**	**0.024**		**0.94**	**0.0055**		**0.0067**	**0.0014**	**0.28**	**0.0034**		**1.9**	**0.0006**	**0.011**		**0.011**	**0.00005**	**0.008**	**0.2**
Location Code	**Field ID**	**Date**	**Lab Report**																			
WH_MW03 SSTVs				*0.16*	*0.024*		*0.94*	*0.0055*	*NM*		*0.004*		*0.002*	*NM*	*1.96*	*0.0006*	*0.038*	*NM*	*0.011*	*0.001*	*0.142*	*0.2*
WH_MW03	WH_MW03	11 Nov 2024	ES2437097	0.16	<0.001	0.048	<0.05	0.0001	8	<0.001	0.002	**9.23**	<0.001	12	1.96		0.038	5	**<0.01**		0.134	<0.5
WH_MW03	WH_MW03_241127	27 Nov 2024	ES2439148		<0.001	0.047	<0.05	0.0001	7	<0.001	0.002		0.001	13	**2.03**		**0.039**	5	**<0.01**		0.137	
WH_MW03	WH_MW03_250513	13 May 2025	ES2514194	0.09	<0.001	0.062	0.06	0.0002	9	<0.001	<0.001	0.16	<0.001	6	0.907	**<0.0001**	0.016	4	**<0.01**	<0.001	0.060	<0.5
WH_MW03	**WH_MW03**	**19 Nov 2025**	**ES2536608**	0.04	<0.001	0.083	0.15	<0.0001	15	<0.001	<0.001	**0.28**	<0.001	9	1.34	**<0.0001**	0.021	5	<0.004	<0.001	0.048	<1.0
WH_MW03	**WH_MW03**	**11 May 2026**	**ES2615273**	0.14	<0.001	0.084	0.10	<0.0001	10	<0.001	0.002	**1.13**	<0.001	7	1.04	**<0.0001**	0.018	5	<0.004	<0.001	0.069	<0.5
WJ_MW03 SSTVs				*1.22*	*0.024*		*0.94*	*0.0055*	*NM*		*0.015*		*0.008*	*NM*	*2.4*	*0.0006*	*0.178*	*NM*	*0.011*	*0.001*	*1.03*	*0.2*
WJ_MW03	WJ_MW03	11 Nov 2024	ES2437097	0.30	0.001	0.011	0.10	<0.0001	68	<0.001	0.001	**41.9**	0.002	54	2.40		0.178	11	**<0.01**		0.922	<0.5
WJ_MW03	WJ_MW03_240028	28 Nov 2024	ES2439148		0.001	0.011	**0.55**	<0.0001	58	0.002	<0.001		<0.001	53	2.26		**0.180**	11	**<0.01**		0.977	<2
WJ_MW03	WJ_WM03_250513	13 May 2025	ES2514194	0.64	0.002	0.024	0.11	0.0001	57	<0.001	0.013	**31.4**	0.006	49	2.12	**<0.0001**	0.169	12	**<0.01**	<0.001	0.972	<0.5
WJ_MW03	**WJ_MW03**	**19 Nov 2025**	**ES2536608**	0.75	<0.001	0.013	0.11	0.0002	57	<0.001	0.008	**21.0**	0.005	51	2.13	**<0.0001**	**0.189**	11	<0.004	<0.001	**1.14**	<1.0
WJ_MW03	**WJ_MW03**	**20 Jan 2026**	**ES2602224**	0.71	0.001	0.012	0.07	<0.0001	51	<0.001	<0.001	**28.0**	0.001	46	2.05	**<0.0001**	**0.181**	10	<0.004	<0.001	0.982	<0.5
WJ_MW03	**WJ_MW03**	**12 May 2026**	**ES2615273**	0.64	<0.001	0.011	0.12	<0.0001	48	<0.001	<0.001	**22.1**	<0.001	46	1.80	**<0.0001**	0.155	11	<0.004	<0.001	0.860	<0.5
WK_MW01 SSTVs				*0.055*	*0.024*		*0.94*	*0.0055*	*NM*		*0.0014*		*0.0034*	*NM*	*1.9*	*0.0006*	*0.025*	*NM*	*0.011*	*0.001*	*0.01*	*0.2*
WK_MW01	WK_MW01	11 Nov 2024	ES2437097	0.04	0.001	0.020	0.80	<0.0001	174	<0.001	<0.001	**11.3**	<0.001	102	1.78		0.015	19	**<0.01**		0.009	<0.5
WK_MW01	WK_MW01_20241202	02 Dec 2024	ES2439571		<0.001	0.022	0.77	<0.0001	189	<0.001	<0.001		<0.001	106	**2.11**	**<0.0001**	0.024	20	**<0.01**		<0.005	
WK_MW01	WK_MW01_250514	14 May 2025	ES2514194	<0.01	<0.001	0.034	0.74	<0.0001	168	<0.001	0.001	**5.12**	<0.001	108	1.00	**<0.0001**	0.016	20	**<0.01**	<0.001	0.010	<0.5
WK_MW01	**WK_MW01**	**18 Nov 2025**	**ES2536608**	<0.01	<0.001	0.008	0.76	<0.0001	85	<0.001	<0.001	<0.05	<0.001	114	0.004	**<0.0001**	0.003	19	<0.004	<0.001	<0.005	<1.0
WK_MW01	**WK_MW01**	**20 Jan 2026**	**ES2602224**	<0.01	<0.001	0.022	0.76	<0.0001	159	<0.001	<0.001	0.11	<0.001	99	0.691	**<0.0001**	0.012	18	<0.004	<0.001	0.005	<0.5
WK_MW01	**WK_MW01**	**12 May 2026**	**ES2615273**	<0.01	<0.001	0.035	0.61	<0.0001	119	<0.001	<0.001	**0.50**	<0.001	83	0.684	**<0.0001**	0.011	17	<0.004	<0.001	0.006	<0.5
WK_MW04 SSTVs				*0.02*	*0.024*		*0.94*	*0.0055*	*NM*		*0.005*		*0.0034*	*NM*	*1.9*	*0.0006*	*0.029*	*NM*	*0.011*	*0.001*	*0.072*	*0.2*
WK_MW04	WK_MW04	11 Nov 2024	ES2437097	0.02	<0.001	0.064	0.08	<0.0001	88	<0.001	0.002	<0.05	<0.001	131	0.165		0.006	17	**<0.01**		0.032	<0.5
WK_MW04	WK_MW04_20241202	02 Dec 2024	ES2439571		<0.001	0.068	0.07	<0.0001	95	<0.001	<0.001		<0.001	132	0.333	**<0.0001**	0.008	18	**<0.01**		0.036	
WK_MW04	WK_MW04_250513	13 May 2025	ES2514194	<0.01	<0.001	0.078	0.07	<0.0001	99	<0.001	<0.001	**0.78**	<0.001	143	0.895	**<0.0001**	0.008	19	**<0.01**	<0.001	0.031	<0.5
WK_MW04	**WK_MW04**	**18 Nov 2025**	**ES2536608**	<0.01	<0.001	0.032	<0.05	<0.0001	61	<0.001	<0.001	<0.05	<0.001	149	0.043	**<0.0001**	0.001	17	<0.004	<0.001	<0.005	<1.0
WK_MW04	**WK_MW04**	**12 May 2026**	**ES2615273**	<0.01	<0.001	0.055	0.07	<0.0001	81	<0.001	<0.001	**0.37**	<0.001	129	0.602	**<0.0001**	0.005	18	<0.004	<0.001	0.030	<0.5
WK_MW06 SSTVs				*0.02*	*0.062*		*0.94*	*0.0055*	*NM*		*0.0014*		*0.0034*	*NM*	*1.9*	*0.0006*	*0.011*	*NM*	*0.011*	*0.001*	*0.008*	*0.2*
WK_MW06	WK_MW06	11 Nov 2024	ES2437097	0.02	0.047	0.756	<0.05	<0.0001	127	<0.001	<0.001	**2.48**	<0.001	46	0.073		<0.001	22	**<0.01**		<0.005	<0.5
WK_MW06	WK_MW06_240028	28 Nov 2024	ES2439148																			<2
WK_MW06	WK_MW06_250514	14 May 2025	ES2514194	<0.01	0.002	0.823	<0.05	<0.0001	126	<0.001	<0.001	**2.00**	<0.001	48	0.059	**<0.0001**	<0.001	22	**<0.01**	<0.001	<0.005	<0.5
WK_MW06	**WK_MW06**	**18 Nov 2025**	**ES2536608**	<0.01	<0.001	0.640	<0.05	<0.0001	115	<0.001	<0.001	<0.05	<0.001	40	0.057	**<0.0001**	0.005	20	<0.004	<0.001	<0.005	<1.0
WK_MW06	**WK_MW06**	**12 May 2026**	**ES2615273**	<0.01	<0.001	0.599	<0.05	<0.0001	113	<0.001	<0.001	**1.53**	<0.001	46	0.050	**<0.0001**	<0.001	22	<0.004	<0.001	<0.005	<0.5

Bold	**Bold**	Exceeds ANZG, July 2026, ANZG Freshwater Toxicant DGVs LOSP 95% (July 2026)
		Exceeds OGMP(2026) baseline data SSTV

Environmen Environmental Standards

ANZG, July 2 ANZG, July 2026, ANZG Freshwater Toxicant DGVs LOSP 95% (July 2026)

Grey	Previous AEMR reporting period (2024-2025)
Black	Current AEMR reporting period (2025-2026)

C.2 Groundwater level tables

Monitoring Zone	Location Code	Alternative Name	Date Time	Water Depth	5th Percentile	95th Percentile	Water Level (mAHD)
SSCAD	CA1		19/11/2025 13:41	1.65	NC	NC	939.808
SSCAD	CA1		12/05/2026 15:00	1.61	NC	NC	939.848
SSCAD	CA2		19/11/2025 13:28	2.48	NC	NC	939.358
SSCAD	CA2		12/05/2026 15:00	2.38	NC	NC	939.458
SSCAD	CB1		19/11/2025 13:54	2.25	NC	NC	940.598
SSCAD	CB1		12/05/2026 15:00	2.93	NC	NC	939.918
SSCAD	CB2		19/11/2025 14:02	2.24	NC	NC	940.504
SSCAD	CB2		12/05/2026 15:00	2.49	NC	NC	940.254
SSCAD	CB3		19/11/2025 14:16	1.72	NC	NC	940.977
SSCAD	CB3		12/05/2026 15:00	2.04	NC	NC	940.657
Upstream Sawyers Swamp Creek	D1	WGM1_D1	11/11/2024 9:54	3.62	NA	953.51	951.29
Upstream Sawyers Swamp Creek	D1	WGM1_D1	26/11/2024		NA	953.51	
Upstream Sawyers Swamp Creek	D1	WGM1_D1	14/05/2025	3.65	NA	953.51	951.26
Upstream Sawyers Swamp Creek	D1	WGM1_D1	17/11/2025 14:14	2.5	NA	953.51	952.41
Upstream Sawyers Swamp Creek	D1	WGM1_D1	20/01/2026 15:00	3.42	NA	953.51	951.49
Upstream Sawyers Swamp Creek	D1	WGM1_D1	12/05/2026 15:00	4.2	NA	953.51	950.71
Stockpile Area	D2	WGM1_D2	11/11/2024 16:54	8.5	918.69	926.04	920.556
Stockpile Area	D2	WGM1_D2	26/11/2024	7.84	918.69	926.04	921.216
Stockpile Area	D2	WGM1_D2	14/05/2025	8.05	918.69	926.04	921.006
Stockpile Area	D2	WGM1_D2	18/11/2025 13:40	8.05	918.69	926.04	921.006
Stockpile Area	D2	WGM1_D2	20/01/2026 15:00	3.055	918.69	926.04	926.001
Stockpile Area	D2	WGM1_D2	11/05/2026 15:00	7.81	918.69	926.04	921.246
KVAR/KVAD	D3	WGM1_D3	11/11/2024 12:08	12.09	919.09	922.3	**918.207**
KVAR/KVAD	D3	WGM1_D3	26/11/2024	11.47	919.09	922.3	**918.827**
KVAR/KVAD	D3	WGM1_D3	13/05/2025	11.205	919.09	922.3	919.092
KVAR/KVAD	D3	WGM1_D3	18/11/2025 9:33	11.77	919.09	922.3	**918.527**
KVAR/KVAD	D3	WGM1_D3	20/01/2026 15:00	11.07	919.09	922.3	919.227
KVAR/KVAD	D3	WGM1_D3	4/03/2026 15:00	10.27	919.09	922.3	920.027
KVAR/KVAD	D3	WGM1_D3	12/05/2026 15:00	11.84	919.09	922.3	**918.457**
Kerosene Vale	D4	WGM1_D4	11/11/2024 15:41	1.53	905.82	906.42	905.894
Kerosene Vale	D4	WGM1_D4	26/11/2024	1.54	905.82	906.42	905.884
Kerosene Vale	D4	WGM1_D4	13/05/2025	1.51	905.82	906.42	905.914
Kerosene Vale	D4	WGM1_D4	18/11/2025 16:29	1.57	905.82	906.42	905.854
Kerosene Vale	D4	WGM1_D4	12/05/2026 15:00	1.55	905.82	906.42	905.874
Red Swamp	D5	WGM1_D5	11/11/2024 14:27	8.88	NA	898.81	895.879
Red Swamp	D5	WGM1_D5	26/11/2024	8.287	NA	898.81	896.472
Red Swamp	D5	WGM1_D5	12/05/2025	8.58	NA	898.81	896.179
Red Swamp	D5	WGM1_D5	19/11/2025 11:06	8.835	NA	898.81	895.924
Red Swamp	D5	WGM1_D5	20/01/2026 15:00	8.83	NA	898.81	895.929
Red Swamp	D5	WGM1_D5	12/05/2026 15:00	8.95	NA	898.81	895.809
Red Swamp	D6	WGM/D6	11/11/2024 13:58	11.35	895.76	896.6	896.04
Red Swamp	D6	WGM/D6	26/11/2024	11.217	895.76	896.6	896.173
Red Swamp	D6	WGM/D6	13/05/2025	11.455	895.76	896.6	895.935
Red Swamp	D6	WGM/D6	19/11/2025 11:36	11.47	895.76	896.6	895.92
Red Swamp	D6	WGM/D6	20/01/2026 15:00	11.455	895.76	896.6	895.935
Red Swamp	D6	WGM/D6	12/05/2026 15:00	11.54	895.76	896.6	895.85
Lidsdale Township	MW102D		13/11/2024 11:49	3.85	NC	NC	901.248
Lidsdale Township	MW102D		26/11/2024	3.76	NC	NC	901.338
Lidsdale Township	MW102D		12/05/2025	5.62	NC	NC	899.478
Lidsdale Township	MW102D		17/11/2025 15:06	10.65	NC	NC	894.448
Lidsdale Township	MW102D		11/05/2026 15:00	11.29	NC	NC	893.808
Lidsdale Township	MW102S		13/11/2024 11:24	5.51	NC	NC	899.521
Lidsdale Township	MW102S		26/11/2024	5.44	NC	NC	899.591
Lidsdale Township	MW102S		12/05/2025	5.67	NC	NC	899.361
Lidsdale Township	MW102S		17/11/2025 14:53	5.66	NC	NC	899.371
Lidsdale Township	MW102S		11/05/2026 15:00	6.06	NC	NC	898.971
Irrigation area	MW109D		13/11/2024 12:36	19.96	NC	NC	878.768
Irrigation area	MW109D		26/11/2024	15.8	NC	NC	882.928
Irrigation area	MW109D		13/05/2025	3.14	NC	NC	895.588
Irrigation area	MW109D		17/11/2025 13:11	3.055	NC	NC	895.673
Irrigation area	MW109D		11/05/2026 15:00	3.33	NC	NC	895.398
Lidsdale Township	MW118	WI_MW03R	11/11/2024 12:50	9.22	892.08	893.77	893.445

Monitoring Zone	Location Code	Alternative Name	Date Time	Water Depth	5th Percentile	95th Percentile	Water Level (mAHD)
Lidsdale Township	MW118	WI_MW03R	26/11/2024	9.049	892.08	893.77	893.616
Lidsdale Township	MW118	WI_MW03R	6/02/2025	9.285	892.08	893.77	893.38
Lidsdale Township	MW118	WI_MW03R	13/05/2025	9.45	892.08	893.77	893.215
Lidsdale Township	MW118	WI_MW03R	19/11/2025 10:41	9.49	892.08	893.77	893.175
Lidsdale Township	MW118	WI_MW03R	12/05/2026 15:00	9.5	892.08	893.77	893.165
Lidsdale Cut	WH_MW02		11/11/2024 13:35	21.74	901.32	902.98	902.671
Lidsdale Cut	WH_MW02		26/11/2024	21.675	901.32	902.98	902.736
Lidsdale Cut	WH_MW02		13/05/2025	21.81	901.32	902.98	902.601
Lidsdale Cut	WH_MW02		18/11/2025 14:16	21.69	901.32	902.98	902.721
Lidsdale Cut	WH_MW02		11/05/2026 15:00	21.93	901.32	902.98	902.481
Irrigation area	WH_MW03		11/11/2024 17:31	16.48	903.34	904.87	904.749
Irrigation area	WH_MW03		26/11/2024	16.42	903.34	904.87	904.809
Irrigation area	WH_MW03		13/05/2025	16.44	903.34	904.87	904.789
Irrigation area	WH_MW03		19/11/2025 12:07	16.49	903.34	904.87	904.739
Irrigation area	WH_MW03		11/05/2026 15:00	16.65	903.34	904.87	904.579
Lidsdale Township	WH_MW04		13/11/2024 13:28	20.14	888.6	889.48	888.901
Lidsdale Township	WH_MW04		26/11/2024	20.075	888.6	889.48	888.966
Lidsdale Township	WH_MW04		12/05/2025	19.95	888.6	889.48	889.091
Lidsdale Township	WH_MW04		17/11/2025 16:47	19.76	888.6	889.48	889.281
Lidsdale Township	WH_MW04		11/05/2026 15:00	19.76	888.6	889.48	889.281
Closed Asbestos Landfill	WJ_MW03		11/11/2024 13:13	3.61	892.18	893.8	893.418
Closed Asbestos Landfill	WJ_MW03		26/11/2024	3.466	892.18	893.8	893.562
Closed Asbestos Landfill	WJ_MW03		12/05/2025	3.84	892.18	893.8	893.188
Closed Asbestos Landfill	WJ_MW03		19/11/2025 9:45	3.81	892.18	893.8	893.218
Closed Asbestos Landfill	WJ_MW03		20/01/2026 15:00	3.79	892.18	893.8	893.238
Closed Asbestos Landfill	WJ_MW03		12/05/2026 15:00	3.93	892.18	893.8	893.098
Stockpile Area	WK_MW01		11/11/2024 16:16	5.88	938.84	940.51	939.172
Stockpile Area	WK_MW01		26/11/2024	5.82	938.84	940.51	939.232
Stockpile Area	WK_MW01		14/05/2025	5.71	938.84	940.51	939.342
Stockpile Area	WK_MW01		18/11/2025 8:17	6	938.84	940.51	939.052
Stockpile Area	WK_MW01		20/01/2026 15:00	5.251	938.84	940.51	939.801
Stockpile Area	WK_MW01		12/05/2026 15:00	5.27	938.84	940.51	939.782
Stockpile Area	WK_MW04		11/11/2024 16:37	3.73	932.12	933.74	933.507
Stockpile Area	WK_MW04		26/11/2024	3.73	932.12	933.74	933.507
Stockpile Area	WK_MW04		13/05/2025	3.735	932.12	933.74	933.502
Stockpile Area	WK_MW04		18/11/2025 8:51	3.85	932.12	933.74	933.387
Stockpile Area	WK_MW04		12/05/2026 15:00	3.83	932.12	933.74	933.407
Stockpile Area	WK_MW06		11/11/2024 17:13	24.4	923.55	925.4	924.506
Stockpile Area	WK_MW06		26/11/2024	24.36	923.55	925.4	924.546
Stockpile Area	WK_MW06		14/05/2025	24.32	923.55	925.4	924.586
Stockpile Area	WK_MW06		18/11/2025 8:33	24.32	923.55	925.4	924.586
Stockpile Area	WK_MW06		12/05/2026 15:00	24.5	923.55	925.4	924.406
Lidsdale Cut	WWD10		12/11/2024 15:43	11.8	893.91	895.06	894.373
Lidsdale Cut	WWD10		26/11/2024	11.587	893.91	895.06	894.586
Lidsdale Cut	WWD10		12/05/2025	12.005	893.91	895.06	894.168
Lidsdale Cut	WWD10		19/11/2025 10:53	12.06	893.91	895.06	894.113
Lidsdale Cut	WWD10		11/05/2026 15:00	12.05	893.91	895.06	894.123
Closed Asbestos Landfill	WWD12		13/11/2024 7:51	8.2	893.67	895.86	894.104
Closed Asbestos Landfill	WWD12		26/11/2024	8.129	893.67	895.86	894.175
Closed Asbestos Landfill	WWD12		14/05/2025	8.26	893.67	895.86	894.044
Closed Asbestos Landfill	WWD12		18/11/2025 14:46	7.915	893.67	895.86	894.389
Closed Asbestos Landfill	WWD12		11/05/2026 15:00	8.22	893.67	895.86	894.084
KVAR/KVAD	WWD14A		12/11/2024 16:59	21.48	NA	920.75	919.944
KVAR/KVAD	WWD14A		26/11/2024	21.45	NA	920.75	919.974
KVAR/KVAD	WWD14A		13/05/2025	21.63	NA	920.75	919.794
KVAR/KVAD	WWD14A		18/11/2025 13:15		NA	920.75	
KVAR/KVAD	WWD14A		11/05/2026 15:00	21.74	NA	920.75	919.684

Monitoring Zone	Location Code	Alternative Name	Date Time	Water Depth	5th Percentile	95th Percentile	Water Level (mAHD)
KVAR/KVAD	WWD14B		12/11/2024 17:08	23.11	918.16	919.2	918.23
KVAR/KVAD	WWD14B		26/11/2024	23.07	918.16	919.2	918.27
KVAR/KVAD	WWD14B		13/05/2025	23.22	918.16	919.2	**918.12**
KVAR/KVAD	WWD14B		18/11/2025 13:14	23.28	918.16	919.2	**918.06**
KVAR/KVAD	WWD14B		11/05/2026 15:00	23.42	918.16	919.2	917.92
SSCAD	WWD1A		12/11/2024 9:37	1.19	942.35	943.21	942.41
SSCAD	WWD1A		26/11/2024	0.947	942.35	943.21	942.653
SSCAD	WWD1A		13/05/2025	0.61	942.35	943.21	942.99
SSCAD	WWD1A		18/11/2025 7:52	0.97	942.35	943.21	942.63
SSCAD	WWD1A		11/05/2026 15:00	1.13	942.35	943.21	942.47
SSCAD	WWD1B		12/11/2024 9:28	2.27	942.12	942.81	942.175
SSCAD	WWD1B		26/11/2024	8.114	942.12	942.81	**936.331**
SSCAD	WWD1B		13/05/2025	1.875	942.12	942.81	942.57
SSCAD	WWD1B		18/11/2025 7:56	1.875	942.12	942.81	942.57
SSCAD	WWD1B		11/05/2026 15:00	2.2	942.12	942.81	942.245
SSCAD	WWD2A		12/11/2024 8:30	3.15	940.72	942.12	**940.557**
SSCAD	WWD2A		26/11/2024	3.34	940.72	942.12	**940.367**
SSCAD	WWD2A		13/05/2025	2.62	940.72	942.12	941.087
SSCAD	WWD2A		18/11/2025 17:15	2.47	940.72	942.12	941.237
SSCAD	WWD2A		20/01/2026 15:00	3.99	940.72	942.12	**939.717**
SSCAD	WWD2A		11/05/2026 15:00	4.22	940.72	942.12	**939.487**
SSCAD	WWD2B		12/11/2024 8:25	3.47	940.38	941.29	**940.332**
SSCAD	WWD2B		26/11/2024	3.03	940.38	941.29	940.772
SSCAD	WWD2B		13/05/2025	3.19	940.38	941.29	940.612
SSCAD	WWD2B		18/11/2025 17:15	3.15	940.38	941.29	940.652
SSCAD	WWD2B		20/01/2026 15:00	4.585	940.38	941.29	**939.217**
SSCAD	WWD2B		11/05/2026 15:00	4.76	940.38	941.29	**939.042**
KVAR/KVAD	WWD5A		12/11/2024 13:21	NA		911.36	
KVAR/KVAD	WWD5A		26/11/2024	NA		911.36	
KVAR/KVAD	WWD5A		12/05/2025	NA		911.36	
KVAR/KVAD	WWD5A		18/11/2025 11:39	NA		911.36	
KVAR/KVAD	WWD5A		11/05/2026 15:00	NA		911.36	
KVAR/KVAD	WWD5B		12/11/2024 13:17	9.85	911.82	912.6	911.846
KVAR/KVAD	WWD5B		26/11/2024	9.785	911.82	912.6	911.911
KVAR/KVAD	WWD5B		12/05/2025	9.79	911.82	912.6	911.906
KVAR/KVAD	WWD5B		18/11/2025 11:35	9.94	911.82	912.6	**911.756**
KVAR/KVAD	WWD5B		11/05/2026 15:00	10.05	911.82	912.6	**911.646**
KVAR/KVAD	WWD6A		13/11/2024 6:52	25.53	917.48	917.72	917.583
KVAR/KVAD	WWD6A		26/11/2024	25.53	917.48	917.72	917.583
KVAR/KVAD	WWD6A		13/05/2025	25.56	917.48	917.72	917.553
KVAR/KVAD	WWD6A		18/11/2025 12:59	25.575	917.48	917.72	917.538
KVAR/KVAD	WWD6A		11/05/2026 15:00	25.73	917.48	917.72	**917.383**
KVAR/KVAD	WWD6B		13/11/2024 6:39	29.97	912.73	913.22	912.785
KVAR/KVAD	WWD6B		26/11/2024	29.92	912.73	913.22	912.835
KVAR/KVAD	WWD6B		13/05/2025	29.93	912.73	913.22	912.825
KVAR/KVAD	WWD6B		18/11/2025 12:59	29.925	912.73	913.22	912.83
KVAR/KVAD	WWD6B		11/05/2026 15:00	30.05	912.73	913.22	**912.705**

Grey	Previous AEMR period (2024-2025)
Black	Current AEMR period (2025-2026)
BOLD	Water level reported outside 5th to 95th percentiles (SSTVs)
NA	Well previously reported dry hence no 5th percentile SSTV
NC	Not calculated due to limited data set

Australia

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St Leonards NSW 2065
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Newcastle NSW 2300
T 02 4907 4800

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QLD 4000
T 07 3648 1200

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15 London Circuit
Canberra City ACT 2601

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Adelaide SA 5000
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Appendix D

Air quality monitoring reports – Depositional dust

EMM
creating opportunities

Barnson ***Pty Ltd*** *(ABN 42 088 342 635) incorporating*
Envirowest Consulting *Pty Ltd*
• 9 Cameron Place, Orange NSW 2800 • Tel (1300) 227676 •
• Email accounts@barnson.com.au • Web www.barnson.com.au •

15 October 2025

Tim Edwards
GMP Lidsdale
PO Box 132
Budgowoi NSW 2262

Ref: L43736dm15

Dear Tim,

Deposited dust monitoring at GPM Lidsdale, September 2025

1. Background

GPM Lidsdale is undertaking earthworks in accordance with an operational environmental management plan (OEMP). The plan requires monthly deposited dust monitoring to be undertaken for amenity management.

2. Scope

Barnson Pty Ltd was commissioned by GPM to provide deposited dust monitoring at four locations on the Lidsdale site in accordance with the OEMP.

3. Site

The site is GPM Lidsdale, Lidsdale NSW (Figure 1).

4. Assessment

Dust deposition gauges were collected on 24 September 2025 by Michael Todd, Environmental Scientist of Barnson Pty Ltd. Laboratory prepared 4L amber glass bottles were installed in monitoring posts above the ground with a glass funnel in a stopper fitted into the neck of the bottle at four locations around the site (Table 1).

The length of assessment was 36 days which is outside the required 30±2 days sampling period. The sampling was undertaken in accordance with Depositional AS/NZS 3580.10.1:2003 *Methods for sampling and analysis ambient air method 10.1*. Analysis for total solids depositional dust, insoluble solids, combustible material and ash was undertaken at the NATA laboratory of SGS Sydney.

Table 1. Gauge locations

ID	Location	Sampling Date Range
DG29	Junction	20/8/25 – 24/9/25
DG30	Lidsdale Fire Shed/Wolgan Road	20/8/25 – 24/9/25
DG31	Skelly Road	20/8/25 – 24/9/25
DG32	Collins Access Road	20/8/25 – 24/9/25

5. Quality control assurance

The sampling was undertaken in accordance with AS3580.10.1 to achieve the data quality objectives. Samples were collected in laboratory prepared containers. The analyses were undertaken in the NATA accredited laboratory of SGS Sydney.

All media appropriate to the objectives of this investigation have been adequately analysed. It is concluded the data is usable for the purposes of the investigation.

Wind speed and direction data was recorded by a Weathermation automated weather station located at GPM Lidsdale.

6. Assessment criteria

The depositional dust assessment criteria of insoluble solids in the Lidsdale OEMP is 4g/m^2/month.

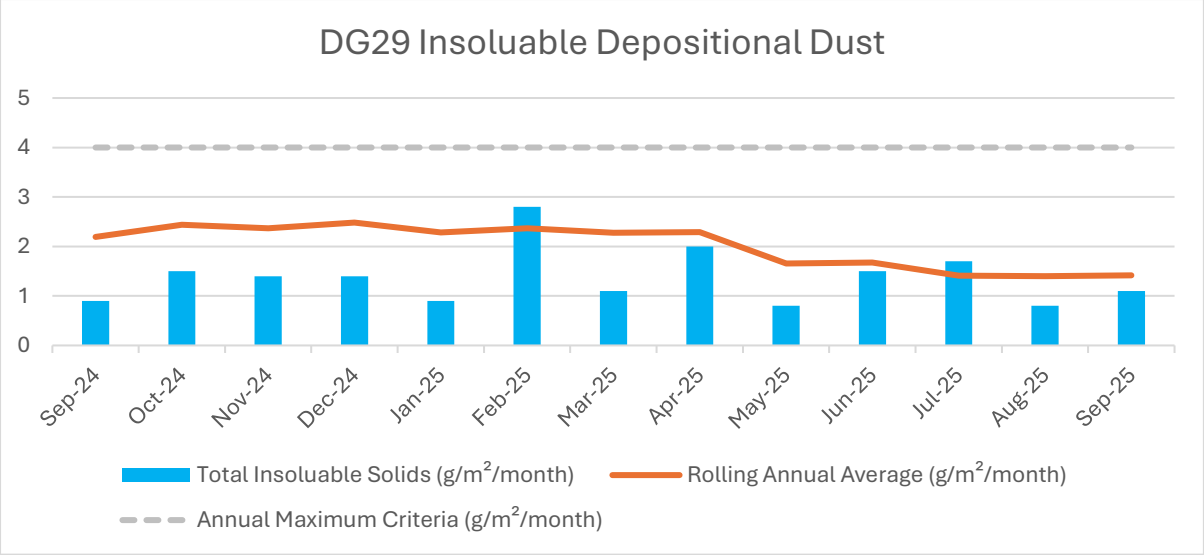
7. Results

All dust gauges recorded a level of insoluble solids below the threshold of 4 g/m^2/month. The rolling annual average for insoluble solids is below 4 g/m^2/month for all locations (Graph 1-4).

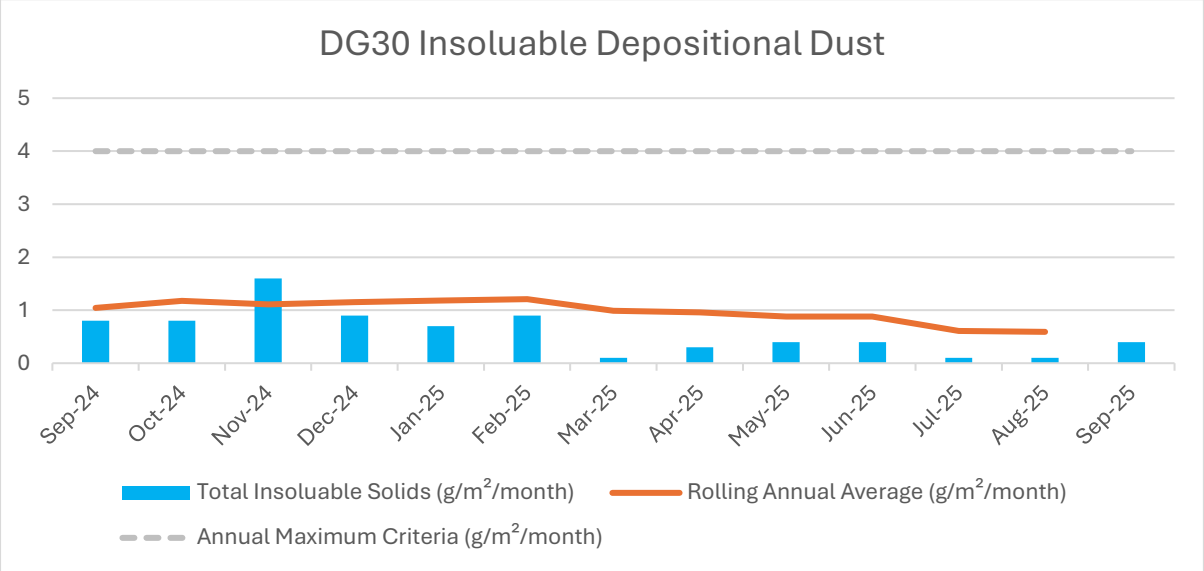
The prevailing wind direction for the sampling period was WSW, maximum windspeed is >14m/s from the NNW, NW, WNW, W and SE (Appendix 2). During the sampling period there were 16 days when the rain gauge recorded rainfall totalling 114.6mm.

Table 2. Deposited dust results, g/m^2/month - July 2025

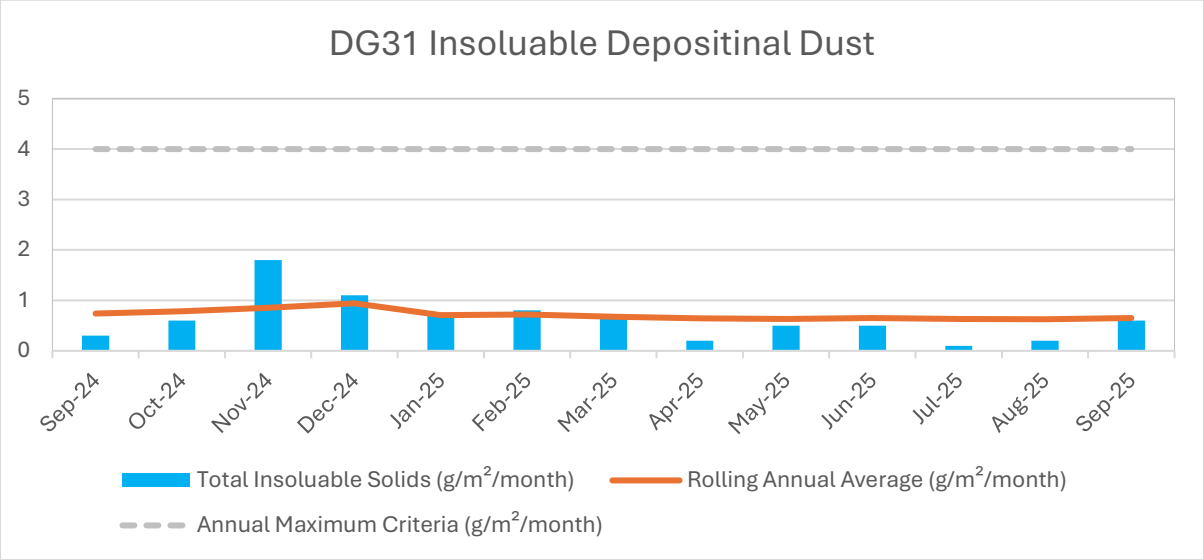
Sample ID	Monthly Insoluble solids	Monthly Combustible Matter	Monthly Ash Residue	Total Solids Per Sampling Period	Rolling Annual Average Insoluble Solids
DG29	1.1	0.2	0.9	3.2	1.4
DG30	0.4	0.4	<0.1	0.4	0.6
DG31	0.6	0.4	0.2	1.9	0.6
DG32	1.6	0.4	1.2	1.7	1.3
OEMP Maximum Criteria	4.0	-	-	-	4.0



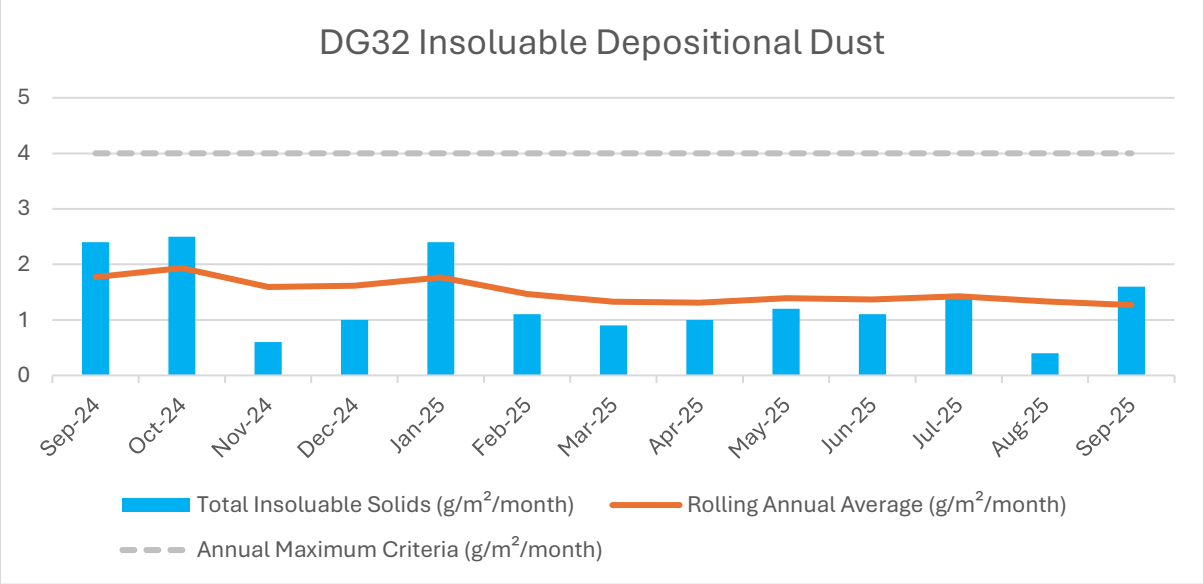
Graph 1. DG29 Guage monthly results



Graph 2. DG30 Gauge monthly results



Graph 3. DG31 Gauge monthly results



Graph 4. DG32 Gauge monthly results

8. Conclusion

The level of recorded insoluble solids for each dust gauge was below the adopted OEMP threshold. The rolling annual average for insoluble solids was also below the OEMP threshold for all locations.

Regards,

Michael Todd Hons. Bsc (Hons) EnvSc
Environmental Scientist

Checked,

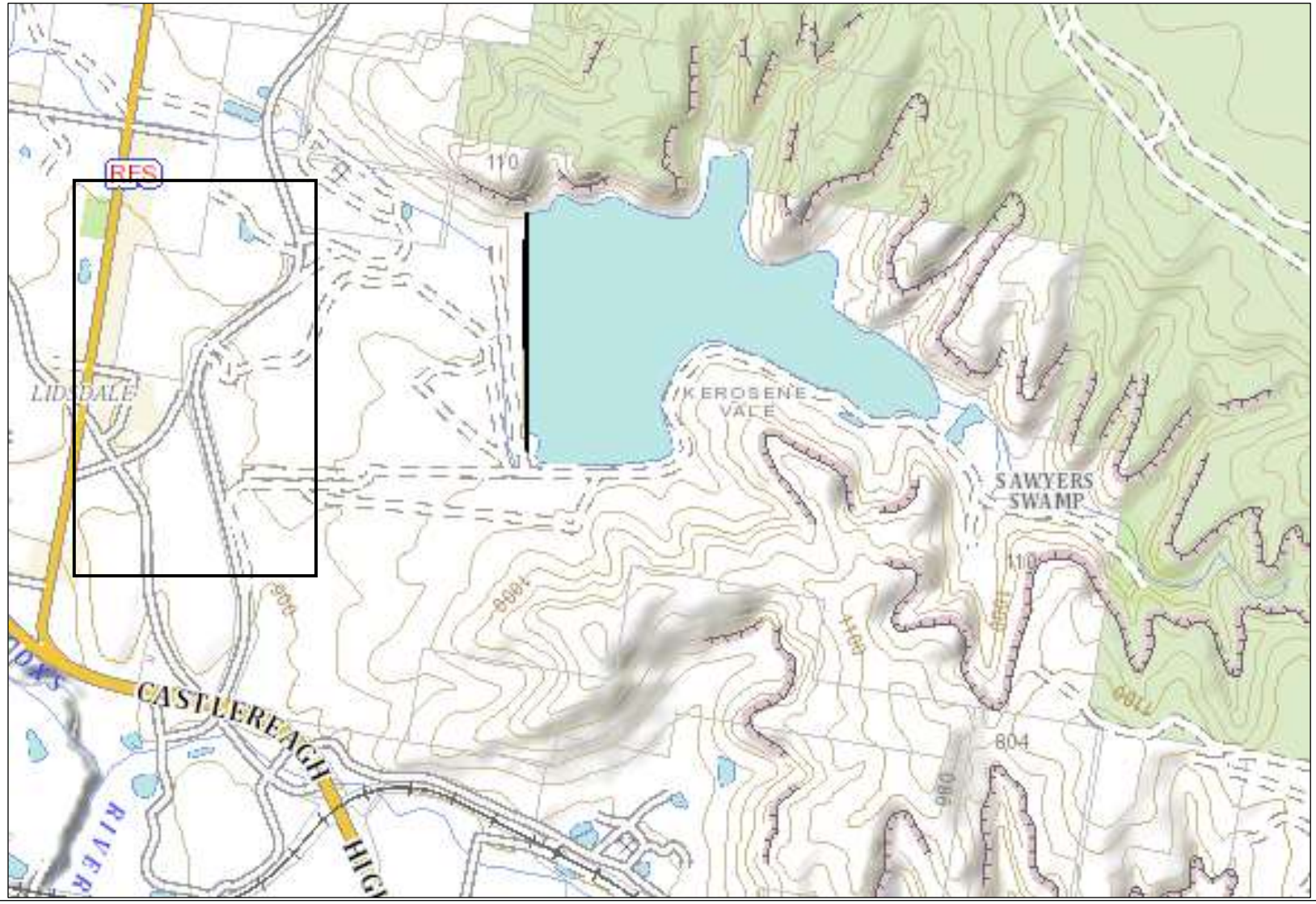


Greg Madafiglio CEnvP
Senior Environmental Scientist

Attachments

Figure 1.	Site locality
Figure 2.	Dust gauge locations
Appendix 1.	Report limitations and intellectual property
Appendix 2.	Weathermation wind rose graph
Appendix 3.	ALS laboratory report EN2516507
Appendix 4.	Field observation

Figures



Approximate Scale 1:22000

0 220 440 880m

Figure 1. Locality map

GPM Lidsdale and Lidsdale, Lidsdale, NSW

Barnson Pty Ltd

Job: L43736dm15	Drawn by: MT	Date: 18/10/2024



Legend

⊗ W29 Dust gauge

Approximate Scale 1:7000

0 7 14 28m

Figure 2. Dust gauge locations		
GPM Lidsdale and Lidsdale, Lidsdale, NSW		
	Barnson Pty Ltd	
Job: L43736dm15	Drawn by: MT	Date: 21/11/2024

Appendix 1. Report limitations and intellectual property

This report has been prepared for the use of the client to achieve the objectives given the clients requirements. The level of confidence of the conclusion reached is governed by the scope of the investigation and the availability and quality of existing data. Where limitations or uncertainties are known, they are identified in the report. No liability can be accepted for failure to identify conditions or issues which arise in the future and which could not reasonably have been predicted using the scope of the investigation and the information obtained.

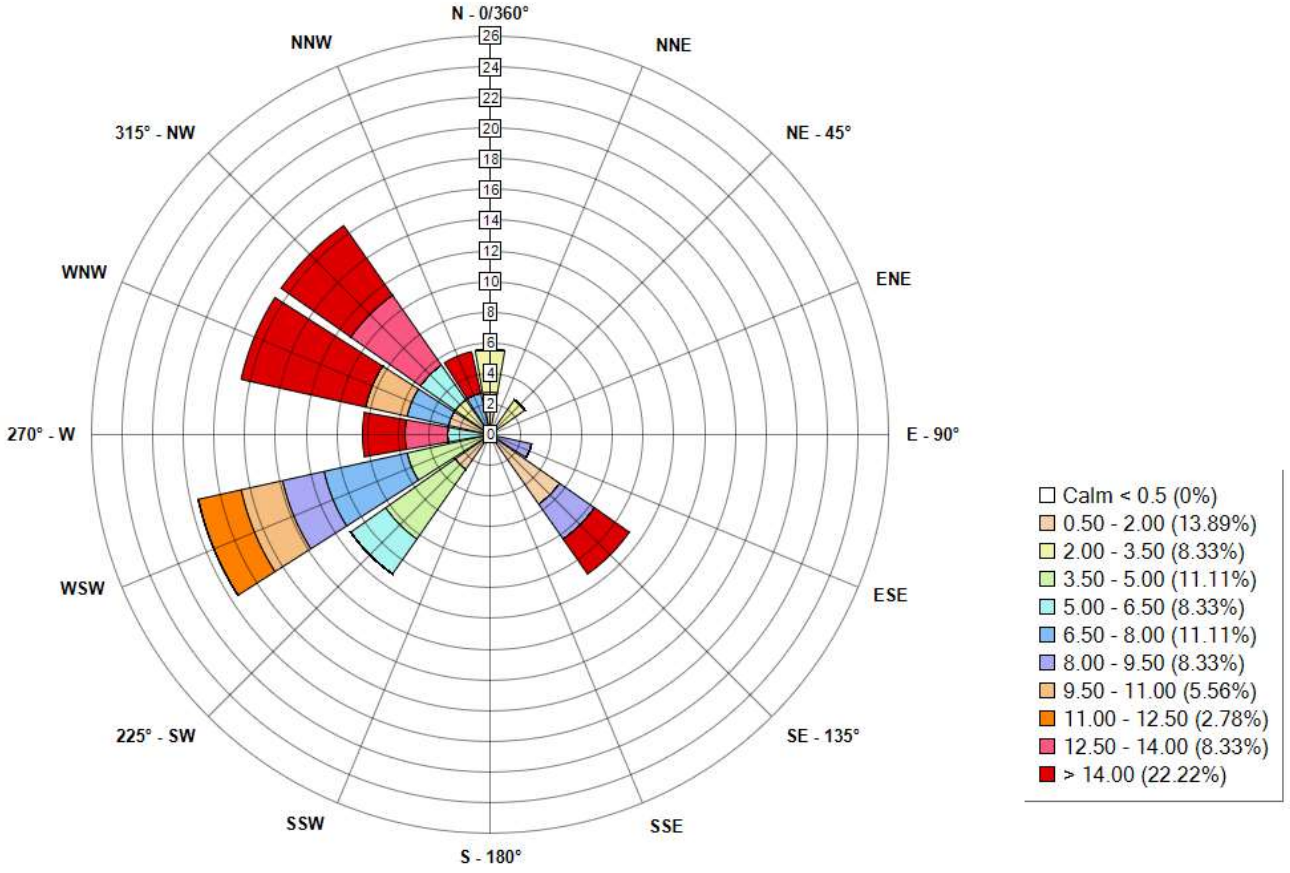
The investigation identifies the actual deposited dust conditions only at those points where samples are taken, when they are taken. Data derived through sampling and subsequent laboratory testing is interpreted by geologists, engineers or scientists who then render an opinion about overall dust conditions, the nature and extent of the contamination, its likely impact on the areas amenity and appropriate remediation measures. Actual conditions may differ from those inferred to exist, because no professional, no matter how well qualified, and no dust monitoring program, no matter how comprehensive, can cover the whole area under investigation.

This report, including data contained and its findings and conclusions, remains the intellectual property of Barnson Pty Ltd. A licence to use the report for the specific purpose identified is granted for the persons identified in that section after full payment for the services involved in preparation of the report. This report should not be used by persons or for purposes other than those stated, and should not be reproduced without the permission of Barnson Pty Ltd.

Appendix 2. Weathermation wind rose graph

Wind Rose Report for: GPM Lidsdale RG - Daily Summary

VWDIR Vector Wind Dir 10m and VWSP Vector Wind Spd 10m in km/h
Period: 2025-08-20 00:00 to 2025-09-24 23:59
Direction the Wind is Coming From



Appendix 3. ALS laboratory report EN2516507

CERTIFICATE OF ANALYSIS

Work Order	: **EN2516507**	Page	: 1 of 3
Client	: **BARNSON**	Laboratory	: Environmental Division Newcastle
Contact	: MICHAEL TODD	Contact	: Customer Service (ALS Mudgee)
Address	: 9 Cameron Place PO Box 8158 ORANGE 2800	Address	: 5/585 Maitland Road Mayfield West NSW Australia 2304
Telephone	: ----	Telephone	: +61 2 6372 6735
Project	: 43736 d7	Date Samples Received	: 26-Sep-2025 11:50
Order number	: ----	Date Analysis Commenced	: 29-Sep-2025
C-O-C number	: ----	Issue Date	: 10-Oct-2025 10:06
Sampler	: MICHAEL TODD		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 4		
No. of samples analysed	: 4		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Zoran Grozdanovski	Team Leader - Chemistry	Newcastle - Inorganics, Mayfield West, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Dust analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis. NATA accreditation does not apply for results reported in deposition units e.g., g/m².mth where the sampling procedure is not NATA accredited.
- Sample exposure period is outside the typical exposure period of 30 +/- 2 days as per AS3580.10.1/AS3580.10.2
- No copper sulfate correction was applied to samples 001 and 003.
- For dust analysis, the Limit of Reporting (LOR) referenced in the reports for deposited matter parameters represents the reporting increment rather than reporting limit.

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST** (Matrix: **AIR**)

Compound	CAS Number	LOR	Unit	Sample ID	DG29 20/08/25 - 24/09/25	DG30 20/08/25 - 24/09/25	DG31 20/08/25 - 24/09/25	DG32 20/08/25 - 24/09/25	----
				Sampling date / time	24-Sep-2025 00:00	24-Sep-2025 00:00	24-Sep-2025 00:00	24-Sep-2025 00:00	----
					EN2516507-001	EN2516507-002	EN2516507-003	EN2516507-004	--------
					Result	Result	Result	Result	----
EA120: Ash Content									
Ash Content	----	0.1	g/m².month		**0.9**	<0.1	**0.2**	**1.2**	**----**
Ash Content (mg)	----	2	mg		**18**	<2	**4**	**25**	**----**
EA125: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		**0.2**	**0.4**	**0.4**	**0.4**	**----**
Combustible Matter (mg)	----	2	mg		**4**	**8**	**8**	**7**	**----**
EA139: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m².month		**2.1**	<0.1	**1.3**	**0.1**	**----**
Total Soluble Matter (mg)	----	2	mg		**44**	<2	**26**	**2**	**----**
EA141: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		**1.1**	**0.4**	**0.6**	**1.6**	**----**
Total Insoluble Matter (mg)	----	2	mg		**22**	**9**	**12**	**32**	**----**
EA142: Total Solids									
Total Solids	----	0.1	g/m².month		**3.2**	**0.4**	**1.9**	**1.7**	**----**
Total Solids (mg)	----	2	mg		**66**	**9**	**38**	**34**	**----**

Appendix 4. Field Observations

Dust monitoring observation

Client GPM Lidsdale

Contact Tim Edwards

Job number 43736

Date 24/9/25

Investigator(s) MT

Location	Appearance	Insects?	Algae?	Bird droppings?	Organic Matter?	Fine dust?	Coarse dust?	Comment/observations
DM29	Clear, colourless	Yes	Nil	Nil	Nil	Nil	Nil	Mosquitos in liquid
DM30	Clear, colourless	Yes	Nil	Nil	Yes	Nil	Nil	Unidentified small insect in liquid
DM31	Clear, colourless	Yes	Nil	Nil	Nil	Yes	Nil	Unidentified small insect in liquid
DM32	Clear, colourless	Yes	Nil	Nil	Nil	Nil	Nil	Unidentified small insect in liquid.

barnson.
DESIGN . PLAN . MANAGE

1300 BARNSON (1300 227 676)
accounts@barnson.com.au
abn. 43 088 342 625

to.
GPM Lidsdale
Attn: Tim Edwards
PO Box 132
Budgowoi NSW 2262

date.
5/11/2025

reference.
L43736dm16

Tim,

Deposited dust monitoring at GPM Lidsdale, October 2025

1. Background
GPM Lidsdale is undertaking earthworks in accordance with an operational environmental management plan (OEMP). The plan requires monthly deposited dust monitoring to be undertaken for amenity management.

2. Scope
Barnson Pty Ltd was commissioned by GPM to provide deposited dust monitoring at four locations on the Lidsdale site in accordance with the OEMP.

3. Site
The site is GPM Lidsdale, Lidsdale NSW (Figure 1).

4. Assessment
Dust deposition gauges were collected on 20 October 2025 by Michael Todd, Environmental Scientist of Barnson Pty Ltd. Laboratory prepared 4L amber glass bottles were installed in monitoring posts above the ground with a glass funnel in a stopper fitted into the neck of the bottle at four locations around the site (Table 1).

The length of assessment was 26 days which is outside the required 30±2 days sampling period. The sampling was undertaken in accordance with Depositional AS/NZS 3580.10.1:2003 *Methods for sampling and analysis ambient air method 10.1*. Analysis for total solids depositional dust, insoluble solids, combustible material and ash was undertaken at the NATA laboratory of SGS Sydney.

Table 1. Gauge locations

ID	Location	Sampling Date Range
DG29	Junction	24/9/25 - 20/10/25
DG30	Lidsdale Fire Shed/Wolgan Road	24/9/25 - 20/10/25
DG31	Skelly Road	24/9/25 - 20/10/25
DG32	Collins Access Road	24/9/25 - 20/10/25

5. Quality control assurance
The sampling was undertaken in accordance with AS3580.10.1 to achieve the data quality objectives. Samples were collected in laboratory prepared containers. The analyses were undertaken in the NATA accredited

laboratory of SGS Sydney.

All media appropriate to the objectives of this investigation have been adequately analysed. It is concluded the data is usable for the purposes of the investigation.

Wind speed and direction data was recorded by a Weathermation automated weather station located at GPM Lidsdale.

6. Assessment criteria

The depositional dust assessment criteria of insoluble solids in the Lidsdale OEMP is 4g/m²/month.

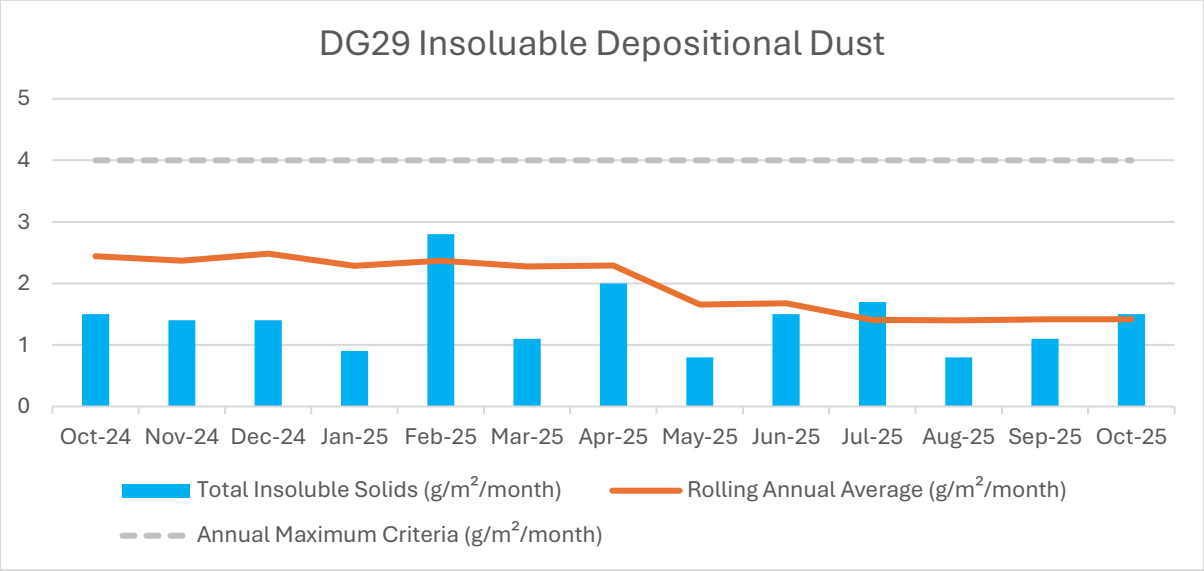
7. Results

All dust gauges recorded a level of insoluble solids below the threshold of 4 g/m²/month. The rolling annual average for insoluble solids is below 4 g/m²/month for all locations (Graph 1-4).

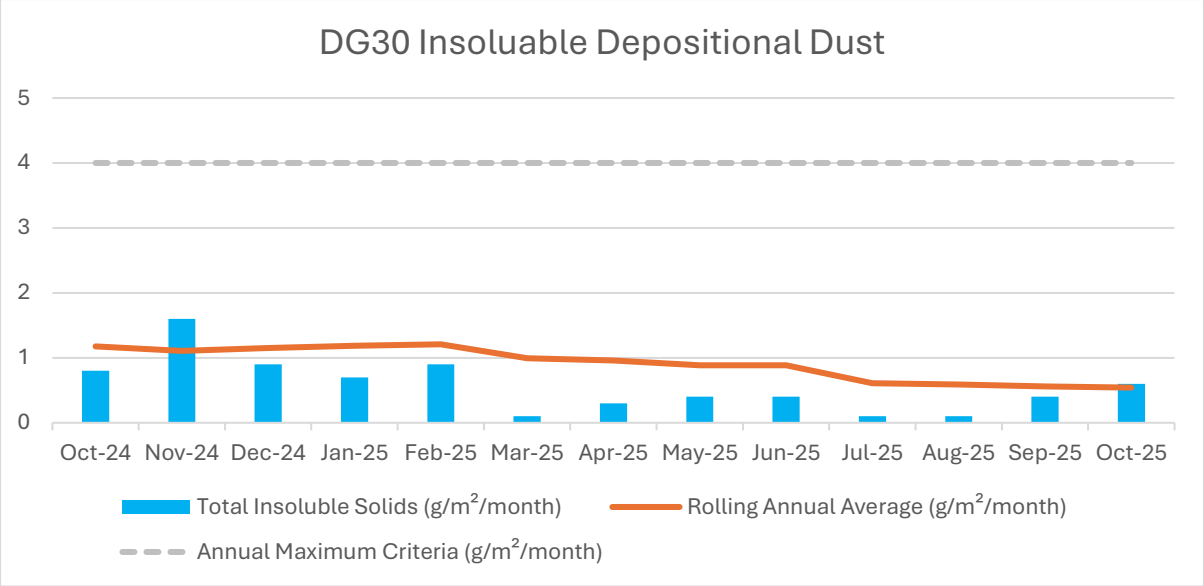
The prevailing wind direction for the sampling period was NW, maximum windspeed was >14m/s from the NW, WNW and W (Appendix 2). During the sampling period there were 11 days when the rain gauge recorded rainfall totaling 2.2mm.

Table 2. Deposited dust results, g/m²/month - October 2025

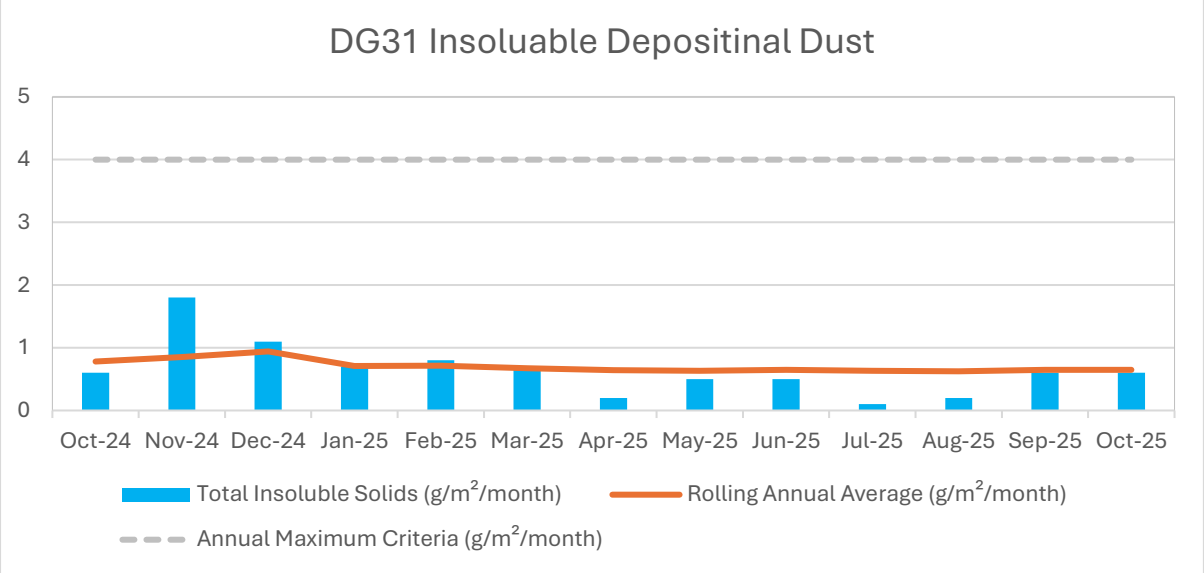
Sample ID	Monthly Insoluble solids	Monthly Combustible Matter	Monthly Ash Residue	Total Solids Per Sampling Period	Rolling Annual Average Insoluble Solids
DG29	1.5	0.3	1.2	1.5	1.4
DG30	0.6	0.4	0.2	3.6	0.5
DG31	0.6	0.3	0.3	2.7	0.7
DG32	1.9	0.6	1.3	2.8	1.2
OEMP Maximum Criteria	4.0	-	-	-	4.0



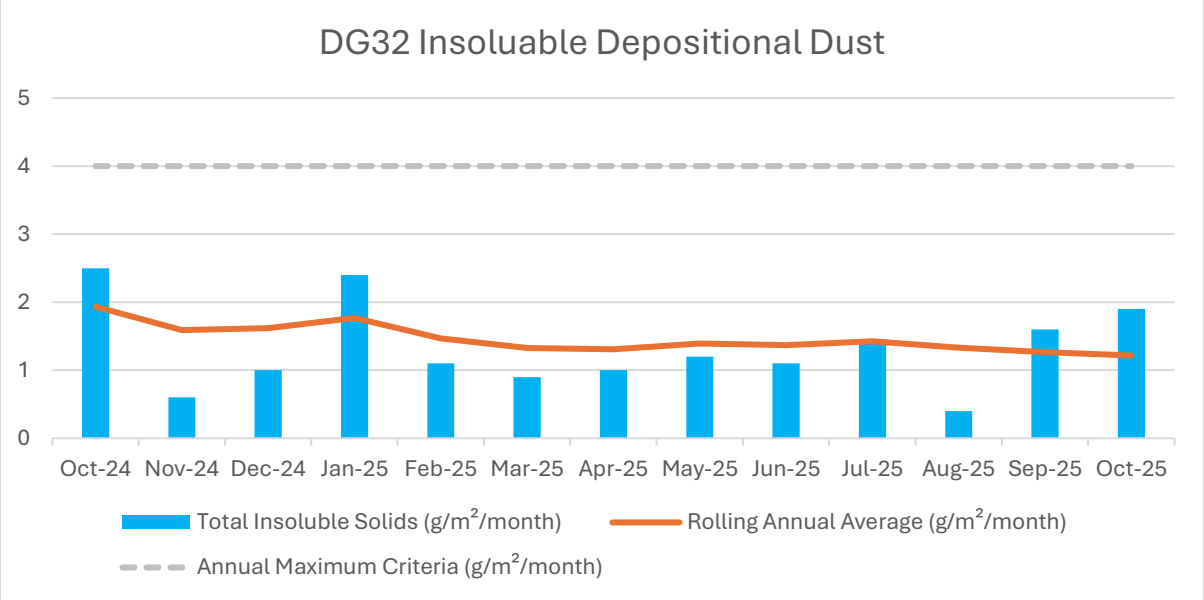
Graph 1. DG29 Guage monthly results



Graph 2. DG30 Gauge monthly results



Graph 3. DG31 Gauge monthly results



Graph 4. DG32 Gauge monthly results

8. Conclusion

The level of recorded insoluble solids for each dust gauge was below the adopted OEMP threshold. The rolling annual average for insoluble solids was also below the OEMP threshold for all locations.

Regards,

Michael Todd Hons. Bsc (Hons) EnvSc
Environmental Scientist

Checked,

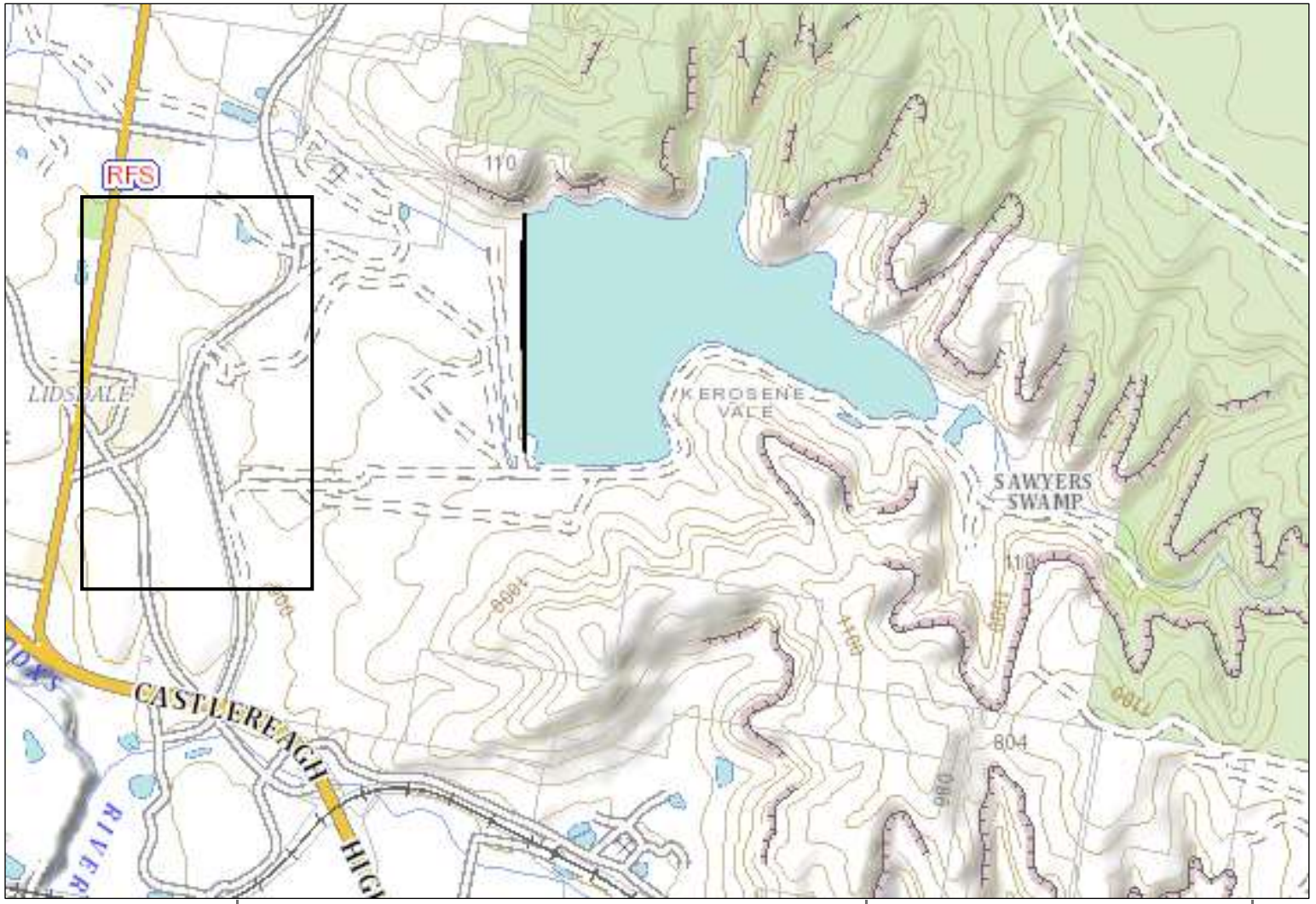
Greg Madafiglio CEnvP
Senior Environmental Scientist

Attachments

Figure 1.	Site locality
Figure 2.	Dust gauge locations
Appendix 1.	Report limitations and intellectual property
Appendix 2.	Weathermation wind rose graph

Appendix 3. ALS laboratory report EN2518128
Appendix 4. Field observations

Figure



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Bathurst I Coffs Harbour I Dubbo I Mudgee I Orange I Sydney I Tamworth

Scale: Approximate Scale 1:22000

0 220 440 880m

Client: GPM Lidsdale

Figure 1: Locality Map

Project:	L43736dm16
Drawn:	MT
Check:	GM
Revision:	A
Date:	31/10/2025



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Approximate Scale 1:13,000

Scale: 0 130 260 520m

Client: GPM Lidsdale

Figure 2: Monitoring locations

Project:	L43736dm16
Drawn:	MT
Check:	GM
Revision:	A
Date:	31/10/2025

Appendix 1. Report limitations and intellectual property

This report has been prepared for the use of the client to achieve the objectives given the clients requirements. The level of confidence of the conclusion reached is governed by the scope of the investigation and the availability and quality of existing data. Where limitations or uncertainties are known, they are identified in the report. No liability can be accepted for failure to identify conditions or issues which arise in the future and which could not reasonably have been predicted using the scope of the investigation and the information obtained.

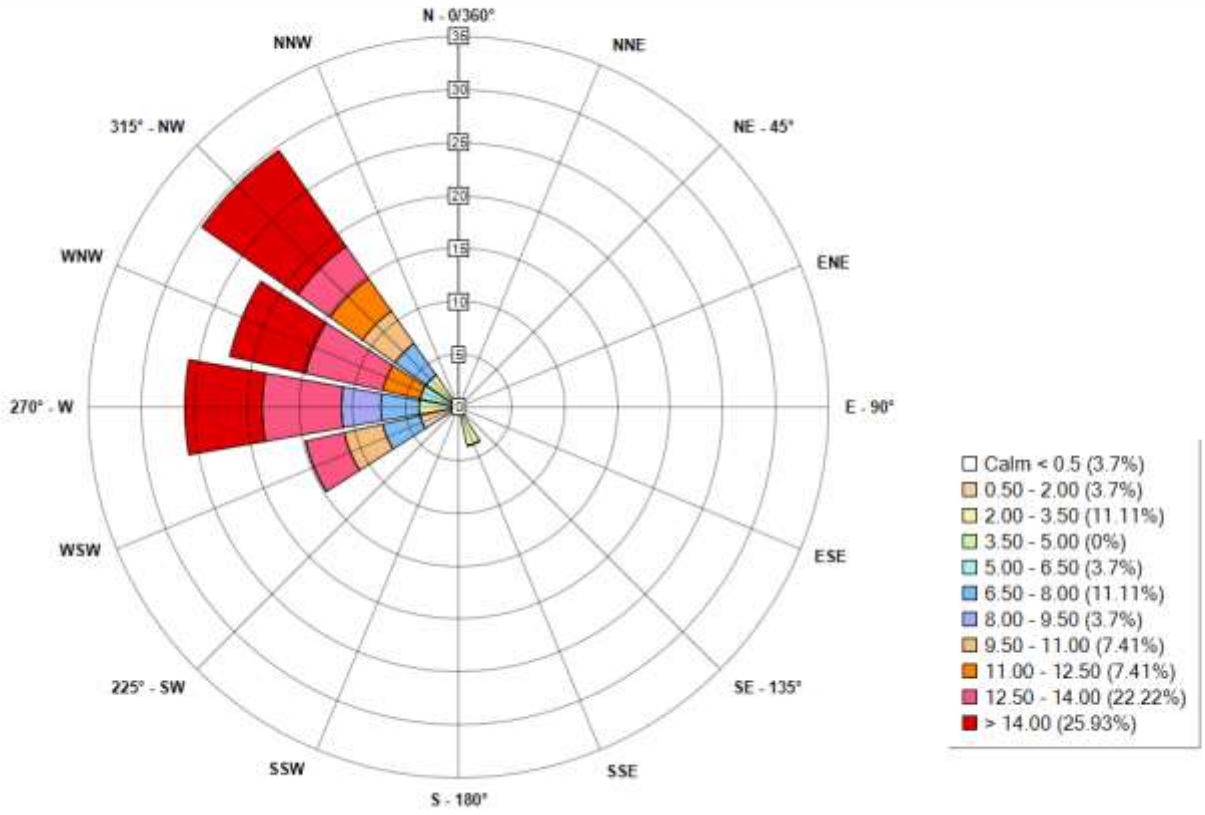
The investigation identifies the actual deposited dust conditions only at those points where samples are taken, when they are taken. Data derived through sampling and subsequent laboratory testing is interpreted by geologists, engineers or scientists who then render an opinion about overall dust conditions, the nature and extent of the contamination, its likely impact on the areas amenity and appropriate remediation measures. Actual conditions may differ from those inferred to exist, because no professional, no matter how well qualified, and no dust monitoring program, no matter how comprehensive, can cover the whole area under investigation.

This report, including data contained and its findings and conclusions, remains the intellectual property of Barnson Pty Ltd. A licence to use the report for the specific purpose identified is granted for the persons identified in that section after full payment for the services involved in preparation of the report. This report should not be used by persons or for purposes other than those stated, and should not be reproduced without the permission of Barnson Pty Ltd.

Appendix 2. Weathermation wind rose graph

Wind Rose Report for: GPM Lidsdale RG - Daily Summary

VWDIR Vector Wind Dir 10m and VWSP Vector Wind Spd 10m in km/h
Period: 2025-09-24 00:00 to 2025-10-20 23:59
Direction the Wind is Coming From



Appendix 3. ALS laboratory report EN2518128

CERTIFICATE OF ANALYSIS

Work Order	: **EN2518128**	Page	: 1 of 3
Client	: **BARNSON**	Laboratory	: Environmental Division Newcastle
Contact	: MICHAEL TODD	Contact	: Customer Service (ALS Mudgee)
Address	: 9 Cameron Place PO Box 8158 ORANGE 2800	Address	: 5/585 Maitland Road Mayfield West NSW Australia 2304
Telephone	: ----	Telephone	: +61 2 6372 6735
Project	: 43736 d16	Date Samples Received	: 23-Oct-2025 16:30
Order number	: ----	Date Analysis Commenced	: 27-Oct-2025
C-O-C number	: ----	Issue Date	: 30-Oct-2025 17:33
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 4		
No. of samples analysed	: 4		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Shane Merrell	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Dust analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis. NATA accreditation does not apply for results reported in deposition units e.g., g/m².mth where the sampling procedure is not NATA accredited.
- Sample exposure period is outside the typical exposure period of 30 +/- 2 days as per AS3580.10.1/AS3580.10.2
- For dust analysis, the Limit of Reporting (LOR) referenced in the reports for deposited matter parameters represents the reporting increment rather than reporting limit.

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST** (Matrix: **AIR**)

Compound	CAS Number	LOR	Unit	Sample ID	DG29 24/09/25 - 21/10/25	DG30 24/09/25 - 21/10/25	DG31 24/09/25 - 21/10/25	DG32 24/09/25 - 21/10/25	----
				Sampling date / time	21-Oct-2025 00:00	21-Oct-2025 00:00	21-Oct-2025 00:00	21-Oct-2025 00:00	----
					EN2518128-001	EN2518128-002	EN2518128-003	EN2518128-004	--------
					Result	Result	Result	Result	----
EA120: Ash Content									
Ash Content	----	0.1	g/m².month		**1.2**	**0.2**	**0.3**	**1.3**	**----**
Ash Content (mg)	----	2	mg		**19**	**3**	**4**	**21**	**----**
EA125: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		**0.3**	**0.4**	**0.3**	**0.6**	**----**
Combustible Matter (mg)	----	2	mg		**5**	**7**	**6**	**10**	**----**
EA139: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m².month		<0.1	**3.0**	**2.1**	**0.9**	**----**
Total Soluble Matter (mg)	----	2	mg		<2	**47**	**34**	**15**	**----**
EA141: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		**1.5**	**0.6**	**0.6**	**1.9**	**----**
Total Insoluble Matter (mg)	----	2	mg		**24**	**10**	**10**	**30**	**----**
EA142: Total Solids									
Total Solids	----	0.1	g/m².month		**1.5**	**3.6**	**2.7**	**2.8**	**----**
Total Solids (mg)	----	2	mg		**24**	**57**	**44**	**46**	**----**

Appendix 4. Field Observations

Dust monitoring observation

Client: UPM Lidsdale

Contact: Tim Edwards

Job number: 43736

Date: 21/10/25

Investigator(s): mt

Location	Appearance	Insects?	Algae?	Bird droppings?	Organic Matter?	Fine dust?	Coarse dust?	Comment/observations
D29	clear, colourless liquid	Yes	NO	NO	Yes	Nil	Nil	Ant present unidentified seeds present
D30	clear, Colourless liquid	NO	NO	NO	Yes	Nil	Nil	Unidentified seeds, unidentified suspended strands
D31	clear, Colourless liquid, suspended strands	NO	NO	NO	Yes	Nil	Nil	Flem and unidentified strands suspended in the liquid
D32	Cloudy, colourless liquid	NO	NO	NO	Yes	Yes	Nil	Spider web may be present

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1300 BARNSON (1300 227 676)
accounts@barnson.com.au
abn. 43 088 342 625

to.
GPM Lidsdale
Attn: Tim Edwards
PO Box 132
Budgowoi NSW 2262

date.
11/12/2025

reference.
L43736dm17

Tim,

Deposited dust monitoring at GPM Lidsdale, November 2025

1. Background
GPM Lidsdale is undertaking earthworks in accordance with an operational environmental management plan (OEMP). The plan requires monthly deposited dust monitoring to be undertaken for amenity management.

2. Scope
Barnson Pty Ltd was commissioned by GPM to provide deposited dust monitoring at four locations on the Lidsdale site in accordance with the OEMP.

3. Site
The site is GPM Lidsdale, Lidsdale NSW (Figure 1).

4. Assessment
Dust deposition gauges were collected on 20 November 2025 by Greg Madafiglio, Environmental Scientist of Barnson Pty Ltd. Laboratory prepared 4L amber glass bottles were installed in sampling stations above the ground with a glass funnel in a stopper fitted into the neck of the bottle at four locations around the site (Table 1).

The length of assessment was 29 days which is within the required 30±2 days sampling period. The sampling was undertaken in accordance with Depositional AS/NZS 3580.10.1:2003 *Methods for sampling and analysis ambient air method 10.1*. Analysis for total solids depositional dust, insoluble solids, combustible material and ash was undertaken at the NATA laboratory of SGS Sydney.

Table 1. Gauge locations

ID	Location	Sampling Date Range
DG29	Junction	20/10/25 – 19/11/25
DG30	Lidsdale Fire Shed/Wolgan Road	20/10/25 – 19/11/25
DG31	Skelly Road	20/10/25 – 19/11/25
DG32	Collins Access Road	20/10/25 – 19/11/25

5. Quality control assurance
The sampling was undertaken in accordance with AS3580.10.1 to achieve the data quality objectives. Samples were collected in laboratory prepared containers. The analyses were undertaken in the NATA accredited laboratory of SGS Sydney.

All media appropriate to the objectives of this investigation have been adequately analysed. It is concluded the data is usable for the purposes of the investigation.

Wind speed and direction data was recorded by a Weathermation automated weather station located at GPM Lidsdale.

6. Assessment criteria

The depositional dust assessment criteria of insoluble solids in the Lidsdale OEMP is 4g/m²/month.

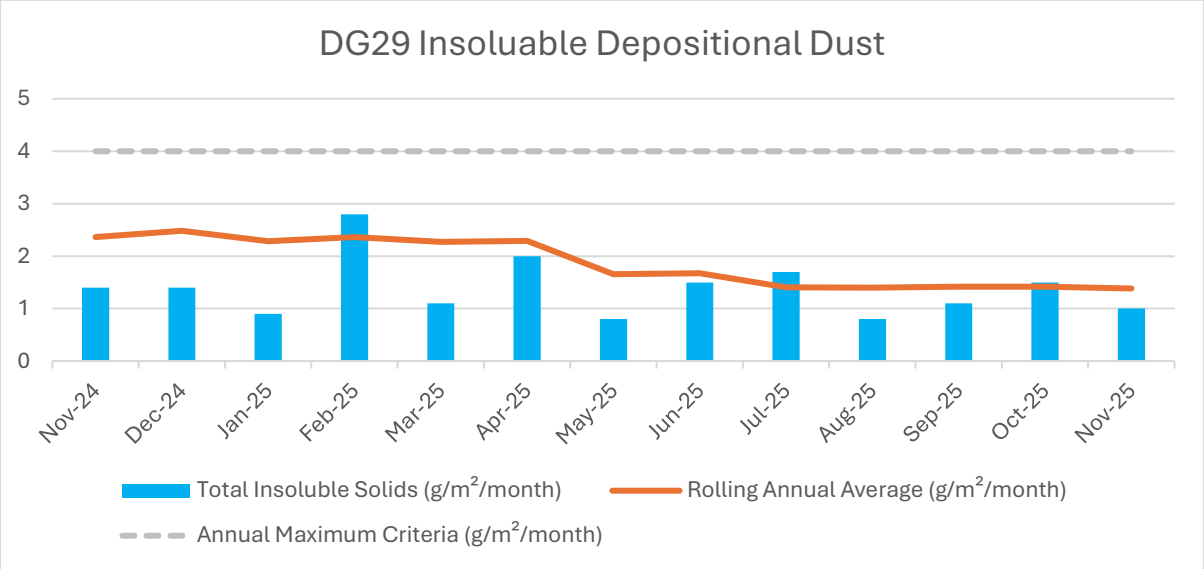
7. Results

All dust gauges recorded a level of insoluble solids below the threshold of 4 g/m²/month. The rolling annual average for insoluble solids is below 4 g/m²/month for all locations (Graph 1-4).

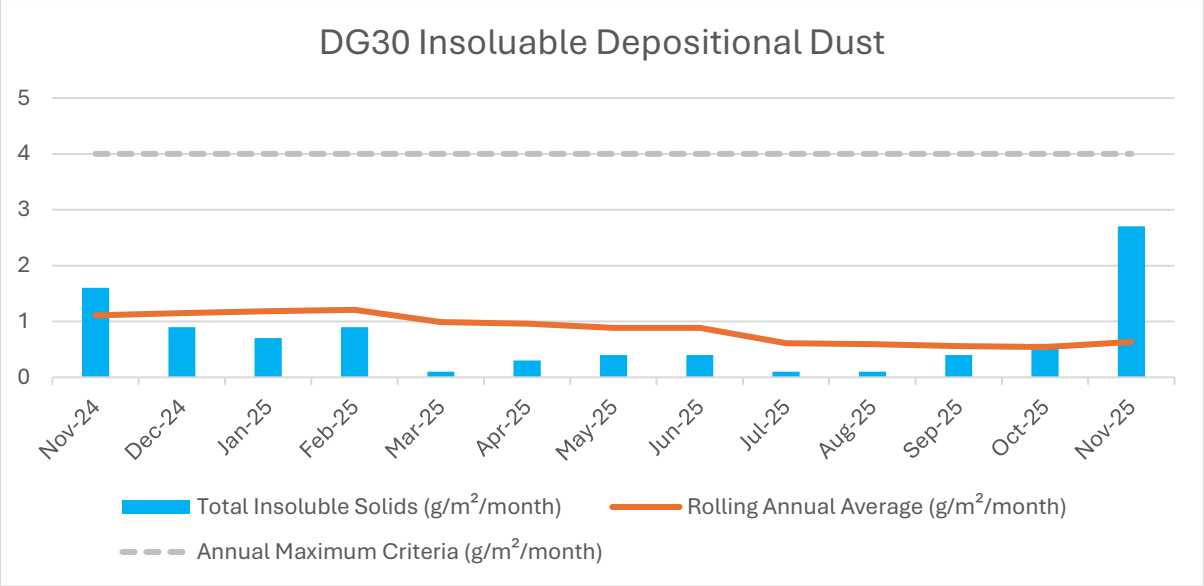
The prevailing wind direction for the sampling period was WSW, maximum windspeed was 11.0 – 12.5 m/s from the ESE, W, NW and NNW (Appendix 2). During the sampling period there were 10 days when the rain gauge recorded rainfall totaling 25mm.

Table 2. Deposited dust results, g/m²/month - November 2025

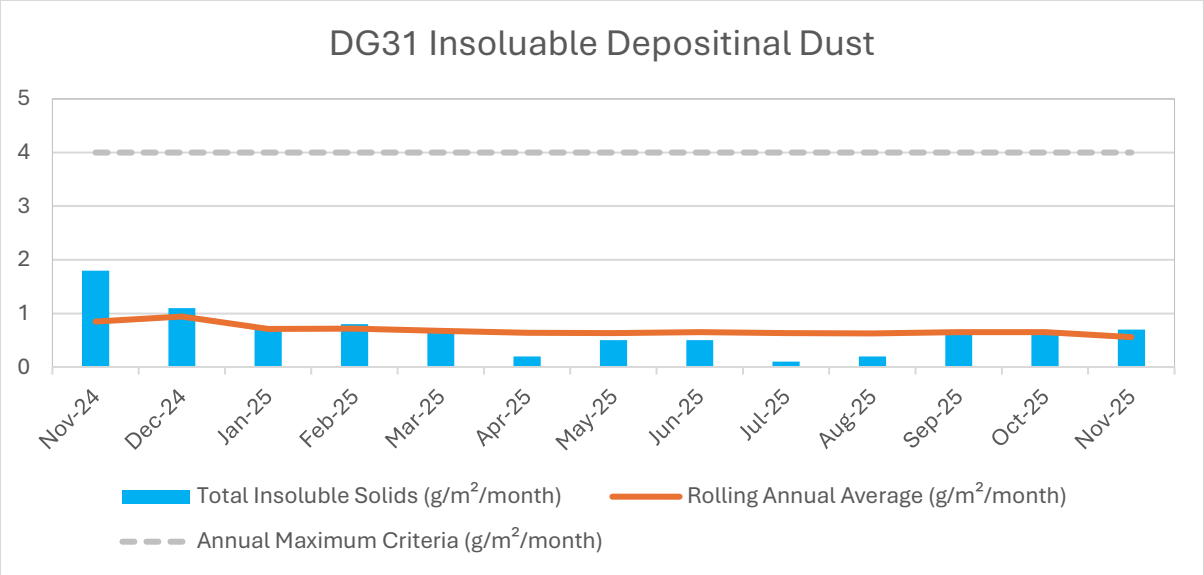
Sample ID	Monthly Insoluble solids	Monthly Combustible Matter	Monthly Ash Residue	Total Solids Per Sampling Period	Rolling Annual Average Insoluble Solids
DG29	1.0	<0.3	0.9	1.9	1.4
DG30	2.7	1.1	1.6	5.4	0.6
DG31	0.7	<0.3	0.5	1.5	0.6
DG32	0.6	<0.3	0.4	1.3	1.2
OEMP Maximum Criteria	4.0	-	-	-	4.0



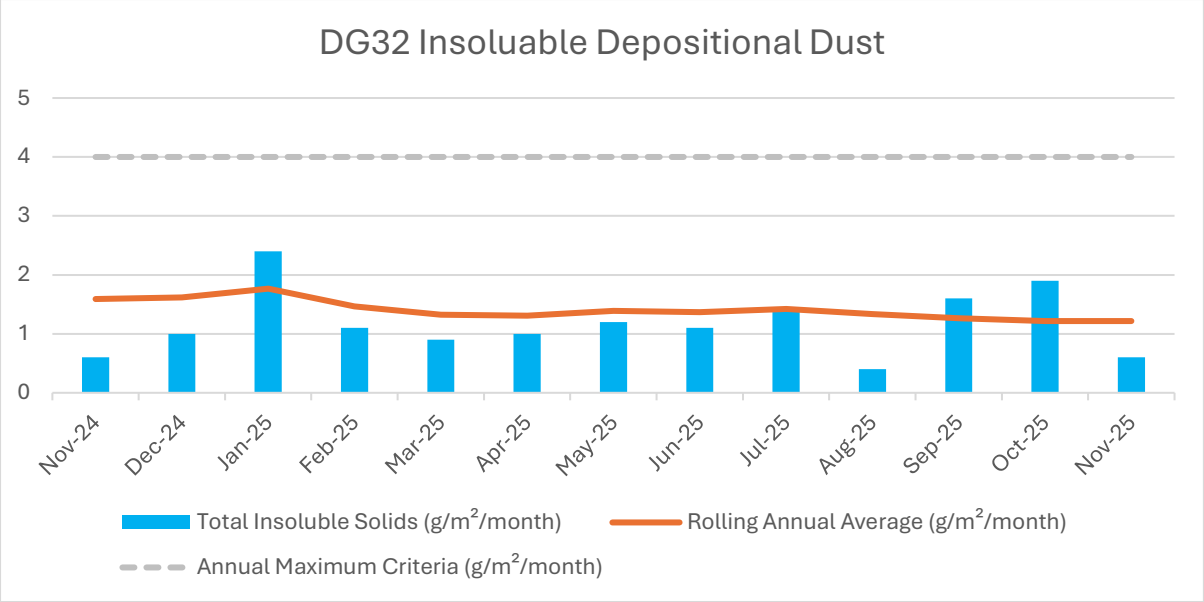
Graph 1. DG29 Guage monthly results



Graph 2. DG30 Gauge monthly results



Graph 3. DG31 Gauge monthly results



Graph 4. DG32 Gauge monthly results

8. Conclusion

The level of recorded insoluble solids for each dust gauge was below the adopted OEMP threshold. The rolling annual average for insoluble solids was also below the OEMP threshold for all locations.

Regards,

Michael Todd Hons. Bsc (Hons) EnvSc
Environmental Scientist

Checked,

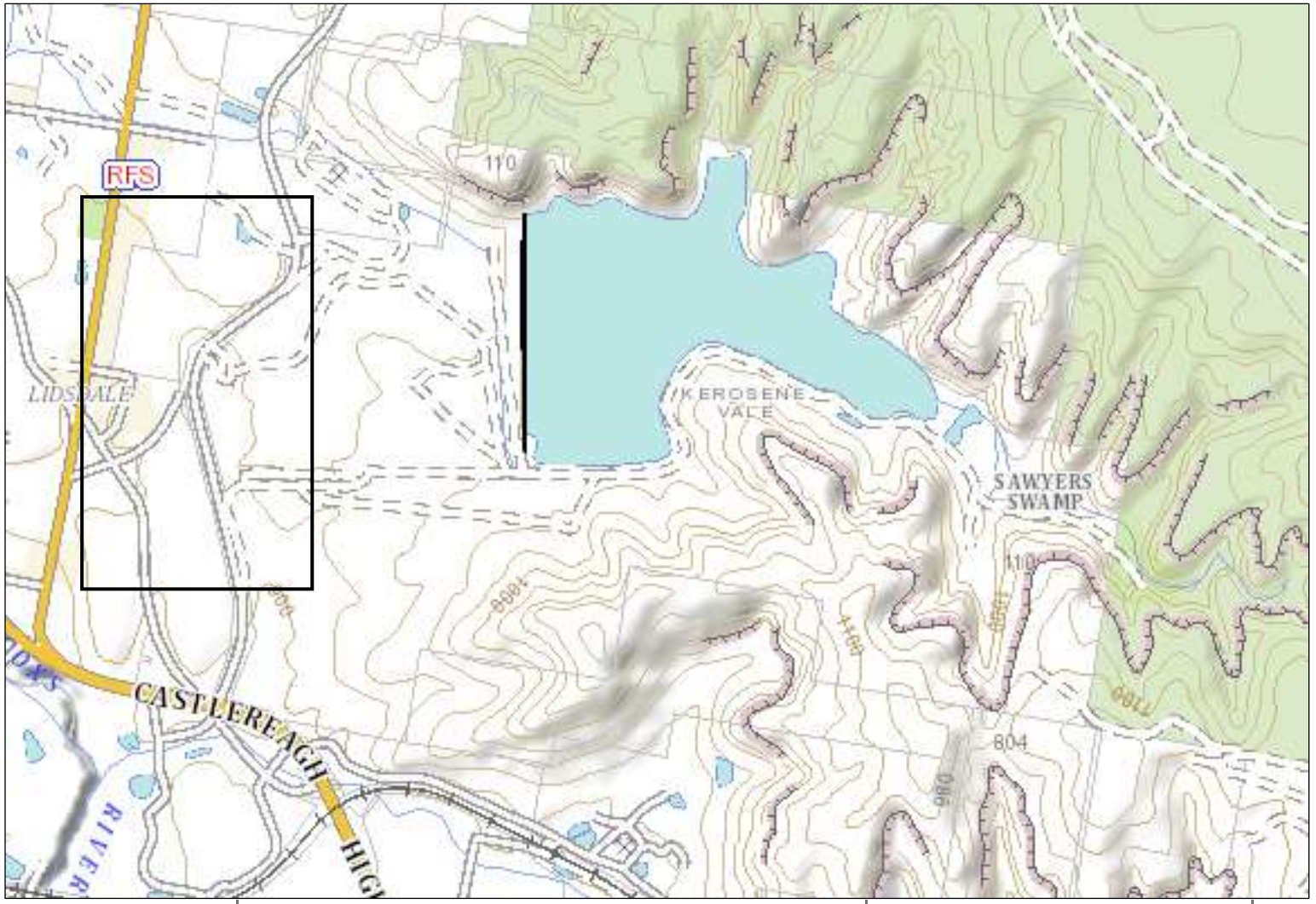
Greg Madafiglio CEnvP
Senior Environmental Scientist

Attachments

Figure 1.	Site locality
Figure 2.	Dust gauge locations
Appendix 1.	Report limitations and intellectual property
Appendix 2.	Weathermation wind rose graph

Appendix 3. SGS laboratory report SE293224
Appendix 4. Field observations

Figures



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Scale: Approximate Scale 1:22000

0 220 440 880m

Client: GPM Lidsdale

Figure 1: Locality Map

Project: L43736dm16
Drawn: MT
Check: GM
Revision: A

Date: 31/10/2025



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Approximate Scale 1:13,000

Scale: 0 130 260 520m

Client: GPM Lidsdale

Figure 2: Monitoring locations

Project:	L43736dm17
Drawn:	MT
Check:	GM
Revision:	A
Date:	31/10/2025

Appendix 1. Report limitations and intellectual property

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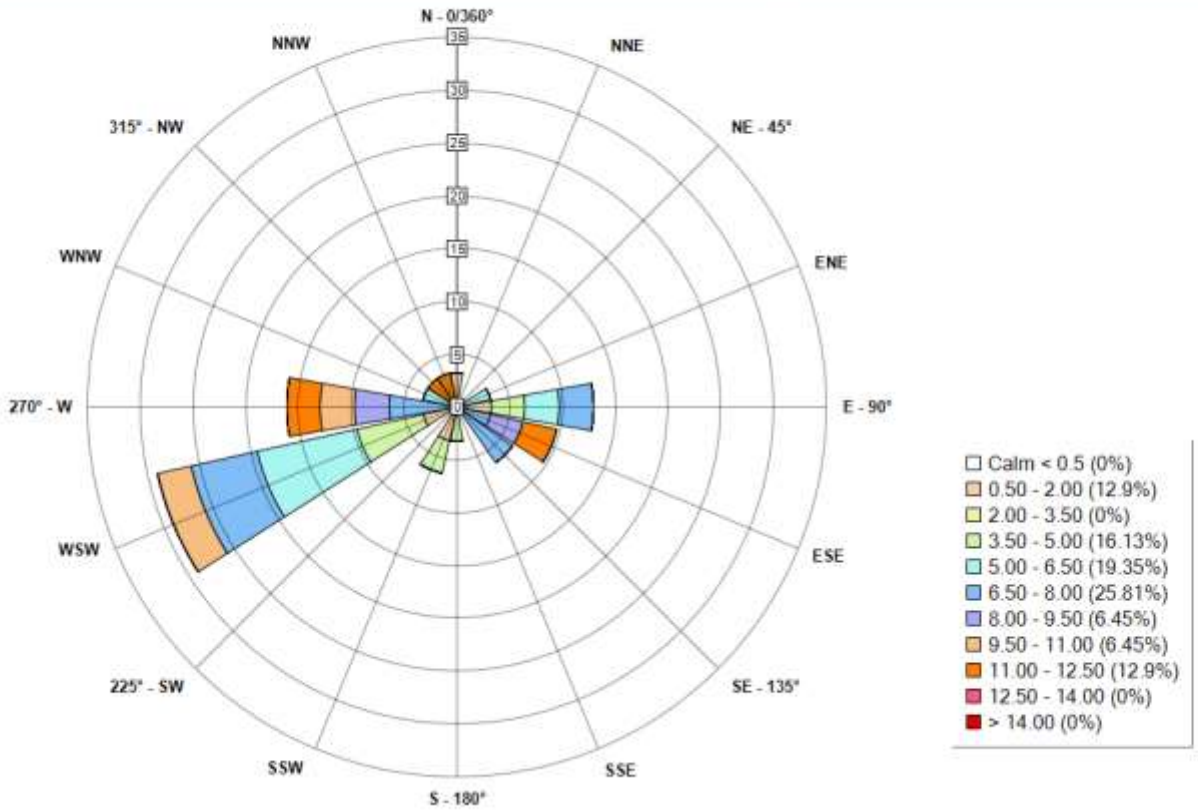
Appendix 2. Weathermation wind rose graph

Wind Rose Report for: GPM Lidsdale RG - Daily Summary

VWDIR Vector Wind Dir 10m and VWSP Vector Wind Spd 10m in km/h
Period: 2024-10-20 00:00 to 2024-11-19 23:59
Direction the Wind is Coming From



Appendix 3. SGS laboratory report SE293224

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Greg Madafiglio
Client	BARNSON PTY LIMITED
Address	UNIT 1 36 DARLING STREET DUBBO NSW 2830
Telephone	61 1300227676
Facsimile	61 2 68845857
Email	gmadafiglio@barnson.com.au
Project	**43736 d17**
Order Number	**43736 d17**
Samples	4

LABORATORY DETAILS

Manager	Shane McDermott
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE293224 R0**
Date Received	21/11/2025
Date Reported	5/12/2025

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

SIGNATORIES

Dong LIANG
Metals/Inorganics Team Leader

Dust in Air (Deposited Matter) [AN502(Sydney) /AN503] Tested: 24/11/2025

PARAMETER	UOM	LOR	DG29 WATER - 19/11/25 15:00 SE293224.001	DG32 WATER - 19/11/25 15:00 SE293224.002	DG31 WATER - 19/11/25 15:00 SE293224.003	DG30 WATER - 19/11/25 15:00 SE293224.004
Sampling Period in Days	days	-	29	29	29	29
Total Insoluble Solids	mg	1	17	10	12	46
Total Insoluble Solids Per Sampling Period	g/m²/30 days	0.1	1.0	0.6	0.7	2.7
Total Insoluble Solids (mg/m2)	mg/m²	100	980	540	700	2600
Total Solids Calculated (mg/m2)	mg/m²	100	1800	1300	1400	5200
Total Solids Calculated	mg	5	32	22	25	92
Total Soluble Solids	mg	5	14	13	13	46
Total Soluble Solids (mg/m2)	mg/m²	100	810	720	710	2600
Total Soluble Solids Per Sampling Period	g/m²/30 days	0.3	0.8	0.7	0.7	2.7
Ash at 850 °C	mg	5	16	6	9	27
Ash (mg/m2) at 850 °C	mg/m²	100	880	350	520	1500
Combustible Matter at 850 °C	mg	5	<5.0	<5.0	<5.0	19.3
Combustible Matter (mg/m2) at 850 °C	mg/m²	100	101.9	198.1	175.4	1092.2
Combustible Matter Calculation at 850 °C	g/m²/30 days	0.3	<0.3	<0.3	<0.3	1.1
Ash Per Sampling Period at 850 °C	g/m²/30 days	0.3	0.9	0.4	0.5	1.6
Total Solids Per Sampling Period Calculated	g/m²/30 days	0.3	1.9	1.3	1.5	5.4

METHOD SUMMARY

SE293224 R0

METHOD	METHODOLOGY SUMMARY
AN502(Sydney) /AN503	Dust 1mm Sieve Observations Abbreviations: Ins=small insects (unidentified), Be=Beetles, Sp=spiders, Wm=worms, Frg=Frog, OM=unidentified organic matter Tw=twig, sm=small amount, vs=very small amount, m-medium amount
AN503/AN502 (Sydney)	The contents of the dust deposition bottle/container may be analysed gravimetrically for insoluble solids, ash, soluble solids, total solids and/or combustible matter, dependent on client requests. The mass deposition rate of deposited matter is then calculated from the mass of solids obtained, the funnel cross-section area (for Standard Deposition Gauges) and the collection area defined by the slot dimensions (for Directional Dust Gauges) and the exposure period. Referenced to AS NZS 3580.10.1.

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
		NVL	Not validated.	LOR	Limit of Reporting.
**	Indicative data, theoretical holding time exceeded.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR			
***	Indicates that both * and ** apply.		Sample listed, but not received.		
NAD	No Asbestos Detected.	NA	Not Applicable.		

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: https://www.sgs.com/en-au/industry/environmental-health-and-safety.

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Appendix 4. Field Observations

Client	GPM Lidsdale
Contact	Tim Edward
Job number	43736
Date	19/11/2025
Investigator(s)	GM

Location	Appearance	Insects?	Algae?	Bird droppings?	Organic Matter?	Fine dust?	Coarse dust?	Comment/observations
DG29	Clear	Trace insects	Nil	Nil	Nil	Nil	Nil	
DG30	Clear	Yes	Nil	Nil	Nil	Nil	Nil	Huntsman spider present in liquid
DG31	Clear	Nil	Nil	Nil	Trace debris	Nil	Nil	
DG32	Clear	Trace insects	Nil	Nil	Trace debris	Nil	Nil	

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1300 BARNSON (1300 227 676)
accounts@barnson.com.au
abn. 43 088 342 625

to.
GPM Lidsdale
Attn: Tim Edwards
PO Box 132
Budgowoi NSW 2262

date.
6/1/2026

reference.
L43736dm18

Tim,

Deposited dust monitoring at GPM Lidsdale, November 2025

1. Background
GPM Lidsdale is undertaking earthworks in accordance with an operational environmental management plan (OEMP). The plan requires monthly deposited dust monitoring to be undertaken for amenity management.

2. Scope
Barnson Pty Ltd was commissioned by GPM to provide deposited dust monitoring at four locations on the Lidsdale site in accordance with the OEMP.

3. Site
The site is GPM Lidsdale, Lidsdale NSW (Figure 1).

4. Assessment
Dust deposition gauges were collected on 18 December 2025 by Greg Madafiglio, Environmental Scientist of Barnson Pty Ltd. Laboratory prepared 4L amber glass bottles were installed in sampling stations above the ground with a glass funnel in a stopper fitted into the neck of the bottle at four locations around the site (Table 1).

The length of assessment was 29 days which is within the required 30±2 days sampling period. The sampling was undertaken in accordance with Depositional AS/NZS 3580.10.1:2003 *Methods for sampling and analysis ambient air method 10.1*. Analysis for total solids depositional dust, insoluble solids, combustible material and ash was undertaken at the NATA laboratory of SGS Sydney.

Table 1. Gauge locations

ID	Location	Sampling Date Range
DG29	Junction	19/11/25 – 18/12/25
DG30	Collins Access Road	19/11/25 – 18/12/25
DG31	Skelly Road	19/11/25 – 18/12/25
DG32	Lidsdale Fire Shed/Wolgan Road	19/11/25 – 18/12/25

5. Quality control assurance
The sampling was undertaken in accordance with AS3580.10.1 to achieve the data quality objectives. Samples were collected in laboratory prepared containers. The analyses were undertaken in the NATA accredited

laboratory of SGS Sydney.

All media appropriate to the objectives of this investigation have been adequately analysed. It is concluded the data is usable for the purposes of the investigation.

Wind speed and direction data was recorded by a Weathermation automated weather station located at GPM Lidsdale.

6. Assessment criteria

The depositional dust assessment criteria of insoluble solids in the Lidsdale OEMP is 4g/m²/month.

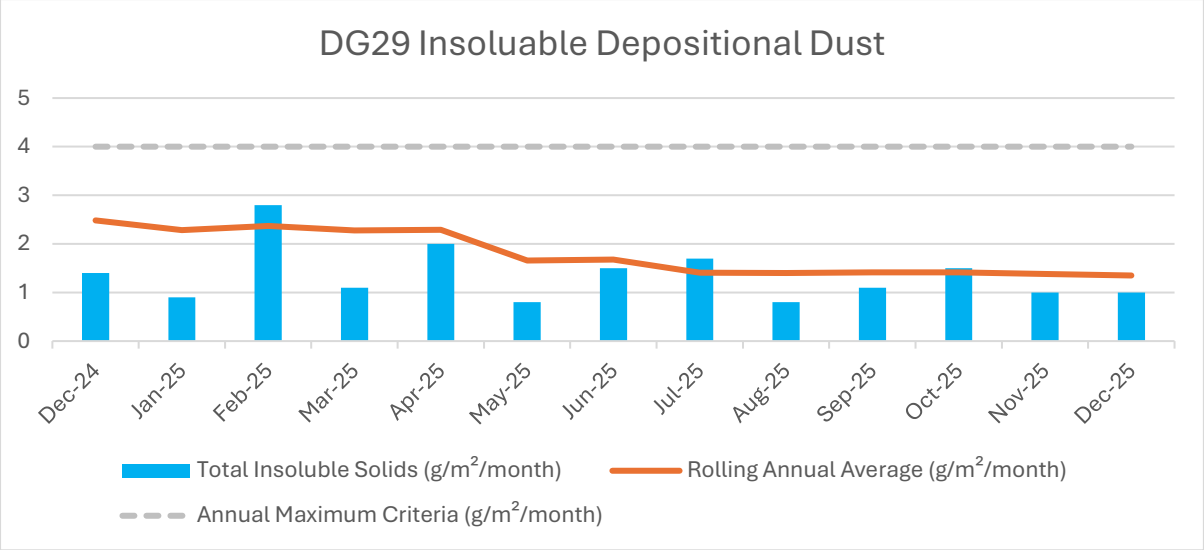
7. Results

All dust gauges recorded a level of insoluble solids below the threshold of 4 g/m²/month. The rolling annual average for insoluble solids is below 4 g/m²/month for all locations (Graph 1-4).

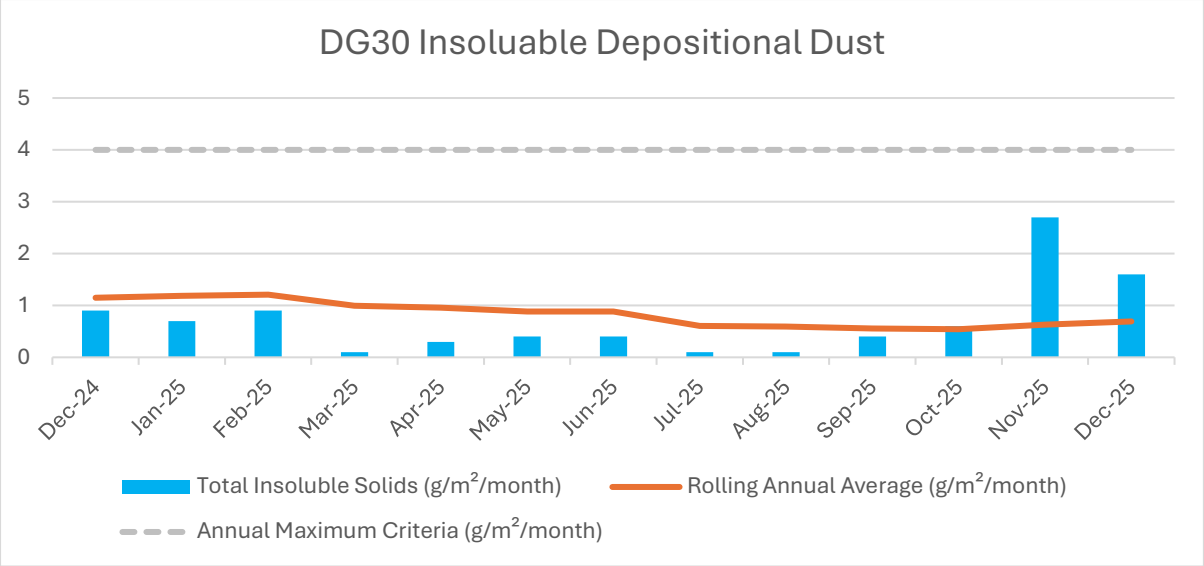
The prevailing wind direction for the sampling period was W, maximum windspeed was >14 m/s from the SE, W, WNW and NW (Appendix 2). During the sampling period there were 9 days when the rain gauge recorded rainfall totaling 62.6 mm.

Table 2. Deposited dust results, g/m²/month - December 2025

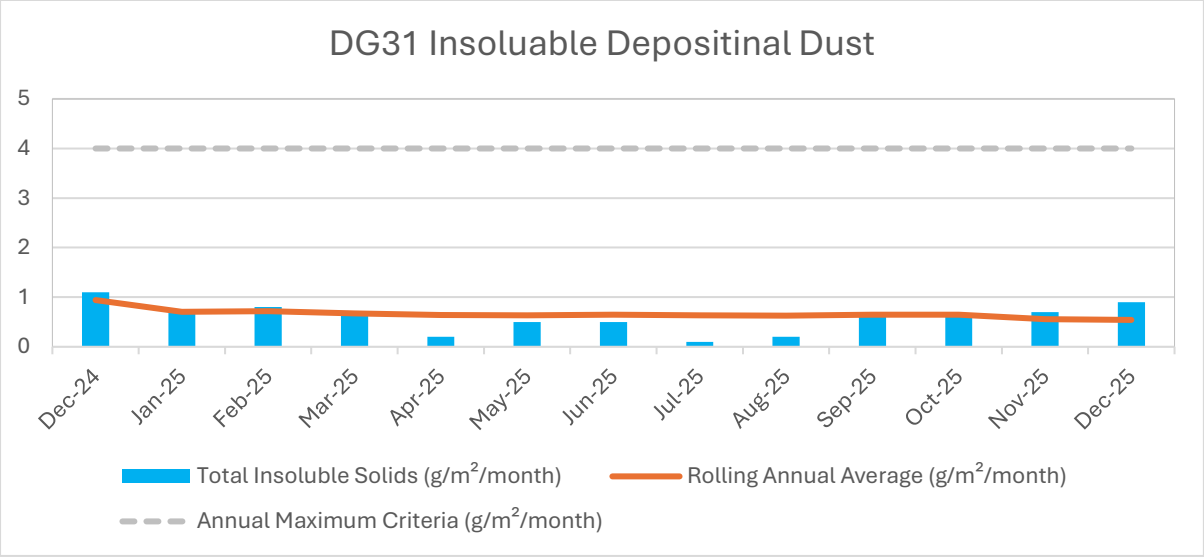
Sample ID	Monthly Insoluble solids	Monthly Combustible Matter	Monthly Ash Residue	Total Solids Per Sampling Period	Rolling Annual Average Insoluble Solids
DG29	1.0	<0.3	0.8	1.6	1.4
DG30	1.6	0.4	1.2	2.6	0.7
DG31	0.9	<0.3	0.6	1.0	0.5
DG32	1.8	0.8	1.0	3.9	1.3
OEMP Maximum Criteria	4.0	-	-	-	4.0



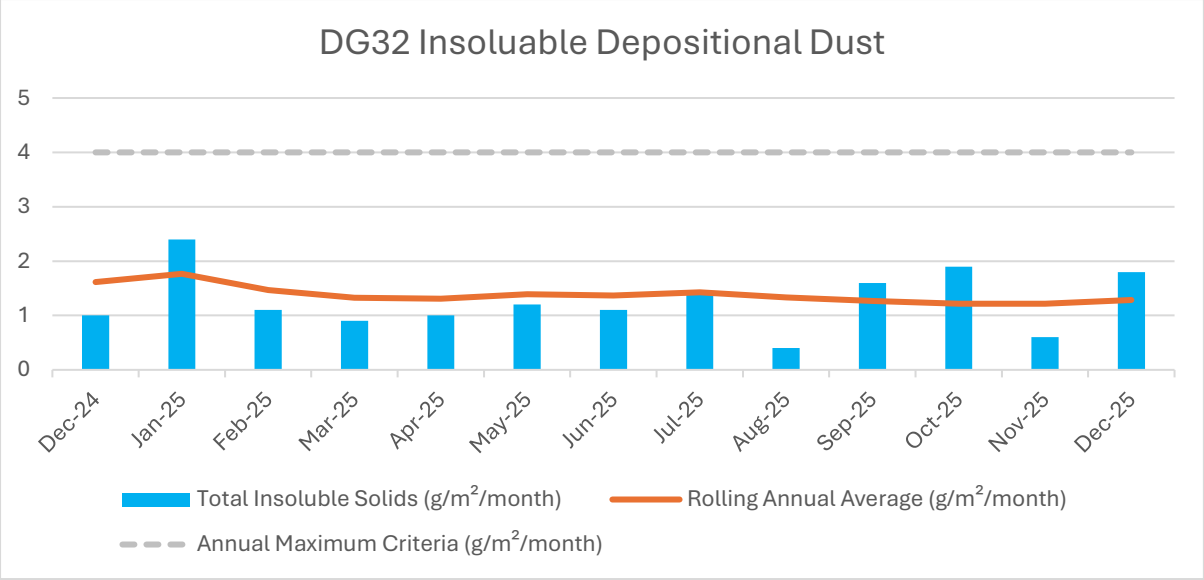
Graph 1. DG29 Guage monthly results



Graph 2. DG30 Gauge monthly results



Graph 3. DG31 Gauge monthly results



Graph 4. DG32 Gauge monthly results

8. Conclusion

The level of recorded insoluble solids for each dust gauge was below the adopted OEMP threshold. The rolling annual average for insoluble solids was also below the OEMP threshold for all locations.

Regards,

Michael Todd Hons. Bsc (Hons) EnvSc
Environmental Scientist

Checked,

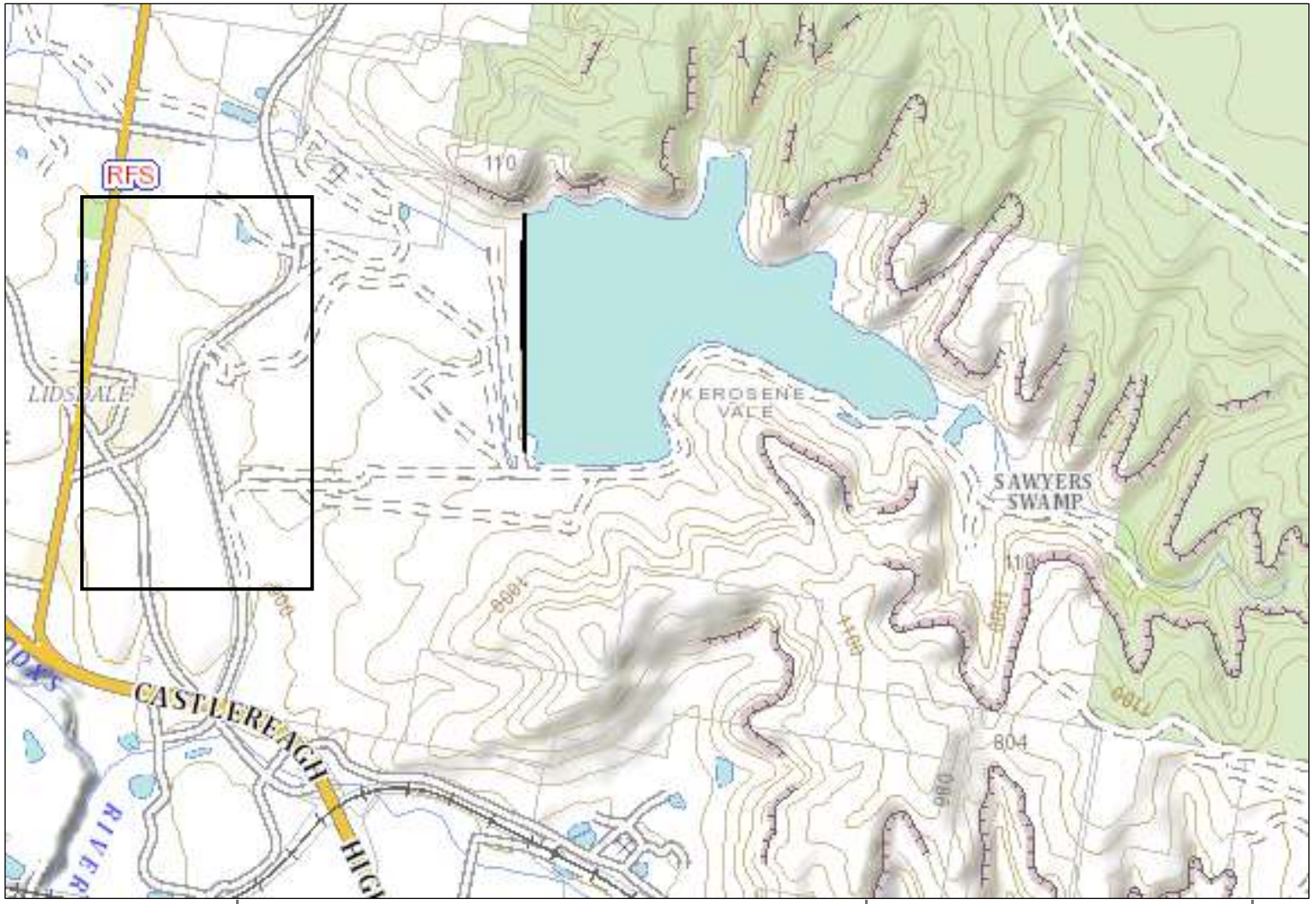
Greg Madafiglio CEnvP
Senior Environmental Scientist

Attachments

Figure 1.	Site locality
Figure 2.	Dust gauge locations
Appendix 1.	Report limitations and intellectual property
Appendix 2.	Weathermation wind rose graph

Appendix 3. SGS laboratory report SE294972
Appendix 4. Field observations

Figures



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Scale: Approximate Scale 1:22000

0 220 440 880m

Client: GPM Lidsdale

Figure 1: Locality Map

Project:	L43736dm18
Drawn:	MT
Check:	GM
Revision:	A
Date:	31/10/2025



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Approximate Scale 1:13,000

Scale: 0 130 260 520m

Client: GPM Lidsdale

Figure 2: Monitoring locations

Project:	L43736dm18
Drawn:	MT
Check:	GM
Revision:	A
Date:	31/10/2025

Appendix 1. Report limitations and intellectual property

This report has been prepared for the use of the client to achieve the objectives given the clients requirements. The level of confidence of the conclusion reached is governed by the scope of the investigation and the availability and quality of existing data. Where limitations or uncertainties are known, they are identified in the report. No liability can be accepted for failure to identify conditions or issues which arise in the future and which could not reasonably have been predicted using the scope of the investigation and the information obtained.

The investigation identifies the actual deposited dust conditions only at those points where samples are taken, when they are taken. Data derived through sampling and subsequent laboratory testing is interpreted by geologists, engineers or scientists who then render an opinion about overall dust conditions, the nature and extent of the contamination, its likely impact on the areas amenity and appropriate remediation measures. Actual conditions may differ from those inferred to exist, because no professional, no matter how well qualified, and no dust monitoring program, no matter how comprehensive, can cover the whole area under investigation.

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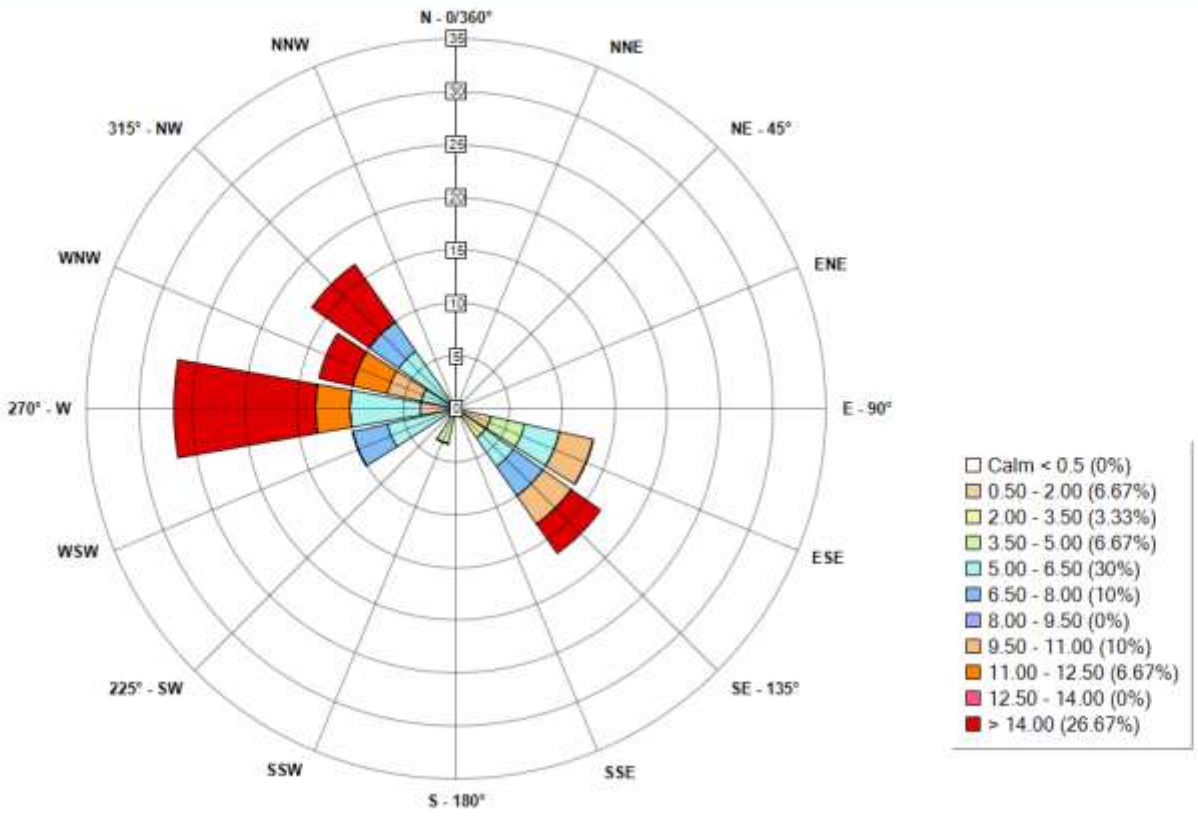
Appendix 2. Weathermation wind rose graph

Wind Rose Report for: GPM Lidsdale RG - Daily Summary

VWDIR Vector Wind Dir 10m and VWSP Vector Wind Spd 10m in km/h
Period: 2025-11-19 00:00 to 2025-12-18 23:59
Direction the Wind is Coming From



Appendix 3. SGS laboratory report SE294972

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Greg Madafiglio
Client	BARNSON PTY LIMITED
Address	UNIT 1 36 DARLING STREET DUBBO NSW 2830
Telephone	61 1300227676
Facsimile	61 2 68845857
Email	gmadafiglio@barnson.com.au
Project	**43736 d18**
Order Number	**43736 d18**
Samples	4

LABORATORY DETAILS

Manager	Shane McDermott
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE294972 R0**
Date Received	19/12/2025
Date Reported	31/12/2025

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

SIGNATORIES

Dong LIANG

Metals/Inorganics Team Leader

Dust in Air (Deposited Matter) [AN502(Sydney) /AN503] Tested: 22/12/2025

PARAMETER	UOM	LOR	DG29 WATER - 18/12/2025 SE294972.001	DG32 WATER - 18/12/2025 SE294972.002	DG31 WATER - 18/12/2025 SE294972.003	DG30 WATER - 18/12/2025 SE294972.004
Sampling Period in Days	days	-	29	29	29	29
Total Insoluble Solids	mg	1	17	30	15	27
Total Insoluble Solids Per Sampling Period	g/m²/30 days	0.1	1.0	1.8	0.9	1.6
Total Insoluble Solids (mg/m2)	mg/m²	100	950	1700	830	1500
Total Solids Calculated (mg/m2)	mg/m²	100	1600	3800	1000	2500
Total Solids Calculated	mg	5	27	66	18	45
Total Soluble Solids	mg	5	11	36	<5	18
Total Soluble Solids (mg/m2)	mg/m²	100	610	2000	170	1000
Total Soluble Solids Per Sampling Period	g/m²/30 days	0.3	0.6	2.1	<0.3	1.1
Ash at 850 °C	mg	5	14	17	10	21
Ash (mg/m2) at 850 °C	mg/m²	100	770	960	590	1200
Combustible Matter at 850 °C	mg	5	<5.0	13.1	<5.0	6.2
Combustible Matter (mg/m2) at 850 °C	mg/m²	100	181.1	741.3	237.7	350.8
Combustible Matter Calculation at 850 °C	g/m²/30 days	0.3	<0.3	0.8	<0.3	0.4
Ash Per Sampling Period at 850 °C	g/m²/30 days	0.3	0.8	1.0	0.6	1.2
Total Solids Per Sampling Period Calculated	g/m²/30 days	0.3	1.6	3.9	1.0	2.6

METHOD SUMMARY

SE294972 R0

METHOD	METHODOLOGY SUMMARY
AN502(Sydney) /AN503	Dust 1mm Sieve Observations Abbreviations: Ins=small insects (unidentified), Be=Beetles, Sp=spiders, Wm=worms, Frg=Frog, OM=unidentified organic matter Tw=twig, sm=small amount, vs=very small amount, m-medium amount
AN503/AN502 (Sydney)	The contents of the dust deposition bottle/container may be analysed gravimetrically for insoluble solids, ash, soluble solids, total solids and/or combustible matter, dependent on client requests. The mass deposition rate of deposited matter is then calculated from the mass of solids obtained, the funnel cross-section area (for Standard Deposition Gauges) and the collection area defined by the slot dimensions (for Directional Dust Gauges) and the exposure period. Referenced to AS NZS 3580.10.1.

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
		NVL	Not validated.	LOR	Limit of Reporting.
**	Indicative data, theoretical holding time exceeded.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR			
***	Indicates that both * and ** apply.		Sample listed, but not received.		
NAD	No Asbestos Detected.	NA	Not Applicable.		

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: https://www.sgs.com/en-au/industry/environmental-health-and-safety.

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Appendix 4. Field Observations

Client	GPM Lidsdale
Contact	Tim Edward
Job number	43736
Date	18/12/2025
Investigator(s)	GM

Location	Appearance	Insects?	Algae?	Bird droppings?	Organic Matter?	Fine dust?	Coarse dust?	Comment/observations
DG29	Nil	Yes	Nil	Nil	Nil	Nil	Nil	Trace insects
DG30	Nil	Yes	Nil	Nil	Nil	Nil	Nil	Trace Insects
DG31	Nil	Yes	Nil	Nil	Nil	Nil	Nil	Trace insects, a moth
DG32	Nil	Yes	Nil	Nil	Nil	Nil	Nil	Trace Insects

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to.
GPM Lidsdale
Attn: Tim Edwards
PO Box 132
Budgowoi NSW 2262

date.
5/2/2026

reference.
L43736dm19

Tim,

Deposited dust monitoring at GPM Lidsdale, January 2026

1. Background
GPM Lidsdale is undertaking earthworks in accordance with an operational environmental management plan (OEMP). The plan requires monthly deposited dust monitoring to be undertaken for amenity management.

2. Scope
Barnson Pty Ltd was commissioned by GPM to provide deposited dust monitoring at four locations on the Lidsdale site in accordance with the OEMP.

3. Site
The site is GPM Lidsdale, Lidsdale NSW (Figure 1).

4. Assessment
Dust deposition gauges were collected on 22 January 2026 by Michael Todd, Environmental Scientist of Barnson Pty Ltd. Laboratory prepared 4L amber glass bottles were installed in sampling stations above the ground with a glass funnel in a stopper fitted into the neck of the bottle at four locations around the site (Table 1).

The length of assessment was 35 days which is just outside the required 30±2 days sampling period. The sampling was undertaken in accordance with Depositional AS/NZS 3580.10.1:2003 *Methods for sampling and analysis ambient air method 10.1*. Analysis for total solids depositional dust, insoluble solids, combustible material and ash was undertaken at the NATA laboratory of SGS Sydney.

Table 1. Gauge locations

ID	Location	Sampling Date Range
DG29	Junction	18/12/25 – 22/1/2026
DG30	Collins Access Road	18/12/25 – 22/1/2026
DG31	Skelly Road	18/12/25 – 22/1/2026
DG32	Lidsdale Fire Shed/Wolgan Road	18/12/25 – 22/1/2026

5. Quality control assurance
The sampling was undertaken in accordance with AS3580.10.1 to achieve the data quality objectives. Samples were collected in laboratory prepared containers. The analyses were undertaken in the NATA accredited

laboratory of ALS Newcastle.

All media appropriate to the objectives of this investigation have been adequately analysed. It is concluded the data is usable for the purposes of the investigation.

Wind speed and direction data was recorded by a Weathermation automated weather station located at GPM Lidsdale.

6. Assessment criteria

The depositional dust assessment criteria of insoluble solids in the Lidsdale OEMP is 4g/m^2/month.

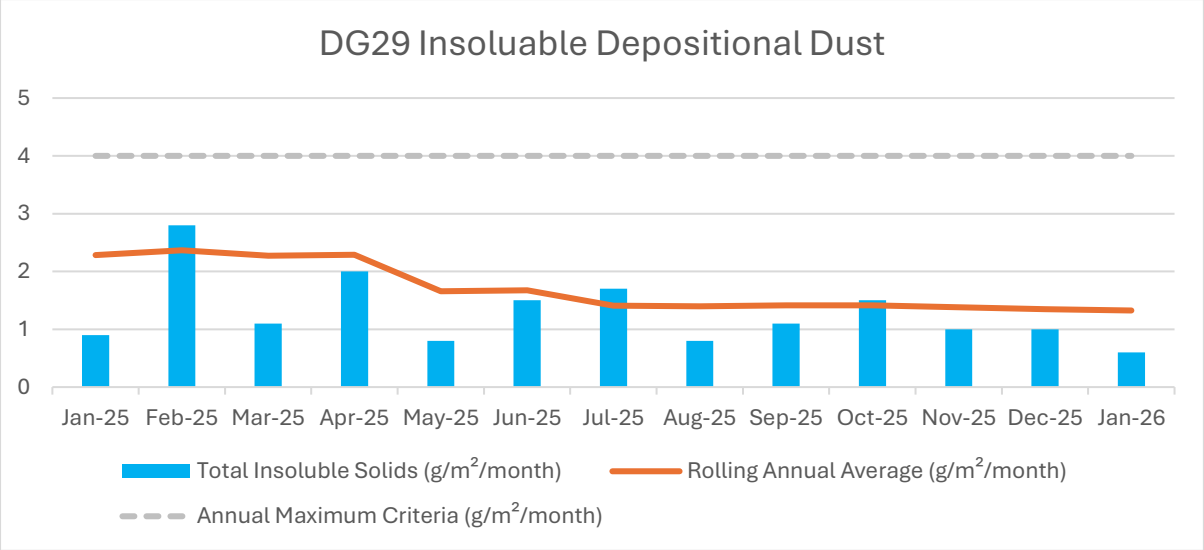
7. Results

All dust gauges recorded a level of insoluble solids below the threshold of 4 g/m^2/month. The rolling annual average for insoluble solids is below 4 g/m^2/month for all locations (Graph 1-4).

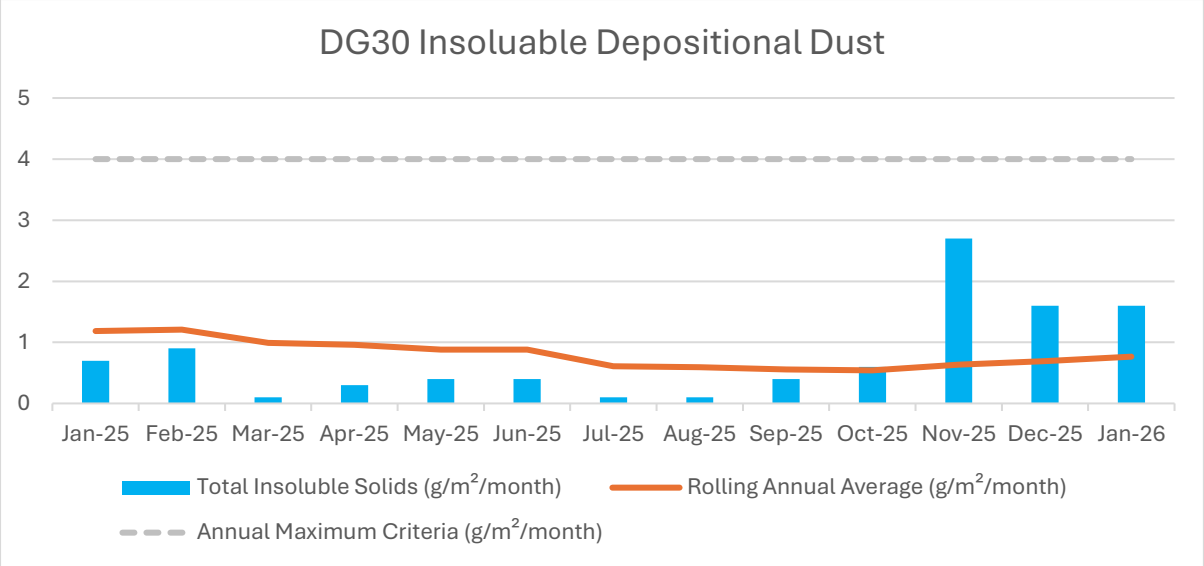
The prevailing wind direction for the sampling period was SE, maximum windspeed was >14 m/s from the NW (Appendix 2). During the sampling period there were 17 days when the rain gauge recorded rainfall totaling 77 mm.

Table 2. Deposited dust results, g/m^2/month - January 2026

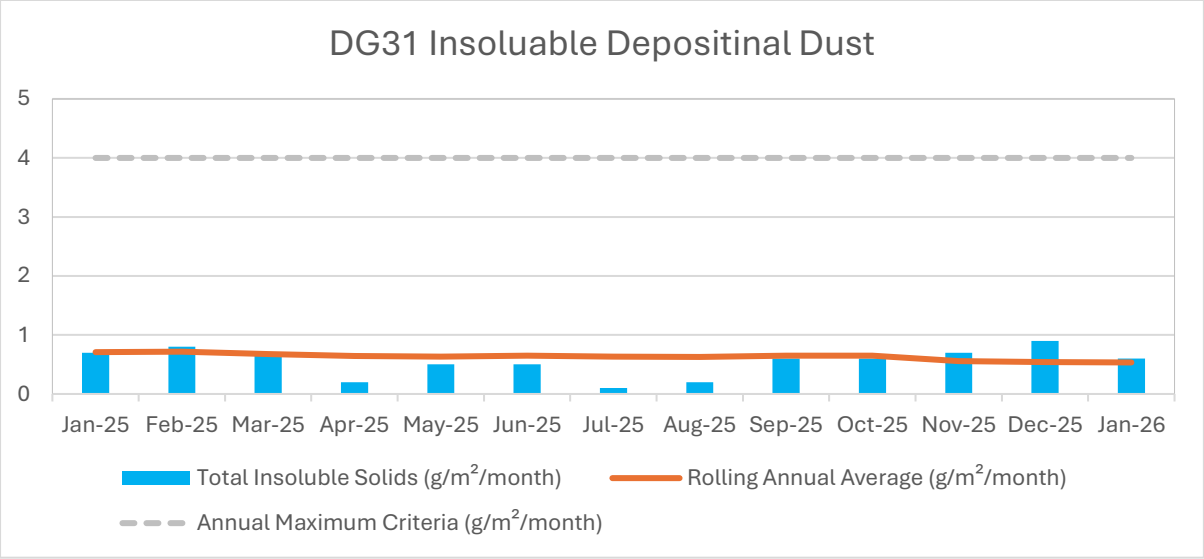
Sample ID	Monthly Insoluble solids	Monthly Combustible Matter	Monthly Ash Residue	Total Solids Per Sampling Period	Rolling Annual Average Insoluble Solids
DG29	0.6	<0.1	0.6	0.8	1.3
DG30	1.6	0.7	0.9	4.0	0.8
DG31	0.6	0.1	0.5	0.6	0.5
DG32	0.6	0.2	0.4	2.1	1.1
OEMP Maximum Criteria	4.0	-	-	-	4.0



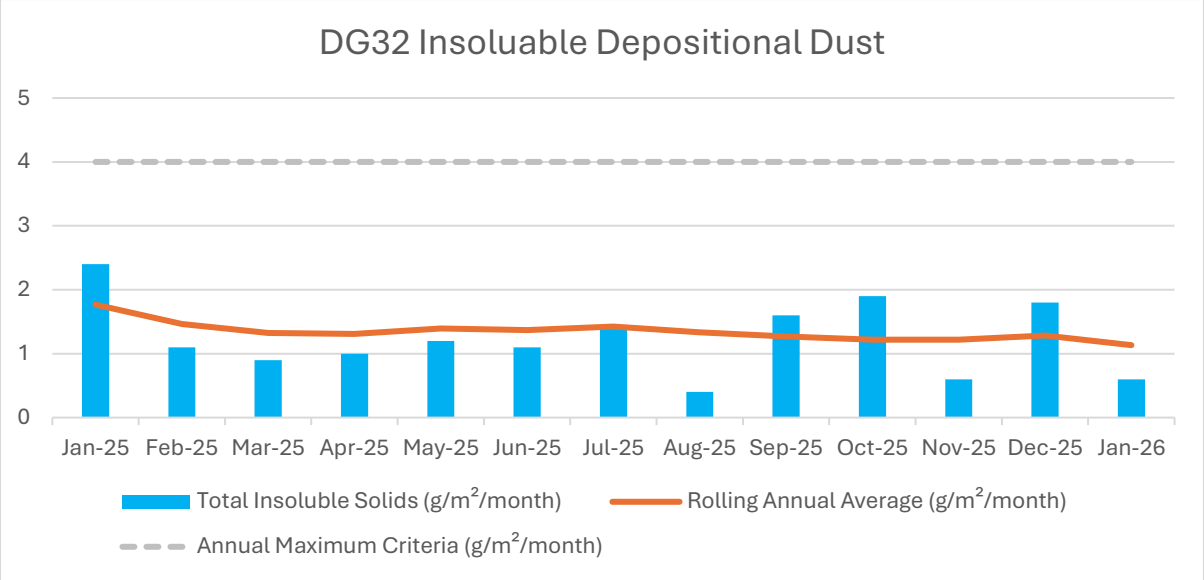
Graph 1. DG29 Guage monthly results



Graph 2. DG30 Gauge monthly results



Graph 3. DG31 Gauge monthly results



Graph 4. DG32 Gauge monthly results

8. Conclusion

The level of recorded insoluble solids for each dust gauge was below the adopted OEMP threshold. The rolling annual average for insoluble solids was also below the OEMP threshold for all locations.

Regards,

Michael Todd Hons. Bsc (Hons) EnvSc
Environmental Scientist

Checked,

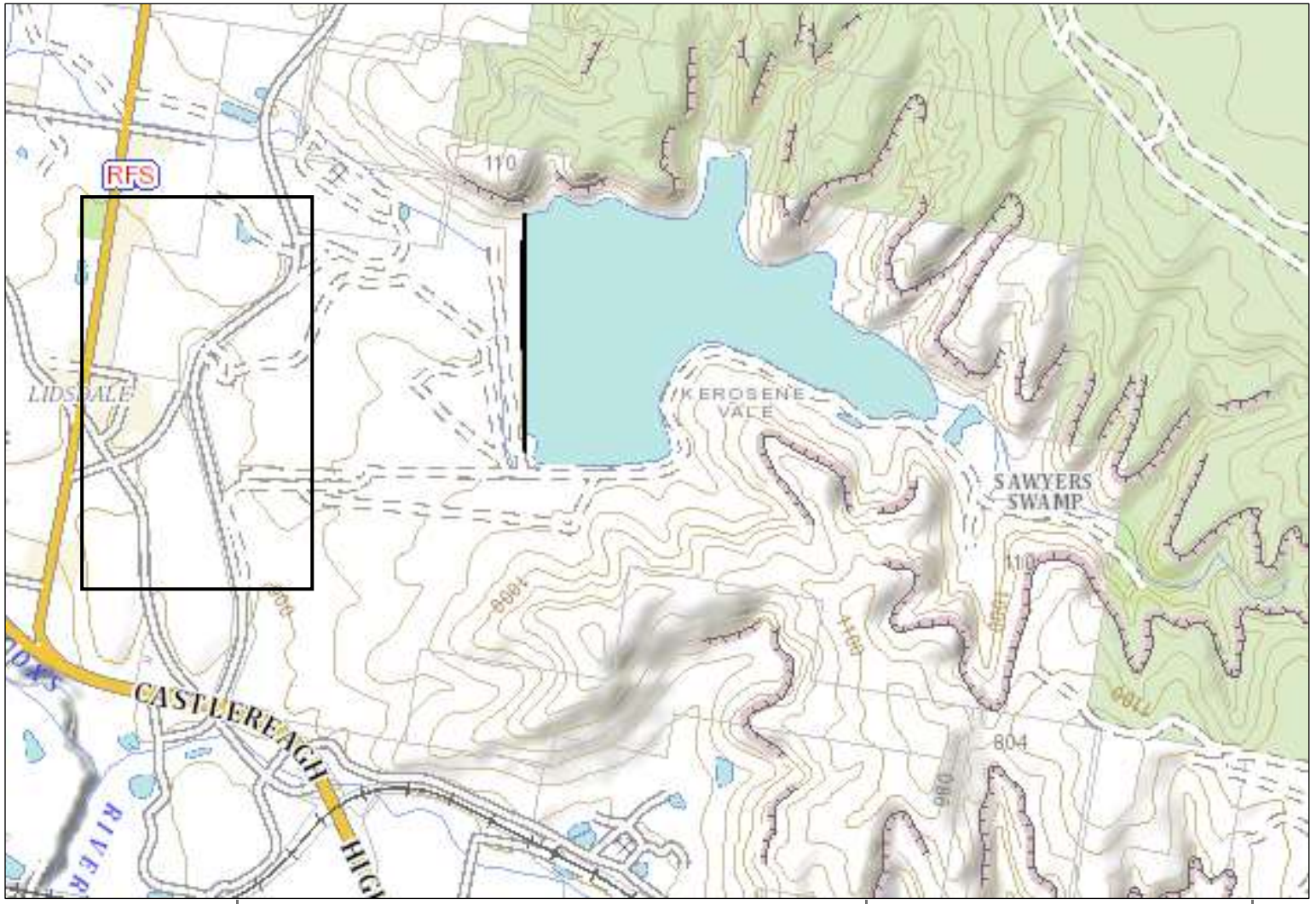
Greg Madafiglio CEnvP
Senior Environmental Scientist

Attachments

Figure 1.	Site locality
Figure 2.	Dust gauge locations
Appendix 1.	Report limitations and intellectual property
Appendix 2.	Weathermation wind rose graph

Appendix 3. ALS laboratory report EN2601388
Appendix 4. Field observations

Figures



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Scale: Approximate Scale 1:22000

0 220 440 880m

Client: GPM Lidsdale

Figure 1: Locality Map

Project:	L43736dm19
Drawn:	MT
Check:	GM
Revision:	A
Date:	31/10/2025



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Approximate Scale 1:13,000

Scale: 0 130 260 520m

Client: GPM Lidsdale

Figure 2: Monitoring locations

Project:	L43736dm19
Drawn:	MT
Check:	GM
Revision:	A
Date:	31/10/2025

Appendix 1. Report limitations and intellectual property

This report has been prepared for the use of the client to achieve the objectives given the clients requirements. The level of confidence of the conclusion reached is governed by the scope of the investigation and the availability and quality of existing data. Where limitations or uncertainties are known, they are identified in the report. No liability can be accepted for failure to identify conditions or issues which arise in the future and which could not reasonably have been predicted using the scope of the investigation and the information obtained.

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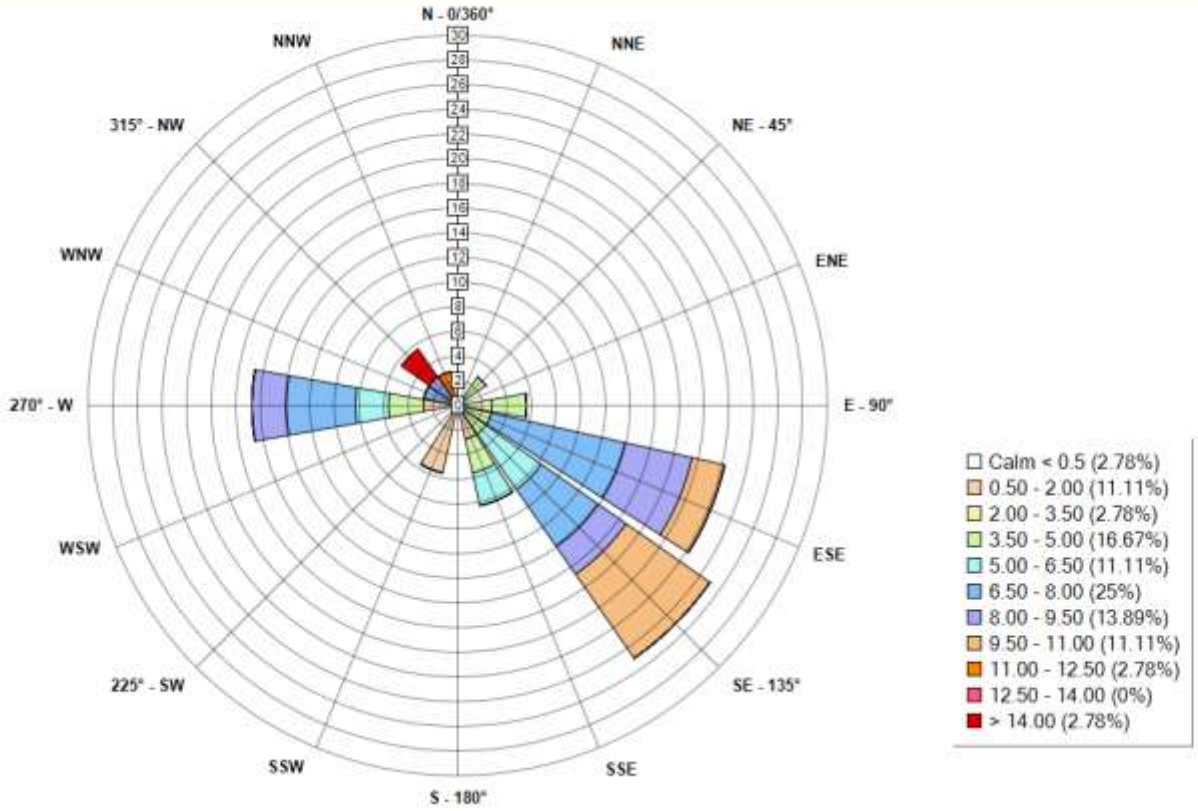
Appendix 2. Weathermation wind rose graph

Wind Rose Report for: GPM Lidsdale RG - Daily Summary

VWDIR Vector Wind Dir 10m and VWSP Vector Wind Spd 10m in km/h
Period: 2025-12-18 00:00 to 2026-01-22 23:59
Direction the Wind is Coming From



Appendix 3. ALS laboratory report EN2601388

CERTIFICATE OF ANALYSIS

Work Order	: **EN2601388**	Page	: 1 of 3
Client	: **BARNSON**	Laboratory	: Environmental Division Newcastle
Contact	: MICHAEL TODD	Contact	: Customer Service (ALS Mudgee)
Address	: 9 Cameron Place PO Box 8158 ORANGE 2800	Address	: 5/585 Maitland Road Mayfield West NSW Australia 2304
Telephone	: ----	Telephone	: +61 2 6372 6735
Project	: 43736 d19	Date Samples Received	: 27-Jan-2026 16:45
Order number	: ----	Date Analysis Commenced	: 29-Jan-2026
C-O-C number	: ----	Issue Date	: 05-Feb-2026 12:04
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 4		
No. of samples analysed	: 4		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Peta Christian	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Dust analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis. NATA accreditation does not apply for results reported in deposition units e.g., g/m².mth where the sampling procedure is not NATA accredited.
- Sample exposure period is outside the typical exposure period of 30 +/- 2 days as per AS3580.10.1/AS3580.10.2
- No copper sulfate correction was applied to sample 002.
- For dust analysis, the Limit of Reporting (LOR) referenced in the reports for deposited matter parameters represents the reporting increment rather than reporting limit.

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST** (Matrix: **AIR**)

Compound	CAS Number	LOR	Unit	Sample ID	DG29 18/12/25 - 22/01/26	DG30 18/12/25 - 22/01/26	DG31 18/12/25 - 22/01/26	DG32 18/12/25 - 22/01/26	----
				Sampling date / time	22-Jan-2026 00:00	22-Jan-2026 00:00	22-Jan-2026 00:00	22-Jan-2026 00:00	----
					EN2601388-001	EN2601388-002	EN2601388-003	EN2601388-004	--------
					Result	Result	Result	Result	----
EA120: Ash Content									
Ash Content	----	0.1	g/m².month		**0.6**	**0.9**	**0.5**	**0.4**	**----**
Ash Content (mg)	----	2	mg		**12**	**18**	**11**	**8**	**----**
EA125: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		<0.1	**0.7**	**0.1**	**0.2**	**----**
Combustible Matter (mg)	----	2	mg		<2	**14**	<2	**4**	**----**
EA139: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m².month		**0.2**	**2.4**	<0.1	**1.5**	**----**
Total Soluble Matter (mg)	----	2	mg		**4**	**49**	<2	**30**	**----**
EA141: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		**0.6**	**1.6**	**0.6**	**0.6**	**----**
Total Insoluble Matter (mg)	----	2	mg		**13**	**32**	**12**	**12**	**----**
EA142: Total Solids									
Total Solids	----	0.1	g/m².month		**0.8**	**4.0**	**0.6**	**2.1**	**----**
Total Solids (mg)	----	2	mg		**17**	**81**	**12**	**42**	**----**

Appendix 4. Field Observations

Client	GPM Lidsdale
Contact	Tim Edward
Job number	43736
Date	22/1/2026
Investigator(s)	GM

Location	Appearance	Insects?	Algae?	Bird droppings?	Organic Matter?	Fine dust?	Coarse dust?	Comment/observations
DG29	Clear, colourless	Yes	No	No	No	Yes	No	2x spiders present
DG30	Clear, colourless	Yes	No	No	Yes	Yes	No	-
DG31	Clear, colourless	No	No	No	Yes	No	No	-
DG32	Clear, colourless	No	No	No	Yes	Yes	No	-

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1300 BARNSON (1300 227 676)
accounts@barnson.com.au
abn. 43 088 342 625

to.
GPM Lidsdale
Attn: Tim Edwards
PO Box 132
Budgowoi NSW 2262

date.
18/3/2026

reference.
L43736dm20

Tim,

Deposited dust monitoring at GPM Lidsdale, February 2026

1. Background
GPM Lidsdale is undertaking earthworks in accordance with an operational environmental management plan (OEMP). The plan requires monthly deposited dust monitoring to be undertaken for amenity management.

2. Scope
Barnson Pty Ltd was commissioned by GPM to provide deposited dust monitoring at four locations on the Lidsdale site in accordance with the OEMP.

3. Site
The site is GPM Lidsdale, Lidsdale NSW (Figure 1).

4. Assessment
Dust deposition gauges were collected on 18 February 2026 by Michael Todd, Environmental Scientist of Barnson Pty Ltd. Laboratory prepared 4L amber glass bottles were installed in sampling stations above the ground with a glass funnel in a stopper fitted into the neck of the bottle at four locations around the site (Table 1).

The length of assessment was 29 days which is within the required 30±2 days sampling period. The sampling was undertaken in accordance with Depositional AS/NZS 3580.10.1:2003 *Methods for sampling and analysis ambient air method 10.1*. Analysis for total solids depositional dust, insoluble solids, combustible material and ash was undertaken at the NATA laboratory of ALS Newcastle.

Table 1. Gauge locations

ID	Location	Sampling Date Range
DG29	Junction	22/1/2026 – 18/2/2026
DG30	Collins Access Road	22/1/2026 – 18/2/2026
DG31	Skelly Road	22/1/2026 – 18/2/2026
DG32	Lidsdale Fire Shed/Wolgan Road	22/1/2026 – 18/2/2026

5. Quality control assurance
The sampling was undertaken in accordance with AS3580.10.1 to achieve the data quality objectives. Samples were collected in laboratory prepared containers. The analyses were undertaken in the NATA accredited

laboratory of ALS Newcastle.

All media appropriate to the objectives of this investigation have been adequately analysed. It is concluded the data is usable for the purposes of the investigation.

Wind speed and direction data was recorded by a Weathermation automated weather station located at GPM Lidsdale.

6. Assessment criteria

The depositional dust assessment criteria of insoluble solids in the Lidsdale OEMP is 4g/m²/month.

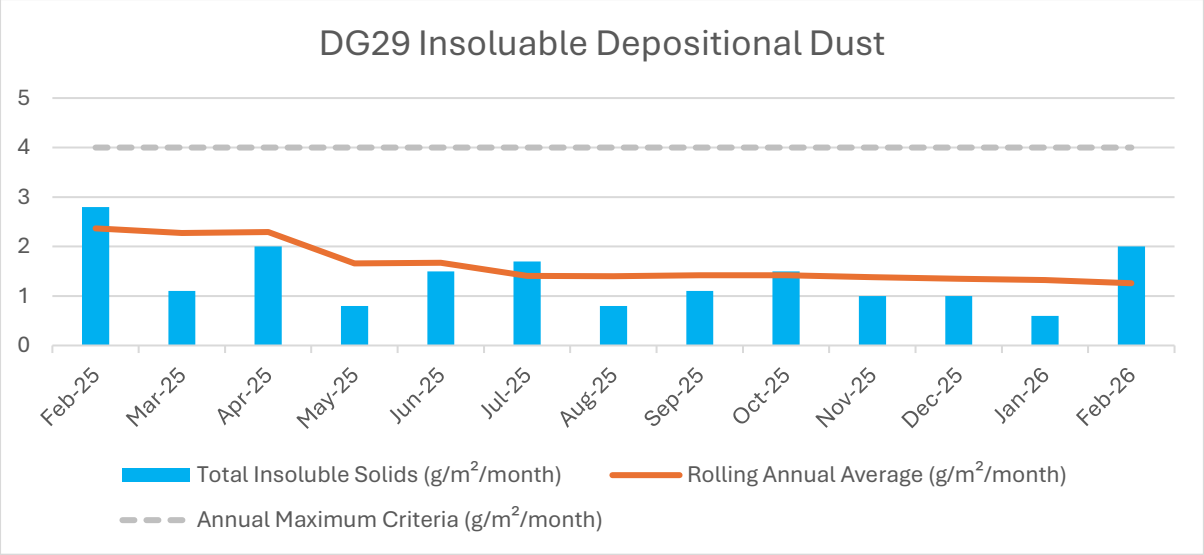
7. Results

All dust gauges recorded a level of insoluble solids below the threshold of 4 g/m²/month. The rolling annual average for insoluble solids is below 4 g/m²/month for all locations (Graph 1-4).

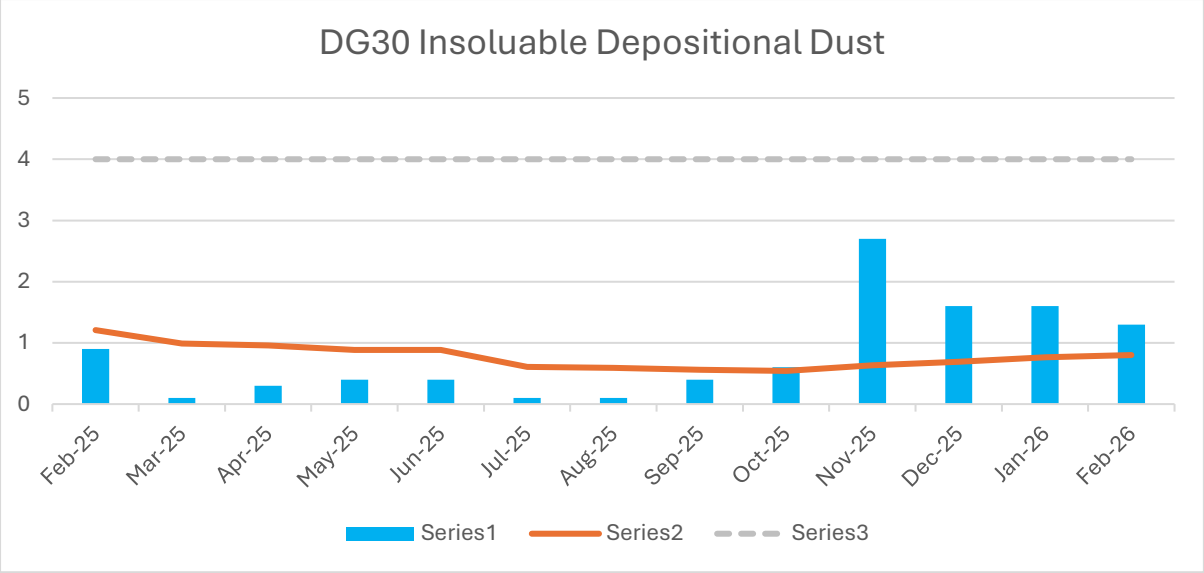
The prevailing wind direction for the sampling period was SE, maximum windspeed was 11.00-12.50 m/s from the SE (Appendix 2). During the sampling period there were 12 days when the rain gauge recorded rainfall totaling 54.4 mm.

Table 2. Deposited dust results, g/m²/month - February 2026

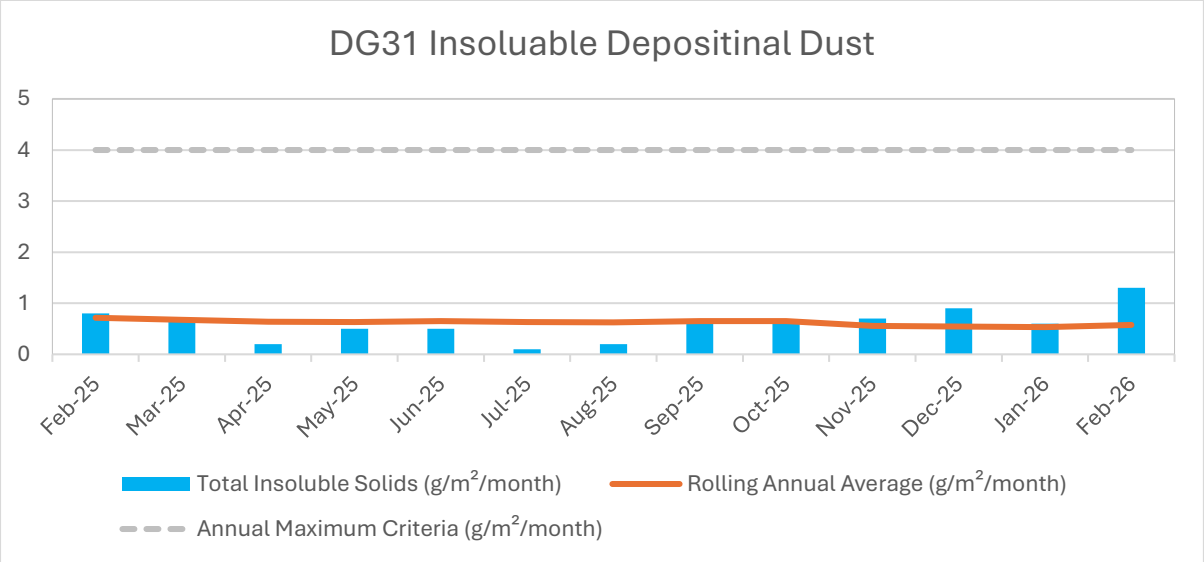
Sample ID	Monthly Insoluble solids	Monthly Combustible Matter	Monthly Ash Residue	Total Solids Per Sampling Period	Rolling Annual Average Insoluble Solids
DG29	2.0	0.4	1.6	2.8	1.3
DG30	1.3	0.5	0.8	3.0	0.8
DG31	1.3	0.5	0.8	2.7	0.6
DG32	1.0	0.6	0.4	3.4	1.1
OEMP Maximum Criteria	4.0	-	-	-	4.0



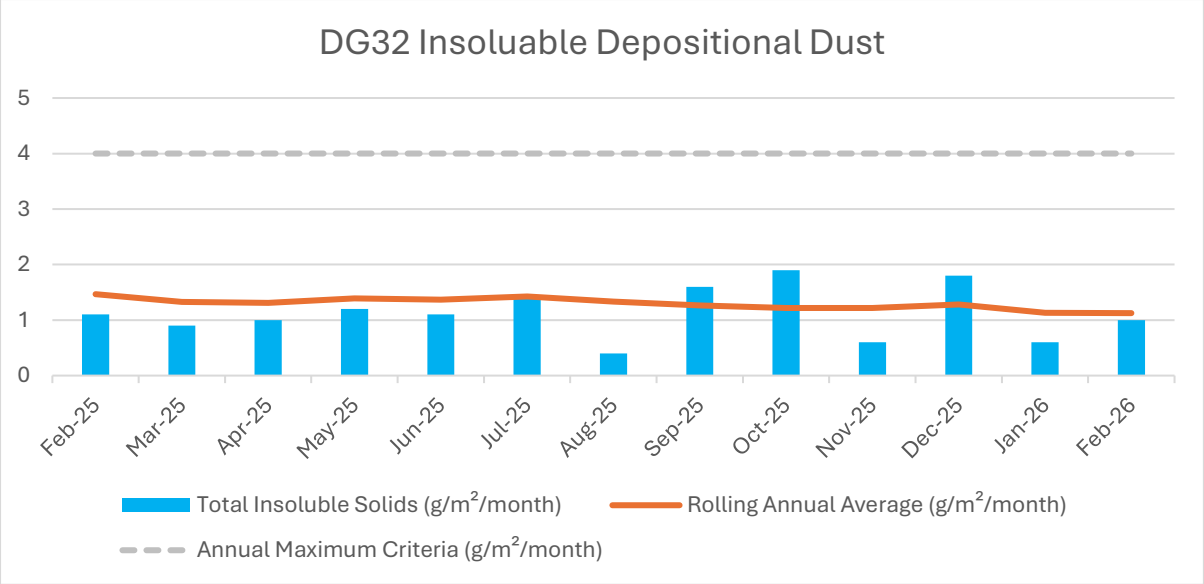
Graph 1. DG29 Guage monthly results



Graph 2. DG30 Gauge monthly results



Graph 3. DG31 Gauge monthly results



Graph 4. DG32 Gauge monthly results

8. Conclusion

The level of recorded insoluble solids for each dust gauge was below the adopted OEMP threshold. The rolling annual average for insoluble solids was also below the OEMP threshold for all locations.

Regards,

Michael Todd Hons. Bsc (Hons) EnvSc
Environmental Scientist

Checked,

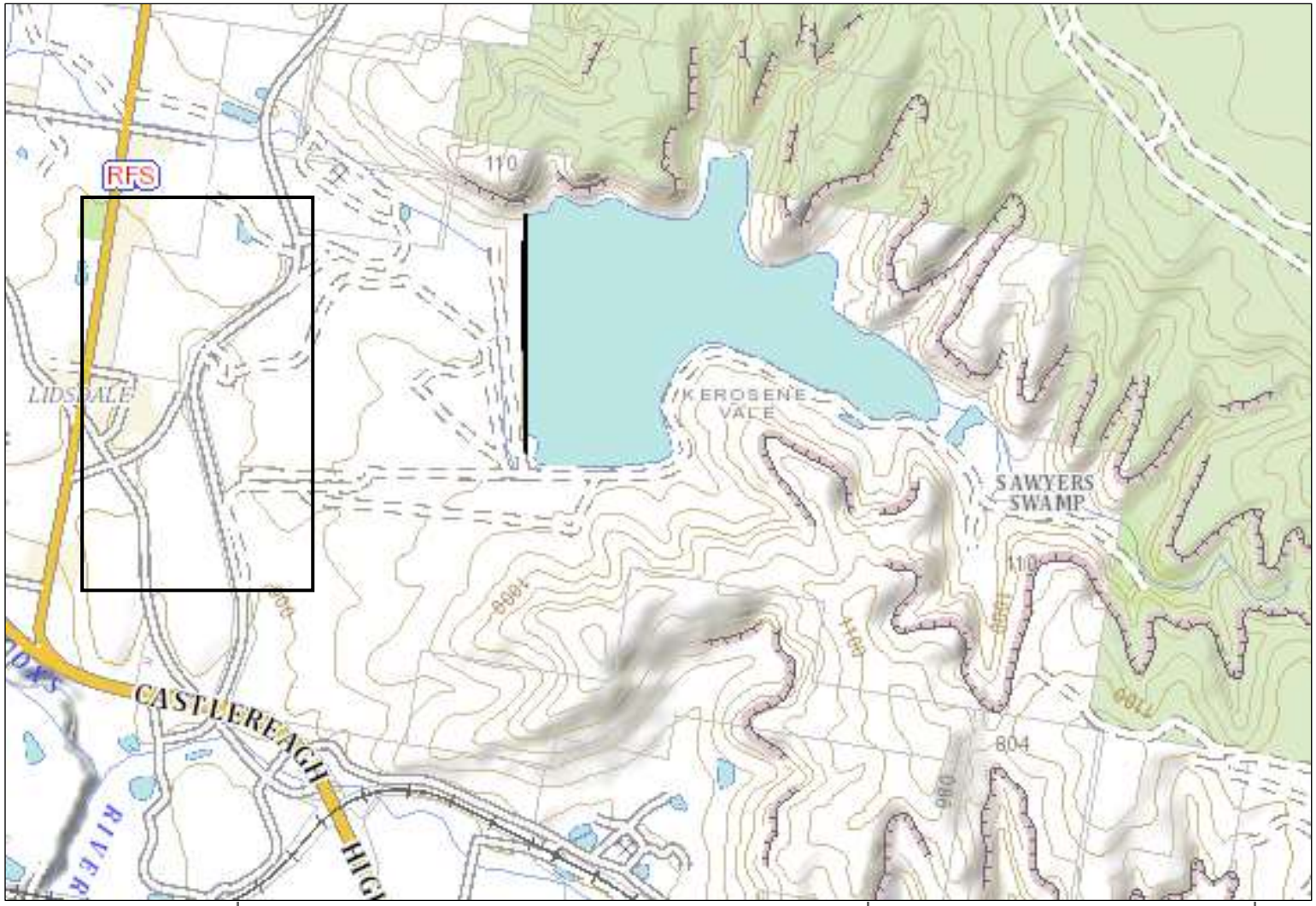
Greg Madafiglio CEnvP
Senior Environmental Scientist

Attachments

Figure 1.	Site locality
Figure 2.	Dust gauge locations
Appendix 1.	Report limitations and intellectual property
Appendix 2.	Weathermation wind rose graph

Appendix 3. ALS laboratory report EN2602874
Appendix 4. Field observations

Figures



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Scale: Approximate Scale 1:22000

0 220 440 880m

Client: GPM Lidsdale

Figure 1: Locality Map

Project:	L43736dm20
Drawn:	MT
Check:	GM
Revision:	A
Date:	31/10/2025



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Approximate Scale 1:13,000

Scale: 0 130 260 520m

Client: GPM Lidsdale

Figure 2: Monitoring locations

Project:	L43736dm20
Drawn:	MT
Check:	GM
Revision:	A
Date:	31/10/2025

Appendix 1. Report limitations and intellectual property

This report has been prepared for the use of the client to achieve the objectives given the clients requirements. The level of confidence of the conclusion reached is governed by the scope of the investigation and the availability and quality of existing data. Where limitations or uncertainties are known, they are identified in the report. No liability can be accepted for failure to identify conditions or issues which arise in the future and which could not reasonably have been predicted using the scope of the investigation and the information obtained.

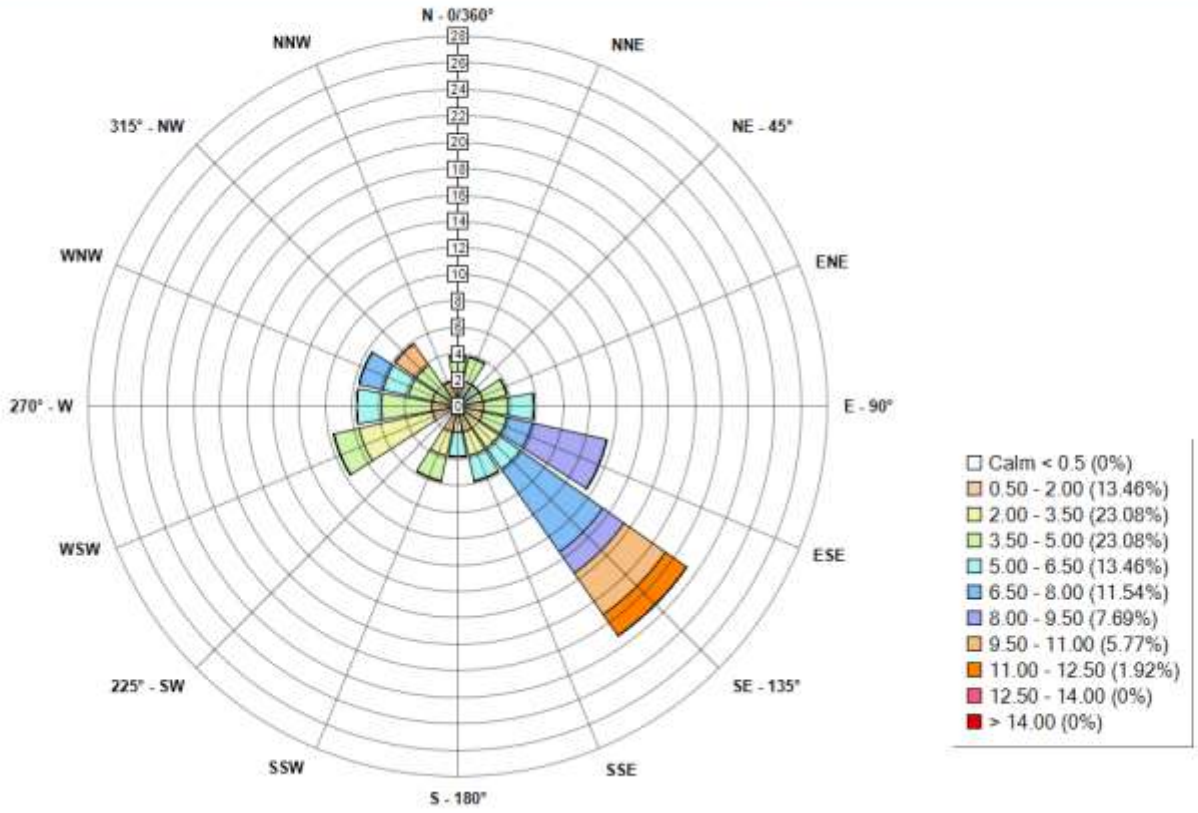
The investigation identifies the actual deposited dust conditions only at those points where samples are taken, when they are taken. Data derived through sampling and subsequent laboratory testing is interpreted by geologists, engineers or scientists who then render an opinion about overall dust conditions, the nature and extent of the contamination, its likely impact on the areas amenity and appropriate remediation measures. Actual conditions may differ from those inferred to exist, because no professional, no matter how well qualified, and no dust monitoring program, no matter how comprehensive, can cover the whole area under investigation.

This report, including data contained and its findings and conclusions, remains the intellectual property of Barnson Pty Ltd. A licence to use the report for the specific purpose identified is granted for the persons identified in that section after full payment for the services involved in preparation of the report. This report should not be used by persons or for purposes other than those stated, and should not be reproduced without the permission of Barnson Pty Ltd.

Appendix 2. Weathermation wind rose graph

Wind Rose Report for: GPM Lidsdale RG - Daily Summary

VWDIR Vector Wind Dir 10m and VWSP Vector Wind Spd 10m in km/h
Period: 2026-1-26 00:00 to 2026-12-18 23:59
Direction the Wind is Coming From



Appendix 3. ALS laboratory report EN2602874

CERTIFICATE OF ANALYSIS

Work Order	: **EN2602874**	Page	: 1 of 3
Client	: **BARNSON**	Laboratory	: Environmental Division Newcastle
Contact	: MICHAEL TODD	Contact	: Customer Service (ALS Mudgee)
Address	: 9 Cameron Place PO Box 8158 ORANGE 2800	Address	: 5/585 Maitland Road Mayfield West NSW Australia 2304
Telephone	: ----	Telephone	: +61 2 6372 6735
Project	: 43736 d20	Date Samples Received	: 20-Feb-2026 16:50
Order number	: ----	Date Analysis Commenced	: 26-Feb-2026
C-O-C number	: ----	Issue Date	: 03-Mar-2026 20:00
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 4		
No. of samples analysed	: 4		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Zoran Grozdanovski	Team Leader - Chemistry	Newcastle - Inorganics, Mayfield West, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Dust analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis. NATA accreditation does not apply for results reported in deposition units e.g., g/m².mth where the sampling procedure is not NATA accredited.
- Sample exposure period is outside the typical exposure period of 30 +/- 2 days as per AS3580.10.1/AS3580.10.2
- No copper sulfate correction was applied to samples.
- No algaecide correction was applied to sample 001.
- For dust analysis, the Limit of Reporting (LOR) referenced in the reports for deposited matter parameters represents the reporting increment rather than reporting limit.

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST** (Matrix: **AIR**)

Compound	CAS Number	LOR	Unit	Sample ID	DG29 22/01/26 - 18/02/26	DG30 22/01/26 - 18/02/26	DG31 22/01/26 - 18/02/26	DG32 22/01/26 - 18/02/26	----
				Sampling date / time	18-Feb-2026 00:00	18-Feb-2026 00:00	18-Feb-2026 00:00	18-Feb-2026 00:00	----
					EN2602874-001	EN2602874-002	EN2602874-003	EN2602874-004	--------
					Result	Result	Result	Result	----
EA120: Ash Content									
Ash Content	----	0.1	g/m².month		**1.6**	**0.8**	**0.8**	**0.4**	**----**
Ash Content (mg)	----	2	mg		**26**	**12**	**12**	**7**	**----**
EA125: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		**0.4**	**0.5**	**0.5**	**0.6**	**----**
Combustible Matter (mg)	----	2	mg		**6**	**9**	**8**	**9**	**----**
EA139: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m².month		**0.8**	**1.7**	**1.4**	**2.4**	**----**
Total Soluble Matter (mg)	----	2	mg		**13**	**27**	**23**	**38**	**----**
EA141: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		**2.0**	**1.3**	**1.3**	**1.0**	**----**
Total Insoluble Matter (mg)	----	2	mg		**32**	**21**	**20**	**16**	**----**
EA142: Total Solids									
Total Solids	----	0.1	g/m².month		**2.8**	**3.0**	**2.7**	**3.4**	**----**
Total Solids (mg)	----	2	mg		**45**	**48**	**43**	**54**	**----**

Appendix 4. Field Observations

Client	GPM Lidsdale
Contact	Tim Edward
Job number	43736
Date	18/2/2026
Investigator(s)	MT

Location	Appearance	Insects?	Algae?	Bird droppings?	Organic Matter?	Fine dust?	Coarse dust?	Comment/observations
DG29	Clear, colourless	Yes	No	No	No	No	No	Insects were larvae
DG30	Clear, colourless	Yes	No	No	No	No	No	Insects were mosquitos and a spider
DG31	Clear, colourless	Yes	No	No	No	No	No	Insect had wings
DG32	Clear, colourless	No	No	No	No	No	No	-

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to.
GPM Lidsdale
Attn: Tim Edwards
PO Box 132
Budgowoi NSW 2262

date.
13/4/2026

reference.
L43736dm21

Tim,

Deposited dust monitoring at GPM Lidsdale, March 2026

1. Background
GPM Lidsdale is undertaking earthworks in accordance with an operational environmental management plan (OEMP). The plan requires monthly deposited dust monitoring to be undertaken for amenity management.

2. Scope
Barnson Pty Ltd was commissioned by GPM to provide deposited dust monitoring at four locations on the Lidsdale site in accordance with the OEMP.

3. Site
The site is GPM Lidsdale, Lidsdale NSW (Figure 1).

4. Assessment
Dust deposition gauges were collected on 20 March 2026 by Michael Todd, Environmental Scientist of Barnson Pty Ltd. Laboratory prepared 4L amber glass bottles were installed in sampling stations above the ground with a glass funnel in a stopper fitted into the neck of the bottle at four locations around the site (Table 1).

The length of assessment was 30 days which is within the required 30±2 days sampling period. The sampling was undertaken in accordance with AS/NZS 3580.10.1:2003 *Methods for sampling and analysis ambient air method 10.1*. Analysis for total solids depositional dust, insoluble solids, combustible material and ash was undertaken at the NATA laboratory of ALS Newcastle.

Table 1. Gauge locations

ID	Location	Sampling Date Range
DG29	Junction	18/2/2026 – 20/3/2026
DG30	Collins Access Road	18/2/2026 – 20/3/2026
DG31	Skelly Road	18/2/2026 – 20/3/2026
DG32	Lidsdale Fire Shed/Wolgan Road	18/2/2026 – 20/3/2026

5. Quality control assurance
The sampling was undertaken in accordance with AS3580.10.1 to achieve the data quality objectives. Samples were collected in laboratory prepared containers. The analyses were undertaken in the NATA accredited

laboratory of ALS Newcastle.

All media appropriate to the objectives of this investigation have been adequately analysed. It is concluded the data is usable for the purposes of the investigation.

Wind speed and direction data was recorded by a Weathermation automated weather station located at GPM Lidsdale.

6. Assessment criteria

The depositional dust assessment criteria of insoluble solids in the Lidsdale OEMP is 4g/m²/month.

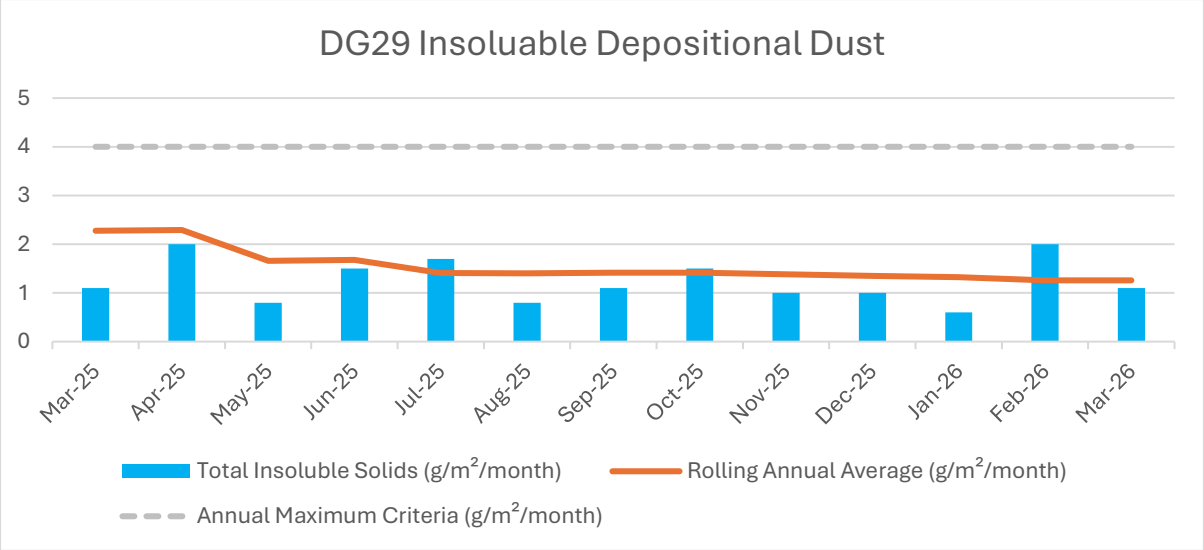
7. Results

All dust gauges recorded a level of insoluble solids below the threshold of 4 g/m²/month. The rolling annual average for insoluble solids is below 4 g/m²/month for all locations (Graph 1-4).

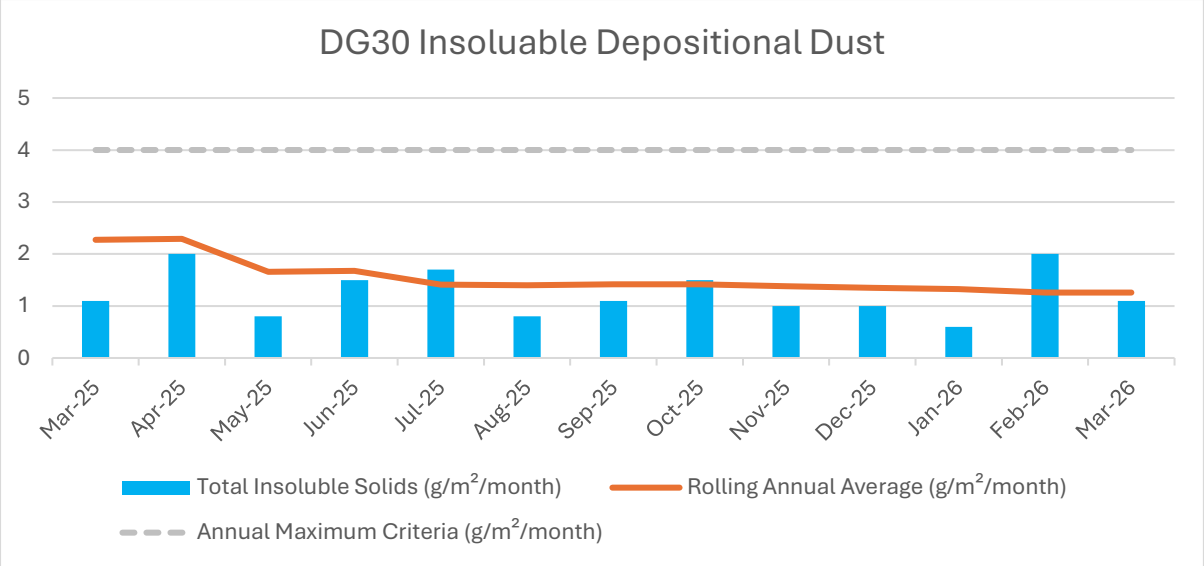
The prevailing wind direction for the sampling period was SE, maximum windspeed was 9.50-11.00 m/s from the SE (Appendix 2). During the sampling period there were 17 days when the rain gauge recorded rainfall totaling 120.2mm.

Table 2. Deposited dust results, g/m²/month - March 2026

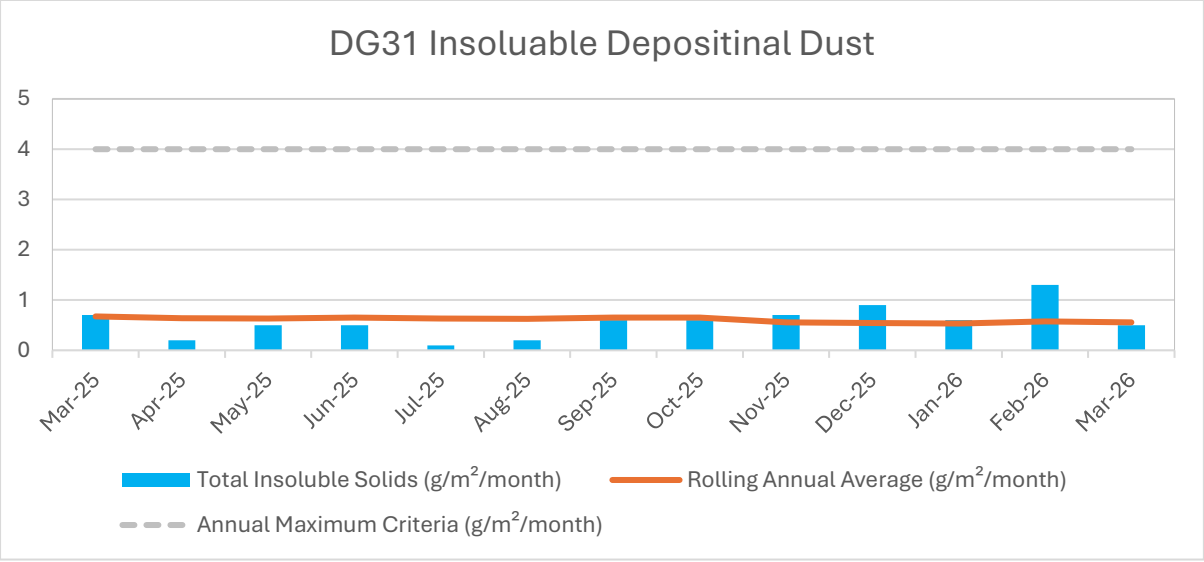
Sample ID	Monthly Insoluble solids	Monthly Combustible Matter	Monthly Ash Residue	Total Solids Per Sampling Period	Rolling Annual Average Insoluble Solids
DG29	1.1	<0.1	1.1	4.0	1.3
DG30	1.6	0.8	0.8	3.5	0.9
DG31	0.5	0.2	0.3	0.6	0.6
DG32	0.7	0.4	0.3	3.0	1.1
OEMP Maximum Criteria	4.0	-	-	-	4.0



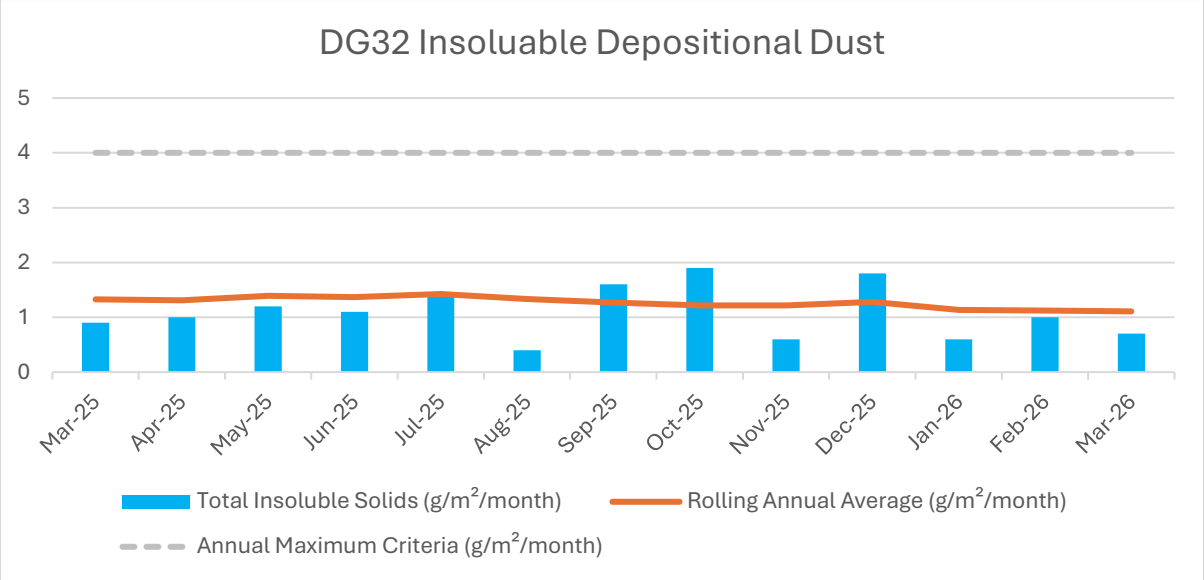
Graph 1. DG29 Guage monthly results



Graph 2. DG30 Gauge monthly results



Graph 3. DG31 Gauge monthly results



Graph 4. DG32 Gauge monthly results

8. Conclusion

The level of recorded insoluble solids for each dust gauge was below the adopted OEMP threshold. The rolling annual average for insoluble solids was also below the OEMP threshold for all locations.

Regards,

Michael Todd Hons. Bsc (Hons) EnvSc
Environmental Scientist

Checked,

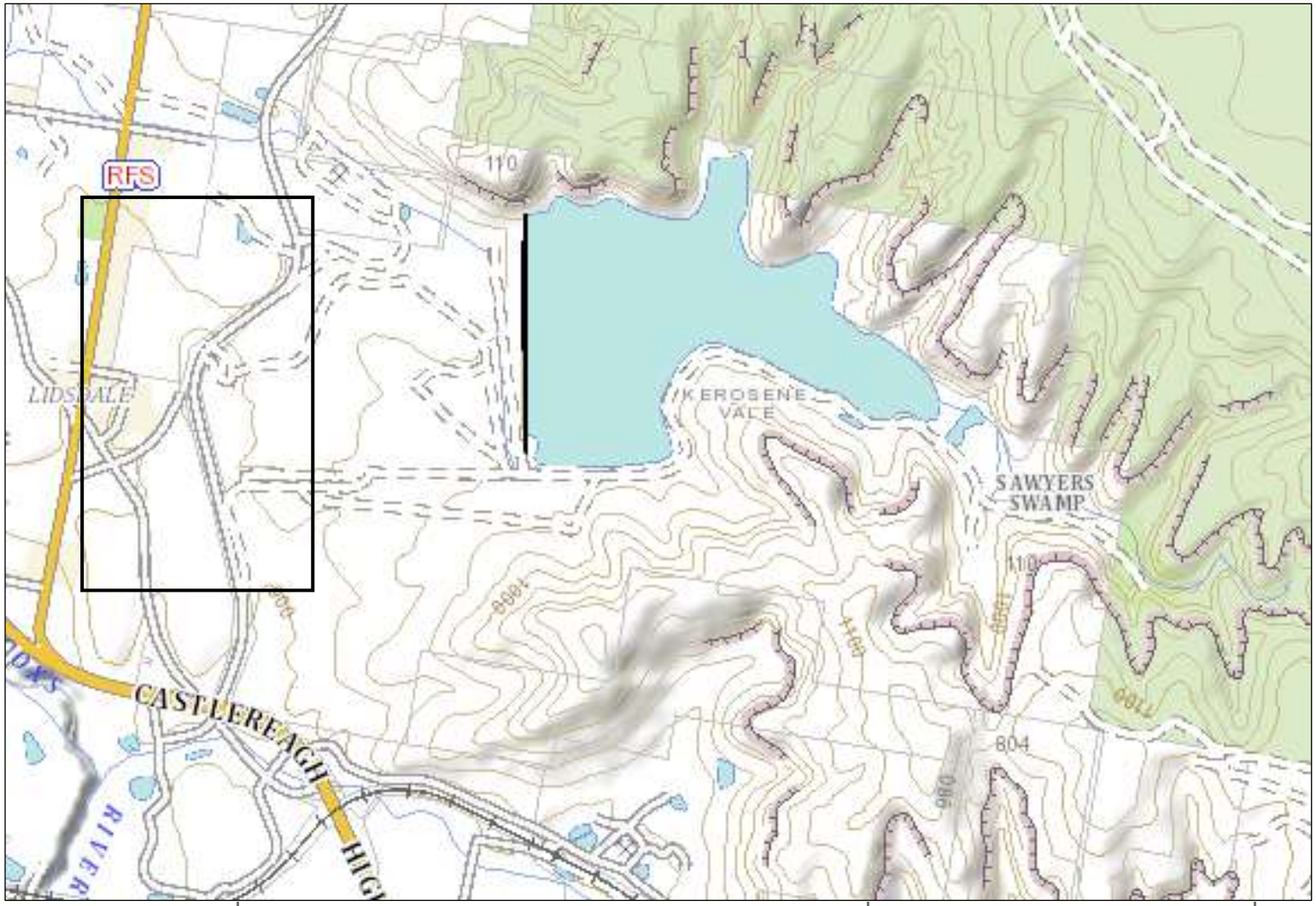
Greg Madafiglio CEnvP
Senior Environmental Scientist

Attachments

Figure 1.	Site locality
Figure 2.	Dust gauge locations
Appendix 1.	Report limitations and intellectual property
Appendix 2.	Weathermation wind rose graph

Appendix 3. ALS laboratory report EN2604581
Appendix 4. Field observations

Figures



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w www.barnson.com.au
Bathurst I Coffs Harbour I Dubbo I Mudgee I Orange I Sydney I Tamworth

Scale: Approximate Scale 1:22000

0 220 440 880m

Client: GPM Lidsdale

Figure 1: Locality Map

Project:	L43736dm21
Drawn:	MT
Check:	GM
Revision:	A
Date:	31/10/2025



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w www.barnson.com.au
Bathurst I Coffs Harbour I Dubbo I Mudgee I Orange I Sydney I Tamworth

Approximate Scale 1:13,000

Scale: 0 130 260 520m

Client: GPM Lidsdale

Figure 2: Monitoring locations

Project:	L43736dm21
Drawn:	MT
Check:	GM
Revision:	A
Date:	31/10/2025

Appendix 1. Report limitations and intellectual property

This report has been prepared for the use of the client to achieve the objectives given the clients requirements. The level of confidence of the conclusion reached is governed by the scope of the investigation and the availability and quality of existing data. Where limitations or uncertainties are known, they are identified in the report. No liability can be accepted for failure to identify conditions or issues which arise in the future and which could not reasonably have been predicted using the scope of the investigation and the information obtained.

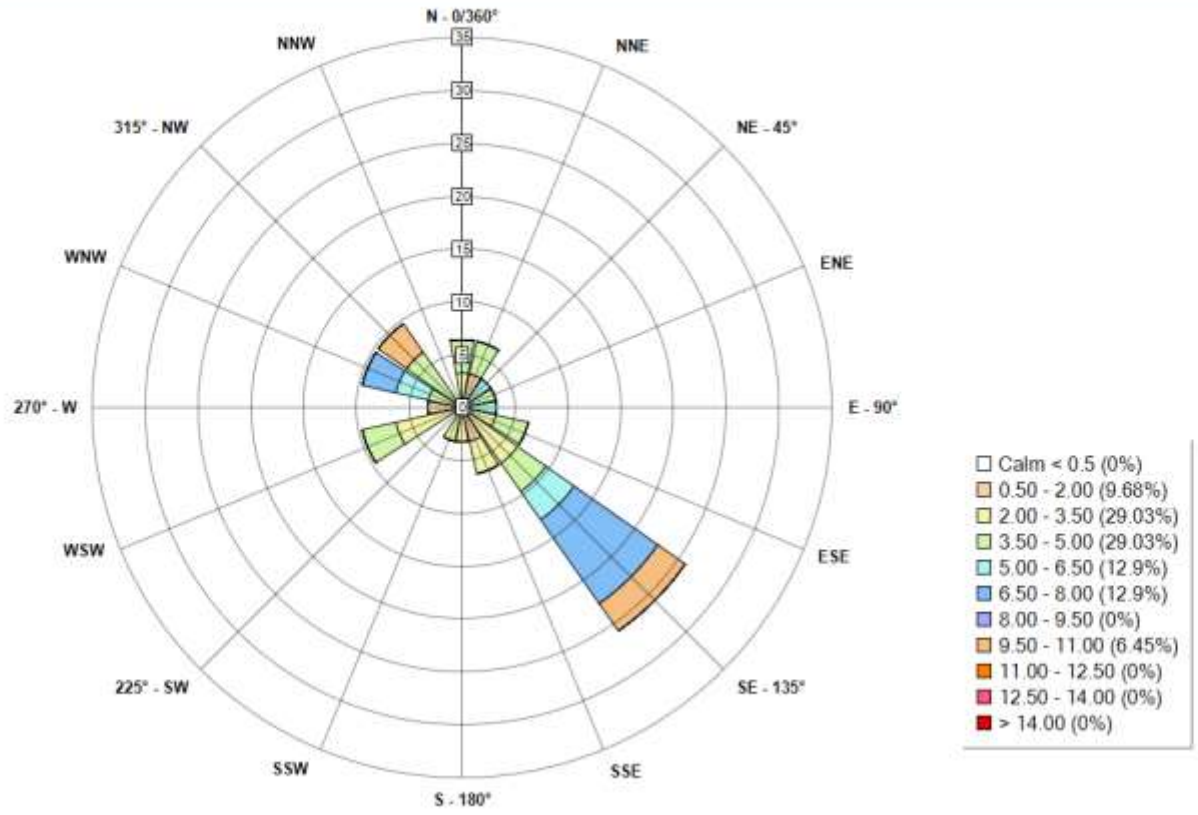
The investigation identifies the actual deposited dust conditions only at those points where samples are taken, when they are taken. Data derived through sampling and subsequent laboratory testing is interpreted by geologists, engineers or scientists who then render an opinion about overall dust conditions, the nature and extent of the contamination, its likely impact on the areas amenity and appropriate remediation measures. Actual conditions may differ from those inferred to exist, because no professional, no matter how well qualified, and no dust monitoring program, no matter how comprehensive, can cover the whole area under investigation.

This report, including data contained and its findings and conclusions, remains the intellectual property of Barnson Pty Ltd. A licence to use the report for the specific purpose identified is granted for the persons identified in that section after full payment for the services involved in preparation of the report. This report should not be used by persons or for purposes other than those stated, and should not be reproduced without the permission of Barnson Pty Ltd.

Appendix 2. Weathermation wind rose graph

Wind Rose Report for: GPM Lidsdale RG - Daily Summary

VWDIR Vector Wind Dir 10m and VWSP Vector Wind Spd 10m in km/h
Period: 2026-02-18 00:00 to 2026-03-20 23:59
Direction the Wind is Coming From



Appendix 3. ALS laboratory report EN2604581

CERTIFICATE OF ANALYSIS

Work Order	: **EN2604581**	Page	: 1 of 3
Client	: **BARNSON**	Laboratory	: Environmental Division Newcastle
Contact	: MICHAEL TODD	Contact	: Customer Service (ALS Mudgee)
Address	: 9 Cameron Place PO Box 8158 ORANGE 2800	Address	: 5/585 Maitland Road Mayfield West NSW Australia 2304
Telephone	: ----	Telephone	: +61 2 6372 6735
Project	: ----	Date Samples Received	: 23-Mar-2026 17:26
Order number	: ----	Date Analysis Commenced	: 25-Mar-2026
C-O-C number	: ----	Issue Date	: 02-Apr-2026 15:13
Sampler	: MICHAEL TODD		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 4		
No. of samples analysed	: 4		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Peta Christian	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Dust analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis. NATA accreditation does not apply for results reported in deposition units e.g., g/m².mth where the sampling procedure is not NATA accredited.
- For dust analysis, the Limit of Reporting (LOR) referenced in the reports for deposited matter parameters represents the reporting increment rather than reporting limit.

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST** (Matrix: **AIR**)

Compound	CAS Number	LOR	Unit	Sample ID	DG29 18/02/26 - 20/03/26	DG30 18/02/26 - 20/03/26	DG31 18/02/26 - 20/03/26	DG32 18/02/26 - 20/03/26	----
				Sampling date / time	20-Mar-2026 00:00	20-Mar-2026 00:00	20-Mar-2026 00:00	20-Mar-2026 00:00	----
					EN2604581-001	EN2604581-002	EN2604581-003	EN2604581-004	--------
					Result	Result	Result	Result	----
EA120: Ash Content									
Ash Content	----	0.1	g/m².month		**1.1**	**0.8**	**0.3**	**0.3**	**----**
Ash Content (mg)	----	2	mg		**19**	**15**	**6**	**5**	**----**
EA125: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		<0.1	**0.8**	**0.2**	**0.4**	**----**
Combustible Matter (mg)	----	2	mg		<2	**14**	**3**	**7**	**----**
EA139: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m².month		**2.9**	**1.9**	**0.1**	**2.3**	**----**
Total Soluble Matter (mg)	----	2	mg		**52**	**33**	<2	**41**	**----**
EA141: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		**1.1**	**1.6**	**0.5**	**0.7**	**----**
Total Insoluble Matter (mg)	----	2	mg		**19**	**29**	**9**	**12**	**----**
EA142: Total Solids									
Total Solids	----	0.1	g/m².month		**4.0**	**3.5**	**0.6**	**3.0**	**----**
Total Solids (mg)	----	2	mg		**71**	**62**	**10**	**53**	**----**

Appendix 4. Field Observations

Client	GPM Lidsdale
Contact	Tim Edward
Job number	43736
Date	18/2/2026
Investigator(s)	MT

Location	Appearance	Insects?	Algae?	Bird droppings?	Organic Matter?	Fine dust?	Coarse dust?	Comment/observations
DG29	Clear, colourless	No	No	No	No	No	No	
DG30	Clear, colourless	Yes	No	No	No	Yes	No	Large spider present in jar
DG31	Clear, colourless	No	No	No	Yes	No	No	
DG32	Clear, colourless	No	No	No	Yes	No	No	Pine needles present

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1300 BARNSON (1300 227 676)
accounts@barnson.com.au
abn. 43 088 342 625

to.
GPM Lidsdale
Attn: Tim Edwards
PO Box 132
Budgowoi NSW 2262

date.
15/5/2026

reference.
L43736dm22

Tim,

Deposited dust monitoring at GPM Lidsdale, April 2026

1. Background
GPM Lidsdale is undertaking earthworks in accordance with an operational environmental management plan (OEMP). The plan requires monthly deposited dust monitoring to be undertaken for amenity management.

2. Scope
Barnson Pty Ltd was commissioned by GPM to provide deposited dust monitoring at four locations on the Lidsdale site in accordance with the OEMP.

3. Site
The site is GPM Lidsdale, Lidsdale NSW (Figure 1).

4. Assessment
Dust deposition gauges were collected on 24 April 2026 by Michael Todd, Environmental Scientist of Barnson Pty Ltd. Laboratory prepared 4L amber glass bottles were installed in sampling stations above the ground with a glass funnel in a stopper fitted into the neck of the bottle at four locations around the site (Table 1).

The length of assessment was 35 days which is outside the required 30±2 days sampling period. The sampling was undertaken in accordance with AS/NZS 3580.10.1:2003 *Methods for sampling and analysis ambient air method 10.1*. Analysis for total solids depositional dust, insoluble solids, combustible material and ash was undertaken at the NATA laboratory of ALS Newcastle.

Table 1. Gauge locations

ID	Location	Sampling Date Range
DG29	Junction	20/3/2026 – 24/4/2026
DG30	Collins Access Road	20/3/2026 – 24/4/2026
DG31	Skelly Road	20/3/2026 – 24/4/2026
DG32	Lidsdale Fire Shed/Wolgan Road	20/3/2026 – 24/4/2026

5. Quality control assurance
The sampling was undertaken in accordance with AS3580.10.1 to achieve the data quality objectives. Samples were collected in laboratory prepared containers. The analyses were undertaken in the NATA accredited

laboratory of ALS Newcastle.

All media appropriate to the objectives of this investigation have been adequately analysed. It is concluded the data is usable for the purposes of the investigation.

Wind speed and direction data was recorded by a Weathermation automated weather station located at GPM Lidsdale.

6. Assessment criteria

The depositional dust assessment criteria of insoluble solids in the Lidsdale OEMP is 4g/m²/month.

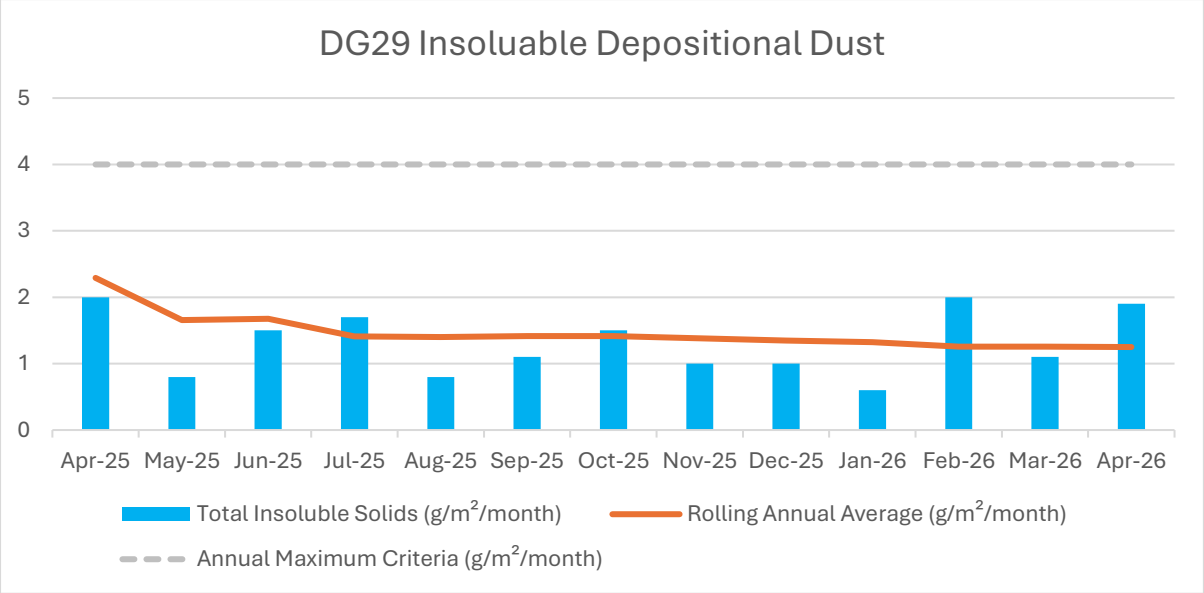
7. Results

All dust gauges recorded a level of insoluble solids below the threshold of 4 g/m²/month. The rolling annual average for insoluble solids is below 4 g/m²/month for all locations (Graph 1-4).

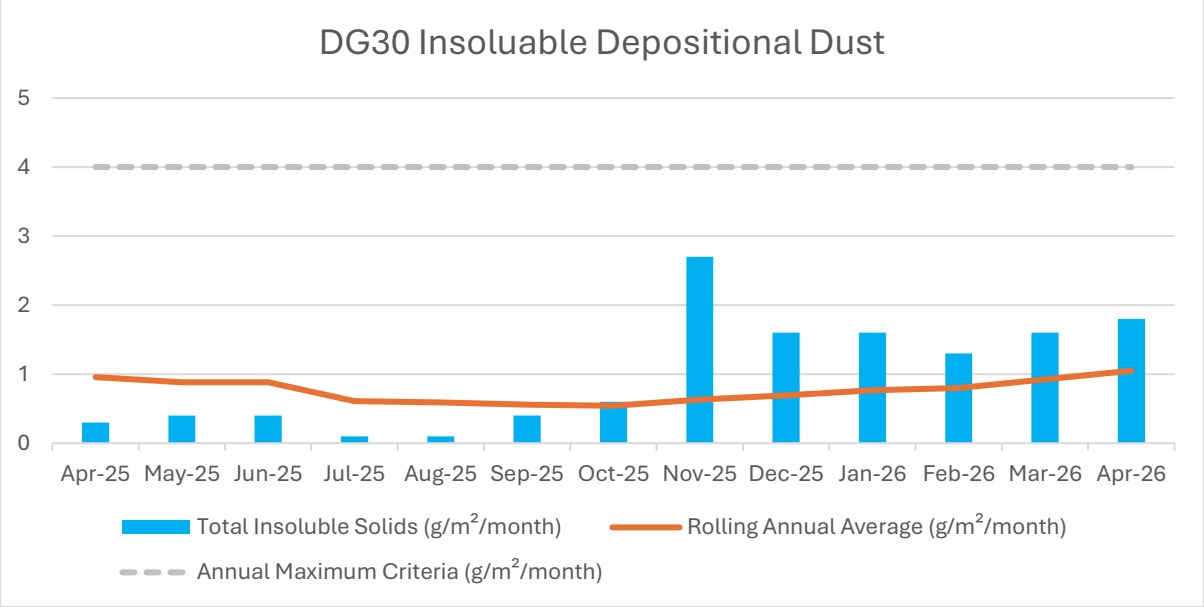
The prevailing wind direction for the sampling period was WSW, maximum windspeed was >14 m/s from the WSW, W and WNW (Appendix 2). During the sampling period there were 16 days when the rain gauge recorded rainfall totaling 45.2mm.

Table 2. Deposited dust results, g/m²/month - April 2026

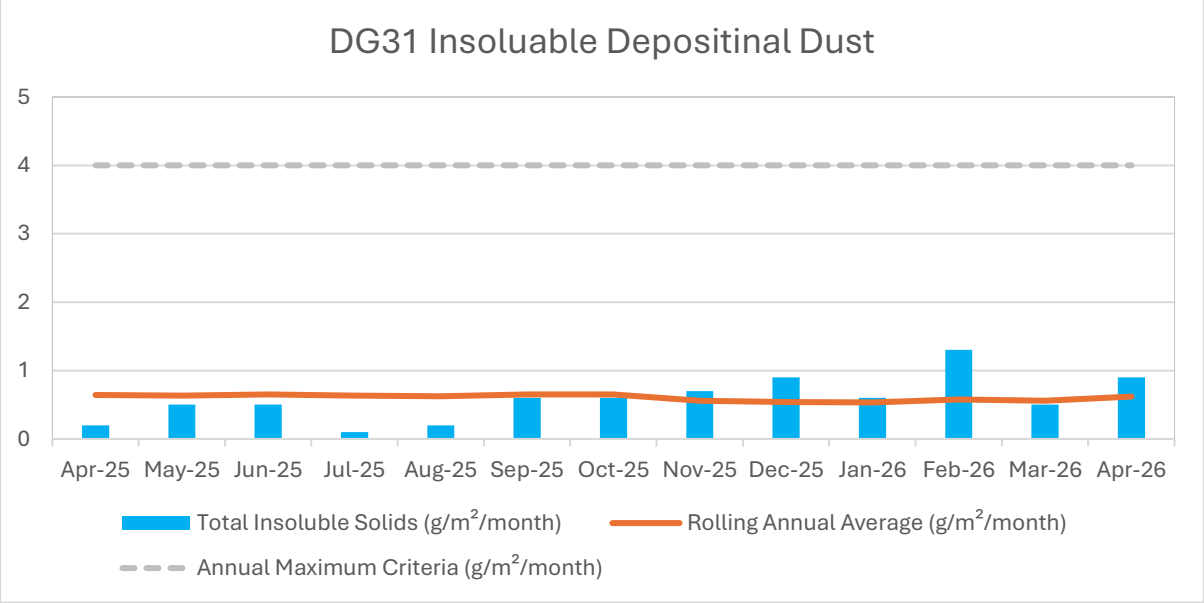
Sample ID	Monthly Insoluble solids	Monthly Combustible Matter	Monthly Ash Residue	Total Solids Per Sampling Period	Rolling Annual Average Insoluble Solids
DG29	0.1	<0.1	0.1	1.9	1.3
DG30	0.6	0.3	0.3	1.8	1.1
DG31	0.2	<0.1	0.2	0.9	0.6
DG32	0.4	0.4	<0.1	0.9	1.1
OEMP Maximum Criteria	4.0	-	-	-	4.0



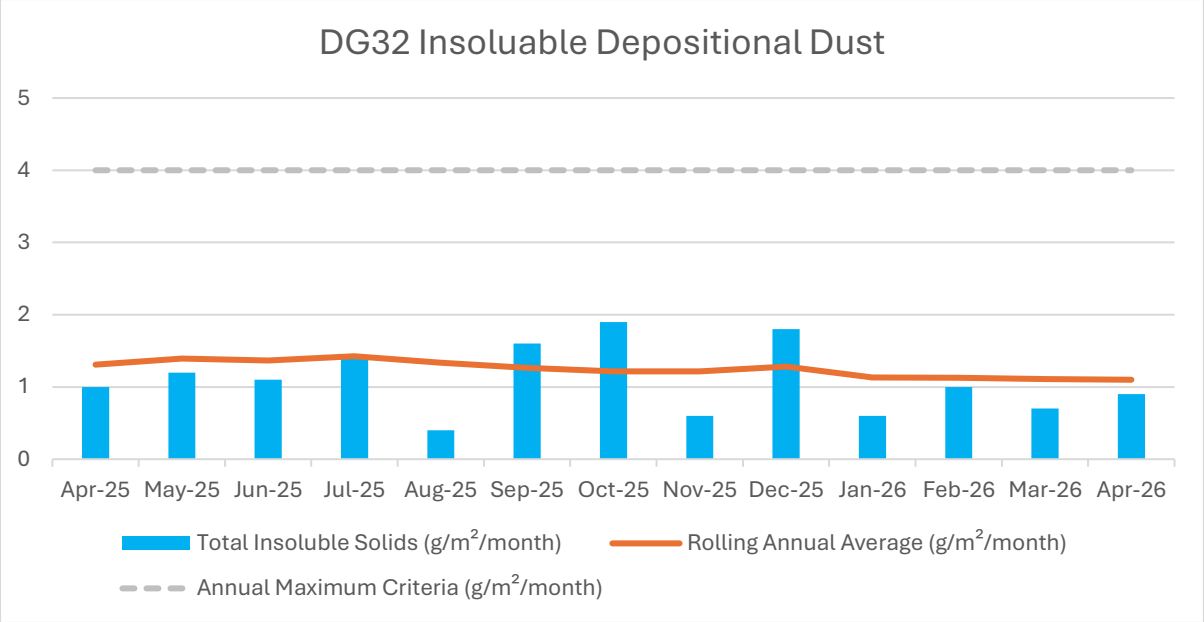
Graph 1. DG29 Guage monthly results



Graph 2. DG30 Gauge monthly results



Graph 3. DG31 Gauge monthly results



Graph 4. DG32 Gauge monthly results

8. Conclusion

The level of recorded insoluble solids for each dust gauge was below the adopted OEMP threshold. The rolling annual average for insoluble solids was also below the OEMP threshold for all locations.

Regards,

Michael Todd Hons. Bsc (Hons) EnvSc
Environmental Scientist

Checked,

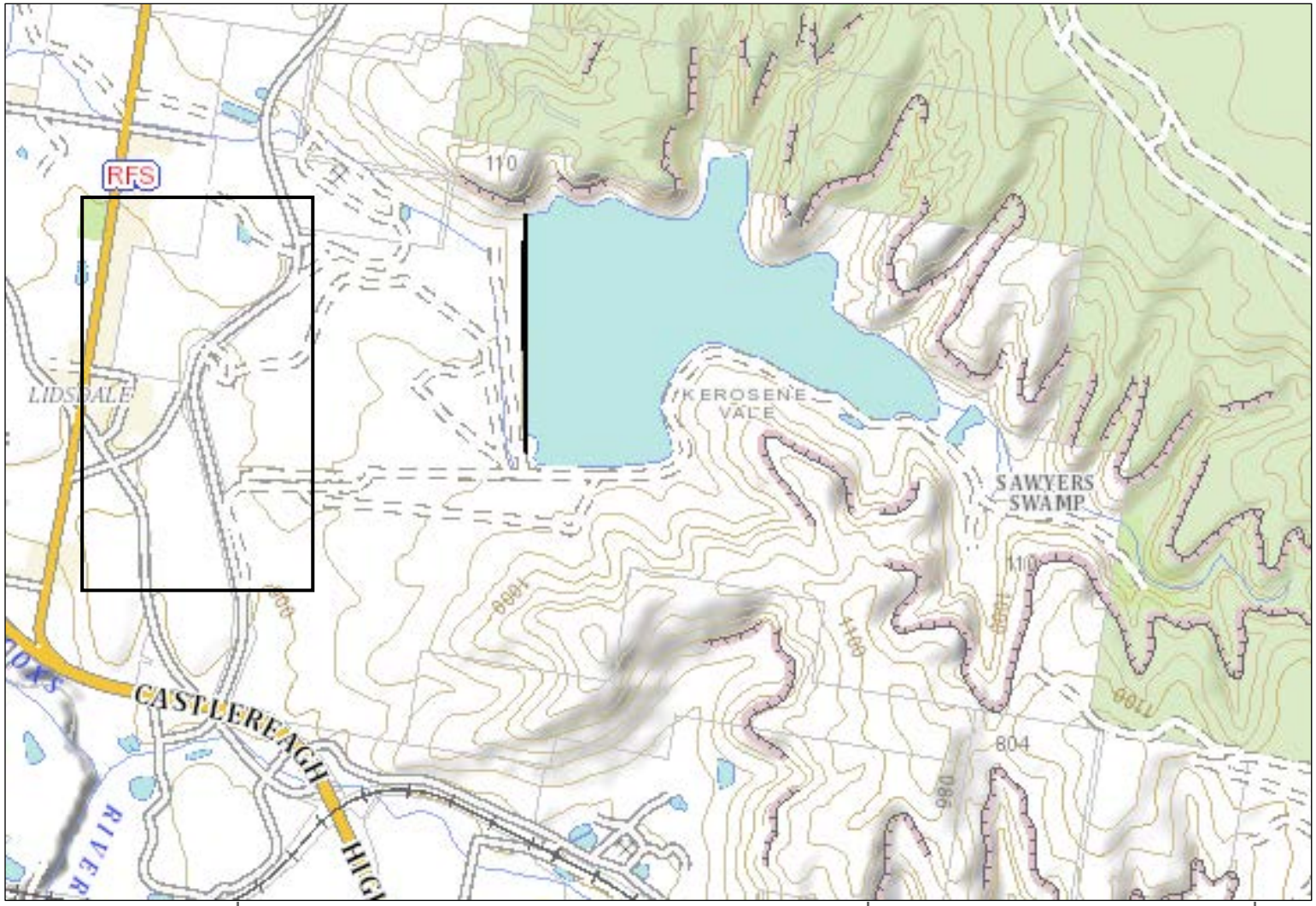
Greg Madafiglio CEnvP
Senior Environmental Scientist

Attachments

Figure 1.	Site locality
Figure 2.	Dust gauge locations
Appendix 1.	Report limitations and intellectual property

Appendix 2. Weathermation wind rose graph
Appendix 3. ALS laboratory report EN2606427
Appendix 4. Field observations

Figures



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Scale: Approximate Scale 1:22000

0 220 440 880m

Client: GPM Lidsdale

Figure 1: Locality Map

Project: L43736dm22
Drawn: MT
Check: GM
Revision: A

Date: 31/10/2025



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Approximate Scale 1:13,000

Scale: 0 130 260 520m

Client: GPM Lidsdale

Figure 2: Monitoring locations

Project: L43736dm22
Drawn: MT
Check: GM
Revision: A
Date: 31/10/2025

Appendix 1. Report limitations and intellectual property

This report has been prepared for the use of the client to achieve the objectives given the clients requirements. The level of confidence of the conclusion reached is governed by the scope of the investigation and the availability and quality of existing data. Where limitations or uncertainties are known, they are identified in the report. No liability can be accepted for failure to identify conditions or issues which arise in the future and which could not reasonably have been predicted using the scope of the investigation and the information obtained.

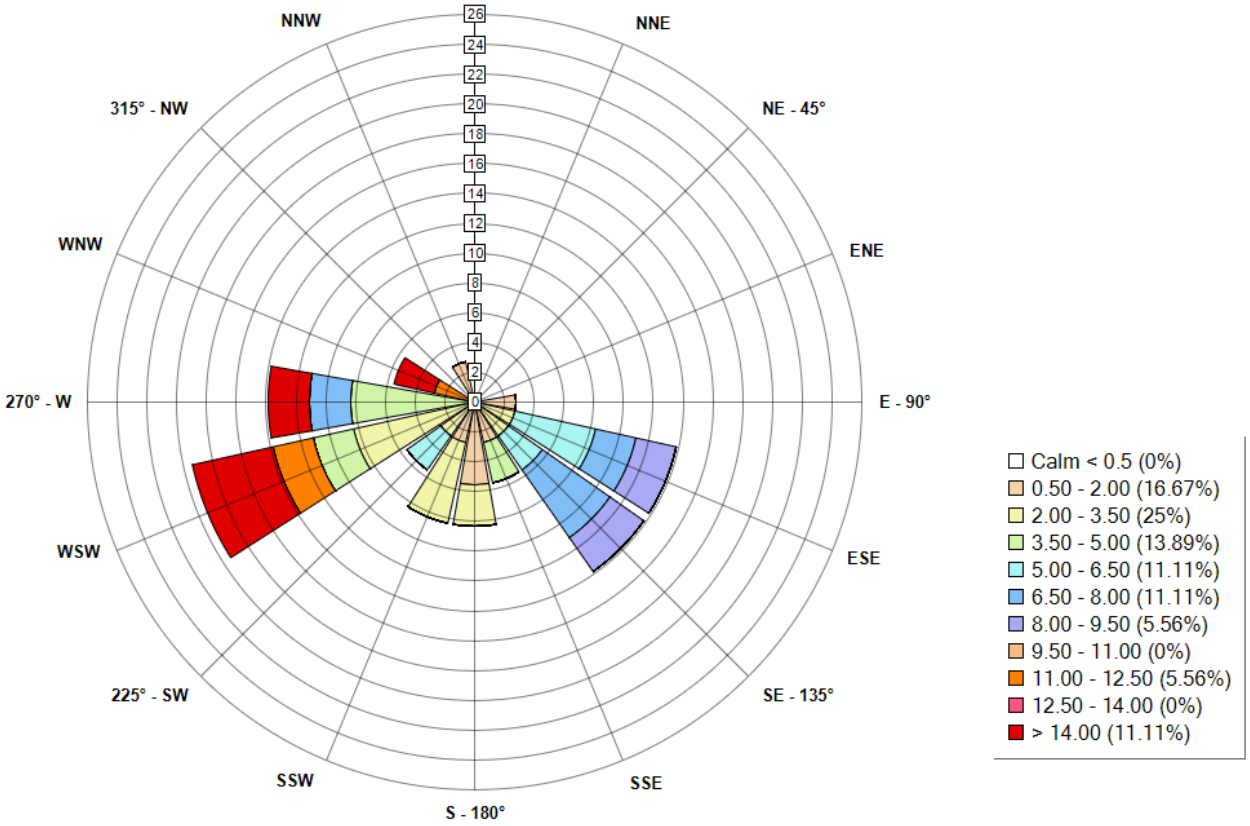
The investigation identifies the actual deposited dust conditions only at those points where samples are taken, when they are taken. Data derived through sampling and subsequent laboratory testing is interpreted by geologists, engineers or scientists who then render an opinion about overall dust conditions, the nature and extent of the contamination, its likely impact on the areas amenity and appropriate remediation measures. Actual conditions may differ from those inferred to exist, because no professional, no matter how well qualified, and no dust monitoring program, no matter how comprehensive, can cover the whole area under investigation.

This report, including data contained and its findings and conclusions, remains the intellectual property of Barnson Pty Ltd. A licence to use the report for the specific purpose identified is granted for the persons identified in that section after full payment for the services involved in preparation of the report. This report should not be used by persons or for purposes other than those stated, and should not be reproduced without the permission of Barnson Pty Ltd.

Appendix 2. Weathermation wind rose graph

Wind Rose Report for: GPM Lidsdale RG - Daily Summary

VWDIR Vector Wind Dir 10m and VWSP Vector Wind Spd 10m in km/h
Period: 2026-03-20 00:00 to 2026-04-24 23:59
Direction the Wind is Coming From



Appendix 3. ALS laboratory report EN2606427

CERTIFICATE OF ANALYSIS

Work Order	: **EN2606427**	Page	: 1 of 3
Client	: **BARNSON**	Laboratory	: Environmental Division Newcastle
Contact	: MICHAEL TODD	Contact	: Customer Service (ALS Mudgee)
Address	: 9 Cameron Place PO Box 8158 ORANGE 2800	Address	: 5/585 Maitland Road Mayfield West NSW Australia 2304
Telephone	: ----	Telephone	: +61 2 6372 6735
Project	: 43736 d21	Date Samples Received	: 28-Apr-2026 16:00
Order number	: ----	Date Analysis Commenced	: 04-May-2026
C-O-C number	: ----	Issue Date	: 07-May-2026 18:34
Sampler	: MICHAEL TODD		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 4		
No. of samples analysed	: 4		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Zoran Grozdanovski	Team Leader - Chemistry	Newcastle - Inorganics, Mayfield West, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Dust analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis. NATA accreditation does not apply for results reported in deposition units e.g., g/m².mth where the sampling procedure is not NATA accredited.
- Sample exposure period is outside the typical exposure period of 30 +/- 2 days as per AS3580.10.1/AS3580.10.2
- No copper sulfate correction was applied to sample 001.
- For dust analysis, the Limit of Reporting (LOR) referenced in the reports for deposited matter parameters represents the reporting increment rather than reporting limit.

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST** (Matrix: **AIR**)

Compound	CAS Number	LOR	Unit	Sample ID	DG29 20/03/26 - 24/04/26	DG30 20/03/26 - 24/04/26	DG31 20/03/26 - 24/04/26	DG32 20/03/26 - 24/04/26	----
				Sampling date / time	24-Apr-2026 00:00	24-Apr-2026 00:00	24-Apr-2026 00:00	24-Apr-2026 00:00	----
					EN2606427-001	EN2606427-002	EN2606427-003	EN2606427-004	--------
					Result	Result	Result	Result	----
EA120: Ash Content									
Ash Content	----	0.1	g/m².month		**0.1**	**0.3**	**0.2**	<0.1	**----**
Ash Content (mg)	----	2	mg		**2**	**7**	**5**	<2	**----**
EA125: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		<0.1	**0.3**	<0.1	**0.4**	**----**
Combustible Matter (mg)	----	2	mg		<2	**5**	<2	**9**	**----**
EA139: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m².month		**1.8**	**1.2**	**0.7**	**0.5**	**----**
Total Soluble Matter (mg)	----	2	mg		**38**	**24**	**15**	**10**	**----**
EA141: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		**0.1**	**0.6**	**0.2**	**0.4**	**----**
Total Insoluble Matter (mg)	----	2	mg		**3**	**12**	**5**	**9**	**----**
EA142: Total Solids									
Total Solids	----	0.1	g/m².month		**1.9**	**1.8**	**0.9**	**0.9**	**----**
Total Solids (mg)	----	2	mg		**41**	**36**	**20**	**19**	**----**

Appendix 4. Field Observations

Client	GPM Lidsdale
Contact	Tim Edward
Job number	43736
Date	24/4/2026
Investigator(s)	MT

Location	Appearance	Insects?	Algae?	Bird droppings?	Organic Matter?	Fine dust?	Coarse dust?	Comment/observations
DG29	Clear, colourless	No	No	No	No	No	No	
DG30	Clear, colourless	No	No	No	No	Yes	No	
DG31	Clear, colourless	No	No	No	Yes	No	No	
DG32	Clear, colourless	No	No	No	Yes	No	No	

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to.
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Attn: Tim Edwards
PO Box 132
Budgowoi NSW 2262

date.
23/6/2026

reference.
L43736dm23

Tim,

Deposited dust monitoring at GPM Lidsdale, May 2026

1. Background
GPM Lidsdale is undertaking earthworks in accordance with an operational environmental management plan (OEMP). The plan requires monthly deposited dust monitoring to be undertaken for amenity management.

2. Scope
Barnson Pty Ltd was commissioned by GPM to provide deposited dust monitoring at four locations on the Lidsdale site in accordance with the OEMP.

3. Site
The site is GPM Lidsdale, Lidsdale NSW (Figure 1).

4. Assessment
Dust deposition gauges were collected on 25 May 2026 by Michael Todd, Environmental Scientist of Barnson Pty Ltd. Laboratory prepared 4L amber glass bottles were installed in sampling stations above the ground with a glass funnel in a stopper fitted into the neck of the bottle at four locations around the site (Table 1).

The length of assessment was 30 days which is within the required 30±2 days sampling period. The sampling was undertaken in accordance with AS/NZS 3580.10.1:2003 *Methods for sampling and analysis ambient air method 10.1*. Analysis for total solids depositional dust, insoluble solids, combustible material and ash was undertaken at the NATA laboratory of ALS Newcastle.

Containers for DG31 and DG32 were damaged in transport to laboratory and the contents couldn't be recovered.

Table 1. Gauge locations

ID	Location	Sampling Date Range
DG29	Junction	25/4/2026 – 25/5/2026
DG30	Collins Access Road	25/4/2026 – 25/5/2026

5. Quality control assurance
The sampling was undertaken in accordance with AS3580.10.1 to achieve the data quality objectives. Samples were collected in laboratory prepared containers. The analyses were undertaken in the NATA accredited

laboratory of ALS Newcastle.

All media appropriate to the objectives of this investigation have been adequately analysed. It is concluded the data is usable for the purposes of the investigation.

Wind speed and direction data was recorded by a Weathermation automated weather station located at GPM Lidsdale.

6. Assessment criteria

The depositional dust assessment criteria of insoluble solids in the Lidsdale OEMP is 4g/m²/month.

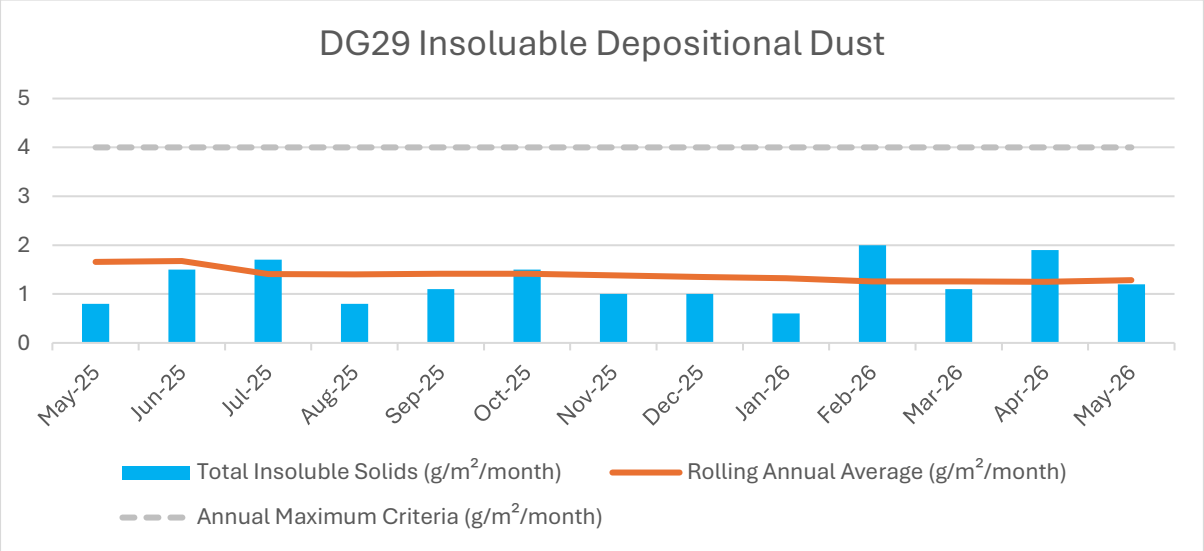
7. Results

All dust gauges recorded a level of insoluble solids below the threshold of 4 g/m²/month. The rolling annual average for insoluble solids is below 4 g/m²/month for all locations (Graph 1-4).

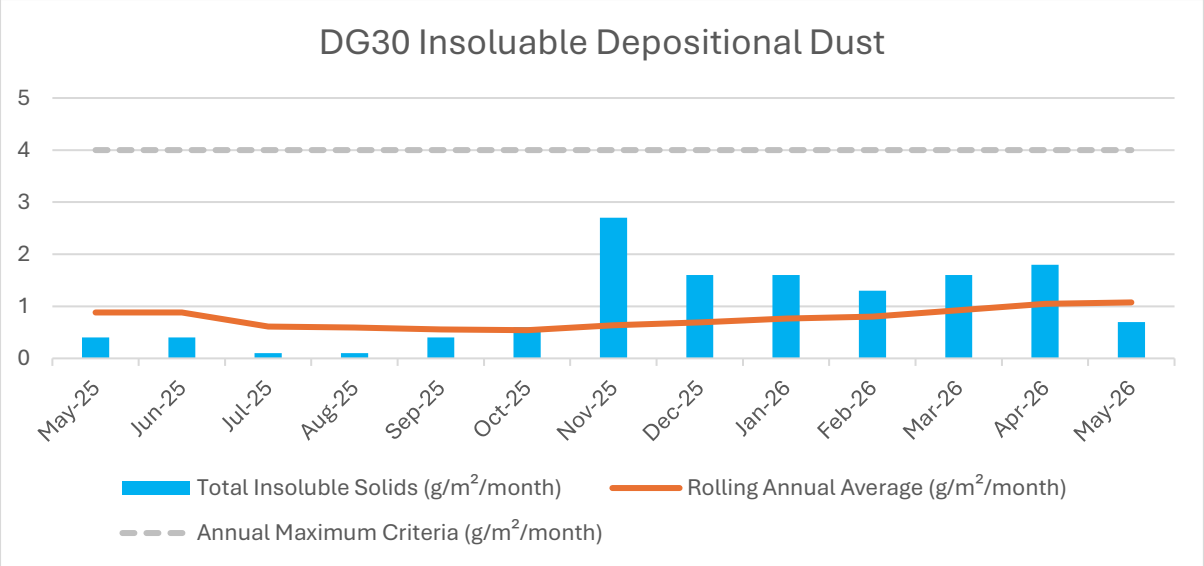
The prevailing wind direction for the sampling period was SE, maximum windspeed was >14 m/s from the WSW (Appendix 2). During the sampling period there were 17 days when the rain gauge recorded rainfall totaling 47.2mm.

Table 2. Deposited dust results, g/m²/month - May 2026

Sample ID	Monthly Insoluble solids	Monthly Combustible Matter	Monthly Ash Residue	Total Solids Per Sampling Period	Rolling Annual Average Insoluble Solids
DG29	1.2	0.2	1.0	1.6	1.3
DG30	0.7	0.2	0.5	1.4	1.1
OEMP Maximum Criteria	4.0	-	-	-	4.0



Graph 1. DG29 Guage monthly results



Graph 2. DG30 Gauge monthly results

8. Conclusion

The level of recorded insoluble solids for DG29 and GD30 dust gauges were below the adopted OEMP threshold. The rolling annual average for insoluble solids was also below the OEMP threshold for all locations.

Regards,

Michael Todd Hons. Bsc (Hons) EnvSc
Environmental Scientist

Checked,

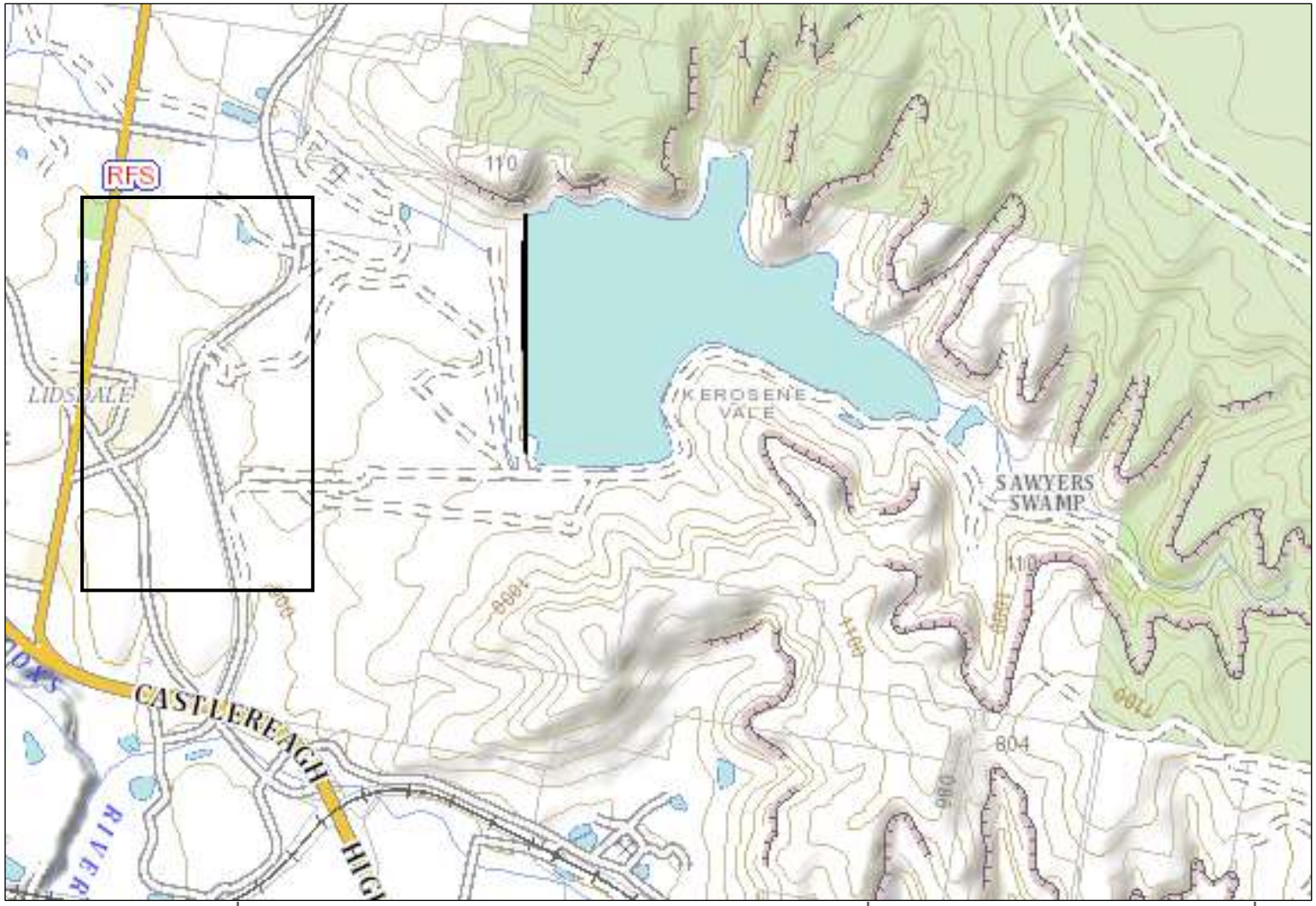
Greg Madafiglio CEnvP
Senior Environmental Scientist

Attachments

Figure 1.	Site locality
Figure 2.	Dust gauge locations
Appendix 1.	Report limitations and intellectual property
Appendix 2.	Weathermation wind rose graph

Appendix 3. ALS laboratory report EN2608087
Appendix 4. Field observations

Figures



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Scale: Approximate Scale 1:22000

0 220 440 880m

Client: GPM Lidsdale

Figure 1: Locality Map

Project: L43736dm23
Drawn: MT
Check: GM
Revision: A

Date: 31/10/2025



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Approximate Scale 1:13,000

Scale: 0 130 260 520m

Client: GPM Lidsdale

Figure 2: Monitoring locations

Project:	L43736dm23
Drawn:	MT
Check:	GM
Revision:	A
Date:	31/10/2025

Appendix 1. Report limitations and intellectual property

This report has been prepared for the use of the client to achieve the objectives given the clients requirements. The level of confidence of the conclusion reached is governed by the scope of the investigation and the availability and quality of existing data. Where limitations or uncertainties are known, they are identified in the report. No liability can be accepted for failure to identify conditions or issues which arise in the future and which could not reasonably have been predicted using the scope of the investigation and the information obtained.

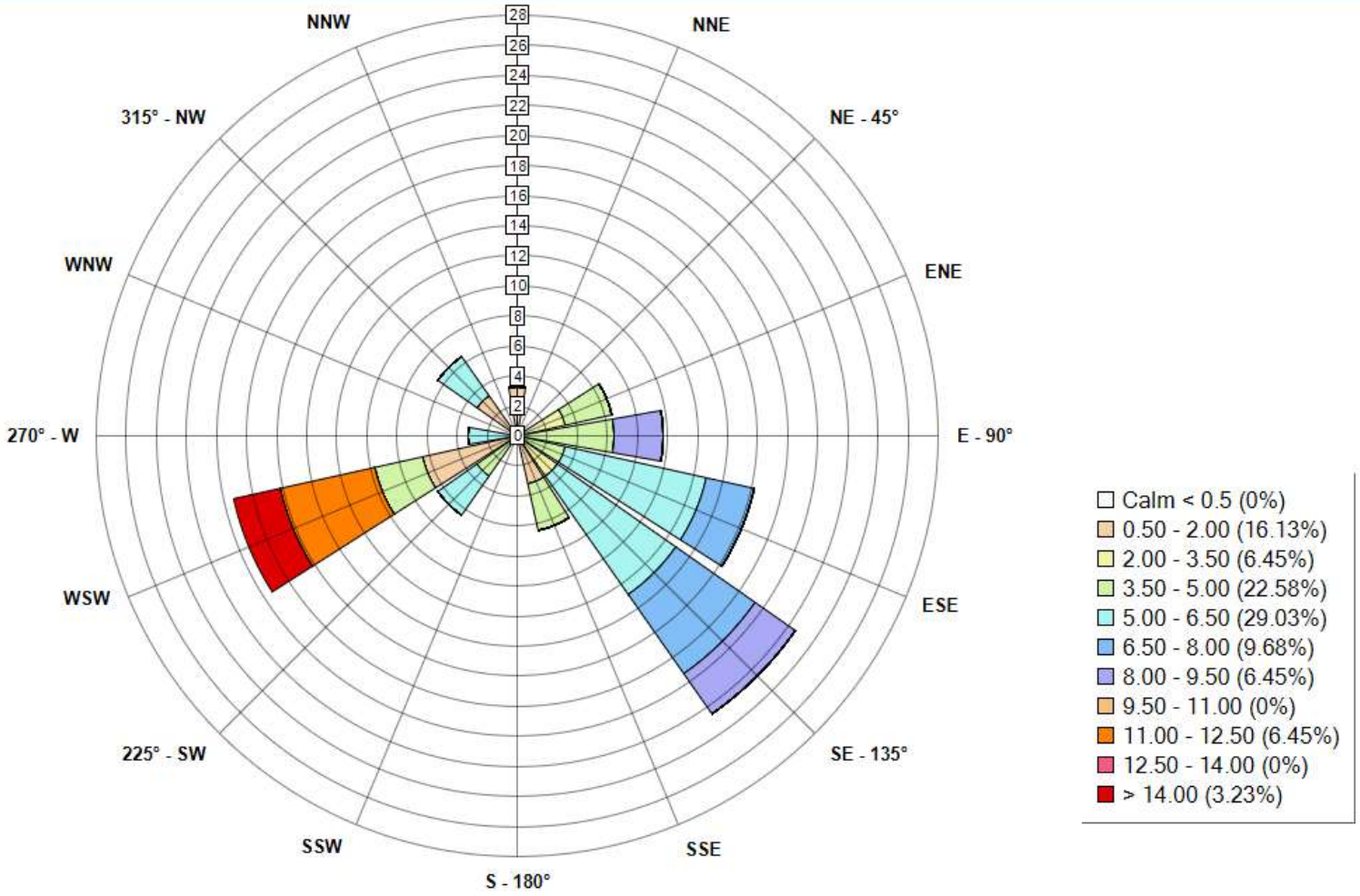
The investigation identifies the actual deposited dust conditions only at those points where samples are taken, when they are taken. Data derived through sampling and subsequent laboratory testing is interpreted by geologists, engineers or scientists who then render an opinion about overall dust conditions, the nature and extent of the contamination, its likely impact on the areas amenity and appropriate remediation measures. Actual conditions may differ from those inferred to exist, because no professional, no matter how well qualified, and no dust monitoring program, no matter how comprehensive, can cover the whole area under investigation.

This report, including data contained and its findings and conclusions, remains the intellectual property of Barnson Pty Ltd. A licence to use the report for the specific purpose identified is granted for the persons identified in that section after full payment for the services involved in preparation of the report. This report should not be used by persons or for purposes other than those stated, and should not be reproduced without the permission of Barnson Pty Ltd.

Appendix 2. Weathermation wind rose graph

Wind Rose Report for: GPM Lidsdale RG - Daily Summary

VWDIR Vector Wind Dir 10m and VWSP Vector Wind Spd 10m in km/h
Period: 2026-04-25 01:00 to 2026-05-25 23:59
Direction the Wind is Coming From



Appendix 3. ALS laboratory report EN2608087

CERTIFICATE OF ANALYSIS

Work Order	: **EN2608087**	Page	: 1 of 3
Client	: **BARNSON**	Laboratory	: Environmental Division Newcastle
Contact	: MICHAEL TODD	Contact	: Customer Service (ALS Mudgee)
Address	: 9 Cameron Place PO Box 8158 ORANGE 2800	Address	: 5/585 Maitland Road Mayfield West NSW Australia 2304
Telephone	: ----	Telephone	: +61 2 6372 6735
Project	: 43736 d23	Date Samples Received	: 27-May-2026 16:00
Order number	: ----	Date Analysis Commenced	: 04-Jun-2026
C-O-C number	: ----	Issue Date	: 11-Jun-2026 13:48
Sampler	: MICHAEL TODD		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Peta Christian	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
~ = Indicates an estimated value.

- Dust analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis.
- For dust analysis, the Limit of Reporting (LOR) referenced in the reports for deposited matter parameters represents the reporting increment rather than reporting limit.

Analytical Results

Sub-Matrix: DEPOSITIONAL DUST (Matrix: AIR)			Sample ID	DG29 25/04/26 - 25/05/26	DG30 25/04/26 - 25/05/26	----	----	----
			Sampling date / time	25-May-2026 00:00	25-May-2026 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EN2608087-001	EN2608087-002	--------	--------	--------
				Result	Result	----	----	----
EA120: Ash Content								
Ash Content	----	0.1	g/m².month	**1.0**	**0.5**	**----**	**----**	**----**
Ash Content (mg)	----	2	mg	**18**	**9**	**----**	**----**	**----**
EA125: Combustible Matter								
Combustible Matter	----	0.1	g/m².month	**0.2**	**0.2**	**----**	**----**	**----**
Combustible Matter (mg)	----	2	mg	**3**	**4**	**----**	**----**	**----**
EA139: Total Soluble Matter								
Total Soluble Matter	----	0.1	g/m².month	**0.4**	**0.7**	**----**	**----**	**----**
Total Soluble Matter (mg)	----	2	mg	**7**	**13**	**----**	**----**	**----**
EA141: Total Insoluble Matter								
Total Insoluble Matter	----	0.1	g/m².month	**1.2**	**0.7**	**----**	**----**	**----**
Total Insoluble Matter (mg)	----	2	mg	**21**	**13**	**----**	**----**	**----**
EA142: Total Solids								
Total Solids	----	0.1	g/m².month	**1.6**	**1.4**	**----**	**----**	**----**
Total Solids (mg)	----	2	mg	**28**	**26**	**----**	**----**	**----**

Appendix 4. Field Observations

Client	GPM Lidsdale
Contact	Tim Edward
Job number	43736
Date	25/5/2026
Investigator(s)	MT

Location	Appearance	Insects?	Algae?	Bird droppings?	Organic Matter?	Fine dust?	Coarse dust?	Comment/observations
DG29	Clear, colourless	Yes	No	No	No	Yes	No	
DG30	Clear, colourless	No	No	No	Yes	Yes	No	
DG31	Clear, colourless	No	No	No	Yes	No	No	
DG32	Clear, colourless	No	No	No	Yes	Yes	No	

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1300 BARNSON (1300 227 676)
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abn. 43 088 342 625

to.
GPM Lidsdale
Attn: Tim Edwards
PO Box 132
Budgowoi NSW 2262

date.
24/7/2026

reference.
L43736dm24

Tim,

Deposited dust monitoring at GPM Lidsdale, June 2026

1. Background

GPM Lidsdale is undertaking earthworks in accordance with an operational environmental management plan (OEMP). The plan requires monthly deposited dust monitoring to be undertaken for amenity management.

2. Scope

Barnson Pty Ltd was commissioned by GPM to provide deposited dust monitoring at four locations on the Lidsdale site in accordance with the OEMP.

3. Site

The site is GPM Lidsdale, Lidsdale NSW (Figure 1).

4. Assessment

Dust deposition gauges were collected on 25 June 2026 by Michael Todd, Environmental Scientist of Barnson Pty Ltd. Laboratory prepared 4L amber glass bottles were installed in sampling stations above the ground with a glass funnel in a stopper fitted into the neck of the bottle at four locations around the site (Table 1).

The length of assessment was 31 days which is within the required 30±2 days sampling period. The sampling was undertaken in accordance with AS/NZS 3580.10.1:2003 *Methods for sampling and analysis ambient air method 10.1*. Analysis for total solids depositional dust, insoluble solids, combustible material and ash was undertaken at the NATA laboratory of ALS Newcastle.

Table 1. Gauge locations

ID	Location	Sampling Date Range
DG29	Junction	25/5/2026 – 25/6/2026
DG30	Collins Access Road	25/5/2026 – 25/6/2026
DG31	Skelly Road	25/5/2026 – 25/6/2026
DG32	Lidsdale Fire Shed/Wolgan Road	25/5/2026 – 25/6/2026

5. Quality control assurance

The sampling was undertaken in accordance with AS3580.10.1 to achieve the data quality objectives. Samples were collected in laboratory prepared containers. The analyses were undertaken in the NATA accredited laboratory of ALS Newcastle.

All media appropriate to the objectives of this investigation have been adequately analysed. It is concluded the data is usable for the purposes of the investigation.

Wind speed and direction data was recorded by a Weathermation automated weather station located at GPM Lidsdale.

6. Assessment criteria

The depositional dust assessment criteria of insoluble solids in the Lidsdale OEMP is 4g/m^2/month.

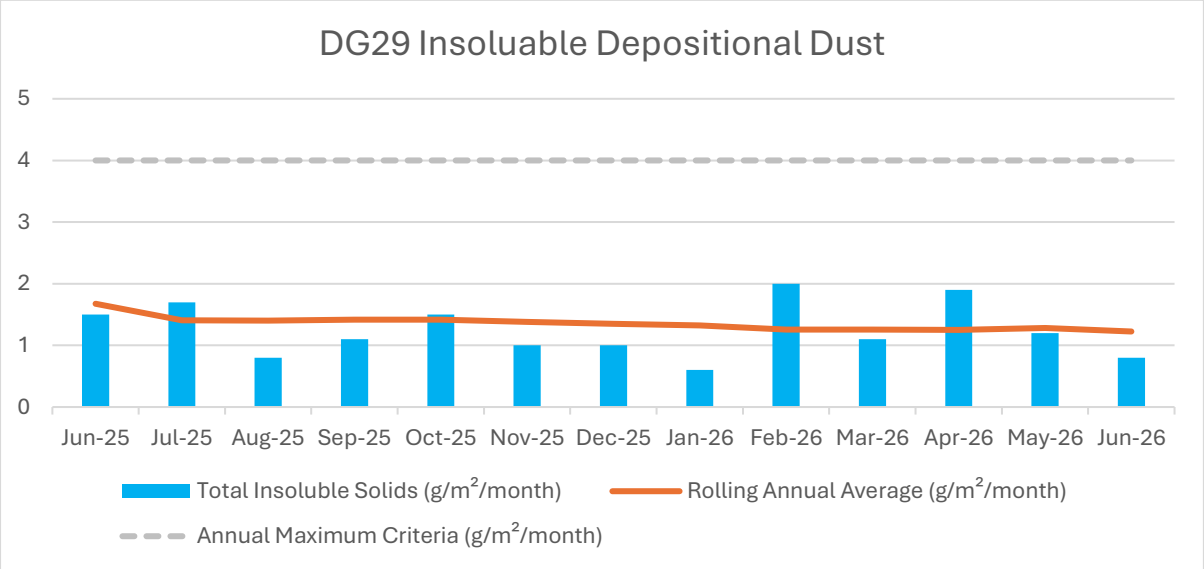
7. Results

All dust gauges recorded a level of insoluble solids below the threshold of 4 g/m^2/month. The rolling annual average for insoluble solids is below 4 g/m^2/month for all locations (Graph 1-4).

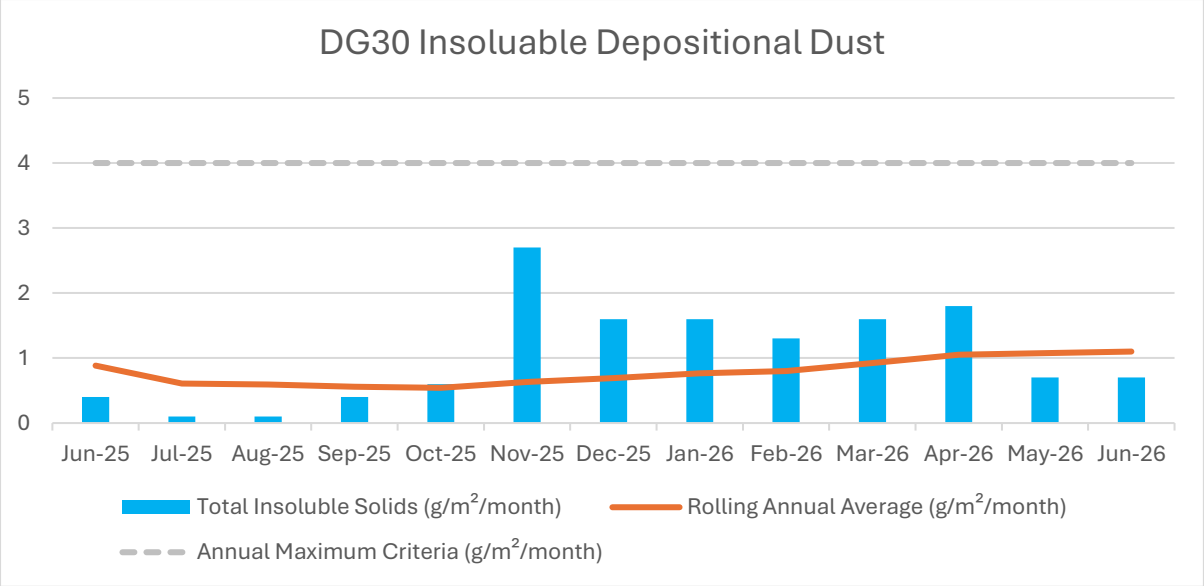
The prevailing wind direction for the sampling period was SE, maximum windspeed was >14 m/s from the WSW, W, WNW, NW and NNW (Appendix 2). During the sampling period there were 21 days when the rain gauge recorded rainfall totaling 61mm.

Table 2. Deposited dust results, g/m^2/month - June 2026

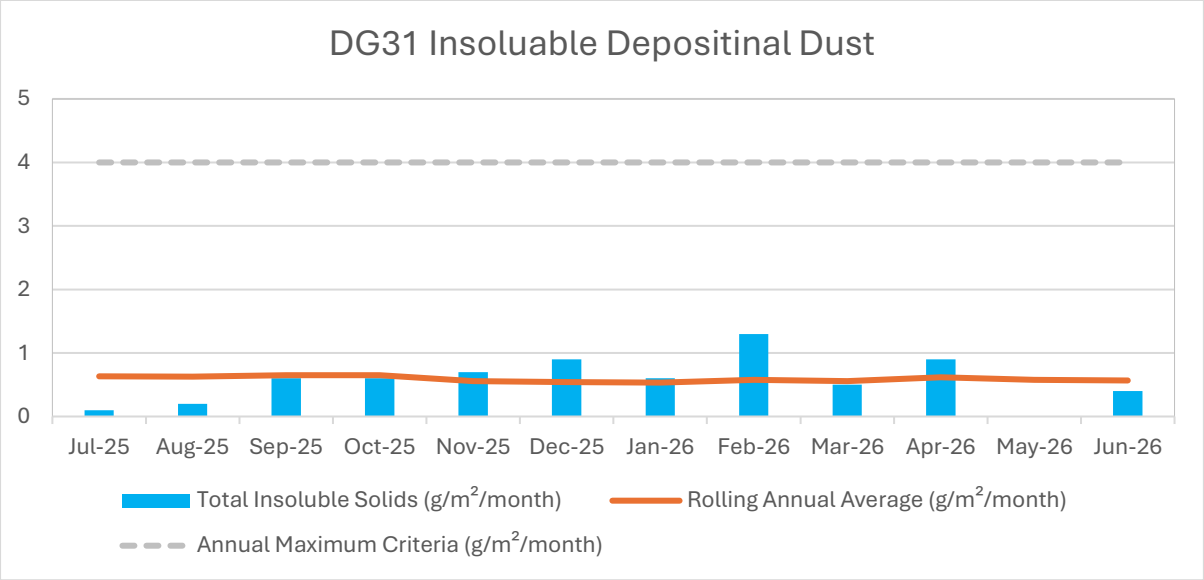
Sample ID	Monthly Insoluble solids	Monthly Combustible Matter	Monthly Ash Residue	Total Solids Per Sampling Period	Rolling Annual Average Insoluble Solids
DG29	0.8	0.1	0.7	1.3	1.2
DG30	0.7	0.4	0.3	0.7	1.1
DG31	0.4	0.4	<0.1	0.7	0.6
DG32	0.6	0.5	0.1	3.0	1.0
OEMP Maximum Criteria	4.0	-	-	-	4.0



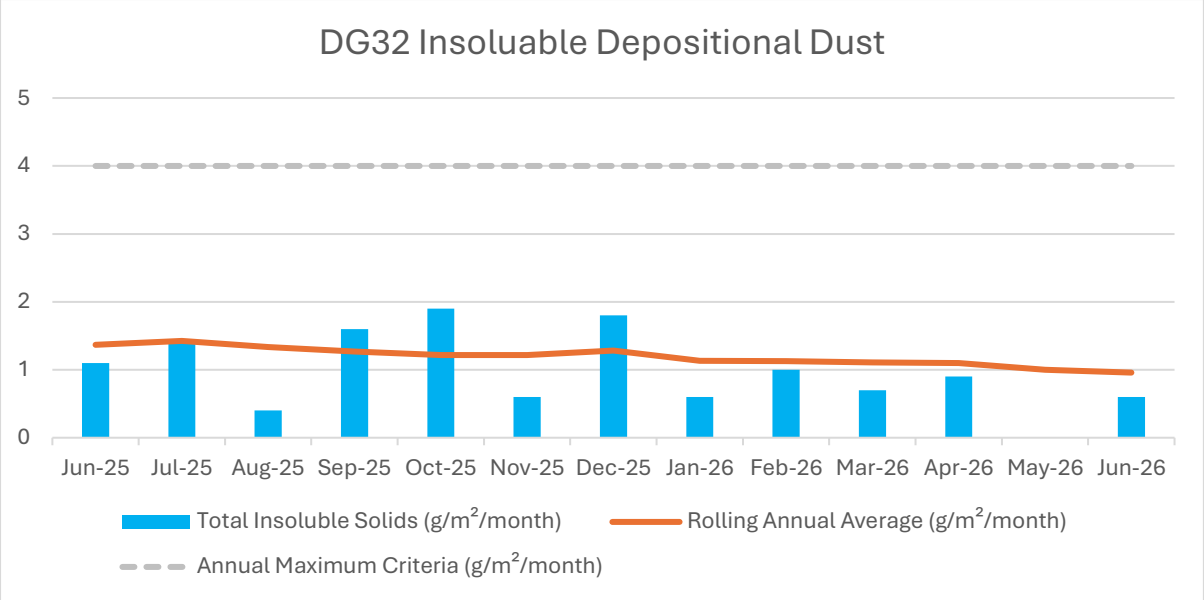
Graph 1. DG29 Guage monthly results



Graph 2. DG30 Gauge monthly results



Graph 3. DG31 Gauge monthly results



Graph 4. DG32 Gauge monthly results

8. Conclusion

The level of recorded insoluble solids for all dust gauges were below the adopted OEMP threshold. The rolling annual average for insoluble solids was also below the OEMP threshold for all locations.

Regards,

Michael Todd Hons. Bsc (Hons) EnvSc
Environmental Scientist

Checked,

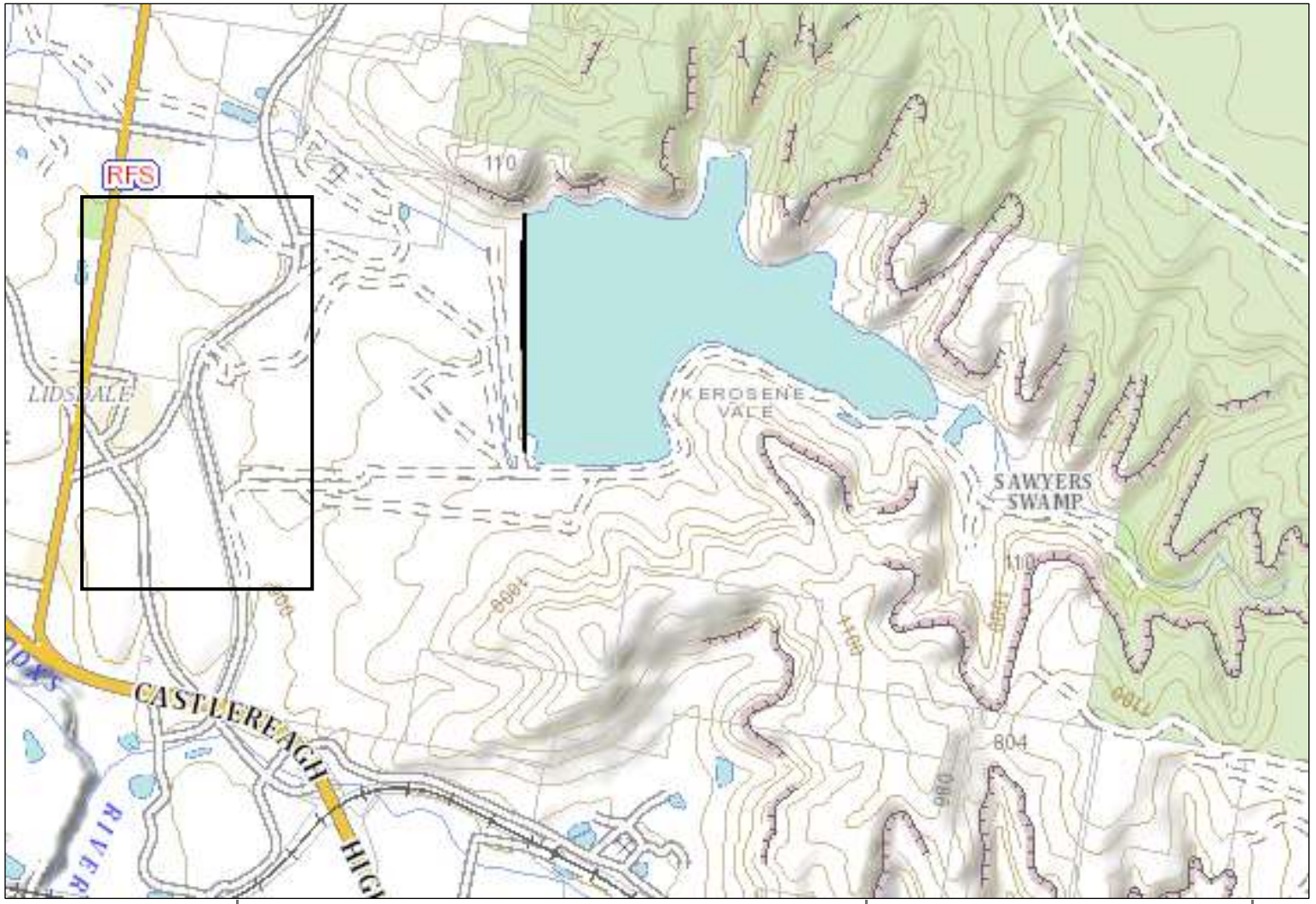
Greg Madafiglio CEnvP
Senior Environmental Scientist

Attachments

Figure 1.	Site locality
Figure 2.	Dust gauge locations
Appendix 1.	Report limitations and intellectual property
Appendix 2.	Weathermation wind rose graph

Appendix 3. ALS laboratory report EN2609822
Appendix 4. Field observations

Figures



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Scale: Approximate Scale 1:22000

0 220 440 880m

Client: GPM Lidsdale

Figure 1: Locality Map

Project:	L43736dm24
Drawn:	MT
Check:	GM
Revision:	A
Date:	31/10/2025



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Approximate Scale 1:13,000

Scale: 0 130 260 520m

Client: GPM Lidsdale

Figure 2: Monitoring locations

Project:	L43736dm24
Drawn:	MT
Check:	GM
Revision:	A
Date:	31/10/2025

Appendix 1. Report limitations and intellectual property

This report has been prepared for the use of the client to achieve the objectives given the clients requirements. The level of confidence of the conclusion reached is governed by the scope of the investigation and the availability and quality of existing data. Where limitations or uncertainties are known, they are identified in the report. No liability can be accepted for failure to identify conditions or issues which arise in the future and which could not reasonably have been predicted using the scope of the investigation and the information obtained.

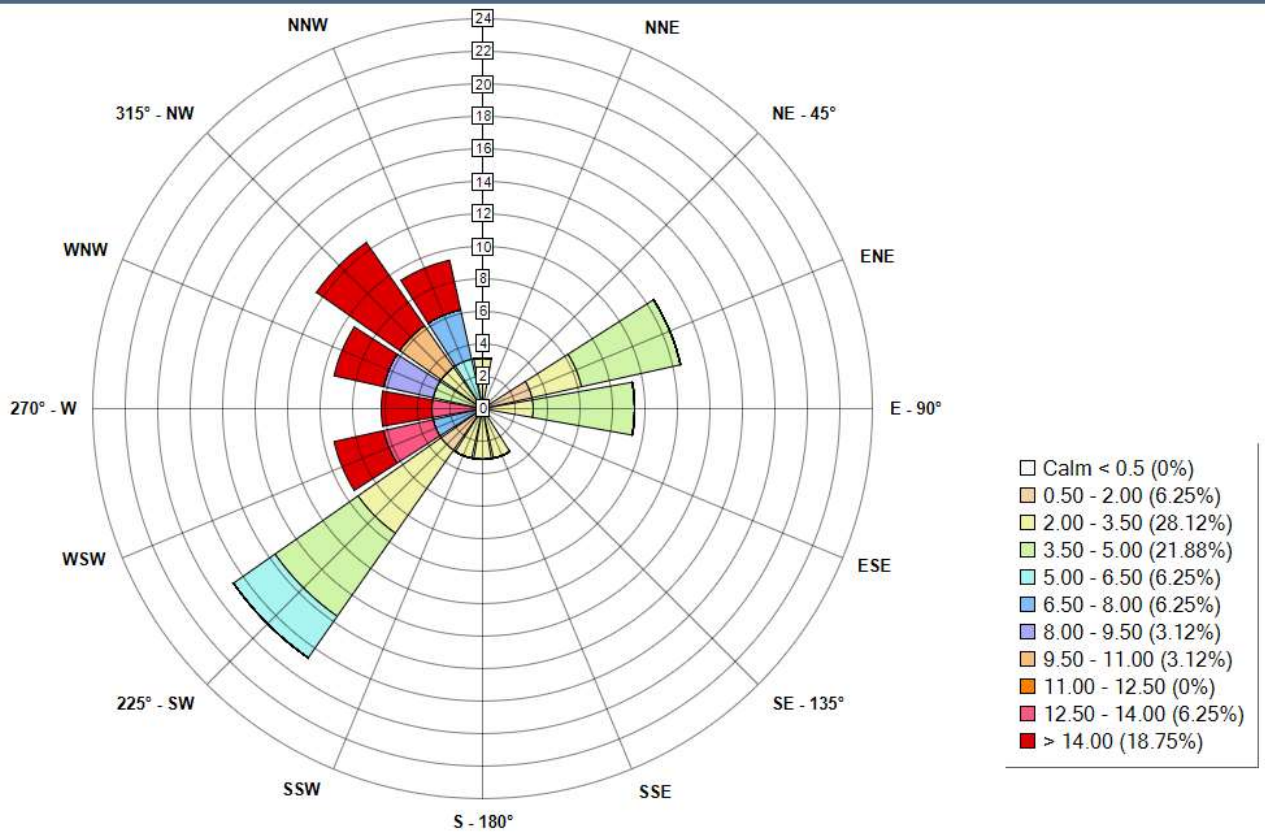
The investigation identifies the actual deposited dust conditions only at those points where samples are taken, when they are taken. Data derived through sampling and subsequent laboratory testing is interpreted by geologists, engineers or scientists who then render an opinion about overall dust conditions, the nature and extent of the contamination, its likely impact on the areas amenity and appropriate remediation measures. Actual conditions may differ from those inferred to exist, because no professional, no matter how well qualified, and no dust monitoring program, no matter how comprehensive, can cover the whole area under investigation.

This report, including data contained and its findings and conclusions, remains the intellectual property of Barnson Pty Ltd. A licence to use the report for the specific purpose identified is granted for the persons identified in that section after full payment for the services involved in preparation of the report. This report should not be used by persons or for purposes other than those stated, and should not be reproduced without the permission of Barnson Pty Ltd.

Appendix 2. Weathermation wind rose graph

Wind Rose Report for: GPM Lidsdale RG - Daily Summary

VWDIR Vector Wind Dir 10m and VWSP Vector Wind Spd 10m in km/h
Period: 2026-05-25 00:00 to 2026-06-25 23:59
Direction the Wind is Coming From



Appendix 3. ALS laboratory report EN2609822

CERTIFICATE OF ANALYSIS

Work Order	: **EN2609822**	Page	: 1 of 3
Client	: **BARNSON**	Laboratory	: Environmental Division Newcastle
Contact	: MICHAEL TODD	Contact	: Customer Service (ALS Mudgee)
Address	: 9 Cameron Place PO Box 8158 ORANGE 2800	Address	: 5/585 Maitland Road Mayfield West NSW Australia 2304
Telephone	: ----	Telephone	: +61 2 6372 6735
Project	: 43736 d24	Date Samples Received	: 30-Jun-2026 17:00
Order number	: ----	Date Analysis Commenced	: 06-Jul-2026
C-O-C number	: ----	Issue Date	: 10-Jul-2026 16:29
Sampler	: MICHAEL TODD		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Zoran Grozdanovski	Team Leader - Chemistry	Newcastle - Inorganics, Mayfield West, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
~ = Indicates an estimated value.

- Dust analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis.
- No copper sulfate correction was applied to sample 004.
- For dust analysis, the Limit of Reporting (LOR) referenced in the reports for deposited matter parameters represents the reporting increment rather than reporting limit.

Analytical Results

Sub-Matrix: DEPOSITIONAL DUST (Matrix: AIR)			Sample ID	DG29 25/05/26 - 25/06/26	DG30 25/05/26 - 25/06/26	DG31 25/05/26 - 25/06/26	DG32 25/05/26 - 25/06/26	----
			Sampling date / time	25-Jun-2026 00:00	25-Jun-2026 00:00	25-Jun-2026 00:00	25-Jun-2026 00:00	----
Compound	CAS Number	LOR	Unit	EN2609822-001	EN2609822-002	EN2609822-003	EN2609822-004	--------
				Result	Result	Result	Result	----
EA120: Ash Content								
Ash Content	----	0.1	g/m².month	**0.7**	**0.3**	<0.1	**0.1**	**----**
Ash Content (mg)	----	2	mg	**12**	**6**	<2	<2	**----**
EA125: Combustible Matter								
Combustible Matter	----	0.1	g/m².month	**0.1**	**0.4**	**0.4**	**0.5**	**----**
Combustible Matter (mg)	----	2	mg	**2**	**6**	**8**	**10**	**----**
EA139: Total Soluble Matter								
Total Soluble Matter	----	0.1	g/m².month	**0.5**	<0.1	**0.3**	**2.4**	**----**
Total Soluble Matter (mg)	----	2	mg	**10**	<2	**6**	**43**	**----**
EA141: Total Insoluble Matter								
Total Insoluble Matter	----	0.1	g/m².month	**0.8**	**0.7**	**0.4**	**0.6**	**----**
Total Insoluble Matter (mg)	----	2	mg	**14**	**12**	**8**	**11**	**----**
EA142: Total Solids								
Total Solids	----	0.1	g/m².month	**1.3**	**0.7**	**0.7**	**3.0**	**----**
Total Solids (mg)	----	2	mg	**24**	**12**	**14**	**54**	**----**

Appendix 4. Field Observations

Client	GPM Lidsdale
Contact	Tim Edward
Job number	43736
Date	25/6/2026
Investigator(s)	MT

Location	Appearance	Insects?	Algae?	Bird droppings?	Organic Matter?	Fine dust?	Coarse dust?	Comment/observations
DG29	Clear, colourless	Yes	No	No	No	Yes	No	
DG30	Clear, colourless	No	No	No	Yes	Yes	No	
DG31	Clear, colourless	No	No	No	Yes	No	No	
DG32	Clear, colourless	No	No	No	Yes	Yes	No	

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1300 BARNSON (1300 227 676)
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abn. 43 088 342 625

to.
GPM Lidsdale
Attn: Tim Edwards
PO Box 132
Budgowoi NSW 2262

date.
19/8/2026

reference.
L43736dm25

Tim,

Deposited dust monitoring at GPM Lidsdale, July 2026

1. Background
GPM Lidsdale is undertaking earthworks in accordance with an operational environmental management plan (OEMP). The plan requires monthly deposited dust monitoring to be undertaken for amenity management.

2. Scope
Barnson Pty Ltd was commissioned by GPM to provide deposited dust monitoring at four locations on the Lidsdale site in accordance with the OEMP.

3. Site
The site is GPM Lidsdale, Lidsdale NSW (Figure 1).

4. Assessment
Dust deposition gauges were collected on 24 July 2026 by Michael Todd, Environmental Scientist of Barnson Pty Ltd. Laboratory prepared 4L amber glass bottles were installed in sampling stations above the ground with a glass funnel in a stopper fitted into the neck of the bottle at four locations around the site (Table 1).

The length of assessment was 30 days which is within the required 30±2 days sampling period. The sampling was undertaken in accordance with AS/NZS 3580.10.1:2003 *Methods for sampling and analysis ambient air method 10.1*. Analysis for total solids depositional dust, insoluble solids, combustible material and ash was undertaken at the NATA laboratory of ALS Newcastle.

Table 1. Gauge locations

ID	Location	Sampling Date Range	Number of monitoring days
DG29	Junction	25/6/2026 – 24/7/2026	30
DG30	Collins Access Road	25/6/2026 – 24/7/2026	30
DG31	Skelly Road	25/6/2026 – 24/7/2026	30
DG32	Lidsdale Fire Shed/Wolgan Road	25/6/2026 – 24/7/2026	30

5. Quality control assurance
The sampling was undertaken in accordance with AS3580.10.1 to achieve the data quality objectives. Samples were collected in laboratory prepared containers. The analyses were undertaken in the NATA accredited

laboratory of ALS Newcastle.

All media appropriate to the objectives of this investigation have been adequately analysed. It is concluded the data is usable for the purposes of the investigation.

Wind speed and direction data was recorded by a Weathermation automated weather station located at GPM Lidsdale.

6. Assessment criteria

The depositional dust assessment criteria of insoluble solids in the Lidsdale OEMP is 4g/m²/month.

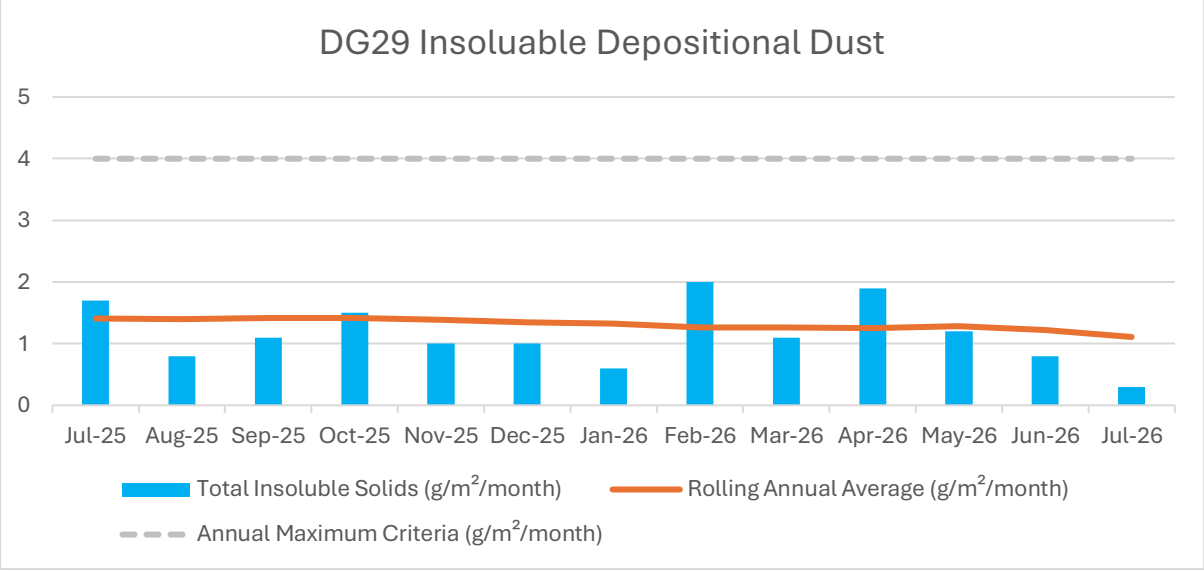
7. Results

All dust gauges recorded a level of insoluble solids below the threshold of 4 g/m²/month. The rolling annual average for insoluble solids is below 4 g/m²/month for all locations (Graph 1-4).

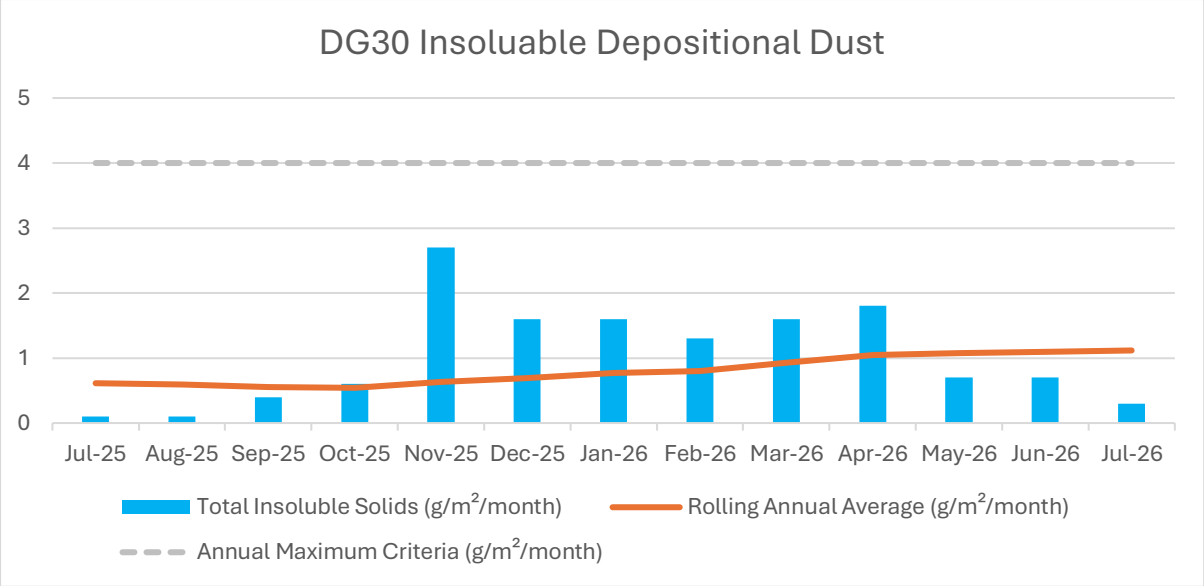
The prevailing wind direction for the sampling period was NNW, W and SE. The maximum windspeed was >14 m/s from the WSW, W and NW (Appendix 2). During the sampling period there were 17 days when the rain gauge recorded rainfall totaling 32mm.

Table 2. Deposited dust results, g/m²/month - July 2026

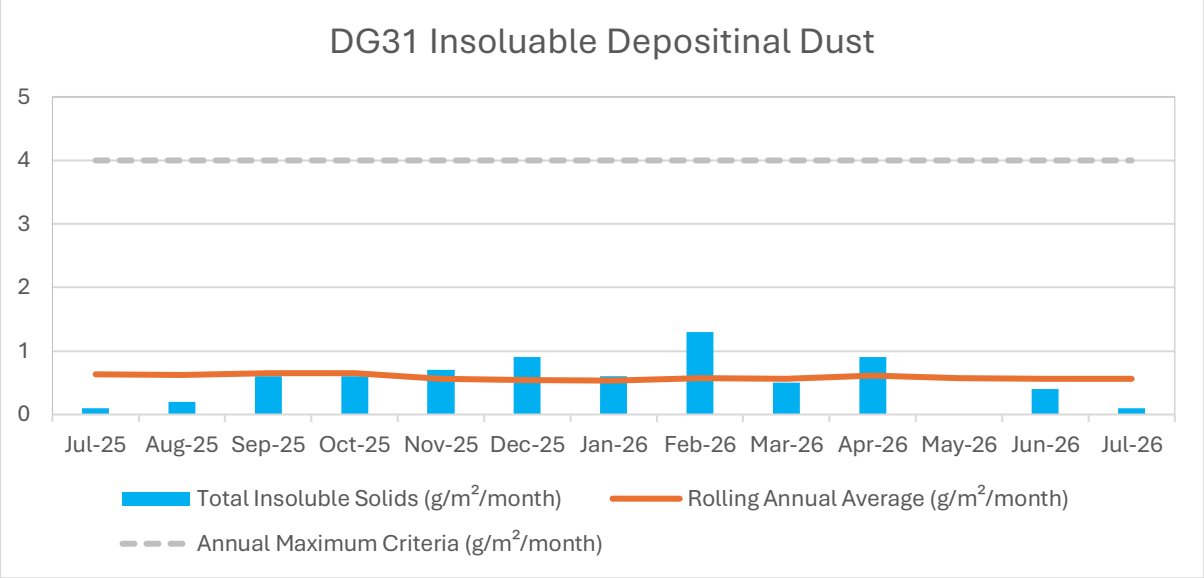
Sample ID	Monthly Insoluble solids	Monthly Combustible Matter	Monthly Ash Residue	Total Solids Per Sampling Period	Rolling Annual Average Insoluble Solids
DG29	0.7	0.1	0.2	0.7	1.1
DG30	0.9	0.1	0.2	0.9	1.1
DG31	0.1	0.1	<0.1	0.1	0.6
DG32	0.3	0.3	<0.1	0.3	0.9
OEMP Maximum Criteria	4.0	-	-	-	4.0



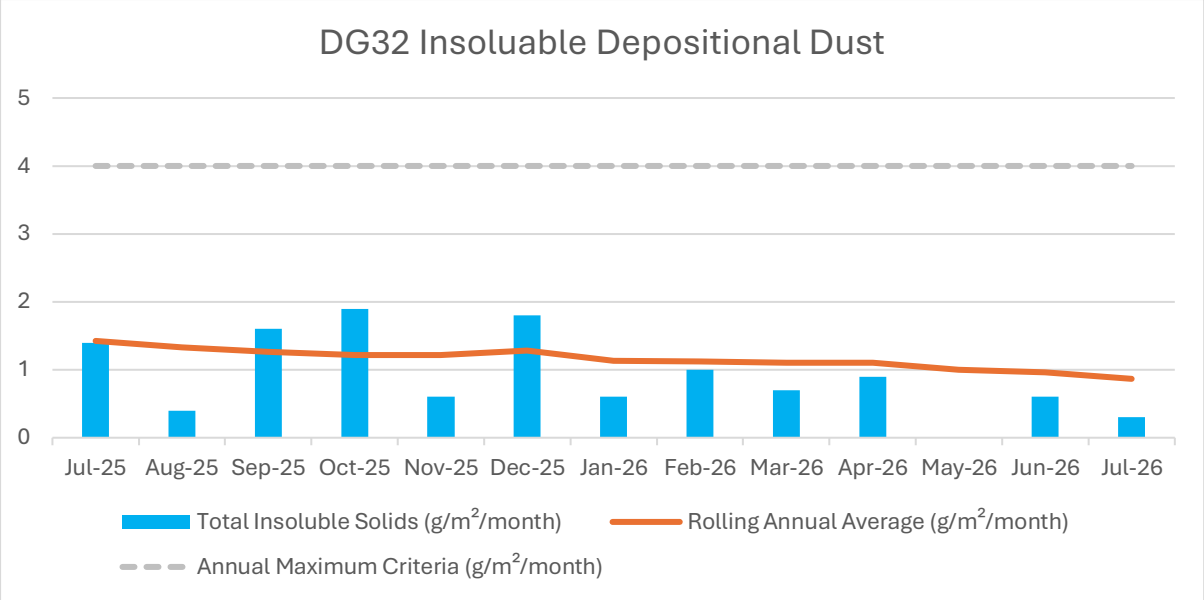
Graph 1. DG29 Guage monthly results



Graph 2. DG30 Gauge monthly results



Graph 3. DG31 Gauge monthly results



Graph 4. DG32 Gauge monthly results

8. Conclusion

The level of recorded insoluble solids for all dust gauges were below the adopted OEMP threshold. The rolling annual average for insoluble solids was also below the OEMP threshold for all locations.

Regards,

Michael Todd Hons. Bsc (Hons) EnvSc
Environmental Scientist

Checked,

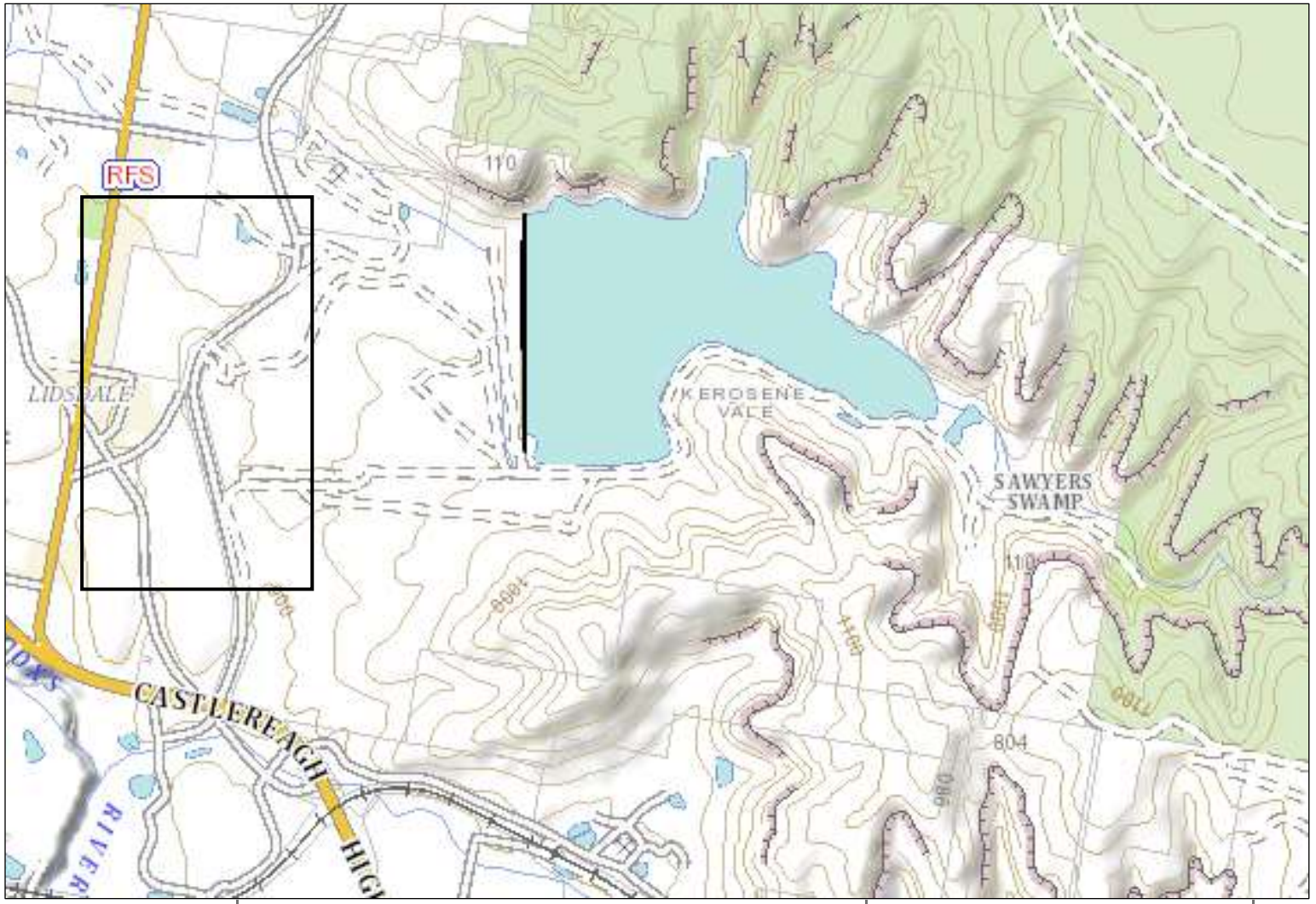
Leah Desborough CEnvP
Senior Environmental Scientist

Attachments

Figure 1.	Site locality
Figure 2.	Dust gauge locations
Appendix 1.	Report limitations and intellectual property
Appendix 2.	Weathermation wind rose graph

Appendix 3. ALS laboratory report EN2609822
Appendix 4. Field observations

Figures



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Scale: Approximate Scale 1:22000

0 220 440 880m

Client: GPM Lidsdale

Figure 1: Locality Map

Project: L43736dm
Drawn: MT
Check: GM
Revision: A

Date: 31/10/2025



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Approximate Scale 1:13,000

Scale: 0 130 260 520m

Client: GPM Lidsdale

Figure 2: Monitoring locations

Project:	L43736dm
Drawn:	MT
Check:	GM
Revision:	A
Date:	31/10/2025

Appendix 1. Report limitations and intellectual property

This report has been prepared for the use of the client to achieve the objectives given the clients requirements. The level of confidence of the conclusion reached is governed by the scope of the investigation and the availability and quality of existing data. Where limitations or uncertainties are known, they are identified in the report. No liability can be accepted for failure to identify conditions or issues which arise in the future and which could not reasonably have been predicted using the scope of the investigation and the information obtained.

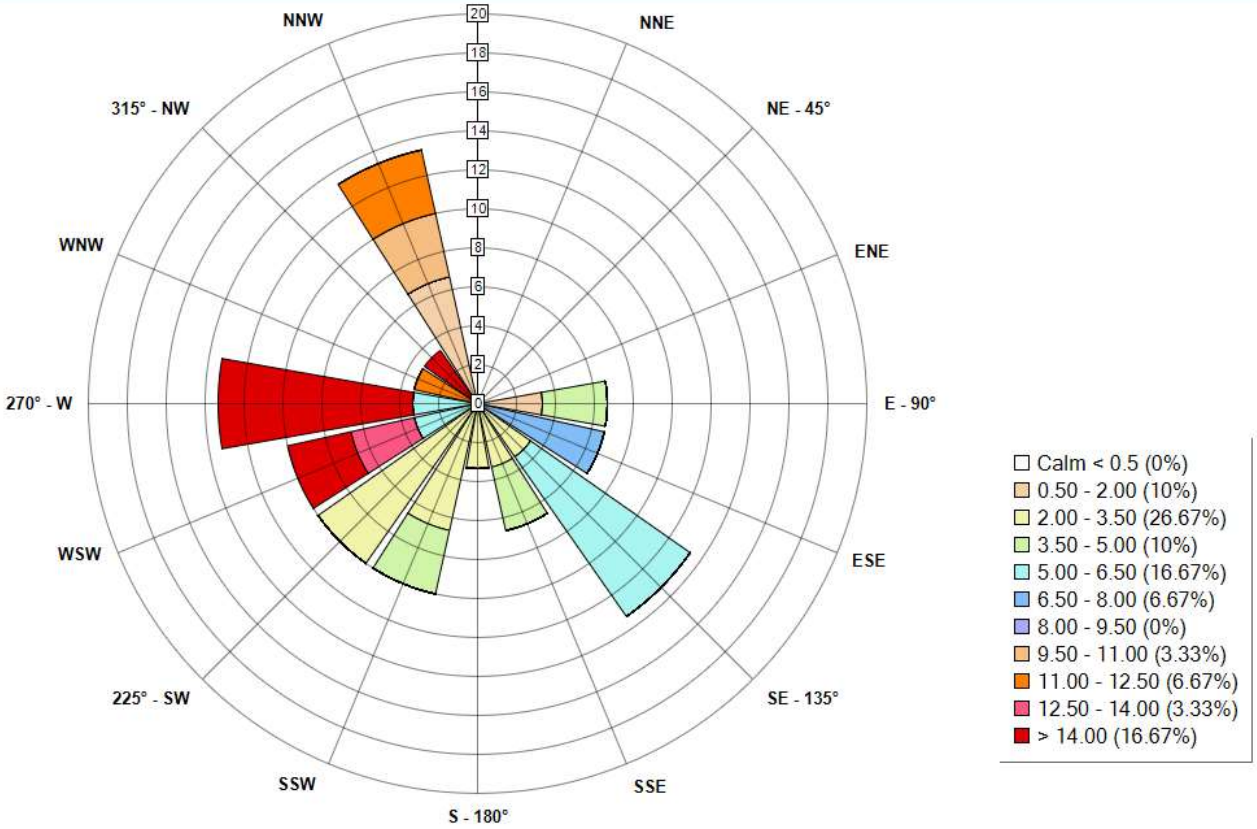
The investigation identifies the actual deposited dust conditions only at those points where samples are taken, when they are taken. Data derived through sampling and subsequent laboratory testing is interpreted by geologists, engineers or scientists who then render an opinion about overall dust conditions, the nature and extent of the contamination, its likely impact on the areas amenity and appropriate remediation measures. Actual conditions may differ from those inferred to exist, because no professional, no matter how well qualified, and no dust monitoring program, no matter how comprehensive, can cover the whole area under investigation.

This report, including data contained and its findings and conclusions, remains the intellectual property of Barnson Pty Ltd. A licence to use the report for the specific purpose identified is granted for the persons identified in that section after full payment for the services involved in preparation of the report. This report should not be used by persons or for purposes other than those stated, and should not be reproduced without the permission of Barnson Pty Ltd.

Appendix 2. Weathermation wind rose graph

Wind Rose Report for: GPM Lidsdale RG - Daily Summary

VWDIR Vector Wind Dir 10m and VWSP Vector Wind Spd 10m in km/h
Period: 2026-06-25 00:00 to 2026-07-24 23:59
Direction the Wind is Coming From



Appendix 3. ALS laboratory report EN2609822

CERTIFICATE OF ANALYSIS

Work Order	: **EN2611437**	Page	: 1 of 3
Client	: **BARNSON**	Laboratory	: Environmental Division Newcastle
Contact	: MICHAEL TODD	Contact	: Customer Service (ALS Mudgee)
Address	: 9 Cameron Place PO Box 8158 ORANGE 2800	Address	: 5/585 Maitland Road Mayfield West NSW Australia 2304
Telephone	: ----	Telephone	: +61 2 6372 6735
Project	: ----	Date Samples Received	: 27-Jul-2026 16:00
Order number	: ----	Date Analysis Commenced	: 30-Jul-2026
C-O-C number	: ----	Issue Date	: 06-Aug-2026 18:03
Sampler	: MICHAEL TODD		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Zoran Grozdanovski	Team Leader - Chemistry	Newcastle - Inorganics, Mayfield West, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
~ = Indicates an estimated value.

- Dust analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis.
- No copper sulfate correction was applied to sample 002.
- For dust analysis, the Limit of Reporting (LOR) referenced in the reports for deposited matter parameters represents the reporting increment rather than reporting limit.

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST** (Matrix: **AIR**)

Compound	CAS Number	LOR	Unit	Sample ID	DG29 25/06/26 - 24/07/26	DG30 25/06/26 - 24/07/26	DG31 25/06/26 - 24/07/26	DG32 25/06/26 - 24/07/26	----
				Sampling date / time	24-Jul-2026 00:00	24-Jul-2026 00:00	24-Jul-2026 00:00	24-Jul-2026 00:00	----
					EN2611437-001	EN2611437-002	EN2611437-003	EN2611437-004	--------
					Result	Result	Result	Result	----
EA120: Ash Content									
Ash Content	----	0.1	g/m².month		**0.2**	**0.2**	<0.1	<0.1	**----**
Ash Content (mg)	----	2	mg		**3**	**3**	<2	<2	**----**
EA125: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		**0.1**	**0.1**	**0.1**	**0.3**	**----**
Combustible Matter (mg)	----	2	mg		**2**	**2**	<2	**5**	**----**
EA139: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m².month		**0.4**	**0.6**	<0.1	<0.1	**----**
Total Soluble Matter (mg)	----	2	mg		**6**	**11**	<2	<2	**----**
EA141: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		**0.3**	**0.3**	**0.1**	**0.3**	**----**
Total Insoluble Matter (mg)	----	2	mg		**5**	**5**	<2	**5**	**----**
EA142: Total Solids									
Total Solids	----	0.1	g/m².month		**0.7**	**0.9**	**0.1**	**0.3**	**----**
Total Solids (mg)	----	2	mg		**11**	**16**	<2	**5**	**----**

Appendix 4. Field Observations

Client	GPM Lidsdale
Contact	Tim Edward
Job number	43736
Date	24/7/2026
Investigator(s)	MT

Location	Liquid Appearance	Insects?	Algae?	Bird droppings?	Organic Matter?	Fine dust?	Coarse dust?	Comment/observations
DG29	Clear, colourless	Yes	No	No	No	Yes	No	
DG30	Clear, colourless	No	No	No	No	Yes	No	
DG31	Clear, colourless	No	No	No	No	No	No	
DG32	Clear, colourless	No	No	No	No	Yes	No	

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1300 BARNSON (1300 227 676)
accounts@barnson.com.au
abn. 43 088 342 625

to.
GPM Lidsdale
Attn: Tim Edwards
PO Box 132
Budgowoi NSW 2262

date.
9/9/2026

reference.
L43736dm26

Tim,

Deposited dust monitoring at GPM Lidsdale, August 2026

1. Background

GPM Lidsdale is undertaking earthworks in accordance with an operational environmental management plan (OEMP). The plan requires monthly deposited dust monitoring to be undertaken for amenity management.

2. Scope

Barnson Pty Ltd was commissioned by GPM to provide deposited dust monitoring at four locations on the Lidsdale site in accordance with the OEMP.

3. Site

The site is GPM Lidsdale, Lidsdale NSW (Figure 1).

4. Assessment

Dust deposition gauges were collected on 25 August 2026 by Michael Todd, Environmental Scientist of Barnson Pty Ltd. Laboratory prepared 4L amber glass bottles were installed in sampling stations above the ground with a glass funnel in a stopper fitted into the neck of the bottle at four locations around the site (Table 1).

The length of assessment was 32 days which is within the required 30±2 days sampling period. The sampling was undertaken in accordance with AS/NZS 3580.10.1:2003 *Methods for sampling and analysis ambient air method 10.1*. Analysis for total solids depositional dust, insoluble solids, combustible material and ash was undertaken at the NATA laboratory of ALS Newcastle.

Table 1. Gauge locations

ID	Location	Sampling Date Range	Number of monitoring days
DG29	Junction	24/7/2026 – 25/8/2026	32
DG30	Collins Access Road	24/7/2026 – 25/8/2026	32
DG31	Skelly Road	24/7/2026 – 25/8/2026	32
DG32	Lidsdale Fire Shed/Wolgan Road	24/7/2026 – 25/8/2026	32

5. Quality control assurance

The sampling was undertaken in accordance with AS3580.10.1 to achieve the data quality objectives. Samples were collected in laboratory prepared containers. The analyses were undertaken in the NATA accredited

laboratory of ALS Newcastle.

All media appropriate to the objectives of this investigation have been adequately analysed. It is concluded the data is usable for the purposes of the investigation.

Wind speed and direction data was recorded by a Weathermation automated weather station located at GPM Lidsdale.

6. Assessment criteria

The depositional dust assessment criteria of insoluble solids in the Lidsdale OEMP is 4g/m²/month.

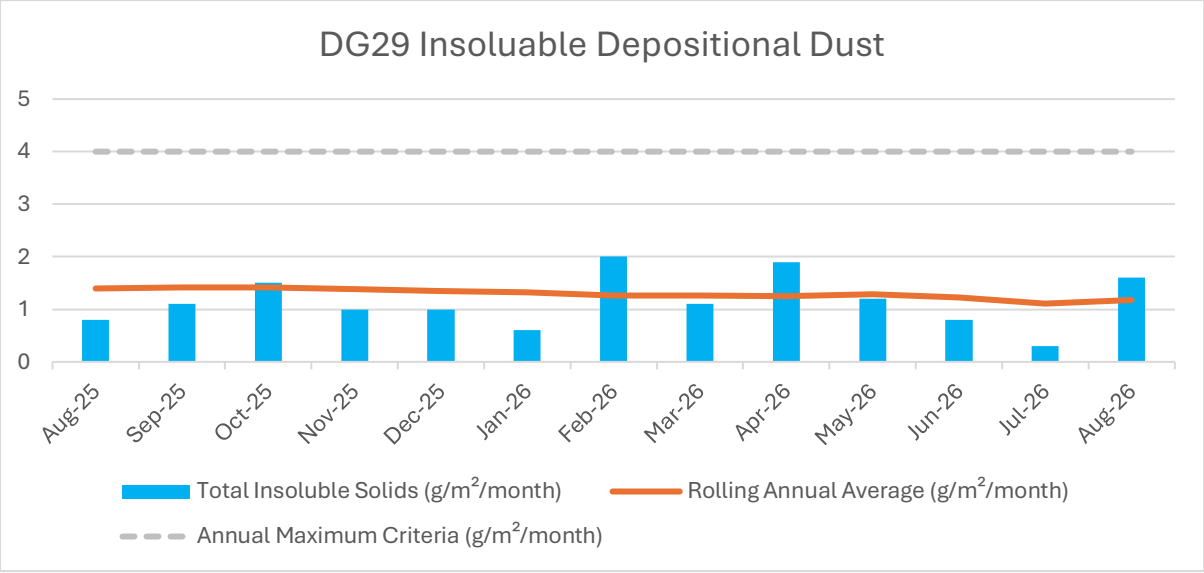
7. Results

All dust gauges recorded a level of insoluble solids below the threshold of 4 g/m²/month. The rolling annual average for insoluble solids is below 4 g/m²/month for all locations (Graph 1-4).

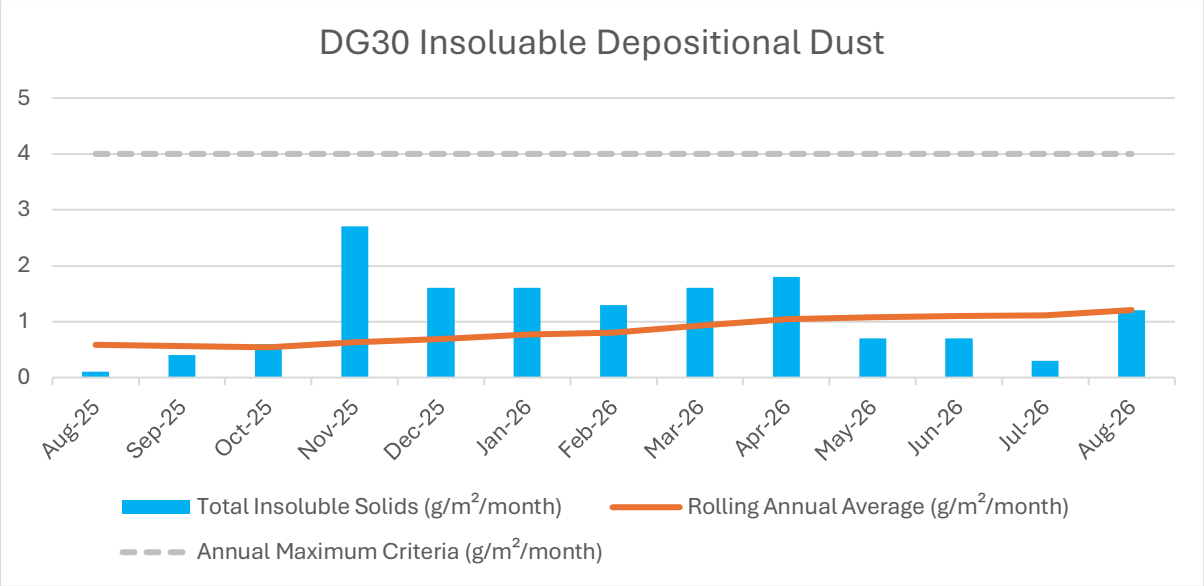
The prevailing wind direction for the sampling period was WSW. The maximum windspeed was >14 m/s from the WSW and WNW (Appendix 2). During the sampling period there were 12 days when the rain gauge recorded rainfall totaling 32mm.

Table 2. Deposited dust results, g/m²/month - August 2026

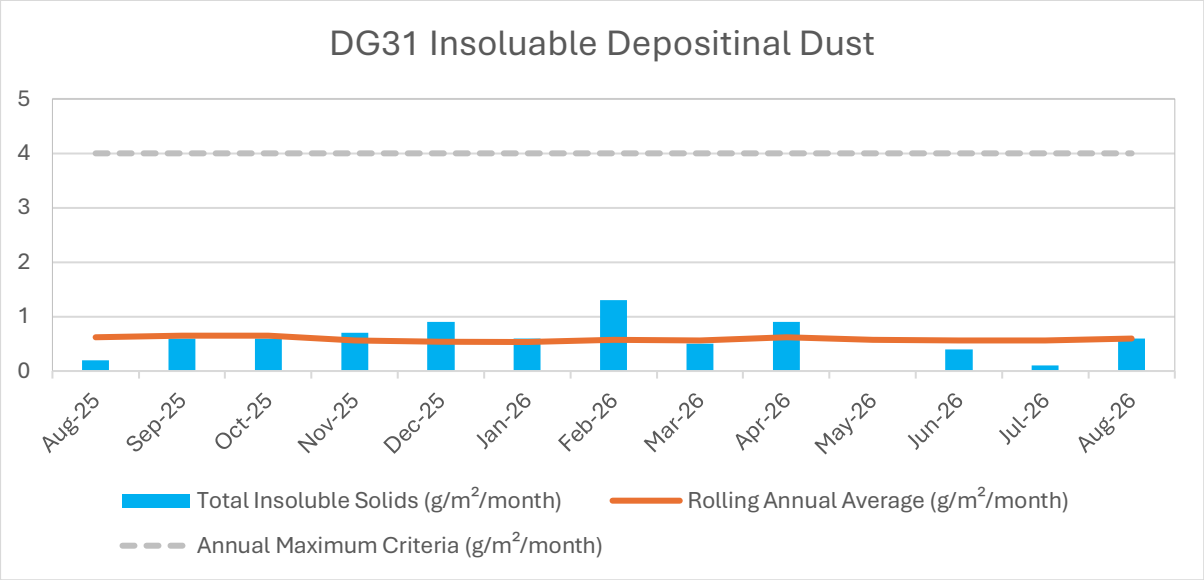
Sample ID	Monthly Insoluble solids	Monthly Combustible Matter	Monthly Ash Residue	Total Solids Per Sampling Period	Rolling Annual Average Insoluble Solids
DG29	1.6	0.5	1.1	2.7	1.2
DG30	1.2	0.4	0.8	1.7	1.2
DG31	0.6	0.3	0.3	1.1	0.6
DG32	0.7	0.3	0.4	1.1	0.9
OEMP Maximum Criteria	4.0	-	-	-	4.0



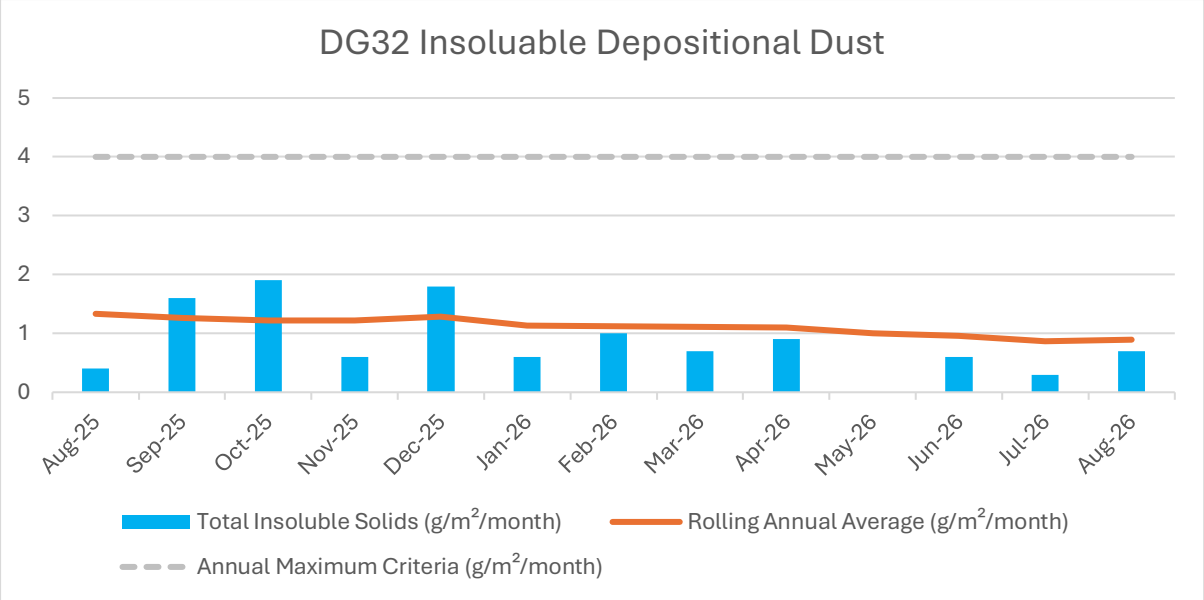
Graph 1. DG29 Guage monthly results



Graph 2. DG30 Gauge monthly results



Graph 3. DG31 Gauge monthly results



Graph 4. DG32 Gauge monthly results

8. Conclusion

The level of recorded insoluble solids for all dust gauges were below the adopted OEMP threshold. The rolling annual average for insoluble solids was also below the OEMP threshold for all locations.

Regards,

Michael Todd Hons. Bsc (Hons) EnvSc
Environmental Scientist

Checked,

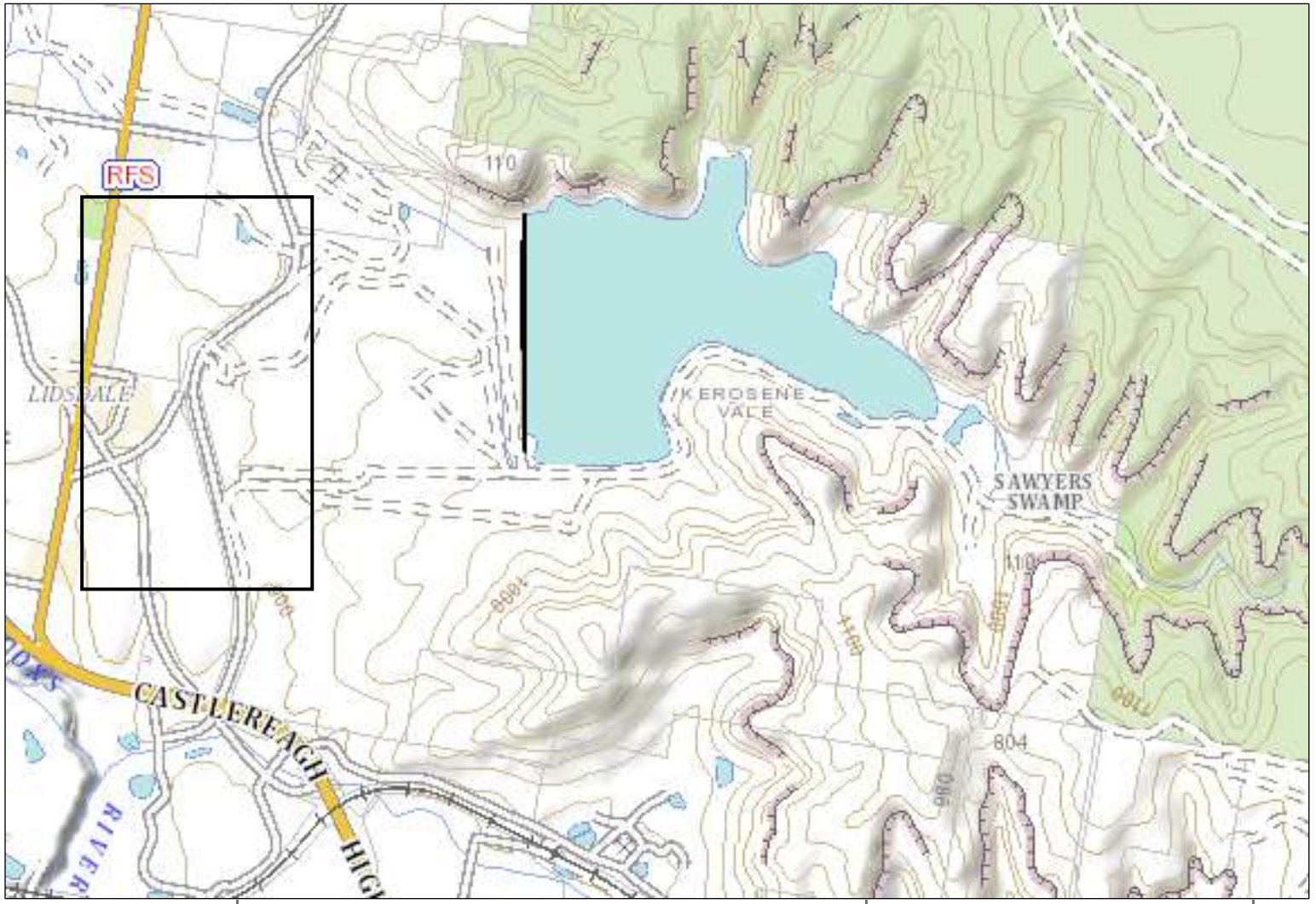
Greg Madafiglio CEnvP
Senior Environmental Scientist

Attachments

Figure 1.	Site locality
Figure 2.	Dust gauge locations
Appendix 1.	Report limitations and intellectual property
Appendix 2.	Weathermation wind rose graph

Appendix 3. ALS laboratory report EN2613098
Appendix 4. Field observations

Figures



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Scale: Approximate Scale 1:22000

0 220 440 880m

Client: GPM Lidsdale

Figure 1: Locality Map

Project: L43736dm
Drawn: MT
Check: GM
Revision: A

Date: 31/10/2025



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Approximate Scale 1:13,000

Scale: 0 130 260 520m

Client: GPM Lidsdale

Figure 2: Monitoring locations

Project:	L43736dm
Drawn:	MT
Check:	GM
Revision:	A
Date:	31/10/2025

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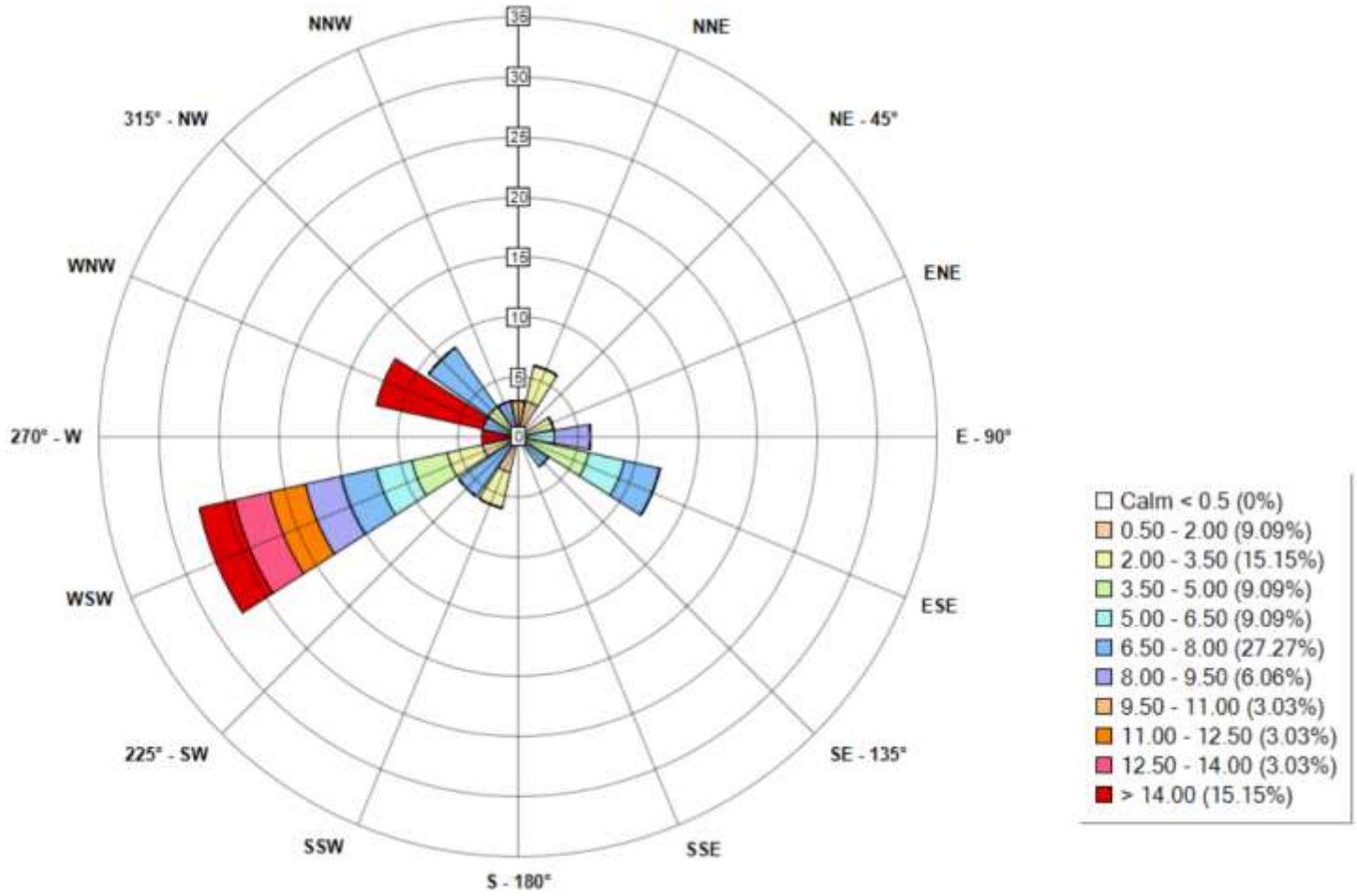
Appendix 2. Weathermation wind rose graph


NNW
NNE
315° - NW
NE - 45°
WNW
ENE
270° - W
E - 90°
WSW
ESE
225° - SW
SE - 135°
SSW
SSE
S - 180°
35
30
25
20
15
10
5
0
Calm < 0.5 (0%)
0.50 - 2.00 (9.09%)
2.00 - 3.50 (15.15%)
3.50 - 5.00 (9.09%)
5.00 - 6.50 (9.09%)
6.50 - 8.00 (27.27%)
8.00 - 9.50 (6.06%)
9.50 - 11.00 (3.03%)
11.00 - 12.50 (3.03%)
12.50 - 14.00 (3.03%)
> 14.00 (15.15%)

Appendix 3. ALS laboratory report EN2613098

CERTIFICATE OF ANALYSIS

Work Order	: **EN2613098**	Page	: 1 of 3
Client	: **BARNSON**	Laboratory	: Environmental Division Newcastle
Contact	: MICHAEL TODD	Contact	: Customer Service (ALS Mudgee)
Address	: 9 Cameron Place PO Box 8158 ORANGE 2800	Address	: 5/585 Maitland Road Mayfield West NSW Australia 2304
Telephone	: ----	Telephone	: +61 2 6372 6735
Project	: 43736 d26	Date Samples Received	: 26-Aug-2026 17:32
Order number	: ----	Date Analysis Commenced	: 28-Aug-2026
C-O-C number	: ----	Issue Date	: 07-Sep-2026 17:29
Sampler	: MICHAEL TODD		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 4		
No. of samples analysed	: 4		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Peta Christian	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Dust analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis.
- For dust analysis, the Limit of Reporting (LOR) referenced in the reports for deposited matter parameters represents the reporting increment rather than reporting limit.

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST** (Matrix: **AIR**)

Compound	CAS Number	LOR	Unit	Sample ID	DG29 24/07/26 - 25/08/26	DG30 24/07/26 - 25/08/26	DG31 24/07/26 - 25/08/26	DG32 24/07/26 - 25/08/26	----
				Sampling date / time	25-Aug-2026 00:00	25-Aug-2026 00:00	25-Aug-2026 00:00	25-Aug-2026 00:00	----
					EN2613098-001	EN2613098-002	EN2613098-003	EN2613098-004	--------
					Result	Result	Result	Result	----
EA120: Ash Content									
Ash Content	----	0.1	g/m².month		**1.1**	**0.8**	**0.3**	**0.4**	**----**
Ash Content (mg)	----	2	mg		**20**	**15**	**5**	**7**	**----**
EA125: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		**0.5**	**0.4**	**0.3**	**0.3**	**----**
Combustible Matter (mg)	----	2	mg		**10**	**8**	**6**	**6**	**----**
EA139: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m².month		**1.1**	**0.5**	**0.5**	**0.4**	**----**
Total Soluble Matter (mg)	----	2	mg		**20**	**10**	**10**	**7**	**----**
EA141: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		**1.6**	**1.2**	**0.6**	**0.7**	**----**
Total Insoluble Matter (mg)	----	2	mg		**30**	**23**	**11**	**13**	**----**
EA142: Total Solids									
Total Solids	----	0.1	g/m².month		**2.7**	**1.7**	**1.1**	**1.1**	**----**
Total Solids (mg)	----	2	mg		**50**	**33**	**21**	**20**	**----**

Appendix 4. Field Observations

Client	GPM Lidsdale
Contact	Tim Edward
Job number	43736
Date	25/8/2026
Investigator(s)	MT

Location	Liquid Appearance	Insects?	Algae?	Bird droppings?	Organic Matter?	Fine dust?	Coarse dust?	Comment/observations
DG29	Clear, colourless	Yes	No	No	No	Yes	No	
DG30	Clear, colourless	No	No	No	No	Yes	No	
DG31	Clear, colourless	No	No	No	No	No	No	
DG32	Clear, colourless	No	No	No	No	Yes	No	

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