MANGOOLA
OPEN CUT

GLENCORE

Annual Review 2023

1 January to 31 December 2023

Title Block

Name of Operation	**Mangoola Open Cut**
Name of Operator	Mangoola Coal Operations Pty Ltd
Development Consent	SSD-8642
Name of holder of Development Consent/ Project Approval	Mangoola Coal Operations Pty Ltd
Mining lease #	ML 1626, ML 1747, ML 1815, ML 1817
Name of holder of mining lease	Mangoola Coal Operations Pty Ltd
Water licence #	Various (refer Section 3.4)
Name of holder of water licence	Mangoola Coal Operations Pty Ltd
RMP Commencement date	2 July 2022
Annual Review start date	1 January 2023
Annual Review end date	31 December 2023

I, Sam Palmer, certify that this audit report is a true and accurate record of the compliance status of Mangoola Open Cut for the period 1 January 2023 to 31 December 2023 and that I am authorised to make this statement on behalf of Mangoola Open Cut.

Note.

a) The Annual Review is an 'environmental audit' for the purposes of section 122B(2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) 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. The maximum penalty is, in the case of a corporation, $1 million and for an individual, $250,000.

b) The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement—maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents—maximum penalty 2 years imprisonment or $22,000, or both).

Name of authorised reporting officer	Sam Palmer
Title of authorised reporting officer	Environment and Community Manager
Signature of authorised reporting officer	
Date	29 March 2024

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1. Statement of Compliance

A summary of compliance at Mangoola Open Cut during 2023 is provided in ***Table 1-1***.

Table 1-1 Statement of Compliance

Were all conditions of the relevant approval(s) complied with?	Yes/No
Development Consent (SSD-8642)	No
Environment Protection Licence (EPL) 12894	No
EPBC 2018/8280	No
Mining Lease 1626	Yes
Mining Lease 1747	Yes
Mining Lease 1817	Yes
Mining Lease 1815	Yes
Assessment Lease 9	Yes
Exploration Licence 5552	Yes

A summary of the non-compliances during the reporting period have been summarised in ***Table 1-2***. The non-compliances during the 2023 reporting period are discussed further in ***Section 11***.

Table 1-2 Non-Compliance During 2023

Relevant Approval	Condition Number	Description Summary	Compliance Status	Comment	Where Addressed
EPL 12894	M4.1	Weather Monitoring Requirements	Non-Compliant	Failure to continuously monitor (15 min averaging periods) at EPL monitoring point 5 and monitoring point 18 for numerous instances throughout 2023	Section 6.1 and Section 11.
EPL 12894	M2.2	PM_{10} monitoring must be undertaken continuously	Non-Compliant	Failure to continuously monitor PM10 at EPL Monitoring Point 19 and monitoring Point 20 due to breakdowns and maintenance throughout 2023.	Section 6.2 and Section 11
SSD8642 & EPBC 2018/8280	Part B, Condition 52 Condition 2	Groundwater monitoring	Non-Compliant	Failure to collect the full annual comprehensive water quality analysis as required by the Groundwater Monitoring Plan (GWMP) at monitoring bore MP9a (sampling occurred in December 2023).	Section 7.7 and Section 11

Relevant Approval	Condition Number	Description Summary	Compliance Status	Comment	Where Addressed
					Note: Condition 2 non compliance further addressed within the 2023 Annual Compliance Report (available on Mangoola website)
SSD8642 & EPL 12894	Part B, Condition 25 Condition M7.1	Blast Monitoring	Non-Compliant	Failure to monitor airblast overpressure and ground vibration for one blast event in Main Pit on 18 January 2023	Section 6.4 and Section 10
EPBC 2018/8280	Condition 6	Failure to notify in specified timeframe	Non-Compliant	Failure to notify the Department of Climate Change, Energy, the Environment and Water (DCCEEW) of the submission of two sub plans of the Water Management Plan (Surface water management plan and Erosion and Sediment Control Plan) within the specified timeframe	Section 10 and the 2023 Annual Compliance Report *(available on Mangoola website)*
EPBC 2018/8280	Condition 19	Reporting non compliance	Non-Compliant	Mangoola notified DCCEEW of non-compliances against Condition 2 and Condition 6. A report on the non-compliance against Condition 2 was reported to DPHI in accordance with SSD8642 reporting requirements. The Condition 6 non-compliance did not constitute a reportable notification to DPHI. Notification of these non-compliances occurred on identification of the non-compliance which on 16 January 2024 and 21 March 2024 respectively.	Section 6.5 Section 7.6, Section 7.7, Section 10, and the 2023 Annual Compliance Report *(available on Mangoola website)*

Relevant Approval	Condition Number	Description Summary	Compliance Status	Comment	Where Addressed
EPBC 2018/8280	Condition 20	Investigation Reporting	Non-Compliant	Mangoola provided the Department of Climate Change, Energy, the Environment and Water (DCCEEW) with an investigation report for the non-compliances identified against Condition 2 and Condition 6. These investigation reports were provided DCCEEW on identification of the non-compliances which was on 22 January 2024 and 21 March 2024 respectively.	Section 6.5 Section 7.6, Section 7.7, Section 10, and the 2023 Annual Compliance Report *(available on Mangoola website)*

Table 1-3 Compliance Status Categories

Risk Level	Colour Code	Description
High	Non-Compliant	Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence
Medium	Non-Compliant	Non-compliance with potential for serious environmental consequences, but is unlikely to occur; or potential for moderate environmental consequences, but is likely to occur.
Low	Non-Compliant	Non-compliance with potential for moderate environmental consequences, but is unlikely to occur; or potential for low environmental consequences, but is likely to occur
Administrative non-compliance	Non-compliant	Non-compliance which does not result in any risk of environmental harm

2. Introduction

2.1 Mining Operations

Mangoola Open Cut (Mangoola) is owned and operated by Mangoola Coal Operations Pty Ltd which is a Glencore managed operation. Mangoola is located near Wybong, New South Wales (NSW), approximately 20 kilometres (km) west of Muswellbrook and approximately 10 km north of Denman in the Muswellbrook Local Government Area (LGA). A locality plan is presented in ***Figure 2-1***. This Annual Review has been prepared for the 12-month reporting period of 1 January 2023 to 31 December 2023 (herein referred to as the reporting period).

Mangoola was approved as a Major Project under the now repealed Section 75J Part 3A of the NSW Environmental Planning and Assessment Act 1979 (EP&A Act) in June 2007 (PA 06_0014). PA 06_0014 has since been declared a State Significant Development (SSD) under Clause 6 of Schedule 2 of the NSW Environmental Planning and Assessment (Savings, Transitional and Other Provisions) Regulation 2017 (PA 06_0014 which then became referred to as MP 06_0014). MP 06_0014 approved the construction of an open cut coal mine and associated infrastructure in the Wybong area. The mine, then owned by Centennial Coal and known as the Anvil Hill Project, was approved to extract up to 10.5 million tonnes per annum (Mtpa) of run-of-mine (ROM) coal. Since April 2014, Mangoola has been approved to extract up to 13.5 Mtpa ROM coal under MP 06_0014. The Site also operates a Coal Handling and Preparation Plant (CHPP) and Train Loading Facility. During the reporting period, mining operations continued in the Main Pit and South Pit areas south of Wybong Road.

On 26 April 2021, the NSW Independent Planning Commission (IPC) approved with conditions, the Development Application for the Mangoola Coal Continued Operations (MCCO) Project under Part 4 of the EP&A Act. The State Significant Development (SSD) 8642 approval provides for the continuation of open cut mining immediately north of the existing mine at Mangoola Coal Operations. This will enable Glencore to extract a further 52 million tonnes of coal through to the end of 2030. During the reporting period, construction continued in the MCCO Project Area north of Wybong Road. The mining phase was triggered on 1 December 2022 with the commencement of vegetation removal associated with mining.

During the reporting period, mining operations continued in the Main Pit and South Pit areas south of Wybong Road, as well as north of Wybong Road within the MCCO Project area, otherwise known as Wybong Pit. Mining operations officially commenced in Wybong Pit on 1 December 2022 with the first blast conducted on 19 January 2023 and first coal extracted on 28 August 2023.

On 21 November 2022, Mangoola surrendered MP 06_0014 in accordance with Schedule 2, Condition A15 of SSD-8642. This Annual Review reports against MP06_0014 and SSD-8642 conditions where they applied during the reporting period.

This Annual Review has been prepared in accordance with:

- Condition D11 of SSD-8642.
- Mining Lease 1626 (ML 1626).
- Mining Lease 1747 (ML 1747).
- Mining Lease 1815 (ML 1815).
- Mining Lease 1817 (ML 1817).
- The NSW Government Annual Review Guideline (October 2015).
- Department of Planning, Housing and Industry (DPHI) 2022 Annual Review feedback.

Copies of and/or a link to this Annual Review will be made available to the Department of Planning, Housing and Infrastructure (DPHI), the Department of Regional NSW – Resources Regulator (Resources Regulator), the Biodiversity Conservation Division (BCD), the Natural Resources Access Regulator (NRAR) and the Environment Protection Authority (EPA). As per Condition D11 of SSD-8642 copies of and/or a link to the company website will also be provided to the Muswellbrook Shire Council and members of the Mangoola Community Consultative Committee (CCC). A copy will also be made available on the Mangoola website in accordance with SSD-8642 for any member of the public to access or be provided at the request of any interested person.

2.2 Mine Contacts

The relevant mine contacts for Mangoola are listed in ***Table 2-1***.

Table 2-1 Mine Contacts

Contacts	Details
Operations Manager	Jacob Hundertmark
Environment and Community Manager	Sam Palmer
Mailing Address	PO Box 495 Muswellbrook NSW 2333
Phone Number	(02) 6549 5500
Fax Number	(02) 6549 5655
24 Hour Community Hotline	1800 014 339
Website	www.mangoolamine.com.au
General Enquiries Email	mangoolaenquiries@glencore.com.au

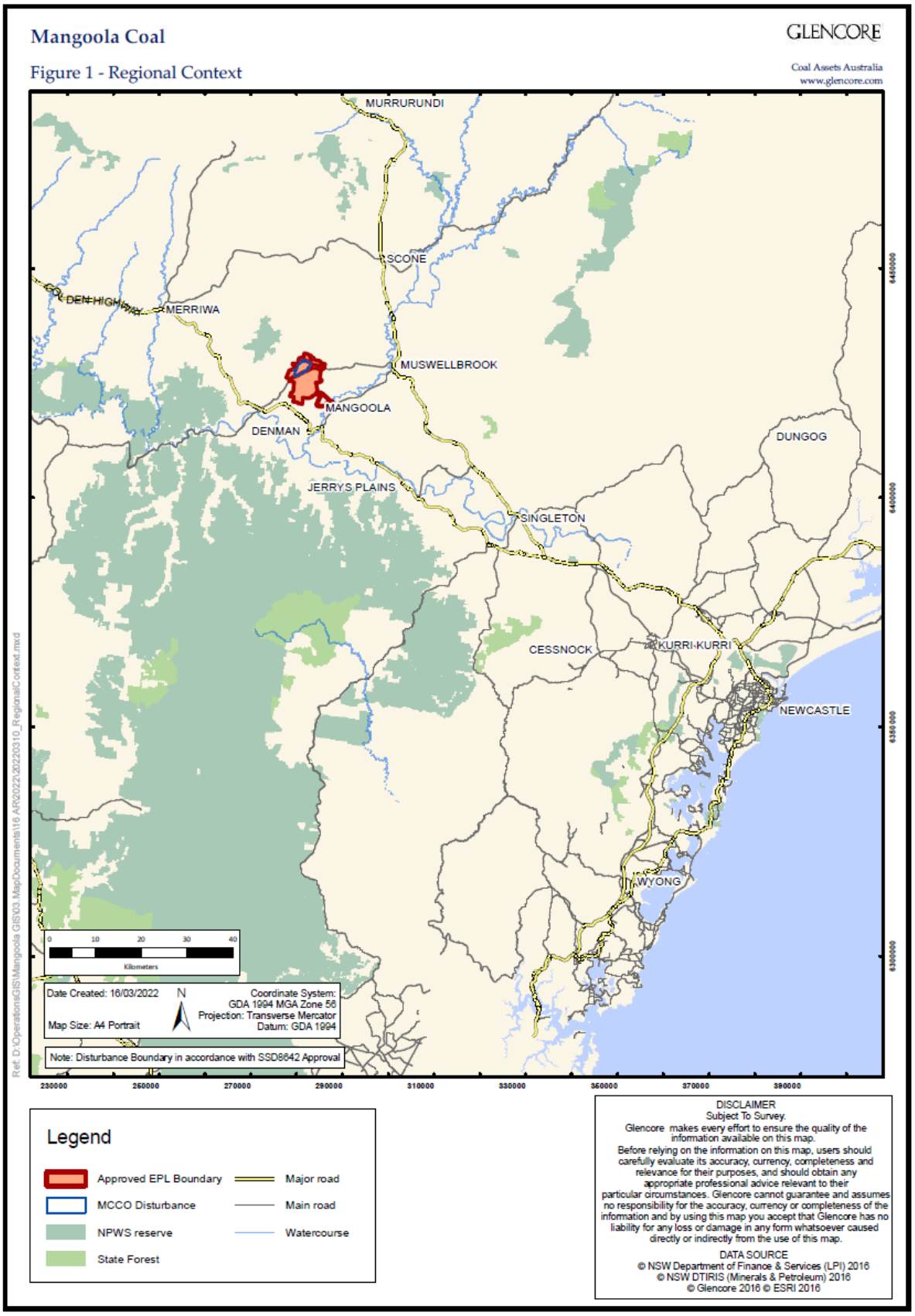


Figure 2-1 Regional Context

3. Approvals

Operations at Mangoola are regulated by a range of leases, licences and approvals, which are summarised in the following sections.

3.1 Development Consent

SSD-8642 allows for the extraction, processing and transportation of up to 13.5 Mtpa through to the end of 2030. The approval supersedes the, now surrendered, MP 06_0014 and incorporates the existing operations in Main and South Pits as well as the continuation of open cut mining immediately north of the existing mine at Mangoola Coal Operations known as Wybong Pit. ***Table 3-1*** summaries the details of this approval.

Table 3-1 SSD-8642 Summary

Approval	Title	Date Granted	Expiry
SSD-8642	Mangoola Coal Continued Operations Project	26 April 2021	31 December 2030

3.2 Mining Titles

Mangoola currently holds six active titles as shown in ***Table 3-2***.

Table 3-2 Mining Tenements

Title	Date Granted	Expiry
Mining Lease 1626	20 November 2008	20 November 2029
Mining Lease 1747	24 August 2016	5 December 2037
Mining Lease 1815	29 September 2021	29 September 2042
Mining Lease 1817	27 October 2021	27 October 2042
Assessment Lease 9	8 November 2004	7 November 2019 (renewal lodged 1 November 2019)
Exploration Licence 5552	8 May 2006	7 November 2025

3.3 Licences

3.3.1 Environment Protection Licence

Mangoola operates under EPL 12894, with an anniversary date of 7 July. Monitoring results are reported to the EPA as part of the Mangoola EPL Annual Return and monitoring data is available on the Mangoola website.

The environmental reporting and monitoring activities undertaken at Mangoola as required under EPL 12894, are discussed in ***Section 0*.**

There were two EPL variations in the 2023 reporting period as shown in ***Table 3-3***.

Table 3-3 EPL Variations

Date of Variation	Variation Type	Summary
3 April 2023	s58 Licence Variation	• Administrative changes related to Railway systems. • Amendment of site plans. • Changes to discharge licences, additional monitoring sits, associated concentration limits and monitoring requirements (regarding HRSTS). • New condition added around premises plans.
6 October 2023	s58 Licence Variation	• Changes to waste tyre recycling, stockpiling, site burial and administrative controls. • Removal of Condition U1 as condition was met and completed.

3.3.2 Surface Water Licences

Mangoola currently holds the following surface water licences, as detailed in ***Table 3-4***.

Table 3-4 Surface Water Licences

WAL No.	DPHI Water Reference Number	Share Allocation (ML)	Water Source	WAL No.	DPHI Water Reference number	Shareblasting Allocation (ML)	Water Source
503	20AL200112	159	Hunter Regulated River	6571	20AL201639	111	Hunter Regulated River
644	20AL200456	3	Hunter Regulated River	6572	20AL201640	8	Hunter Regulated River
645	20AL200457	432	Hunter Regulated River	6576	20AL201869	600	Hunter Regulated River
691	20AL200578	50	Hunter Regulated River	6577	20AL201870	8	Hunter Regulated River
692	20AL200579	8	Hunter Regulated River	7291*	20AL202589	63	Wybong Creek
735	20AL200676	72	Hunter Regulated River	7292*	20AL202610	44	Wybong Creek
822	20AL200912	3	Hunter Regulated River	9061	20AL203156	6	Hunter Regulated River

WAL No.	DPHI Water Reference Number	Share Allocation (ML)	Water Source	WAL No.	DPHI Water Reference number	Shareblasting Allocation (ML)	Water Source
823	20AL200913	310	Hunter Regulated River	9062	20AL203157	18	Hunter Regulated River
824	20AL200915	175	Hunter Regulated River	9343*	20AL203174	25	Wybong Creek
830	20AL200933	306	Hunter Regulated River	9344*	20AL203206	164	Wybong Creek
831	20AL200934	8	Hunter Regulated River	9986	20AL203182	5	Hunter Regulated River
895	20AL201081	8	Hunter Regulated River	9987	20AL203183	82	Hunter Regulated River
897	20AL201085	55	Hunter Regulated River	9988	20AL203184	8	Hunter Regulated River
898	20AL201086	8	Hunter Regulated River	11085*	20AL203320	128	Wybong Creek
933	20AL201156	43	Hunter Regulated River	11216	20AL203370	86	Hunter Regulated River
1000	20AL201324	3	Hunter Regulated River	13083	20AL203454	100	Hunter Regulated River
1001	20AL201325	334	Hunter Regulated River	13228	20AL202591	0	Wybong Creek
1057	20AL201469	509	Hunter Regulated River	13229	20AL202592	77	Wybong Creek
1159	20AL201722	159	Hunter Regulated River	18689	20AL209242	15	Muswellbrook
1239	20AL203080	40	Hunter Regulated River	18701	20AL209198	28	Muswellbrook

WAL No.	DPHI Water Reference Number	Share Allocation (ML)	Water Source	WAL No.	DPHI Water Reference number	Shareblasting Allocation (ML)	Water Source
1349	20AL202949	8	Hunter Regulated River	18712	20AL209241	5	Muswellbrook
1387	20AL202878	40	Hunter Regulated River	20343	20AL204331	48	Wybong Creek
6260*	20AL202522	36	Wybong Creek	37027*	20AL213134	30	Wybong Creek
6261	20AL202524	1	Wybong Creek	37028*	20AL213135	96	Wybong Creek
6262*	20AL202525	8	Wybong Creek	6294*	20AL202631	39	Wybong Creek
6264*	20AL202531	30	Wybong Creek	6296*	20AL202639	86	Wybong Creek
6272*	20AL202554	50	Wybong Creek	6298*	20AL202643	39	Wybong Creek
6275	20AL202561	5	Wybong Creek	6300	20AL202647	5	Wybong Creek
6276*	20AL202562	12	Wybong Creek	6304	20CA202655	5	Wybong Creek
6278*	20AL202569	117	Wybong Creek	6305	20CA202656	74	Wybong Creek
6306*	20AL202658	52	Wybong Creek	7495	20AL202699	27	Wybong Creek
6310	20AL202674	4.5	Wybong Creek	6311	20AL202675	13	Wybong Creek

**WAL covered under water use approval 20MW065001 (Miscellaneous Works Approval for licence of harvestable rights).*

3.3.3 Groundwater Licences

Mangoola currently holds the following groundwater licences shown in ***Table 3-5*.**

Table 3-5 Groundwater Licences

WAL No.	Works Approval No.	Share Allocation (ML)	Type of Works	WAL No.	Works Approval No.	Share Allocation (ML)	Type of Works
6316	20CA202449	175	Well	-	20BL172827	0	Test bore
6317	20CA202451	19	Well	-	20BL171778	0	Test bore

WAL No.	Works Approval No.	Share Allocation (ML)	Type of Works	WAL No.	Works Approval No.	Share Allocation (ML)	Type of Works
6322	20CA202463	5	Well	-	20BL171860	0	Test bore
6327	20CA202482	30	Well	-	20BL171861	0	Test bore
18068	20CA208143	5	Bore	-	20BL171862	0	Test bore
18136	20CA208033	596	Bore	-	20BL171864	0	Test bore
18170	20CA207847	219	Well	-	20BL171865	0	Test bore
18214	20CA208151	218	Well	-	20BL171867	0	Test bore
18219	20CA208171	5	Bore	-	20BL172567	0	Test bore
18232	20CA208179	5	Bore	-	20BL172568	0	Test bore
18690	20CA209155	10	Bore/Well	-	20BL172569	0	Test bore
18695	20CA209151	131	Well	-	20BL172570	0	Test bore
18696	20CA209157	53	Well	-	20BL172573	0	Test bore
18701	20CA209199	28	Bore	-	20BL172788	0	Test bore
18718	20CA209147	151	Well/Bore	-	20BL172789	0	Test bore
30247	20CA212344	98	Well	-	20BL172790	0	Test bore
41561	WAL 41561	700	Excavation	-	20BL172806	0	Test bore
-	20WA216010	1	Bore	-	20BL172808	0	Test bore
-	20WA207550	0	Bore	-	20BL172809	0	Test bore
-	20WA214821	0	Bore	-	20BL172811	0	Test bore
-	20WA207593	0	Well	-	20BL172812	0	Test bore
-	20WA207594	0	Well	-	20BL172813	0	Test bore
-	20WA209128	0	Bore	-	20BL172814	0	Test bore
-	20WA215330	0	Bore	-	20BL168135	0	Test bore
-	20WA207651	0	Bore	-	20BL168414	0	Test bore
-	20WA215537	0	Bore	-	20BL168696	0	Test bore
-	20WA207655	0	Well	-	20BL168743	0	Test bore
-	20WA207668	0	Well	-	20WA216315	0	Bore
-	20WA209113	0	Bore	-	20WA207700	0	Well
-	20WA212410	0	Bore	-	20WA209139	0	Spear points

WAL No.	Works Approval No.	Share Allocation (ML)	Type of Works	WAL No.	Works Approval No.	Share Allocation (ML)	Type of Works
-	20WA209136	0	Bore	-	20WA207718	0	Well
-	20WA209112	0	Bore	-	20WA215573	0	Well
-	20WA215016	0	Bore	-	20WA215826	0	Well
-	20WA215082	0	Bore	-	20BL167003	0	Bore
-	20WA215502	0	Bore	-	20CA211849	0	Well
-	20WA207649	0	Bore	-	-	-	-

3.3.4 Radiation Licence

Mangoola holds Radiation Licence 5063445 which expires 28 April 2024. This annual licence was renewed during the reporting period.

3.3.5 Sewerage Management System Licence

Mangoola Coal holds an approval to operate an onsite sewerage management system (licence number WTA5/2010) in accordance with the requirements of the Muswellbrook Shire Council and EPL 12894. The licence expires on 29 July 2026. All monitoring results required under EPL 12894 are published on the Mangoola Coal website. If monitoring results exceed the criteria as outlined within the council approval, the results are reported directly through to council.

3.4 Other Approvals

3.4.1 Rehabilitation Management Plan

The Mangoola Mining Operations Plan (MOP) was superseded on 2 July 2022 by the Rehabilitation Management Plan (RMP), in accordance with the transitional arrangements for the new reporting requirements under the *Mining Act 1992*. The RMP, Annual Rehabilitation Report and Forward Program have been prepared in accordance with B91 of SSD-8642 and the *Mining Act 1992.*

3.4.2 Compliance with EIS Predictions

In accordance with the *Annual Review Guideline* (DPHI, 2015), this Annual Review compares the predictions made in the SSD-8642 Environmental Impact Statement (EIS) with the environmental monitoring results from the 2023 reporting period where they applied during the reporting period. ***Table 3-6*** details the location of these prediction comparisons.

Table 3-6 Comparison Against Predictions

Environmental Aspect	Section Reference
Air Quality	**Section 6.2.3**
Noise	**Section 6.3.3**
Blasting and Vibration	**Section 6.4.3**

Environmental Aspect	Section Reference
Biodiversity	**Section 6.6.3**
Heritage	**Section 6.9.3**
Surface Water	**Section 7.6.3**
Groundwater	**Section 7.7.3**

4. Operations During the Reporting Period

4.1 Mining Operations

4.1.1 Overview

Open cut mining continued at Mangoola's Main Pit and South pit located south of Wybong Road during the reporting period. Minig operations officially commenced under SSD8642 on 1 December 2022 in the MCCO project area (Wybong Pit). During the reporting period, Mangoola continued operations in Wybong Pit, with the first blast conducted on 19 January 2023 and first coal extracted on 28 August 2023.

Truck and shovel mining methods are used to handle overburden and coal, following pre-strip and drilling and blasting activities. Product coal is loaded and transported to market via the rail loop connected to the Muswellbrook – Ulan railway. The mine operates 24 hours a day, seven days a week, and currently employs 471 full time equivalent employees (with approval for 480 employees). The general site layout is presented in ***Figure 4-1*****.** Activities undertaken during the reporting period included open cut mining, coal processing, coal transport, and construction works which are detailed in the following sections.

4.1.2 Exploration

Throughout the reporting period, 9 exploration holes and 34 Limit of Oxidation (LOX) holes, 2 Piezometer holes and 10 groundwater monitoring bores were drilled within the ML 1817, Wybong Pit area.
In July 2022, Mangoola submitted an ESF4 application for the exploration of a further 11 boreholes within Assessment Lease (AL) 9.

4.1.3 Land Preparation

Land clearing is undertaken in accordance with the Mangoola Environmental Management System (EMS). Areas are assessed prior to clearing to minimise potential ecological, water management, sediment and erosion, and cultural heritage impacts in accordance with pre-clearing requirements.

4.1.4 Mining

Open cut mining operations continued during the reporting period, with 10.1 million tonnes (Mt) of ROM coal being extracted. Mining operations during the reporting period continued in the Main Pit and South Pit. Approximately 34.30 million bank cubic metres (BCM) of overburden were moved.

The 2023 production summary is presented in ***Table 4-1***.

Table 4-1 2023 Production Summary

Material	Approved Limit	2022 Reporting Period (Actual)	2023 Reporting Period (Actual)	2024 Reporting Period (Forecast)
Waste Rock/ Overburden (BCM)	No limit	30,303,401	34,301,895	33,841,208
ROM Coal (t)	13,500,000	7,686,725	10,093,439	11,161,272

Material	Approved Limit	2022 Reporting Period (Actual)	2023 Reporting Period (Actual)	2024 Reporting Period (Forecast)
Coarse reject (t)	No limit	1,066,164	1,165,885	1,562,000
Fine reject (Tailings) (t)	No limit	898,786	642,642	1,080,000
Saleable product (t)	No limit	5,718,749	8,205,387	8,520,606

During 2023, no additional haul trucks were added to the mining fleet and no gravel crushing operations occurred.

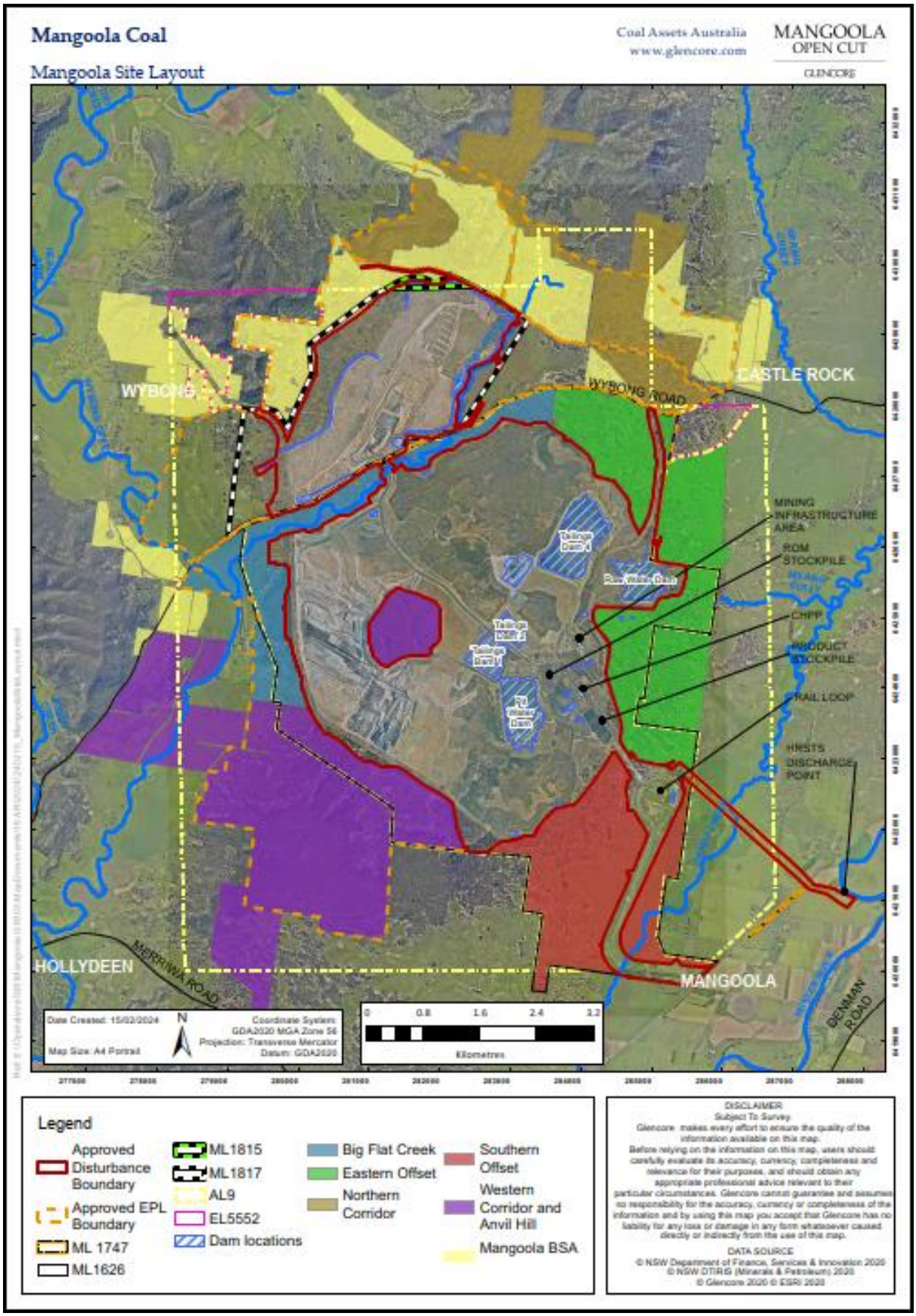


Figure 4-1 Mangoola Site Layout

4.2 Other Operations

4.2.1 Coal Processing

During the reporting period approximately 8.2 Mt of product coal, 0.64Mt of tailings and 1.16 Mt of coarse rejects were produced from the CHPP. The CHPP washed or bypassed all coal produced at Mangoola, with Tailings Dam 4 used for fine rejects disposal.

Tailings Dam 4 has sufficient capacity for Life-Of-Mine. No capping was undertaken for Tailings Dam 1 or Tailings Dam 2 during 2023.

4.2.2 Coal Transport

During the reporting period there were 1814 train movements from the Mangoola rail loader, which transported approximately 8.04 Mt of coal. Each train consists of two movements (one movement into the loop and one movement out of the loop). This equates to an average of 4.98 daily train movements generated by Mangoola, with a maximum of 14 train movements in one day. This is within the 20 train movements per day limit stipulated in Condition B93 of SSD-8642. No coal was transported other than by rail during the reporting period.

Annual train movements are included in ***Appendix G***.

4.2.3 Construction

Works associated with the MCCO Project have been ongoing since construction commenced with preliminary site establishment works on 6 December 2021, before broader construction activities commenced in early January 2022. During 2023, all of the remaining construction works and quality assurance reviews were completed and the construction site compound was demobilised. In summary, the following works were completed throughout 2022 and 2023:

- Clean Water Diversion Drain 2 (enables clean water to be diverted around the future mining area).
- Several water management infrastructure items including Sedimentation Dams and Catch Drains.
- Visual bunds.
- Works completed on the overpass which enabled equipment to access the MCCO Project area.
- Reinstatement of the original Wybong Road alignment.
- The Wybong Road Temporary Diversion has been closed.
- Wybong Post Office Road has been closed in Government Gazette of 21 April 2023.
- EXC151 excavator commenced production in Wybong Pit on 4 April 2023.
- Water truck fill point fit out, electrical and piping, and commissioning.
- Hydroseeding completed on all construction related disturbed areas.
- All pipelines installed – pipe and pump commissioning – Sediment Dams 1, 2, 3 and Big Flat Creek culvert rehabilitation completion – topsoil seeding and tube stock planting.
- Augmentation of 11kV and fibre optic services around the new mining area.

- Construction of a clean water diversion bund to direct clean water to a suitably sized culvert under Wybong Road and into Big Flat Creek to prevent flooding of Wybong Road during heavy rainfall events.

4.2.4 Waste Management

Waste at Mangoola is managed in accordance with the EMS (incorporating waste reuse and recycling). The EMS has been developed in accordance with the requirements of the *Protection of the Environment Operations Act 1997* (POEO Act).

A licensed waste contractor undertakes the collection, transport and recording of waste material, with as much material as possible being recycled. During the reporting period 2,185.85 tonnes of waste was disposed of offsite with 1,847 tonnes of that being recycled (84.5% recycled). This represents an overall increase of 441.85 tonnes in total waste disposal compared to 2022 (1,744 tonnes). This increase was primarily due to the commencement of mining within Wybong Pit whereby some old sheds and structures had to be demolished for mining progression.

The major waste streams during the reporting period were waste oil (775.15 tonnes), scrap steel (425.08 tonnes), mixed solid waste (315.84 tonnes) and effluent (494.70 tonnes).

A summary of waste disposal from 2016 to 2023 is presented in ***Figure 4-2***.

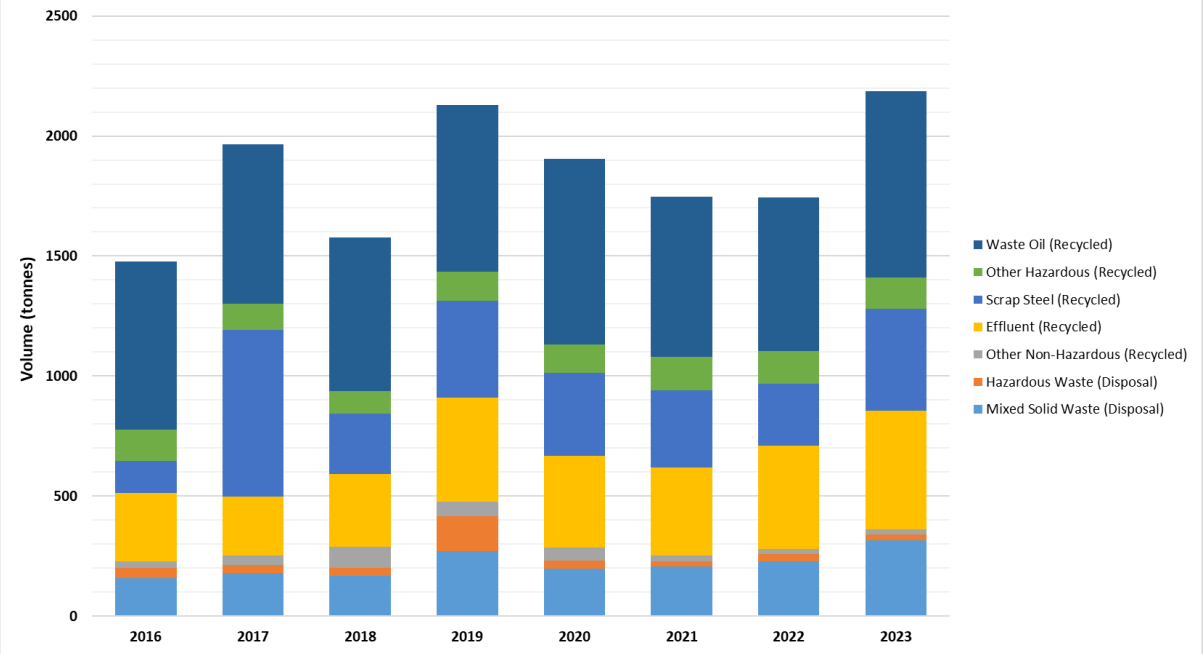


Figure 4-2 2016-2023 Waste Streams Generated

4.3 Next Reporting Period

4.3.1 Mining

During 2024, coal extraction will continue in the Main Pit, South Pit, and Wybong Pit (to the north of Wybong Road). Forecast production for 2024 is 11.2 Mt of ROM coal and 8.5 Mt of product coal. There are no proposed changes to mining equipment, personnel or mining techniques in 2024. Construction works were completed in 2023.

Wybong Pit will house three of the five primary excavator equipment, with the remaining two servicing the operations within the Main pit and South pit areas.

4.3.2 Exploration

Approximately 11 boreholes are to be drilled in AL9 and 55 bore holes drilled in ML 1817, Wybong Pit area. Three of these will be cored with the remainder of the holes open (chip) holes.

4.3.3 Construction

The project construction is now complete, no further construction is planned.

4.3.4 Tailings Disposal

During 2024, tailings will be disposed of in Tailings Dam 4, which has sufficient capacity for Life-of-Mine.

5. Actions Required from Previous Annual Review

Mangoola received a letter from DPHI on 16 August 2023 stating the Mangoola 2022 Annual Review was found to generally satisfy the requirements of the consents and the Departments *Annual Review Guideline* dated October 2015. However, DPHI requested additional information to be included in future Annual Reviews, which has been captured as an action in ***Table 5-1***.

The Resources Regulator advised that the Annual Review had been received and was subject to review to comply with the Mangoola mining authorisations and conditions of the Mining Act. No further correspondence was received.

Table 5-1 Actions Required From 2022 Annual Review

Action Required from Previous Annual Review	Due Date	Action Taken by Mangoola	Where Discussed
Fully address the requirements of condition B34 of the consent, by reporting the specific greenhouse gas abatement measures implemented to reduce greenhouse gas emissions generated by the Mangoola Continued Operations project.	31 March 2024 (and ongoing)	Mangoola has addressed the requirements of condition B34 of the consent in section 6.15.4 and more broadly throughout all of section 6.15. However no reasonable and feasible measures were identified for implementation in 2023.	***Section 6.15.4***

6. Environmental Performance

6.1 Meteorology

In accordance with Condition B35 of SSD-8642 and Condition P1.1 of EPL 12894, Mangoola continued to operate at least two meteorological monitoring stations across the site during the reporting period. These details are summarised in ***Table 6-1*** and illustrated on ***Figure 6-4***. Meteorological data recorded during the reporting period is available on the Mangoola website.

Table 6-1 Summary of Weather Stations in 2023

Weather Station	Commencement Date	Decommission Date	Location Description
Northern Meteorological Station (WSN1)	20 May 2022	Current	Located to the north of the site, along Wybong PO Road.
Southern Meteorological Station (WSS)	Existing	Current	Located to the south of the site, adjacent to the CHPP.

As shown in ***Figure 6-1***, total rainfall during 2023 was considered to be 'average'. WSS recorded 419 mm of rainfall during 2023, considerably lower than the 2022 total of 974 mm. The highest monthly rainfall total was recorded in December (83.3 mm) while the lowest was recorded in May (0.6 mm). Long-term rainfall data is presented in ***Appendix B***, which shows that rainfall recorded during 2023 was lower than most years since 2010.

As shown in ***Figure*** **6-3**

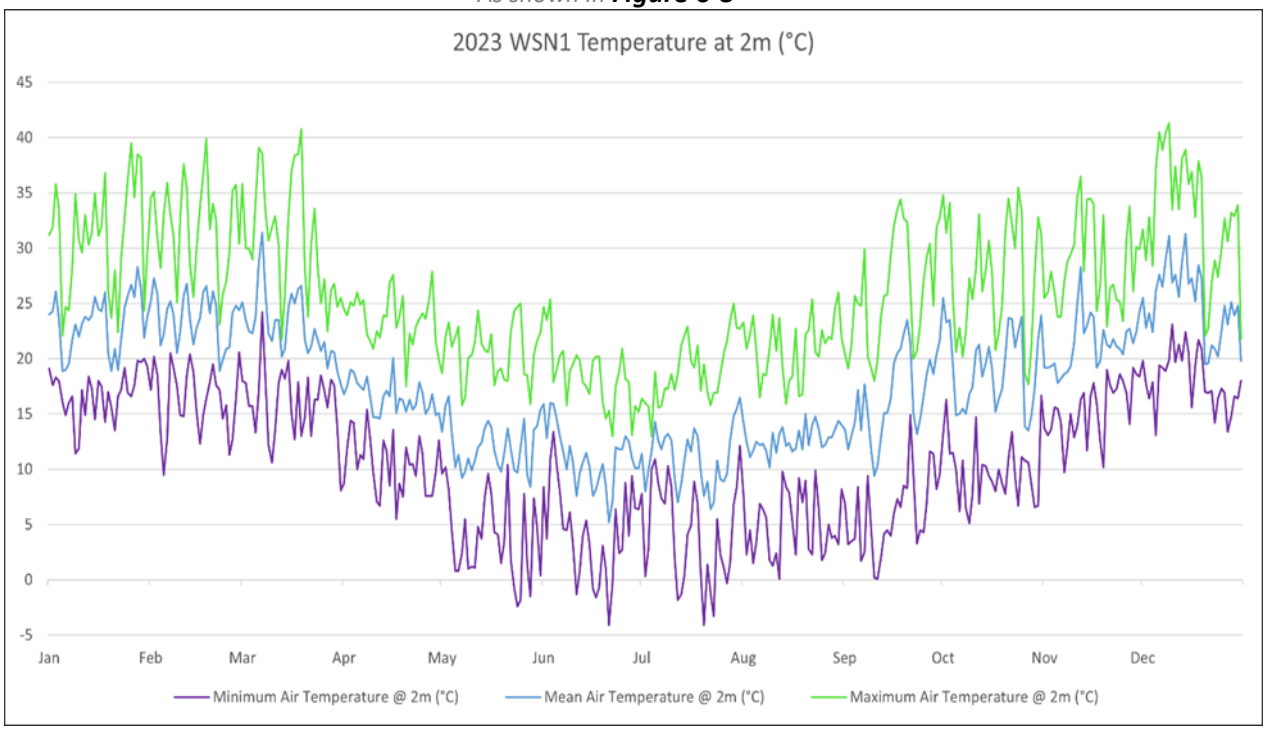


Figure 6-3, the daily minimum and maximum 2 metre above surface level temperatures at WSN1 ranged from 4.1 °C to 41.3°C in 2023 respectively, with an average daily maximum of 25.9 °C, which

is warmer than the 2022 daily average of 22.5 °C. Relative humidity during 2023 ranged from 7.1% to 100%.

In 2023, there were several occasions of failure to monitor weather continuously as shown in Table 11-1. Note these dates do not necessarily indicate outages for the entire date specified, rather it indicates missing 15-minute average values occurring during the specified period.

Failure to continuously monitor weather in accordance with Condition M4.1 EPL monitoring point 5 and monitoring point 18 for various 15 minute increments throughout 2023:

30/01/2023-31/01/2023, 8/02/2023, 4/03/2023, 6/03/2023-7/03/2023, 8/03/2023, 17/03/2023, 21/03/2023, 29/03/2023-30/03/2023, 1/04/2023-3/04/2023, 6/04/2023-8/04/2023, 10/04/2023, 30/04/2023, 5/05/2023, 13/05/2023, 17/05/2023, 20/05/20233-21/05/2023, 25/05/2023-26/05/2023, 31/05/2023, 4/06/2023-7/06/2023, 14/06/2023, 18/06/2023-19/06/2023, 22/06/2023-23/06/2023, 25/06/2023-26/06/2023, 29/06/2023-30/06/2023, 1/7/2023, 10/07/2023, 14/07/2023-18/07/2023, 1/8/2023-2/8/2023, 18/08/2023, 31/08/2023, 16/09/2023, 27/09/2023-28/09/2023, 1/10/2023, 14/10/2023, 22/10/2023, 30/10/2023, 7/11/2023, 9/11/2023-12/11/2023, 15/11/2023, 17/11/2023, 22/11/2023, 26/11/2023, 28/11/2023-29/11/2023, 1/12/2023, 10/12/2023, 12/12/2023, 15/12/2023, 19/12/2023, 25/12/2023

There were no recognisable adverse effects of the non-compliance and data capture for the reporting period of Monitoring Point 5 and 18 remained above 95% in 2023 (99.7% and monitoring point 5, and 99.6% for monitoring point 18).

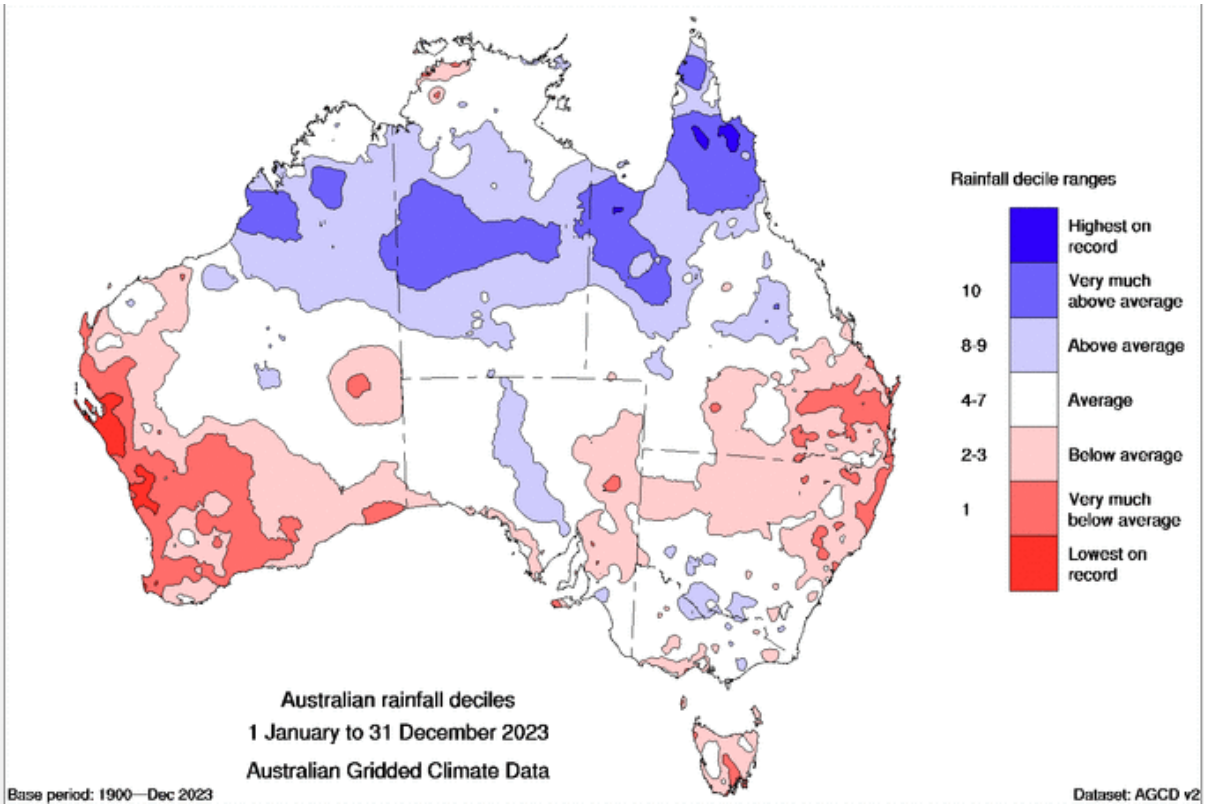


Figure 6-1 12-month Rainfall Deficiency for 2023 (BOM, 2023)

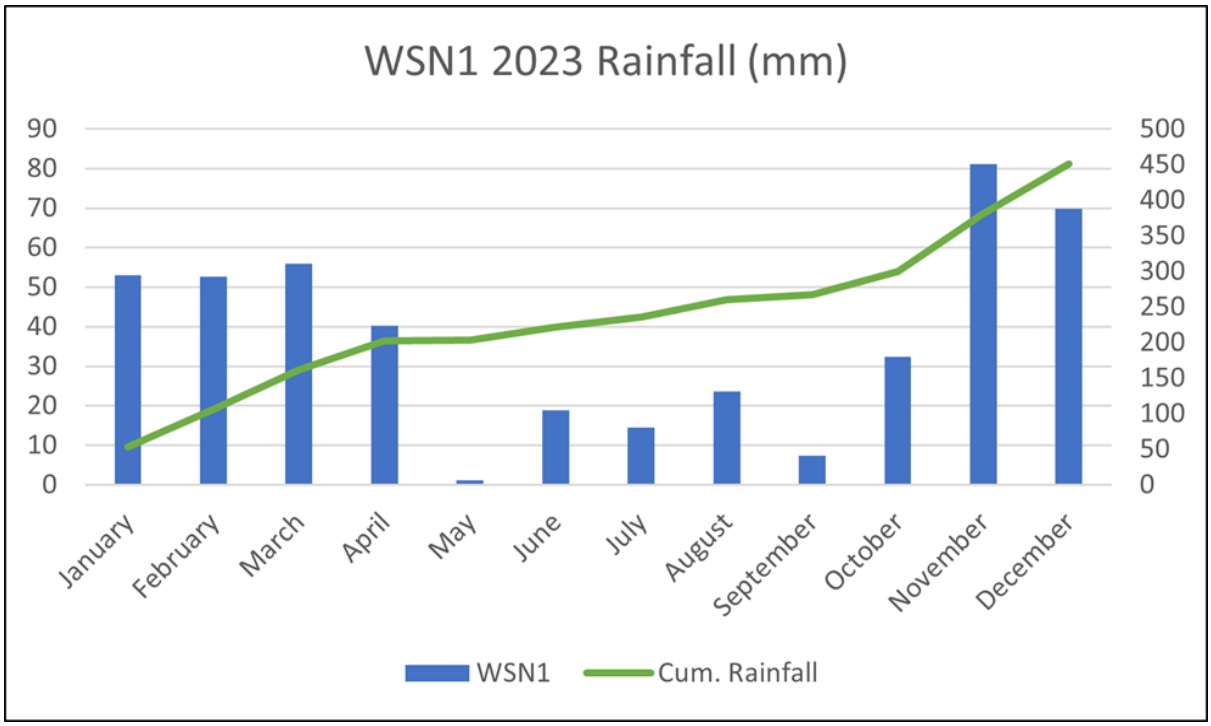


Figure 6-2 WSN1 2023 Rainfall Data

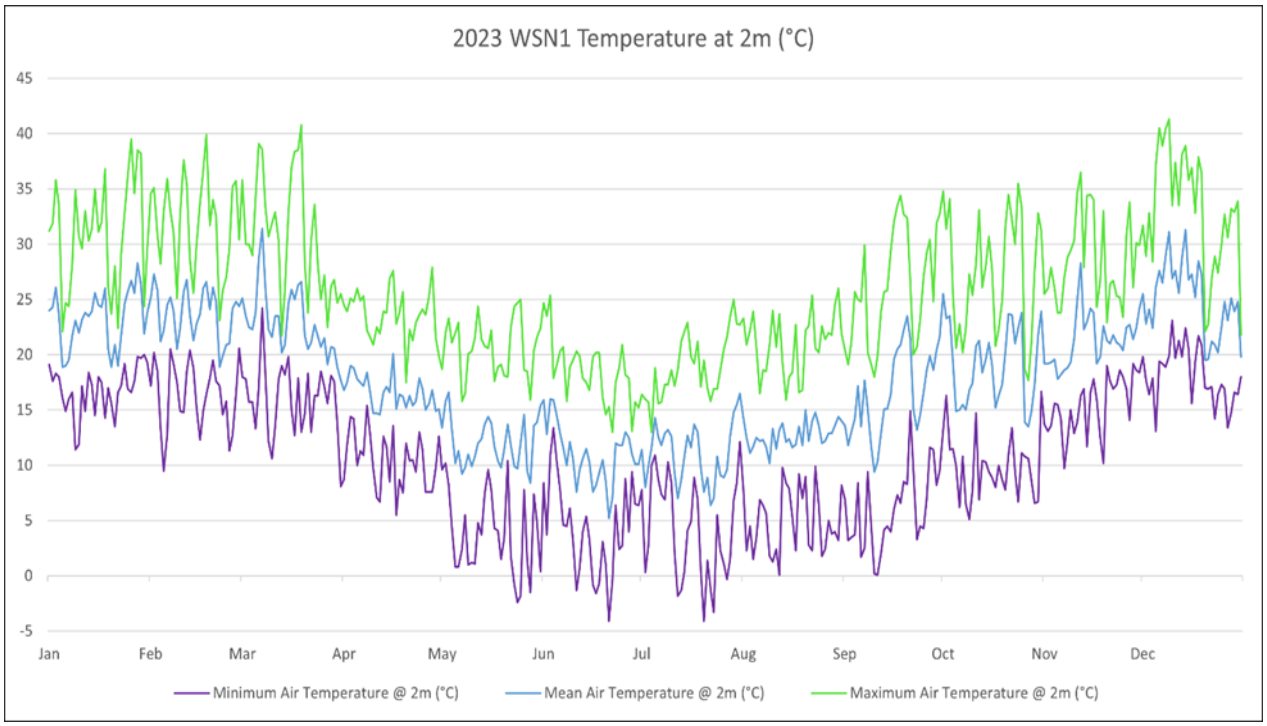


Figure 6-3 WSN1 2023 2 m Temperature Data

6.2 Air Quality

6.2.1 Environmental Management

Mangoola operated in accordance with the approved Air Quality and Greenhouse Gas Management Plan (AQGGMP) that was reviewed for the construction phase of the MCCO Project. The former Air Quality Management Plan was updated to the Air Quality and Greenhouse Gas Management Plan (AQGGMP) and approved by DPHI in 2022, aligning with the new monitoring requirements under SSD-8642. Mangoola commissioned and decommissioned several pieces of air quality monitoring equipment (as shown in ***Figure 6-4***) to align with the updated requirements of SSD-8642 and the former approved AQMP. A summary of amendments to the air quality monitoring network made during the reporting period is provided in ***Table 6-2***.

Table 6-2 Amendments to Air Quality Monitoring Network made during 2023

Site Name	Description of Change	Revised Site Name
WSN	Decommissioned and infrastructure relocated to the west of the mining area north of Wybong Road.	WSN1
D05-PM10	Decommissioned and infrastructure relocated to the north of the project boundary to be reflective of the nearest private receivers located on Ridgeland's Road.	D08-PM10
D07-PM10	Decommissioned and infrastructure relocated adjacent to the revised location of WSN1.	D09-PM10
DG01 – DG28	Depositional dust sites decommissioned.	N/A*
D02-DC	$PM_{2.5}$ monitor installed at D02-DC to further enhance the coverage of the $PM_{2.5}$ monitoring capabilities of the network.	No change

** – Monitoring instrument has been decommissioned and removed from approval documents and management plans.*

The current air quality monitoring program consists of:

- Five Tapered Element Oscillating Microbalance (TEOM) dust monitors continuously measuring PM_{10} known as D02-DC to D06-DC (D02-DC, D04-DC and D06-DC measure $PM_{2.5}$ as well as PM_{10}).
- Two PM_{10} E-Sampler Particulate Monitors continuously measuring PM_{10} known as D9-DC (formerly known as D7-DC before relocation) and D8-DC (EPL Monitoring Points 19 and 20 respectively).
- Three High Volume Air Sampler (HVAS) dust monitors measuring Total Suspended Particulates (TSP) over one 24-hour period every six days, known as D02-TSP to D04-TSP.
- Four HVAS dust monitors measuring PM_{10} over one 24-hour period every six days, known as D01-PM10, D06-PM10, D08-PM10, and D09-PM10.

SSD-8642 stipulate criteria for PM2.5, PM10 and TSP 3, as presented in ***Table 6-3***.

Table 6-3 SSD-8642 Air Quality Criteria that applied during the reporting period

Pollutant	Averaging Period	Criterion[4]
Long Term Impact Assessment Criteria for Particulate Matter		
TSP	Annual Average	[1] 90 μg/m^3
PM_{10}	Annual Average	[1] 25 μg/m^3
$PM_{2.5}$	Annual Average	[1] 8 μg /m^3
Short Term Impact Assessment Criteria for Particulate Matter		
PM_{10}	24-hour Average	[1] 50 μg/m^3
$PM_{2.5}$	24-hour Average	[1] 25 μg/m^3

1 – Incremental impact (i.e. incremental increase in concentrations due to the development on its own).
2 – Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations sure to all other sources).
3 – Excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Secretary.

Mangoola currently implements a Dust Management Trigger Action Response Plan (TARP) developed in line with the Dust Assessment Handbook (NSW EPA, 2019).

Mangoola implements best practice for the management of air quality including the implementation of reasonable and feasible measures to minimise/mitigate offsite odours. Mangoola will continue to implement all controls in the Spontaneous Combustion Management Plan, Blast Fume Management Plan and the AQGGMP.

In addition, Mangoola also implements key operational controls as described in Section 4.2 of the AQGGMP. These controls include, but are not limited to, predictive meteorological forecasting, water carts, chemical dust suppressants, progressive rehabilitation and dust suppression sprays on stockpiles and conveyors.

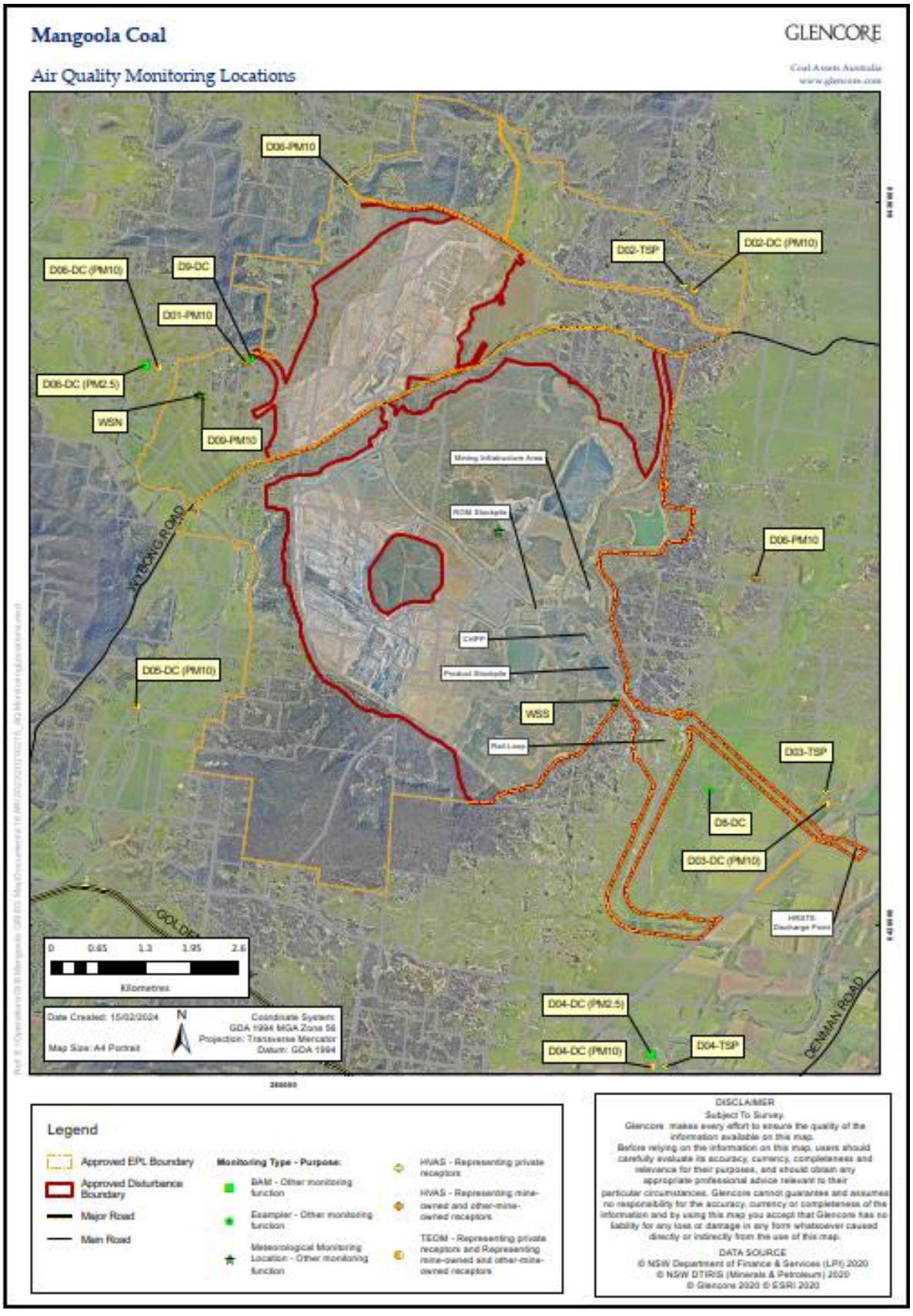


Figure 6-4 Air Quality and Meteorological Locations

6.2.2 Environmental Monitoring Results

6.2.2.1 Results from the Reporting Period

TEOM (PM_{10})

TEOM results for PM_{10} concentrations are available on the Mangoola website and are summarised in ***Table 6-4***.

Table 6-4 2022 PM_{10} 24-hr Average Results

Gauge	Location Description	Minimum (µg/m³)	Annual Average# (µg/m³)	Maximum 24 hr (µg/m³)^
D02-DC	96 Ridgelands Rd	3.0	17.4	**53.6^^**
D03-DC	830 Mangoola Rd	3.8	20.1	**57.7^^**
D04-DC	22 Bells Lane	3.3	16.3	**52.1^^**
D05-DC	2909 Wybong Rd	1.3	11.0	48.3
D06-DC	393 Wybong PO Rd	3.5	16.5	**55.3^^**
D9-DC*	Wybong PO Rd	0.1	15.4	76.8
D8-DC*	CHPP	0.2	11.9	40.6

** EPL monitoring points (19 and 20) no compliance criteria against EPL 12894.*

 # PM_{10} Annual Average Criterion 30 µg/m³ until the commencement of Development under SSD-8642 occurred on 6 December 2021. Following commencement of Stage 2 – PM_{10} annual average criterion reduced from 30 µg/m³ to 25 µg/m³ as listed in Table 14. TSP Annual Average Criterion 90 µg/m³.

^PM_{10} 24h Max Criteria 50 µg/m³.

^^ Results above 50 µg/m³ due to offsite contributions.

There were no exceedances of the 25 µg/m³ annual average criterion at any of the applicable monitoring locations throughout the reporting period. There were eight exceedances of the 50 µg/m3 24-hr averaging period criterion. Note: it was determined that that Mangoola's impact was below the criteria which was ascertained by an incremental contribution investigation.

The TEOM readings which fell outside the PM_{10} criteria included:

- D02-DC on the 2nd of October 2023 (53.6 µg/m³) it was noted that localised offsite contributions lead to higher average reading. Site incremental contribution was lower than the 50ug/m3 criteria.
- D03-DC on the 23rd of May 2023 (54.5 µg/m³) it was noted that localised offsite contributions lead to the inflated average reading. Site incremental contribution was lower than the 50ug/m3 criteria.
- On the 2nd of October 2023 (52.7 µg/m³) it was noted that localised offsite contributions lead to a higher average reading. The site incremental contribution was lower than the 50ug/m3 criteria.
- On the 11 of December 2023 (53.1 µg/m³) it was noted that there were high levels of regional dust in Wybong/Muswellbrook areas. The wind direction from the south-west and heading to the south-east, suggested that Mangoola was not contributing to this high result.

- On the 19th of December 2023 (57.7 µg/m^3) it was noted that incremental contribution calculation indicates that the exceedance was not due to Mangoola's mining operations. Smoke was coming from the fires in the north-west and wind direction supports this.
- D04-DC On the 19th of the December 2023 (52.1 µg/m^3) it was noted that incremental contribution calculation indicates the exceedance was not due to Mangoola's mining operations. Smoke was coming from the fires in the north-west and wind direction supports this.
- D06-DC on the 2nd of October 2023 (55.3 µg/m^3) it was noted that localised offsite contributions lead to higher average reading. The site incremental contribution was lower than the 50ug/m3 criteria.
- On the 19th of the December 2023 (52.7 µg/m^3) It was noted that incremental contribution calculation indicates the exceedance is not due to Mangoola's mining operations. Smoke was coming from the fires in the north-west and wind direction supports this.

BAM ($PM_{2.5}$)

BAM results for $PM_{2.5}$ concentrations are available on the Mangoola website and are summarised in ***Table 6-5***.

Table 6-5 2023 $PM_{2.5}$ 24-hr and Annual Average Results

Gauge	Location Description	Minimum (µg/m^3)	Annual Average# (µg/m^3)	Maximum (µg/m^3)^
D02-DC	96 Ridgelands Rd	0.3	7.3	**34^^**
D04-DC	22 Bells Lane	0.1	3.6	24.5
D06-DC	393 Wybong PO Rd	0.4	5.2	**26.3^^**

 # $PM_{2.5}$ Annual Average Criterion 8 µg/m^3
^$PM_{2.5}$ 24h Max Criteria 25 µg/m^3.
^^ Results above 25 µg/m^3 due to offsite contributions.

There were no exceedances of the $PM_{2.5}$ annual average criteria of 8 µg/m^3 and two exceedances of the 24-hr maximum criteria of 25 µg/m^3 at any of the monitoring locations throughout the reporting period which required further investigation to determine site incremental contribution.

BAM results which fell outside the $PM_{2.5}$ criteria included:

- D02-DC on the 19th of December 2023 (34 µg/m^3) it was noted that the incremental contribution calculation indicates the exceedance was not due to Mangoola's mining operations. Smoke was coming from the fires in the north-west and wind direction supports this.
- D06-DC on the 19th of December 2023 (26.3 µg/m^3) it was noted that the incremental contribution calculation indicates the exceedance was not due to Mangoola's mining operations. Smoke was coming from the fires in the north-west and wind direction supports this.

High Volume Air Sampler (HVAS) TSP and PM_{10}

HVAS results for TSP and PM_{10} concentrations are available on the Mangoola website and are summarised in ***Table 6-6***.

Table 6-6 2023 PM_{10} and TSP 24-hr Average Results

Monitoring Point	Minimum (µg/m³)	Annual Average (µg/m³)*	Maximum (µg/m³)**
TSP			
D02-TSP#	3.4	45.7	126
D03-TSP#	12.2	50.51	137
D04-TSP#	6.5	37.8	100
PM_{10}			
D01-PM_{10}^	2.2	15.7	**52.8**
D08-PM_{10}^#	1	13.7	47.2
D06-PM_{10}^	2	18.6	**51.6**
D09-PM_{10}^	0.1	14.3	**53**

** PM_{10} Annual Average Criterion 25 µg/m³, TSP Annual Average Criterion 90 µg/m³;*
*** PM_{10} 24hr Criterion 50 µg/m³;*
^ Monitor located on Mine Owned Land; and
 # Representative of private receptors.

There were four exceedances of the respective criteria for TSP and PM_{10} throughout the reporting period which required further investigation to determine site incremental contribution:

- D01-PM10 on the 2nd of October 2023 (50.3 µg/m^3) it was noted that localised offsite contributions lead to higher average reading. Site incremental contribution was lower than the 50ug/m3 criteria.
- On the 19th of December (52.8 µg/m^3) it was noted that the incremental contribution calculation indicates the exceedance was not due to Mangoola's mining operations. Smoke was coming from the fires in the north-west and wind direction supports this.
- D06-PM10 on the 19th of December (51.6 µg/m^3) it was noted that the incremental contribution calculation indicates the exceedance was not due to Mangoola's mining operations. Smoke was coming from the fires in the north-west and wind direction supports this.
- D09-PM10 on the 19th of December (53 µg/m^3) it was noted that the incremental contribution calculation indicates the exceedance was not due to Mangoola's mining operations. Smoke was coming from the fires in the north-west and wind direction supports this.

Odour

In accordance with, SSD-8642 and EPL 12894, no odour monitoring is required at Mangoola. No complaints have been received during the reporting period in relation to odour. No incidents have been reported in relation to odour.

6.2.2.2 Comparison with Predictions

An Air Quality Impact Assessment (Jacobs, 2019) was completed as part of the MCCO Project.

A comparison of 2023 dust data against the relevant MCCO Air Quality Impact Assessments has been made in ***Table 6-7***.

Table 6-7 Comparison of 2020 to 2023 Dust Emissions

Dust Monitor	Closest Privately Owned Residence	2023 Prediction (SSD-8642)	2020 Annual Average	2021 Annual Average	2022 Annual Average	2023 Annual Average
TEOM (PM_{10}) Monitoring Sites (µg/m³)						
D02-DC	111	11.0	12.3	12.8	12.8	17.4
D03-DC	125D, E and F	12.0	17.2	15.4	13.3	20.1
D04-DC	184	11.0	13.6	13.2	11.2	16.3
D05-DC	176	11.0	10.5	9.2	7.6	11.0
D06-DC	110	13.0	14.6	12.3	12.0	16.5
TEOM ($PM_{2.5}$) Monitoring Sites (µg/m³)						
D02-DC	111	5.0	-	-	5.3	7.3
D04-DC	184	5.0	-	-	3.4	3.6
D06-DC	110	6.0	-	-	7.3	5.2
E-Samplers (PM_{10}) (µg/m³						
D9-DC	130	20.0	8.7	11.1	9.9	15.4
D8-DC	125	13.0	11.9	8.9	8.4	11.9
HVAS (PM_{10} and TSP) Monitors (µg/m³)						
D02-TSP	111	50	34.5	27.8	28.0	45.7
D03-TSP	125D, E and F	51	42.1	30.3	27.2	50.51
D04-TSP	184	50	32.9	23.8	23.3	37.8
D01-PM_{10}	110	-	13.3	10.2	9.2	15.7
D06-PM_{10}	130	-	15.6	10.9	10.8	18.6
D07-PM_{10}	190	-	14.1	9.5	14.8	N/A
D08-PM_{10}^ (from 22/04/22)	139/157	-	-	-	7.9	13.7

Dust Monitor	Closest Privately Owned Residence	2023 Prediction (SSD-8642)	2020 Annual Average	2021 Annual Average	2022 Annual Average	2023 Annual Average
D09-PM_{10}^ (from 22/04/22)	130	-	-	-	7.4	14.3

^ Full year of data unavailable due to monitor relocation

As shown in ***Table 6-7***, the 2023 annual averages for air quality were generally above the predicted levels form the air quality assessment completed for the MCCO Project Area.

6.2.2.3 Long Term Trend Analysis

A long-term trend analysis of air quality monitoring results at Mangoola has been undertaken using data from July 2010 to December 2023 to identify any trends in the monitoring data over the life of the project. These graphs are presented in ***Appendix C***. Increased rainfall in 2020 resulted in lower results than the previous few years (refer ***Appendix B***). 2022 saw results slightly higher than those in 2021 with 2023 results increasing slightly, on average, likely due to below average rainfall.

The annual average HVAS TSP data has shown a gradual increase from 2010 to 2014, then declining in 2015, remaining low in 2016 and 2017, before rising again in 2018 and 2019. The results from 2018 and 2019 saw an increase in TSP results due to prolonged period of drought and increased bushfire activity. Due to increased rain in 2020, results decreased to be consistent with results from 2015 to 2017. The 2022 average TSP results decreased further, likely a result of the consistent rain during the period with 2023 results increasing in line, and likely attributable to below average rainfall.

The 24hr maximum TEOM data show seasonal peaks in the summer months. The annual average TEOM results have remained consistent with results from 2011 through to 2017 and results have been generally increasing during 2018-2019 which correlates with low rainfall and the ongoing drought conditions. Increased rain during 2020 decreased results to be consistent with those from 2015 to 2017. Ongoing rain during 2022 saw 24hr maximum TEOM (averages) remain consistent with those in 2021 with 2023 results increasing in line, and likely attributable to below average rainfall.

6.2.3 Key Performance and/or Management Issues

PM10 monitoring is required continuously in accordance with Condition M2.2 of EPL 12894 at Point 19 (D9-DC) and Point 20 (D8-DC). While the continuous emissions monitoring captured >96% data (the minimum is 90% as per EPA website) EPL19 had a unit failure between 19/8/2023 and 21/8/2023. The unit was then replaced (on 21/8/2023) after a field service did not rectify the issue.

EPL 20 suffered a technical failure whereby there was insufficient data (flow failure) on 15/01/2023, and then again on the 22/07/2023, 26/07/2023, 30/07/2023, and 3/08/2023-4/08/2023. On each instance an in field service was completed and the unit recommenced operation. The unit then failed on 07/08/2023 resulting in no data from 7/08/2023 – 9/08/2023, subsequently the unit was replaced. A technical fault was experienced with this unit between 14/12/2023 and 18/12/2023 leading to insufficient data capture on these dates. It is to be noted that this data loss will be reported in the next Annual Return.

Continuous monitoring at other PM_{10} and $PM_{2.5}$ units was in accordance with the approved AQGGMP. All units captured more than 96% data and an average of 98.2% overall. Where outages did occur, they were quickly identified and responded to and due to unplanned power outages/interruptions, monitor breakdowns and servicing/calibration.

There were 6 community complaints received by Mangoola during the reporting period relating to dust, which is an increase from the previous reporting period. Further detail on the complaints received in 2023 is provided in **Section 9.3**.

6.2.4 Proposed Improvements

There are no proposed improvements for air quality for 2024.

6.3 Noise

6.3.1 Environmental Management

During the reporting period Mangoola has operated in accordance with the approved Noise Management Plan (NMP) required under SSD-8642, which is available on the Mangoola website. Attended noise monitoring was completed as per the requirements of SSD-8642 and EPL 12894. All noise monitoring undertaken during the reporting period is summarised as follows:

- Attended monthly monitoring occurred during the night period at thirteen locations representative of privately-owned residences and the Anglican Church (NM4, NM8, NM10, NM13–22) and at six locations during the day period to capture potential construction activity associated with the MCCO project (NM4, NM18–22), as per the NMP.
- Continuous unattended noise monitoring was undertaken at five permanent locations (NC02, NC03, NC05, NC06 and NC10). Three mobile units were also utilised and relocated as needed. This monitoring is used for proactive and reactive management of day-to-day operations at Mangoola Open Cut, not to monitor compliance.

The attended and permanent unattended noise monitoring locations are shown in ***Figure 6-5***.

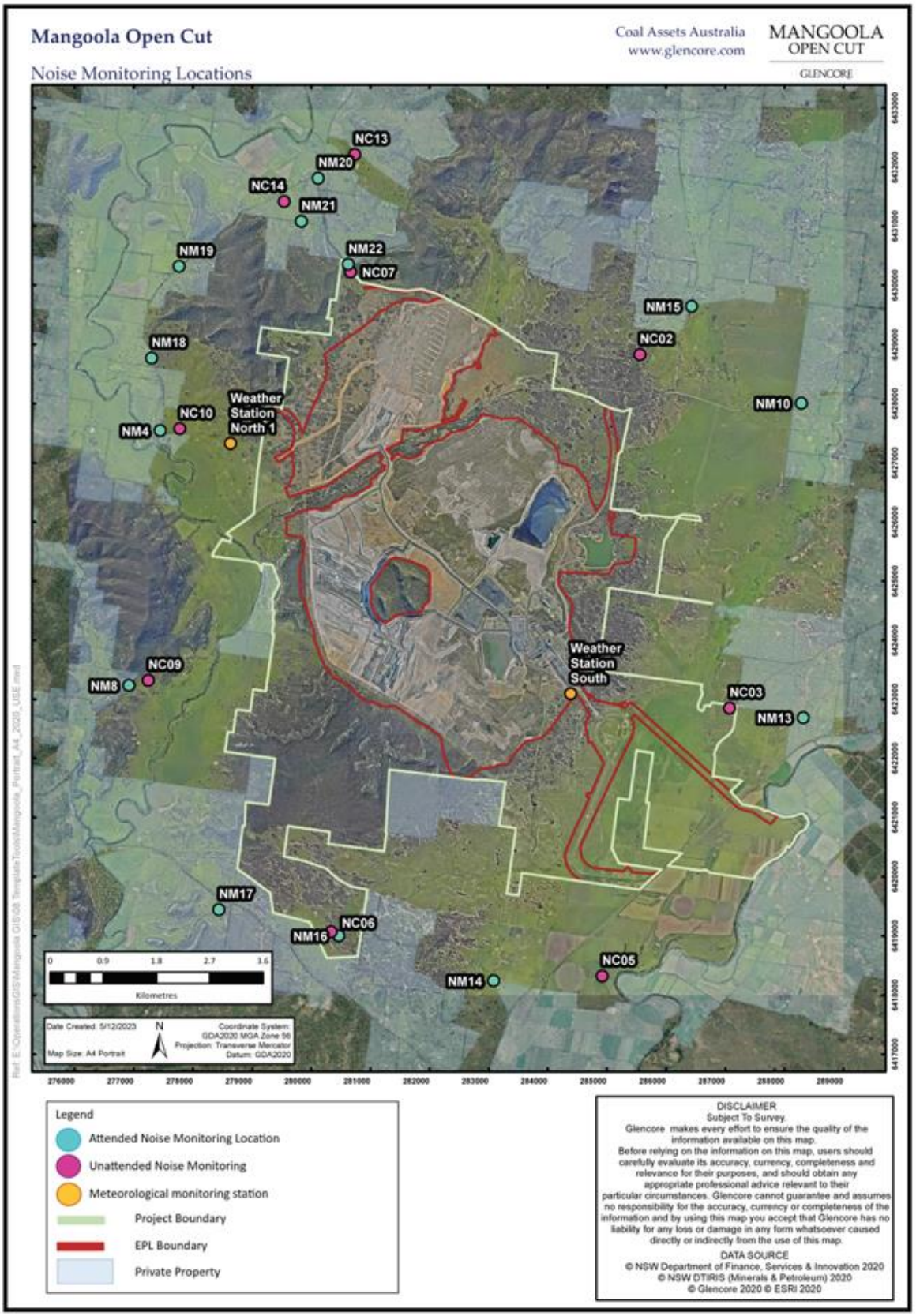


Figure 6-5 Noise Monitoring Locations

Noise Impact Assessment Criteria

Mangoola's noise limits are specified in Table 1, Condition B1 of Schedule 2 of SSD-8642 and Condition L3.2 of the EPL and are reproduced here in ***Table 6-8*** and ***Table 6-9***.

Table 6-8 SSD-8642 – Noise Impact Assessment Criteria

Noise Assessment Location	Day $L_{Aeq(15\ minute)}$ Years 1 & 2	Day $L_{Aeq(15\ minute)}$ Year 3 onward	Evening $L_{Aeq(15\ minute)}$	Night $L_{Aeq(15\ minute)}$	Night $L_{A1(1minute)}$
171, 176, 144	40	40	40	40	52
25, 128, 154, 193, 125A, 182B	40	40	38	38	52
261	42	40	38	38	52
54, 79, 114, 141, 151, 192, 206, 321, 125C, 182A, 241A, 241C, 190, 157	40	40	37	37	52
165, 177, 106B, 104, 166, 178, 251, 253, 260, 112B, 183C, 184A, 147, 112A, 112C, 240, 241B	40	40	36	36	52
134A	44	40	39	39	52
109A-F	43	40	39	39	52
263	42	40	39	39	52
164^	40	40	35	39	52
Other privately-owned residences^	40	40	35	35	52
Wybong Hall and Anglican Church	48	48	48	48	-

^*The Applicant has a written agreement in place with the owners of* Property ID*'s* 132 *and 164 and the Department was notified of this in writing of this.*

Table 6-9 EPL 12894 – Noise Impact Assessment Criteria

Attended Noise Monitoring Location	EPL ID Number	Representative Residences	Night $L_{Aeq\ (15\ minute)}$	Night $L_{A1\ (1minute)}$
NM4	23	109A, 109B, 109C, 109D, 109E, 109F	41	54
NM8	26	176	40	52
NM10	27	251	35	551

Attended Noise Monitoring Location	EPL ID Number	Representative Residences	Night $L_{Aeq\ (15\ minute)}$	Night $L_{A1\ (1minute)}$
NM13	29	125A, 125C, 190, 240, 241A, 241B, 241C, 182A, 182B	38	50
NM14	30	184A	37	53
NM15	22	154	34	48
NM16	34	79, 177, 178, 147, 253, 141, 151	37	52
NM17	35	54, 114, 166, 112A, 112B, 112C, 106B	36	51
NM18	36	134A	39	52
NM19	37	165	35	51
NM20	38	206, 260, 261, 263, 321	38	51
NM21	39	144, 128	40	49
NM22	40	157, 171	46	58

The approved NMP adopts 13 attended NM locations for night period operations and six attended NM locations for day period activity (operations and construction) that are representative of residences outlined in SSD-8642 and consistent with those provided in the EPL. Noise criteria only apply in specific meteorological conditions in accordance with EPL 12894. Under SSD-8642, noise criteria increase by 5 dB (compared to the standard noise criteria) during 'very noise-enhancing' conditions (i.e. not 'standard' or 'noise-enhancing' conditions).

Where several assessment locations are in one NM catchment, representative noise criteria have been adopted to ensure that the lowest (most stringent) criteria within the NM catchment can be achieved. Additionally, in accordance with the Noise Policy for Industry (NPfI) (EPA, 2017), relevant modifying factor adjustments apply when assessing the characteristics of Mangoola mine noise emissions.

Management and Mitigation Measures

In addition to conducting noise monitoring, Mangoola continues to implement several mitigation measures with regard to the management of noise to minimise potential noise impact on nearby receivers, and to comply with the conditions of SSD-8642. Mitigation measures are implemented as per the NMP and include, but are not limited to:

- Consideration of noise impacts during mine planning.
- Controlling mine noise at the source using equipment with appropriate sound attenuation fitted, where practical.
- Maintaining mining equipment in a proper and efficient manner.
- Restricting, where possible, operations on outer dump faces or elevated dumps in sensitive areas during adverse weather conditions.
- Ensuring trucks operating during the nighttime are restricted to operational areas below the maximum elevation of the overburden emplacement areas.

- Using real-time noise monitors that incorporate automatic alarms so that proactive control can be implemented.

6.3.2 Environmental Monitoring Results

6.3.2.1 Results from the Reporting Period

EPL 12894 and SSD-8642 Noise Monitoring

During 2023, monthly attended surveys were undertaken at 13 and 6 representative locations during the night and day periods respectively to measure operational and construction activity noise, in accordance with SSD-8642 and EPL 12894. These locations have been outlined in ***Section 6.3.1***.

It is of note that the daytime (i.e. MCCO construction) noise monitoring ceased in April 2023, as MCCO construction activities were complete.

During 2023, Mangoola was compliant with all noise criteria set out in SSD-8642 and EPL 12894. A summary of results is presented in ***Table 6-10*** and ***Table 6-11.*** Where the meteorological conditions did not apply (for EPL 12894) or were 'very noise-enhancing' (for SSD-8642), these cells have been bolded.

All noise monitoring results are available in full on the Mangoola website.

Table 6-10 Attended noise monitoring results and comparison against MCCO predictions ($L_{Aeq,15minute}$, dB)

	NM4	NM8	NM10	NM13	NM14	NM15	NM16	NM17	NM18	NM19	NM20	NM21	NM22	Compliance against criteria
EA property reference	109A, 109B, 109C, 109D, 109E, 109F	176	251	125A, 125C, 190, 240, 241A, 241B, 241C, 182A, 182B	184A	154	79, 177, 178, 147, 253, 141, 151	54, 114, 166, 112A, 112B, 112C, 106B	134A	165	206, 260, 261, 263, 321	144, 128	157, 171	
$L_{Aeq,15minute}$ criteria	41	40	35	38	37	34	37	36	39	35	38	40	46	
$L_{Aeq,15minute}$ Year 1 prediction (Day/Night)	38/39[1], 38/39[2], 38/39[3], 38/39[4], 38/39[5], 38/39[6]	40	36	38[7], 37[8], 37[9], 36[10], 37[11], 36[12], 37[13], 37[14], 38[15]	36	38	37[16], 36[17], 36[18], 36[19], 36[20], 37[21], 37[22]	37[23], 37[24], 36[25], 36[26], 36[27], 36[28], 36[29]	38/39	33/35	32/34[30], 31/34[31], 36/38[32], 35/39[33], 35/37[34]	38/40[35], 33/37[36]	31/34[37], 34/39[38]	
January (Day/Night)	IA/≤33	-/31	-/IA	-/IA	-/IA	-/IA	-/IA	-/ IA	IA/IA	IA/<20	IA/<20	IA/<20	IA/24	Yes
February (Day/Night)	**IA**/30	-/31	-/**IA**	-/**IA**	-/**IA**	-/IA	-/IA	-/25	**IA**/26	**IA/<25**	**IA**/<IA	**IA**/IA	**IA**/IA	Yes
March (Day/Night)	IA/IA	-/26	-/28	-/29	-/<20	-/IA	-/IA	-/IA	IA/IA	IA/IA	IA/<20	IA/IA	**IA**/24	Yes

	NM4	NM8	NM10	NM13	NM14	NM15	NM16	NM17	NM18	NM19	NM20	NM21	NM22	Compliance against criteria
April (Day/Night)	**<27**/36	-/30	-/IA	-/IA	-/34	-/IA	-/36	-/27	**IA**/31	**IA**/<20	**IA**/<20	**IA**/<20	**IA**/30	Yes
May (Day/Night)	-/22	-/<20	-/28	-/28	-/23	-/31	-/<20	-/IA	-/<20	-/IA	-/IA	-/<20	-/31	Yes
June (Day/Night)	-/**IA**	-/**IA**	-/**<30**	-/**<30**	-/**<22**	-/**<30**	-/**<24**	-/**IA**	-/**<20**	-/**IA**	-/**IA**	-/**<20**	-/<20	Yes
July (Day/Night)	-/**40**	-/35	-/<25	-/32	-/31	-/<20	-/31	-/25	-/34	-/24	-/30	-/27	-/**38**	Yes
August (Day/Night)	-/**39**	-/35	-/IA	-/IA	-/**25**	-/IA	-/34	-/30	-/39	-/30	-/**28**	-/<25	-/34	Yes
September (Day/Night)	-/**<20**	-/**IA**	-/**27**	-/**31**	-/24	-/IA	-/23	-/23	-/**IA**	-/**IA**	-/IA	-/IA	-/IA	Yes
October (Day/Night)	-/**36**	-/**29**	-/**IA**	-/IA	-/IA	-/**IA**	-/**IA**	-/**IA**	-/**<36**	-/**32**	-/**<25**	-/**<25**	-/**<30**	Yes
November (Day/Night)	-/**NM**	-/**26**	-/IA	-/IA	-/**IA**	-/**IA**	-/**IA**	-/**IA**	-/**<30**	-/**<25**	-/**<30**	-/**<25**	-/**30**	**Yes**
December (Day/Night)	-/**31**	-/**30**	-/IA	-/IA	-/**IA**	-/IA	-/**25**	-/**30**	-/**33**	-/**<30**	-/**IA**	-/**28**	-/**37**	Yes

1. EA reference 109A *2. EA reference 109B* *3. EA reference 109C* *4. EA reference 109D* *5. EA reference 109E* *6. EA reference 109F*
7. EA reference 125A *8. EA reference 125C* *9. EA reference 190* *10. EA reference 240* *11. EA reference 241A* *12. EA reference 241B*
13. EA reference 241C *14. EA reference 182A* *15. EA reference 182B* *16. EA reference 79* *17. EA reference 177* *18. EA reference 178*
19. EA reference 147 *20. EA reference 253* *21. EA reference 141* *22. EA reference 151* *23. EA reference 54* *24. EA reference 114*
25. EA reference 166 *26. EA reference 112A* *27. EA reference 112B* *28. EA reference 112C* *29. EA reference 106B* *30. EA reference 206*
31. EA reference 260 *32. EA reference 261* *33. EA reference 263* *34. EA reference 321* *35. EA reference 144* *36. EA reference 128*
37. EA reference 157 *38. EA reference 171* *IA= Inaudible*
Note: Bolded results denote that a positive 5 dB adjustment was applied to the specified noise limit to account for 'very noise enhancing' weather conditions at the time of the measurement
Note: Bolded in red results denote a measured result that is above the predicted noise level for that location.

Table 6-11 Attended noise monitoring results and comparison against MCCO predictions (L_{Amax}, dB)

	NM4	NM8	NM10	NM13	NM14	NM15	NM16	NM17	NM18	NM19	NM20	NM21	NM22	Compliance against criteria
EA property reference	109A, 109B, 109C, 109D, 109E, 109F	176	251	125A, 125C, 190, 240, 241A, 241B, 241C, 182A, 182B	184A	154	79, 177, 178, 147, 253, 141, 151	54, 114, 166, 112A, 112B, 112C, 106B	134A	165	206, 260, 261, 263, 321	144, 128	157, 171	
L_{Amax} criteria	54	51	50	53	48	52	54	51	52	51	51	49	58	
L_{Amax} Year 1 prediction	40[1], 40[2], 40[3], <40[4], 40[5], <40[6]	41	<40	<40[7], <40[8], <40[9], <40[10], <40[11], <40[12], <40[13], <40[14], <40[15]	<40	40	<40[16], <40[17], <40[18], <40[19], <40[20], <40[21], <40[22]	<40[23], <40[24], <40[25], <40[26], <40[27], <40[28], <40[29]	<40	<40	<40[30], <40[31], 41[32], 43[33], 40[34]	44[35], 40[36]	<40[37], 43[38]	
January	33	31	IA	IA	IA	IA	IA	IA	27	<20	25	<20	24	Yes
February	33	35	IA	IA	IA	IA	IA	27	26	<25	IA	IA	IA	Yes
March	IA	29	31	33	<20	IA	IA	IA	IA	IA	<20	IA	28	Yes
April	**45**	33	IA	IA	**44**	IA	**49**	29	38	28	<20	<20	**45**	Yes
May	23	<20	32	33	25	37	<20	IA	<20	IA	IA	<25	36	Yes

	NM4	NM8	NM10	NM13	NM14	NM15	NM16	NM17	NM18	NM19	NM20	NM21	NM22	Compliance against criteria
June	**IA**	**IA**	**<30**	**38**	**<22**	**33**	**<24**	**IA**	**<25**	**IA**	**IA**	**<20**	<20	Yes
July	**42**	41	<25	39	35	<20	33	27	**40**	27	33	29	**47**	Yes
August	**43**	**44**	IA	IA	**26**	IA	**42**	31	**44**	33	**34**	<25	39	Yes
September	**<20**	**IA**	**36**	**38**	27	IA	25	25	**IA**	**IA**	IA	IA	IA	Yes
October	**38**	**32**	**IA**	IA	IA	**IA**	**IA**	**IA**	**37**	**33**	**<25**	**<25**	**<30**	Yes
November	**NM**	**32**	IA	IA	**IA**	**IA**	**IA**	**IA**	**32**	**<25**	**<30**	**28**	**40**	Yes
December	**33**	**32**	IA	IA	**IA**	IA	**26**	**32**	**36**	**<30**	**IA**	**33**	**44**	Yes

1. EA reference 109A *2. EA reference 109B* *3. EA reference 109C* *4. EA reference 109D* *5. EA reference 109E* *6. EA reference 109F*
7. EA reference 125A *8. EA reference 125C* *9. EA reference 190* *10. EA reference 240* *11. EA reference 241A* *12. EA reference 241B*
13. EA reference 241C *14. EA reference 182A* *15. EA reference 182B* *16. EA reference 79* *17. EA reference 177* *18. EA reference 178*
19. EA reference 147 *20. EA reference 253* *21. EA reference 141* *22. EA reference 151* *23. EA reference 54* *24. EA reference 114*
25. EA reference 166 *26. EA reference 112A* *27. EA reference 112B* *28. EA reference 112C* *29. EA reference 106B* *30. EA reference 206*
31. EA reference 260 *32. EA reference 261* *33. EA reference 263* *34. EA reference 321* *35. EA reference 144* *36. EA reference 128*
37. EA reference 157 *38. EA reference 171* *IA= Inaudible* *For assessment purposes the L_{Amax} and the $L_{A1,1minute}$ are interchangeable.*

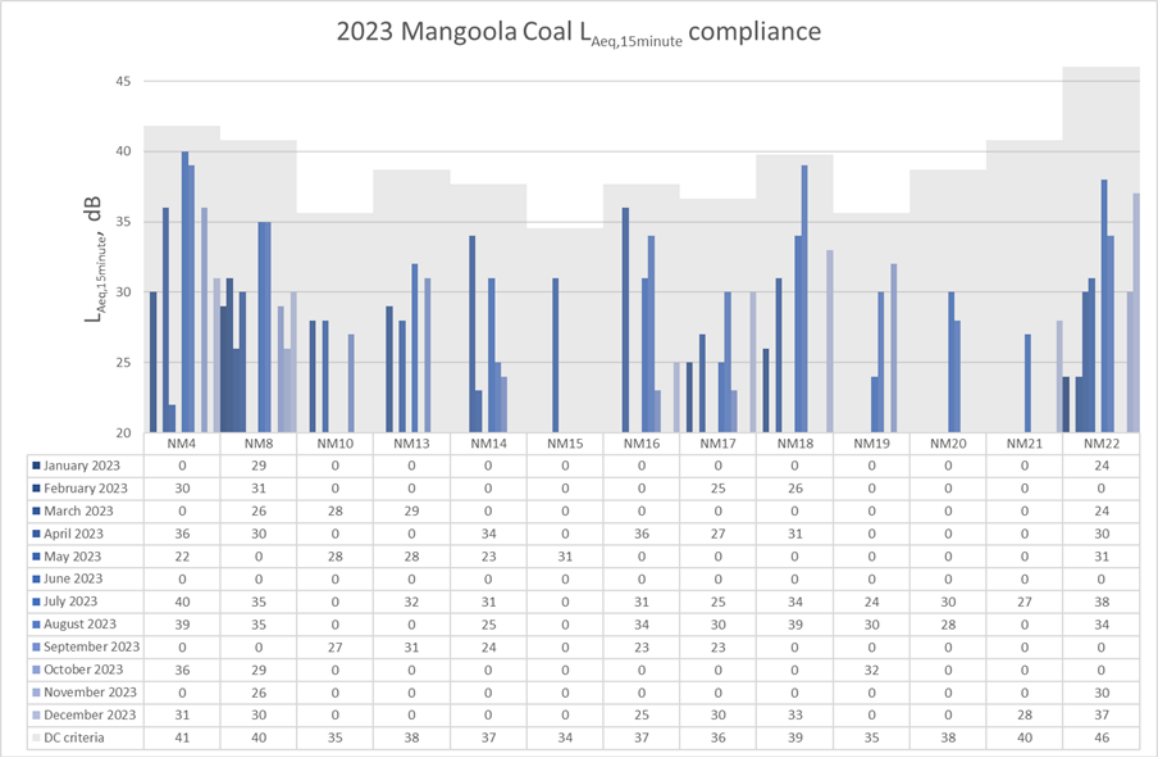
Note: Bolded results denote that a positive 5 dB adjustment was applied to the specified noise limit to account for 'very noise enhancing' weather conditions at the time of the measurement
Note: Bolded in red results denote a measured result that is above the predicted noise level for that location.

As shown in ***Table 6-10***, the noise levels recorded at Mangoola from January–December 2023 were compared against the Year 1 noise predictions presented in the MCCO Noise Impact Assessment (Global Acoustics, 2019) and relevant SSD-8642 $L_{Aeq,15minute}$ criteria.
Two monitoring locations recorded at least one result above the Year 1 $L_{Aeq,15minute}$ predictions, with one result above the predicted levels at NM4 and two results above the predicted levels at NM22. However, these levels were well below the relevant criterion. All other results were lower than predicted levels.

Table 6-11 compares the January–December 2023 Mangoola L_{Amax} noise against MCCO Noise Impact Assessment Year 1 predictions and SSD-8642 $L_{A1,1minute}$ criteria. Three monitoring locations recorded at least one result above the Year 1 L_{Amax} predictions, with one result above the predicted levels at NM8 and NM14, two results above the predicted levels at NM16 and NM18, three results above the predicted level at NM4, and four results above the predicted level at NM22. All other measured L_{Amax} were below predicted levels.

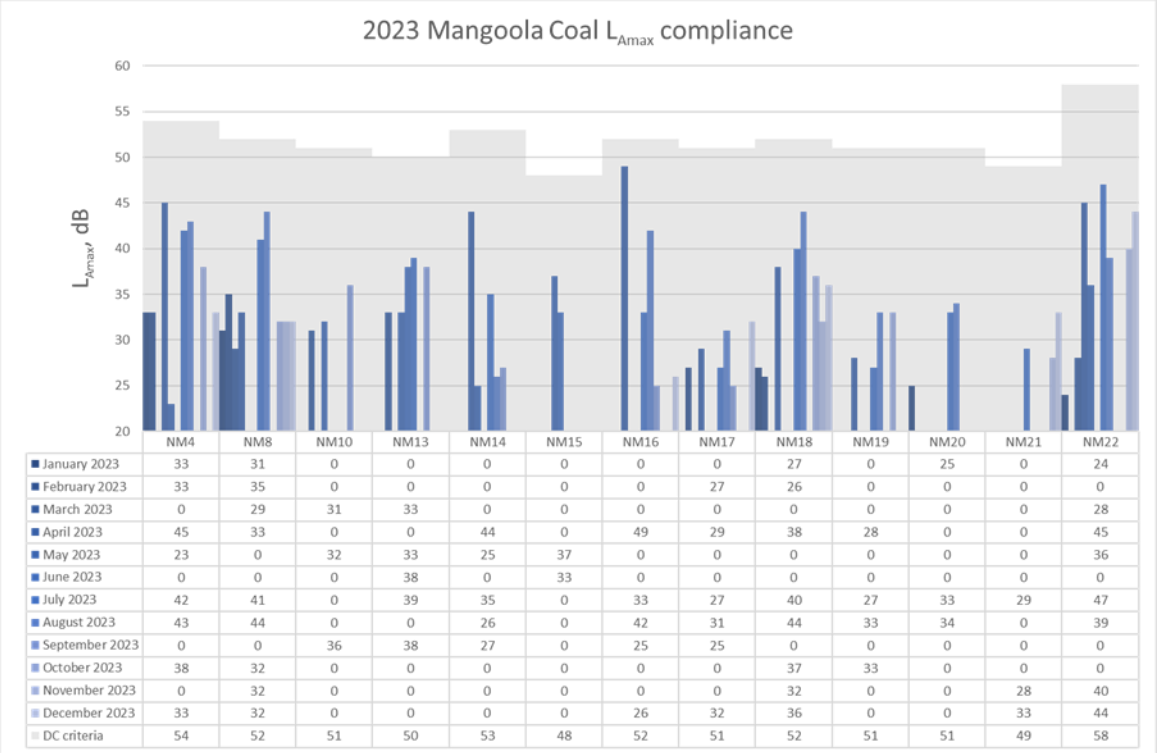
Possible reasons for a difference between modelled noise levels and those measured are differences in modelling scenario assumptions compared to actual operations, or specific weather conditions at the time (only a finite set of meteorological conditions can be modelled). The former primarily relates to features such as mine topography and locations of plant and equipment. Importantly, measured Mangoola noise levels did not exceed any $L_{Aeq,15minute}$ or L_{Amax} noise criterion during 2023.

Figure 6-6 and ***Figure 6-7*** compare the 2023 noise levels recorded at Mangoola with relevant approval criteria.



	NM4	NM8	NM10	NM13	NM14	NM15	NM16	NM17	NM18	NM19	NM20	NM21	NM22
January 2023	0	29	0	0	0	0	0	0	0	0	0	0	24
February 2023	30	31	0	0	0	0	0	25	26	0	0	0	0
March 2023	0	26	28	29	0	0	0	0	0	0	0	0	24
April 2023	36	30	0	0	34	0	36	27	31	0	0	0	30
May 2023	22	0	28	28	23	31	0	0	0	0	0	0	31
June 2023	0	0	0	0	0	0	0	0	0	0	0	0	0
July 2023	40	35	0	32	31	0	31	25	34	24	30	27	38
August 2023	39	35	0	0	25	0	34	30	39	30	28	0	34
September 2023	0	0	27	31	24	0	23	23	0	0	0	0	0
October 2023	36	29	0	0	0	0	0	0	0	32	0	0	0
November 2023	0	26	0	0	0	0	0	0	0	0	0	0	30
December 2023	31	30	0	0	0	0	25	30	33	0	0	28	37
DC criteria	41	40	35	38	37	34	37	36	39	35	38	40	46

Figure 6-6 Annual Review Attended Noise Monitoring Compliance Results (LAeq(15minute))



	NM4	NM8	NM10	NM13	NM14	NM15	NM16	NM17	NM18	NM19	NM20	NM21	NM22
January 2023	33	31	0	0	0	0	0	0	27	0	25	0	24
February 2023	33	35	0	0	0	0	0	27	26	0	0	0	0
March 2023	0	29	31	33	0	0	0	0	0	0	0	0	28
April 2023	45	33	0	0	44	0	49	29	38	28	0	0	45
May 2023	23	0	32	33	25	37	0	0	0	0	0	0	36
June 2023	0	0	0	38	0	33	0	0	0	0	0	0	0
July 2023	42	41	0	39	35	0	33	27	40	27	33	29	47
August 2023	43	44	0	0	26	0	42	31	44	33	34	0	39
September 2023	0	0	36	38	27	0	25	25	0	0	0	0	0
October 2023	38	32	0	0	0	0	0	0	37	33	0	0	0
November 2023	0	32	0	0	0	0	0	0	32	0	0	28	40
December 2023	33	32	0	0	0	0	26	32	36	0	0	33	44
DC criteria	54	52	51	50	53	48	52	51	52	51	51	49	58

Figure 6-7 Annual Review Attended Noise Monitoring Compliance Results (LAmax)

6.3.2.2 Comparison with Predictions

The MCCO Noise Impact Assessment (Global Acoustics, 2019) predicted the 90th percentile $L_{Aeq,15minute}$ and L_{Amax} operational noise levels at private receptors in Years 1, 3, 5 and 8. As MCCO was approved in 2021, a comparison of 2023 noise data against the Year 1 predictions has been made in ***Table 6-10*** and ***Table 6-11***.

Any measured level which exceeds that predicted (and meteorological conditions were relevant) has been bolded in red.

6.3.2.3 Long Term Trend Analysis

Exceedances of SSD-8642 and EPL 12984 criteria have decreased over the years. During 2023 there were no occasions when measured Mangoola mine noise levels exceeded SSD-8642 or EPL 12894 criteria. These results represent a continuation of the zero exceedances reported in 2020, 2021 and 2022.

6.3.3 Key Performance and/or Management Issues

There are eight properties eligible for acquisition (Property IDs 25, 66, 83, 110, 130, 139, 148 and 205) as per Table 10, Condition C1 of SSD 8642. During 2023, no properties eligible for acquisition have triggered those rights under Condition C1 of SSD 8642. These properties are also eligible for additional mitigation under Condition C2 of SSD 8642. It is noted some have already had mitigation installed and there were no further requests in 2023.

There are 22 properties eligible for additional mitigation (Property IDs 128, 144, 154, 171, 176, 193, 261, 263, 109A, 109B, 109C, 109D, 109E, 109F, 125A, 134A, 182B, 164, 177, 251, 174A and 174B) as per Table 11, Condition C2 of SSD 8642. During 2023, no properties eligible for additional mitigation triggered those rights.

The properties identified in Table 2, Condition B6 of SSD 8642 (Property ID's 246, 249 and 251) have mitigation rights for road traffic noise however it is noted that Property 246 previously had mitigation works completed under MP 06_0014 and 251 also has mitigation rights under Table 11. During 2023, one property (Property ID 251) eligible for road traffic noise mitigation triggered those rights. The impacts on this property, based on the assessment undertaken for the MCCO project, were deemed 'negligible' under VLAMP and, as such, this property was added to the air conditioning maintenance schedule.

All private property owners with rights to mitigation or acquisition were notified of the SSD 8642 approval and their rights under this approval within 1 month of the date of consent.

During 2023, there were no new noise impact agreements. The existing noise impact agreements for Property IDs 164 and 132 were maintained and as such, the SSD 8642 noise criteria relevant to those properties cease to apply.

A total of 32 noise related complaints were received during 2023, which is the same as that received during the 2022 reporting period. These were predominately from residences to the north-west of operations. In response to an increase in complaints in this area, weekly attended noise monitoring was once again conducted over the winter period. Monitoring results indicated that site noise was below noise compliance levels. Complaints are further discussed in ***Section 9.3.***

6.3.4 Proposed Improvements

In response to any future changes to property ownership around the operation, Mangoola will review the noise monitoring network to determine whether continuous noise monitoring units can be relocated to provide better coverage around the mining operations.

6.4 Blasting and Vibration

6.4.1 Environmental Management

Blasting at Mangoola is undertaken in accordance with the Blast Management Plan (BMP). The Blast Fume Management Procedure is also implemented, which defines practises to reduce the potential for fume generation and therefore reduce the impact of fume on the environment and community.

Prior to blasting and in accordance with the BMP, predictive and current meteorological data is reviewed to ensure that blasting is undertaken in appropriate weather conditions. Wind speed, wind direction and the presence of temperature inversions are analysed prior to initiating blasting activities.

Blast overpressure and vibration was monitored at eleven monitoring locations during 2023, known as BM03, BM07, BM08, BM09, BM10, BM11, Anvil Rock, the closest rock formation to the blast, transmission line powerline pylons (where necessary), public road (where necessary) and the Castle Hill Slab Hut. Blasting within proximity to the powerline easement is undertaken as per a written agreement between the mining company and the electricity infrastructure owner.

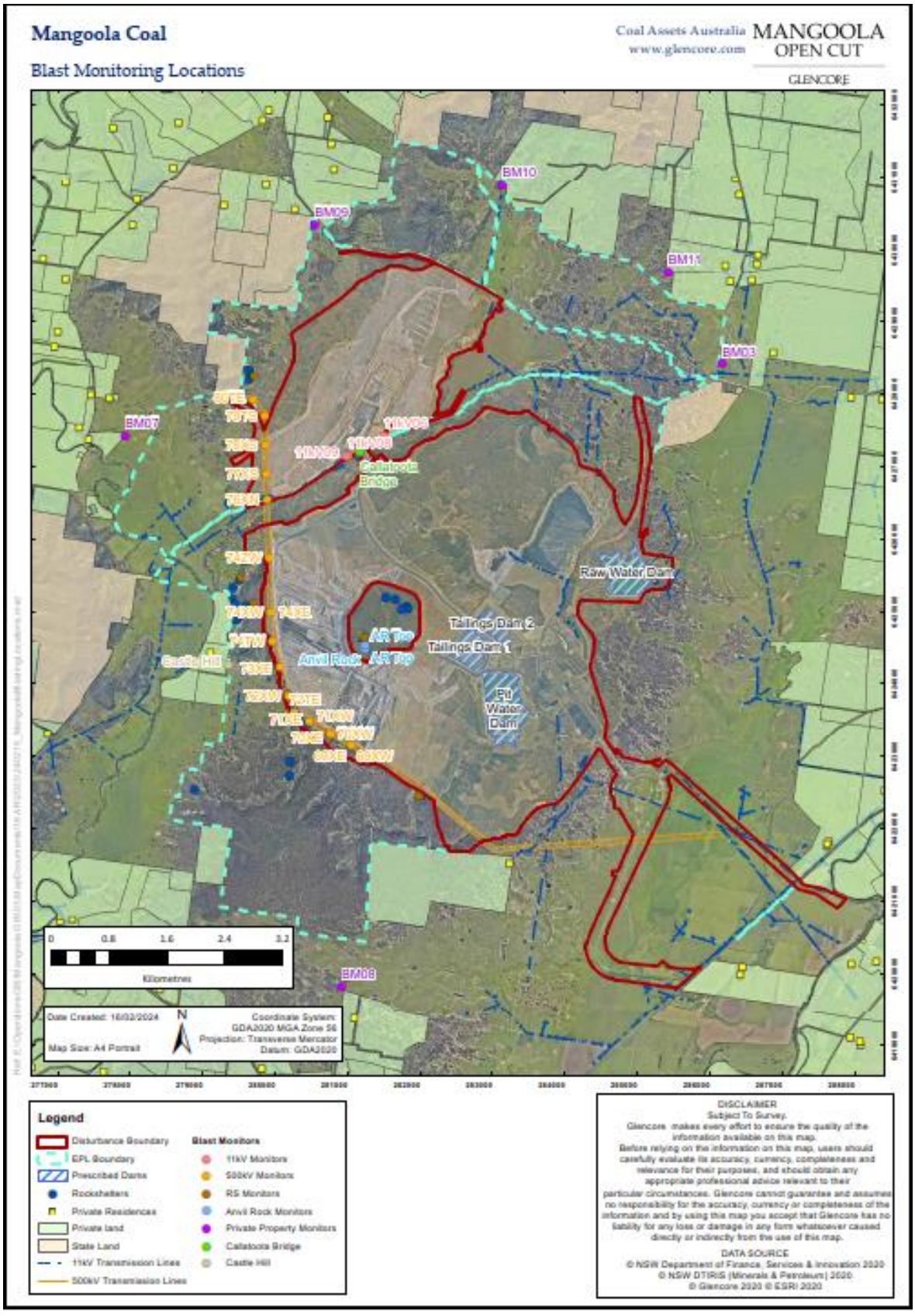


Figure 6-8 Blast Monitoring Locations

6.4.2 Environmental Monitoring Results

6.4.2.1 Results from the Reporting Period

During the reporting period there was an average of 3.2 blast events per week, which is compliant with Condition B14 of SSD-8642, which allow a maximum of 6 blasts per week, averaged over a calendar year. A total of 167 blast events occurred during the reporting period and no more than 2 blast events per day which is compliant with Condition B14 of SSD-8642, as shown by ***Figure 6-9***.

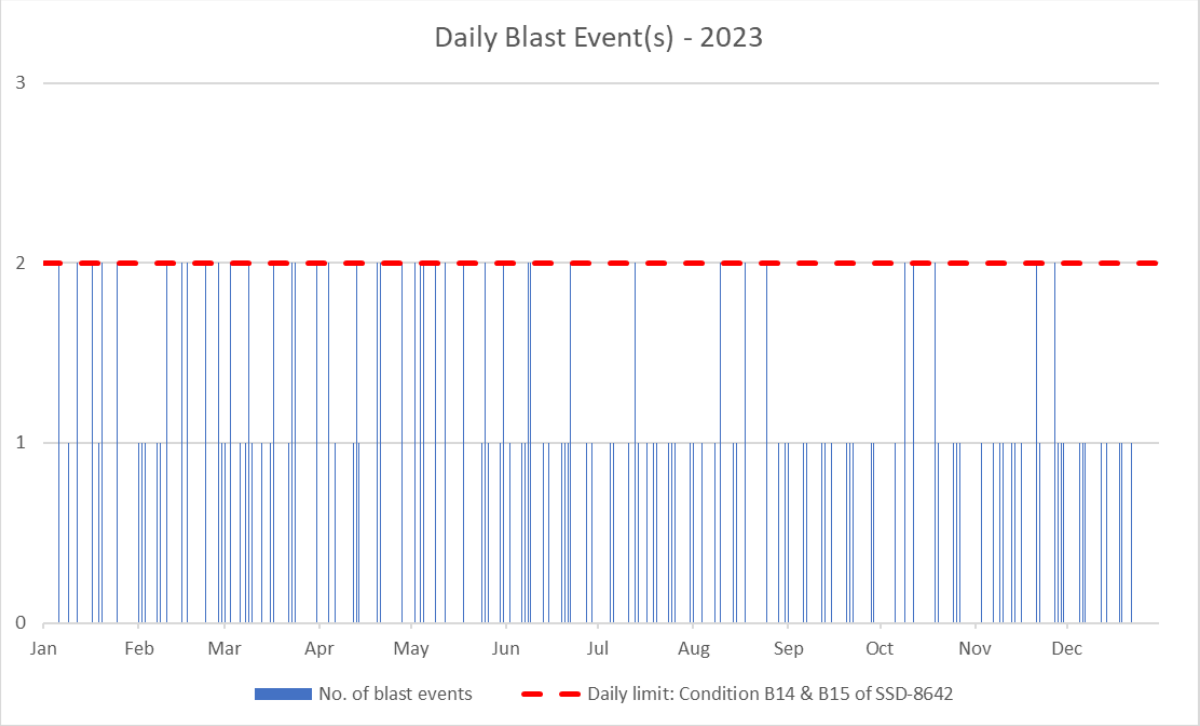


Figure 6-9 Daily Blast Events

Condition B11 of SSD-8642, as well as Condition L4 of EPL 12894, provide the criteria for allowable air blast overpressure and ground vibration as measured at any privately owned residence. Additional ground vibration limits apply to the electricity transmission pylons in accordance with the agreement with TransGrid as the asset owner.

Table 6-12 summarises the blasting criteria, as defined in SSD-8642 and EPL 12894, and other compliance monitoring requirements as defined in the approved BMP and Historic Heritage Management Plan (HHMP) for Mangoola.

Table 6-12 Compliance Monitoring Location Summary and Adopted Criterion

Monitoring Requirement	Monitoring Site (MP or DC / EPL ID)	Airblast Overpressure Limit	Ground Vibration Limit	Comments
DC[1]: Residence on privately owned land.	Private Property NW (BM07/21)			

Monitoring Requirement	Monitoring Site (MP or DC / EPL ID)	Airblast Overpressure Limit	Ground Vibration Limit	Comments
EPL[2]: At monitoring points 16, 21 and 32.	Church NE (BM03/16)	115 dB (Lin Peak) (allowable exceedance of 5% over 12 months); and 120 dB (Lin Peak) absolute limit.	5 mm/s (peak particle velocity (PPV)) (allowable exceedance of 5% over 12 months); and 10 mm/s (PPV) absolute limit.	Blast monitoring is conducted at the nearest residence on privately owned land to the blast zone (or representative locations on mine-owned land that is not further than the nearest residence). Locations may change over the life of the mine as properties are acquired and the mining progresses. Criteria applies to the nearest privately owned residence (as per SSD-8642 and EPL definition). The EPL requires blast monitoring at monitoring points 16, 21 and 32 as per Condition M7.1. BM03 represents Point 16, BM07 represents Point 21 and BM08 represents Point 32.
	Private Property S (BM08/32)			
DC[1]: Residence on privately owned land.	Private Property NW (BM09)			
	Private Property N (BM10)			
	Private Property E (BM11)			
DC[1]: 500 kV Transmission Line	Pylon 64X through to Pylon 80T	N/A (not measured)	[3]60 mm/s for tension towers [3]150mm/s for suspension towers	Monitoring requirements and limits apply as per agreement with the infrastructure owner (TransGrid).
DC[1]: Rock Formations	Anvil Hill The Book Rockshelter sites	N/A (not measured)	50 mm/s under DC.	Representative blast monitoring of Anvil Hill to inform vibration monitoring. The closest rock formation is monitored for every blast if not Anvil Hill.
DC[1]: Historic Heritage	Castle Hill Slab Hut	N/A (not measured)	*Safe blasting limit as determined by specialist analysis under DC. 20 mm/s.*	Representative blast monitoring for all blasts south of Wybong Road.

Monitoring Requirement	Monitoring Site (MP or DC / EPL ID)	Airblast Overpressure Limit	Ground Vibration Limit	Comments
DC[1]: Infrastructure	Wybong road, under-ground cables. 11 kV line	N/A (not measured)	*Safe blasting limit as determined by specialist analysis under DC. 100 mm/s.*	Representative blast monitoring for all blasts north of Wybong Road, within 300m of infrastructure.

[2] A requirement of Mangoola's SSD-8642 (Conditions B11, B12 and B71).
[2]EPL: A requirement of Mangoola's EPL 12894 (condition L4.1, L4.2, L4.3 and L4.4 and M7.1).
[3]As per TransGrid Agreement - Tower limits were increased on 17 September 2020 via agreement with TransGrid and DPHI.

The above criteria reflect the updated compliance limits which came into force during 2023, to align with the requirements of SSD-8642 through the BMP. The BMP was approved by DPHI on 19 October 2022 and the relinquishment of Project Approval (MP 06_0014) occurred on 21 November 2022.

Airblast Overpressure

Airblast overpressure results at all monitoring locations for the reporting period are available on the Mangoola website, with the results recorded at the nearest privately owned residences and sensitive location summarised in ***Table 6-13***.

Table 6-13 Airblast Overpressure Summary

Location	Minimum (dBL)	Average (dBL)	Maximum (dBL)	#Blasts between 115 – 120 dBL	% Blasts between 115 – 120 dBL	Exceedances (Y/N)
BM03	70.2	93.5	113.1	0	0.0 %	N
BM07	80.6	98.4	113.7	0	0.0 %	N
BM08	76.3	92.2	109.1	0	0.0 %	N
BM09	74.9	91.9	109.2	0	0.0 %	N
BM10	70.3	90.1	109.0	0	0.0 %	N
BM11	70.4	89.5	107.5	0	0.0 %	N

All monitored blast events were compliant with the airblast over pressure limit of 115 dBL; or within the 5% exceedance allowance of between 115 and 120 dBL.

Ground Vibration

Ground vibration monitoring data for the reporting period is available on the Mangoola website and is summarised in ***Table 6-14***.

Table 6-14 Ground Vibration Summary

Location	Minimum (mm/s)	Average (mm/s)	Maximum (mm/s)	Compliance Limit (mm/s)	Exceedances (Y/N)
Residences					

Location	Minimum (mm/s)	Average (mm/s)	Maximum (mm/s)	Compliance Limit (mm/s)	Exceedances (Y/N)
BM03	0.01	0.05	0.25	5	N
BM07	0.01	0.07	0.44	5	N
BM08	0.01	0.10	0.28	5	N
BM09	0.01	0.06	0.41	5	N
BM10	0.01	0.07	0.58	5	N
BM11	0.01	0.09	0.41	5	N
Historic Heritage					
Castle Hill Slab Hut	0.02	1.0	5.3	20	N
Rock Formations					
Anvil Rock	<0.1	1.9	26.1	50	N
Closest Rock Formation (where Anvil Rock is not the closest)	<0.1	2.5	13.3	50	N
Infrastructure					
Transmission Line Pylon (tension)	<0.1	6.0	61.0	60[1]	N
Transmission Line Pylon (suspension)	<0.1	4.1	142.3	150	N
11 kV line pole (WP blasts only)	0.1	3.4	28.5	100	N
Road/cabling (WP blasts only)	<0.1	4.9	34.3	100	N

[1]As per agreement with infrastructure owner TransGrid, results of >60mm/s are not considered an exceedance of criteria. Mangoola targets 60mm/s at a 95% confidence interval.

During 2023, there were 2 events where ground vibration surpassed 60mm/s at TransGrid Tension tower 74T. Following these 2 events and as per agreement with TransGrid, investigations were conducted to confirm no damage had been caused to tower 74T. The vibration readings and results of the investigation from both events were reported directly to TransGrid.

6.4.2.2 Comparison with Predictions

The Environmental Assessment completed for the MCCO project included a Noise and Vibration Assessment which assessed the impacts of blasting. This assessment determined the limiting factors to the blast design with respect to the relevant blast criteria.

Excluding the two blast events that resulted in ground vibration results >60mm/s at Tension Tower 74T in 2023, there were no exceedances of blast overpressure or ground vibration criteria, and therefore the results were largely consistent with predictions made.

These findings were then reviewed and reassessed by Enviro Strata Consulting (2019) in accordance with ANZECC Guidelines and the relevant Australian and British Standards as part of the EIS for the MCCO Project which formed the basis of the compliance limits imposed under SSD-8642 to achieve the desired performance measures.

6.4.2.3 Long Term Trend Analysis

In accordance with SSD-8642, a long-term trend analysis of blast monitoring results at Mangoola has been undertaken using data from July 2010 to December 2023 (refer ***Appendix D***).

Ground vibration monitoring results have remained generally consistent since monitoring commenced, with no increasing trends developing in the data. All blast vibration monitoring results at private residences have been below the SSD-8642 criteria since monitoring commenced. All results have been below the 10 mm/s criteria, and while some results have exceeded the 5 mm/s criteria, these were within the allowable 5% frequency.

Airblast overpressure monitoring results at private residences (BM03, BM07, BM08, BM09, BM10 and BM11) have remained generally constant at all locations since monitoring began.

6.4.3 Key Performance and/or Management Issues

There were no exceedances of the 115 dB or 5 mm/s (and associated 5% exceedance allowance) criteria for private receptors. In addition, the 50 mm/s and 20 mm/s specialist determined safe limit for Anvil Rock (or other closest rock formations) and Castle Hill Slab Huts, respectively, were not exceeded.

Mangoola Coal failed to monitor airblast overpressure and ground vibration for one blast in accordance with the sites approved Blast Management Plan during 2023. A blast event which occurred on the 18th of January 2023 in the Main Pit did not trigger an event on Mangoola's blast monitor network and thus no data was retained on the sites data repository at the time of the blast. This failure to monitor was identified in March 2024. Following correspondence with Mangoola's blast monitoring contractor during March 2024 it was determined that the data required for retroactive blast event triggering is maintained within the data repository for 6 weeks, after which it is no longer available. As Mangoola did not identify the missing results until March 2024 the overpressure and vibration were not able to be retroactively retrieved.

As no data was available, this non-compliance with Condition B25 of SSD8642 and Conditions M7.1 and R5 of EPL12894 was reported to the EPA and DPHI as required. it is to be noted that no community complaints were received on this day in relation to blasting. Mangoola performed an investigation into this non-compliance and identified internal actions to be implemented to prevent a reoccurrence. These include updating the internal blast monitoring procedure and form to capture a data validation process as well as a monthly validation all blast records in conjunction with Drill and Blast internal records.

Three complaints were received in relation to blasting during the reporting period, which is a decrease from the seven complaints received in 2022. All three complaints were relating to blast vibration/overpressure. Further detail on complaints is provided in ***Section 9.3.***

Proposed Improvements

The Blast Management Plan was updated in 2022 to align with the requirements of SSD-8642 prior to commencement of mining within the Wybong Pit to the north of Wybong Road.

Improvement opportunities will be reviewed in 2024 as per the review requirements of SSD-8642, including adjustment of the monitoring network and relocation of monitors as required by approval conditions.

6.5 Erosion and Sediment Control

6.5.1 Environmental Management

Mangoola manages erosion and sediment on site in accordance with the approved Erosion and Sediment Control Plan (ESCP), which is included as Appendix C of the Water Management Plan (WMP).

Prior to land disturbance for any aspect of the mine, appropriate erosion and sediment controls are designed and constructed according to the ESCP as well as the guidelines *Managing Urban Stormwater: Soils and Construction* (Landcom 2004) (the Blue Book) *Volume One and Volume 2E Mines and Quarries* (DECC 2008).

In September 2023 Mangoola made amendments to two (2) sub plans of the approved Water Management Plan, that being the Surface Water Management Plan and the Erosion and Sediment Control Plan. The amendments related to the establishment of a water diversion bund to direct clean water to a suitably sized culvert under Wybong Road and into Big Flat Creek to prevent flooding of Wybong Road during heavy rainfall events. These plans were approved by the NSW Planning Secretary in October 2023. The water diversion bund was constructed in November 2023. A copy of the ESCP is available on the Mangoola website.

Site erosion and sediment controls are inspected at least monthly, and within 5 days of a high rainfall event (i.e. greater than 20 mm in 24 hours). Regular maintenance is undertaken as required to replace damaged sediment control structures and maintain other temporary measures. Annual channel stability monitoring is also undertaken at Mangoola to identify any erosion and sedimentation issues on surrounding creeks and drainage lines. The outcomes are reported in the Annual Channel Stability Report in accordance with SSD-8642.

6.5.2 Environmental Monitoring Results

Monitoring of erosion and sediment control structures was completed in accordance with the requirements of the approved ESCP.

The 2023 Annual Inspection saw no observed changes in the Ephemeral Stream Assessments for Big Flat Creek, with a slight change in a specific section of Sandy Creek around lower reaches XS12, which surround Mangoola.

6.5.3 Key Performance and/or Management Issues

There were no issues with erosion and sediment control during the reporting period however as noted within Section 1 and Section 10, Mangoola failed to notify the Department of Climate Change, Energy, the Environment and Water (DCCEEW) of the submission of two sub plans of the Water Management Plan (WMP) namely the Surface Water Management Plan (SWMP) and the Erosion and Sediment Control Plan (ESCP) within the specified timeframe as noted within Condition 6 of EPBC 2018/8280. This non-compliance was reported to DCCEEW and a investigation report provided as per Condition 20 od EPBC 2018/8280. This non compliance is addressed further within the 2023 Annual Compliance Report available on the Mangoola Website.

The effect of the reduction of sediment previously being contributed into Big Flat Creek from Anvil Creek will be monitored in future assessments. Mangoola will review and implement if required any remedial measures as per the recommendations of the 2023 Annual Channel Stability Report, as

provided in Table 6- ***15***. Remedial actions will be implemented as required following onsite erosion and sediment control inspections completed routinely and following rainfall events.

Table 6-15 2023 Annual Channel Stability Report Recommendations

Recommendation	Mangoola Response
Big Flat Creek: **Continue to manage stock access.**	This area is in Mangoola grazing land and is only lightly stocked due to the low carrying capacity. The area adjacent to Big Flat Creek was fenced off to exclude stock previously during 2021. Revegetation of adjacent offset areas is undertaken in accordance with the Biodiversity Offset Management Plan and Strategy (BOMPS).
Sandy Creek: **Manage stock access along Sandy Creek.**	This area is associated within several Mangoola offset areas and grazing land surrounding Sandy Creek. Fencing of offset areas to exclude cattle will continue to be maintained as per the BOMPS. Grazing is restricted due to low carrying capacity. The area will continue to be monitored and further stock reductions undertaken if required.
Sandy Creek: **Repair active erosion points.**	The area identified has a low stocking rate and any erosion in this grazing land area will continue to be monitored and remediation works undertaken if necessary.
Sandy Creek: **Native revegetation and continue to manage weeds.**	Weed management works continue to be undertaken regularly across all buffer land and offset areas. These works are prioritised based on weed type and numbers present. Revegetation across offset areas is undertaken in accordance with the BOMPS.

6.5.4 Proposed Improvements

The ESCP was updated in 2023 to include the establishment of a water diversion bund to direct clean water to a suitably sized culvert under Wybong Road and into Big Flat Creek to prevent flooding of Wybong Road during heavy rainfall event. At this stage, no further improvements to the erosion and sediment controls are planned for the 2024 period, however, this will be reviewed as required following the progression of mining activities.

6.6 Biodiversity

6.6.1 Environmental Management

Flora and fauna are managed in accordance with the BOMPS. The BOMPS was approved by DPHI on 10 August 2022. Both documents are due for review in 2024 and are available on the Mangoola website. Clearing activities at Mangoola have been designed to minimise impacts to any threatened flora and fauna species and vegetation communities. Suitably qualified personnel inspect all disturbance areas in accordance with site procedures and processes to manage approved impacts on threatened species of flora and fauna. Any fauna found during clearing activities are captured (where possible) and relocated by suitably qualified persons.

Two threatened terrestrial orchids and an endangered population of epiphytic orchid are present on lands at Mangoola, being *Diuris tricolor, Prasophyllum sp aff petilum* (Wybong) and *Cymbidium canaliculatum*. A Translocation Management Plan is in place to salvage and relocate threatened orchid species affected by the progression of mining activities. The document, titled “Translocation of Threatened Flora Species” was updated and approved during 2021 and is available on the Mangoola website.

6.6.1.1 Weather Conditions 2023

Following increased and sustained rainfall, the intense drought of 2017-2019 eased to recovery conditions in winter of 2020. The Wybong Parish was declared as non-drought in September of 2020. During 2023, rainfall was markedly lower, that the higher-than-average levels observed in 2022.

6.6.2 Environmental Monitoring Results

The following sites were monitored in 2023 as part of the BOMPS monitoring program:

- Sixteen fauna monitoring sites.
- Nine flora monitoring sites.
- Two groundwater dependent ecosystem monitoring sites.

6.6.2.1 Floristic Values

2023 mostly resulted in floristic value improvement, with general increases in vegetation height (particularly in regenerating/revegetation sites) and foliage cover at most sites continuing to be improve in 2023. This highlights good sign of resilience and recovery with a positive trajectory for sites going into 2024. This improvement is particularly evident in the photographic monitoring of most revegetation sites compared to their baselines, where previous grassland areas now have readily observable young trees.

Native groundcover saw a decrease (in cover and richness); alongside, exotics as well. This is likely due to shifting climactic conditions which has resulted in drier and hotter weather than previous years. Weeds will be a continued area of focus for management actions in 2024, to prevent exotics from dominating or inhibiting the recovery of native species diversity and abundance.

Floristic results show mostly stable trends in High Threat Weed (HTW) composition, however several sites have identified new HTWs in 2022 that have not previously been observed (including African boxthorn (*Lycium ferocissimum*), galenia (*Galenia pubescens*) and pear species (*Opuntia sp*.) likely due to favourable weather conditions and haying off ground cover species. Overall weed composition (comprising largely innocuous species) remains quite high at revegetation sites and comparatively low at remnant sites. Coverage by weeds was highest in areas of derived native grassland that had been subject to revegetation (compared to remnant vegetation or rehabilitated vegetation), with weeds favouring small extents of ground disturbance.

Presence of pear species (*Opuntia sp*.) is similarly much lower in 2023 than during baseline. This is due to ongoing targeted management works by Mangoola.

Remnant monitoring sites are considered generally stable and resilient. There is recovery in native species richness at most remnant sites Attention to managing exotic species will continue in these communities. The key HTW of concern at remnant sites in 2022 was fireweed (*Senecio madagascariensis*), particularly in treed areas immediately adjacent to grasslands, that are more exposed to edge effects.

6.6.2.2 Fauna Values

Habitat value provided by rehabilitated and revegetated areas continues to increase. Increases in height and foliage cover were recorded as were natural increases in habitat/niche complexity such as fallen timber, flowering plants and litter cover.

Nest boxes have been installed in large numbers throughout the remnant areas of offsets over several years. These nest boxes are showing good levels of use by native species.

Fauna diversity in 2023 (including threatened species) in remnant areas was generally consistent with previous monitoring years.

Fauna diversity observed in revegetation areas and regeneration areas in 2023, was lower on average for amphibians, birds and steady for mammals. However, on average was marginally higher for reptiles, this was likely due to proximity of revegetation/regeneration sites to farm dams compared to remnant areas. Remnant areas also generally had a greater diversity of more niche-specific fauna such as:

- Hollow dependent fauna.
- Small native mammals.
- Woodland dependent fauna.
- Frugivorous birds.
- Honeyeaters.

Remnant areas also contain greater threatened species diversities than revegetation/regeneration areas.

The threatened mollusc species (Meridolum) was not identified during the 2023. The mollusc survey results show that the mollusc population (not threatened) has a mostly stable to positive trend. General fauna compositions across remnant sites were generally consistent with previous monitoring.

Note: As fauna monitoring survey techniques are slightly different to previous years (removal of remote camera surveys etc. prior to 2016), comparisons between monitoring years prior to this time are only generally informative.

6.6.2.3 Threatened Species

Fauna

A 2023 Fauna Monitoring Report was prepared by Ecological in February 2024 including a Microbat Ultrasonic Call Identification Report prepared by RA Environmental Consultants.

At the time of this report, the following fauna species identified are listed as threatened under *the Biodiversity Conservation Act 2016* and/or the *Environment Protection and Biodiversity Conservation Act 1999:*

- Speckled Warbler.
- White-throated Needletail.
- Grey-crowned Babbler.
- Grey-headed Flying-fox.
- Large-eared pied-bat.
- Eastern False Pipistrelle.
- East Coast Free-tailed Bat.
- Little Bentwing Bat.
- Large Bent- winged Bat.
- Yellow-bellied Sheathtail-bat
- Greater Broad-nosed Bat

Flora

No targeted threatened flora species work was undertaken as part of this program during 2023 and no new records were identified at any of the monitoring sites. However, known tiger orchids (*Cymbidium canaliculatum*) and weeping myall (*Acacia pendula*) were observed opportunistically while moving between sites and all appeared in a good state of health. Weeping myall (*Acacia pendula*) populations in offsets are flourishing with regenerating shrubs abundant surrounding established plants.

Ecological monitoring locations are shown in ***Figure 6-10***.

6.6.2.4 Conservation Agreement Monitoring

In 2023, the biodiversity offset areas were managed under the terms of the Conservation Agreements that are registered with the BCD.

Annual monitoring of the Conservation Areas was undertaken by Atlantech during 2023 (Atlantech, 2024), which included photo monitoring for comparison against baseline photos, quadrat monitoring to compare data to benchmarks and a walk-through assessment of all conservation areas. The following monitoring was undertaken:

Big Flat Creek Conservation Area:

- Eleven photo monitoring points.
- Five quadrat plots.

Western Corridor and Anvil Hill Conservation Area:

- Twelve photo monitoring points.
- Seven quadrat plots.

Southern Offset Conservation Area:

- Eight photo monitoring points.
- Five quadrat plots.

Eastern Offset Conservation Area:

- Ten photo monitoring points.
- Seven quadrat plots.

Northern Corridor Conservation Area:

- Twelve photo monitoring points.
- Six quadrat plots.

The monitoring data and reports related to the Conservation Agreements have been provided to the Biodiversity Conservation Trust as per conditions of the agreement.

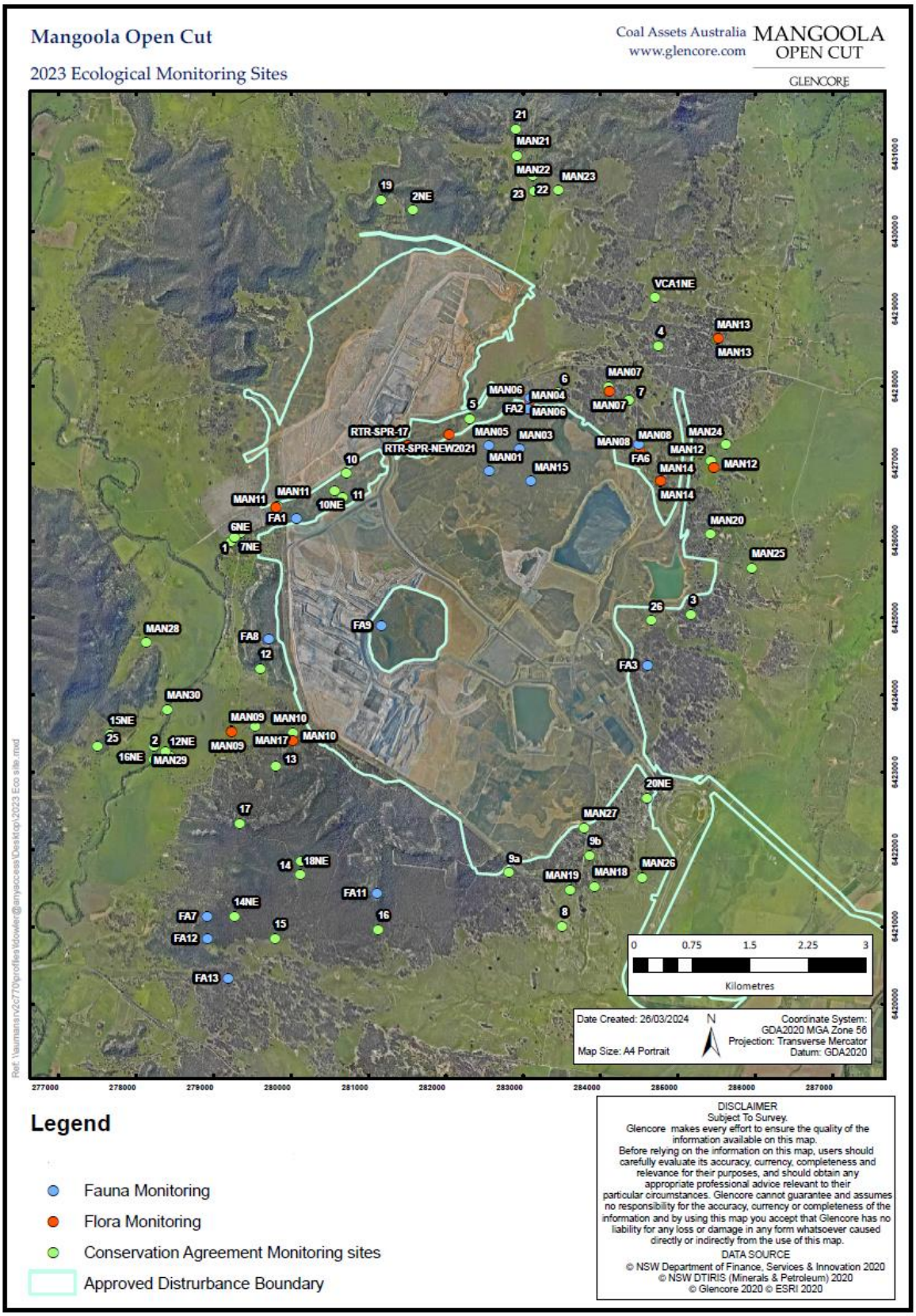


Figure 6-10 Flora, Fauna and GDE Monitoring Locations

6.6.2.5 Nest Box Monitoring

A portion of the nest boxes at Mangoola are monitored every year for the presence of fauna and the condition of each box is also monitored at this time. A total of 593 nest boxes were monitored as part of the program for 2023, and all were monitored for condition and content. This work was completed in January 2023.

Results are summarised below:

- Sixteen of the boxes monitored showed some signs of use, comprising a mixture of eggs, shells and various nesting materials. Note, this is often skewed by installers putting nesting material such as sawdust, leaves or grass in the boxes at the time of installation. This makes it difficult to gauge if fauna brought this material in. In this case, nesting material was counted as a sign of use when it had been clearly shaped or was fresh.
- Sixty Nine of the boxes monitored contained an animal at the time of monitoring. These included mammals, marsupials, reptiles, amphibians and birds.
- Breeding was confirmed in a number of boxes, through the presence of young brushtail possums, baby birds or eggs.
- Two threatened squirrel gliders (*Petaurus norfolcensis*) were recorded in a feathertail glider box in the Northern Corridor.
- No boxes were monitored in the rehabilitation this year.
- Nest box occupation is not as high as previous years (12%), however this is possibly a result of the time of year. Monitoring in late summer shows good results for micro-bats in boxes, however is likely to miss key breeding periods for most birds.
- Pest species usage of boxes continues to be low with only four European honey-bee hives recorded.

6.6.2.6 Threatened Terrestrial Orchid Monitoring

Following three years of drought (2017-2019), improved winter rainfall from 2020 to 2022 has seen elevated orchid presence within most monitoring and control plots. 2023 has seen a return to very dry conditions, particularly over winter, meaning that orchid emergence has again declined. The eight months of active orchid emergence and flowering (Apr-Nov) all received below average rainfall in 2023. This has likely contributed greatly to poor overall emergence within translocation plots and is supported by poor emergence data from control plots.

Nearly all plots continued the decreasing trend in orchid numbers from the last detection peak in 2020. This includes Translocation # 3 (Central) which, following a biomass burn in May 2022 leading to an increase in *Diuris* in 2022, has again started to decline with the dry conditions. Translocation # 6 (Rehabilitation 4B), which has not yet been burnt, also displayed ongoing high numbers of *Diuris* (but no *Prasophyllum*), which is particularly encouraging for any future translocation of this species into mine rehabilitation. No new orchids were detected and marked within control plots, likely due to the very dry conditions: there remain 62 *Diuris* and 53 *Prasophyllum* across these four control plots acting as reference. Ongoing tracking of these individuals over time is delivering important emergence and ecological data for these species that, in addition to providing a measure against translocated orchids, can be used to inform surveys for these species elsewhere.

Considered together, detectability of *Diuris* and *Prasophyllum* for most recipient plots in 2023 was between 1 and 42%, and *Prasophyllum* was almost totally absent. For *Diuris*, many plots (5 of 12) returned rates of between 5 and 88%, with one of the rehabilitation plots (Rehab 4B) again showing the best results (88%). Offset plots recorded rates of 0-23% over 8-13 years for *Diuris*, with the longest

running plot (Translocation # 2; 13 years) showing a decline to <1% in 2023 from the last peak of 12% in 2021. This followed the biomass burn at this plot in May 2022, and the implications of this are discussed further below. In mine rehabilitation, *Diuris* detection ranged from 0 to 88% after 8-9 years for five plots, and evidence of exceptional recruitment was again seen in one of these. *Prasophyllum* has not performed as strongly as *Diuris*, with Offset plots returning detection rates of between 0 and 7% over 8-13 years. No detection at all of *Prasophyllum* occurred in Rehabilitation plots in 2023 after 8-9 years.

Evidence for new recruitment first confirmed for *Diuris* in Rehabilitation plots in 2020 continued into 2021, 2022 and 2023, but *Prasophyllum* recruitment has not yet been detected. The 29 new *Diuris* individuals (8 in Rehabilitation Plot 4A, 21 in Plot 4B) observed in 2020 increased to 114 (29 in Plot 4A and 85 in Plot 4B) in 2021, irrespective of the biomass reduction burn undertaken in Plot 4A four months prior in May 2021. However, no orchids in 2022 and just two in 2023 within Plot 4A suggest that the late timing of the 2021 burn has had a delayed detrimental impact on emergence since. This is supported by the observation that Plot 4B, not yet burnt, continued to show strong numbers of *Diuris* in 2022 (24 new recruits) and 2023 (29 new recruits). The same outcome may be in process for the six offset plots (Translocation # 2-5) which had biomass reduced by fire in May 2022, as all plots are showing steady declines in numbers (but trends may be exacerbated by rainfall variability).

Sporadic individuals of *Diuris* within some unburnt offset plots observed in recent years also represent new recruitment, with ten detected in 2023.

Permanently tagged orchids within the four control plots were censused for the eighth year in 2023, and with the changing weather patterns year-to-year is now yielding important emergence and detection data for both species. In 2023, just 6 (8%) of the 74 (27 *Diuris*, 47 *Prasophyllum*) originally tagged orchids had emerged. No new individual orchids were detected in 2023, leaving a total of 41 (35 Diuris and 6 *Prasophyllum*) newly emerged orchids that have been added to the 74 tagged at commencement in 2016 (115 in total). This means that over the course of eight years, more than double the number of orchids has emerged from the same four plots as were originally detected in 2016.

The 2021 orchid monitoring report presented a new monitoring regime for the Mangoola translocation project, closely linked to the introduction of fire into these fenced habitats to control biomass accumulation and replace annual brush-cutting. Systematic biomass burns commenced in May 2022 (after a pilot burn in May 2021), and the 2023 flowering season has been the second in which to examine how burning has affected orchid emergence and flowering. The trial biomass reduction burn conducted in May 2021 within Translocation # 6 (Rehabilitation 4A) found no immediate deleterious impact on orchids in the first season post-fire; however after 16-17 months emergence and flowering was non-existent, and at 28-29 months post-burning just one *Diuris* was evident. It is postulated that the May 2021 burn, which occurred during the active growth and food accumulation period, restricted tuber replenishment such that an extended recovery time was required. Ongoing monitoring will track this recovery, but it seems clear that burning during Autumn is not ideal (pending future monitoring results), and that new burns should only occur in mid- to late-Summer.

Some minor issues relating to the management of translocation recipient and control sites became apparent and action is required. Outstanding management actions include:

- Replacement of gate on Translocation Plot # 3 (East), which has developed large holes suitable for macropod entry.

6.6.2.7 Groundwater Dependent Ecosystems

Groundwater Dependent Ecosystem (GDE) monitoring was undertaken at site RTR-SPR-17 and control site RTR-SPR-NEW2021, both located along Big Flat Creek. The purpose of this monitoring was to identify if floristic data reflects any substantial negative changes that may have resulted from groundwater depressurisation associated with groundwater inflows.

Monitoring at the GDE sites followed the same methodology used for the floristic monitoring.

Site RTR-SPR-NEW2021 is used as a reference site against which changes at RTR-SPR-17 can be compared. The reference site assists in identifying other potential factors of change such as climactic conditions.

Groundwater quantitative data is collected at one site (MP17-B) along Big Flat Creek and in proximity to RTR-SPR-17. Flow in this bore moves in a south-westerly direction. In 2012, baseline depth to water (DtW) level for MP17-B was recorded at 2.96 m. This level would have been within the root zone of treed vegetation or at least within a zone where soil capillary action allows groundwater to influence soil moisture and thus be available to surface vegetation.

Ongoing monitoring identified MP17-B as being dry for numerous years (from late 2017), until December 2021 when depth to water was recorded as recovering to 2.52 m. Water level declined again throughout 2023 and DtW was approximately 8.26 m in August 2023.

GDE monitoring site RTR-SPR-17 showed signs of haying off in the in the ground, forb and weed cover. This change was also reflected at the control site RTR-SPR-NEW2021, indicating this change is most likely a result of drought conditions rather than groundwater depressurisation. Overstory vegetation at both sites appeared to be healthy and regeneration of mid and overstory species was observed.

Monitoring site RTR-SPR-17 (within the depressurisation zone) and RTR-SPR-2021NEW (outside the depressurisation zone and acting as a reference) will continue to be monitored as part of the ongoing program.

6.6.2.8 Offset and Infill Tree Planting 2023

Tree planting activities are undertaken in the biodiversity offset areas in accordance with the BOMPS to extend and enhance vegetated areas and create habitat corridors linking offset areas and rehabilitation with remnant vegetation to the north and west of Mangoola mine.

In accordance with the BOMPS priority areas for revegetation, an area of 47.5 ha was assessed for planting suitability in 2023. After due diligence, inspections, and preparation of the areas for planting, the approximate areas planted in 2023 were:

- 20 ha of Ironbark Woodland Complex in the Western Corridor at WC-01; and
- 9 ha of Ironbark Woodland Complex at HEO-3.

The above areas were within the Year 13 (2023) planting areas outlined in the BOMPS and were planted with approximately:

- 19,500 canopy and understory Ironbark Woodland species at WC-01; and
- 8,500 canopy and understory Ironbark Woodland species at HEO-3.

An extra area was identified during due diligence inspections as suitable for planting with the available tubestock species:

- 21 ha of Ironbark Woodland species at SC-01 – approx. 18,500 plants.

Infill planting was undertaken in 2023 in response to recommendations from ecological monitoring reports. Areas targeted for infill planting in 2023 included:

- 2 ha Ironbark Woodland species at MAN-12 – approx. 900 plants
- 8 ha Redgum Forest species at MAN-09 – approx. 600 plants
- 11 ha of Slaty Gum Forest species at MAN-08 – approx. 2000 plants

The trees and shrubs were planted after mechanical ground preparation (ripping) to prepare the soil for planting. All plants installed in 2023 were provided supplementary watering to aid establishment due to very dry conditions during the year and hot weather during planting. The offset areas were planted in late 2023 and will be subject to future monitoring.

Photo 6-1 Tube stock awaiting installation at SC01

Photo 6-2 Planting in MAN12 Area

6.6.3 Key Performance and/or Management Issues

During the reporting period there were no reportable incidents, performance or management issues relating to flora and fauna. Management issue recommendations related to biodiversity monitoring are:

- Recommendations from the 2023 BOMPS Monitoring Report (Atlantech, 2024) include:
  - Continue to undertake ongoing maintenance and monitoring of weed species in line with the identified areas of concern and the 202 Weed Action Plan.
  - Continue to undertake targeted control works for vertebrate pest mammals.
  - Undertake supplementary planting within identified areas.
- Recommendations for future nest box activities include:
  - Continue to number new nest box installations with individual identification numbers and re-number existing boxes as numbers fade (ongoing).
  - Continue supplementary nest box installation in rehabilitation and regeneration areas as habitat matures and target small nest box designs to encourage use by small birds, microbats, reptiles, frogs, dasyurids and insects.
  - Maintain nest box diversity to cater for a wide range of species (ongoing).
- Recommendations from the Rehabilitation Monitoring Report include:
  - Ongoing management of weeds and pest species;
  - Minor erosion control works;
  - Thinning of canopy trees and shrubs at select sites where densities are considered to be impacting the overall vegetation condition; and
  - Undertake review of the target tree stem densities for target vegetation communities and revise targets in the RMP as necessary.

Mangoola will review and implement these recommendations where appropriate as part of the 2024 ecological monitoring program.

6.6.4 Proposed Improvements

No improvements are considered necessary in the 2024 biodiversity monitoring program.

Two new Biodiversity Stewardship Agreement (BSA) areas are being established in accordance with the BOMPS, EPBC 2018/8280 and SSD 8642 biodiversity offset requirements. These two new BSA's, Wybong Heights BSA and Mangoola BSA, are expected to be executed in Q1 and Q2 2024. The monitoring and management of these areas is set out in each BSA document. The BOMPS will be updated in 2024 in accordance with the requirements of the BSA's. The monitoring program will be expanded to include the prescribed monitoring for these areas.

6.7 Weed and Pest

6.7.1 Environmental Management

6.7.1.1 Weed Management Activities

During the reporting period, contractors were engaged to undertake weed management works at the mine, within rehabilitation and offset areas. Priority weeds for the Hunter (NSW DPI) were prioritised with environmental weeds treated opportunistically when encountered. A summary of the weed management and control activities undertaken during the reporting period is listed below:

- High and low volume spraying was conducted across all offset areas targeting *Echium plantagineum* (Patterson's Curse), *Eragrostis curvula* (African Love Grass), *Galenia pubescens* (Galenia), *Opuntia monacantha* (Prickly Pear), *Auramtiaca monacantha* (Tiger Pear), *Heliotropium amplexicaule - Perforatum* (Blue Heliotrope), *Lycium ferocissimum* (African Boxthorn), *Anredera cordifolia* (Madeira Vine), *Ligustrum lucidum* (Large-Leaf Privet), *Robinia pseudoacacia* (Black Locust), *Pyrus communis* (Common Pear), *Juncus acutus* (Sharp Rush), *Bryophyllum delagoense* (Mother of Millions), *Hypericum perforatum* (St John's-wort), *Hyparrhenia hirta* (Coolatai Grass) Rubus sp. (Blackberry), *Senecio madagascariensis* (Fire Weed), *Sida rhombifolia* (Paddy's Lucerne), *Verbena bonariensis* (Purple Top), and *Cestrum parpui* (Green Cestrum).
- Primary control areas were along powerlines, tracks, creek lines, rip lines and within revegetation areas.
- Cut-and-paint works with chainsaws and handsaws were conducted throughout site targeting *Lycium ferocissimum* (African Boxthorn).
- Cut-and-paint works with chainsaws and handsaws were conducted around the old farm houses and creek lines within the offsets.
- Widespread high and low volume weed control throughout all mine rehabilitation areas, primarily targeting *Verbena bonariensis* (Purple top verbena), Thistle (various), *Conyza Species* (Fleabane), *Brassica juncea* (Mustard Weed), *Verbena bonariensis* (Purple top Verbena), *Heterotheca grandiflora* (Telegraph Weed), *Gomphocarpus fruiticoses* (Cotton Bush), *Hyparrhenia hirta* (Coolatai Grass), *Onopordum acanthium* (Scotch Thistle), *Galenia pubescens* (Galenia), *Heliotrope amplexicaule* (Blue Heliotrope), *Erigeron bonariensis* (Fleabane), *Hypericum perforatum* (St Johns Wort), and *Senecio madagascariensis* (Fire Weed).
- Hand weeding was conducted within the Orchid translocation compounds. Slashing was conducted in and around Orchid monitoring compounds. Biomass was raked and removed from the compounds. Low volume herbicide application was conducted around the edges of some plots targeting *Verbena sp* (Purple Top), *Conyza sp* (Fleabane) and *Galenia pubescens* (Galenia).
- Hand weeding was conducted in the *Pomaderris reperta* planting compounds targeting *Bidens Pilosa* (Farmers Friends), *Chloris virgata* (Feathery Rhodes Grass), *Hyparrhenia hirta* (Coolatai Grass) and *Verbena bonariensis* (Purple Top).
- Slashing and low volume herbicide application was conducted around mining infrastructure areas, dams and monitoring points.

6.7.1.2 Feral and Pest Animal Management Activities

Mangoola is a member of the Wybong Wild Dog Association and co-ordinates vertebrate pest control activities with regional neighbours to provide maximum program efficiency.

During 2023, 1080 baiting was completed in autumn and spring targeting wild dogs and foxes. Three rounds of pig trapping were completed in response to high numbers of pigs and pig sign observed during monitoring and routine operations. Ground shooting was conducted throughout the year targeting pigs, fallow deer, goats and kangaroos.

Outside of offset areas, kangaroos are targeted both by commercial harvesting and via a licence to harm issued by NSW National Parks and Wildlife Service.

In November 2023, Local Land Services (LLS) conducted an aerial cull targeting pigs which included Wybong Heights offset area. The program resulted in 24 pigs and 3 fallow deer being removed.

Mangoola feral and pest animal management activities resulted in removal of 3 wild dogs; 204 foxes; 11 goats; 271 pigs; 57 fallow deer; 1 cat; and 83 kangaroos from the local populations, in addition to the LLS numbers.

6.7.2 Key Performance and/or Management Issues

No reportable incidents, performance or management issues regarding weeds and feral animal management occurred during the reporting period.

6.7.3 Proposed Improvements

There are no proposed improvements to weed and pest management during 2024.

6.8 Visual Mitigation

6.8.1 Environmental Management

All works occurring onsite are undertaken in a manner which ensures that there is minimal impact on visual amenity in accordance with *AS 4282-1997 Control of the Obtrusive Effects of Outdoor Lighting*. Mangoola is committed to minimising ongoing visual impacts from its operations. To ensure visual impacts are minimised a variety of methods are implemented, including tree screen planting, visual bunds, building placement, light shielding and lighting direction to prevent light spillage.

Construction of visual controls required for the MCCO Project commenced and were completed in 2023. The Mangoola Visual Impact Management Plan (VIMP) was approved by the DPHI on 28 September 2022.

In August 2023, 440 native juvenile trees were planted along Ridgelands Rd, on the NE edge of the MCCO project area, as a visual impact abatement measure. As outlined in the VIMP, the native tree screens act to mitigate visual impact for receptors along Ridgelands Rd for the life of the operation.

6.8.2 Environmental Monitoring Results

On the 12 December 2023, a visual inspection was undertaken (1st Year) since completion of visual controls. There were no identified non-compliances in the management of lighting and visual impacts at Mangoola based on works completed to the time of inspection.

Lighting inspections are undertaken as required by Mining Supervisors to monitor mobile lighting impacts from external viewing points. In 2023, mining moved further to the west for South pit and South for North pit leading to work progressing further behind the Anvil Hill Offset Area. This offered more protection from obtrusive lighting and lessened the requirement for lighting inspections which are not conducted unless there is a greater risk of impact to the community.

All works proposed for completion in 2023 were completed.

6.8.3 Key Performance and/or Management Issues

There were no performance or management issues regarding visual mitigation or lighting during the reporting period.

There was one lighting complaint received 01 July 2023 (light observed towards household). This was investigated by the Mining Supervisor and resolved for the complainant. Lighting was in place on the OOP dump. It was not required for work taking place on night shift, however had not been moved from the position. Daylight sensor/timer settings resulted in the lighting plant activating. The unrequired lighting was shutdown and its placement modified.

There were no non-compliances associated with visual amenity or lighting during the reporting period.

6.8.4 Proposed Improvements

There are no proposed improvements to visual impact management during 2023. All construction of visual controls as per the VIMP commitments were completed as of 2023.These will then be added to the monitoring schedule in accordance with the VIMP.

6.9 Aboriginal Heritage

6.9.1 Environmental Management

The management of activities relating to Aboriginal cultural heritage at Mangoola is undertaken in accordance with the Aboriginal Cultural Heritage Management Plan (ACHMP), relevant other guidelines and legislation. The ACHMP was updated in 2021 and a copy is available on the Mangoola website.

A number of Aboriginal archaeological sites are recorded within or adjacent to the Mangoola project area. To assist with the management of Aboriginal cultural heritage, Mangoola maintains spatial information regarding all identified Aboriginal archaeological sites within the operational geographical information system (GIS). The GIS information is utilised to inform the GDP process.

6.9.2 Environmental Monitoring Results

Aboriginal heritage monitoring and inspections undertaken in 2023 have been summarised in ***Table 6-16***.

Table 6-16 Aboriginal Heritage Monitoring and Inspections

Monitoring / Inspection	Dates	Attendees	Notes
2023 Offset Tree Planting	April 2023	Stephanie Rusden (OzArk - Archaeologist) and a representative from a RAP.	WC86 was identified within WC-01 and SC135 was identified within HE-03 (both isolated finds). Both sites were fenced along with 7 other known sites ahead of tree planting.
2023 Annual Offset Monitoring	23 – 27 October 2022	Stephanie Rusden (OzArk - Archaeologist), Carla Merrick (Mangoola Environment and Community Officer) and a representative from a RAP.	Throughout 2023 Mangoola ensured that visitation to rockshelters and other Aboriginal Cultural Heritage Offset Areas (ACHOAs) was kept to a minimum. Visitation to these locations was undertaken to conduct the required monitoring and measurements in line with approved management plans and statutory approvals. A summary of the report outcomes was presented at the annual cultural heritage consultation meeting held on 6 December 2023. Further information is available at the request of RAPs.

6.9.3 Key Performance and/or Management Issues

On 22 March 2023, in accordance with Condition 10, Part D of the Development Consent SSD8642, Mangoola provided notification of a potential non-compliance with Condition 65, Part B to the DPHI via the major projects planning portal. This potential non compliance is currently under investigation by DPHI. Mangoola notified Registered Aboriginal Groups (RAPs) of this potential non-compliance.

Actions captured in the 2023 Annual Stakeholder Review Meeting have been enacted.

6.9.4 Proposed Improvements

As an outcome of the 2023 annual cultural heritage consultation meeting, Mangoola will continue to provide to the attendees at the upcoming meetings a detailed 'interactive' view into the management and scope of work that is completed annually at the rock shelters as part of the annual ACHOA monitoring. Many RAPs have expressed interest in learning more about the rock shelters and the management controls Mangoola has in place to monitor impacts of blasting at these locations, but due to the steep terrain are unable to attend the rock shelters in person. In 2023 Mangoola restructured the annual ACHOA monitoring incorporating a 'low risk' day whereby monitoring locations that are on flat terrain and easily accessible by vehicle is offered to RAP groups to attend. This structure will continue in 2024 as it was well received in 2023 and feedback provided in the 2023 annual stakeholder review meeting was positive.

Mangoola will continue to work with RAPs regarding the application and processing of funding available to enhance or promote Aboriginal matters as per the process outlined in the ACHMP.

Maintenance of the GIS layers will continue including the addition of any new artefacts and/or sites found as part of due diligence works.

6.10 European Heritage

6.10.1 Environmental Management

European heritage is managed at Mangoola in accordance with the plan Historic Heritage Management Plan.

As required by Condition B71(c) of SSD-8642, the Historic Heritage Management Plan (HHMP) replaced and superseded the Conservation Management Strategy to include the current Approved Project Area for Mangoola which includes the area south of Wybong Road and the MCCO Additional Project Area, north of Wybong Road

A copy of the HHMP is available on the Mangoola website. Specifically, the HHMP identifies known European Heritage sites at Mangoola and any relevant monitoring required to be completed to assess potential impacts (primarily from blasting or clearing activities).

6.10.2 Environmental Monitoring Results

During the reporting period ground vibration monitoring at key heritage sites, such as Anvil Rock, was maintained.

No blast events have exceeded the vibration limit of 20 mm/s at the Castle Hill site in 2023 and results from other blast monitors and structural monitoring undertaken has demonstrated that no damage has occurred to any sites.

6.10.3 Key Performance and/or Management Issues

No reportable incidents regarding European heritage occurred during the reporting period.

Mangoola will continue to undertake ground vibration and physical monitoring in 2024 on Anvil Rock and the Book Rock Formations to inform the adequacy of blasting controls and management of these structures.

6.10.4 Proposed Improvements

There are no proposed improvements in this area in 2024.

6.11 Spontaneous Combustion

6.11.1 Environmental Management

Management of spontaneous combustion is undertaken in accordance with the Mangoola Spontaneous Combustion Principal Hazard Management Plan (SCPHMP). This management plan details the monitoring and control measures implemented by Mangoola to reduce the incidence and impacts of spontaneous combustion, including stockpile inspections, staff training, priority processing of areas that are heating, and track rolling/battering down stockpiles that will be stored for greater than three months.

6.11.2 Environmental Monitoring Results

No significant instances of spontaneous combustion were detected at Mangoola during the reporting period. Implementation of the SCPHMP has been effective in preventing spontaneous combustion on site to date.

6.11.3 Key Performance and/or Management Issues

There were no reportable incidents, performance or management issues involving spontaneous combustion during the reporting period.

6.11.4 Proposed Improvements

There are no proposed improvements in this area in 2024.

6.12 Bushfire

6.12.1 Environmental Management

Potential risks associated with bushfire are managed through the implementation of monitoring and control strategies as documented in the Mangoola Bushfire Management Plan. This management plan was originally developed in consultation with the NSW Rural Fire Service, Muswellbrook Shire Council, and both the Mangoola and Wybong Rural Fire Brigades. In 2022, a revised Bushfire Management Plan was submitted to the DPHI and other relevant agencies (including NSW Rural Fire Service) in accordance with the conditions of SSD-8642.

6.12.2 Environmental Monitoring Results

There were two bushfires at Mangoola during 2023. The ignition of both these fires was triggered by the burning out of two vehicles along public road. The first event occurred on the 25/5/2023 opposite the now closed southern end of Wybong PO Rd. The fire was controlled and extinguished by utilising onsite equipment and the RFS was contacted to advise of the incident. This fire resulted in approximately 0.04 Ha being burnt. The second event occurred on the 31/7/2023 in the Northern Corridor offset immediately West of the Ridgelands Rd – Wybong Rd intersection. This fire was already extinguished and did not require controlling. The second event burnt approximately 0.5 Ha of grass and did not impact the trees in the area.

Mangoola continued to implement the bushfire hazard reduction program which included:

- Maintaining Asset Protection Zones (APZ) - mowing and slashing
- Maintaining site access roads and tracks
- Bushfire awareness training
- Mapping and signage for main access gates and tracks

Key Performance and/or Management Issues

There were no performance or management issues relating to bushfires during the reporting period.

Proposed Improvements

The Bushfire Management Plan will be updated in accordance with the requirements of SSD-8642 in consultation with RFS.

6.13 Hydrocarbon Management

6.13.1 Environmental Management

Bulk fuel facilities are managed in accordance with *AS1940-2017 The Storage and Handling of Flammable and Combustible Liquids*. All permanent fuel facilities are fully bunded, with emergency measures in place to manage spills.

All hydrocarbon spills which occur are reported via the sites incident reporting system, and investigations carried out as required. When spills occur, they are managed with one of the spill kits available onsite or treated through oily-water separators.

There is also an active bioremediation area which was constructed within the mining area in 2018 and utilised as required during 2023.

6.13.2 Environmental Monitoring Results

During the reporting period, there were 17 hydrocarbon spills which were reported internally. All spills were contained on site within the active mining area and no offsite pollution or environmental harm occurred because of these spills. Consequently, none of these incidents required external reporting to any government agencies.

In response to each spill, the following tasks were generally implemented:

- Source of the spill controlled (pumping/machinery stopped).
- Spill contained and cleaned up with absorbent material.
- Contaminated material taken to bioremediation area, where appropriate.
- Incident reported and investigation commenced where required.
- Machinery repaired, where required.
- Where required, procedures were updated, and staff and contractors received additional training on adequate management of hydrocarbons or spills.

6.13.3 Key Performance and/or Management Issues

There were no key performance and/or management issues relating to hydrocarbon management in 2023.

6.13.4 Proposed Improvements

There are no proposed improvements in this area in 2024.

6.14 Public Safety

6.14.1 Environmental Management

Mangoola is committed to preventing risks to public safety as a result of operations at the mine. Ongoing reviews of potential public safety issues are undertaken on a regular basis around the mine area and associated public roads.

Day-to-day monitoring of public safety at Mangoola is undertaken through a variety of methods, including:

- All site visitors are directed to the main office and are required to report and logon to an electronic visitors' book.
- Implementation of a security system to ensure public and employee safety is maintained in accordance with the relevant requirements under the *Coal Work Health and Safety Act 2011*, *Mining Act 1992* and the mining tenements.
- During hazardous activities such as blasting, sentries are posted throughout the site, and if required, public road, to prevent unauthorised entry into the blasting zone.
- Site boundary fencing surround the perimeter of the site.
- Security patrols.
- Upgrade of local roads in accordance with Conditions B94-B97 of SSD-8642.
- Restrictions of local road use in accordance with Conditions B98-B101 of SSD-8642.
- Employee and contractor inductions regarding mine safety and environmental management issues prior to commencement of work at the site.

6.14.2 Environmental Monitoring Results

Wybong PO Road has been closed and entry secured in accordance with SSD-8642.

6.14.3 Key Performance and/ or Management Issues

There were no public safety incidents, performance or management issues in 2023.

6.14.4 Proposed Improvements

There are no proposed improvements in this area in 2024.

6.15 Greenhouse Gas Energy

6.15.1 Environmental Management

Energy consumption (electricity, diesel and liquefied petroleum gas) at Mangoola is monitored and reported in accordance with Glencore requirements and the *National Greenhouse and Energy Reporting Act 2007* (NGER Act).

Mangoola operates in accordance with the approved AQGGMP. The AQGGMP has been produced to comply with Condition B31 of SSD-8642. Mangoola continually assesses the viability of initiatives to improve energy efficiency and reduce greenhouse emissions from proposed operations.

The AQGGMP identifies opportunities at Mangoola to reduce greenhouse gas emissions and energy consumption, as well as specifying actions to realise these opportunities.

Mangoola minimises emissions from diesel and electricity consumption by:

- Optimisation of mining practices e.g. haulage planning, blast design, conveying arrangements.
- Optimisation of engine performance e.g. studies undertaken in collaboration with OEMs to enhance fuel efficiency and emissions reduction.
- New fleet is purchased with the most fuel-efficient engines available.
- Ongoing monitoring of potential biofuel and fuel additive opportunities.
- Ongoing monitoring and assessment of emerging technologies.

6.15.2 Environmental Monitoring Results

6.15.2.1 Results from the Reporting Period

Mangoola reports greenhouse gas emissions (GHG) in accordance with NGER legislation. Each financial year Mangoola is required to submit to the federal government the emissions from their NGERs registered facility. Also, because Mangoola emits over 110kt of CO2e- each year, Mangoola is registered as a Safeguard facility and therefore also had a Safeguard baseline. Emissions above the baseline for that year need to be offset by retiring Australian Carbon credit Units (ACCUs). The NGERs reporting year is based on a financial year, not a calendar year such as this Annual Review. To prevent incompatible public reporting, the values in this report also cover a financial year. The following table contains the Scope 1 (direct emissions from the mining activities during the year), and Scope 2 emissions (electricity consumption by the mine during the year). Data relating to electricity consumption, fossil fuel usage and the associated greenhouse gas emissions, during the 2022/2023 reporting period is presented in ***Table 6-17***. In 2022/2023, the total emissions produced by Mangoola were 151,045 t CO2-e which represents a ~9.3% increase from 2021/2022 (136,954 t CO2-e).

Table 6-17 Greenhouse Gas Data

Emissions Source	2021/2022 T CO_2-e	2022/2023 T CO_2-e	Year 2-9 Scope Total T CO_2-e – Prediction (MOD 6)
Total Scope 1 Emissions (Direct)	100,044	117,312	136,358[1]
Total Scope 2 Emissions (Indirect)	36,910	33,733	63,962
TOTAL EMISSIONS (SCOPE 1 & 2)	**136,954**	**151,045**	**200,320**

[1] *Scope total made up of diesel use, explosive use and fugitive emissions – MOD 6 greenhouse gas assessment breakdown, current annual broken down more accurately than initial assessment.*

6.15.2.2 Comparison with Predictions

The MOD 6 Environmental Assessment included an Air Quality Impact Assessment (Todoroski Air Sciences, 2013) which predicted greenhouse gas emissions for years 1, 2 - 9 and 10 of the Project. As MOD 6 was approved in 2014, 2023 can be considered Year 10 of the modified operations. The Year 2-10 greenhouse gas emissions predictions are presented in ***Table 6-17***.

The data shown in ***Table 6-17*** represents the average annual predicted CO2-e emissions for Years 2 - 9 of the modified operations. As shown in ***Table 6-17***, the total emissions for 2022/2023 were 151,045 t CO2-e. This is 24.6% less than the 200,320 t CO2-e predicted in the Environmental Assessment for Years 2-9 (Todoroski Air Sciences, 2013) for Scope 1 (Direct) and 2 (Indirect) emissions.

A Greenhouse Gas and Energy Assessment was prepared by Umwelt (2019) to support the MCCO Project. The MCCO Project is expected to increase annual Scope 1 and Scope 2 emissions by 407,000 t CO2-e and 51,000 t CO2-e, respectively (Umwelt, 2019). Whilst mining associated with MCCO has commenced, the results demonstrate that Mangoola are below the forecast emissions.

No reportable incidents regarding greenhouse gas and energy occurred during the reporting period.

6.15.3 Key Performance and/or Management Issues

Greenhouse gas is incorporated into the AQGGMP as required by SSD-8642.

Mangoola is a part of the wider coal assets held by Glencore across Australia. GCAA are themselves a part of the global Glencore mining portfolio. In line with the ambitions of the 1.5^{o}C scenarios set out by the IPCC, Glencore targets a short-term reduction of 15% by 2026 and a medium-term 50% reduction of our total (Scope 1, 2 and 3) emissions by 2035 on 2019 levels. Post 2035, Glencore's ambition is to achieve, with a supportive policy environment, net zero total emissions by 2050.

Glencore incorporates energy costs and our carbon footprint into our annual planning process. Commodity departments, such as GCAA, are required to provide energy and greenhouse gas emissions forecasts for each asset over the forward planning period and provide details of emissions reduction projects.

In the case of Mangoola, this includes involvement with GCAA when considering available greenhouse gas abatement technology and mine planning to optimise efficiency (which usually translates into reduced fuel consumption).

6.15.4 Proposed Improvements and Abatement Measures

Mangoola undertook no additional abatement measures for the annual report period of 2023, as no reasonable and feasible measures were identified.

For the upcoming 2024 improvements and abatement measures Mangoola had an independent review of the Air Quality and Greenhous Gas Management Plan as directed by the DPHI to review it against best practice greenhouse gas abatement measures. This was undertaken Katestone Environmental Pty Ltd who were engaged by the DPHI to complete the review.

Mangoola is currently reviewing the recommendations of the Katestone review which, where reasonable and feasible, will be actioned in 2024.

7. Water Management

Mangoola manages water on site in accordance with the approved Mangoola Water Management Plan (WMP) which is available on the Mangoola website. The WMP was reviewed to align with the progress of the MCCO project and was resubmitted and approved in 2022. Mangoola implements the following hierarchy of water supply to meet demand and reduce water take:

1. On-site runoff from within the saline water system is preferentially used for dust suppression and CHPP process water.
2. On-site runoff from within the dirty water system is preferentially used for dust suppression and CHPP process water.
3. Groundwater inflows into the open cut pits is preferentially used for dust suppression and CHPP process water.
4. Clean water incidentally collected from undisturbed areas of the site is preferentially used for dust suppression and CHPP process water in accordance with the Harvestable Rights provisions.
5. Water extracted from the Hunter River utilising existing water access licences or purchased on the open market.

7.1 Water Balance

Mangoola operates a comprehensive and calibrated site water balance to inform water management at the site. Water held and captured onsite at Mangoola by the water management system during the calendar year reporting period is shown in ***Table 7-1***. The Mangoola water balance is generated from a calibrated model, with an error margin of 1.2%.

Table 7-1 2023 Water Balance (Calendar Year)

Aspect	Volume (ML)
INFLOWS	
Rainfall Runoff	1,496
Hunter River Raw Water Supply	1
Groundwater Inflow	59
Spoil Seepage	684
Tailings Bleed Water	1,054
Total	**3,295**
OUTFLOWS	
Evaporation	1,118
CHPP Supply	2,397

Aspect	Volume (ML)
Water Cart Usage	41.3
Wash Bay / Stockpile	586
Hunter Release	18
Spill	0
Total	**4,160**
Inflow – Outflow	**-865**
Recorded Stored on Site at Start of Annual Review Period	3,092
Recorded Stored on Site and End of Annual Review Period	2,139
Change in Storage	**-953**
Error	**1.2%**

7.2 Salt Balance

As required by Condition B50 (ii) of SSD-8642, a salt Balance was conducted for the 2023 reporting period. Saline material is any material moved on site that has the potential to generate saline water. Salt can be released when saline material is exposed to the surface, via weathering. The salt then has the potential to be transported by water.

Key sources of saline material at Mangoola include:

- Overburden material.
- ROM Coal.
- Product Coal.
- Coal Rejects.

Key sources of saline water at Mangoola include:

- Direct rainfall onto the surface of water storage dams.
- Runoff – where salt on the surface of soils / saline material is dissolved by rainfall and transported in the system through runoff.
- Water imported from the Hunter River.
- Groundwater inflow into the open cut pits.

7.3 Saline Material, Water Management and Minimisation

The measures to manage saline material and minimise the discharge of saline water from site include:

- Store ROM coal and product coal in stockpiles that are contained within the mine Water Management System (WMS).

- Store coal rejects in emplacement dumps which are constructed such that runoff is contained in the mine WMS.
- Separation of different water qualities to reduce the volume saline water.
- Discharge saline water in accordance with the HRSTS once infrastructure is in place.
- Calibrated water balance model to better understand the likely water volumes and qualities to be managed.
- Water use for dust suppressions to reduce the volume of saline water in storages.
- Out of pit storages to reduce the volume of saline water in the pit.

Table 7-2 Salt Sources and Balance

Salt Source	EC (uS/cm)	TDS (mg/L)
Rainfall	54	30
Hardstand Catchment Runoff	4,000	2,235
Pit Catchment Runoff	1,500	838
Tailings Catchment Runoff	5,000	2,793
Active Waste Catchment Runoff	5,000	2,793
Stockpile Catchment Runoff	6,000	3,352
Rehabilitation Catchment Runoff	1,000	559
Natural Catchment Runoff	200	112
Groundwater Inflow	8,000	4,469
Hunter River Imports	500	279
Aspect		**Salt (T)**
INFLOWS		
Rainfall Runoff		**1,865**
Hunter River Raw Water Supply		**0.2**
Groundwater Inflow		**4,682**[1]
Spoil Seepage		**-**
Tailings Bleed Water		**2,746**
OUTFLOWS		
Evaporation		**-**
CHPP Supply		**8,110**[2]
Water Cart Usage		-

Salt Source	EC (uS/cm)	TDS (mg/L)
Wash Bay/Stockpile		**1,969**
Hunter Release		**63**
Spill		**0**
Total		**10,142**
Inflow-Outflow		**-848**
Recorded Stored on Site at Start of Annual Review Period		**6,803**
Recorded Stored on Site at End of Annual Review Period		**7,595**
Change in storage		**792**
Error		**-8.4%**

[1] Combined groundwater and seepage.

[2] Combined dust suppression and wash bay / stockpile

7.4 Water Take

Mangoola currently operates two water extraction pumps within one pump station (20WA211008) to provide additional water for its operations, as required, from the Hunter River in accordance with its water extraction permits. The extraction limit for the Mangoola Hunter River Licences is 2,758 ML. The water allocation for the Hunter River changes throughout the year and the water allocation has been at 100% for General Security during the reporting period. With the addition of the Colinta Licences, extraction limit is 3,600 ML.

The total Hunter River water extracted by Mangoola during the 2022-2023 water year was approximately 328 ML (including both Mangoola and Colinta licences) which was within the allowable extraction limit. This represents an increase from the 93 ML extracted from the Hunter River during the previous 22021-2022 water year.

Water taken by the operation during water year (1 July 2022 to 30 June 2023) for Mangoola and Colinta licences has been summarised in ***Table 7-3***.

Table 7-3 2022 Water Take (Water Year)

Water Licence #	Water Sharing Plan, Source and Management Zone (as applicable)	Entitlement (ML) 100%	Entitlement (ML) 125%	Allocation Used (ML) (Previous Water Year)
Mangoola Licences				
503	Hunter Regulated River (zone 1A)	159	198.75	0
645	Hunter Regulated River (zone 1A)	432	540	0
691	Hunter Regulated River (zone 1A)	50	62.5	0
735	Hunter Regulated River (zone 1A)	72	90	0
823	Hunter Regulated River (zone 1A)	310	387.5	0

Water Licence #	Water Sharing Plan, Source and Management Zone (as applicable)	Entitlement (ML) 100%	Entitlement (ML) 125%	Allocation Used (ML) (Previous Water Year)
824	Hunter Regulated River (zone 1A)	175	218.75	0
830	Hunter Regulated River (zone 1A)	306	382.5	0
897	Hunter Regulated River (zone 1A)	55	68.75	0
933	Hunter Regulated River (zone 1A)	43	53.75	10
1159	Hunter Regulated River (zone 1A)	159	198.75	0
6571	Hunter Regulated River (zone 1A)	111	138.75	0
6576	Hunter Regulated River (zone 1A)	600	750	0
9062	Hunter Regulated River (zone 1A)	18	22.5	0
9987	Hunter Regulated River (zone 1A)	82	102.5	0
11216	Hunter Regulated River (zone 1A)	86	107.5	0
13083	Hunter Regulated River (zone 1A)	100	125	0
	Hunter River Licences Sub-Total	**2,758**	**3447.5**	**10**
Colinta Licences				
1001	Hunter Regulated River (zone 1A)	334	417.5	123
1057	Hunter Regulated River (zone 1A)	509	636.25	195
	Colinta Licences Sub-Total	**843**	**1035.75**	**318**
Groundwater Inflows				
WAL41561	Excavation Groundwater	700	-	84.5
6308	Wybong Creek Water Source	96	-	0
6270	Wybong Creek Water Source	30	-	0
11085	Wybong Creek Water Source	128	-	0
	Groundwater Licences Sub-Total	**954**	**-**	**84.5**
	TOTAL	**4,555**	**-**	**412.5**

7.4.1 Changes to Licences

No changes to surface water licences occurred in 2023. The water take under the Harvestable Rights provision is in line with 2019 Harvestable Rights assessment by Engeny and the reducing clean water catchment area of Anvil Creek. This harvestable rights provision was reviewed as part of the MCCO EIS.

7.5 Hunter River Salinity Trading Scheme Discharges

Mangoola undertook one Hunter River Salinity Trading Scheme (HRSTS) discharge within 2023 in line with Water NSW determinations and EPL conditions. A total of 17.87 ML was discharged during the 2023 reporting period.

7.6 Surface Water Monitoring

7.6.1 Environmental Management

Surface water quality continued to be monitored onsite at Mangoola and in the surrounding waterways during the reporting period in accordance with the Surface Water Management Plan. Surface water monitoring locations are shown on ***Figure 7-1*** and comprise of 16 sites (SW01 – 07 and SW09 – 17) which are sampled monthly for pH, Electrical Conductivity (EC), Total Suspended Solids (TSS), Total Dissolved Solids (TDS) and flow conditions by observation. Water monitoring is also undertaken monthly as a requirement of EPL 12894. Monitoring is completed at surface water monitoring points SW16, SW03, SW04 and SW07 representing EPL monitoring point number 7, 8, 9 and 31, respectively.

There is no surface water monitoring criteria limit listed in EPL 12894. Surface water monitoring criteria is described in the approved Surface Water Management Plan (SWMP).

In 2023 Mangoola developed an EPBC Water Resource Plan as required to meet Condition 4a, b and c of EPBC 2018/8280. This was approved by the Department of Climate Change, Energy, the Environment and Water (DCCEWW) of on 21 June 2023. This plan is available on the Mangoola Coal website and is implemented in conjunction with the approved SWMP and associated TARPs.

Note – the Surface Water Management Plan and associated Surface Water and Groundwater Response Plan was updated for the MCCO Project and consolidated into a single Surface Water Management Plan which was approved by DPHI in December 2022 and implemented within Q2 of 2023 in accordance with the MCCO Development Consent (SSD-8642).

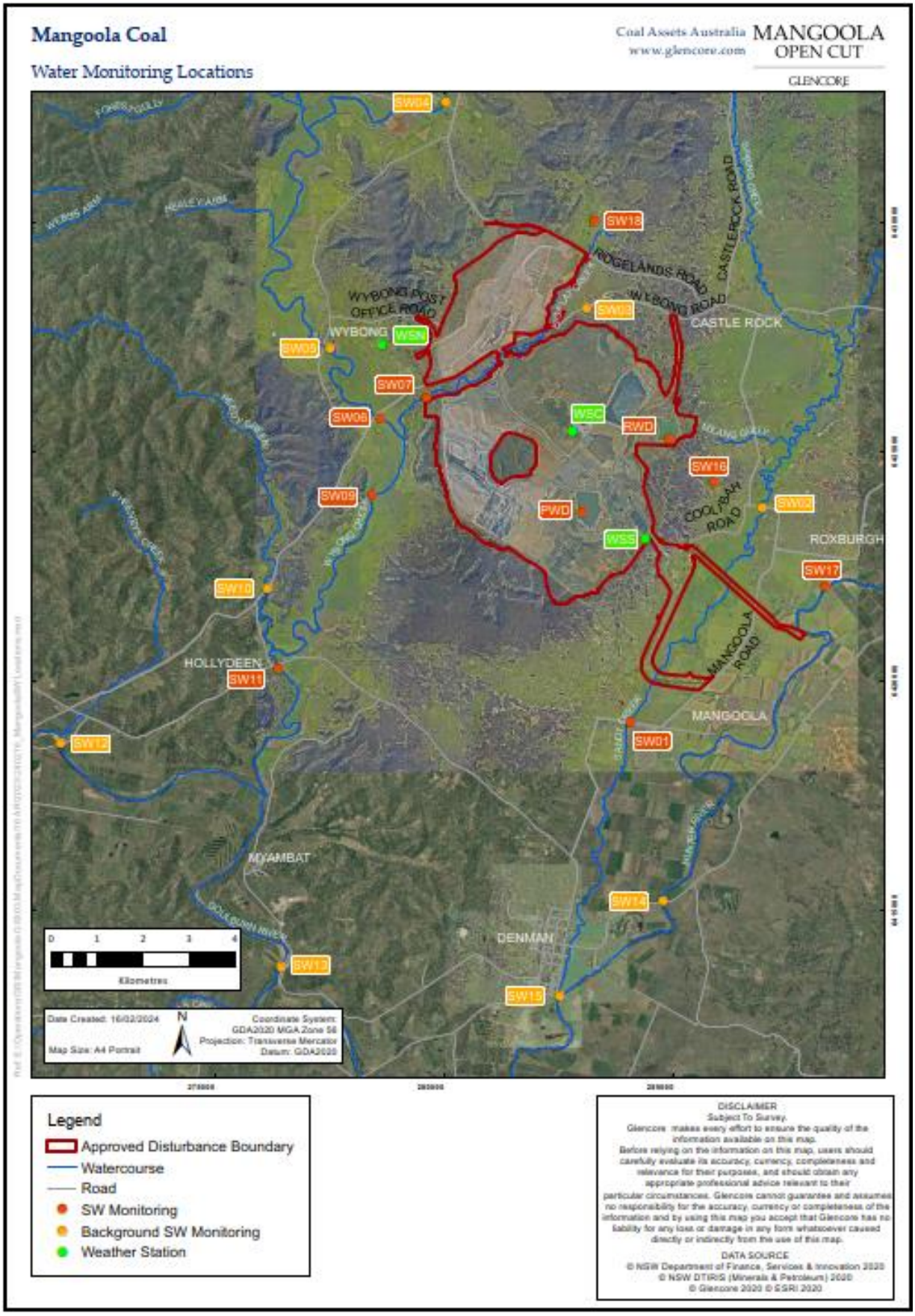


Figure 7-1 Surface Water Monitoring Locations

7.6.2 Environmental Monitoring Results

7.6.2.1 Results from the Reporting Period

The pH and EC monitoring results for the reporting period have been summarised in ***Table 7-4*.** In accordance with the TARPs as outlined within the Surface Water Management Plan (which was updated and approved during 2022), exceedances of surface water monitoring criteria are not reported to DPHI unless three consecutive elevated results at a monitoring location is recorded and an incident is deemed to have occurred. Detailed results of surface water quality monitoring collected during the reporting period are available on the Mangoola website.

Table 7-4 Surface Water Monitoring Results – pH and EC

Site	pH Results					EC Results (µS/cm)				No. of Samples and Flow Conditions
	Min	Ave	Max	Lower Criteria	Upper Criteria	Min	Ave	Max	Criteria	
SW01	8.19	8.48	8.77	**7.3**	**8.1**	3,790	4040	4,290	**5063**	*12 in Total Flow (0) No Flow (12)*
SW02	8.07	8.2	8.44	**7.3**	**8.1**	3,120	4,105	6,340	**5063**	*12 in Total Flow (10) No Flow (2)*
SW03	7.56	8.16	8.48	**6.7**	**8.3**	1,390	8,247	20,800	**22600**	*12 in Total Flow (0) No Flow (12)*
SW04	8.27	8.47	8.60	**7.7**	**8.3**	991	1,199	1,490	**2910**	*12 in Total Flow (12) No Flow (0)*
SW05	8.32	8.46	8.57	**7.7**	**8.3**	1,090	1,362	1,720	**2910**	*12 in Total Flow (12) No Flow (0)*
SW06	8.25	8.44	8.56	**7.7**	**8.3**	1,110	1,398	1,760	**2910**	*12 in Total Flow (12) No Flow (0)*
SW07	7.80	8.09	8.43	**6.7**	**8.3**	1,230	1574	1,930	**22600**	*12 in Total Flow (0) No Flow (12)*
SW09	8.31	8.47	8.56	**7.7**	**8.3**	1,130	1,465	1,930	**2910**	*12 in Total Flow (12) No Flow (0)*
SW10	7.08	7.23	7.48	**N/A**	**N/A**	538	640	698	**N/A**	*12 in Total Flow (1) No Flow (11)*
SW11	8.24	8.43	8.56	**7.7**	**8.3**	1,160	1484	1,880	**2910**	*12 in Total Flow (12) No Flow (0)*
SW12	8.34	8.53	8.60	**7.9**	**8.4**	902	1122	1320	**1340**	*12 in Total Flow (12) No Flow (0)*
SW13	8.38	8.52	8.60	**7.9**	**8.4**	962	1193	1480	**1340**	*12 in Total Flow (12) No Flow (0)*
SW14	8.06	8.25	8.43	**7.8**	**8.1**	372	843	1300	**657**	*12 in Total Flow (12) No Flow (0)*

Site	pH Results					EC Results (µS/cm)				No. of Samples and Flow Conditions
	Min	Ave	Max	Lower Criteria	Upper Criteria	Min	Ave	Max	Criteria	
SW15	8.04	8.15	8.34	**7.8**	**8.1**	599	922	1350	**657**	*12 in Total Flow (12) No Flow (0)*
SW16	4.94	6.11	7.28	**7.3**	**8.1**	663	852	1040	**5063**	*12 in Total Flow (0) No Flow (12)*
SW17	7.98	8.24	8.47	**7.8**	**8.1**	387	903	2080	**657**	*12 in Total Flow (12) No Flow (0)*

Note that shaded sites are monitored to establish background conditions upstream or separate of mining operations and used in the investigation of exceedance of impact assessment criteria at locations directly downstream of mining operations.

Surface water pH levels were slightly alkaline across the site, ranging from 4.94 to 8.77, with an average pH of 8.28 which is higher than the 2022 average pH of 8.0.

pH results which fell outside the pH adopted performance criteria for both upstream and downstream monitoring locations included:

- SW01 during January (8.77), and February (8.19)
- SW02 during February (8.27), March (8.27), June (8.44), July (8.16), August (8.12), September (8.16), October (8.21) and November (8.34).
- SW03 during May (8.46), July (8.48) and August (8.32)
- SW04 during May (8.46), June (8.60), July (8.51), August (8.43), September (8.47), November (8.49), and December (8.36)
- SW05 during May (8.45), June (8.57), July (8.48), August (8.44), September (8.46), October (8.40), November (8.46), and December (8.32).
- SW06 during April (8.51), May (8.43), June (8.56), July (8.49), August (8.44), September (8.48), October (8.35), and November (8.39)
- SW09 during January (8.45), February (8.48), March (8.50), April (8.53), May (8.46), June (8.56), July (8.50), August (8.46), September (8.43), October (8.43), November (8.48) and December (8.31)
- SW11 during January (8.44), February (8.46), March (8.46), April (8.48), May (8.41), June (8.56), July (8.44), August (8.43), September (8.41), October (8.35) and November (8.42).
- SW12 during January (8.52), February (8.57), March (8.59), April (8.55), May (8.50), June (8.59), July (8.57), August (8.53), September (8.56), October (8.44) and November (8.60).
- SW13 during January (8.52), February (8.54), March (8.56), April (8.55), May (8.50), June (8.60), July (8.57), August (8.50), September (8.54), October (8.40), and November (8.57).
- SW14 during January (8.2), February (8.18), March (8.27), April (8.27), May (8.26), June (8.39), July (8.30), August (8.38), September (8.43), October (8.19), November (8.24) and December (8.10).
- SW15 during March (8.13), April (8.16), May (8.13), June (8.34), July (8.20), August (8.23), September (8.14), and November (8.11).

- SW17 during January (8.18), February (8.18), March (8.47), April (8.25), May (8.22), June (8.36), July (8.21), August (8.32), September (8.42), October (8.25) and November (8.22).

EC results across the site ranged from 372 µS/cm to 20,800µS/cm, with an average of 1,708 µS/cm which is higher than the 2022 average of 1,154 µS/cm.

EC results which fell outside the EC adopted performance criteria for both upstream and downstream monitoring locations included:

- SW02 during November (5400 µS/cm), and December (6340 µS/cm).
- SW13 during October (1360 µS/cm), and December (1480 µS/cm).
- SW14 during January (826 µS/cm), February (856µS/cm), March (1040µS/cm), April (1240µS/cm), May (1300 µS/cm), July (833 µS/cm), August (939 µS/cm), September (909 µS/cm), October (784µS/cm), and November (703 µS/cm).
- SW15 during January (859 µS/cm), February (887 µS/cm), March (1100 µS/cm), April (1270 µS/cm), May (1350 µS/cm), July (866 µS/cm), August (979 µS/cm), September (966 µS/cm), October (822µS/cm) and November (743µS/cm).
- SW17 during January (807 µS/cm), February (913 µS/cm), March (2080 µS/cm), April (1240 µS/cm), May (1210 µS/cm), July (800 µS/cm), August (889 µS/cm), September (874 µS/cm), October (721 µS/cm), and November (701 µS/cm).

As per the surface water quality TARP outlined within Section 7.3.3 of SWMP an investigation into monitoring results that are above the impacted assessment criteria (for three consecutive sampling events) occurred to determine if an incident and/or non-compliance occurred and the likely causes. On all of the instances of investigations undertaken, the monitoring results were due to fluctuating climatic conditions and not attributable to mining impacts and therefore and no incident and/or non compliance was recorded or reported.

Assessment of Surface Water Quality

In accordance with the Surface Water Management Plan, speciation monitoring is undertaken annually at Mangoola surface water monitoring locations in June. There is no speciation monitoring criteria in the Surface Water Management Plan. A summary of the surface water results for 2023 are presented in ***Table 7-5***.

Table 7-5 Annual Surface Water Speciation Results

Parameter	SW01	SW02	SW03	SW04	SW05	SW06	SW07	SW09	SW10	SW11	SW12	SW13	SW14	SW15	SW16	SW17
Flow	Dry	Flow	Dry	Flow	Flow	Flow	Dry	Flow	Dry	Flow	Flow	Flow	Flow	Flow	Dry	Flow
pH	-	8.44	-	8.60	8.57	8.56	-	8.56	-	8.56	8.59	8.60	8.39	8.34	-	8.36
EC (µS/cm)	-	3410	-	1160	1260	1300	-	1320	-	1320	1080	1110	592	620	-	556
TSS (mg/L)	-	10	-	<5	<5	<5	-	<5	-	<5	<5	<5	13	12	-	12
TDS (mg/L)	-	2090	-	624	701	740	-	733	-	766	574	623	313	355	-	302
Nitrite (mg/L)	-	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01
Nitrate (mg/L)	-	<0.01	-	0.01	<0.01	0.01	-	<0.01	-	<0.01	0.02	<0.01	0.53	0.59	-	0.54
TKN (mg/L)	-	0.5	-	0.3	0.3	0.4	-	0.2	-	0.3	0.3	0.2	0.4	0.4	-	0.4
Total Nitrogen as N (mg/L)	-	0.5	-	0.3	0.3	0.4	-	0.2	-	0.3	0.3	0.2	0.9	1.0	-	0.9
Total Phosphorus as P (mg/L)	-	0.02	-	0.18	0.19	0.21	-	0.21	-	0.02	0.07	0.08	0.05	0.06	-	0.04
Sulphate (mg/L)	-	112	-	16	18	19	-	20	-	23	58	60	36	37	-	33
Calcium (mg/L)	-	105	-	55	62	63	-	64	-	63	48	50	49	45	-	48
Magnesium (mg/L)	-	118	-	69	73	74	-	76	-	77	64	65	29	30	-	28
Sodium (mg/L)	-	526	-	90	106	110	-	114	-	120	87	92	40	43	-	36
Potassium (mg/L)	-	5	-	2	2	3	-	3	-	3	4	4	2	2	-	2
Iron (mg/L)	-	0.28	-	0.06	0.06	0.16	-	0.08	-	0.08	0.06	0.06	0.21	0.25	-	0.29

Parameter	SW01	SW02	SW03	SW04	SW05	SW06	SW07	SW09	SW10	SW11	SW12	SW13	SW14	SW15	SW16	SW17
Arsenic (mg/L)	-	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001
Boron (mg/L)	-	0.9	-	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05
Barium (mg/L)	-	0.215	-	0.008	0.01	0.014	-	0.012	-	0.013	0.034	0.031	0.015	0.016	-	0.015
Cadmium (mg/L)	-	<0.0001	-	<0.0001	<0.0001	<0.0001	-	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	<0.0001
Copper (mg/L)	-	<0.0001	-	<0.0001	<0.0001	0.003	-	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	<0.0001
Manganese (mg/L)	-	0.161	-	0.017	0.016	0.037	-	0.021	-	0.021	0.029	0.032	0.027	0.031	-	0.030
Chloride (mg/L)	-	993	-	187	234	246	-	261	-	274	173	190	52	58	-	46
Selenium (mg/L)	-	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01
Lead (mg/L)	-	<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)	-	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001
Zinc (mg/L)	-	<0.005	-	<0.005	<0.005	<0.005	-	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005
Mercury (mg/L)	-	<0.0001	-	<0.0001	<0.0001	<0.0001	-	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	<0.0001
Fluoride (mg/L)	-	0.4	-	0.2	0.2	0.2	-	0.2	-	0.2	0.2	0.2	0.2	0.2	-	0.2
Bicarbonate (mg/L)	-	500	-	374	371	370	-	370	-	363	285	290	200	200	-	205

Stream Health Monitoring

Biosis (2023) undertook stream health monitoring surveys during autumn and spring in 2023. The stream health monitoring program encompasses nine potential impact sites (monitoring sites) across five major waterways that traverse the Mangoola Open Cut site – Big Flat Creek, Wybong Creek, Sandy Creek and the Hunter River. The program also includes seven control sites with catchments similar to the monitoring sites to differentiate potential mining impacts from environmentally driven variations due to natural processes.

The control sites are located across two waterways – Cuan Creek, Wybong Creek (upstream of the mine site) and the Hunter River. The monitoring program assesses macroinvertebrate community structures, water quality and overall catchment-riparian health using NSW AUSRIVAS and Signal2 sampling and analyses, HABSCORE assessments, and physicochemical surface water quality testing.

HABSCORE assessments during 2023 surveys indicated slight decrease in stream health conditions when compared with 2022, with the results clustering within the marginal and sub-optimal categories. This decrease is attributed to the decline in rainfall to drought-like levels in 2023 compared to the elevated rainfall levels in 2022. This change in weather pattern caused deterioration in physical attributes at all sites including water depth, water flow, pool variability, water width and habitat availability, ultimately resulting in three out of nine impact sites to be completely dry in either autumn or spring.

The AUSRIVAS and SIGNAL 2 analyses showed that, while sites have been in poor condition since the commencement of baseline monitoring, the macroinvertebrate assemblages improved over previous years. Year to year fluctuations in these metrics are observed across both monitoring and control sites and therefore likely associated with changes in water availability and environmental conditions, most obviously during the most intense period of the recent drought in 2019.

Stream health criteria have been established for major waterways identified as being potentially subject to impacts associated with mining activities. The assessment of the 2023 monitoring results against these criteria did not trigger the need for any further investigation with the results below the relevant trigger values. Impact site BFC-DS2 in autumn, although not below the defined trigger values represented by Quadrant 4, recorded 10 taxa and a SIGNAL 2 score below 4, which is lower than found in the previous monitoring period (2022). This impact site, similar to BFC-US1, has a history of having no water present and recorded significantly low water levels in 2023 which is likely to contribute to the decline in macroinvertebrate community composition. The macroinvertebrate community in BFC-DS2 in spring was observed to recover, falling within Quadrant 2 due to a higher number of taxa than found in autumn. Therefore, no further consideration is required for BFC-DS2 during this monitoring period.

Comparison with Predictions

A detailed water balance assessment, integrating the MCCO Project with the existing operations was completed as part of the Surface Water Assessment for the EIS (2019).

The high water demand scenario was based on 13.5 Mtpa of ROM coal washed through the CHPP, and the low water demand scenario was based on 8.0 Mtpa of ROM coal washed through the CHPP and 5.5 Mtpa of ROM coal processed as bypass coal (i.e. unwashed).

In the 2023 reporting year, the predictions against the MCCO project EIS (SSD 8642) water usage data is compared against actuals and are shown in ***Table 7-6.***

Table 7-6 Comparison of 2023 Water Usage with the 2019 EIS (SSD 8642) Predictions

Aspect of Water Management System	2023 Data (ML)	EIS (2019) Prediction (ML/annum)
CHPP water use	2,396	3,012.5
Haul Road Dust Suppression	586	1,166.5
Pipeline Water (Hunter River)	10	1,212.6
Hunter River Salinity Trading Scheme Offsite (HRSTS) Release	17.87	191.2

As shown ***Table 7-6***, all water consumption and lawful discharge parameters are within the predictions made in the EIS (2019).

7.6.2.2 Long Term Trend Analysis

In accordance with SSD-8642, a long-term trend analysis of surface water monitoring results at Mangoola has been undertaken using data from 2010 to 2023 to identify any trends in the monitoring data over the life of the project. Long term monitoring results for pH, EC, TDS and TSS are presented in ***Appendix E***.

The results indicate:

- The pH of surface water monitoring locations has generally remained relatively stable since mining operations commenced in 2010.
- EC has generally remained stable from 2010-23 with the exception of monitoring locations SW01, SW02, SW03, and SW07, which have been periodically elevated. SW02 and SW03 are located upstream of the Mangoola Mining Lease boundary, and therefore the elevated salinity cannot be attributed to operations at Mangoola.
- Similarly, SW07, and SW01, while located within the Mangoola Mining Lease boundary, are downstream of SW03 and SW02 respectively. Monitoring locations SW01, SW02, SW03, and SW07 were dry for most of 2017-19 due to drought conditions. An increase in rain during 2020 to 2022 allowed most sites to be sampled during that period with rainfall decreasing in 2023 resulting in some dry sampling sites throughout the reporting period.

7.6.3 Key Performance and/or Management Issues

As previous mentioned, in accordance with the SWMP (updated and approved during 2022 and implemented in Q2, 2023) and its associated TARPs, exceedances of surface water monitoring criteria for three consecutive sampling events are only required to be externally reported if investigations determine that an incident has occurred. During 2023 elevated results were investigated and reported internally, as the investigations determined that the background/ upstream water monitoring locations were also experiencing elevated monitoring results (fluctuating climatic conditions) and were not attributable to mining impacts and therefore not externally reportable to DPHI.

However, as per Condition 7 of EPBC Approval 2018/8280, the approval holder (Mangoola) must notify the Department of Climate Change, Energy, the Environment and Water (DCCEEW) of the exceedance of any trigger levels which are specified in the approved SWMP as required by Condition B50 of SSD8642 within 5 business days of detecting or predicting the exceedance. After the implementation and integration of the SWMP in Q2, 2023 Mangoola provided notification to DCCEEW of monitoring

results that had exceeded trigger levels stated within the SWMP on: 28 July 2023, 10 August 2023, 20 September 2023, 20 October 2023, 20 November 2023, and 15 December 2023. As the investigations were completed as per the TARP (within the approved SWMP) did not deem an incident had occurred, nil further investigation or reporting under EPBC Approval 2018/8280 was required.

In addition, and as noted within Section 1 and Section 10, Mangoola failed to notify the Department of Climate Change, Energy, the Environment and Water (DCCEEW) of the submission of two sub plans of the Water Management Plan (WMP) namely the Surface Water Management Plan (SWMP) and the Erosion and Sediment Control Plan (ESCP) within the specified timeframe as noted within Condition 6 of EPBC 2018/8280. This non-compliance was reported to DCCEEW and an investigation report provided as per Condition 20 od EPBC 2018/8280. This non-compliance is addressed further within the 2023 Annual Compliance Report available on the Mangoola Website.

7.6.4 Proposed Improvements

In line with an EPL variation received in 2023, infrastructure at the Raw Water Dam will be set up during 2024 to allow water discharge under the Hunter River Salinity Trading Scheme (HRSTS).

Throughout 2023 Mangoola developed a dam maintenance program which will be implemented in 2024. This program will review sediment loads within the dams as outlined within the site Operational Water Management Plan (OWMP) using bathymetric surveys

7.7 Groundwater Management

7.7.1 Environmental Management

Refer to Appendix F

7.7.2 Environmental Monitoring Results

Refer to Appendix F

7.7.3 Key Performance and/or Management Issues

Refer to Appendix F

7.7.4 Proposed Improvements

Refer to Appendix F

8. Rehabilitation

Mangoola aims to develop rehabilitation of mined land that returns the site to a condition where the landforms, soils, hydrology, flora and fauna are self-sustaining and compatible with the surrounding land uses. Rehabilitation of the overburden emplacement areas is conducted progressively over the life of mine, as an integral component of mining operations.

8.1 Rehabilitation of Disturbed Land

Rehabilitation at Mangoola was undertaken in accordance with the Rehabilitation Management Plan (RMP). A copy of the current RMP is available on the Mangoola website. A total of 966 ha of rehabilitation has been undertaken to date. All rehabilitation areas are classified as being in the Ecosystem and Land Use Establishment Phase. A summary of rehabilitation during 2022 and 2023, and the projected rehabilitation for 2024, is provided in ***Table 8-1*.**

Table 8-1 Rehabilitation Status

Mine Area Type	Previous Reporting Period (Actual) (Ha)	This Reporting Period (Actual) (Ha)	Next Reporting Period (Forecast) (Ha)
A. Total mine footprint[1]	2,916	2455	2623
B. Total active disturbance[2]	1,429	1488	1577
Infrastructure Areas	714	811	851
Active Mining Areas	231	276	316
Waste Emplacements	270	195	203
Tailings Dams	117	117	117
Water Management	97	90	90
C. Land being prepared for Rehabilitation[3]	40	0	0
D. Land under active Rehabilitation[4]	873	966	1046
E. Completed rehabilitation[5]	0	0	0

1 Total mine footprint includes all areas within a mining lease that either have at some point in time or continue to pose a rehabilitation liability due to mining and associated activities.

2 Total active disturbance includes all areas ultimately requiring rehabilitation except areas listed under C, D or E.

3 Land being prepared for rehabilitation – includes the sum of mine disturbed land that is under the following rehabilitation phases – decommissioning, landform establishment and growth medium development (as defined in DRE RMP Guidelines).

4 Land under active rehabilitation - includes areas under rehabilitation and being managed to achieve relinquishment.

5 Completed rehabilitation – requires formal sign-off by DRE that the area has successfully met the rehabilitation land use objectives and completion criteria.

Topsoil is being managed to maximise the viability of soil biota. Topsoil management measures on site include varying stripping depths for different soil types, incorporation of mulched vegetation material

into the topsoil resource, limiting topsoil storage stockpiles to a maximum of three metres in height, minimising any compaction of stockpiles, and seeding topsoil stockpiles with a cover crop.

Mangoola has continued with the natural landform design project and will implement this design in all final rehabilitation. The natural landform design has been integrated into the RMP. All rehabilitation undertaken is guided by the completion criteria outlined in the RMP.

A general overview of the 2023 rehabilitation process is presented below:

- After shaping is completed, topsoil is applied at a nominal depth of 100 mm in thickness. Direct topsoil placement from recently mulched and stripped areas is prioritised, where possible.
- Gypsum is applied as a soil ameliorant for incorporation into the topsoil.
- Ground timber and stag trees are placed, with the density depending on available resources.
- Frog ponds and aquatic habitat areas are shaped with habitat structures added.
- Topsoiled rehabilitation areas are double pass ripped, across the contour, to a depth ranging from 200 mm (level areas), 400 mm (gradual slopes) to 600 mm (steeper slopes).
- Rehabilitation areas are seeded by hand. This provides more detail for targeted vegetation communities, such as riparian areas and eco-tonal changes based on soil type and aspect. Seed mixes are comprised of endemic Ironbark woodland complex species sourced from adjoining offset and buffer lands.

In addition to the natural landform created at Mangoola, plant species compositions have been selected based on vegetation types of the surrounding natural landforms, e.g. Forest Gum woodland or Rough-barked Apple woodland in the drainage lines or Ironbark woodland along the ridges and Spotted Gum forest on the ridge tops. An example of seed mixes used at Mangoola is provided in the RMP.

During the reporting period, no rehabilitation areas received sign-off from the Resources Regulator as all rehabilitation criteria have not been met.

Due to the unprecedented rainfall experienced during late 2021 and early 2022 TD2 was required to be used as a short-term water storage option. This unfortunately prevented the planned 2021 commencement of TD1 capping (due to the seepage from TD2) and the subsequent timing of TD2's capping. TD1 trial of the 6 species evaluation for dewatering capacity of tailings by vegetation continued across 2023 due to the delay in planned capping works.

Construction of the capping layer will commence progressively, from the upper beach of TD1 in the northeast of the dam. With regards to TD2, the tailings strength will continue to be routinely monitored by use of the shear vane apparatus, until tailings strengths develop to those similar to TD1, when construction of the capping layer commences. Throughout this process any surface water will be kept to a minimum on TD1 and TD2 (once TD2 is emptied of its short-term water storage) to maximise the effect of solar desiccation.

The following were undertaken as part of the rehabilitation monitoring program:

- 23 long term monitoring sites (13 existing and 10 newly established);
- 50 initial establishment monitoring sites (comprising 9 existing and 41 new sites); and
- Five fauna monitoring sites.

Predictions and mapping of rehabilitation and disturbance areas are included in the Annual Rehabilitation Report and Forward Program, which are attached in ***Appendix A.***

The Mining Amendment (Standard Conditions of Mining Leases – Rehabilitation) Regulation 2021 (the Regulation) introduced new standard rehabilitation and reporting conditions on mining leases. The

Regulation commenced on 2 July 2021, with a transition period to 2 July 2022. Following the transition period, Mining Operations Plans cease to exist in NSW.

8.2 Removal of Buildings

During 2023, no buildings or other infrastructure were removed or renovated.

8.2.1 Key Issues Affecting Rehabilitation

During September 2023, a walkthrough rehabilitation inspection audit was completed by a specialist consultant to review and report on the condition of mine rehabilitation and highlight areas where maintenance action is required. Due to the size of the area under rehabilitation, since 2020 the annual walkover inspection has been moved to a biennial schedule, with eleven rehabilitation blocks totalling 293 ha in the southern rehabilitation area and three blocks totalling 67 ha in main pit rehabilitation were inspected during 2023.

Overall erosion control has been successful. The establishment of vegetation and stabilisation of erosion gullies has been successful in remediating previous erosion issues. The rehabilitation landscape design has been successful in limiting erosion potential across the rehabilitation areas.

No continuous areas of recalcitrant bare ground >400 m^2 in size were identified in the walkover inspection. Topsoil management including consistent spreading and ripping is evident across the rehabilitation area.

Ten weeds considered to have potential to impact on the development of target vegetation communities were identified:

- Galenia
- Exotic perennial grasses
- Zig-zag wattle
- Silver-leaved ironbark
- Small cooba
- Golden wreath wattle
- Swamp Mahogany
- Telegraph weed
- African Boxthorn
- Sharp rush

Vegetation health was high across the rehabilitation area with good growth rates observed in response to favourable environmental conditions in 2020-2022.

Evidence of three feral animal species was encountered during the walkover inspection: pigs, deer and hares. These species have not been observed to be having a significant impact on the rehabilitation at this time. Pigs and deer are included in the annual pest control programs across Mangoola owned land. Hares may be included in future pest control works if impacts from this species are observed to rehabilitation establishment.

A diversity of artificial/salvaged habitat features are present across all areas of the Mangoola rehabilitation. In particular, constructed drainage lines using a mix of stag trees, logs, rocks and chains of ponds are looking promising. Utilisation of these features has been recorded including by mammals, reptiles, amphibians, birds and invertebrates.

While assessment of floristic trends is considered unreliable for rehabilitation under two years of age, all rehabilitation blocks are generally trending towards completion criteria consistent with what could be expected for the age of each rehabilitation block.

Some threats to the rehabilitation as identified in the RMP have been partially triggered, mainly presence of minor erosion and low presence of weeds or species not belonging to the target vegetation communities. With the continuation of current management practices and continued adoption of recommendations, these are unlikely to pose a significant risk to meeting completion criteria for the northern rehabilitation.

Overall, the Mangoola rehabilitation works in the rehabilitation to date remains highly successful and are generally progressing towards the completion criteria listed in the RMP. Native diversity across all rehabilitation domains of sufficient age was generally moderate to high.

8.2.2 Post Rehabilitation Land Use

As outlined in the RMP, the post-rehabilitation land use will be self-sustaining locally occurring vegetation communities, which emulate the pre-mining environment, enhance local and regional ecological linkages and provide for a sustainable final land use option. It has been developed with consideration of the inherently low land capability of the existing land (Class VI) across most of the site. The final void will remain onsite and will be appropriately rehabilitated and fenced to prevent access. Rehabilitation will establish a range of grassland, woodland and forest communities in addition to the offset area which surrounds the site.

Mangoola will establish native woodland and approximately 700 ha of native grassland across the site at closure.

Vegetation communities within the native woodland areas include:

- Forest Redgum Riparian Woodland.
- Ironbark Woodland Complex.
- Paperbark Woodland.
- Sheltered Grey gum Woodland.
- Slaty Box Woodland.
- Spotted Gum Open Forest.
- Weeping Myall Woodland.

In addition to the above, Mangoola is monitoring rehabilitation against relevant completion criteria. ***Table 8-2*** provide a summary of progress to date against relevant criteria for the stage of rehabilitation onsite, which has only been undertaken on rehabilitated waste emplacement areas. Further updates against criteria will be provided in future Annual Reviews as relevant criteria are triggered.

Many of the completion criteria listed in the RMP are not yet relevant, as they relate to stages of rehabilitation that have not yet been reached or triggered. The annual ecological monitoring program, rehabilitation walkover inspection and annual bushfire hazard inspection have assessed the relevant criteria, specifically landform stability, floristic diversity, vegetation health, weed presence, structural fauna habitat, management of pest species and bushfire management.

Table 8-2 Comparison of the 2023 Rehabilitation Walkover Inspection Results with RMP Completion Criteria

Performance Indicator	Objective	Completion criteria	
Development of native ecosystems as per the final land use	Floristic diversity is progressing towards the ecosystems planned in the final land use	Native plant species richness assessed for each growth form	This was not formally assessed as part of the walkover inspection and would be more appropriately assessed under the BAM monitoring programme. All areas appear to be generally trending in the right direction.
	Strata development is progressing towards the ecosystems planned in the final land use	**For Grassland**: -0-20% canopy -60-90% Groundcover	Grassland areas are generally consistent with this performance indicator. A number of areas mapped as grassland that were developing a canopy were mulched in 2022, some budding shrubs appearing.
		For Woodland: -20-60% canopy -10-60% understorey - 40-80% groundcover	This was not formally assessed as part of the walkover inspection and would be more appropriately assessed under the BAM monitoring programme. All areas appear to be generally trending in the right direction.
		For Woodland: Minimum total tree/shrub densities to be 400 stems/ha	Densities of trees and shrubs exceed the minimum number across all Woodland rehabilitation areas. This should continue to be monitored as pioneer shrub species senesce.

Performance Indicator	Objective	Completion criteria	
	Weeds are not a major component of the planned ecosystems	Less than 30% weeds	>25% weed coverage noted.
	No signs of ill health and stalling of canopy strata	More than 75% of trees are healthy and growing	No instances of significant dieback noted.
	The rehabilitation is self-sustainable	**For Woodland:** Signs of flowering and seeds or second generation seedlings for trees and shrubs	Instances of seeding and second generation establishment in South pit rehabilitation seeded 2016-2019.
Fauna diversity is progressing towards the ecosystems planned in the final land use	Rehabilitation areas provide a range of structural habitats similar to pre-mining fauna communities.	Evidence of a range of structural habitats in rehabilitation areas. 1-10 boxes or hollows per ha	All rehabilitation blocks had stag trees, and many areas had logs and ponds. Vegetation consistent with wet areas was starting to develop. A diversity of fauna species were observed using the rehabilitation, in particular adjacent to offsets and in older rehabilitation
	Fauna pest species are managed and	Evidence of pest fauna	Very low levels of evidence of deer (visual sightings/footprints) and hares (scat) were found. Additional evidence of pig and hare.

Performance Indicator	Objective	Completion criteria	
	controlled (where possible)	usage of rehabilitation	

8.3 Rehabilitation Trials and Research

Mangoola is undertaking a long-term orchid translocation trial for the threatened species *Diuris tricolor* and *Prasophyllum petilum*. Orchids were translocated to new areas and the survival rates have been monitored annually since 2010. The results of the 2023 orchid translocation monitoring are presented in ***Section 6.6.2.6***.

Invertebrate habitat "bee and bug hotels" were introduced into the rehabilitation during 2019. These structures are being used by invertebrates, but no analysis has been carried out to identify particular species.

Mangoola is partnering with NSW BCD on a large-scale translocation project of the critically endangered *Pomaderris reperta*. The aim of the project is to evaluate the effectiveness of propagation and translocation on this species as a means of extending its distribution within the natural range of the species. Two 12 m x 12 m translocation plots have been established within establishing Mangoola rehabilitation, and two identical sized plots located in Mangoola offset land. Ongoing monitoring is showing very favourable results overall and data is being collected regarding the impact of differing ground preparation methods on plant survival rates.

Translocation projects including *Cymbidium canaliculatum, Xanthorrhoea johnsonii* and *Macrozamia communis* continue to be undertaken throughout the rehabilitation areas where opportune.

Mangoola has undertaken and is planning to undertake further trial ecological cool burns in areas of rehabilitation. No burns were undertaken in the 2023 calendar year.

8.4 Actions for the Next Reporting Period

Rehabilitation activities proposed for the 2024 reporting period include the continuation of the rehabilitation research and trials for threatened flora species translocation, continued use of seed mix with increased species diversity, mulching and treatment of some rehabilitation areas to achieve the desired grassland vegetation communities, creating additional complexity in aquatic habitat features, and a focus on achieving the rehabilitation targets as outlined in the RMP.

9. Community

9.1 Community Engagement Activities/Initiatives

Mangoola continued to engage with our local community during 2023 in accordance with our Social Performance Management Plan and our Social Impact Management Plan, required by Condition B108 of SSD-8642.

In summary, Mangoola:

- Met with Community Consultative Committee (CCC) quarterly.
- Held the inaugural Annual Community Event (9th November) with local community/key stakeholders.
- Met with Community Enhancement Program (CEP) working group (inaugural meeting 11th October).
- Offered/hosted mine tours.
- Distributed community newsletter/handed out other printed resources at community events).
- Maintained our company website with up-to-date information.
- Continued to liaise/meet with local community members as required (e.g. discuss environmental management aspects, arrange tank cleaning/other works as per the Social Impact Management Plan, discuss community projects and events).

9.1.1 Community Consultative Committee

The combined Mangoola Coal/Mangoola Coal Continued Operations Project Community Consultative Committee (CCC) met four times during the reporting period. Meeting minutes and presentations are available on the website (*www.mangoolamine.com.au* under 'Documents'/'Community documents').

Meetings generally include:

- Welcome/introductions/apologies/declarations.
- Business arising from previous meeting.
- Correspondence report.
- Project reports (approvals update, mine and project updates, environmental update including monitoring summary, review of incidents, rehabilitation and offsets updates etc, community update including land ownership update, complaints summary, tours held, community contributions/event summary). New initiatives/feedback opportunities are also discussed in project reports.
- General Business.

The *Community consultative committee guideline* for State Significant Projects (Department of Planning and Environment, 2023) was amended June 2023. Mangoola's CCC Independent Chairperson communicated the changes to the CCC at the Quarter 4 meeting and distributed the revised documentation, including Declaration of Interest forms and Terms of Reference forms to the CCC members. The Quarter 4 meeting was held at the new Donald Horne building in Muswellbrook. This building, partially funded through Mangoola's VPA contributions, offers 'The Melt', a makerspace and prototyping facility combining engineering capability, equipment and business mentoring skills, and

STEM learning. A tour was held prior to the meeting so CCC members can promote what this new facility offers. A mine rehabilitation tour also preceded the Quarter 2 meeting.

The CCC also welcomed a new MSC representative to the Q4 meeting – Theresa Folpp, council's Development Compliance Officer.

9.1.2 Annual Community Event

On 9th November, 2023, Mangoola held the inaugural Annual Community Event at the Wybong Public Hall. Local community members from within 4km of the operation were invited to attend as well as people with mitigation/other rights under SSD 9642, CCC and Community Enhancement Program (CEP) working group members and Wybong Public Hall Committee Members.

The planned mine tour had to be cancelled due to persistent lightning/heavy rainfall at the scheduled tour time.

Mine personnel from various departments engaged with community members and posters displayed information about environmental monitoring, mine and rehabilitation updates, offset areas, available community funding, exploration updates, career opportunities and other information. Handouts providing further information were also available.

9.1.3 Community Tours

Mangoola hosted the following tours in 2023:

- School tours through the Upper Hunter Mining Dialogue.
- Community Enhancement Program Working tour of mine rehabilitation in October.
- CCC members toured mine rehabilitation during the Quarter 2 meeting.
- Participants of 'Workforce Readiness Program' (local high school students).

Tours will again be offered in 2024 through the Community Newsletter and other community interactions.

Mangoola and Glencore personnel attended a tour of the newly renovated Wanaruah Local Aboriginal Land Council premises. Mangoola has previously worked with WLALC on bathroom/kitchen upgrades and landscaping projects. Glencore also supported an extension to the rear of building (completed/opened in 2023).

Photo 9-1 High School Students visit Mangoola as part of the Upper Hunter Mining Dialogue

9.1.4 Other Consultation

Mangoola continued to meet with local landholders / stakeholders as per the site's Social Performance Management Plan (internal document) with communications/outcomes recorded using site-based systems.

In addition to handouts at community event/poster information, a community newsletter was distributed in quarter 1 2023 and another one being developed to report on year-end performance (Q1 2024 distribution). This is distributed to local residents within 6-10km radius of the mine and hard copies are also available at Denman locations (in 2023, these were the Denman Rural (CRT), Denman Library and Denman and Districts Men Shed). It is also available on the website and can be emailed upon request. Other handouts were also provided at community events and posters displayed at the Annual Community Event.

The new 'Mine Dust and You' fact sheet was added to our company website which was also maintained as per the requirements of SSD 8642 during the reporting period.

Consultation relating to exploration activity was reduced in 2023 due to postponement of exploration drilling within AL9 until 2024. There was no drilling activity within EL5552. All drilling occurs on land owned by Mangoola Coal Operations Pty Ltd. Planned exploration activity within AL9 was discussed at the Annual Community Event and an update provided in each of the CCC meetings. It will also be included in the end of year newsletter. EL5552 and AL9 Reduced Community Consultation Reports have been prepared and uploaded to the company website (*www.mangoolamine.com.au* under 'Documents', 'Reporting Documents').

Mangoola continued to notify community members in the blast notification register of upcoming blasts, as well as advertising of road closures for blasting in local newspapers and on the MSC website.

9.1.5 SIMP Community Management Program Performance Summary

All Community Management Program activities as per Table 3.5 of Social Impact Management Plan were met in 2023. Many of these commitments are ongoing and thus may be further discussed elsewhere in this document. The below is a summary of the performance grouped by action/commitment theme:

9.1.5.1 Community Mitigation Measures

Mangoola re-communicated the air quality mitigation measures through the Community Newsletter and at the Annual Community Event. 3 new residences were each added to tank cleaning, first flush/filter system and solar panel cleaning programs during the reporting period. In 2023, over 240 water tanks were cleaned (annual and biannual service year), 7 residences had their solar panels cleaned/inspected every 4 months, 3 new residential properties were fitted with first flush/filter systems and 191 first flush systems were serviced and 88 filters replaced each quarter.

Mitigation and inspection rights under SSD 8642 have been previously communicated and those with rights were invited to the Annual Community Event. A community feedback survey was also completed with questions relating to satisfaction of mitigation measures. Overall people were satisfied with measures/contractor performance and one additional person was satisfied but noted tardiness on one air conditioning contractor which was responded to at the time. There were no new inspections in 2023.

9.1.5.2 Communicating Environmental Performance

During 2023, Mangoola re-communicated to the CCC and through Community Newsletter our website link and how to find environmental monitoring reports on our Mangoola Website (including the Annual Review and Complaints Register). Environmental monitoring updates, complaint review and Annual Review link (and hard copy) are also provided to members of our CCC.

9.1.5.3 Implementation of Management Plan Commitments

The operation continued to implement measures identified in our Noise Management Plan, Air Quality and Greenhouse Gas Management Plan, Visual Impact Management Plan and Rehabilitation Strategy and Management Plan (see updates provided in relevant sections of this Annual Review).

9.1.5.4 Recruitment Initiatives

In addition to recruitment and tender campaigns, Mangoola Human Resources personnel also had displays/handouts at the Denman Motor Market Event in April 2023 and at the Annual Community Event in November 2023. High school students toured the mine through the Upper Hunter Mining Dialogue and Workforce Readiness Program. Members of the Denman Chamber of Commerce and Muswellbrook Chamber of Commerce and Industry are on Mangoola's CCC. Details on how to register for job alerts was communicated to the CCC members and distributed in the Community Newsletter. Mangoola also participates in the Glencore Indigenous Pathways program coordinated by Glencore Coal Assets Australia. This 26-week job readiness program includes on-site training including Mangoola.

9.1.5.5 Other

The following commitments were also either met or non-applicable for the reporting period:

- Maintained workforce communication to reinforce positive employee and contractor behaviour on and off-site.
- There were no Project-related community safety-issues during the reporting period however Mangoola will continue to collaborate with emergency service providers to develop emergency response, where necessary. The Bushfire Management Plan review and road closures are performed in consultation with relevant emergency services.
- Continued to participate in Government and industry initiatives relevant to regional development and/or cumulative impact management and implement the Stakeholder Engagement Program.
- The requirement to review the SIMP 3 years prior to mine closure and adequately consider social impacts in the mine closure planning process is not yet triggered.

9.1.6 Website

Mangoola operates a website (www.mangoolamine.com.au) where members of the community can access information about the site, including the latest reports, management plans and environmental monitoring data, including previous Annual Reviews. An audit of the website was completed in March 2024 and identified that the website was compliant with the requirements of the development consent.

9.2 Community Contributions

9.2.1 Voluntary Planning Agreement

Mangoola implemented the Voluntary Planning Agreement (VPA) under Condition A17 of SSD-8642 with Muswellbrook Shire Council. The VPA is designed to provide financial contributions commensurate with the terms set out in SSD-8642. Mangoola is committed to meeting its obligations under the VPA with over $880K paid in 2023 for the following:

- Wybong Road Maintenance.
- General mine affected road maintenance.
- Council environmental management and monitoring.
- Additional environmental and community projects.

Under the VPA, Mangoola also has a commitment to make reasonable attempts to recruit 6 apprentices from the Muswellbrook LGA/Aberdeen areas. During 2023, apprenticeship, and other career opportunities, were advertised through GCAA using social and local media avenues (as well as brochures/website updates). Mangoola further promoted how to register for job/apprenticeship alerts through CCC meetings and community newsletter and Human Resources also attended two local community events promote apprenticeship and career opportunities to local residents. During 2023 we welcomed 3 new apprentices from the Muswellbrook, Denman and Scone areas.

Mangoola personnel also attended opening events for projects VPA funding has supported including Muswellbrook Animal Shelter, Donald Horne Building (Tertiary Education) and Denman Heritage Village (tour planned on new museum in 2024).

Photo 9-2 The new home of the Denman and District Heritage Village funded in part through the Voluntary Planning Agreement funding.

9.2.2 Smarty Grants

Each year Mangoola contributes to community projects through our Smarty Grants program. This is focussed on eligible projects within the Muswellbrook, Sandy Hollow, Wybong and Denman areas. Projects supported cover themes such as health, education, enterprise development (e.g. event to promote local community spend) and other local need. In 2023, $85,000 was spent on community projects which included:

- Upper Hunter Show – Young Woman of the Year (and other competitions).
- Great Cattle Dog Muster – working dog trial.
- Upper Hunter Education Fund.
- Muswellbrook Local Business Awards.
- Local Annual School Awards.
- Motor Market Event in Denman.
- Christmas Shopping/Market Event in Denman.
- Mangoola Fire Brigade – water/electrolyte supplies.
- Wybong Rural Fire Brigade – defibrillator for 2nd fire truck/smart TV/Satellite.
- Wybong Public Hall – insurance/100th Celebration Event/Defibrillator for hall.
- Sunnyfield Disability Services – Creative Minds Project.
- Denman Men's Shed – drum sander.
- Denman and District Heritage Village – display cabinets for new museum (also contributed through VPA funds).
- Denman Children's Centre – new furniture/toys.
- Sandy Hollow Public School – camp.
- Sandy Hollow Progress Association – quilting workshop.

Photo 9-3 Smarty Grant recipients and Mangoola staff supporting community events in 2023

Additional support was provided through Glencore Coal Assets Australia for other sporting and general grants projects benefiting junior sports clubs and other organisations in the Muswellbrook, Aberdeen, Sandy Hollow and Denman areas. GCAA also donated $10,000 to the Power FM/2NM Food and Toy Appeal, which Mangoola's workforce also donated to through a food and toy collection. This, along with other community and business donations, helps support almost 400 families in need across the Upper Hunter Valley.

Photo 9-4 Donations to the Power FM/2NM Christmas Food and Toy Appeal (GCAA and Mangooa Workforce). Congratulations to coordinator De-anne Douglas and the team at Blackroo Community Indigenous Corporation.

Mangoola personnel met with other potential community investment partners in 2023 to promote and discuss opportunities.

9.2.3 Community Enhancement Fund

In 2023, Mangoola established the Community Enhancement Program working group with the first meeting held 11th October (followed by optional mine rehabilitation tour). This group will nominate and vote on projects that qualify for Community Enhancement Funding. These projects must be of benefit to the local community (being Wybong, Manobalai, Castle Rock and Mangoola) and meet an identified community need. This is a commitment from Mangoola's Social Impact Management Plan for the Mangoola Coal Continued Operations Project.

The working group comprises members of the local communities and representatives of the Wybong Public Hall Committee, Wybong Rural Fire Brigade and Wybong Wild Dog Association. The group will continue to meet twice a year and measure the success of projects and how they have helped to address identified community needs. At the first meeting, project ideas were discussed and those the committee votes on, will be implemented over the next 12-month period.

These projects will be funded from a separate budget surplus to the Smarty Grants and VPA funds.

All CEP commitments outlined in Table 3.7 of the Social Impact Management Plan were met as applicable during the reporting period. These mainly related to the establishment of the committee, governance documents, fund establishment and other associated actions. These were completed by the required date. Updates will be provided in further Annual Reviews as projects are implemented.

9.3 Community Complaints

Mangoola manages all complaints in accordance with the Mangoola Complaints Management Procedure, which details the process for receiving and responding to complaints. Complaints are received via a dedicated Community Response Line, in person, facsimile, email, letter or general telephone.

Mangoola continues to advertise the Blasting and Community Complaints hotline at least monthly via digital local newspaper and the hard copy Hunter River Times. It is also advertised on our company website and in newsletters.

9.3.1 2023 Complaints Summary

A total of 41 community complaints were received by Mangoola during the reporting period. A summary of the time of year and subject of the complaints are provided in ***Table 9-1***.

Table 9-1 Summary of Complaints in 2023

Month	Noise	Dust	Lighting	Blasting	Traffic	Other	Total
January	1	1	-	-	-	-	**2**
February	2	2	-	-	1	-	**5**
March	1	-	-	-	-	-	**1**
April	3	-	-	-	-	-	**3**
May	-	-	-	-	-	-	**-**
June	1	-	-	-	-	-	**1**

Month	Noise	Dust	Lighting	Blasting	Traffic	Other	Total
July	5	-	1	-	-	-	**6**
August	2	-	-	-	-	-	**2**
September	4	2	-	1	-	-	**7**
October	4	1	-	2	-	-	**7**
November	5	-	-	-	-	-	**5**
December	2	-	-	-	-	-	**2**
Total	**30**	**6**	**1**	**3**	**1**	**0**	**41**

9.3.2 Analysis of Complaints

Complaint Subject and Quantity

As shown in ***Table 9-1*** a total of 41 community complaints were received by Mangoola during the reporting period.

The majority of complaints received were in relation to noise (73.2%). This percentage has decreased marginally from 2022 (76.2%) and total noise complaints have reduced by 2 from 2022. Further details on management and mitigation measures regarding noise that were implemented during the reporting period are provided in ***Section 6.3***. Additional attended noise monitoring was conducted once again from August to September 2023 (cooler period) in the area northwest of the mine which, during the previous year, was where most noise complaints came from.

The 41 complaints received in 2023 represent a 2.4% decrease from the 42 environmental complaints received in 2022. A review of complaints from 2007 to 2023 found that complaints peaked in 2011 (717 complaints) which represented the first full calendar year of operations.

Figure 9-1 shows the number of community complaints received during 2023 compared to previous years. It shows the lowest number of complaints since mining commenced in 2010.

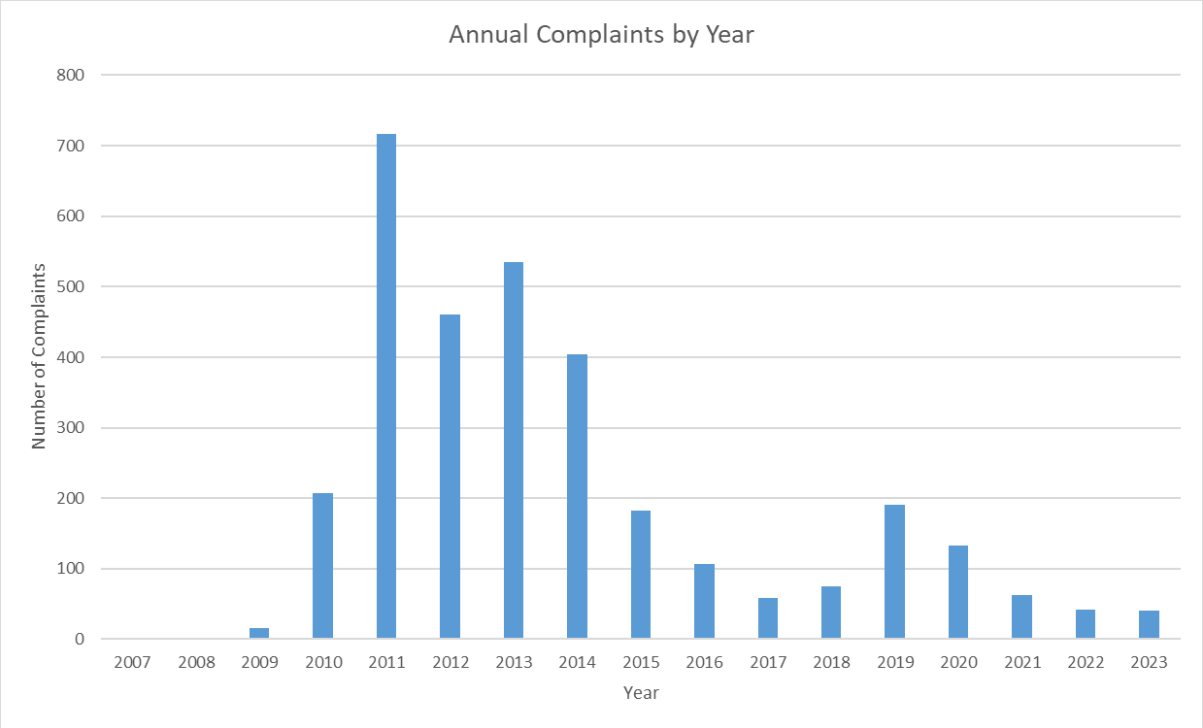


Figure 9-1 Complaints by Year

Complaint Timing

Figure 9-2 shows the time of day that complaints were made during 2023. Analysis of this data shows that noise complaints were generally made from evening to mid-morning, whereas blast related complaints were generally made in the middle of the day, which coincides with blasting activities, and air quality complaints were mostly in the late afternoon/early evening.

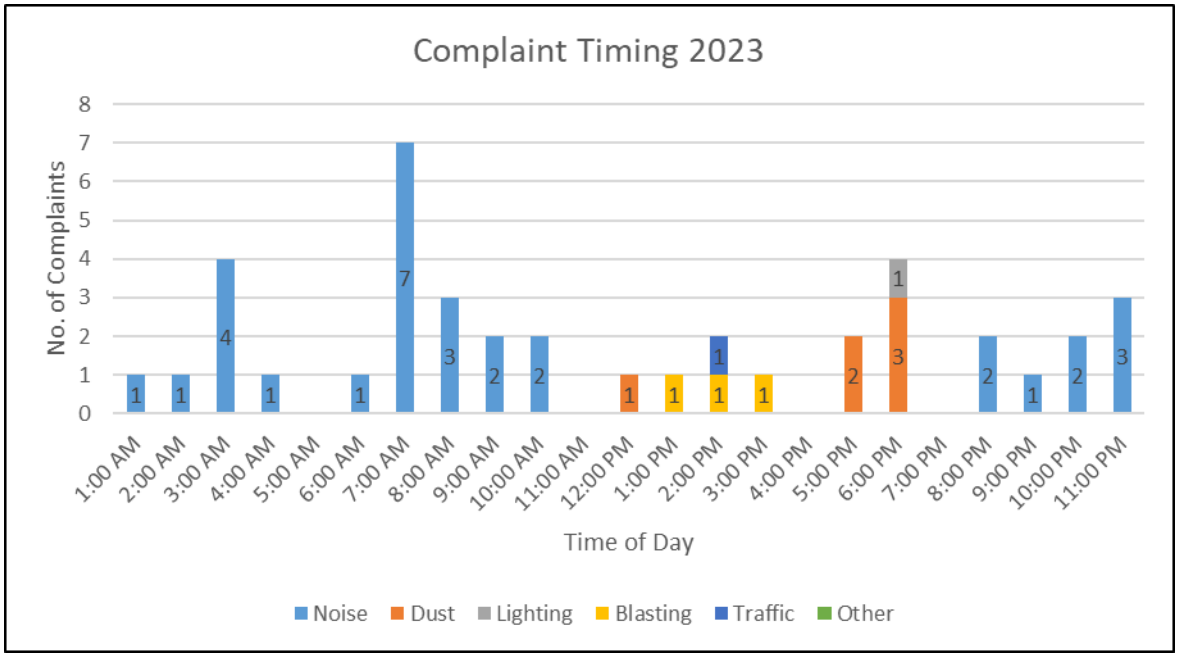


Figure 9-2 2023 Complaints by Time of Day

Complainants

Figure 9-3 shows the number of complaints made by each complainant during 2023. The 41 complaints were made by 17 individuals during 2023 and approximately 46% of all complaints (19) were made by three complainants. These were all in relation to noise.

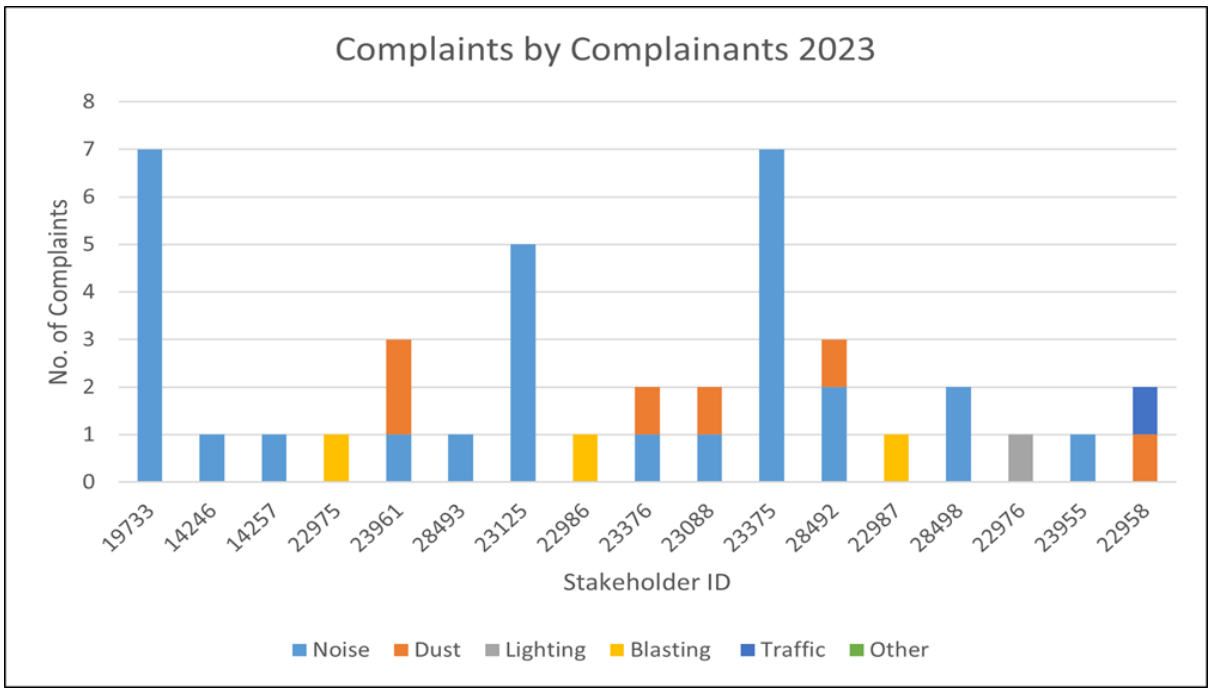


Figure 9-3 2023 Complaints by Complainant

Figure 9-4 shows 2023 complainant location in relation to the mine with the majority of complaints received from complainants in the north-west sectors, primarily related to noise. There is one complaint made anonymously in 2023. It is included in the complaint statistics, but not displayed in below figure as the address is unknown.

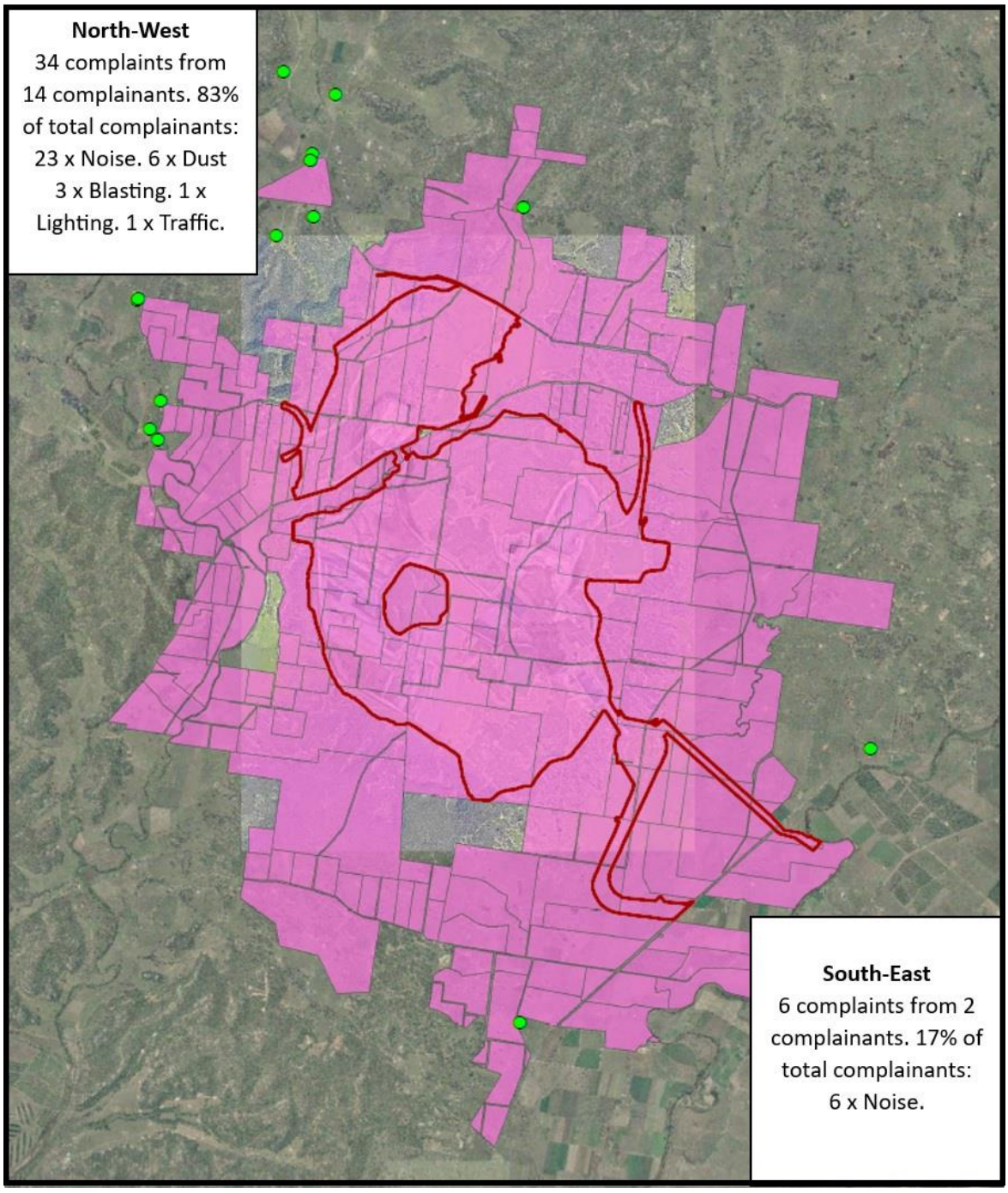


Figure 9-4 Location of 2023 complainants in relation to mine

9.3.3 Actions in Response to Complaints

In response to complaints received in 2023, the following responses were undertaken, depending on the nature of the complaint. Complaints and outcomes of investigations are discussed with complainants where they have requested a call back.

Noise

Following receipt of each noise complaint, the real time noise monitors were reviewed, and noise alarms were reviewed to see if any were received prior to the complaint.

Operational noise management controls were reviewed by the Mining Supervisor or CHPP Supervisor.

Where noise alarms were received and the Mining/CHPP Supervisor verified activities from our operation to be the source, the operation was reviewed with changes made as required to reduce noise levels, e.g. parking up equipment.

Supplementary weekly attended noise monitoring was undertaken at an additional four locations at a further distance northwest of site as per previous years. No elevated results were recorded. Attended compliance noise monitoring was also conducted monthly during 2023 with no non-compliances were measured during this monitoring.

Blast

Depending on the nature of the blast complaint, the following are reviewed:

- Blast monitoring results.
- The video recording of the blast.
- Pre-blast assessment to confirm meteorological conditions at time of blasting.
- Air quality monitoring results (not applicable in 2023).
- Other blasting activity in region (where blast time did not correlate with a Mangoola blast).
- All blast overpressure and ground vibration results confirmed to be within compliance limits and discussed with complainant where relevant.

Dust

Following receipt of a dust complaint, a review of alarms and the operational air quality management controls was undertaken by the Mining Supervisor, CHPP Supervisor or Environment and Community personnel (in consultation with operations).

Modifications to operations were made as required (e.g. additional water cart called up, workforce communication regarding use of less frequented light vehicle roads - call up water cart/drive to conditions).

Meteorological conditions and other relevant monitoring systems (such as the Upper Hunter Air Quality Monitoring Network) were also reviewed.

Complainants contacted as requested to discuss complaint detail, outcomes of investigation and any additional actions implemented in response to alarms.

Monitoring results were within air quality monitoring criteria. Controls being implemented at the time and any additional action taken (if triggered) were discussed with complainant where possible.

Lighting

One lighting complaint was received. Mine personnel were already on the way to shut off a parked mobile lighting plant which had auto-started on dark when the complaint came through. Complainant confirmed shortly after that the light was no longer visible.

Traffic

One traffic complaint was received in relation to stopping local traffic for passage of mine vehicle. This was an approved action, but feedback was still provided to those responsible for traffic control for consideration.

All other complaints were investigated and handled on a case by cases basis with the aim of mitigating impacts (where required) and responding to community members.

10. Independent Environmental Audit

In accordance with Condition D13 of SSD-8642, an Independent Environmental Audit (IEA) is required every three years from the initial IEA that was conducted. The initial IEA for the first year of commencement was conducted in July 2022 and thereafter is now required every 3 years.

Submission of the 2019-2022 IEA report was completed on the 6 October 2022. The IEA received approval from the Department of Planning, Housing and Infrastructure (DPHI) and Mangoola published the results on the public website with associated key audit outcomes reported in the subsequent 2022 Annual Review.

The next audit will be in 2025 to cover the 3-year period starting from 23 July 2022 with corresponding 2025 Annual Review to providing key audit outcomes.

11. Incidents and Non-Compliances

All 2023 Incidents, non-compliances and exceedances related to the SSD-8642 and relevant management plans are summarised in ***Table 11-1*.**

Table 11-1 Incidents, Non-Compliances and Exceedances

Date	Summary	Non-Compliance	Details/Response
2023	Failure to Monitor Weather Continuously	EPL 12894 (Condition M4.1)	Failure to continuously monitor weather in accordance with Condition M4.1 EPL monitoring point 5 and monitoring point 18 for various 15-minute increments throughout 2023: *30/01/2023-31/01/2023, 8/02/2023, 4/03/2023, 6/03/2023-7/03/2023, 8/03/2023, 17/03/2023, 21/03/2023, 29/03/2023-30/03/2023, 1/04/2023-3/04/2023, 6/04/2023-8/04/2023, 10/04/2023, 30/04/2023, 5/05/2023, 13/05/2023, 17/05/2023, 20/05/20233-21/05/2023, 25/05/2023-26/05/2023, 31/05/2023, 4/06/2023-7/06/2023, 14/06/2023, 18/06/2023-19/06/2023, 22/06/2023-23/06/2023, 25/06/2023-26/06/2023, 29/06/2023-30/06/2023, 1/7/2023, 10/07/2023, 14/07/2023-18/07/2023, 1/8/2023-2/8/2023, 18/08/2023, 31/08/2023, 16/09/2023, 27/09/2023-28/09/2023, 1/10/2023, 14/10/2023, 22/10/2023, 30/10/2023, 7/11/2023, 9/11/2023-12/11/2023, 15/11/2023, 17/11/2023, 22/11/2023, 26/11/2023, 28/11/2023-29/11/2023, 1/12/2023, 10/12/2023, 12/12/2023, 15/12/2023, 19/12/2023, 25/12/2023* There were no recognisable adverse effects of the non-compliance and data capture for the reporting period at Monitoring Point 5 and 18 remained above 95% in 2023 (99.7% for monitoring point 5, and 99.6% for monitoring point 18). *Note: dates above do not necessarily indicate outages for the entire date specified, rather it indicates missing 15 minute average values occurring during the specified period.*
15/01/2023 **22/07/2023** **26/07/2023** **30/07/2023**	Failure to Monitor PM10 Continuously	EPL 12894 (Condition M2.2)	PM10 monitoring is required continuously in accordance with Condition M2.2 of EPL 12894 at Point 19 (D9-DC) and Point 20 (D8-DC). While the continuous emissions monitoring captured >96% data (the minimum is 90% as per EPA website) EPL19 had a unit failure between 19/8/2023 and 21/8/2023. The unit was then replaced (on 21/8/2023) after a field service did not rectify the issue.

Date	Summary	Non-Compliance	Details/Response
3/08/2023-4/08/2023 **7/8/2023-9/8/2023** **19/8/2023-21/8/2023** **14/12/2023-18/12/2023**			EPL 20 suffered a technical failure whereby there was insufficient data (flow failure) on 15/01/2023, and then again on the 22/07/2023, 26/07/2023, 30/07/2023, and 3/08/2023-4/08/2023. On each instant a in field service was completed and the unit recommenced operation however the unit then failed on 07/08/2023 resulting in no data from 7/08/2023 – 9/08/2023. The unit was then replaced. A technical fault was experienced with this unit between 14/12/2023 and 18/12/2023 leading to insufficient data capture on these dates. This will be reported in the next Annual Return
11/12/2023	Failure to complete full annual comprehensive water quality analysis at monitoring bore MP9a.	SSD8642 (Part B, Condition 52) EPBC 2018/8280 (condition 2)	Mangoola failed to complete the full annual comprehensive water quality analysis as required by the GWMP at monitoring bore MP9a during the reporting period (2023). Upon investigation it was identified that the monitoring contractor had the incorrect paperwork by his employer (not Mangoola). The paperwork outlines the monitoring points and analytes that require sampling (as per the scope as provided by Mangoola) which then accompanies the sample to the lab for analysis. This administrative error resulted in the below analytes being missed for MP9a: *Dissolved iron (Fe), Silver (Ag), Arsenic (As), Boron (B), Barium (Ba), Cadmium (Cs), Copper (Cu), Dissolved Manganese (Mn), Lead (Pb), Selenium (Se), Zinc (Zn), Mercury (Hg), Fluoride (Fl).* This non-compliance was reported to DPHI and DCCEEW in accordance with applicable statutory requirements.
18/01/2023	Failure to monitor over pressure and ground vibration for one blast event in Main Pit on 18 January 2023.	SSD8642 (Part B Condition B25), BMP (Section 4.1)	Due to an internal administrative error, Mangoola Coal failed to monitor airblast overpressure and ground vibration for one blast event in Main Pit on 18 January 2023 in accordance with Section 4.2 of the Blast Management Plan. All other monitoring data required by Section 4.2 excluding overpressure and ground

Date	Summary	Non-Compliance	Details/Response
		and EPL12894 (Condition M7.1)	vibration was successfully captured. No community complaints were received on this day in relation to blasting. This non-compliance was reported to the DPHI and EPL in accordance with applicable statutory requirements.
September 2023	Failure to notify the Department of Climate Change, Energy, the Environment and Water (DCCEEW) of the submission of two sub plans of the Water Management Plan within the specified timeframe noted within condition 6 of EPBC 2018/8280	EPBC 2018/8280 (condition 6)	Mangoola did not notify the Department of the submission of two sub plans of the Water Management Plan (the Surface Water Management Plan and the Erosion and Sediment Control Plan) within the specified timeframe. The sub plans were submitted to the DHPI in September 2023. Notification of the non-compliance was made to the Department on 16 January 2024, was administrative in nature, and no remedial action was required. The Department was notified of the request to change the Water Management Plan on 24 January 2024.
September 2023 and 11 December 2023	Mangoola notified the Department of Climate Change, Energy, the Environment and Water (DCCEEW) of non-compliances against Condition 2 and Condition 6 of EPBC 2018/8280.	EPBC 2018/8280 (condition 19)	Mangoola notified DCCEEW of non-compliances against Condition 2 and Condition 6. A report on the non-compliance against Condition 2 was reported to DPHI in accordance with SSD8642 reporting requirements. The Condition 6 non-compliance did not constitute a reportable notification to DPHI. Notification of these non-compliances occurred on identification of the non-compliance which on 16 January 2024 and 21 March 2024 respectively. These non-compliances are further detailed within the Annual Compliance Report 2023 available on Mangoola's website.
September 2023 and 11 December 2023	Mangoola provided the Department of Climate Change, Energy, the Environment and Water (DCCEEW) with an investigation report for the non-	EPBC 2018/8280 (condition 20)	Mangoola provided the Department of Climate Change, Energy, the Environment and Water (DCCEEW) with an investigation report for the non-compliances identified against Condition 2 and Condition 6. These investigation reports were provided DCCEEW on identification of the non compliances which was on 22 January 2024 and 21 March 2024 respectively.

Date	Summary	Non-Compliance	Details/Response
	compliances identified against Condition 2 and Condition 6.		These non-compliances are further detailed within the Annual Compliance Report 2023 available on Mangoola's website.

12. Activities to be Completed During Next Reporting Period

12.1 Management Plan Review

In accordance with Condition D8 of SSD-8642 the following strategies, plans and programs will be reviewed and/or revised in 2024 as necessary, as listed in ***Table 12-1***.

Table 12-1 Revision of Strategies, Plans and Programs

Document	2024 Review	Comment
Aboriginal Cultural Heritage Management Plan	Yes	Aboriginal Cultural Heritage Management Plan (ACHMP) will be reviewed and updated in accordance with requirements of SSD8642 however no changes are required as a result of the 2023 Annual Review.
Air Quality and Greenhouse Gas Management Plan	No	No changes are required as a result of the 2023 Annual Review.
Biodiversity Offset Management Plan and Strategy	Yes	The Biodiversity Offset Management Plan and Strategy (BOMPS) will be reviewed and updated in accordance with requirements of SSD8642 (to reflect execution of Mangoola and Wybong heights BSA) however no changes are required as a result of the 2023 Annual Review.
Blast Management Plan	No	No changes are required as a result of the 2023 Annual Review.
Blast Fume Management Procedure	No	No changes are required as a result of the 2023 Annual Review.
Closing Public Roads – Mining Procedure	No	No changes are required as a result of the 2023 Annual Review.
Environmental Management Strategy	No	No changes are required as a result of the 2023 Annual Review.
Historic Heritage Management Plan	No	No changes are required as a result of the 2023 Annual Review.
Noise Management Plan	Yes	The Noise Management Plan (NMP) will be reviewed and updated in accordance with requirements of SSD8642 however no changes are required as a result of the 2023 Annual Review.
Water Management Plan	No	No changes are required as a result of the 2023 Annual Review.

Document	2024 Review	Comment
Surface Water Management Plan	No	No changes are required as a result of the 2023 Annual Review.
Groundwater Monitoring Plan	Yes	The Groundwater Monitoring Plan will be reviewed and updated in accordance with the requirements of SSD8642 and in response to the validation and review of the numerical groundwater model.
Erosion and Sediment Control Plan	No	No changes are required as a result of the 2023 Annual Review.
Site Water Balance	Yes	Completed annually.
Annual Rehabilitation Report and Forward Program	Yes	Completed annually.
Rehabilitation Management Plan	Yes	The Rehabilitation Management Plan (RMP) will be reviewed and updated in accordance with requirements of SSD8642 however no changes are required as a result of the 2023 Annual Review.
Social Impact Management Plan	No	No changes are required as a result of the 2023 Annual Review.
Translocation Management Plan	Yes	The Translocation Management Plan will be reviewed and updated in accordance with requirements of SSD8642 however no changes are required as a result of the 2023 Annual Review
Traffic Management Plan	Yes	The Traffic Management Plan (TMP) will be reviewed and updated in accordance with requirements of SSD8642 however no changes are required as a result of the 2023 Annual Review.
Visual Impact Management Plan	No	No changes are required as a result of the 2023 Annual Review.
EPBC Water Resource Plan	No	No changes are required as a result of the 2023 Annual Review.
Rehabilitation Strategy	No	No changes are required as a result of the 2023 Annual Review.

12.2 2024 Actions

Table 12-2 outlines the actions to be implemented during the 2024 reporting period.

Table 12-2 2024 Actions

Action	Due Date
Retire credits generated from Mangoola Biodiversity Stewardship Agreement	30/06/2024
Retire credits generated from Wybong Heights Biodiversity Stewardship Agreement	30/06/2024
Complete 80 hectares of new rehabilitation	31/12/2024
Validation and review of the Groundwater model including a revision of the GWMP	31/12/2024
Install infrastructure at Raw Water Dam to allow water discharge under the Hunter River Salinity Trading Scheme (HRSTS) as per the EPL Variation received April 2023	31/12/2024
Implement the Dam Maintenance Program and action findings accordingly	31/12/2024

13. References

Atlantech, 2023. 2023 Ecological Monitoring Report, December 2023.

Biosis 2024. 2023 Stream Health Monitoring Program, February 2024.

DPHI, 2015. Annual Review Guideline. October 2015.

East Coast Flora Survey 2024. 2023 Monitoring of translocated threatened orchids report, February 2024.

Ecological 2024. 2023 Spring Fauna Montoring Report, February 2024.

EMM, 2013. Mangoola Coal Project – Modification 6: Noise and Vibration Assessment. May 2013.

Engeny 2024. 2023 Annual Review Water and Salt Balance, February 2024.

Engeny, 2022. 2021/2022 Quarter 4 Review of Mangoola Groundwater Ingress. July 2022.

Engeny, 2023. 2022/2023 Quarter 2 Review of Mangoola Groundwater Ingress. March 2023.

Enviro Strata Consulting, 2019. Blasting Impact Assessment for Mangoola Coal Continued Operations Project. May 2019.

Global Acoustics, 2019. Mangoola Coal Continued Operations Project Noise Impact Assessment. May 2019.

HLM, 2023. Annual Channel Stability Report (Year 16). December 2023.

Jacobs, 2019. Mangoola Coal Continued Operations Project Air Quality Impact Assessment. June 2019.

Landcom, 2004. Managing Urban Stormwater: Soils and Construction. March 2004.

NSW EPA, 2017. Noise Policy for Industry. October 2017.

NSW EPA, 2019. Dust Assessment Handbook. December 2019.

Todoroski Air Sciences, 2013. Air Quality and Greenhouse Gas Assessment. May 2013

Umwelt, 2019. Greenhouse Gas and Energy Assessment. May 2019.

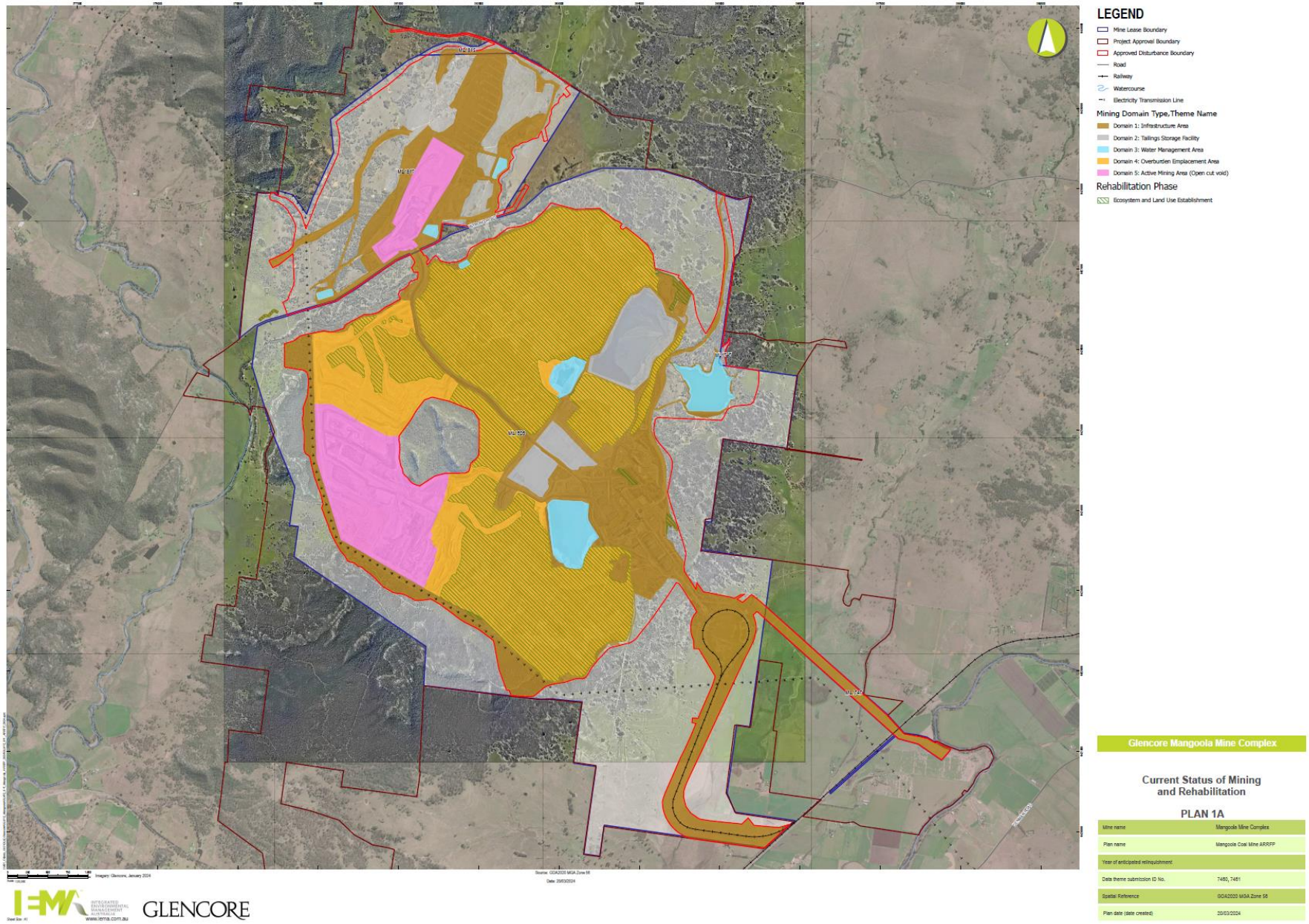
Umwelt, 2023a. 2022 Ecological Monitoring Report. February 2023.

Umwelt, 2023b. 2022 Rehabilitation Monitoring Report. February 2023.

WRM, 2013. Manoola Coal Modification to Project Approval Surface Water Assessment. April 2013.

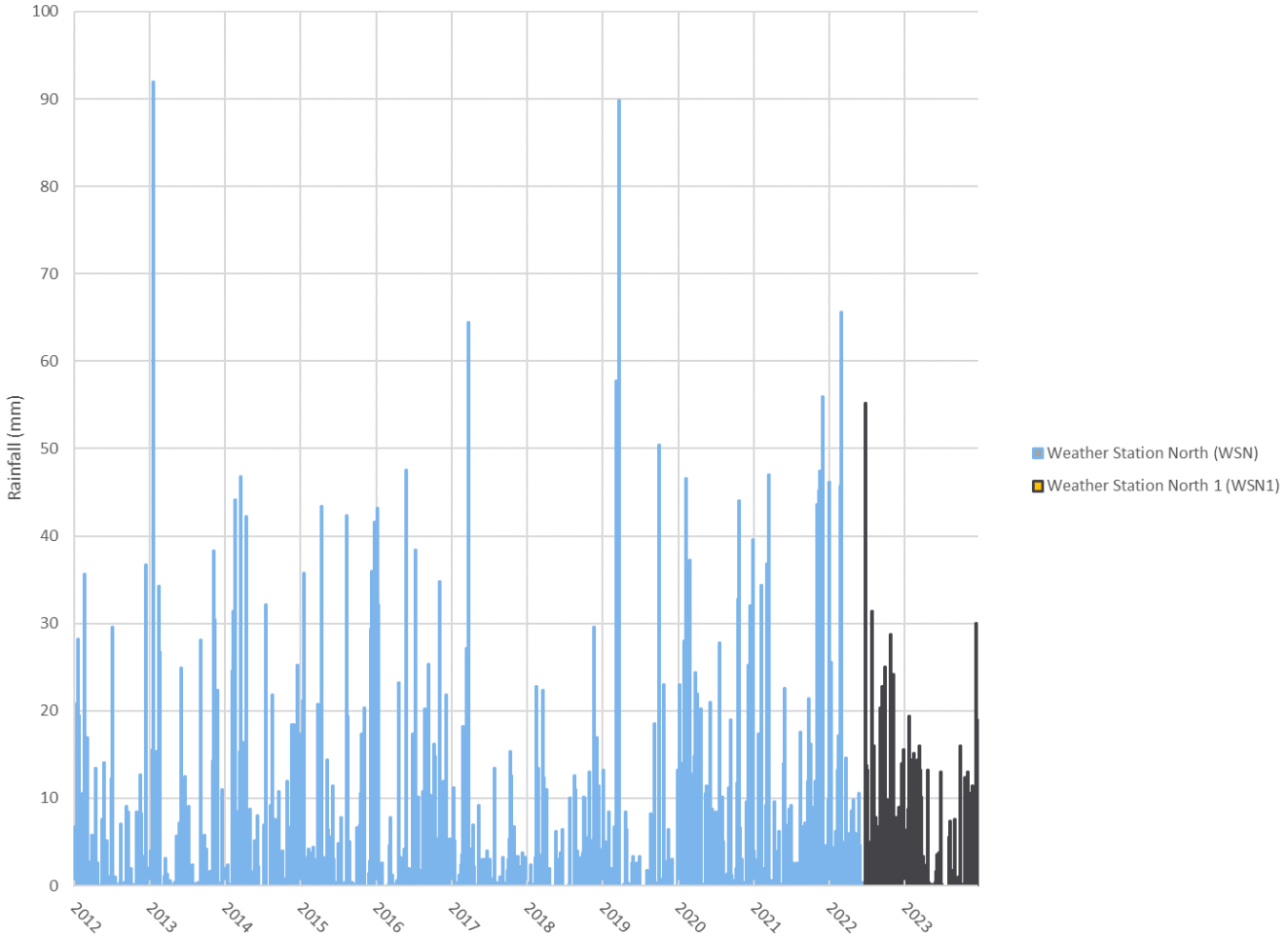
Appendix A - Annual Rehabilitation Report and Forward Program and 2023 Disturbance and Rehabilitation Plan

Note – The Annual Rehabilitation Report and Forward Program will be appended to the Annual Review following submission to the NSW Resources Regulator mine rehabilitation portal. The Annual Rehabilitation Report and Forward Program will also be available on the Mangoola website here: https://www.glencore.com.au/operations-and-projects/coal/current-operations/mangoola-open-cut/management-plans


LEGEND
Mine Lease Boundary
Project Approval Boundary
Approved Disturbance Boundary
Road
Railway
Watercourse
Electricity Transmission Line
Mining Domain Type,Theme Name
Domain 1: Infrastructure Area
Domain 2: Tailings Storage Facility
Domain 3: Water Management Area
Domain 4: Overburden Emplacement Area
Domain 5: Active Mining Area (Open cut void)
Rehabilitation Phase
Ecosystem and Land Use Establishment
Glencore Mangoola Mine Complex
Current Status of Mining and Rehabilitation
PLAN 1A
Mine name
Mangoola Mine Complex
Plan name
Mangoola Coal Mine ARRFP
Year of anticipated relinquishment
Data theme submission ID No.
7460, 7461
Spatial Reference
GDA2020 MGA Zone 56
Plan date (date created)
20/03/2024
GLENCORE

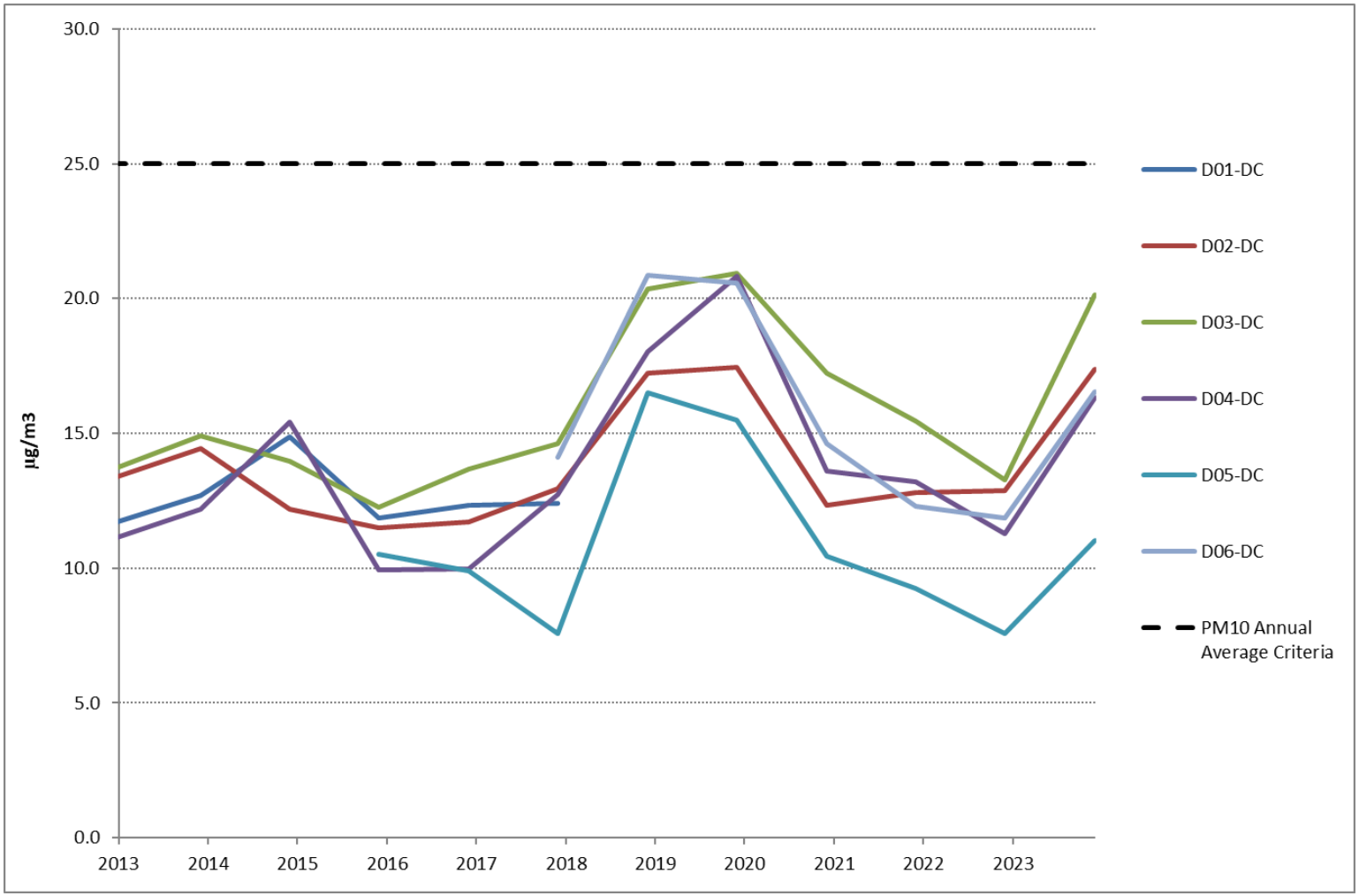

LEGEND
Mine Lease Boundary
Project Approval Boundary
Current Landform Contours (5m)
Railway
Road
Watercourse
Electricity Transmission Line
Glencore Mangoola Mine Complex
Current Landform Contours
PLAN 1B
Mine name
Mangoola Mine Complex
Plan name
Mangoola Coal Mine ARRFP
Year of anticipated relinquishment
Data theme submission ID No.
7457
Spatial Reference
GDA2020 MGA Zone 56
Plan date (date created)
20/03/2024

Appendix B - Long Term Trend Graph: Rainfall

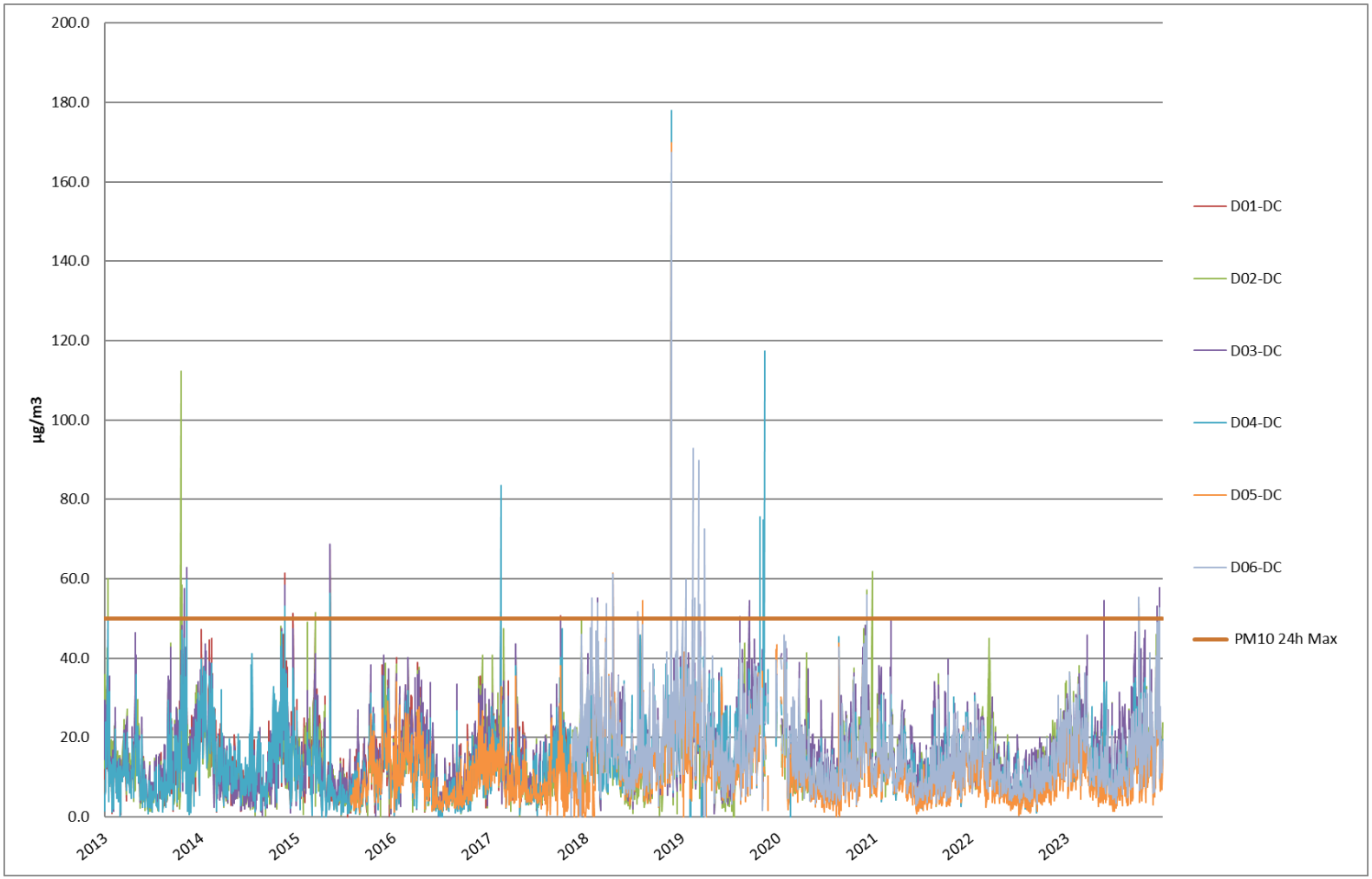


Long Term Daily Rainfall Data at WSN/WSN1 – 2013 to 2023

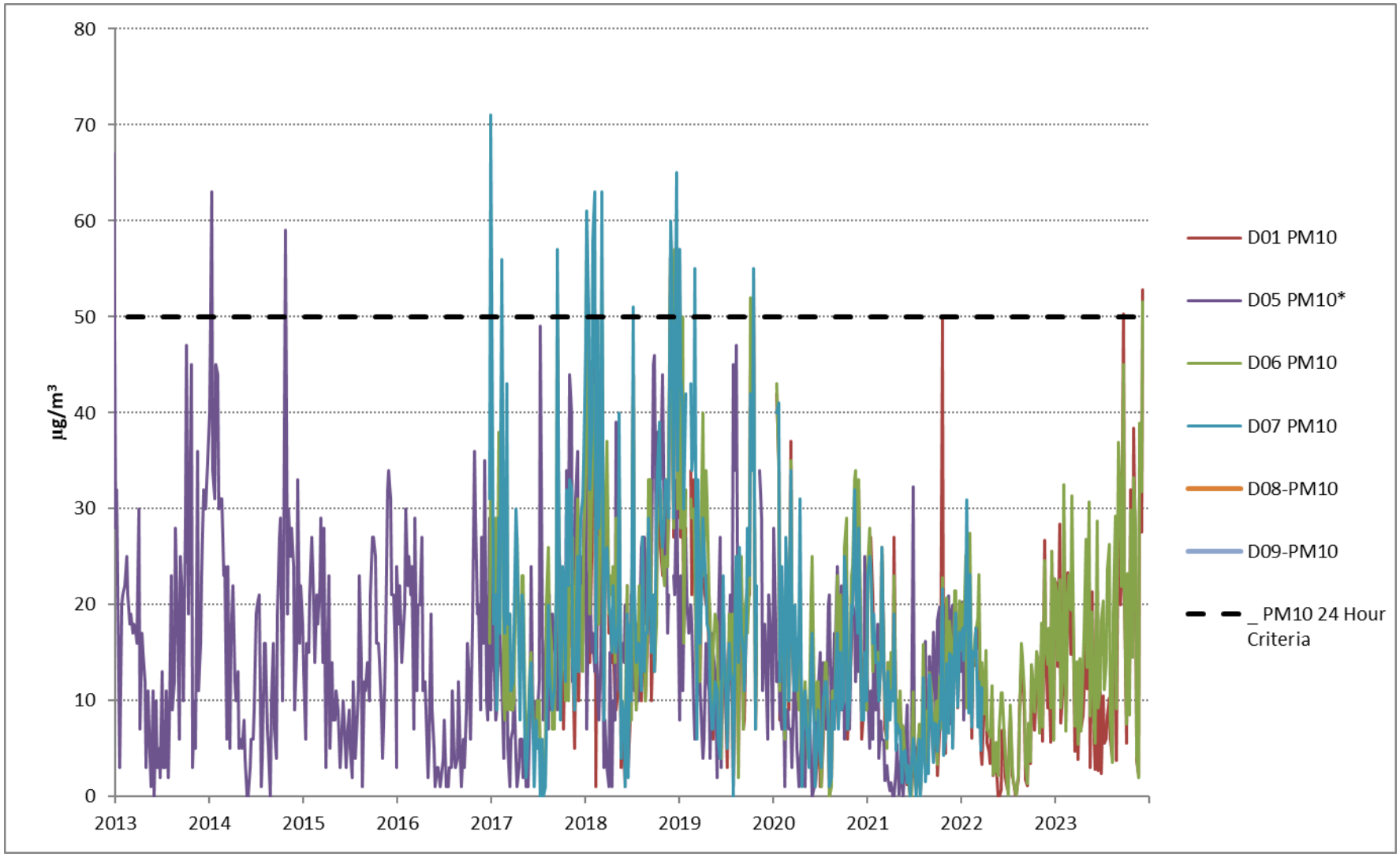
Appendix C - Long Term Trend Graphs: Air Quality



Long Term Annual Average PM10 TEOM Monitoring Results – 2013 to 2023

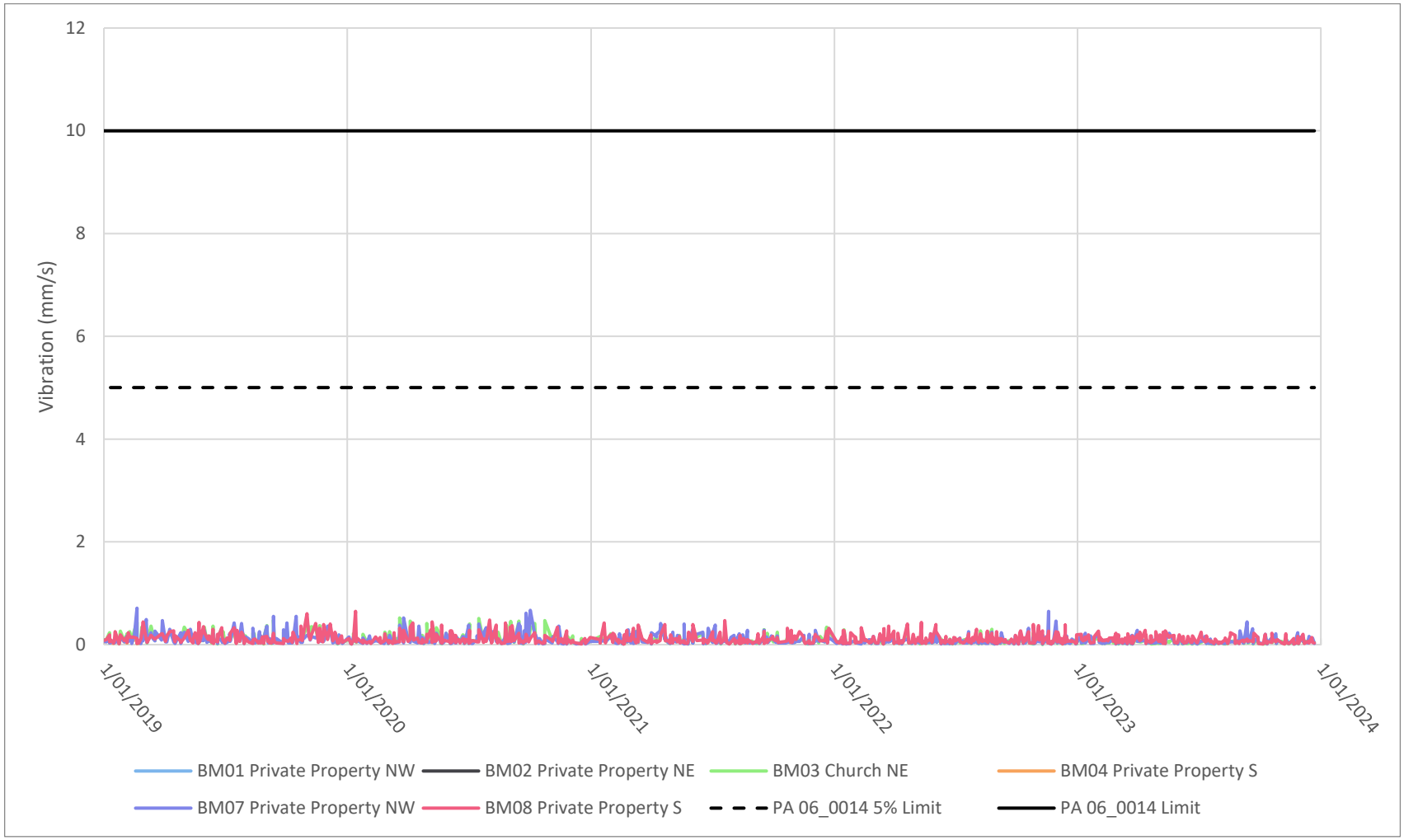


Long Term 24hr PM10 TEOM Monitoring Results – 2013 to 2023

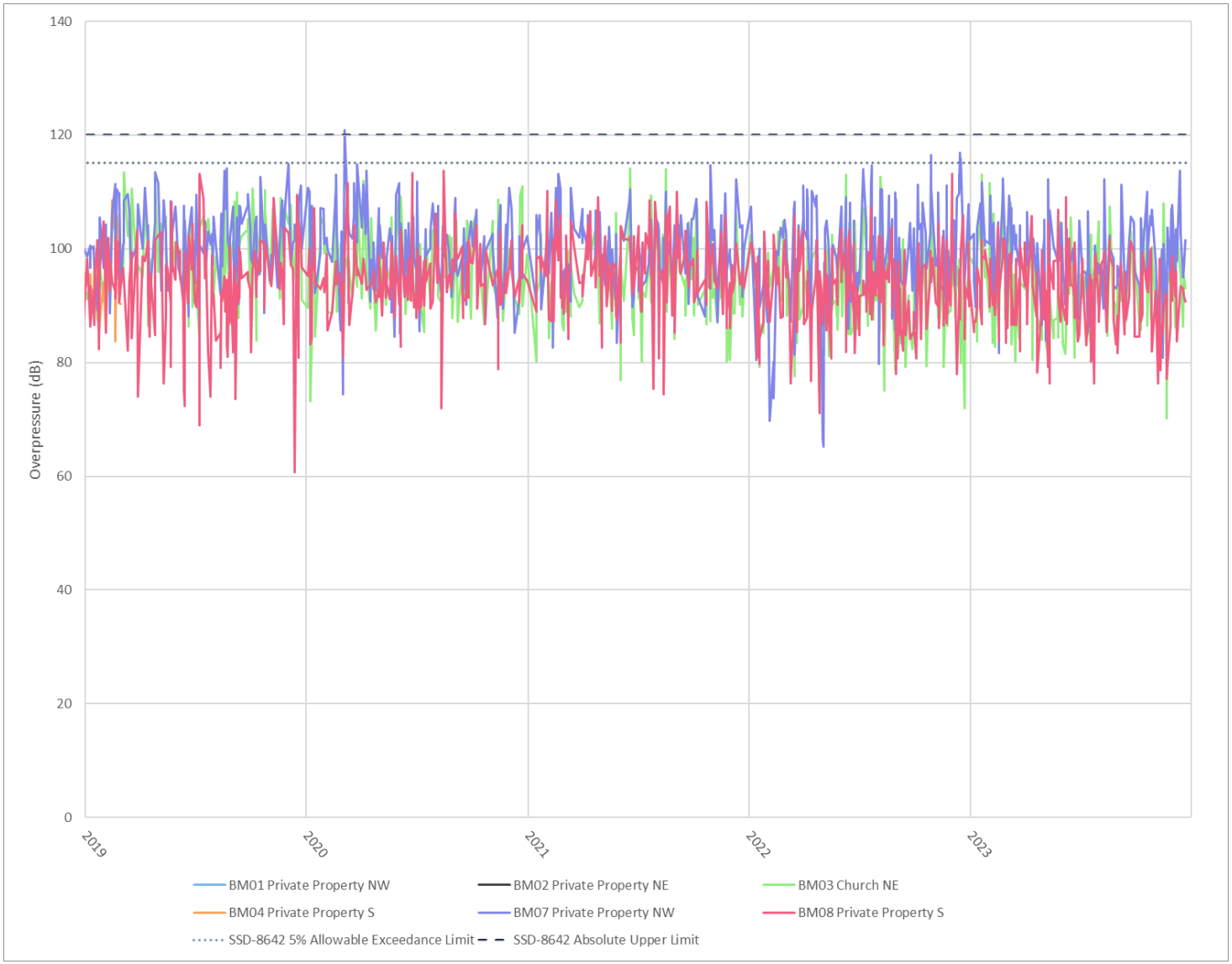


Long Term HVAS Monitoring Results – 2013 to 2023

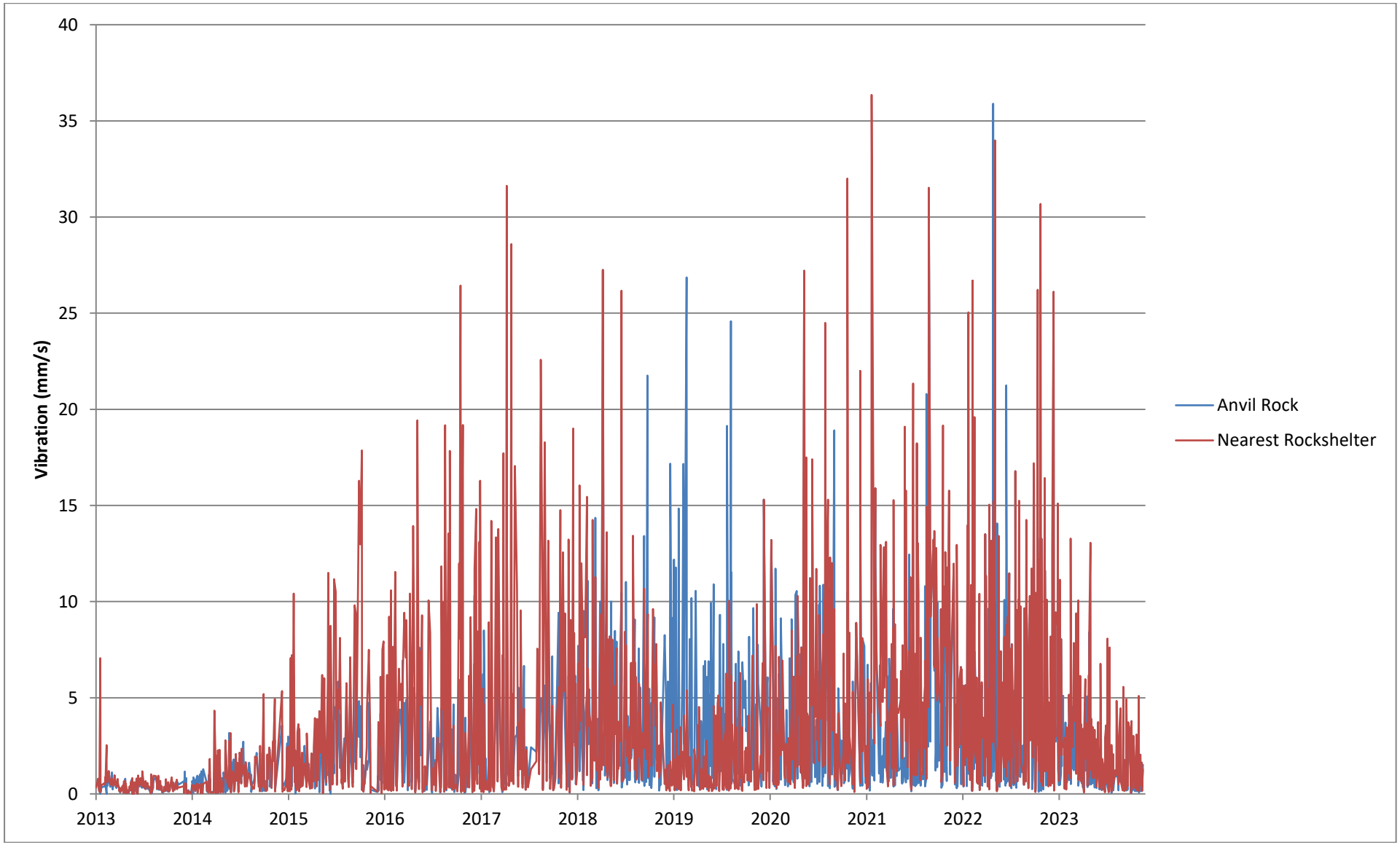
Appendix D - Long Term Trend Graphs: Blasting



Long Term Blast Vibration Monitoring – 2019 to 2023 at BM01 to BM04, BM07 & BM08

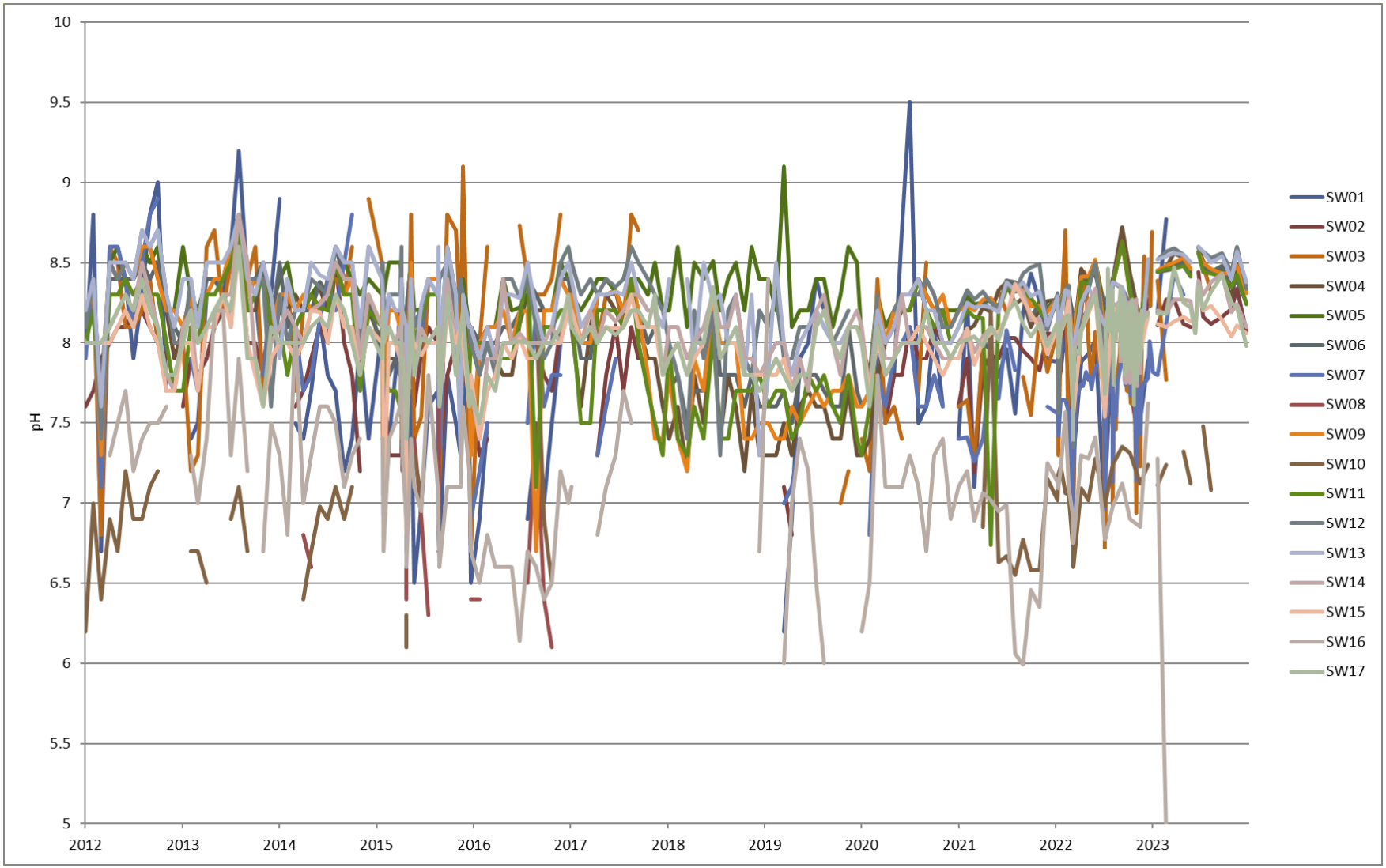


Long Term Blast Overpressure Monitoring – 2019 to 2023 at BM01 to BM04, BM07 & BM08

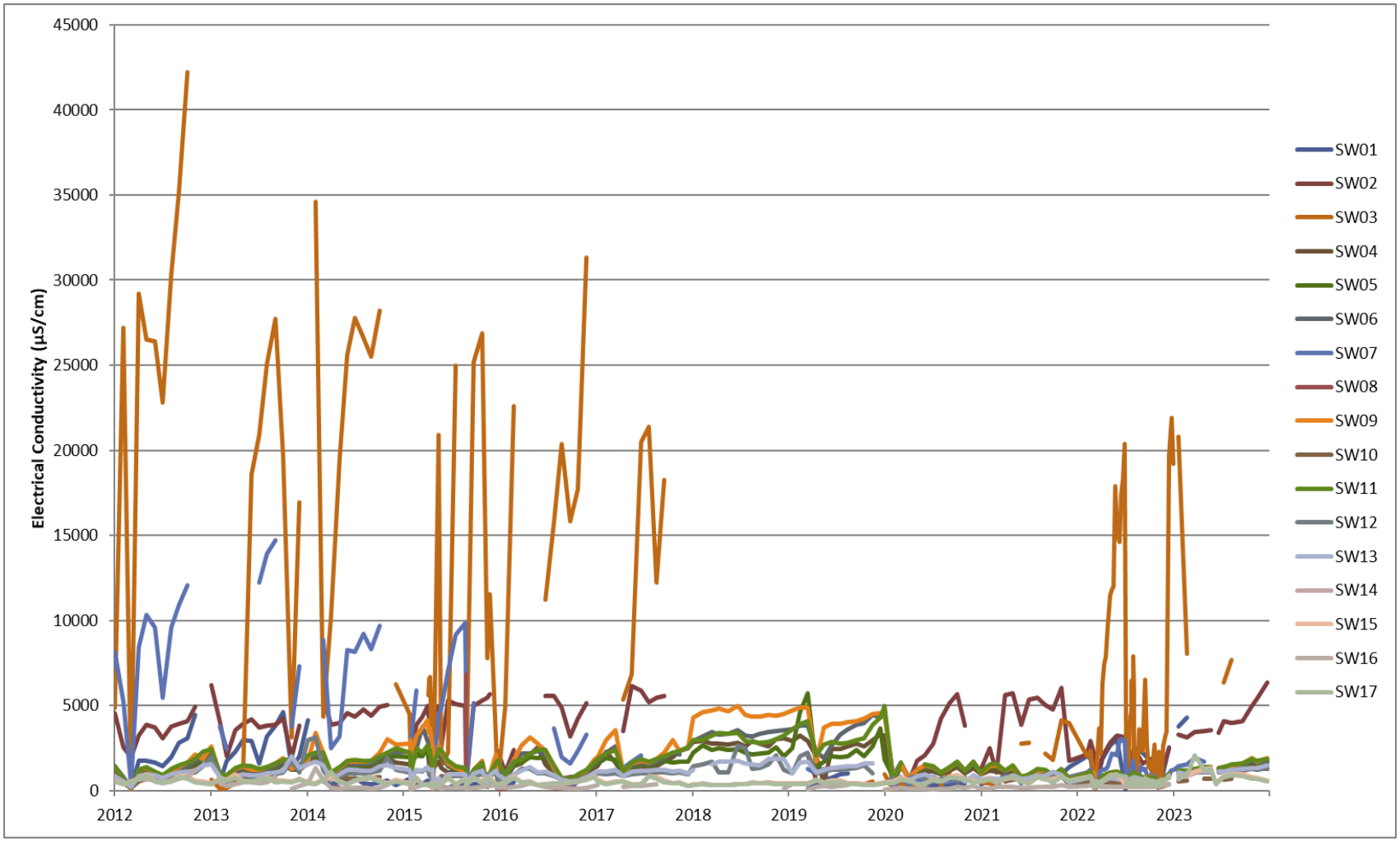


Long Term Blast Vibration Monitoring – 2010 to 2022 at Representative Locations of Anvil Rock and the Nearest Rock Formation

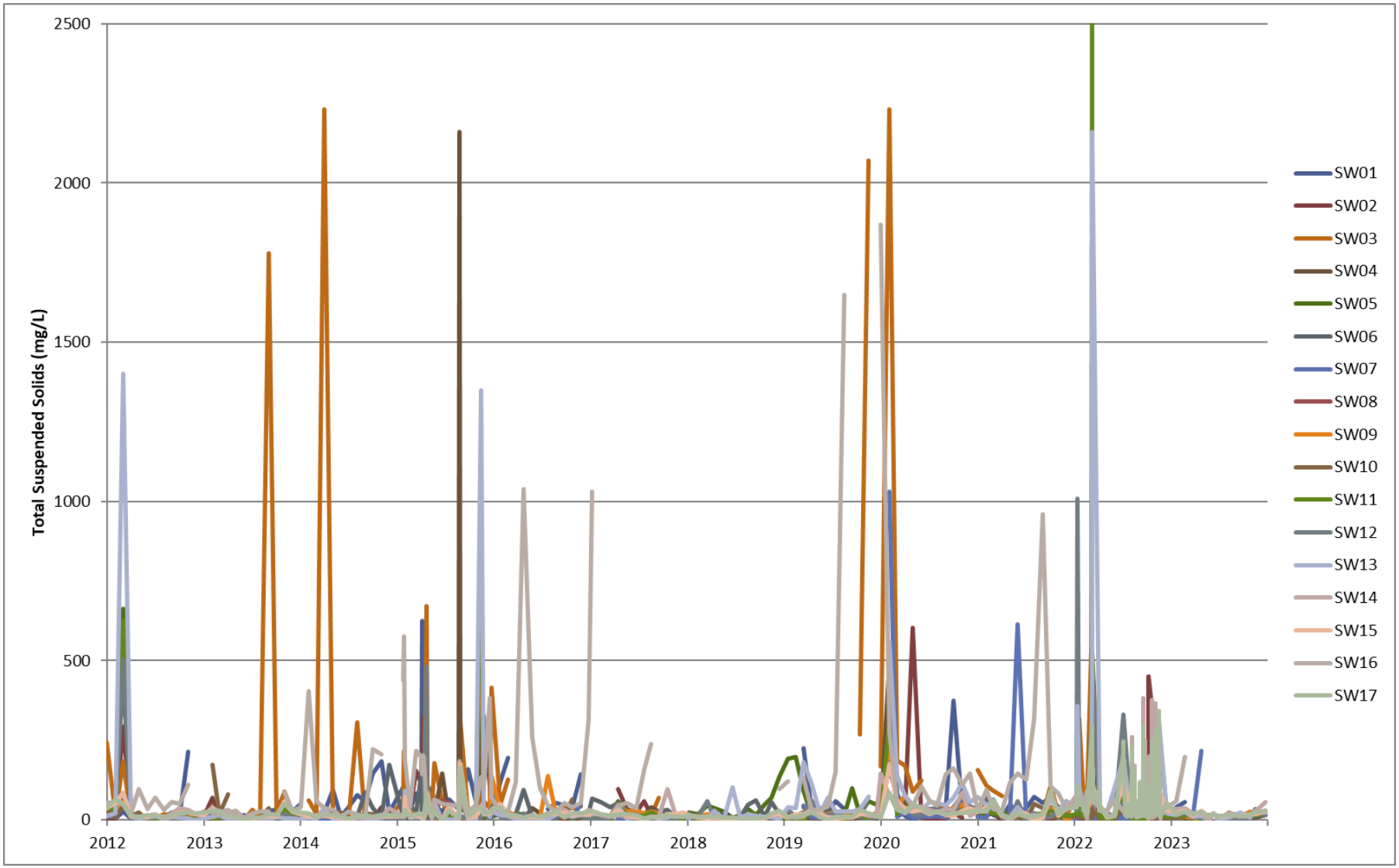
Appendix E - Long Term Trend Graphs: Surface water



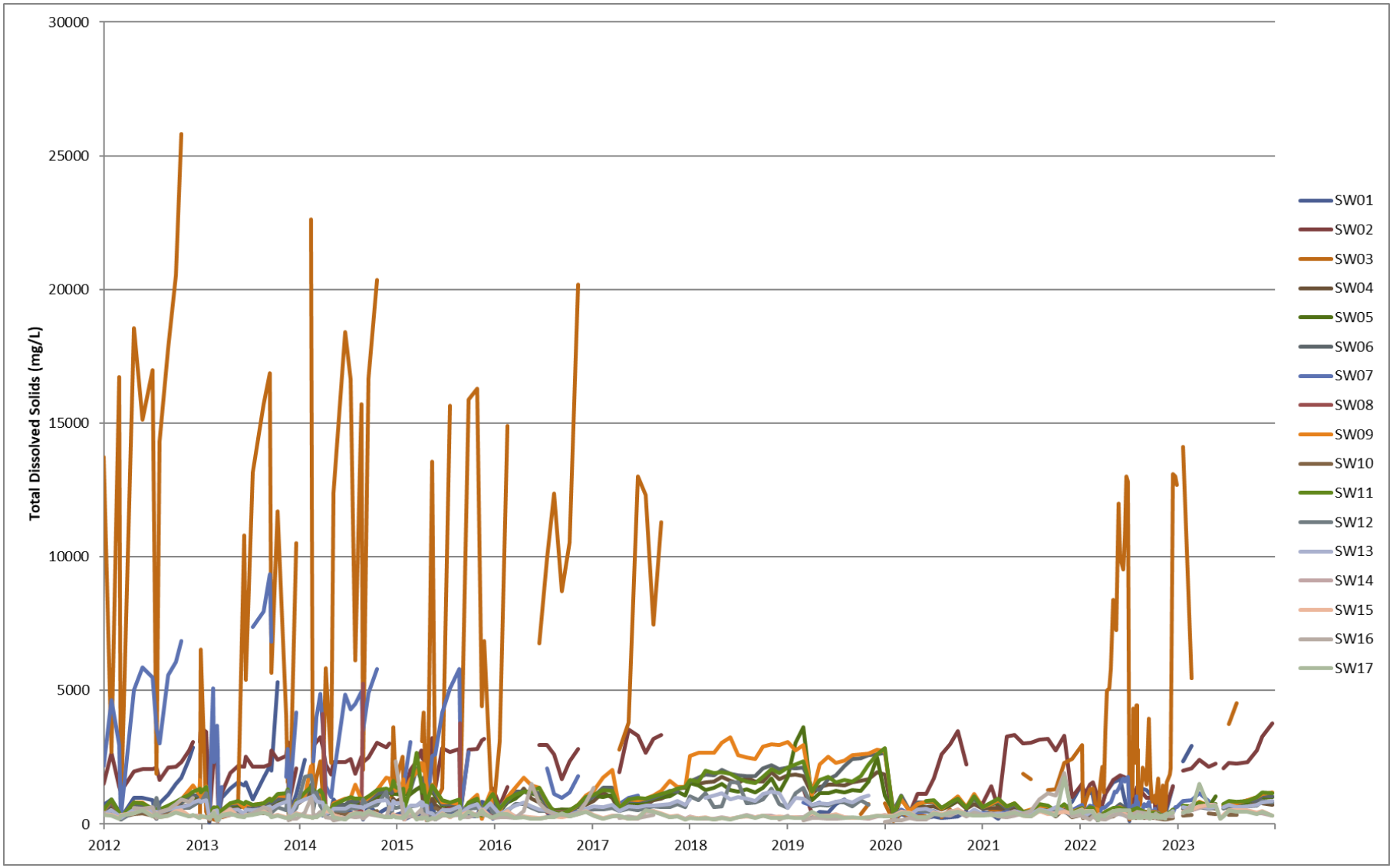
Long Term Surface Water pH Results – 2012 to 2023



Long Term Surface Water Electrical Conductivity Results – 2012 to 2023



Long Term Surface Water Total Suspended Solids – 2012 to 2023



Long Term Surface Water Total Dissolved Solids – 2012 to 2023

Appendix F - Groundwater Report

Appendix G - Annual Train Movements 2023

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
1	02/01/2023 06:18	02/01/2023 11:25	9301
2	02/01/2023 11:31	02/01/2023 13:41	9320
3	02/01/2023 16:13	02/01/2023 18:42	9235
4	03/01/2023 14:29	03/01/2023 19:13	9325
5	03/01/2023 11:59	03/01/2023 14:21	9221
6	03/01/2023 19:37	03/01/2023 21:42	9315
7	04/01/2023 00:36	04/01/2023 03:14	9251
8	05/01/2023 23:54	06/01/2023 02:28	9300
9	06/01/2023 08:17	06/01/2023 11:16	9100
10	07/01/2023 00:28	07/01/2023 02:09	9102
11	07/01/2023 08:46	07/01/2023 11:45	9093
12	07/01/2023 17:37	07/01/2023 19:47	8500
13	08/01/2023 01:49	08/01/2023 04:11	8519
14	08/01/2023 05:41	08/01/2023 08:49	9290
15	09/01/2023 08:46	09/01/2023 10:26	9313
16	09/01/2023 14:05	09/01/2023 16:05	9299

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes
01-Jan-23	0	0.00
02-Jan-23	6	27856.64
03-Jan-23	6	27860.73
04-Jan-23	2	9251.20
05-Jan-23	1	0.00
06-Jan-23	3	18400.92
07-Jan-23	6	26695.74
08-Jan-23	4	17808.75
09-Jan-23	5	18611.84
10-Jan-23	5	27552.73
11-Jan-23	9	36967.13
12-Jan-23	2	9256.35
13-Jan-23	7	37112.14
14-Jan-23	2	8517.75
15-Jan-23	4	17723.91
16-Jan-23	4	18620.92

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
17	09/01/2023 22:19	10/01/2023 00:28	9228
18	10/01/2023 03:07	10/01/2023 05:03	9218
19	10/01/2023 08:40	10/01/2023 11:12	9106
20	11/01/2023 02:52	11/01/2023 04:49	9215
21	11/01/2023 05:28	11/01/2023 07:27	9350
22	11/01/2023 09:15	11/01/2023 11:10	9109
23	11/01/2023 18:50	11/01/2023 21:50	9293
24	11/01/2023 23:41	12/01/2023 02:52	9256
25	13/01/2023 01:48	13/01/2023 04:12	9302
26	12/01/2023 22:50	13/01/2023 01:37	9293
27	13/01/2023 05:49	13/01/2023 09:05	9235
28	13/01/2023 12:38	13/01/2023 15:22	9283
29	14/01/2023 05:35	14/01/2023 07:17	8518
30	15/01/2023 06:38	15/01/2023 09:33	8502
31	15/01/2023 21:17	15/01/2023 23:07	9222
32	16/01/2023 07:10	16/01/2023 09:14	9313
33	16/01/2023 18:18	16/01/2023 21:22	9308
34	17/01/2023 19:38	17/01/2023 22:29	9309

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes
17-Jan-23	2	9309.33
18-Jan-23	4	18601.89
19-Jan-23	2	9116.20
20-Jan-23	0	0.00
21-Jan-23	6	27661.41
22-Jan-23	2	9117.44
23-Jan-23	4	17829.48
24-Jan-23	6	27837.50
25-Jan-23	4	18506.53
26-Jan-23	4	18489.83
27-Jan-23	4	18502.96
28-Jan-23	8	36359.87
29-Jan-23	6	27567.77
30-Jan-23	4	17774.29
31-Jan-23	5	18537.33
01-Feb-23	7	36365.90
02-Feb-23	5	18611.87
03-Feb-23	12	55486.51

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
35	18/01/2023 12:01	18/01/2023 14:05	9299
36	18/01/2023 15:04	18/01/2023 17:26	9303
37	19/01/2023 18:18	19/01/2023 20:24	9116
38	21/01/2023 04:45	21/01/2023 07:22	9313
39	21/01/2023 11:11	21/01/2023 13:14	9239
40	21/01/2023 12:48	21/01/2023 15:22	9110
41	22/01/2023 10:12	22/01/2023 12:50	9117
42	23/01/2023 19:55	23/01/2023 21:35	9327
43	23/01/2023 21:56	23/01/2023 23:50	8502
44	24/01/2023 02:06	24/01/2023 04:11	9310
45	24/01/2023 06:32	24/01/2023 09:03	9248
46	24/01/2023 13:40	24/01/2023 16:27	9279
47	25/01/2023 02:00	25/01/2023 04:02	9321
48	25/01/2023 06:50	25/01/2023 09:32	9185
49	26/01/2023 07:30	26/01/2023 09:40	9198
50	26/01/2023 18:38	26/01/2023 23:19	9292
51	27/01/2023 01:06	27/01/2023 03:52	9313
52	27/01/2023 11:50	27/01/2023 13:41	9190

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes
04-Feb-23	13	61470.18
05-Feb-23	7	27071.06
06-Feb-23	6	26924.02
07-Feb-23	1	9284.92
08-Feb-23	0	0.00
09-Feb-23	0	0.00
10-Feb-23	3	9113.58
11-Feb-23	6	27730.96
12-Feb-23	7	37199.37
13-Feb-23	3	9269.35
14-Feb-23	8	36355.87
15-Feb-23	4	18465.71
16-Feb-23	3	18459.24
17-Feb-23	7	27650.32
18-Feb-23	8	36789.63
19-Feb-23	5	27854.18
20-Feb-23	2	9229.78
21-Feb-23	4	17788.76

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
53	28/01/2023 03:55	28/01/2023 06:33	9279
54	28/01/2023 08:06	28/01/2023 10:49	9298
55	28/01/2023 11:13	28/01/2023 17:44	8485
56	28/01/2023 17:58	28/01/2023 19:49	9298
57	29/01/2023 02:08	29/01/2023 04:25	9035
58	29/01/2023 08:02	29/01/2023 09:55	9224
59	29/01/2023 18:40	29/01/2023 21:43	9309
60	30/01/2023 16:06	30/01/2023 18:34	9316
61	30/01/2023 20:49	30/01/2023 22:52	8458
62	31/01/2023 03:14	31/01/2023 05:10	9233
63	31/01/2023 13:54	31/01/2023 16:22	9304
64	31/01/2023 22:22	01/02/2023 01:08	9299
65	01/02/2023 01:33	01/02/2023 03:35	9267
66	01/02/2023 04:23	01/02/2023 08:00	8495
67	01/02/2023 14:40	01/02/2023 16:31	9305
68	02/02/2023 00:34	02/02/2023 02:32	9310
69	02/02/2023 03:08	02/02/2023 05:03	9302
70	02/02/2023 23:01	03/02/2023 01:05	9243

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes
22-Feb-23	4	18547.08
23-Feb-23	2	9309.99
24-Feb-23	2	8497.74
25-Feb-23	4	17785.62
26-Feb-23	6	27047.77
27-Feb-23	6	27814.91
28-Feb-23	4	17733.02
01-Mar-23	1	0.00
02-Mar-23	4	18211.72
03-Mar-23	7	36864.76
04-Mar-23	7	27710.13
05-Mar-23	7	36365.64
06-Mar-23	3	9092.50
07-Mar-23	8	35359.51
08-Mar-23	9	45513.48
09-Mar-23	2	8508.26
10-Mar-23	2	9145.45
11-Mar-23	10	45701.35

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
71	03/02/2023 01:43	03/02/2023 03:32	9288
72	03/02/2023 04:41	03/02/2023 06:43	9105
73	03/02/2023 07:45	03/02/2023 11:17	9251
74	03/02/2023 14:49	03/02/2023 16:57	9302
75	03/02/2023 17:43	03/02/2023 21:31	9297
76	03/02/2023 23:50	04/02/2023 02:27	9311
77	04/02/2023 05:25	04/02/2023 07:55	9248
78	04/02/2023 08:03	04/02/2023 10:51	9310
79	04/02/2023 10:15	04/02/2023 13:32	9291
80	04/02/2023 14:35	04/02/2023 16:44	9295
81	04/02/2023 15:30	04/02/2023 18:47	5826
82	04/02/2023 19:08	04/02/2023 21:18	9190
83	05/02/2023 11:38	05/02/2023 13:45	9297
84	05/02/2023 14:51	05/02/2023 18:09	9271
85	05/02/2023 18:14	05/02/2023 22:05	8503
86	05/02/2023 21:30	06/02/2023 00:39	9114
87	06/02/2023 04:38	06/02/2023 06:22	8516
88	06/02/2023 06:32	06/02/2023 09:32	9294

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes
12-Mar-23	7	27085.58
13-Mar-23	8	36402.90
14-Mar-23	7	37008.25
15-Mar-23	6	27767.87
16-Mar-23	6	26995.23
17-Mar-23	5	18221.94
18-Mar-23	7	35560.83
19-Mar-23	4	18511.86
20-Mar-23	2	8484.14
21-Mar-23	3	9138.88
22-Mar-23	4	18444.31
23-Mar-23	8	36949.03
24-Mar-23	6	26871.82
25-Mar-23	5	27734.91
26-Mar-23	8	36910.81
27-Mar-23	5	18336.86
28-Mar-23	5	18617.16
29-Mar-23	5	27388.37

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
89	06/02/2023 23:53	07/02/2023 02:26	9285
90	10/02/2023 08:15	10/02/2023 10:22	9114
91	10/02/2023 21:36	11/02/2023 00:40	9183
92	11/02/2023 03:29	11/02/2023 07:05	9237
93	11/02/2023 09:45	11/02/2023 13:33	9311
94	11/02/2023 21:38	12/02/2023 00:30	9301
95	12/02/2023 02:04	12/02/2023 04:50	9326
96	12/02/2023 07:35	12/02/2023 09:41	9263
97	12/02/2023 16:56	12/02/2023 20:56	9309
98	13/02/2023 17:07	13/02/2023 22:02	9269
99	13/02/2023 22:09	14/02/2023 01:19	8508
100	14/02/2023 07:55	14/02/2023 10:04	9333
101	14/02/2023 11:07	14/02/2023 14:20	9299
102		14/02/2023 21:41	9216
103	14/02/2023 21:51	15/02/2023 01:25	9329
104	15/02/2023 12:20	15/02/2023 15:12	9137
105	15/02/2023 20:42	16/02/2023 03:36	9156
106	16/02/2023 16:14	16/02/2023 18:32	9304

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes
30-Mar-23	7	36744.83
31-Mar-23	6	27845.21
01-Apr-23	6	27035.00
02-Apr-23	7	27716.56
03-Apr-23	10	46090.70
04-Apr-23	1	9304.93
05-Apr-23	0	0.00
06-Apr-23	0	0.00
07-Apr-23	9	32105.52
08-Apr-23	8	37060.75
09-Apr-23	13	64815.60
10-Apr-23	8	36977.14
11-Apr-23	9	37190.00
12-Apr-23	5	27700.07
13-Apr-23	9	36404.18
14-Apr-23	10	45913.08
15-Apr-23	5	27840.25
16-Apr-23	6	27106.95

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
107		17/02/2023 05:18	9127
108	17/02/2023 05:24	17/02/2023 10:17	9242
109	17/02/2023 11:00	17/02/2023 13:26	9281
110	17/02/2023 20:32	18/02/2023 02:22	9114
111	18/02/2023 05:45	18/02/2023 10:58	9311
112	18/02/2023 11:10	18/02/2023 18:44	9112
113	18/02/2023 19:15	18/02/2023 22:29	9253
114	18/02/2023 22:33	19/02/2023 03:41	9308
115	19/02/2023 04:28	19/02/2023 10:31	9312
116	19/02/2023 10:36	19/02/2023 15:03	9234
117	20/02/2023 20:07	20/02/2023 22:49	9230
118	21/02/2023 01:08	21/02/2023 04:08	9283
119	21/02/2023 04:16	21/02/2023 08:05	8506
120	22/02/2023 04:06	22/02/2023 06:14	9290
121	22/02/2023 16:07	22/02/2023 18:22	9257
122	23/02/2023 01:19	23/02/2023 06:20	9310
123	24/02/2023 12:43	24/02/2023 14:38	8498

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes
17-Apr-23	1	0.00
18-Apr-23	5	22682.10
20-Apr-23	4	13388.73
21-Apr-23	4	18567.77
22-Apr-23	4	12780.75
23-Apr-23	0	0.00
24-Apr-23	6	22783.54
25-Apr-23	2	9122.76
26-Apr-23	2	9115.18
27-Apr-23	7	27588.00
28-Apr-23	3	18574.82
29-Apr-23	2	9276.59
30-Apr-23	0	0.00
01-May-23	3	9293.45
02-May-23	4	18504.40
03-May-23	3	18433.24
04-May-23	2	9296.97

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
124	25/02/2023 00:15	25/02/2023 03:16	9291
125	25/02/2023 18:42	25/02/2023 21:32	8495
126	26/02/2023 04:53	26/02/2023 08:08	8498
127	26/02/2023 09:06	26/02/2023 10:58	9287
128	26/02/2023 16:07	26/02/2023 18:49	9263
129	27/02/2023 00:54	27/02/2023 03:49	9294
130	27/02/2023 06:09	27/02/2023 09:30	9289
131	27/02/2023 20:15	27/02/2023 22:50	9231
132	28/02/2023 07:50	28/02/2023 09:48	8490
133	28/02/2023 12:45	28/02/2023 14:48	9243
134	01/03/2023 23:00	02/03/2023 02:04	9111
135	02/03/2023 15:48	02/03/2023 18:24	9101
136	02/03/2023 23:10	03/03/2023 01:02	9309
137	03/03/2023 03:25	03/03/2023 05:37	9124

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes
05-May-23	2	8493.49
06-May-23	1	0.00
07-May-23	7	36350.25
08-May-23	0	0.00
09-May-23	2	8526.50
10-May-23	0	0.00
11-May-23	4	17049.46
12-May-23	4	18478.54
13-May-23	8	36207.60
14-May-23	6	27863.94
15-May-23	7	27008.12
16-May-23	6	27842.69
17-May-23	5	27746.97
18-May-23	2	4266.78

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
138	03/03/2023 10:42	03/03/2023 13:43	9291
139	03/03/2023 19:16	03/03/2023 21:45	9141
140	04/03/2023 06:04	04/03/2023 09:28	9297
141	04/03/2023 13:22	04/03/2023 16:15	9293
142	04/03/2023 20:48	04/03/2023 23:13	9120
143	04/03/2023 23:20	05/03/2023 01:43	8510
144	05/03/2023 05:44	05/03/2023 09:16	9315
145	05/03/2023 09:20	05/03/2023 12:38	9258
146	05/03/2023 17:15	05/03/2023 20:16	9283
147	06/03/2023 18:26	06/03/2023 23:01	9093
148	06/03/2023 23:03	07/03/2023 01:48	8497
149	07/03/2023 03:01	07/03/2023 06:01	9287
150	07/03/2023 11:25	07/03/2023 14:11	9080
151	07/03/2023 14:29	07/03/2023 16:40	8495
152	07/03/2023 22:08	08/03/2023 01:01	9285

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes
19-May-23	8	31235.98
20-May-23	14	54335.87
21-May-23	8	31198.40
22-May-23	7	17820.48
23-May-23	1	9306.79
24-May-23	0	0.00
25-May-23	1	0.00
26-May-23	9	36141.51
27-May-23	8	31501.13
28-May-23	10	35519.84
29-May-23	3	9128.94
30-May-23	12	55456.99
31-May-23	9	46221.40
01-Jun-23	7	27715.63
02-Jun-23	7	36921.75

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
153	08/03/2023 01:22	08/03/2023 05:27	9270
154	08/03/2023 11:23	08/03/2023 14:44	8489
155	08/03/2023 15:47	08/03/2023 19:00	9207
156	08/03/2023 18:16	08/03/2023 21:23	9263
157	09/03/2023 09:19	09/03/2023 12:44	8508
158	10/03/2023 01:08	10/03/2023 02:49	9145
159	11/03/2023 00:25	11/03/2023 02:41	9287
160	11/03/2023 05:04	11/03/2023 08:17	9294
161	11/03/2023 08:20	11/03/2023 11:12	8520
162	11/03/2023 14:39	11/03/2023 16:24	9306
163	11/03/2023 17:47	11/03/2023 22:10	9295
164	12/03/2023 03:38	12/03/2023 05:56	8525
165	12/03/2023 08:26	12/03/2023 10:18	9275
166	12/03/2023 18:13	12/03/2023 21:17	9286
167	12/03/2023 22:33	13/03/2023 01:20	9299
168	13/03/2023 02:02	13/03/2023 04:00	8511
169	13/03/2023 08:00	13/03/2023 09:48	9286
170	13/03/2023 18:15	13/03/2023 21:17	9307

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes
03-Jun-23	9	37005.58
04-Jun-23	9	45451.35
05-Jun-23	0	0.00
06-Jun-23	4	18542.90
07-Jun-23	1	0.00
08-Jun-23	8	37172.24
09-Jun-23	3	17699.86
10-Jun-23	4	17776.15
11-Jun-23	2	8506.24
12-Jun-23	2	8481.72
13-Jun-23	2	9316.37
14-Jun-23	6	27694.07
15-Jun-23	2	9296.90
16-Jun-23	4	17671.48
17-Jun-23	0	0.00
18-Jun-23	8	31313.19
19-Jun-23	2	4261.74
20-Jun-23	6	26933.15

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
171	13/03/2023 21:24	14/03/2023 00:11	9295
172	14/03/2023 06:30	14/03/2023 08:29	9125
173	14/03/2023 11:23	14/03/2023 13:50	9283
174	14/03/2023 16:19	14/03/2023 18:23	9305
175	15/03/2023 00:20	15/03/2023 02:52	9247
176	15/03/2023 09:59	15/03/2023 11:57	9231
177	15/03/2023 13:17	15/03/2023 15:55	9290
178	16/03/2023 04:04	16/03/2023 09:05	9195
179	16/03/2023 17:59	16/03/2023 20:07	9299
180	16/03/2023 21:23	16/03/2023 23:10	8502
181	17/03/2023 06:23	17/03/2023 10:08	9118
182	17/03/2023 19:19	17/03/2023 21:16	9104
183	17/03/2023 22:32	18/03/2023 01:00	8514
184	18/03/2023 05:42	18/03/2023 07:33	9302
185	18/03/2023 09:30	18/03/2023 11:39	8505
186	18/03/2023 19:04	18/03/2023 21:22	9240
187	19/03/2023 03:57	19/03/2023 05:56	9246
188	19/03/2023 15:52	19/03/2023 17:52	9266

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes
21-Jun-23	4	13583.15
22-Jun-23	6	21908.85
23-Jun-23	2	9272.42
24-Jun-23	6	27116.50
25-Jun-23	2	9309.30
26-Jun-23	8	32112.01
27-Jun-23	8	31971.74
28-Jun-23	12	50461.96
29-Jun-23	7	27638.72
30-Jun-23	4	18491.88
01-Jul-23	3	18421.73
02-Jul-23	3	9310.66
03-Jul-23	5	27849.20
04-Jul-23	4	18546.86
05-Jul-23	2	9232.96
06-Jul-23	1	0.00
07-Jul-23	4	18567.94
08-Jul-23	10	46216.61

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
189	20/03/2023 16:43	20/03/2023 21:03	8484
190	21/03/2023 14:49	21/03/2023 16:58	9139
191	21/03/2023 23:25	22/03/2023 01:56	9323
192	22/03/2023 18:19	22/03/2023 21:07	9121
193	22/03/2023 21:10	23/03/2023 00:01	9099
194	23/03/2023 10:26	23/03/2023 12:43	9298
195	23/03/2023 07:20	23/03/2023 10:24	9263
196	23/03/2023 12:50	23/03/2023 15:31	9289
197	23/03/2023 21:56	24/03/2023 00:18	9288
198	24/03/2023 06:30	24/03/2023 09:32	9115
199	24/03/2023 22:48	25/03/2023 00:55	9267
200	24/03/2023 20:45	24/03/2023 22:44	8469
201	25/03/2023 04:46	25/03/2023 13:09	9212
202	25/03/2023 21:03	25/03/2023 23:30	9256
203	26/03/2023 02:17	26/03/2023 04:46	9116
204	26/03/2023 05:25	26/03/2023 07:49	9211
205	26/03/2023 15:18	26/03/2023 18:15	9295
206	26/03/2023 20:13	26/03/2023 23:03	9289

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes
09-Jul-23	8	37033.69
10-Jul-23	3	18437.13
11-Jul-23	2	9270.25
12-Jul-23	6	27812.47
13-Jul-23	3	9309.23
14-Jul-23	3	17691.14
15-Jul-23	4	17630.97
16-Jul-23	7	27864.22
17-Jul-23	6	26986.89
18-Jul-23	4	18483.65
19-Jul-23	7	37007.81
20-Jul-23	6	26993.45
21-Jul-23	5	18227.33
22-Jul-23	5	27772.17
23-Jul-23	6	27127.63
24-Jul-23	4	18533.15
25-Jul-23	6	27877.78
26-Jul-23	6	27132.74

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
207	27/03/2023 06:26	27/03/2023 09:57	9192
208	27/03/2023 13:06	27/03/2023 17:39	9145
209	27/03/2023 23:11	28/03/2023 01:31	9294
210	28/03/2023 12:32	28/03/2023 14:24	9323
211	28/03/2023 20:01	29/03/2023 00:26	9105
212	28/03/2023 23:38	29/03/2023 08:43	9191
213	29/03/2023 14:31	29/03/2023 17:17	9093
214	29/03/2023 22:10	30/03/2023 01:04	9094
215	30/03/2023 02:39	30/03/2023 05:08	9235
216	30/03/2023 07:53	30/03/2023 09:46	9276
217	30/03/2023 19:11	30/03/2023 23:10	9140
218	31/03/2023 02:26	31/03/2023 05:10	9308
219	31/03/2023 07:40	31/03/2023 09:57	9244
220	31/03/2023 16:09	31/03/2023 18:10	9293
221	01/04/2023 09:37	01/04/2023 11:48	8600

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes
27-Jul-23	4	17823.51
28-Jul-23	5	17832.85
29-Jul-23	5	27768.05
30-Jul-23	6	26912.06
31-Jul-23	1	0.00
01-Aug-23	7	36920.79
02-Aug-23	9	36119.31
03-Aug-23	13	63439.05
04-Aug-23	9	31160.95
05-Aug-23	1	9197.90
06-Aug-23	0	0.00
07-Aug-23	0	0.00
08-Aug-23	2	9286.11
09-Aug-23	4	16982.03
10-Aug-23	2	9208.21

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
222	01/04/2023 13:03	01/04/2023 15:36	9307
223	01/04/2023 17:36	01/04/2023 21:00	9128
224	02/04/2023 07:28	02/04/2023 11:24	9153
225	02/04/2023 12:04	02/04/2023 15:28	9238
226	02/04/2023 20:29	02/04/2023 22:23	9326
227	02/04/2023 23:31	03/04/2023 03:12	9126
228	03/04/2023 02:00	03/04/2023 08:25	9255
229	03/04/2023 08:47	03/04/2023 10:38	9301
230	03/04/2023 10:54	03/04/2023 14:23	9283
231	03/04/2023 14:28	03/04/2023 18:56	9126
232	03/04/2023 22:23	04/04/2023 00:31	9305
233	07/04/2023 03:41	07/04/2023 05:09	4270
234	07/04/2023 10:24	07/04/2023 12:35	9298
235	07/04/2023 15:08	07/04/2023 17:06	9296

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes
11-Aug-23	5	17774.85
12-Aug-23	3	18647.76
13-Aug-23	6	26963.96
14-Aug-23	10	34759.42
15-Aug-23	5	18591.33
16-Aug-23	11	44746.06
17-Aug-23	6	27065.31
18-Aug-23	8	31828.56
19-Aug-23	7	22732.76
20-Aug-23	9	36407.15
21-Aug-23	1	0.00
22-Aug-23	12	45607.50
23-Aug-23	3	13603.22
24-Aug-23	2	9306.50

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
236	07/04/2023 17:09	07/04/2023 20:20	9242
237	07/04/2023 23:57	08/04/2023 02:10	9316
238	08/04/2023 08:10	08/04/2023 10:40	9300
239	08/04/2023 14:08	08/04/2023 16:41	9315
240	08/04/2023 19:01	08/04/2023 21:56	9130
241	08/04/2023 22:32	09/04/2023 01:10	9234
242	09/04/2023 03:30	09/04/2023 05:22	9285
243	09/04/2023 05:25	09/04/2023 09:10	9332
244	09/04/2023 09:12	09/04/2023 11:20	9159
245	09/04/2023 12:55	09/04/2023 16:24	9237
246	09/04/2023 17:24	09/04/2023 21:02	9283
247	09/04/2023 20:21	09/04/2023 23:40	9286
248	10/04/2023 00:51	10/04/2023 03:20	9125
249	10/04/2023 05:11	10/04/2023 08:15	9261

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes
25-Aug-23	8	37107.65
26-Aug-23	4	18562.07
27-Aug-23	4	18549.56
28-Aug-23	2	9210.77
29-Aug-23	3	9204.26
30-Aug-23	1	9251.05
31-Aug-23	4	18606.02
01-Sep-23	1	0.00
02-Sep-23	6	13569.71
03-Sep-23	5	26936.01
04-Sep-23	6	27064.37
05-Sep-23	8	36127.10
06-Sep-23	0	0.00
07-Sep-23	9	32049.59

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
250	10/04/2023 10:19	10/04/2023 12:45	9295
251	10/04/2023 20:11	10/04/2023 22:44	9296
252	11/04/2023 00:02	11/04/2023 02:13	9311
253	11/04/2023 04:03	11/04/2023 05:57	9329
254	11/04/2023 08:10	11/04/2023 10:36	9323
255	11/04/2023 12:47	11/04/2023 14:37	9227
256	11/04/2023 22:08	12/04/2023 01:00	9157
257	12/04/2023 01:04	12/04/2023 03:32	9280
258	12/04/2023 15:47	12/04/2023 17:51	9263
259	13/04/2023 01:06	13/04/2023 04:00	9302
260		13/04/2023 08:50	8518
261	13/04/2023 13:52	13/04/2023 16:22	9292
262	13/04/2023 16:33	13/04/2023 21:40	9291
263	13/04/2023 22:22	14/04/2023 01:19	9088

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes
08-Sep-23	5	27042.62
09-Sep-23	11	41107.14
10-Sep-23	7	31311.54
11-Sep-23	4	18596.72
12-Sep-23	4	18207.63
13-Sep-23	2	9203.13
14-Sep-23	1	0.00
15-Sep-23	3	18532.74
16-Sep-23	4	13371.75
17-Sep-23	6	22788.49
18-Sep-23	4	18514.48
19-Sep-23	7	27053.95
20-Sep-23	5	17794.53
21-Sep-23	6	22792.61

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
264	14/04/2023 08:16	14/04/2023 10:27	9288
265	14/04/2023 14:19	14/04/2023 16:18	9130
266	14/04/2023 16:24	14/04/2023 19:50	9148
267	14/04/2023 20:28	14/04/2023 22:45	9259
268	14/04/2023 23:43	15/04/2023 02:43	9301
269	15/04/2023 05:29	15/04/2023 07:49	9293
270	15/04/2023 09:42	15/04/2023 11:38	9247
271	16/04/2023 06:10	16/04/2023 10:07	8511
272	16/04/2023 16:50	16/04/2023 20:26	9301
273	16/04/2023 20:28	16/04/2023 23:03	9294
274	17/04/2023 23:42	18/04/2023 01:43	9296
275	18/04/2023 01:47	18/04/2023 04:31	9132
276	18/04/2023 04:58	18/04/2023 05:58	4254
277	19/04/2023 00:28	19/04/2023 02:32	9264
278	19/04/2023 02:39	19/04/2023 06:20	9303
279	19/04/2023 13:01	19/04/2023 15:01	9282

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes
22-Sep-23	6	21906.28
23-Sep-23	2	4263.21
24-Sep-23	9	36147.12
25-Sep-23	11	50500.22
26-Sep-23	8	37080.80
27-Sep-23	6	22693.89
28-Sep-23	3	9283.53
29-Sep-23	9	46191.50
30-Sep-23	9	37112.00
01-Oct-23	3	17745.98
02-Oct-23	8	36235.34
03-Oct-23	0	0.00
04-Oct-23	2	9261.83
05-Oct-23	0	0.00
06-Oct-23	1	0.00
07-Oct-23	9	46236.46

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
280		19/04/2023 19:52	9239
281	20/04/2023 07:09	20/04/2023 11:58	9126
282	20/04/2023 19:50	20/04/2023 22:12	4263
283	21/04/2023 01:36	21/04/2023 04:01	9281
284	21/04/2023 18:43	21/04/2023 21:26	9287
285	22/04/2023 01:12	22/04/2023 03:21	8509
286	22/04/2023 19:45	22/04/2023 21:09	4272
287	24/04/2023 12:10	24/04/2023 14:29	9227
288	24/04/2023 15:10	24/04/2023 16:08	4266
289	24/04/2023 19:45	24/04/2023 23:30	9291
290	25/04/2023 03:37	25/04/2023 05:43	9123
291	26/04/2023 15:51	26/04/2023 18:52	9115
292	27/04/2023 00:21	27/04/2023 02:14	9300
293	27/04/2023 02:45	27/04/2023 05:11	9177
294	27/04/2023 14:19	27/04/2023 16:14	9110
295	27/04/2023 23:59	28/04/2023 02:05	9280
296	28/04/2023 05:31	28/04/2023 08:22	9295
297	29/04/2023 14:35	29/04/2023 17:22	9277

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes
08-Oct-23	6	27791.55
09-Oct-23	6	27783.96
10-Oct-23	4	18560.61
11-Oct-23	5	17617.94
12-Oct-23	11	54685.30
13-Oct-23	9	37102.33
14-Oct-23	10	45561.80
15-Oct-23	5	27028.42
16-Oct-23	4	18542.18
17-Oct-23	7	27719.39
18-Oct-23	4	18534.22
19-Oct-23	3	18500.38
20-Oct-23	10	46278.74
21-Oct-23	9	36876.32
22-Oct-23	7	37063.51
23-Oct-23	3	9280.45
24-Oct-23	8	36303.84
25-Oct-23	5	27805.91

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
298	01/05/2023 17:27	01/05/2023 20:05	9293
299	01/05/2023 23:51	02/05/2023 02:41	9281
300	02/05/2023 14:20	02/05/2023 15:49	9223
301	02/05/2023 22:02	03/05/2023 00:01	9299
302	03/05/2023 15:24	03/05/2023 17:19	9134
303	04/05/2023 04:58	04/05/2023 11:42	9297
304	05/05/2023 12:17	05/05/2023 14:11	8493
305	06/05/2023 22:08	07/05/2023 00:54	9267
306	07/05/2023 01:08	07/05/2023 03:12	8533
307	07/05/2023 08:34	07/05/2023 10:50	9261
308	07/05/2023 11:03	07/05/2023 13:59	9290
309	09/05/2023 18:59	09/05/2023 21:52	8527
310	11/05/2023 00:49	11/05/2023 04:51	8538
311	11/05/2023 12:19	11/05/2023 14:31	8512
312	12/05/2023 12:22	12/05/2023 14:53	9169
313	12/05/2023 19:28	12/05/2023 22:10	9310

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes
26-Oct-23	6	26925.04
27-Oct-23	4	18523.33
28-Oct-23	9	37077.75
29-Oct-23	4	18473.10
30-Oct-23	7	36986.71
31-Oct-23	6	27783.99
01-Nov-23	6	26979.93
02-Nov-23	6	27751.26
03-Nov-23	7	27075.30
04-Nov-23	7	36320.41
05-Nov-23	6	27777.11
06-Nov-23	8	36244.63
07-Nov-23	2	9231.00
08-Nov-23	6	27742.88
09-Nov-23	3	8496.00
10-Nov-23	6	27780.92

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
314	13/05/2023 05:17	13/05/2023 07:28	8516
315	13/05/2023 09:04	13/05/2023 11:13	9308
316	13/05/2023 13:00	13/05/2023 14:41	9206
317	13/05/2023 19:42	13/05/2023 21:34	9177
318	14/05/2023 02:37	14/05/2023 04:24	9301
319	14/05/2023 12:41	14/05/2023 14:36	9296
320	14/05/2023 17:32	14/05/2023 19:45	9267
321	15/05/2023 05:34	15/05/2023 08:44	9212
322	15/05/2023 08:51	15/05/2023 10:59	9281
323	15/05/2023 19:35	15/05/2023 21:55	8515
324	15/05/2023 22:18	16/05/2023 01:02	9293
325	16/05/2023 07:18	16/05/2023 09:54	9245
326	16/05/2023 20:05	16/05/2023 23:29	9305
327	16/05/2023 23:34	17/05/2023 02:31	9249

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes
11-Nov-23	6	26287.77
12-Nov-23	10	46554.31
13-Nov-23	1	9284.24
14-Nov-23	3	9283.48
15-Nov-23	4	17707.00
16-Nov-23	4	18480.12
17-Nov-23	3	18510.68
18-Nov-23	6	27798.24
19-Nov-23	4	18512.50
20-Nov-23	6	27819.99
21-Nov-23	2	9230.37
22-Nov-23	0	0.00
23-Nov-23	0	0.00
24-Nov-23	6	17805.92

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
328	17/05/2023 03:09	17/05/2023 05:11	9189
329	17/05/2023 09:02	17/05/2023 11:02	9309
330	18/05/2023 15:19	18/05/2023 17:24	4267
331	19/05/2023 06:00	19/05/2023 08:21	4273
332	19/05/2023 08:34	19/05/2023 11:16	8534
333	19/05/2023 16:40	19/05/2023 19:32	9274
334	19/05/2023 20:01	19/05/2023 22:03	9155
335	20/05/2023 01:31	20/05/2023 02:38	4275
336	20/05/2023 03:03	20/05/2023 05:06	9306
337	20/05/2023 05:38	20/05/2023 07:56	8550
338	20/05/2023 08:01	20/05/2023 10:49	9284
339	20/05/2023 14:02	20/05/2023 17:01	9307
340	20/05/2023 17:01	20/05/2023 19:41	9348
341	20/05/2023 21:41	20/05/2023 23:53	4266

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes
25-Nov-23	7	36322.35
26-Nov-23	5	26991.97
27-Nov-23	4	17816.33
28-Nov-23	4	17828.74
29-Nov-23	7	26327.70
30-Nov-23	3	18514.14
01-Dec-23	8	36322.06
02-Dec-23	6	27034.04
03-Dec-23	4	17749.91
04-Dec-23	0	0.00
05-Dec-23	6	27040.79
06-Dec-23	2	9288.79
07-Dec-23	8	36217.01
08-Dec-23	9	35587.66

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
342	21/05/2023 02:49	21/05/2023 04:55	8501
343	21/05/2023 07:50	21/05/2023 09:49	9138
344		21/05/2023 15:34	4257
345	21/05/2023 19:11	21/05/2023 21:07	9303
346	22/05/2023 00:20	22/05/2023 02:50	9279
347	22/05/2023 04:43	22/05/2023 06:03	4274
348	22/05/2023 19:33	22/05/2023 20:37	4267
349	22/05/2023 21:54	23/05/2023 00:03	9307
350	25/05/2023 22:45	26/05/2023 01:36	9143
351	26/05/2023 04:04	26/05/2023 05:27	4265
352	26/05/2023 07:04	26/05/2023 09:23	9311
353	26/05/2023 13:05	26/05/2023 15:08	9135
354	26/05/2023 19:32	26/05/2023 21:04	4288
355	27/05/2023 03:57	27/05/2023 06:11	9357

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes
09-Dec-23	7	35603.11
10-Dec-23	9	34885.35
11-Dec-23	14	61830.68
12-Dec-23	13	63289.07
13-Dec-23	8	37053.37
14-Dec-23	2	9242.86
15-Dec-23	4	18563.86
16-Dec-23	6	27727.29
17-Dec-23	4	18345.09
18-Dec-23	1	0.00
19-Dec-23	5	27697.03
20-Dec-23	6	27836.22
21-Dec-23	0	0.00
22-Dec-23	4	18522.28

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
356	27/05/2023 09:25	27/05/2023 10:23	4284
357	27/05/2023 16:35	27/05/2023 19:03	8508
358	27/05/2023 19:14	27/05/2023 22:13	9353
359	28/05/2023 00:40	28/05/2023 02:01	4280
360	28/05/2023 12:01	28/05/2023 14:01	9118
361	28/05/2023 15:45	28/05/2023 18:07	8537
362	28/05/2023 14:03	28/05/2023 15:41	4264
363	28/05/2023 19:10	28/05/2023 22:49	9321
364	29/05/2023 18:47	29/05/2023 21:12	9129
365	29/05/2023 21:03	30/05/2023 00:35	9264
366	30/05/2023 02:31	30/05/2023 05:53	9278
367	30/05/2023 06:33	30/05/2023 10:44	9246
368	30/05/2023 10:52	30/05/2023 13:01	9138
369	30/05/2023 13:05	30/05/2023 15:30	9252
370	30/05/2023 18:30	30/05/2023 21:03	9279
371	30/05/2023 23:24	31/05/2023 01:38	9138

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes
23-Dec-23	0	0.00
24-Dec-23	3	9255.90
25-Dec-23	0	0.00
26-Dec-23	0	0.00
27-Dec-23	1	9254.68
28-Dec-23	4	18577.94
29-Dec-23	0	0.00
30-Dec-23	2	9296.28
31-Dec-23	2	9304.87
31-Dec-22	0	0

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
372	31/05/2023 01:40	31/05/2023 03:53	9188
373	31/05/2023 03:56	31/05/2023 07:21	9316
374	31/05/2023 14:46	31/05/2023 17:37	9285
375	31/05/2023 20:44	31/05/2023 22:39	9294
376	01/06/2023 06:34	01/06/2023 09:34	9301
377	01/06/2023 16:46	01/06/2023 18:39	9313
378	01/06/2023 21:37	01/06/2023 23:31	9102
379	01/06/2023 23:44	02/06/2023 02:03	9232
380	02/06/2023 09:12	02/06/2023 12:16	9289
381	02/06/2023 13:57	02/06/2023 16:56	9236
382	02/06/2023 18:36	02/06/2023 20:36	9165
383	03/06/2023 03:43	03/06/2023 06:00	9279
384	03/06/2023 06:20	03/06/2023 09:46	9254
385	03/06/2023 09:53	03/06/2023 12:40	9154
386	03/06/2023 12:48	03/06/2023 16:17	9318
387	03/06/2023 21:13	04/06/2023 00:06	9276
388	04/06/2023 01:40	04/06/2023 03:43	9122
389	04/06/2023 07:29	04/06/2023 09:56	9339

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
390	04/06/2023 12:14	04/06/2023 14:35	8504
391	04/06/2023 18:23	04/06/2023 21:05	9211
392	06/06/2023 08:20	06/06/2023 10:09	9277
393	06/06/2023 10:18	06/06/2023 12:59	9266
394	07/06/2023 23:04	08/06/2023 00:52	9290
395	08/06/2023 00:40	08/06/2023 03:01	9288
396	08/06/2023 07:44	08/06/2023 10:01	9290
397	08/06/2023 13:17	08/06/2023 16:31	9304
398	08/06/2023 22:22	09/06/2023 00:51	8521
399	09/06/2023 17:39	09/06/2023 20:38	9179
400	10/06/2023 01:10	10/06/2023 02:58	9285
401	10/06/2023 18:14	10/06/2023 20:58	8491
402	11/06/2023 04:13	11/06/2023 06:10	8506
403	12/06/2023 09:30	12/06/2023 12:32	8482
404	13/06/2023 21:02	13/06/2023 23:39	9316
405	14/06/2023 00:55	14/06/2023 03:11	9138
406	14/06/2023 08:34	14/06/2023 11:57	9269
407	14/06/2023 16:13	14/06/2023 19:44	9286

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
408	15/06/2023 17:18	15/06/2023 21:33	9297
409	16/06/2023 02:58	16/06/2023 05:23	9155
410		16/06/2023 19:57	8516
411	18/06/2023 04:34	18/06/2023 06:44	9304
412	18/06/2023 01:20	18/06/2023 03:33	8480
413	18/06/2023 12:27	18/06/2023 15:03	9265
414	18/06/2023 09:46	18/06/2023 11:10	4265
415	19/06/2023 18:22	19/06/2023 20:16	4262
416	20/06/2023 03:34	20/06/2023 06:17	8513
417	20/06/2023 13:20	20/06/2023 16:01	9258
418	20/06/2023 16:15	20/06/2023 21:01	9163
419		21/06/2023 01:58	4237
420	21/06/2023 14:51	21/06/2023 18:17	9346
421	22/06/2023 02:55	22/06/2023 03:47	4269
422	22/06/2023 00:32	22/06/2023 02:41	8514
423	22/06/2023 05:08	22/06/2023 08:08	9126
424	23/06/2023 07:34	23/06/2023 10:25	9272
425	24/06/2023 00:24	24/06/2023 03:30	9295

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
426	24/06/2023 08:15	24/06/2023 10:19	8534
427	24/06/2023 15:15	24/06/2023 17:15	9287
428		25/06/2023 03:04	9309
429	26/06/2023 00:20	26/06/2023 03:24	9268
430		26/06/2023 08:19	4276
431	26/06/2023 15:53	26/06/2023 17:57	9260
432	26/06/2023 21:17	26/06/2023 23:21	9309
433	27/06/2023 00:04	27/06/2023 02:01	9185
434	27/06/2023 02:45	27/06/2023 03:46	4255
435	27/06/2023 11:05	27/06/2023 13:20	9270
436	27/06/2023 13:27	27/06/2023 15:52	9261
437	28/06/2023 01:42	28/06/2023 03:49	9285
438	28/06/2023 04:16	28/06/2023 06:20	9197
439	28/06/2023 07:50	28/06/2023 09:56	9267
440	28/06/2023 12:40	28/06/2023 15:06	9294
441	28/06/2023 10:42	28/06/2023 12:20	4224
442	28/06/2023 16:49	28/06/2023 19:48	9195
443	29/06/2023 07:06	29/06/2023 09:36	9279

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
444	29/06/2023 09:53	29/06/2023 12:26	9216
445	29/06/2023 21:13	29/06/2023 23:47	9144
446	29/06/2023 23:54	30/06/2023 02:05	9236
447	30/06/2023 12:30	30/06/2023 16:01	9256
448	30/06/2023 22:07	01/07/2023 00:10	9292
449	01/07/2023 20:58	01/07/2023 22:47	9129
450	02/07/2023 00:39	02/07/2023 03:33	9311
451	02/07/2023 23:15	03/07/2023 01:24	9282
452	03/07/2023 07:15	03/07/2023 12:02	9279
453	03/07/2023 13:30	03/07/2023 15:54	9288
454	04/07/2023 01:15	04/07/2023 03:20	9266
455	04/07/2023 05:40	04/07/2023 08:02	9281
456	05/07/2023 06:03	05/07/2023 09:24	9233
457		07/07/2023 00:32	9275
458	07/07/2023 10:00	07/07/2023 13:19	9293
459	07/07/2023 22:36	08/07/2023 01:26	9120
460	08/07/2023 01:31	08/07/2023 04:36	9296
461	08/07/2023 04:39	08/07/2023 08:36	9206

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
462	08/07/2023 12:36	08/07/2023 14:34	9307
463	08/07/2023 17:16	08/07/2023 20:51	9288
464	08/07/2023 22:56	09/07/2023 01:49	9288
465	09/07/2023 06:57	09/07/2023 09:30	9119
466	09/07/2023 09:55	09/07/2023 11:56	9299
467	09/07/2023 15:42	09/07/2023 18:43	9327
468	09/07/2023 22:15	10/07/2023 01:26	9151
469	10/07/2023 13:12	10/07/2023 15:10	9286
470	11/07/2023 02:20	11/07/2023 05:30	9270
471	12/07/2023 02:28	12/07/2023 05:15	9313
472	12/07/2023 05:20	12/07/2023 08:50	9319
473	12/07/2023 20:33	12/07/2023 23:39	9180
474	13/07/2023 15:06	13/07/2023 17:59	9309
475	13/07/2023 23:05	14/07/2023 01:40	9187
476	14/07/2023 03:54	14/07/2023 06:11	8504
477	15/07/2023 09:17	15/07/2023 11:13	9130
478	15/07/2023 12:16	15/07/2023 14:19	8501
479	16/07/2023 04:00	16/07/2023 06:42	9303

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
480	16/07/2023 14:29	16/07/2023 16:41	9277
481	16/07/2023 19:57	16/07/2023 22:51	9284
482	16/07/2023 22:57	17/07/2023 01:04	8476
483	17/07/2023 03:10	17/07/2023 05:22	9239
484	17/07/2023 15:14	17/07/2023 17:09	9271
485	17/07/2023 22:15	18/07/2023 08:32	9328
486	18/07/2023 16:10	18/07/2023 21:45	9156
487	18/07/2023 22:08	19/07/2023 01:07	9275
488	19/07/2023 01:17	19/07/2023 04:02	9287
489	19/07/2023 11:35	19/07/2023 14:56	9244
490	19/07/2023 15:46	19/07/2023 17:35	9202
491	20/07/2023 12:41	20/07/2023 15:27	9259
492	20/07/2023 15:35	20/07/2023 18:45	8466
493	20/07/2023 19:37	20/07/2023 21:57	9269
494	21/07/2023 04:46	21/07/2023 06:51	9157
495	21/07/2023 11:13	21/07/2023 13:15	9070
496	21/07/2023 21:32	22/07/2023 00:59	9192
497	22/07/2023 07:51	22/07/2023 10:29	9240

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
498	22/07/2023 17:45	22/07/2023 20:48	9340
499	23/07/2023 06:10	23/07/2023 11:18	9303
500	23/07/2023 06:57	23/07/2023 08:52	8520
501	23/07/2023 19:35	23/07/2023 21:37	9304
502	24/07/2023 09:52	24/07/2023 12:31	9287
503	24/07/2023 14:15	24/07/2023 16:55	9247
504	25/07/2023 06:15	25/07/2023 10:47	9266
505	25/07/2023 10:51	25/07/2023 13:06	9315
506	25/07/2023 14:19	25/07/2023 16:47	9297
507	26/07/2023 04:52	26/07/2023 07:44	8512
508	26/07/2023 12:46	26/07/2023 15:27	9285
509	26/07/2023 21:18	26/07/2023 23:14	9336
510	27/07/2023 17:14	27/07/2023 19:26	8501
511	27/07/2023 20:14	27/07/2023 22:21	9323
512	28/07/2023 00:19	28/07/2023 02:41	9322
513	28/07/2023 20:44	28/07/2023 22:49	8511
514	28/07/2023 23:04	29/07/2023 01:20	9244
515	29/07/2023 10:49	29/07/2023 12:45	9269

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
516	29/07/2023 18:55	29/07/2023 20:59	9255
517	30/07/2023 02:36	30/07/2023 04:25	9266
518	30/07/2023 07:48	30/07/2023 09:46	8479
519	30/07/2023 11:04	30/07/2023 13:47	9167
520	31/07/2023 21:15	01/08/2023 01:35	9282
521	01/08/2023 07:30	01/08/2023 10:19	9253
522	01/08/2023 12:54	01/08/2023 15:39	9088
523		01/08/2023 21:01	9297
524	02/08/2023 00:37	02/08/2023 02:45	8511
525	02/08/2023 09:06	02/08/2023 11:54	9227
526	02/08/2023 16:35	02/08/2023 18:24	9283
527	02/08/2023 20:50	02/08/2023 22:29	9098
528	02/08/2023 22:36	03/08/2023 03:04	9310
529	03/08/2023 03:06	03/08/2023 05:18	8511
530	03/08/2023 05:26	03/08/2023 08:15	8505
531	03/08/2023 08:22	03/08/2023 10:43	9285
532	03/08/2023 14:39	03/08/2023 16:35	9279
533	03/08/2023 16:41	03/08/2023 20:05	9298

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
534	03/08/2023 20:22	03/08/2023 22:42	9251
535	04/08/2023 04:25	04/08/2023 05:24	4268
536	04/08/2023 00:23	04/08/2023 02:26	9262
537	04/08/2023 05:31	04/08/2023 08:56	8491
538	04/08/2023 09:07	04/08/2023 11:04	9140
539	04/08/2023 23:10	05/08/2023 00:53	9198
540	08/08/2023 10:00	08/08/2023 11:43	9286
541	09/08/2023 03:16	09/08/2023 05:58	8501
542	09/08/2023 11:34	09/08/2023 14:57	8481
543	10/08/2023 18:58	10/08/2023 21:27	9208
544	11/08/2023 03:00	11/08/2023 04:57	8507
545	11/08/2023 08:30	11/08/2023 11:25	9268
546	11/08/2023 20:10	12/08/2023 00:22	9323
547	12/08/2023 01:50	12/08/2023 05:26	9324
548	13/08/2023 01:08	13/08/2023 04:06	9198
549	13/08/2023 04:30	13/08/2023 06:29	9256
550	13/08/2023 09:50	13/08/2023 11:55	8510
551	14/08/2023 07:04	14/08/2023 09:55	8496

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
552	14/08/2023 04:34	14/08/2023 05:46	4271
553	14/08/2023 18:32	14/08/2023 21:21	8545
554	14/08/2023 10:08	14/08/2023 12:11	9185
555		14/08/2023 22:42	4262
556	15/08/2023 01:09	15/08/2023 02:52	9306
557	15/08/2023 14:48	15/08/2023 17:44	9286
558	16/08/2023 01:10	16/08/2023 03:35	9313
559	15/08/2023 22:36	16/08/2023 01:04	8507
560		16/08/2023 05:03	4256
561	16/08/2023 15:47	16/08/2023 18:04	9273
562	16/08/2023 18:57	16/08/2023 21:51	9122
563	16/08/2023 22:19	16/08/2023 23:18	4275
564	17/08/2023 00:08	17/08/2023 02:22	9262
565	17/08/2023 05:41	17/08/2023 08:00	9312
566	17/08/2023 12:07	17/08/2023 14:04	8491
567	18/08/2023 07:00	18/08/2023 09:54	9129
568	18/08/2023 09:45	18/08/2023 12:32	4256
569	18/08/2023 13:56	18/08/2023 16:19	9168

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
570	18/08/2023 16:26	18/08/2023 20:06	9276
571	19/08/2023 08:31	19/08/2023 09:34	4266
572	19/08/2023 11:25	19/08/2023 13:38	9184
573	19/08/2023 19:21	19/08/2023 21:05	9282
574	19/08/2023 21:31	20/08/2023 00:06	9279
575	20/08/2023 05:05	20/08/2023 07:27	9332
576	20/08/2023 08:00	20/08/2023 09:09	4264
577	20/08/2023 12:27	20/08/2023 14:00	4259
578	20/08/2023 21:31	20/08/2023 23:38	9273
579	21/08/2023 22:24	22/08/2023 00:29	9308
580	22/08/2023 00:46	22/08/2023 02:19	4269
581	22/08/2023 03:01	22/08/2023 05:45	9298
582	22/08/2023 08:27	22/08/2023 13:07	9285
583	22/08/2023 14:33	22/08/2023 15:33	4266
584	22/08/2023 16:29	22/08/2023 18:57	9182
585	22/08/2023 21:05	23/08/2023 01:01	9338
586	23/08/2023 02:52	23/08/2023 04:06	4266
587	24/08/2023 03:18	24/08/2023 06:10	9307

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
588	25/08/2023 01:04	25/08/2023 03:22	9314
589	25/08/2023 05:53	25/08/2023 08:36	9191
590	25/08/2023 15:02	25/08/2023 18:18	9293
591	25/08/2023 20:18	25/08/2023 22:31	9311
592	26/08/2023 03:17	26/08/2023 05:31	9284
593	26/08/2023 18:20	26/08/2023 20:21	9278
594	27/08/2023 08:45	27/08/2023 12:06	9261
595	27/08/2023 18:47	27/08/2023 20:57	9289
596	28/08/2023 00:46	28/08/2023 02:45	9211
597	29/08/2023 06:08	29/08/2023 09:07	9204
598	29/08/2023 22:51	30/08/2023 01:40	9251
599	31/08/2023 07:40	31/08/2023 09:26	9310
600		31/08/2023 16:51	9296
601	01/09/2023 22:45	02/09/2023 01:45	0
602	02/09/2023 15:06	02/09/2023 18:09	9311
603	02/09/2023 22:10	02/09/2023 23:21	4259
604	02/09/2023 23:23	03/09/2023 01:35	9129
605	03/09/2023 12:26	03/09/2023 14:35	9287

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
606	03/09/2023 15:04	03/09/2023 18:58	8520
607	04/09/2023 02:34	04/09/2023 05:45	9306
608	04/09/2023 06:17	04/09/2023 08:44	8517
609	04/09/2023 19:39	04/09/2023 22:57	9241
610	05/09/2023 00:12	05/09/2023 02:13	9306
611	05/09/2023 06:51	05/09/2023 09:38	8507
612	05/09/2023 09:44	05/09/2023 13:29	9114
613	05/09/2023 20:44	05/09/2023 23:25	9200
614	07/09/2023 01:34	07/09/2023 03:08	4266
615	07/09/2023 08:32	07/09/2023 10:30	9287
616	07/09/2023 12:21	07/09/2023 14:10	9256
617	07/09/2023 18:13	07/09/2023 21:27	9241
618	07/09/2023 21:30	08/09/2023 00:42	9257
619	08/09/2023 08:26	08/09/2023 10:32	8525
620	08/09/2023 15:59	08/09/2023 18:02	9261
621	09/09/2023 00:05	09/09/2023 02:29	9130
622	09/09/2023 04:42	09/09/2023 06:41	9247
623	09/09/2023 08:35	09/09/2023 09:29	4264

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
624	09/09/2023 11:28	09/09/2023 13:26	9268
625	09/09/2023 16:12	09/09/2023 18:06	9199
626	09/09/2023 22:27	10/09/2023 01:12	9282
627	10/09/2023 07:13	10/09/2023 09:51	8505
628	10/09/2023 12:31	10/09/2023 15:11	9263
629	10/09/2023 19:30	10/09/2023 21:14	4261
630	11/09/2023 07:35	11/09/2023 09:37	9293
631	11/09/2023 19:58	11/09/2023 21:54	9304
632	12/09/2023 04:28	12/09/2023 06:27	9105
633	12/09/2023 14:05	12/09/2023 15:56	9102
634	13/09/2023 19:33	13/09/2023 21:59	9203
635	14/09/2023 22:00	15/09/2023 00:11	9271
636	15/09/2023 06:27	15/09/2023 10:08	9262
637	16/09/2023 03:27	16/09/2023 05:30	4247
638	16/09/2023 08:00	16/09/2023 10:18	9124
639	17/09/2023 08:25	17/09/2023 09:52	4261
640	17/09/2023 09:54	17/09/2023 12:09	9240
641	17/09/2023 20:00	17/09/2023 21:56	9287

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
642		18/09/2023 09:24	9247
643	18/09/2023 09:35	18/09/2023 11:43	9268
644	19/09/2023 01:31	19/09/2023 04:19	8515
645	19/09/2023 10:17	19/09/2023 12:54	9271
646	19/09/2023 21:16	19/09/2023 23:32	9268
647	19/09/2023 23:37	20/09/2023 00:42	4261
648	20/09/2023 11:54	20/09/2023 13:57	9273
649	20/09/2023 16:44	20/09/2023 17:46	4261
650	21/09/2023 17:44	21/09/2023 18:55	4263
651		21/09/2023 21:17	9273
652		21/09/2023 23:52	9257
653	22/09/2023 12:40	22/09/2023 14:49	4274
654	22/09/2023 10:31	22/09/2023 12:56	8501
655	22/09/2023 19:57	22/09/2023 22:55	9131
656	23/09/2023 19:36	23/09/2023 20:53	4263
657	24/09/2023 01:34	24/09/2023 03:46	9207
658	24/09/2023 08:12	24/09/2023 10:56	9251
659	24/09/2023 12:43	24/09/2023 14:44	8483

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
660	24/09/2023 18:17	24/09/2023 21:26	9206
661	24/09/2023 23:42	25/09/2023 00:39	4264
662	25/09/2023 07:12	25/09/2023 09:36	9268
663	25/09/2023 09:39	25/09/2023 11:40	9229
664	25/09/2023 12:20	25/09/2023 14:09	9241
665	25/09/2023 14:14	25/09/2023 16:48	9289
666	25/09/2023 17:42	25/09/2023 21:30	9209
667	26/09/2023 07:33	26/09/2023 09:41	9283
668	26/09/2023 11:40	26/09/2023 14:11	9243
669	26/09/2023 14:17	26/09/2023 16:53	9269
670	26/09/2023 19:25	26/09/2023 21:35	9286
671	27/09/2023 03:30	27/09/2023 04:37	4263
672	27/09/2023 08:37	27/09/2023 10:50	9172
673	27/09/2023 17:00	27/09/2023 20:04	9259
674	28/09/2023 07:01	28/09/2023 09:36	9284
675	28/09/2023 22:35	29/09/2023 01:29	9273
676	29/09/2023 01:36	29/09/2023 03:47	9233
677	29/09/2023 03:39	29/09/2023 05:59	9304

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
678	29/09/2023 07:19	29/09/2023 09:39	9119
679	29/09/2023 16:05	29/09/2023 18:13	9263
680		30/09/2023 03:17	9288
681	30/09/2023 05:07	30/09/2023 08:03	9255
682	30/09/2023 10:27	30/09/2023 13:35	9271
683	30/09/2023 18:00	30/09/2023 21:09	9298
684	30/09/2023 22:09	01/10/2023 00:02	9240
685	01/10/2023 07:24	01/10/2023 09:57	8506
686	02/10/2023 03:23	02/10/2023 05:49	9243
687	02/10/2023 05:52	02/10/2023 09:31	9228
688	02/10/2023 17:14	02/10/2023 20:05	8498
689	02/10/2023 20:35	02/10/2023 22:33	9267
690	04/10/2023 01:18	04/10/2023 04:01	9262
691	06/10/2023 21:08	07/10/2023 00:39	9256
692		07/10/2023 10:33	9198
693	07/10/2023 11:28	07/10/2023 13:17	9248
694	07/10/2023 16:35	07/10/2023 18:32	9249
695	07/10/2023 20:42	07/10/2023 22:38	9286

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
696	08/10/2023 05:23	08/10/2023 07:21	9247
697	08/10/2023 09:48	08/10/2023 11:45	9290
698	08/10/2023 15:34	08/10/2023 18:32	9254
699	09/10/2023 00:40	09/10/2023 03:38	9273
700	09/10/2023 19:21	09/10/2023 21:24	9219
701	09/10/2023 21:28	09/10/2023 23:44	9291
702	10/10/2023 01:15	10/10/2023 03:33	9292
703	10/10/2023 12:25	10/10/2023 15:11	9269
704	11/10/2023 06:08	11/10/2023 10:04	9265
705	11/10/2023 12:46	11/10/2023 14:41	8353
706	11/10/2023 21:46	12/10/2023 00:53	9273
707	12/10/2023 00:56	12/10/2023 03:37	8510
708	12/10/2023 03:54	12/10/2023 07:52	9191
709	12/10/2023 08:09	12/10/2023 10:58	9228
710	12/10/2023 14:24	12/10/2023 17:26	9220
711	12/10/2023 19:36	12/10/2023 21:35	9263
712	13/10/2023 01:46	13/10/2023 03:35	9284
713	13/10/2023 10:54	13/10/2023 13:38	9262

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
714	13/10/2023 13:53	13/10/2023 16:21	9290
715	13/10/2023 19:32	13/10/2023 22:17	9267
716	13/10/2023 22:43	14/10/2023 00:50	9282
717	14/10/2023 06:44	14/10/2023 09:06	9294
718	14/10/2023 09:50	14/10/2023 11:33	9269
719	14/10/2023 12:50	14/10/2023 14:32	9227
720	14/10/2023 19:15	14/10/2023 21:42	8490
721	14/10/2023 22:19	15/10/2023 00:31	9260
722	15/10/2023 05:00	15/10/2023 07:49	8509
723	15/10/2023 19:27	15/10/2023 22:23	9259
724	16/10/2023 07:22	16/10/2023 09:45	9268
725	16/10/2023 10:56	16/10/2023 12:55	9275
726	17/10/2023 07:45	17/10/2023 09:39	9269
727	17/10/2023 09:45	17/10/2023 11:59	9267
728	17/10/2023 17:13	17/10/2023 19:15	9184
729	17/10/2023 22:30	18/10/2023 03:21	9270
730	18/10/2023 09:48	18/10/2023 11:45	9264
731	18/10/2023 22:33	19/10/2023 00:23	9224

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
732	19/10/2023 19:36	19/10/2023 21:40	9277
733	20/10/2023 00:26	20/10/2023 03:09	9290
734	20/10/2023 03:12	20/10/2023 06:28	9278
735	20/10/2023 09:34	20/10/2023 11:53	9214
736	20/10/2023 12:54	20/10/2023 15:26	9269
737	20/10/2023 19:09	20/10/2023 21:46	9228
738	21/10/2023 01:45	21/10/2023 03:35	9223
739	21/10/2023 09:12	21/10/2023 11:43	9149
740	21/10/2023 11:53	21/10/2023 14:43	9269
741	21/10/2023 14:55	21/10/2023 18:34	9234
742	21/10/2023 23:25	22/10/2023 01:35	9278
743	22/10/2023 09:03	22/10/2023 11:13	9286
744	22/10/2023 11:34	22/10/2023 13:47	9269
745	22/10/2023 18:46	22/10/2023 21:30	9230
746	23/10/2023 21:41	23/10/2023 23:39	9280
747	23/10/2023 23:45	24/10/2023 01:36	9265
748	24/10/2023 03:23	24/10/2023 06:01	9268
749	24/10/2023 13:23	24/10/2023 15:44	9270

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
750		24/10/2023 23:27	8501
751	24/10/2023 23:43	25/10/2023 01:44	9258
752	25/10/2023 01:47	25/10/2023 05:03	9269
753		25/10/2023 12:09	9279
754	26/10/2023 04:05	26/10/2023 05:53	9156
755	26/10/2023 00:30	26/10/2023 03:25	9264
756	26/10/2023 08:17	26/10/2023 10:44	8505
757	27/10/2023 03:15	27/10/2023 05:20	9265
758	27/10/2023 05:37	27/10/2023 07:24	9258
759	28/10/2023 03:34	28/10/2023 06:53	9286
760	28/10/2023 13:53	28/10/2023 16:35	9269
761	28/10/2023 16:43	28/10/2023 18:48	9272
762		28/10/2023 23:48	9251
763	28/10/2023 23:50	29/10/2023 02:48	9206
764	29/10/2023 19:53	29/10/2023 21:53	9267
765	29/10/2023 22:50	30/10/2023 00:58	9270
766	30/10/2023 02:58	30/10/2023 04:50	9255
767	30/10/2023 08:28	30/10/2023 11:17	9195

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
768	30/10/2023 11:25	30/10/2023 15:18	9267
769	31/10/2023 00:09	31/10/2023 02:08	9256
770	31/10/2023 07:12	31/10/2023 09:58	9282
771	31/10/2023 12:42	31/10/2023 15:12	9246
772	01/11/2023 08:16	01/11/2023 10:10	9286
773	01/11/2023 15:38	01/11/2023 17:44	9205
774	01/11/2023 19:31	01/11/2023 21:34	8489
775	02/11/2023 06:09	02/11/2023 08:56	9248
776	02/11/2023 11:45	02/11/2023 13:49	9286
777	02/11/2023 13:55	02/11/2023 16:28	9217
778	03/11/2023 00:43	03/11/2023 02:45	9278
779	03/11/2023 05:37	03/11/2023 08:47	8505
780	03/11/2023 13:28	03/11/2023 15:32	9292
781	03/11/2023 23:17	04/11/2023 01:18	9281
782	04/11/2023 02:36	04/11/2023 04:51	9262
783	04/11/2023 11:42	04/11/2023 13:35	8513
784	04/11/2023 21:36	04/11/2023 23:30	9265
785	05/11/2023 07:01	05/11/2023 09:17	9228

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
786	05/11/2023 11:54	05/11/2023 14:01	9270
787	05/11/2023 14:04	05/11/2023 16:01	9280
788	06/11/2023 06:35	06/11/2023 09:26	9293
789	06/11/2023 12:26	06/11/2023 14:51	9197
790	06/11/2023 14:57	06/11/2023 17:39	9263
791	06/11/2023 19:38	06/11/2023 21:26	8491
792	07/11/2023 02:06	07/11/2023 04:28	9231
793	08/11/2023 01:18	08/11/2023 05:27	9238
794	08/11/2023 16:50	08/11/2023 19:32	9275
795	08/11/2023 19:37	08/11/2023 22:05	9230
796	09/11/2023 17:39	09/11/2023 21:10	8496
797	09/11/2023 22:01	10/11/2023 00:18	9249
798	10/11/2023 02:59	10/11/2023 05:58	9247
799	10/11/2023 10:18	10/11/2023 12:26	9285
800	10/11/2023 23:29	11/11/2023 01:43	8521
801	11/11/2023 06:44	11/11/2023 09:22	8504
802	11/11/2023 21:20	11/11/2023 23:05	9263
803	11/11/2023 23:15	12/11/2023 02:43	9302

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
804	12/11/2023 02:47	12/11/2023 06:14	9271
805	12/11/2023 07:04	12/11/2023 09:39	9231
806	12/11/2023 11:57	12/11/2023 13:46	9526
807	12/11/2023 18:22	12/11/2023 21:45	9225
808	12/11/2023 21:50	13/11/2023 00:22	9284
809	14/11/2023 08:53	14/11/2023 11:45	9283
810	14/11/2023 23:23	15/11/2023 01:29	9236
811	15/11/2023 05:33	15/11/2023 08:41	8471
812	15/11/2023 23:49	16/11/2023 02:27	9230
813	16/11/2023 21:28	16/11/2023 23:16	9250
814	16/11/2023 23:21	17/11/2023 01:51	9285
815	17/11/2023 07:22	17/11/2023 09:23	9226
816	18/11/2023 08:49	18/11/2023 11:25	9289
817	18/11/2023 11:32	18/11/2023 14:05	9239
818	18/11/2023 20:39	18/11/2023 22:43	9270
819	19/11/2023 07:11	19/11/2023 09:48	9241
820	19/11/2023 12:26	19/11/2023 15:20	9272
821	20/11/2023 03:03	20/11/2023 05:12	9264

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
822	20/11/2023 14:34	20/11/2023 16:30	9291
823	20/11/2023 19:06	20/11/2023 21:19	9264
824	21/11/2023 00:06	21/11/2023 02:03	9230
825	24/11/2023 05:42	24/11/2023 07:58	9294
826	24/11/2023 12:28	24/11/2023 14:28	8531
827	24/11/2023 18:00	24/11/2023 20:29	9275
828	24/11/2023 23:42	25/11/2023 02:18	9274
829	25/11/2023 05:05	25/11/2023 07:48	8485
830	25/11/2023 14:33	25/11/2023 16:45	9270
831		26/11/2023 01:52	9261
832	26/11/2023 04:36	26/11/2023 08:49	9256
833		26/11/2023 10:59	8475
834	27/11/2023 07:02	27/11/2023 09:36	8530
835	27/11/2023 09:53	27/11/2023 12:55	9286
836	28/11/2023 05:30	28/11/2023 08:28	8544
837	28/11/2023 12:25	28/11/2023 15:39	9285
838	29/11/2023 09:55	29/11/2023 12:04	8536
839	29/11/2023 19:32	29/11/2023 22:09	9273

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
840	29/11/2023 22:45	30/11/2023 01:47	9257
841	30/11/2023 10:32	30/11/2023 12:31	9257
842	29/11/2023 20:43	29/11/2023 23:06	8518
843	01/12/2023 05:51	01/12/2023 09:29	9273
844	01/12/2023 09:30	01/12/2023 11:46	9263
845	01/12/2023 11:57	01/12/2023 14:20	8535
846	01/12/2023 21:50	01/12/2023 23:39	9251
847	02/12/2023 00:04	02/12/2023 03:04	9259
848	02/12/2023 12:23	02/12/2023 15:04	9261
849	02/12/2023 14:30	02/12/2023 17:38	8514
850	03/12/2023 08:25	03/12/2023 10:13	9228
851	03/12/2023 17:06	03/12/2023 19:18	8522
852	05/12/2023 03:07	05/12/2023 05:02	8520
853	05/12/2023 16:49	05/12/2023 18:41	9258
854	05/12/2023 20:31	05/12/2023 22:57	9263
855	06/12/2023 17:04	06/12/2023 19:47	9289
856	07/12/2023 00:18	07/12/2023 02:03	9278
857	07/12/2023 08:23	07/12/2023 10:35	9171

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
858	07/12/2023 12:40	07/12/2023 15:03	9242
859	07/12/2023 20:57	07/12/2023 23:04	8526
860	08/12/2023 00:39	08/12/2023 02:46	9270
861	08/12/2023 05:06	08/12/2023 09:16	9231
862	08/12/2023 08:30	08/12/2023 11:43	8557
863	08/12/2023 23:50	09/12/2023 02:27	9223
864	08/12/2023 20:43	08/12/2023 23:03	8530
865	09/12/2023 11:08	09/12/2023 13:17	9275
866	09/12/2023 08:54	09/12/2023 10:36	8559
867	09/12/2023 19:20	09/12/2023 21:42	8546
868	10/12/2023 03:32	10/12/2023 06:03	8543
869	10/12/2023 07:15	10/12/2023 09:37	8532
870	10/12/2023 14:52	10/12/2023 17:18	9269
871	10/12/2023 12:29	10/12/2023 14:47	8541
872	10/12/2023 22:34	11/12/2023 00:51	9232
873	11/12/2023 03:56	11/12/2023 06:28	9263
874	11/12/2023 00:52	11/12/2023 03:30	8477
875	11/12/2023 06:32	11/12/2023 09:48	9280

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
876	11/12/2023 09:53	11/12/2023 12:30	8539
877	11/12/2023 13:19	11/12/2023 17:22	8500
878	11/12/2023 19:38	11/12/2023 21:40	8539
879	11/12/2023 23:30	12/12/2023 01:56	9221
880	12/12/2023 06:14	12/12/2023 09:55	9269
881	12/12/2023 04:03	12/12/2023 05:58	8534
882	12/12/2023 09:58	12/12/2023 13:28	9272
883		12/12/2023 18:03	9228
884	12/12/2023 12:08	12/12/2023 16:00	8546
885	12/12/2023 18:16	12/12/2023 21:52	9219
886	13/12/2023 01:53	13/12/2023 03:52	9280
887	13/12/2023 05:21	13/12/2023 08:23	9225
888	13/12/2023 12:25	13/12/2023 14:36	9286
889		13/12/2023 19:33	9262
890	14/12/2023 07:07	14/12/2023 09:15	9243
891	15/12/2023 09:36	15/12/2023 13:22	9282
892	15/12/2023 13:29	15/12/2023 18:30	9282
893	16/12/2023 08:02	16/12/2023 09:53	9247

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)
894	16/12/2023 10:17	16/12/2023 12:36	9151
895	16/12/2023 15:06	16/12/2023 17:46	9329
896	17/12/2023 03:01	17/12/2023 05:18	9172
897	17/12/2023 19:25	17/12/2023 21:17	9173
898	18/12/2023 23:22	19/12/2023 01:31	9200
899	19/12/2023 02:38	19/12/2023 04:30	9239
900	19/12/2023 13:03	19/12/2023 16:04	9259
901	20/12/2023 03:31	20/12/2023 05:27	9293
902	20/12/2023 05:30	20/12/2023 08:22	9256
903	20/12/2023 12:20	20/12/2023 14:58	9288
904	22/12/2023 06:01	22/12/2023 09:57	9258
905	22/12/2023 16:38	22/12/2023 19:05	9264
906	24/12/2023 07:34	24/12/2023 11:44	9256
907	24/12/2023 13:16	27/12/2023 01:39	9255
908	28/12/2023 02:30	28/12/2023 04:28	9294
909	28/12/2023 14:43	28/12/2023 17:23	9284
910	30/12/2023 09:50	30/12/2023 12:52	9296
911	31/12/2023 10:41	31/12/2023 12:36	9305

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

INDIVIDUAL TRAIN DETAILS

Train Index	Date and Time to Site	Date and Time from Site	Coal Transported (tonnes)

Bold indicates start of TLO arrival/loading

Italics - only half train loaded for power station

DAILY SUMMARY

Start Date	Total Daily Train Movements (Limit = 20)	Tonnes

GLENCORE