AdBri Quarries Sydney Pty Ltd

ABN: 79 002 325 144

2025 Annual Review

for the

Tinda Creek Quarry

Prepared by:

RWCorkery&co

March 2026

ACKNOWLEDGEMENT

R.W. Corkery & Co. acknowledge and pay our respects to the Traditional Custodians of the lands comprising NSW and Australia on which our projects are located. We appreciate the knowledge, advice and involvement of the Elders and extended Aboriginal community that contribute to our Projects and extend our respect to all Aboriginal and Torres Strait Islander peoples.

Adbri Quarries Sydney Pty Ltd

ABN: 79 002 325 144

2025 Annual Review

for the

Tinda Creek Quarry

Period: 1 January 2025 to 31 December 2025

Prepared for:

Adbri Quarries Sydney Pty Ltd
ABN: 79 002 325 144

Telephone: (02) 9647 2866
Email: david.cilento@adbri.com.au

Unit 4 Gateway Business Park
63-79 Parramatta Road
SILVERWATER NSW 2128

Prepared by:

R.W. Corkery & Co. Pty. Limited
Geological & Environmental Consultants
ABN: 31 002 033 712

Telephone: (02) 9985 8511
Email: admin@rwcorkery.com

Sydney | Orange | Newcastle

Sydney
PO Box 1796
CHATSWOOD NSW 2057

Orange
62 Hill Street
ORANGE NSW 2800

Ref No. 980/30 March 2026

RWCorkery&co

Table A
Title Block

Name of operation	Tinda Creek Sand Quarry
Name of operator	Adbri Quarries Sydney Pty Ltd
Development consent / project approval #	SSD_4978
Name of holder of development consent / project approval	Adbri Quarries Sydney Pty Ltd
Mining Lease #	No Mining Lease applicable to site under *Mining Act* (1992).
Name of holder of mining lease	N/A
Water licence #	WAL 24367 / WAL 24381 / WAL 42446
Name of holder of water licence	Adbri Quarries Sydney Pty Ltd
MOP/RMP start date	N/A
MOP/RMP end date	N/A
Annual Review start date	1 January 2025
Annual Review end date	31 December 2025
I, Bryan Grant, certify that to the best of my knowledge this audit report is a true and accurate record of the compliance status of the Tinda Creek Quarry for the period 1 January 2024 to 31 December 2024 and that I am authorised to make this statement of behalf of Adbri Quarries Sydney Pty Ltd. *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); Section 307A, 307B and 307C (false or misleading application/information/documents – maximum penalty 2 years imprisonment or $22,000, or both).*	
Name of authorised reporting officer	Bryan Grant
Title of authorised reporting officer	Quarry Manager
Signature of authorised reporting officer	
Date	31 March 2026

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LIST OF ACRONYMS

AHD	Australian height datum
ANZECC	Australian and New Zealand Environment Conservation Council
ARI	average recurrence interval
AUSRIVAS	Australian River Assessment System
CCC	Community Consultative Committee
DD	deposited dust
DPE	Department of Planning and Environment
DPIE	Department of Planning, Industry and Environment
EIS	Environmental Impact Statement
EMM	EMM Consulting Pty Ltd
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPA	Environment Protection Authority
EPL	Environment Protection License
MAC	Muller Acoustic Consulting Pty Ltd
PM	particulate matter
RCE	Riparian and Channel and Environment Inventory Assessment
RFS	Rural Fire Service
RWC	R.W. Corkery and Co. Pty Limited
SIGNAL	stream invertebrate grade number average level
SSD	State Significant Development
TRH	total recoverable hydrocarbon
TSP	total suspended particulate
WAL	Water Access Licence

1. STATEMENT OF COMPLIANCE

Table 1
Statement of Compliance

Were all conditions of the relevant approval(s) complied with?	Yes / No
DC # SSD_4978	No
EPL # 12007	No

Table 2
Non-compliances

Relevant Approval	Condition #	Condition Description (summary)	Compliance Status	Comment	Where Addressed in Annual Review
SSD_4978	2 (2)	This condition relates to operation of the Quarry in accordance with the conditions of consent.	Administrative	Non-compliance with two conditions of SSD_4978 occurred during the reporting period precluding the achievement of compliance with this condition.	Section 11.3, **Appendix 1**
SSD_4978	2 (15)	The Applicant shall: (a) provide annual quarry production data to DRE using the standard form for that purpose; and (b) include a copy of this data in the Annual Review (see condition 4 of schedule 5).	Administrative	DRE no longer requests this data and the standard form is not available. Therefore, Adbri was not able to comply with this condition during the reporting period.	Section 7.2.3 Section 11.2, **Appendix 1**
EPL 12007	A3.2	This condition relates to activities being carried out in accordance with SSD_4978	Administrative	The non-compliances recorded under SSD_4978 preclude the achievement of compliance with this condition.	Section 11.4

Compliance Status Key

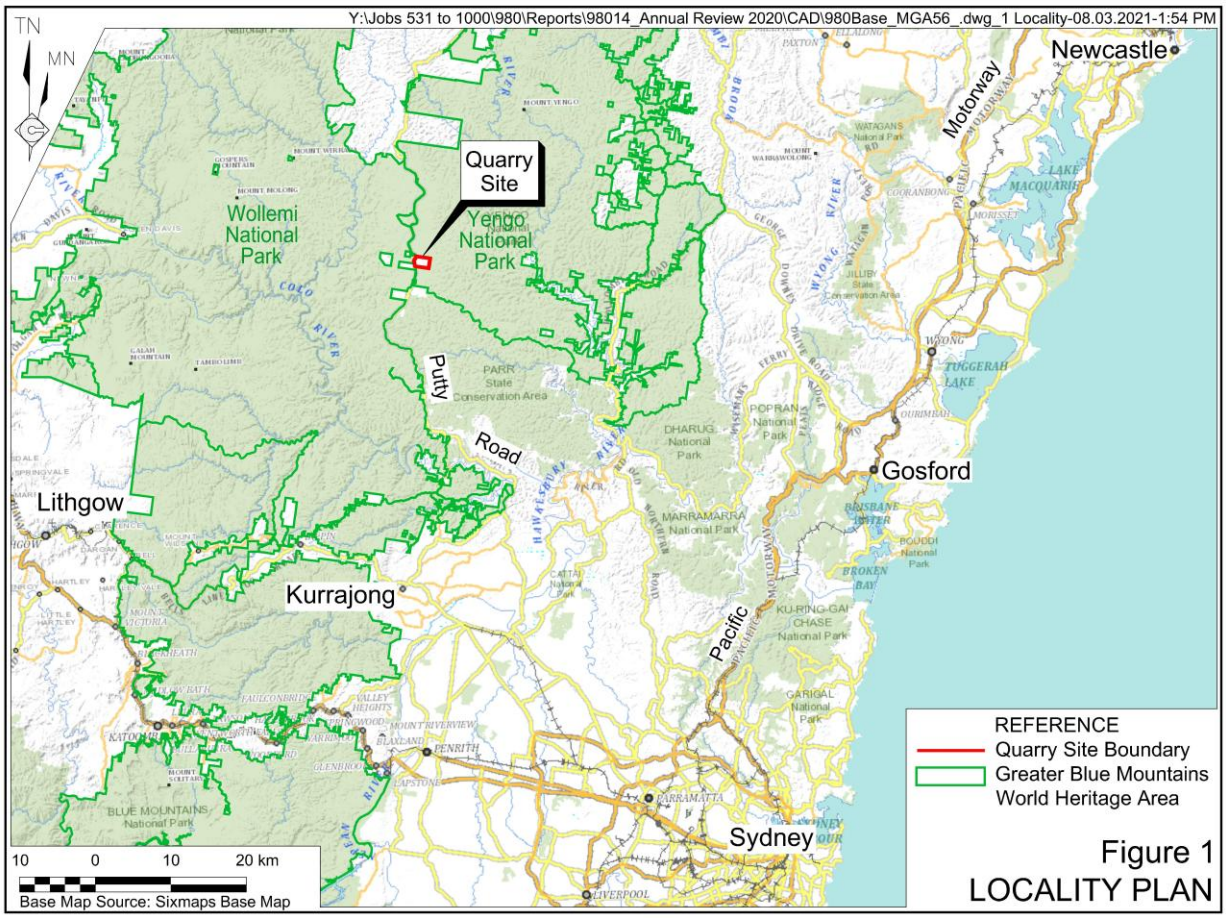
Risk level	***Colour code***	***Description***
High	*Non-compliant*	*Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence.*
Medium	*Non-compliant*	*Non-compliance with:* • *potential for serious environmental consequences, but is unlikely 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*	*Only to be applied where the non-compliance does not result in any risk of environmental harm (e.g. submitting a report to government later than required under approval conditions).*

2. INTRODUCTION

2.1 SCOPE AND FORMAT

This *Annual Review* has been compiled by R.W. Corkery & Co. Pty Limited (RWC) on behalf of Adbri Quarries Sydney Pty Ltd. This report is applicable for the period 1 January 2025 to 31 December 2025 ("the reporting period"). The information presented within this *Annual Review* has been prepared based upon information provided by Adbri.

The Tinda Creek Sand Quarry (the Quarry) is owned and operated by Adbri. The Quarry Site is located approximately 67km north of Windsor along Putty Road, NSW (see **Figure 1**). Development Consent SSD_4978 (SSD_4978) was granted on 10 April 2015 to permit the extraction and despatch of up to 300 000 tonnes of sand from the Quarry each year for the duration of the Project. **Figure 2** displays the layout of the Quarry.



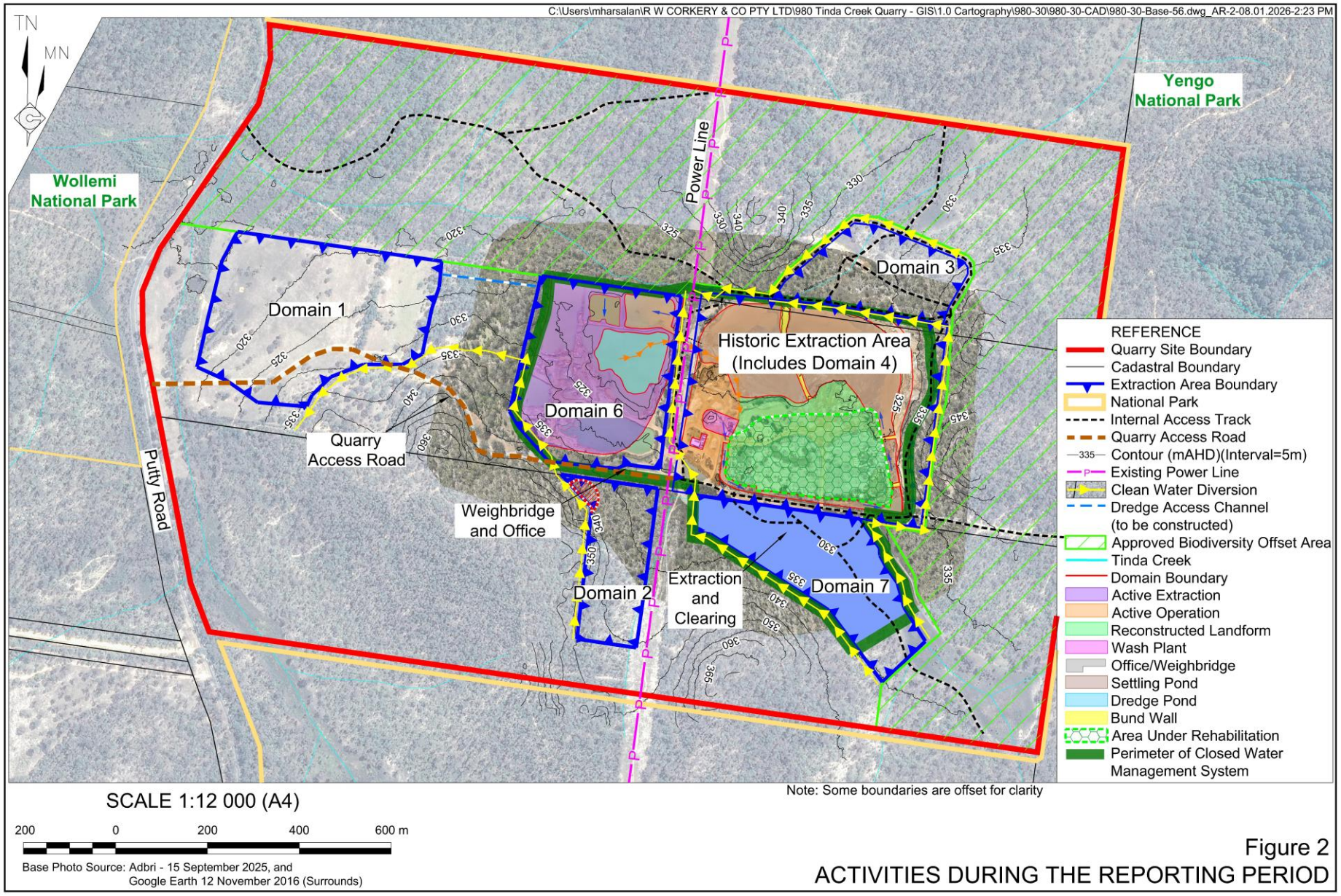


Figure 2
ACTIVITIES DURING THE REPORTING PERIOD

This *Annual Review* has been prepared in accordance with *Condition 5(4)* of Development Consent SSD_4978 to record the activities and environmental monitoring undertaken at the Quarry during the reporting period and to outline the activities and environmental monitoring planned throughout the next reporting period (1 January 2026 to 31 December 2026). *Condition 5(4)* requires the preparation of a report which must:

a) *describe the development (including rehabilitation) that was carried out in the previous calendar year, and the development that is proposed to be carried out over the current calendar year* (Sections 4, 8 and 11);

b) *include a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, which includes a comparison of these results against*:

- *the relevant statutory requirements, limits or performance measures/criteria;*
- *the monitoring results of previous years; and*
- *the relevant prediction in the EIS* (Sections 6, 7 and 9);

c) *identify any non-compliance over the last year, and describes what actions were (or are being) taken to ensure compliance* (Section 10);

d) *identify any trends in the monitoring data over the life of the development* (Section 6 and 7);

e) *identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies* (Section 6 and 7); and

f) *describe what measures will be implemented over the current calendar year to improve the environmental performance of the development* (Sections 6, 7 and 11).

2.2 KEY PERSONNEL CONTACT DETAILS

The key personnel contact names, position and phone numbers are as follows.

Name	Position	24 Hour Contact
Bryan Grant	Quarry Manager	0400 967 633
Matthew Hook	Quarry Operations Manager	0407 107 247

3. APPROVALS

Adbri is required to operate the Tinda Creek Quarry in accordance with the conditions of development consent under the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act), an approval under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and four licences as described in **Table 3**.

Table 3
Tinda Creek Sand Quarry – Approvals and Licences

Consent/Lease/Licence	Issue Date	Expiry Date	Details / Comments
Development Consent SSD_4978	10/04/2015	31/12/2045	Issued by the then Department of Planning and Environment
Approval EPBC 2013/7028	04/10/2016	31/12/2045	Issued by the then Department of Environment and Energy
Environment Protection Licence No 12007	03/03/2017	12 May+	Issued by Environment Protection Authority
Water Access License 24381 40 Units	01/09/2014	Continuing	Nominated Water Supply Works (Excavation) approval number 10WA112523 issued on 01/07/2011. Valid until 08/11/2025
Water Access License 24367 15 Units	01/07/2011	Continuing	Nominated Water Supply Works (Bore) approval number 10WA112531 amended on 11/11/2020. Valid until 13/04/2035*
Water Access License 42446 60 Units	20/06/2019	Continuing	Nominated Water Supply Works (Bore) approval number 10WA112531 amended on 11/11/2020. Valid until 13/04/2035*

+ Anniversary Date

* Works Approval 10WA112531 has a conditional limit of 44ML per annum.

A modification to SSD_4978 was submitted in December 2024 to support site water management during heavy rainfall periods through the occasional controlled discharge of water from the Quarry Site from a nominal discharge location (Modification 1). Modification 1 was exhibited during the reporting period. No other modifications or variations to the development consent or licenses outlined in **Table 3.1** were sought within the reporting period.

SSD_4978 was granted in accordance with Part 4 of the EP&A Act by the Minister for Planning on 10 April 2015 to extract and transport no more than 300 000 tonnes of sand products from the Quarry Site each calendar year until 31 December 2045. Sand extraction in accordance with SSD_4978 commenced in October 2016.

Adbri also operates in accordance with Approval EPBC 2013/7028 granted under the EPBC Act. This approval relates principally to operations that may impact the threatened Koala and small flower Grevillea identified within the Quarry Site. This approval also recognises the international recognition of natural heritage values of the nearby Greater Blue Mountains Area. A compliance review of the conditions of EPBC 2013/7028 is completed annually and placed on the Adbri website. During the reporting period, Adbri remained compliant with the conditions of

EPBC 2013/7028, excluding conditions relating to the biodiversity offset area which mirror the NSW approval and are not yet satisfied.

Adbri also operates the Tinda Creek Quarry in accordance with Environment Protection Licence (EPL) 12007. This licence incorporates standard conditions for extractive industries and includes limits for noise emissions from the Quarry Site.

Water Access Licence (WAL) 24381 (40 units), WAL 42446 (60 units) and WAL 24367 (15 units) have been issued to represent the allocation of water from the Sydney Basin North Groundwater Source that may be used by Adbri under the relevant works approval(s). Water within this source is managed through the water sharing plan for the *Greater Metropolitan Region Groundwater Sources 2011*. Two Water Supply Works approvals have been issued to Adbri to permit extraction of groundwater associated with the WALs. The WALs and licences permit extraction of groundwater in accordance with the conditions provided in the licences.

WAL 24381 and the nominated works approval 10WA112523 permit the use of water accessed from the groundwater setting through extraction activities and principally accounts for evaporation from exposed faces. Anecdotally, Quarry personnel have observed very little seepage into operating domains.

WAL 42446 and WAL 24367 and the nominated works approval 10WA112531 permit the use of groundwater sourced via a production bore from the underlying aquifer. This water is used to top up the dredge pond to ensure the dredge can operate efficiently. Water Supply Works (Bore) approval number 10WA112531 has a conditional limit of 44ML per annum. This limit has been imposed to account for potential impacts to the groundwater setting including groundwater dependent ecosystems in the vicinity of the existing production bore. During the reporting period, WaterNSW approved an application for the conversion of a test bore to a production bore for take of the remaining 6ML of groundwater entitlements.

4. OPERATIONS SUMMARY

4.1 INTRODUCTION

The following subsections provide a summary of activities undertaken during the reporting period. Activities were generally consistent with those described in previous environmental management reporting. **Plates 1** to **6** display a series of photographs of the Tinda Creek Quarry taken during March 2026 that are representative of existing conditions at the Quarry.

4.2 CLOSED WATER MANAGEMENT SYSTEM

Condition 12 of Schedule 3 of SSD_4978 requires that the catchment of the closed water system must not exceed 40ha at any one time. The closed water management system includes the area within the clean water diversions (**Figure 2**).

During the reporting period the closed water management system covered an area of approximately 38.4ha, a slight increase from the 2024 reporting period (37.1ha) due to the extension of operations within Domain 7.

4.3 EXTRACTION OPERATIONS

Extraction and processing during the reporting period continued within Domain 7 (see **Figure 2**). The total volume of sand produced was 159,775t which is within the limits specified in Condition 6 of Schedule 2 of SSD_4978. Sand was extracted utilising two methods. Where sand was being extracted directly from the floor of the dredge pond within Domain 7, a cutter-suction dredge floating on the dredge pond was used (refer **Plate 1**). Where Domain 7 was being extended, sand was extracted via excavator then loaded onto a single articulated dump truck and hauled to the dredge where the material was tipped into a dump pocket in front of the dredge (refer **Plate 1**).

The dredging process involves the removal of water, sand, silt and clay in the form of a slurry which is then pumped to the processing area, further washed and then the clean sand is stockpiled prior to transportation (refer **Plate 2** and **Plate 3**). Sand transported from Quarry site during the reporting period and forecast for the 2026 reporting period is displayed in **Table 4**.

Table 4
Sand Transportation from Site

Material	Approved annual limit (SSD_4978)	2019 reporting period	2020 reporting period	2021 reporting period	2022 reporting period	2023 reporting period	2024 reporting period	2025 reporting period	2025 reporting period (approximate forecast)
Sand	300,000 t	46,942t	93,488t	96,703t	103,180t	158,421t	180,573t	158,506t	174,000t
Source: Adbri									

During the reporting period, the reported sand transported from site (158,506t) was slightly less than the volume of sand produced (159,775t) which is below the 300,00tpa limit approved within the development consent.

C:\Users\jackie\R W CORKERY & CO PTY LTD\980 Tinda Creek Quarry - GIS\1.0 Cartography\980-30\980-30-CAD\980-30-Base-56.dwg_Plates-24.03.2026-11:43 AM

Plate 1: Dredge pond in Domain 7

Plate 2: Sand loader and generator

Plate 3: Sand loader and stockpile

During the reporting period (and for all historic operations) extraction operations did not exceed the limit of 15m below the natural ground surface described in *Condition 2(6)* of SSD_4978. Adbri has established a site-based standard procedure for survey and confirmation of the depth of extraction. The site-based procedure is undertaken on a monthly basis.

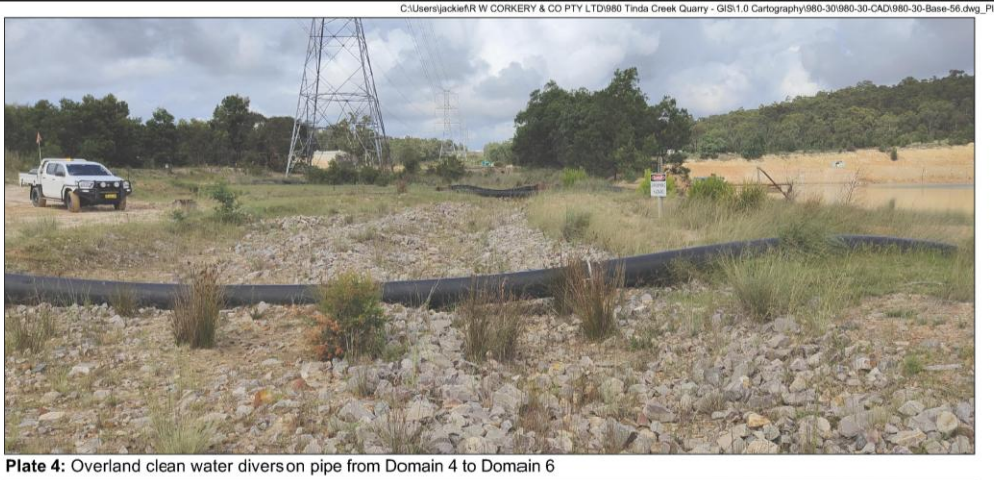


Plate 4: Overland clean water diversion pipe from Domain 4 to Domain 6

Plate 5: Clean Water diversion drain

Plate 6: Native vegetation rehabilitation of Domain 4

4.4 HOURS OF OPERATION

The permissible operating hours as set out in *Condition 3(3)* of SSD_4978 were adhered to throughout the reporting period. Extended hours for major supply contracts were not required during the reporting period.

4.5 TRANSPORT LEVELS

SSD_4978 specifies that haulage activities at Tinda Creek Quarry should not exceed 34 trucks per day, averaged over a calendar month. A total of 4,013 laden loads were despatched from the Quarry during the reporting period. A summary of the vehicle movements at Tinda Creek Quarry is provided from the Adbri website and are summarised in **Table 5**. There were no recorded exceedances of average daily vehicle movements (based on a calendar month averaging period) within the reporting period.

Table 5
Monthly Laden Truck Movements at Tinda Creek Quarry

Month	Laden Truck Loads	Mean Daily Laden Truck Loads[1]
January	258	8.3
February	402	14.4
March	376	12.1
April	350	11.7
May	311	10.0
June	425	14.2
July	397	12.8
August	273	8.8
September	370	12.3
October	348	11.2
November	219	8.1
December	284	9.2
Annual Total	**4,013**	**-**
Annual Daily Average	**-**	**11.1**
Note 1: Daily despatch averaged over the calendar month is presented, consistent with the requirements of Condition 7 of Schedule 2 of SSD_4978.		
Source: Adbri		

4.6 CONSTRUCTION ACTIVITIES

Construction activities undertaken during the reporting period include installation of a solar system and batteries for powering of the office and workshop.

4.7 IMPORTATION OF VENM/ENM

No VENM/ENM was imported onto the site during this reporting period.

4.8 WASTE MANAGEMENT

Waste management practices continued in accordance with the provisions of the *Protection of the Environment Operations* (Waste) *Regulation 2014* throughout the reporting period. Adbri has engaged licensed waste contractors to recycle and dispose of waste throughout the reporting period.

4.9 NEXT REPORTING PERIOD

Sand extraction and processing from Domain 7 will continue in the 2026 reporting period (refer **Plate 1**), Extraction is unlikely to proceed into Domains 1, 2 or 3 in 2026.

Rehabilitation within areas of the former Domain 4 will throughout the next reporting period (refer **Plate 6**). Weed management is proposed to continue and topsoil removed from Domain 7 will be applied to the surface. Once the existing weeds are under control, direct seeding of the area will be undertaken in accordance with the approved Landscape Management Plan.

Processing activities will continue, consistent with historic processing activities. Average daily laden truck levels will remain within approved limits.

5. ACTIONS REQUIRED FROM PREVIOUS ANNUAL REVIEW

No actions were required as a result of the Department's review of the Annual Review 2025.

6. ENVIRONMENTAL PERFORMANCE

6.1 METEOROLOGICAL MONITORING

Adbri installed a meteorological station in July 2016 in accordance with the requirements of *Condition 3(10)* of SSD_4978. The meteorological station complies with the requirements in the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales* guideline. The location of the meteorological station is shown on **Figure 3**.

6.1.1 Rainfall

A summary of the rainfall data for the reporting period is provided in **Table 6**. A total of 1,089mm of rain was recorded from 1 January 2025 to 31 December 2025. Total rainfall during 2025 was 453mm more than in 2024. Rainfall varied between individual months, with the highest rainfall occurring throughout January, March, July and August.

Table 6
Summary of Rainfall Records Since 2007

Rainfall (mm)																				
	Year																			
Month	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Mean**
Jan	51	96	29	49	67	133	138	8	163	272	36*	26	30	65	62	87	76	101	110	87
Feb	152	147	138	120	47	179	202	64	47	0	34*	58	25	208	81	99	70	100	19	98
Mar	81	43	30	86	97	145	103	135	97	0	208	64	87	134	206	753	130	26	126	134
Apr	62	82	117	26	60	64	64	61	286	0	22^	13	12	58	30	69	68	141	37	69
May	29	11	57	60	96	-	31	0	57	0	17	6	4	20	40	43	4	72	140	38
Jun	210	94	40	43	86	29	85	29	21	126	54	33	22	13	30	6	18	71	55	56
Jul	13	25	18	39	26	27	19	13	34	55	3	5	12	115	26	221	13	18	126	42
Aug	107	41	4	14	90	4	11	75	27	37	12	10	26	51	54	51	30	13	345	53
Sep	19	59	21	18	69	28	32	29	27	46	0	20	52	38	14	93	7	16	42	33
Oct	22	94	86	85	66	18	27	48	34	40	62	89	20	67	29	168	22	36	18	54
Nov	158	75	32	128	159	71	107	17	141	72	36	13	24	34	169	52	74	38	31	75
Dec	76	71	104	121	73	19	27	150	116	69	65	3	0	186	30	21	70	4	40	65
Totals	978	834	673	785	934	715	843	628	1047	717	548	341	315	988	771	1664	583	636	1089	794

* Estimated from Putty Tea RMS as Quarry weather station out of service.

^ Data downloaded between 31/3/2017 – 9/4/2017 due to weather station fault

6.2 AIR QUALITY

6.2.1 Introduction

Air quality monitoring is required to be undertaken in accordance with the approved *Air Quality Management Plan*.

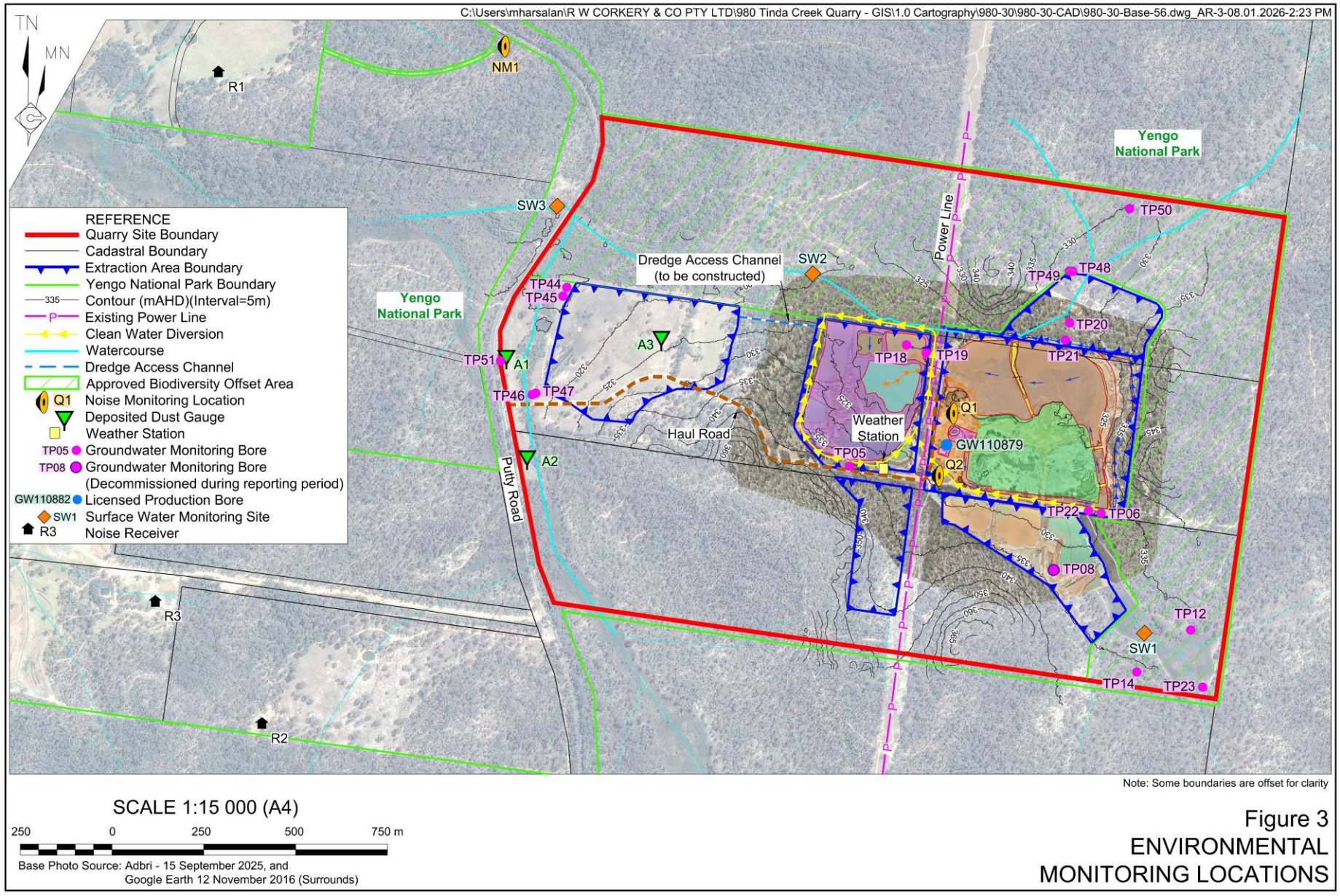


Figure 3
ENVIRONMENTAL MONITORING LOCATIONS

6.2.2 Air Quality Criteria

The air quality criteria for the Quarry are provided in *Condition 3(7)* of SSD_4978 and are summarised in **Table 7**. Deposited dust (DD) is currently the only air quality parameter that is required to be monitored as specified in the approved *Air Quality Management Plan.* The level of monitoring is considered appropriate as all extraction and processing is essentially a 'wet' process and generates limited dust. Deposited dust levels are used as an indicator of the overall air quality performance of operations.

Table 7
Air Quality Criteria

Pollutant	Criterion	Averaging Period
Total suspended particulates (TSP)	90µg/m^3	Annual mean
Particulate matter <10µm (PM_{10}) <10µm (PM_{10})	30µg/m^3	Annual mean
Particulate matter <10µm (PM_{10})	50µg/m^3	24-hour average
Deposited dust	4g/m^2/month*	Annual mean

* or 2g/m^2/month above the annual background level

Nb: Particulate matter (PM10) data is required to be monitored as specified in the approved Air Quality Management Plan

6.2.3 Air Quality Monitoring Results

Monthly deposited dust monitoring was undertaken throughout the reporting period. The location of dust monitoring gauges DG1, DG2 and DG3 are shown on **Figure 3**. **Figure 4** and **Table 8** present the results of the deposited dust monitoring program over the reporting period. It is noted that the approved *Air Quality Management Plan* requires deposited dust monitoring at location DG1 only. Monitoring at locations DG2 and DG3 is undertaken on a voluntary basis and therefore is not subject to compliance under SSD 4978.

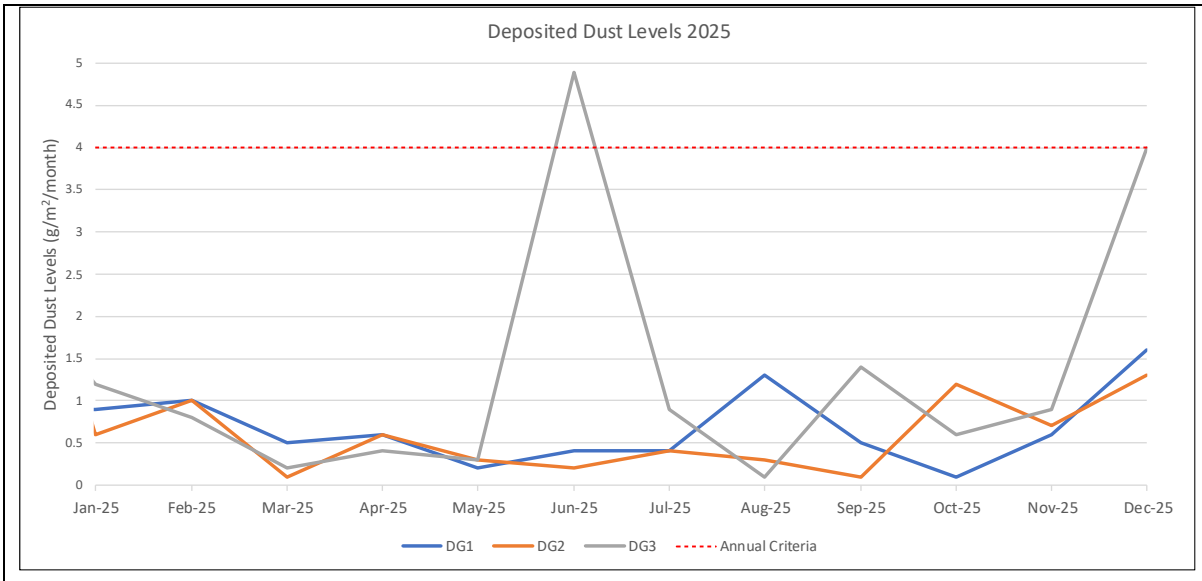


Figure 4
DEPOSITED DUST LEVELS 2025

Table 8
Measured Performance – Deposited Dust

	Deposited Dust Level[1]			
Date	**DG1**	**DG2**	**DG3**	**Criterion**
January	0.9	0.6	1.2	4
February	1.0	1.0	0.8	4
March	0.5	0.1	0.2	4
April	0.6	0.6	0.4	4
May	0.2	0.3	0.3	4
June	0.4	0.2	4.9	4
July	0.4	0.4	0.9	4
August	1.3	0.3	0.1	4
September	0.5	0.1	1.4	4
October	0.1	1.2	0.6	4
November	0.6	0.7	0.9	4
December	1.6	1.3	4.0	4
Annual Average	0.7	0.6	1.3	4
Note 1: Units – g/m^2/month				

6.2.4 Analysis of Results

Deposited dust levels were all well below the trigger value at each dust gauge throughout the reporting period with the exception of levels recorded for DG3 in June and December. Additional testing was undertaken in June to investigate the cause of the exceedance. The results indicated contamination predominantly from dirt (75%), with minor contributions from coal (5%), insects (5%) and vegetation (5%).

The December exceedance could not be further analysed as the laboratory destroyed the sample prior to additional testing. It is hypothesised that this exceedance was associated with vegetation slashing activities in the surrounding paddock. Overall, the annual average deposited dust level is below the criteria level for the reporting period across all sites.

It is noted that the EIS does not include a quantitative assessment of potential air quality impacts as the operation is essentially a 'wet' process and significant air quality impacts were not anticipated.

6.3 OPERATIONAL NOISE

6.3.1 Introduction

Noise monitoring is required to be undertaken in accordance with the conditions listed in the development consent, EPL and approved *Noise Management Plan*. The following subsections provide a brief summary of noise criteria that apply at the Quarry, the results of noise monitoring activities and a discussion of the results recorded during the reporting period.

Following discussions with DPE in January 2017, it was agreed that additional monitoring would be undertaken to provide an estimate of the contribution of the Quarry to noise levels at residential locations. The results of this monitoring for 2025 are presented in Section 6.3.5 and in **Appendix 2**.

6.3.2 Noise Criteria

Condition 3(4) of SSD_4978 is relevant to noise compliance assessment and sets the criteria for noise generated by the development at any residence on privately-owned land as outlined in **Table 9.**

Table 9
Noise Monitoring Criteria SSD_4978 (dB(A))

Receiver	Day / Evening	Night	
	LAeq (15 min)	LAeq (15min)	LA1 (max)
All receivers	35	35	45

Condition L3 of EPL 12007 is relevant to the noise compliance assessment and stipulates the noise criteria at any monitoring point established under the EPL as outlined in **Table 10**.

Table 10
Noise Monitoring Criteria EPL 12007 (dB(A)) – All Receivers

Time Period	Measurement Parameter	Noise level dB(A)
All hours	LAeq (15 minute)	35
Night	Lmax OR LA1, 1min	45

6.3.3 Noise Monitoring Results

Attended noise monitoring was undertaken by Muller Acoustic Consulting Pty Ltd (MAC) on 10 April 2025 in accordance with the approved *Noise Management Plan*. A report prepared by MAC is included as **Appendix 2**.

A summary of the attended noise monitoring results at NM1 is provided in **Table 11**. In all instances the Quarry contribution to noise levels was <35dB$_{LAeq\ (15\ minute)}$.

Table 11
Summary of Attended Noise Monitoring at Receiver NM1

Page 1 of 2

Time (hrs)	Measure (dBA re 20µPa)			Descriptor and Noise Contribution (dBA)
	LAmax	LAeq	LA90	
Morning Shoulder (6:00am)	69	46	20	Traffic 20-69 Birds 20-44 Site Inaudible
Morning Shoulder (6:15am)	70	49	16	Traffic 20-70 Birds 20-58 Site Inaudible

Table 11 (Cont'd)
Summary of Attended Noise Monitoring at Receiver NM1

Time (hrs)	Measure (dBA re 20µPa)			Descriptor and Noise Contribution (dBA)
	LAmax	LAeq	LA90	
Morning Shoulder (6:30am)	63	42	17	Traffic 20-63 Birds 20-58 Site Inaudible
Morning Shoulder (6:45am)	64	43	16	Traffic 20-64 Birds 20-49 Site Inaudible
Tinda Creek Quarry Contribution				<25
Day (7:20am)	62	43	21	Traffic 20-62 Birds 20-48 Site Inaudible
Day (7:35am)	61	41	16	Traffic 20-56 Birds 20-61 Aircraft 25-43 Site Inaudible
Day (7:50am)	67	43	17	Traffic 25-67 Birds 20-46 Road Works 20-28 Site Inaudible
Day (8:05am)	61	41	18	Traffic 20-61 Birds 20-48 Road Works 20-25 Aircraft 25-40 Site Inaudible
Tinda Creek Quarry Contribution				<25

6.3.4 Attended Noise Measurement Compliance Assessment

The compliance assessment summary for R1 (see **Figure 3**) is presented in **Table 12** for day and morning shoulder assessment periods and compares operational contributions against the relevant criteria.

Table 12
Day and Morning Shoulder Noise Compliance Assessment at R1

Period	Quarry Noise Contribution $L_{Aeq(15min)}$	Quarry Noise Criteria $L_{Aeq(15min)}$	Compliant
Day	<25	35	Yes
Morning Shoulder	<25	35	Yes

The overall contribution of the Quarry to ambient noise was found to be less than 25dB(A) at the time of the monitoring which is within the limits set by both SSD_4978 and EPL 12007. These results indicate that the Quarry is complying with all relevant noise assessment criteria.

The results of the noise monitoring program are also comparable with historic noise monitoring data from Tinda Creek Quarry. Attended noise monitoring conducted from 2016 to 2025 estimated Quarry noise contribution to vary between be <27dB(A) and <20bB(A) in each reporting period. This indicates that current noise mitigation measures are effective in restricting noise to an acceptable level.

6.3.5 Quarry Noise Predictions at Residences

On 20 January 2017, the DPE requested that Adbri undertake additional noise monitoring to record existing noise levels (sound power levels) that were being produced at the Quarry and undertake an assessment to predict the noise impact of the Quarry at nearby privately-owned residences. The request was only made for the year 2017, however Adbri has taken on the initiative to continue to assess the noise levels at surrounding residences that could potentially be impacted by noise generated from Quarry operations.

Sound power levels were measured at locations Q1 and Q2 (see **Figure 3**) with the results of this assessment presented in **Appendix 2**. In summary, it was concluded that Quarry noise at R1, R2, and R3 after taking into consideration the attenuation caused from distance and topography is 21dB(A), 20dB(A), and 21dB(A) at the respective residences. These results all fall well below the criteria nominated by both the SSD_4978 and the EPL12007 of 35dB(A). It is noted that the noise levels are also well below the predicted noise levels modelled during the preparation of the EIS which ranged from <30dB(A) to 35dB(A) at the nearest receivers.

6.4 ABORIGINAL HERITAGE

No actions or impacts related to Aboriginal heritage occurred during the reporting period.

6.5 NON-ABORIGINAL HERITAGE

No actions or impacts related to non-Aboriginal heritage occurred during the reporting period.

7. WATER MANAGEMENT

7.1 GROUNDWATER

7.1.1 Groundwater Quality Monitoring

Groundwater quality monitoring was conducted by Adbri in accordance with the approved *Water Management Plan*. Groundwater quality monitoring was undertaken at six-month intervals over the reporting period at the locations shown on **Figure 3**. The groundwater quality assessment trigger values recorded in the approved *Water Management Plan* are presented in **Table 13**.

Table 13
Groundwater Quality Trigger Criteria

Analyte	Lower Trigger Value	Upper Trigger Value
pH	<4.5	>7.0
Conductivity (µS/cm)	N/A	900
Nitrate (mg/L)	N/A	7.5
Ammonia (mg/L)	N/A	0.2
TRH (C6-C9) (mg/L)	N/A	5.0
TRH (C10-C14) (mg/L)	N/A	5.0
TRH (C15-C28) (mg/L)	N/A	5.0
TRH (C29-C36) (mg/L)	N/A	5.0
Source: Water Management Plan (RWC, 2019) – Table 18		

The results of the groundwater quality monitoring data are outlined in **Tables 14** and **15**. All results for Total Recoverable Hydrocarbon (TRH) were below the limit of recording and it is assumed there was none present. TRH is not discussed further in this review.

Table 14
Water Monitoring Results – 26 March 2025

Page 1 of 2

Bore Hole	pH	EC (µS/cm)	Nitrate (mg/L)	Ammonia (mg/L)
TP05	4.9	260	<0.1	<0.1
TP06	6.1	190	<0.1	0.1
TP08*	-	-	-	-
TP12	5.2	75	0.6	<0.1
TP14	5.4	65	<0.1	<0.1
TP20	5.4	50	2.7	<0.1
TP21	5.3	50	2.7	<0.1
TP22^	-	-	-	-
TP23	5.1	85	<0.1	<0.1
TP44	5.5	200	0.9	<0.1
TP45	5.6	250	4.7	1
TP46	6.8	100	1.6	<0.1
TP47	5.6	90	<0.1	<0.1
TP48	6.1	130	<0.1	0.6

Table 14 (Cont'd)
Water Monitoring Results – 26 March 2025

Bore Hole	pH	EC (µS/cm)	Nitrate (mg/L)	Ammonia (mg/L)
TP49	5.1	220	0.5	<0.1
TP50	5.0	330	0.3	<0.1
TP51	6.8	100	1.6	<0.1

Red text indicates exceeded trigger levels
* Decommissioned prior to monitoring event.
^ Monitoring bore damaged at time of sampling event.

Table 15
Water Monitoring Results – 27 October 2025

Bore Hole	pH	EC (µS/cm)	Nitrate (mg/L)	Ammonia (mg/L)
TP05	5.3	280	0.2	<0.1
TP06	5.7	95	<0.1	<0.1
TP08*	-	-	-	-
TP12	5.3	70	0.2	<0.1
TP14	5.3	60	<0.1	<0.1
TP20	5.4	55	3.1	<0.1
TP21	5.5	55	2.1	<0.1
TP22*	-	-	-	-
TP23	5.2	85	<0.1	<0.1
TP44^	-	-	-	-
TP45	5.3	230	0.2	<0.1
TP46	6.7	95	0.9	<0.1
TP47	5.6	90	<0.1	<0.1
TP48	6.0	150	<0.1	0.2
TP49	5.9	240	<0.1	0.1
TP50	5.0	290	0.2	<0.1
TP51	5.7	95	<0.1	<0.1

Red text indicates exceeded trigger levels
* Decommissioned prior to monitoring event.
^ Monitoring bore damaged at time of sampling event.

7.1.2 Analysis of Groundwater Quality Results

General observations from the groundwater quality monitoring data are as follows:

- Two exceedances of the relevant criteria for ammonia were observed at TP45 and TP48 during the March monitoring event within the reporting period.
- The slightly acidic pH is consistent with historic data and likely to represent the breakdown of plant material.

- The outcomes for EC are consistent with historic data and within the assumed trigger levels.
- It is highly unlikely that quarrying activities are impacting groundwater quality.
- pH, conductivity, nitrate and ammonia results are consistent with groundwater monitoring data obtained during previous monitoring campaigns. No distinct temporal trends are evident within the measured parameters.

The EIS noted that the groundwater tended to be slightly acidic due to the generation of organic acid from the breakdown of plant material (min pH = 4.5, max pH = 6.6). The EIS further noted that electrical conductivity was generally very low (min µS/cm = 50, max µS/cm = 310). It should be noted that levels of ammonia reached the upper trigger measure of 0.2mg/L in TP48 during both monitoring events of the reporting period and TP45 during the first monitoring event (**Table 14**). As these bores are located outside of the extraction boundary, these levels are unlikely to be attributed to quarry operations and are likely a result of naturally occurring ammonia in the groundwater system. Ammonia levels will be monitored on an ongoing basis to ensure levels do not exceed the upper trigger limit. Additionally, the groundwater quality results are generally consistent with those presented in the EIS and it is unlikely that extractive operations are impacting on the quality of the groundwater. As a result, notification to DPHI on the exceedance of ammonia trigger levels was not deemed necessary.

Bores TP18, TP19, TP08 and TP22 were removed as a part of Domain 6 and Domain 7 development. Monitoring bores TP44, 45, 46, 47, 48, 49, 50 and 51 were installed in 2017.

7.1.3 Groundwater Level Monitoring

Groundwater levels at the monitoring bores were monitored monthly in accordance with the approved *Water Management Plan*.

Groundwater levels in the monitoring bores are used to assess the impacts of Quarry operations on the surrounding aquifers. This analysis involves assessing the risk of Quarry operations impacting on the Greater Blue Mountains Heritage Area. No significant impacts were anticipated to groundwater flow as a result of quarrying activities.

Table 16 presents the drilled depth and groundwater investigation trigger level for each bore.

Groundwater level monitoring has been undertaken at 11 groundwater bores since October 2010 (bores TP05, TP06, TP08, TP12, TP14, TP18, TP19, TP20, TP21, TP22, TP23). In March 2018, monitoring also commenced at a further five bores located to the west of the Quarry (TP44, TP45, TP46, TP47, and TP51) and three bores in the vicinity of Domain 7 (TP49, TP48 and TP50). The locations of the monitoring bores are shown on **Figure 3**.

The results of the 2025 groundwater level monitoring are outlined in **Table 17** and displayed in **Figure 5**. The historical groundwater levels are presented in **Figure 6** and **Figure 7**. Monitoring results are displayed for both the original monitoring bores and the bores constructed in 2018.

Table 16
Groundwater Investigation Trigger Levels

Bore	Drilled Depth (m)	Trigger Level mBGL
TP22	12	4.43
TP06	18	5.91
TP12	15	6.67
TP23	15	6.77
TP14	20	9.08
TP08	18	6.76
TP05	15	8.75
TP18*	18	3.30
TP19*	12	4.79
TP20	12	5.84
TP21	12	5.84
TP44	18.5	3.11
TP45	9	3.36
TP46	20	1.71
TP47	12	0.69
TP48	18	5.85
TP49	10	5.80
TP50	20	7.67
TP51	16	2.49
* Bore no longer accessible		
Source: Water Management Plan (RWC, 2019) - Table 17		

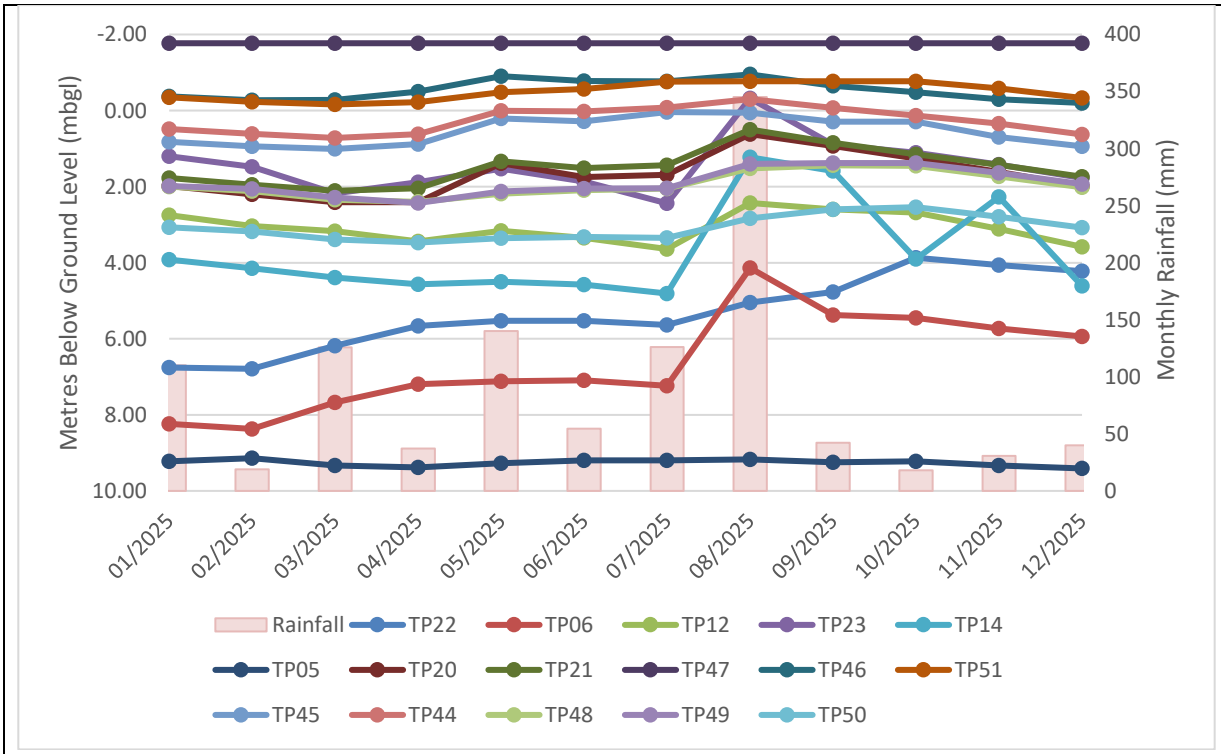


Figure 5
2025 GROUNDWATER LEVEL MONITORING RESULTS

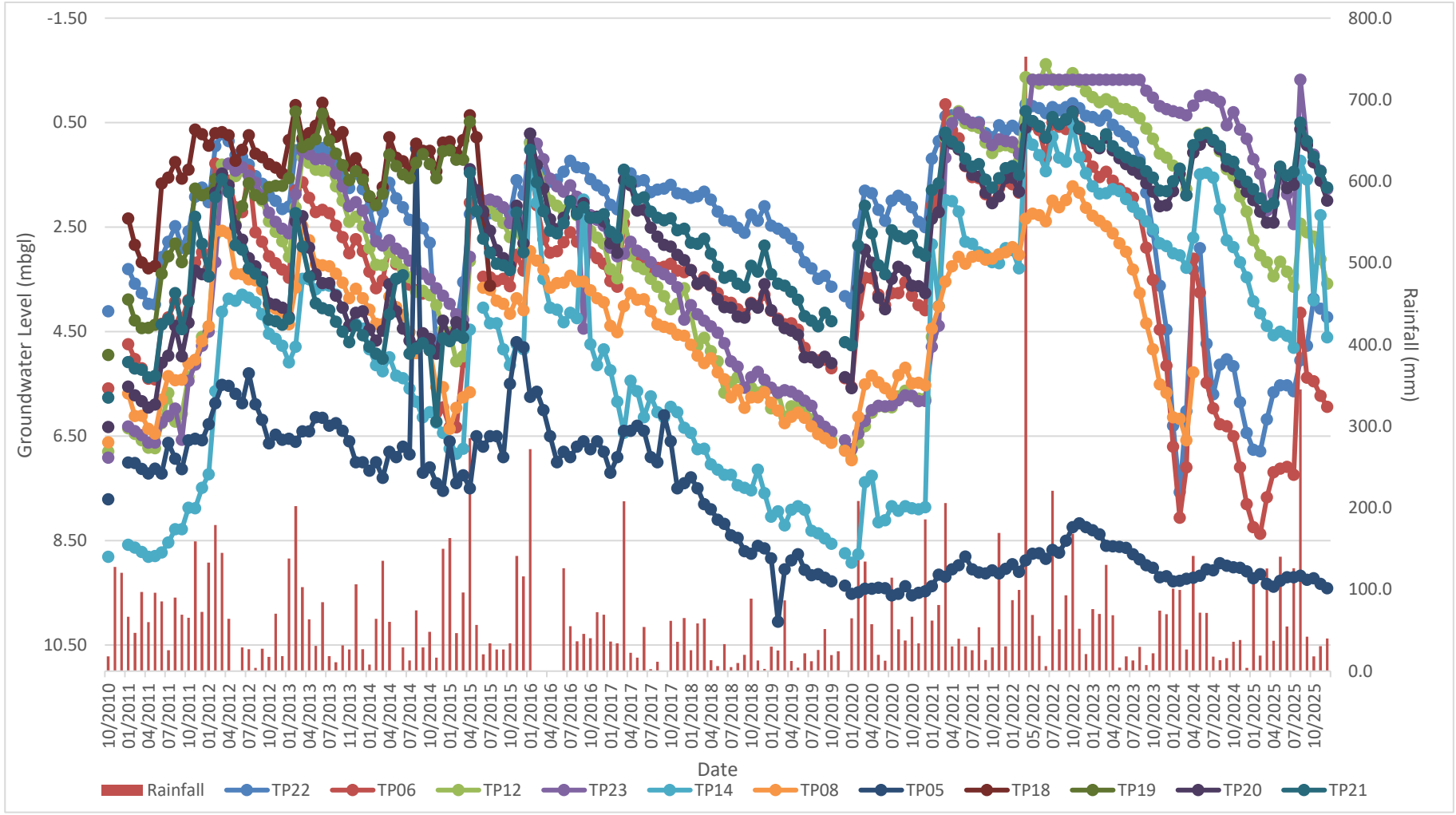


Figure 6
HYDROGRAPHY FOR SITE BORES WITH MONTHLY RAINFALL (HISTORIC BORES)

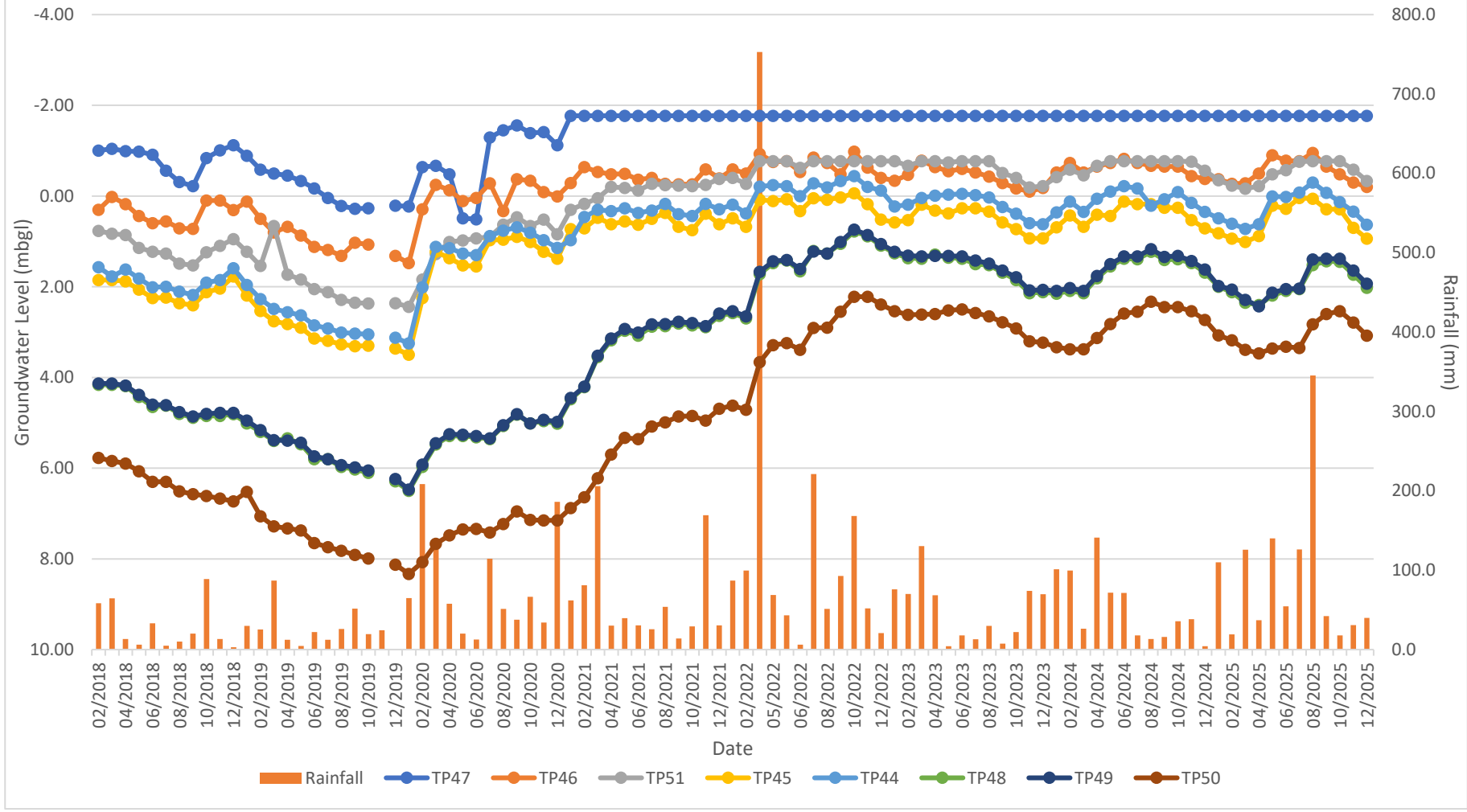


Figure 7
HYDROGRAPHY FOR SITE BORES WITH MONTHLY RAINFALL (2018 BORES)

Table 17
Results of 2025 Groundwater Levels Monitoring Program

Bore Hole	Trigger	Month											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		Depth to water (mbgs)											
TP22	**4.43**	6.76	6.79	6.18	5.66	5.53	5.53	5.64	5.05	4.77	3.87	4.06	4.22
TP06	**5.91**	8.24	8.37	7.67	7.19	7.12	7.09	7.24	4.14	5.38	5.45	5.73	5.94
TP12	**6.67**	2.75	3.04	3.17	3.44	3.16	3.35	3.64	2.43	2.60	2.68	3.11	3.58
TP23	**6.77**	1.20	1.48	2.18	1.88	1.53	1.87	2.44	-0.32	0.90	1.11	1.42	1.77
TP14	**9.08**	3.92	4.15	4.39	4.57	4.50	4.58	4.81	1.23	1.59	3.90	2.27	4.61
TP08*	**6.76**												
TP05	**8.75**	9.22	9.14	9.33	9.38	9.27	9.20	9.20	9.17	9.25	9.22	9.33	9.41
TP20	**5.84**	1.98	2.20	2.41	2.41	1.39	1.75	1.69	0.62	0.93	1.26	1.61	1.99
TP21	**5.84**	1.77	1.95	2.11	2.04	1.34	1.51	1.44	0.5	0.85	1.15	1.43	1.74
TP47	**0.69**	-1.77	-1.77	-1.77	-1.77	-1.77	-1.77	-1.77	-1.77	-1.77	-1.77	-1.77	-1.77
TP46	**1.71**	-0.37	-0.27	-0.28	-0.5	-0.9	-0.78	-0.77	-0.95	-0.65	-0.48	-0.3	-0.2
TP51	**2.49**	-0.35	-0.23	-0.16	-0.22	-0.48	-0.57	-0.76	-0.77	-0.77	-0.77	-0.58	-0.33
TP45	**3.36**	0.82	0.94	1.01	0.88	0.21	0.28	0.04	0.06	0.29	0.29	0.7	0.94
TP44	**3.11**	0.49	0.61	0.72	0.62	0.01	0.02	-0.08	-0.3	-0.07	0.13	0.34	0.63
TP48	**5.85**	2.00	2.12	2.35	2.4	2.19	2.09	2.05	1.52	1.44	1.45	1.73	2.02
TP49	**5.80**	1.98	2.06	2.29	2.43	2.13	2.05	2.04	1.4	1.38	1.38	1.64	1.93
TP50	**7.67**	3.07	3.18	3.39	3.47	3.36	3.32	3.35	2.83	2.6	2.54	2.79	3.08

Red text indicates exceeded trigger levels

*Decommissioned May 2024 due to active extraction in area

7.1.4 Analysis of Groundwater Level Results

Figure 6 and **Figure 7** indicate that groundwater levels at the monitoring bores closely mirror the rainfall environment. This is particularly evident in the current reporting period where an increase in groundwater level was experienced at all bores, with the exception of TP05 and TP47, following increased rainfall in August (**Figure 5**). This change was particularly evident for TP06, TP14 and TP23. The more significant increase observed at TP06 is likely attributed to elevated water levels in Domain 7 contributing to groundwater recharge. Aside from the August event, groundwater levels recorded across the Quarry Site remained relatively consistent over the reporting period, with the exception of TP14, which experienced fluctuating groundwater levels from August through to December (**Figure 5**).

Groundwater levels in monitoring bore TP05 were below the trigger levels for the entirety of the reporting period. Groundwater levels at this bore have consistently been below the trigger levels established in the Water Management Plan for the past four years. Historically, TP05, which is close to the active Domain 6, has not been as responsive to recharge as other bores. It is indicated that this trigger level may no longer be appropriate for this bore.

Groundwater levels in monitoring bore TP22 and TP06 also experienced periods of falling below the trigger levels. This is consistent with the results of the previous reporting period.

Quarterly investigations by a hydrogeologist were conducted during the 2025 reporting period to ensure extraction activities did not have an adverse impact on groundwater quality, or the overall health of the surrounding vegetation that may rely on the groundwater reserves. The outcomes of the investigations further describe that the instances of falling below the trigger levels occurring at TP05, TP06 and TP22 are likely associated with the extraction occurring in Domain 7 or past extraction that has caused groundwater levels to decrease. However, further investigations are not required for these bores as the Groundwater Impact Assessment for the project predicted groundwater drawdown and recovery within 100m from the extraction area, where these bores are located. Further, groundwater levels have not fallen to levels where impacts to surrounding vegetation may be likely.

Several bores continue to indicate artesian conditions in the aquifer resulting in water levels above ground level in the monitored bores (within the casing). This is considered to likely represent confined aquifer conditions with subsequent pressure forcing water into the bore and then stabilising within the casing. Monitoring bores TP23, TP46, TP47 and TP51 located downgradient of the Quarry retain higher groundwater level (artesian) conditions, however TP47, TP46 and TP51 do not accurately measure the water level as they are often flowing above ground level.

7.1.5 Groundwater Usage

Adbri have the capacity to extract 44 megalitres (ML) of water per year under its water access licences and water supply works approvals (see Section 3 and **Table 2**). Water extracted from the deeper aquifers are primarily used to fill the dredge pond and for use in dust suppression during extended dry periods.

The approved *Water Management Plan* requires that the quantity of water obtained from production bores is monitored on a monthly basis. **Table 18** presents a summary of the groundwater usage from January 2025 until December 2025.

Table 18
Groundwater Usage – Meter Reading and Monthly Usage

Date	Meter Reading (KL)	Usage (ML)
January	62069	0.045
February	62072	0.003
March	62081	0.009
April	62090	0.009
May	62148	0.058
June	62185	0.037
July	62192	0.007
August	62206	0.014
September	62223	0.017
October	62307	0.084
November	62307	0.000
December	62419	0.112
	Total	**0.395**

A total of 0.395 ML of groundwater was utilised over the reporting period which represents a decrease of 0.120ML compared to 2024. This decrease is reflective of the higher rainfall levels experienced at the Quarry, and the reduced reliance on groundwater to top-up operating dredge pond levels. Groundwater use has been substantially lower than the volume available under licenced entitlements.

7.2 SURFACE WATER

7.2.1 Introduction

The Tinda Creek Quarry is situated near the top of the Tinda Creek catchment. Tinda Creek itself typically experiences intermittent, short duration flows immediately following heavy rainfall events. Previous monitoring, conducted in 2008 and 2015, indicates that quarrying activities have not impacted negatively on the Tinda Creek system and the downstream portions of the creek remain consistent with other creek systems in the vicinity of the Quarry.

The Quarry utilises a closed water management system (see Section 4.2). This system has been successfully implemented for the past 30 years and involves a number of pump lines and catch drains, though it is noted that a number of discharge events took place during 2020, 2021, 2022 and 2024 with no detectable impacts. Adbri has adapted its water management procedures to account for the transition from extremely dry conditions experienced in 2018/2019 to the more recent significant rainfall events.

Clean water diversion drains have been constructed within the Quarry Site in order to prevent clean runoff entering the operations area. The diversion drain system shown on **Figure 3** comprises the following components.

- Southern Diversion
- Southern Diversion Extension
- Existing Diversion.

Clean water diversions for operations in Domain 6 were constructed in 2017. In 2022, the clean water diversion drain was moved to the southern side of the access road (refer **Plate 5**). No further changes were required during 2025.

During the reporting period the closed water management system covered an area of approximately 38.4ha and remained within the limit of 40ha at any one time, as described in *Condition 3(12)* of SSD_4978.

7.2.2 Surface Water Monitoring

Surface water monitoring was conducted generally in accordance with the approved *Water Management Plan* over the reporting period. A summary of the required surface water monitoring is provided in **Table 19**.

Table 19
Surface Water Monitoring Regime

Monitoring Type	Location	Parameters Monitored	Frequency of Monitoring	Monitoring Method
Dredge Pond Level	Dredge Pond	Level (depth below ground)	Monthly	Observation or dip
Surface Water Quality	Upstream and downstream of Quarry	pH, EC, turbidity	Monthly if water is flowing in Tinda Creek. Samples will also be taken after more than 50mm of rain in 24 hours if water is flowing.	Grab Sample
Drainage Lines and Diversion Drains	Upstream and downstream of quarry	Stability, erosion, and sediment build up	Monthly and event based	Observation and photography
Closed Water Management System	Quarry	Stability, erosion, and sediment build up	Monthly and event based	Observation and photograph

7.2.3 Dredge Pond Water Levels

The *Water Management Plan* requires that dredge pond water levels are assessed on a monthly basis. The depth of water in any operating dredge pond is to remain more than 5m to avoid triggering further investigations.

The depth of the dredge pond was measured regularly between January 2025 to December 2025. Water levels were approximately 14.9mbgs during each survey. On the basis of these results it is confirmed that the dredge pond was at an appropriate level during the reporting period and the approved depth of extraction (15mbgl) was not exceeded. Therefore no further investigations were required.

7.2.4 Surface Water Quality

Surface water quality monitoring was conducted by Adbri in accordance with the approved *Water Management Plan*. The surface water quality assessment trigger values recorded in the approved *Water Management Plan* are presented in **Table 20**.

Table 20
Surface Water Quality Triggers

Parameter	ANZECC Trigger*
pH	6.5-8.0
Electrical Conductivity	30-350
Turbidity	2-25
*ANZECC (2000) guideline triggers are based on values for upland streams in NSW (see Table 3.3.2 and Table 3.3.3 of ANZECC (2000)).	

Insufficient water was available in Tinda Creek to trigger the requirement for monthly sampling of upstream and downstream of the Quarry throughout the reporting period.

7.2.5 Drainage Lines, Diversion Drains and Water Management System

Adbri have implemented a range of measures to ensure sediment movement within drainage structures is limited. These measures include the following.

- Construction and maintenance of spoon drains.
- Lining of drains with geofabric and rock armouring.
- Installation of a gabion mattress at the end of drain in the vicinity of Domain 6 to capture sediment and slow the flow of water.
- Installation of rows of hay bales and silt fencing.
- Re-seeding of the drain to establish a suitable ground cover.

Condition M2.1 of the EPL 12007 requires that the licensee undertake monthly inspections of the surface water system at the premises. The monthly inspection must:

- be undertaken immediately upstream and downstream of the Quarry disturbance area;
- include visual inspection for litter, oil and grease and sediment within the surface water system, including diversion channels;
- include visual inspection of the physical integrity of the surface water system, including any signs of erosion; and
- include visual inspection of the water level/flow in Tinda Creek.

Results of the visual inspections recorded during the reporting period is presented in **Table 21**.

Table 21
Results of Surface Water Monitoring – 2025

Observation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Litter	No	No	No	No	No	No	No	No	No	No	No	No
Oil/Grease	No	No	No	No	No	No	No	No	No	No	No	No
Sediment	No	No	No	No	No	No	No	No	No	No	No	No
Erosion	No	No	No	No	No	No	No	No	No	No	No	No
Water Level/Flow	No	No	No	No	No	No	No	No	No	No	No	No

As there were no extended periods of heavy rainfall during the 2025 reporting period, no notable or significant erosion was recorded during the monthly inspections.

8. REHABILITATION AND LANDSCAPE MANAGEMENT

8.1 REHABILITATION MANAGEMENT

Rehabilitation objectives for the Quarry are described in Schedule 3, Condition 17 of SSD_4978 and reiterated in the approved *Landscape Management Plan* for the Quarry. The objectives for progressive and final rehabilitation of the Quarry include the following.

- The Quarry Site is safe, stable and non-polluting.
- Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of local native species and habitat, including at least 0.35ha of Mellong Sandmass Sedgeland.
- Surface infrastructure is to be decommissioned and removed (unless the Secretary agrees otherwise).
- Minimise the size, depth, batter slope and the drainage catchment of the final void.
- Ensure that the volume of VENM and ENM detailed in the EIS is imported for rehabilitation of the site.
- Ensure that the surface area of the final voids is no greater than 16ha in total.
- Ensure that final voids are separated from the surface water drainage system, unless the Secretary agrees otherwise.
- Restore alignment and hydraulic function of watercourses, as far as practical.
- Ensure public safety.

Rehabilitation works continued in the domain in the south-eastern quadrant of the Quarry Site and the north-eastern corner of the historic extraction area of Domain 4 as shown on **Figure 2** and in **Plate 6**. Rehabilitation works comprised primarily landform construction through backfilling the area with overburden, silt and clay material with coarse woody debris applied as available to enhance the natural regeneration. This activity was consistent with the methods and timing presented in the *Landscape Management Plan*.

8.2 LANDSCAPE MANAGEMENT

Landscape management was undertaken generally in accordance with the approved *Landscape Management Plan* which was prepared in accordance with *Condition 3(19)* of SSD_4978. Activities involved predominantly weed management, maintenance of clean water diversions and some vegetation maintenance.

On behalf of Local Land Services, a 1080 Wild Dog Baiting Program was undertaken within the Hawkesbury and Blue Mountains region in June 2025. This included the Quarry Site.

The *Landscape Management Plan* includes a range of monitoring activities to be undertaken by Adbri to demonstrate compliance with the objectives and performance criteria for landscape and rehabilitation management. A summary of these activities is provided in **Table 22**.

Table 22
Ecological Monitoring Requirements at Tinda Creek Quarry

Type of Monitoring	Parameters Monitored	Frequency	Monitoring Method	Responsibility
Rehabilitation	Inspections of survey markers, drainage lines, water management systems and rehabilitation areas.	Monthly	Visual Inspection	Quarry Manager
	Survey of 9 x BAM plot as per Section 13.2.2.	Annually	Field Survey	Quarry Manager / Ecologist
Koala	Targeted Spot Assessment Technique, Call playback surveys, Spotlight surveys.	Bi-annually (every two years)	Field Survey	Quarry Manager / Ecologist
Grevillea parviflora subsp. *parviflora*	Surveys during known flowering period (July to December), stem counts in permanent plots, photo monitoring, habitat quality.	Annually	Field Survey	Quarry Manager / Ecologist
Nest Boxes	Condition assessment.	Annually (if required).	Field Survey	Quarry Manager / Ecologist
Voluntary Undertaking	Natural regeneration.	Annually	Visual Inspection / Photographs	Quarry Manager
Aquatic Monitoring	Stream width and edge habitat, stream features including substrate, vegetation and organic material, site observation including catchment description and local land use practises, and riparian characteristics.	Annually	Field Survey and Photography	Quarry Manager / Ecologist

8.2.1 Rehabilitation Monitoring

Visual inspections of the areas under active rehabilitation were undertaken monthly during the reporting period (rather than six-monthly) and cross-over with requirements for monitoring of erosion and sediment controls and surface water quality in accordance with the *Water Management Plan*. A summary of the outcomes of monitoring during the reporting period is provided in **Table 23**. Visual inspections of the Quarry Site were supplemented by monitoring undertaken by EMM in December 2025 (EMM, 2026) with the outcomes of this monitoring presented in **Appendix 3.**

Table 23
Rehabilitation Inspections

Rehabilitation Monitoring Aspect	Comment
Monitoring is to include: • soil conditions and erosion (i.e. stability); • drainage and sediment control structures; • runoff water quality; • germination rates; • plant health; • natural regeneration; and • weed infestation.	Visual inspections were undertaken monthly by the Quarry Manager with photographic evidence of drain conditions and stability recorded. It is considered that existing erosion and sediment controls were functioning appropriately (see **Plate 4 and 5**). No significant erosion was noted. During the reporting period campaigns of weed (African Lovegrass) spraying and manual removal via scalping has occurred.

8.2.2 Long-Term Rehabilitation Monitoring

Long-term rehabilitation monitoring was undertaken by EMM in December 2025 (EMM, 2026). The outcomes of this monitoring are described in detail in the monitoring report presented as **Appendix 3** of this report. **Table 24** presents an overview of key monitoring aspects and outcomes.

Table 24
Long-Term Rehabilitation Monitoring

Rehabilitation Monitoring Aspect	Comment
Monitoring is to: • compare results against rehabilitation objectives and targets • identify possible trends and continuous improvement • link to records of rehabilitation to determine causes and explain results • assess effectiveness of environmental controls implemented • where required, identify modifications required for the monitoring program, rehabilitation practices or areas requiring research • compare flora species present against original seed mix and/or analogue sites • assess vegetation health • assess vegetation structure (e.g. upper, mid. and lower storey) • the presence and abundance of any weed species • assessment of natural regeneration/recruitment of new species • where applicable, assess native fauna species diversity and the effectiveness of habitat creation for target fauna species	The majority of the rehabilitation objectives do not yet apply, however progressive rehabilitation and management of the rehabilitating landscape remains consistent with these objectives (described in Section 8.1). No monitoring occurred on BAM plot B2 in the 2025 reporting period due to substantial ground disturbance, ongoing earthworks, and landform alterations in proximity to the plot. Monitoring of this plot will continue to be deferred until rehabilitation works have been undertaken. BAM plot B1 was surveyed for the first time this monitoring season. EMM (2026) observed that native species richness decreased in the rehabilitation site B3 and analogue site B7compared to 2024 surveys. Plot B3 presented with a substantial increase in litter cover compared to 2024 (40.8% 2025 compared to 17.4% 2024). Weed cover and abundance in plot B3 has continued to decrease (30.1% 2025 down from 40.4% 2024). The year-to-year trending decline of weed cover within plot B3 is consistent with the findings of surveys conducted since 2022, indicating successful weed management within B3. Weed cover at this plot is mostly influenced by cover of African Lovegrass (30% cover in 2025). Weed control will be continually required as the African Lovegrass density will negatively affect biodiversity values of the surrounding Biodiversity Offset Areas.

8.2.3 Biodiversity Offset Area Monitoring

Monitoring within the Biodiversity Offset Area was undertaken by EMM in December 2025 in accordance with the *Landscape Management Plan*. The monitoring plots that were re-visited with the approximate locations presented in **Figure 8**. **Table 25** presents the monitoring aspects and general conclusions of the monitoring campaign. A more detailed review of the monitoring outcomes and the data collected from monitoring plots is provided in **Appendix 3**.

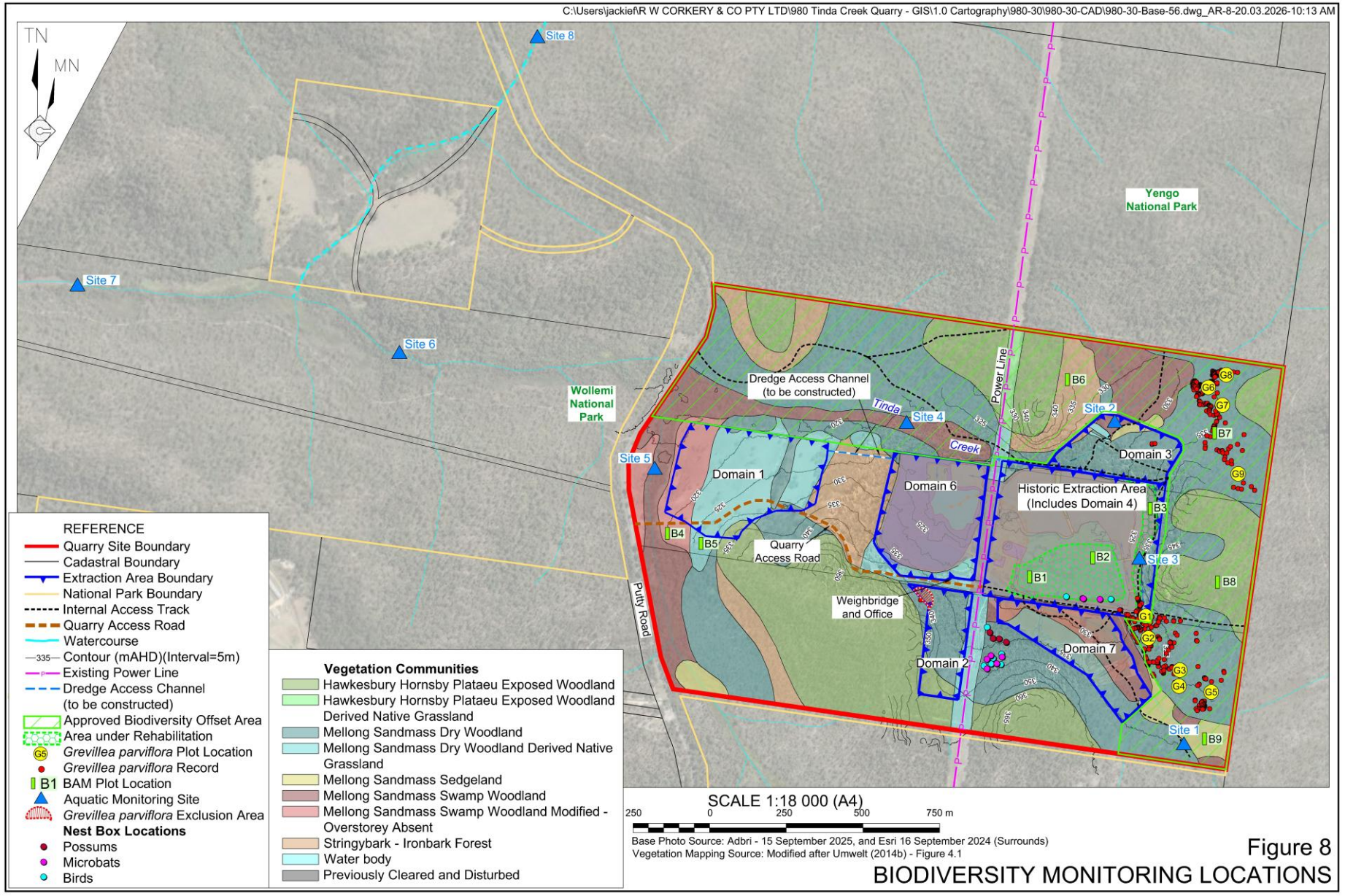


Figure 8
BIODIVERSITY MONITORING LOCATIONS

Table 25
Biodiversity Offset Area Monitoring

Biodiversity Offset Area Monitoring Aspect	Comment
Monitoring is to include: • general vegetation health • evidence of natural seedling recruitment • occurrence and abundance of weed species • structure and floristics of vegetation cover • signs of disturbance (by stock, people or feral animals) • nature and extent of erosion • evidence of fire • characteristic of ground cover (e.g. leaf litter, rocks, logs and soil) • nectar or fruit resources and perch sites • water resources • secondary evidence of fauna use such as scats, tree scratches or diggings.	EMM (2026) noted no obvious adverse effects from the Quarry on vegetation communities within the Biodiversity Offset Area. EMM (2026) observed that, with the exception of the Mellong Sandmass Swamp Woodland and Stringybark-Ironbark Forest, native species richness has remained relatively stable in all vegetation communities when compared to the 2024 monitoring year data. The largest decrease between 2024 and 2025 was a decrease of six species (34 in 2024 down to 28 in 2025) recorded within the Mellong Sandmass Swamp Woodland. The largest increase in species richness between 2024 and 2025 was recorded within Stringybark-Ironbark Forest, with an additional three species recorded. On average, native species richness across the site has increased by 56% since 2019.This is largely attributed to an increase of native species richness within the Hawkesbury Hornsby Plateau Exposed Woodland and Regenerating Mellong Sandmass Woodland, both of which had an increase of 20 and 18 species respectively. A number of threatened species occur within the Biodiversity Offset Area, including a population of Grevillea parviflora. The Grevillea population has increased by 27% during the reporting period. This may indicate a recovery from poorer conditions leading up to the 2024 survey period or potentially be due to above average rainfall experienced throughout 2024. Exotic species were recorded within B1, B3, B4, B5 and B6, all of which are in, or close to, areas of disturbance. Weed diversity and cover across the surveyed plots remain relatively consistent with 2024 results. However, an additional high threat exotic species, Whisky Grass, was recorded in B3 which was not present in 2024. It is also noted B1, which was not surveyed during the 2024 period, contained 11 exotic species, of which four were high threat. Plots B7, B8 and B9 contained vegetation in good condition, with no evidence of exotic species. No weed species recorded are listed as ‘Weeds of National Significance’.

8.2.4 Koala Monitoring

No Koala monitoring was undertaken during the reporting period. Koala monitoring will be undertaken during the 2026 reporting period in accordance with the requirements of the *Landscape Management Plan*.

8.2.5 Aquatic Monitoring

On 12 November 2025, Niche (2026) undertook aquatic monitoring to monitor the river health of Tinda Creek and its tributaries and to assess any potential impacts from Quarry development. A report detailing the methods, outcomes and conclusions of the aquatic monitoring program is provided as **Appendix 4**. The monitoring program is consistent with the previous monitoring presented in the *Landscape Management Plan* (RWC, 2022).

Aquatic monitoring sites are presented in **Figure 8.** The monitoring program in 2025 included the following:

- Assessment of water quality against default ANZG trigger values.
- Assessment of the macroinvertebrate community condition using Stream Invertebrate Grade Number Average Level (SIGNAL2) and AUSRIVAS.
- Assessment of habitat condition using AUSRIVAS proforma.

During the 2024 monitoring event, increased rainfall experienced during the year resulted in all sampling sites containing water and able to be assessed. Conversely, below average rainfall in the months preceding the 2025 sampling event resulted in low water levels within Tinda Creek, with site 4 unable to be sampled due to dry conditions.

8.2.5.1 Water Quality

All water quality results for electrical conductivity and pH at the samples sites were within the ANZG default trigger values. All sites sampled, inclusive of both reference and test sites, were below the trigger values for dissolved oxygen. Turbidity was above the trigger values for both reference sites, however within range for the sampled test sites, 6 and 7. These results are consistent with expected ephemeral/intermittent streams in the region.

8.2.5.2 Stream Health

Aquatic environments downstream of the Quarry were found to have a good level of riparian growth, having recovered from the 2019-2020 bushfire events, as well as stable channel morphology. The macroinvertebrate communities had recorded generally poor SIGNAL2 and poor to moderate AUSRIVAS results, however these results were comparable between the test site and reference sites and are consistent with the previous reporting periods.

Overall stream health results recorded at the test sites are comparable to those recorded at the reference sites. As such, the streams are likely being influenced by natural stress associated with intermittent/ephemeral streams and reflect conditions experienced within the locality and not impacts associated with the operation of the Quarry.

8.2.5.3 Conclusion

Based on the evidence available, there appears to be no obvious disturbance resulting from the Quarry operations at downstream sites.

8.2.6 Nest Box Monitoring

Nest boxes were installed following the clearing of Domain 7 during the 2023 reporting period. These consisted of a mixture of nesting boxes for Microbats (M1 to M8), Parrots (B1 to B8) and Possums (P1 to P4), the locations of which are displayed on **Figure 11**.

Nest box monitoring was undertaken by EMM in October 2025 and involved inspection of the nest boxes to report on condition and detect signs of use (**Appendix 3**). All nest boxes were observed to be in an adequate condition and suitable for use. No target animals were directly observed to be actively occupying the nest boxes, however six out of 20 nest boxes showed evidence of use, with one non-target species (Peron's tree frog) observed in one of the microbat boxes.

The low utilisation of the nest boxes may be associated with an absence of target species in the location which they were installed or unsuitable nest box placement. EMM recommended to relocate nest boxes which do not have any signs of use at least 150m away from Quarry Site operations and to areas which do not contain highly fragmented vegetation to improve utilisation rates and increase nest box success. Adbri will commission a contractor to review the location and type of nesting boxes used at the Quarry with the updated locations to be subject to monitoring in 2026.

8.2.7 Threatened Species Monitoring

Threatened fauna monitoring was undertaken by EMM in December 2025, predominantly focused on the Biodiversity Offset Area (EMM, 2026). The outcomes of these surveys are presented in **Appendix 3**.

8.2.8 *Grevillea parviflora* Monitoring

Monitoring of the condition and persistence of the small flower *Grevillea parviflora* subsp. *parviflora* was undertaken in December 2025 and is considered to provide an indication of the condition of this species for the reporting period. A series of nine 10m x 10m plots were revisited within the approved Biodiversity Offset Area to facilitate annual stem counts of the species. The locations of these plots can be seen on **Figure 8**. The goal of this monitoring program is to assess the ongoing viability and health of the species and to ensure the habitat is maintained or improved over the life of the operations. The monitoring results are included in **Table 26**.

A total of 1,265 plants were recorded within the eight of the nine plots during the survey. This is an increase of 270 plants recorded compared with 2024. This may indicate a recovery from poorer conditions leading up to the 2024 survey period or potentially be due to above average rainfall experienced throughout 2024. It is noted that the methodology applied to survey was different between the earlier monitoring events (2018 to 2020); the current methodology of counting stems as opposed to individual plants has been applied since the 2021 monitoring event. EMM (2026) concluded that plot monitoring indicates the distribution of *Grevillea parviflora* subsp. *parviflora* increased within seven plots (Plot 1, 3, 5, 6, 7 and 9), decreased within one plot (Plot 5) and remained static within one plot (Plot 8).

Table 26
***Grevillea parviflora* Monitoring at Tinda Creek Quarry**

Plot Number	2018*[1] Count	2019* Count	2020* Count	2021^ Count	2022^ Count	2023^ Count	2024^ Count	2025^ Count
G1	18	38	0	21	80	202	270	376
G2	50	7	0	103	650	577	220	327
G3	32	25	18	14	20	24	25	50
G4	44	1	10	53	35	61	85	71
G5	20	19	35	9	40	25	25	38
G6	23	35	16	26	100	90	120	144
G7	16	0	0	25	120	237	185	190
G8	14	0	0	12	5	0	0	0
G9	3	0	1	22	65	65	65	69
Total	**220**	**125**	**80**	**285**	**1,115**	**1,281**	**995**	**1,265**

Note 1: Average number of stems from March 2018 and September 2018.
* Count of number of individual plants.
^ Count of number of stems.

Source: EMM (2026) – Table 3.6

8.2.9 Conclusion

Consistent with previous years, Adbri has continued to operate the Quarry with minimal evident impact to the surrounding landscape or within the Quarry Site, the Biodiversity Offset Area or in aquatic environments downstream of the Quarry. Rehabilitation progress during the reporting period has been steady, with further action required to establish vegetation communities to benchmark conditions. This is evident by the success of the tube stock planting which occurred during the reporting period (refer to **Plate 6**).

Ongoing and targeted weed control is also recommended by EMM (2026) using spot spray techniques on foot and by hand only (as to prevent the spread of weed seeds by vehicles and minimise overspray of plants nearby). Weeds should be monitored visually every three months and sprayed as necessary.

To address the ongoing African Lovegrass population on site, EMM (2026) recommends an integrated approach of multiple techniques conducted seasonally in 2026, including:

- slashing, mechanical removal, or burning of African Lovegrass in winter to reduce cover;
- follow-up spraying of existing African Lovegrass extent and new shoots or growth in cleared or burned areas at the beginning of spring into summer; and
- re-seeding of bare soil with native grass to reduce African Lovegrass re-establishment in cleared areas

EMM also recommends the relocation, repositioning and modification of nest box monitoring during the 2026 reporting period to improve utilisation by the target species.

It is apparent from the recent ecological monitoring that the overall flora species richness has increased as well as the number of *Grevillea parviflora* present in the monitored plots since monitoring began. During the 2025 monitoring period, plot markers to demarcate the boundaries of all Grevillea parviflora subsp. parviflora plots were installed which will increase the accuracy of stem counts and photo monitoring.

Aquatic ecological monitoring has identified that the streams are likely being influenced by natural stress associated with intermittent/ephemeral streams and reflect conditions experienced within the locality, and not impacts associated with the operation of the Quarry.

9. COMMUNITY

9.1 COMMUNITY COMPLAINTS

There were no complaints received during the reporting period.

Complaints will continue to be logged within the complaints register and investigated fully when they are received. The complaints are recorded on a complaint register, a copy of which is updated on the Adbri website on a monthly basis.

9.2 COMMUNITY LIAISON

A single Tinda Creek Quarry Community Consultative Committee (CCC) meeting was conducted during the reporting period. It was held on site on Tuesday 19 August 2025. Minutes of the meetings are provided in **Appendix 4**.

There were no issues raised during the CCC meetings that were considered to be complaints or required investigation by Adbri.

10. INDEPENDENT ENVIRONMENTAL AUDIT RESPONSE

An independent environmental audit of quarrying operations was undertaken between 1 and 8 July 2025. The audit was undertaken by Mr James Hart (Lead Environmental Auditor - Exemplar Global No. 12105). The audit was the fourth for the Quarry and covered the period from 4 July 2022 to 1 July 2025.

The outcomes of the audit report and Adbri's response to the matters raised are presented in **Table 27**, with the full audit report and response available from the Adbri website. All matters raised in the audit report have been addressed or are in the process of being addressed.

The next independent environmental audit will be commissioned before July 2028.

Table 27
Response to the Non-Compliance Issues from the 2025 IEA

Issue No.	Condition	Requirement	Issue sighted	Audit Recommendation	Comments
01	Schedule 2 Condition 2	The development may only be carried out: a) in compliance with the conditions of this consent; b) in accordance with all written directions of the Planning Secretary; c) generally in accordance with the EIS; and d) generally in accordance with the Development Layout in Appendix 2.	Non-compliances with the conditions of consent have been identified in this report, resulting in a non-compliance with this condition .	It is recommended that all non-compliances identified are addressed and closed out.	Adbri believes that all matters raised in the audit have previously been addressed and closed or are in the process of being addressed.
02	Schedule 2 Condition 15	The Applicant shall: a) provide annual quarry production data to DRE using the standard form for that purpose; and b) include a copy of this data in the Annual Review (see condition 4 of schedule 5).	Annual production data had been provided to DRE. However, the annual; return provided in 2022 was not provided within 60 days of the end of the reporting period.	Annual Returns for 2023 and 2024 were provided within the required timeframe. No further action required.	Adbri notes that there is no longer a process for these forms to be submitted to the Resources Regulator but considers that the detailed reporting of production (see Section 4.3) addresses the intention of this condition. It is acknowledged that this remains a non-compliance.
03	Schedule 2 Condition 12 EPL Condition L1	The Applicant shall: a) comply with Section 120 of the POEO Act, unless an EPL authorises otherwise; b) ensure that the catchment of the water management system is not larger than 40ha, unless the Secretary agrees otherwise; c) maintain the dredge and silt ponds to capture a 1 in 100 ARI storm event plus adequate freeboard to ensure no offsite discharge; and d) ensure that the loss of groundwater and surface water to Tinda Creek is no greater than predicted in the EIS in the dredge and silt ponds.	Water has been discharged from the site on 3 occasions during the period covered by this audit. Discharges have occurred as the result of one uncontrolled and two controlled discharges. Monitoring conducted did not identify any material harm to the environment.	Surface water should be managed to ensure that no offsite discharge occurs . Adbri were in the process of updating the WMP and to obtaining approval for the controlled release of surface No further action required.	Adbri initiated a controlled discharge of water from the Quarry Site in response to significant rainfall events during the 2024 reporting period. The NSW DPHI and NSW EPA were notified. Water quality monitoring was undertaken at locations upstream, downstream and at the point of the discharge and determined consistent with the surrounding environment. Adbri submitted a modification application in December 2024 to permit control discharge from the Quarry in the event of prolonged and extreme rainfall events.
04	Schedule 3 Condition 16	Within 2 years of this consent, unless otherwise agreed with the Secretary, the Applicant shall make suitable arrangements to provide appropriate long-term security for the offset area, to the satisfaction of the Secretary.	NPWS has advised Adbri that it will issue a deed agreement under section 150 (2) of the NPW Act for ongoing access. NPWS is in the process of finalising the necessary subdivision of the land intended for dedication. Once complete, Adbri will be able to finalise the transfer of land and arrange the necessary agreement required for ongoing access. It is expected that Adbri would retain responsibility for monitoring and management of the land in accordance with the approved Landscape Management Plan until operations cease and the Quarry is closed.	Adbri should continue to liaise with NPWS to ensure the finalise arrangements for the long-term security for the offset area.	In February 2023, Adbri agreed to the subdivision of land to establish the biodiversity offset site with the Administration Sheet including the intention for the land to be reserved under the provisions of the National Parks and Wildlife Act 1974. The Administration Sheet was signed by a delegate for the Minister administering the National Parks and Wildlife Act 1974 and is therefore considered to have the effect of securing the land for conservation purposes. Adbri is in the process of negotiating the terms of agreement for the transfer of land, including matters such as ongoing access for monitoring and (where needed) environmental monitoring. However it is considered that the land has been secured for its intended purpose and this condition has now been satisfied.
05	Schedule 3 Condition 21	Within 3 months of each Independent Environmental Audit (see condition 9 of schedule 5), the Applicant shall review, and if necessary, revise, the sum of the Conservation and Rehabilitation Bond to the satisfaction of the Secretary.	The Conservation and Rehabilitation Bond. had not been reviewed and updated within 3 months of the previous independent environmental audit.	Adbri should implement a process to ensure that the Conservation and Rehabilitation Bond is reviewed and revised where necessary following completion of each Independent Environmental Audit.	The Conservation and Rehabilitation Bond was submitted to DPHI on 31 October 2025, 3 months after the current Independent Environmental Audit.
06	Schedule 5 Condition 2	The Applicant shall assess and manage development-related risks to ensure that there are no exceedances of the criteria and/or performance measures in schedule 3. Any exceedance of these criteria and/or performance measures constitutes a breach of this consent and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation. Where any exceedance of these criteria and/or performance measures has occurred, the Applicant shall, at the earliest opportunity: (a) take all reasonable and feasible measures to ensure that the exceedance ceases and does not recur; (b) consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and (c) implement remediation measures as directed by the Secretary; to the satisfaction of the Secretary.	Site water had been released to the environment on two occasions, one in 2022 and one in 2024.	Surface water should be managed to ensure that no offsite discharge occurs. Adbri were in the process modifying Development Consent and to obtain approval for the controlled release of surface. The modification application was submitted to DPHI in December 2024. No further action required.	Adbri initiated a controlled discharge of water from the Quarry Site in response to significant rainfall events during the 2024 reporting period. The NSW DPHI and NSW EPA were notified. Water quality monitoring was undertaken at locations upstream, downstream and at the point of the discharge and determined consistent with the surrounding environment. Adbri submitted a modification application in December 2024 to permit control discharge from the Quarry in the event of prolonged and extreme rainfall events.

Table 27 (Cont'd)
Response to the Non-Compliance Issues from the 2025 IEA

Issue No.	Condition	Requirement	Issue sighted	Recommendation	Comments
07	Schedule 5 Condition 5 Water Management Plan Section 18	Within 3 months of a modification to this consent or following the submission of an: a) annual review under condition 4 above: b) incident report under condition 7 below; or c) audit report under condition 9 below, the Applicant shall review, and if necessary, revise, the strategies, plans, and programs required under this consent to the satisfaction of the Secretary.	No records were provided to demonstrate review of Strategies, Plans and Programs following submission of: a) annual review under condition 4 above: b) incident report under condition 7 below; or c) audit report under condition 9.	Adbri should ensure that relevant management plans, strategies and programs are reviewed, and if necessary, updated to incorporate any recommended measures to improve the environmental performance of the development, as required by Schedule 5, condition 5.	Adbri notes this comment and has committed to review and update (where necessary) all management plans and strategies following completion of the pending modification application. It is noted that updates to the following management plans will be undertaken following the approval of the pending modification application • Water Management Plan • Noise Management Plan • Air Quality Management Plan • Transport Management Plan • Heritage Management Plan • Environmental Management Strategy
08	Schedule 5 Condition 7	The Applicant shall immediately notify the Secretary and any other relevant agencies of any incident that has caused, or threatens to cause, material harm to the environment. For any other incident associated with the Development, the Applicant shall notify the Secretary. Within 7 days of the date of the incident, the Applicant shall provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.	While incidents were reported to DPHI and EPA and detailed incident reports provided, the reports were not provided within 7 days of the date of the incident.	Adbri should ensure that a detailed report of notified incidents is provided to the Secretary and any relevant agencies within 7 days of the date of the incident.	Adbri notes this comment.
09	Schedule 5 Condition 7	Within 6 months of the date of this consent, the Applicant shall: • make copies of the following publicly available on its website: – the EIS; – current statutory approvals for the development; – approved strategies, plans and programs required under the conditions of this consent; – a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs; – a complaints register, which is to be updated monthly; • minutes of CCC meetings; – the annual reviews of the development (for the last 5 years); – any independent environmental audit of the development, and the Applicant's response to the recommendations in any audit; – any other matter required by the Secretary; and b) keep this information up-to-date, to the satisfaction of the Secretary.	The following information was not available on the project website: • 2024 Annual Review • Surface Water Quality Monitoring results	Adbri should ensure that all relevant information is provided on the project website in a timely manner.	Adbri notes this comment and has now addressed the non-compliance.
10	EPL Condition R4.3	The report to the EPA must include: a) the results of surface water management system inspections required in condition M2.1 for the month related to the exceedance, including photographs; and b) appropriate mitigation and contingency measures to be implemented within one month of the exceedance being detected.	Request to provide report following controlled discharge on 7/06/2024 received. Report provided 28/06/2024. Report does not include: • the results of surface water management system inspections required in condition M2.1 for the month related to the exceedance, including photographs	Adbri should ensure that, where surface water triggers are exceeded, a report is provided to the EPA which includes the results of surface water management system inspections required in condition M2.1 for the month related to the exceedance, including photographs.	In the report submitted to the EPA, photographs documenting the site inspection were included in accordance with condition M2.1. However, the detailed inspection record was not included. Adbri acknowledges this observation and commits to supply the required results in compliance with condition R4.3 in future reports.

11. INCIDENTS AND NON-COMPLIANCES DURING THE REPORTING PERIOD

11.1 INTRODUCTION

The following subsections outline incidents and non-compliances that occurred during the reporting period. An internal review of compliance with the conditions of SSD_4978 was undertaken by Adbri and RWC and is included as **Appendix 1**. The operation remained generally compliant with development conditions throughout the reporting period with the exception of the non-compliances listed below.

11.2 INCIDENTS

There were no notable incidents relating to non-compliances that occurred at the Quarry Site during the reporting period.

11.3 DEVELOPMENT CONSENT SSD_4978

Adbri was not compliant with Conditions 2(2) and 2(15) of SSD_4978 during the reporting period. These non-compliance issues are summarised as follows.

Condition 2(2) relating to carrying out the development in accordance with the EIS, Statement of Commitments, and conditions of SSD_4978 – Non-compliance with this condition reflects other non-compliance issues identified above and below.

Condition 2(15) relating to the requirement to provide production data to DRE using the standard form. DRE no longer requests this data and the standard form is not available. Therefore, Adbri was not able to comply with this condition during the reporting period.

11.4 ENVIRONMENT PROTECTION LICENCE

Adbri was not compliant with Conditions A3.2 of EPL 12007 during the reporting period. There was one administrative non-compliances summarised as follows.

- Condition A3.2 relating to activities being carried out in accordance with SSD_4978 - non-compliances recorded under SSD_4978 preclude the achievement of compliance with this condition.

11.5 WATER ACCESS LICENCES

Works Approval 10WA112531 permits extraction of 44ML of water per annum via the production bore based on a water year (i.e. July to June). A total of 0.316ML of water was used between July 2024 to June 2025.

12. ACTIVITIES TO BE COMPLETED IN THE NEXT REPORTING PERIOD

The following operational activities are planned throughout the 2026 reporting period.

- Extraction and clearing will continue in Domain 7 including construction of diversion channel and bundings (see **Figure 9**).
- Determination of Modification 1of SSD _4978 to recognise the possible future need for water management to include occasional controlled discharge of water from the Quarry Site.
- Adbri anticipates that the deed agreement relating to the transfer of land set aside for the Offset Area, and ongoing access and other requirements for management during the life of the Quarry (where needed) will be negotiated and finalised during the next reporting period.
- A Variation to EPBC 2013/7028 is expected to occur in relation to final arrangements to secure the Offset Area and following the pending modification.
- The production forecast for 2026 is to extract, process and transport approximately 156,368t of sand product.
- Ongoing monitoring and maintenance of erosion and sediment controls and diversion drains.
- Maintenance and improvement to processing infrastructure would be continued to enhance washing processes and improve water re-use in production.
- Maintenance of the Quarry Access Road.
- Continuation of progressive rehabilitation as practicable. This will primarily continue within the south-eastern rehabilitation area, utilising topsoil to begin revegetation of the area.
- Tubestock planting and professional seed harvesting will continue in the next reporting period to support rehabilitation activities in Domain 4 (refer to **Plate 6**).
- Continuation of water management and dust control measures.
- Continue to monitor deposited dust and confirm the success of bird control measures through review of results against historic trends.
- Waste will continue to be collected by licensed contractors and volumes and dates recorded.
- Continuation of minimum of annual aerial Survey or other aerial imagery capture of the Quarry Site.
- Continued implementation of all requirements and conditions prescribed under Development Consent SSD_4978, EPL 12007 and approved management plans.

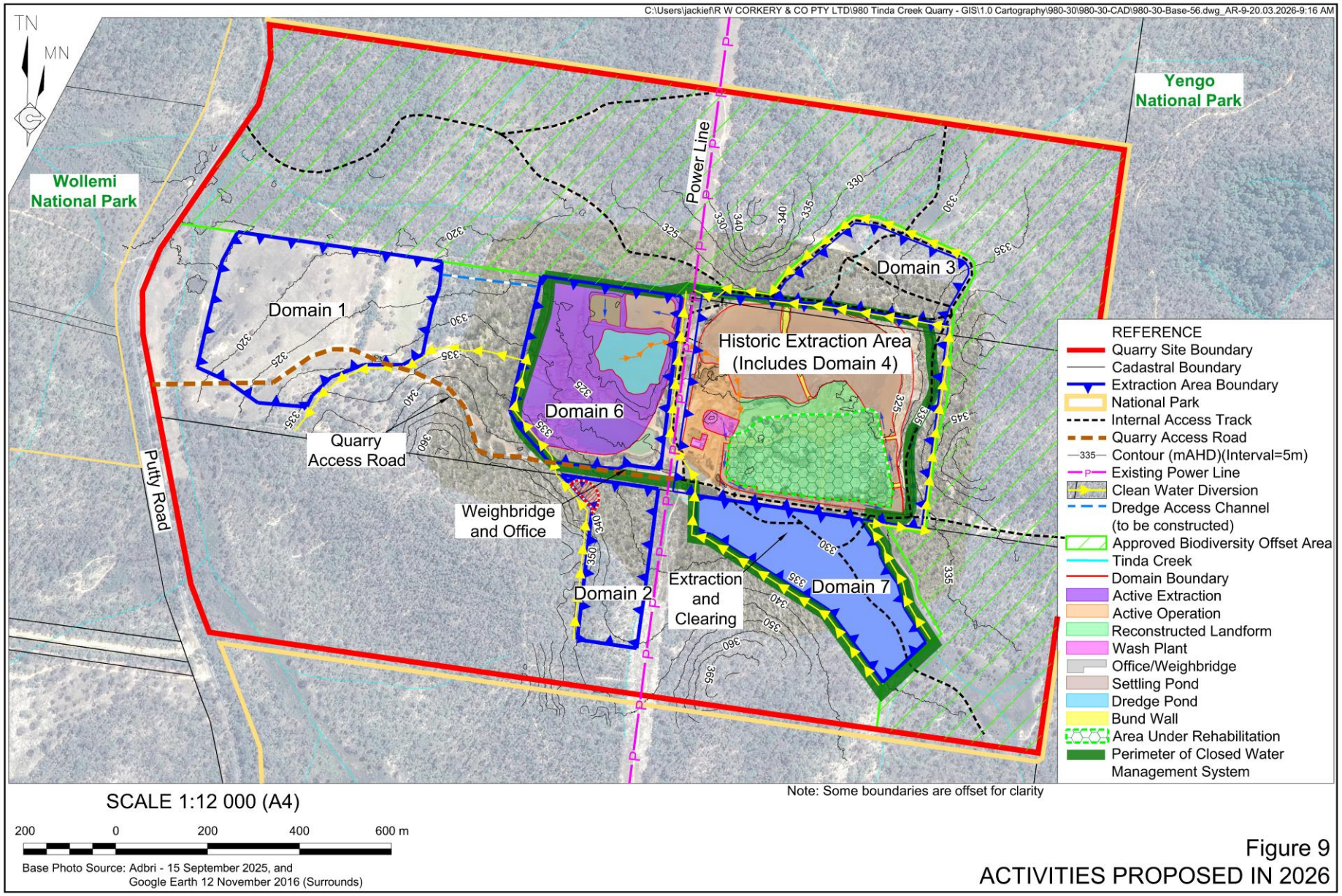


Figure 9
ACTIVITIES PROPOSED IN 2026

Appendices

Appendix 1 Internal Compliance Audit (SSD_4978 and EPL 12007) – 1 January 2025 to 31 December 2025

Appendix 2 Noise Monitoring Assessment 2025

Appendix 3 Biodiversity Monitoring Report 2025

Appendix 4 Aquatic Monitoring Report – Spring 2025

Appendix 5 Minutes of Tinda Creek Quarry Community Consultative Committee Meetings

Appendix 1

Internal Compliance Audit (SSD_4978 & EPL 12007) – 1 January 2025 to 31 December 2026

(Total No. of pages including blank pages = 28)

Table A1-1
Internal Compliance Audit of Relevant Conditions of Development Consent SSD_4978 for Tinda Creek Sand Project from 01 January 2025 to 31 December 2025

Condition No.	Paraphrased Requirement	Compliance	Comment	Basis*
SCHEDULE 2: ADMINISTRATION CONDITIONS				
Obligation to Minimise Harm to the Environment				
1.	In addition to meeting the specific performance criteria established under this consent, the Applicant shall implement all reasonable and feasible measures to prevent and/or minimise any material harm to the environment that may result from the construction, operation, or rehabilitation of the development.	Yes	All management measures were implemented successfully and there was no identified material harm to the environmental during the reporting period.	O/D
TERMS OF CONSENT				
2.	The Applicant shall carry out the development generally in accordance with the: (a) EIS; (b) Statement of Commitments; and (c) conditions of this consent.	No	A non-compliance issues has been identified against the conditions of SSD_4978.	O/D
3.	If there is any inconsistency between the above documents, the most recent document shall prevail to the extent of the inconsistency. However, the conditions of this consent shall prevail to the extent of any inconsistency.	Noted		
4.	The Applicant shall comply with any reasonable requirement/s of the Secretary arising from the Department's assessment of: (a) any strategies, plans, programs, reviews, audits, reports or correspondence that are submitted in accordance with this consent; (b) any reports, reviews or audits commissioned by the Department regarding compliance with this consent; or (c) the implementation of any actions or measures contained in these documents.	Yes	No requests were received from DPHI during the reporting period.	D

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Table A1-1 (Cont'd)
Internal Compliance Audit of Relevant Conditions of Development Consent SSD_4978 for Tinda Creek Sand Project from 01 January 2024 to 31 December 2024

Condition No.	Paraphrased Requirement	Compliance	Comment	Basis*
SCHEDULE 2: ADMINISTRATION CONDITIONS (Cont'd)				
LIMITS ON CONSENT				
Extraction Operations				
5.	The Applicant may undertake extraction operations on the site until 31 December 2045.	Noted		
Production Limits				
6.	The Applicant shall not: (a) extract or process more than 300,000 tonnes of sand in any calendar year; or (b) undertake extraction operations beyond 15 m below the natural ground surface.	Yes	Approximately 159,775 tonnes of sand were extracted and processed and depth restrictions were not exceeded during the reporting period.	D
Transportation Limits				
7.	The Applicant shall not: (a) transport more than 300,000 tonnes of sand from the site in a calendar year; and (b) dispatch more than 34 trucks per day or receive more than 34 trucks per day, averaged over a calendar month.	Yes	Product despatch was limited to 158,506 tonnes and truck level limits were not exceeded during the reporting period.	D
SURRENDER OF EXISTING DEVELOPMENT CONSENT				
8.	Within 6 months of the date of this consent, unless the Secretary agrees otherwise, the Applicant shall surrender the development consent (DA 0134/95) for the existing operations on the site in accordance with Section 104A of the EP&A Act. Prior to the surrender of development consent DA 0134/95, the conditions of this consent shall prevail to the extent of any inconsistency with the conditions of that consent.	Yes	DA 1034/95 was surrendered on 10 December 2015.	D
STRUCTURAL ADEQUACY				
9.	The Applicant shall ensure that any new buildings and structures, and any alterations, or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the BCA.	Yes	No new buildings were constructed during the reporting period. Installation of a dewatering screen and radial stacker was undertaken during the reporting period. This was constructed in accordance with the relevant requirements of the BCA.	O/D
DEMOLITION				
10.	The Applicant shall ensure that all demolition work on site is carried out in accordance with Australian Standard AS 2601-2001: The Demolition of Structures, or its latest version.	Yes	No demolition occurred during the reporting period.	O/D

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Internal Compliance Audit of Relevant Conditions of Development Consent SSD_4978 for Tinda Creek Sand Project from 01 January 2025 to 31 December 2025

Condition No.	Paraphrased Requirement	Compliance	Comment	Basis*
SCHEDULE 2: ADMINISTRATION CONDITIONS (Cont'd)				
PROTECTION OF PUBLIC INFRASTRUCTURE				
11.	The Applicant shall: (a) repair, or pay the full costs associated with repairing, any public infrastructure that is damaged by the development; and (b) relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of the development. *Note: This condition does not apply to any damage to roads caused as a result of general road usage.*	Noted	There was no damage or necessary relocation of public infrastructure during the reporting period.	O
OPERATION OF PLANT AND EQUIPMENT				
12.	The Applicant shall ensure that all plant and equipment used on site is: (a) maintained in a proper and efficient condition; and (b) operated in a proper and efficient manner.	Yes	All equipment was maintained and operated in an acceptable manner during the reporting period.	D
UPDATING & STAGING STRATEGIES, PLANS OR PROGRAMS				
13.	With the approval of the Secretary, the Applicant may submit any strategies, plans or programs required by this consent on a progressive basis. To ensure the strategies, plans or programs under the conditions of this consent are updated on a regular basis, the Applicant may at any time submit revised strategies, plans or programs to the Secretary for approval. With the agreement of the Secretary, the Applicant may prepare any revised strategy, plan or program without undertaking consultation with all parties under the applicable condition of this consent.	Noted	Not required during the reporting period.	D
14.	Until they are replaced by an equivalent strategy, plan or program approved under this consent, the Applicant shall implement the existing strategies, plans or programs for the site that have been approved under DA 0134/95.	Noted	All management strategies, plans and programs have been updated and approved.	D
PRODUCTION DATA				
15.	The Applicant shall: (a) provide annual quarry production data to DRE using the standard form for that purpose; and (b) include a copy of this data in the Annual Review (see condition 4 of schedule 5).	No	DRE no longer requests this data and the standard form is not available. Therefore, Adbri was not able to comply with this condition during the reporting period.	D
DEVELOPER CONTRIBUTIONS				
16.	The Applicant shall pay Council road maintenance contributions consistent with Council's Section 94 Contributions Plan, or its latest version.	Yes	Road maintenance contributions are paid monthly.	D

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Internal Compliance Audit of Relevant Conditions of Development Consent SSD_4978 for Tinda Creek Sand Project from 01 January 2025 to 31 December 2025

<table>
<tr><th>Condition No.</th><th>Paraphrased Requirement</th><th>Compliance</th><th>Comment</th><th>Basis*</th></tr>
<tr><td colspan="5">SCHEDULE 3: ENVIRONMENTAL PERFORMANCE CONDITIONS</td></tr>
<tr><td colspan="5">IDENTIFICATION OF APPROVED LIMITS OF EXTRACTION</td></tr>
<tr><td>1.</td><td>Prior to undertaking extraction operations under this consent, the Applicant shall:
(a) engage a registered surveyor to mark out the boundaries of the approved limits of extraction within the site; and
(b) submit a survey plan of these boundaries with applicable GPS coordinates to the Secretary.</td><td>Yes</td><td>All relevant boundaries have been surveyed and marked to comply with this condition.</td><td>O</td></tr>
<tr><td>2.</td><td>While extraction operations are being carried out, the Applicant shall ensure that these boundaries are clearly marked at all times.</td><td>Noted</td><td>All boundaries were clearly marked during the reporting period.</td><td>O</td></tr>
<tr><td colspan="5">HOURS OF OPERATION</td></tr>
<tr><td>3.</td><td>The Applicant shall comply with the operating hours set out in Table 1.
Table 1: Operation Hours
<table>
<tr><th>Activity</th><th>Operating Hours</th></tr>
<tr><td>Extraction operations and deliveries</td><td>7 am to 6 pm, Monday to Friday
7 am to 3 pm, Saturday
No activities on Sundays or Public Holidays</td></tr>
<tr><td>Dispatch</td><td>5 am to 10 pm, Monday to Friday
6 am to 3 pm, Saturday</td></tr>
<tr><td>Construction activities</td><td>7 am to 6 pm, Monday to Friday
8 am to 1 pm, Saturday
No construction to be undertaken on Sundays or Public Holidays</td></tr>
<tr><td>Maintenance activities</td><td>24 hours a day, 7 days per week, providing maintenance activities are inaudible at any privately-owned residence</td></tr>
</table></td><td>Yes</td><td>Adbri complied with all approved operating hours during the reporting period.</td><td>D</td></tr>
<tr><td colspan="5">NOISE</td></tr>
<tr><td colspan="5">Noise Criteria</td></tr>
<tr><td>4.</td><td>The Applicant shall ensure that the noise generated by the development does not exceed the criteria in Table 2 at any residence on privately-owned land.
Table 2: Noise criteria dB(A)
<table>
<tr><th rowspan="2">Receiver</th><th>Day/Evening</th><th colspan="2">Night</th></tr>
<tr><th>$L_{Aeq(15\ min)}$</th><th>$L_{Aeq(15\ min)}$</th><th>$L_{A1(max)}$</th></tr>
<tr><td>All receivers</td><td>35</td><td>35</td><td>45</td></tr>
</table></td><td>Yes</td><td>Noise monitoring undertaken during the reporting period demonstrates that Adbri complied with this criteria. There were no noise complaints during the reporting period.</td><td>D</td></tr>
</table>

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Condition No.	Paraphrased Requirement	Compliance	Comment	Basis*
SCHEDULE 3: ENVIRONMENTAL PERFORMANCE CONDITIONS (Cont'd)				
NOISE (Cont'd)				
Operating Conditions				
5.	The Applicant shall: (a) implement all reasonable and feasible mitigation measures to minimise the construction, operational and road noise of the development; (b) regularly assess noise monitoring data and relocate, modify and/or stop operations on site to ensure compliance with the noise criteria in this consent; (c) minimise the noise impacts of the development during meteorological conditions under which the noise criteria in this consent do not apply (see Appendix 6); and (d) carry out regular noise monitoring to determine whether the development is complying with the relevant conditions of this consent, to the satisfaction of the Secretary.	Yes	See previous response. Adbri has not been required to modify operations due to noise-related concerns during the reporting period.	
Noise Management Plan				
6.	The Applicant shall prepare and implement a Noise Management Plan for the development to the satisfaction of the Secretary.	Yes	A Noise Management Plan has been approved by the Secretary and is implemented at the Quarry. The Noise Management Plan is available from the Adbri website.	
AIR QUALITY				
Air Quality Criteria				
7.	The Applicant shall implement all reasonable and feasible avoidance and mitigation measures so that particulate matter emissions generated by the development do not exceed the criteria in Tables 3 to 5 at any residence on privately-owned land. Table 3: Long-Term Criteria for Particulate Matter	Yes	Dust monitoring undertaken during the reporting period indicates that the operation complied with the criteria in this condition.	D

Pollutant	Averaging period	[d] Criterion
Total suspended particulates (TSP)	Annual	[a] 90 µg/m3
Particulate matter < 10µm (PM_{10})	Annual	[a] 30 µg/m3

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<table>
<tr><th>Condition No.</th><th>Paraphrased Requirement</th><th>Compliance</th><th>Comment</th><th>Basis*</th></tr>
<tr><td colspan="5">SCHEDULE 3: ENVIRONMENTAL PERFORMANCE CONDITIONS (Cont'd)</td></tr>
<tr><td colspan="5">AIR QUALITY (Cont'd)</td></tr>
<tr><td colspan="5">Air Quality Criteria (Cont'd)</td></tr>
<tr><td></td><td colspan="3">Table 4: Short-Term Criteria for Particulate Matter
<table><tr><th>Pollutant</th><th>Averaging period</th><th>[d] Criterion</th></tr><tr><td>Particulate matter < 10µm (PM_{10})</td><td>24 hour</td><td>[a] 50 µg/m3</td></tr></table>
Table 5: Long-Term Criteria for Deposited Dust
<table><tr><th>Pollutant</th><th>Averaging period</th><th>Maximum increase in deposited dust level</th><th>Maximum total deposited dust level</th></tr><tr><td>[c] Deposited dust</td><td>Annual</td><td>[b] 2g/m^2/month</td><td>[a] 4g/m^2/month</td></tr></table></td><td></td><td></td></tr>
<tr><td colspan="5">Operating Conditions</td></tr>
<tr><td>8.</td><td>The Applicant shall:
(a) implement all reasonable and feasible measures to minimise the dust emissions of the development;
(b) minimise surface disturbance of the site; and
(c) monitor and report on compliance with the relevant air quality criteria in this consent;
to the satisfaction of the Secretary.</td><td>Yes</td><td>Dust impacts were effectively managed during the reporting period.</td><td>D</td></tr>
<tr><td colspan="5">Air Quality Management Plan</td></tr>
<tr><td>9.</td><td>The Applicant shall prepare and implement an Air Quality Management Plan for the development to the satisfaction of the Secretary.</td><td>Yes</td><td>An Air Quality Management Plan has been approved by the Secretary and is implemented at the Quarry.
The Air Quality Management Plan is available from the Adbri website.</td><td>D</td></tr>
<tr><td colspan="5">METEOROLOGICAL MONITORING</td></tr>
<tr><td>10.</td><td>For the life of the development, the Applicant shall ensure that there is a suitable meteorological station operating in the vicinity of the site that complies with the requirements in the Approved Methods for Sampling of Air Pollutants in New South Wales guideline.</td><td>Yes</td><td>A meteorological station was installed in July 2016.</td><td>D</td></tr>
</table>

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Condition No.	Paraphrased Requirement	Compliance	Comment	Basis*
SCHEDULE 3: ENVIRONMENTAL PERFORMANCE CONDITIONS (Cont'd)				
SOIL AND WATER				
Water Supply				
11.	The Applicant shall ensure that it has sufficient water for all stages of the development, and if necessary, adjust the scale of operations under the consent to match its available water supply to the satisfaction of the Secretary.	Noted	Adbri is approved to use 44ML of water per annum (based on a water year (July to June)). A total of 0.316ML was used between July 2024 to June 2025.	D
Operating Conditions				
12.	The Applicant shall: (a) comply with Section 120 of the POEO Act, unless an EPL authorises otherwise; (b) ensure that the catchment of the water management system is not larger than 40 ha, unless the Secretary agrees otherwise; (c) maintain the dredge and silt ponds to capture a 1 in 100 ARI storm event plus adequate freeboard to ensure no offsite discharge; and (d) ensure that the loss of groundwater and surface water to Tinda Creek is no greater than predicted in the EIS.	Yes	The catchment of the closed water management system used in the reporting period was 38.4ha. No discharge of water occurred during the reporting period.	D
Water Management Plan				
13.	The Applicant shall prepare and implement a Water Management Plan for the development to the satisfaction of the Secretary.	Yes	A Water Management Plan has been prepared and approved by the Secretary and is being implemented at the Quarry.	D
HERITAGE				
Heritage Management Plan				
14.	The Applicant shall prepare and implement a Heritage Management Plan for the development to the satisfaction of the Secretary.	Yes	A Heritage Management Plan has been approved by the Secretary and is implemented at the Quarry. The Heritage Management Plan is available from the Adbri website	

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<table>
<tr><th>Condition No.</th><th>Paraphrased Requirement</th><th>Compliance</th><th>Comment</th><th>Basis*</th></tr>
<tr><td colspan="5">SCHEDULE 3: ENVIRONMENTAL PERFORMANCE CONDITIONS (Cont'd)</td></tr>
<tr><td colspan="5">LANDSCAPE AND REHABILITATION</td></tr>
<tr><td colspan="5">Biodiversity Offset Strategy</td></tr>
<tr><td>15.</td><td>The Applicant shall implement the biodiversity offset strategy described in the EIS, as summarised and revised in Table 6, and shown conceptually in Appendix 5, to the satisfaction of the Secretary.
Table 6: Biodiversity Offset Strategy (ha)<table><tr><th>Area</th><th>Offset Type</th><th>Minimum Size (ha)</th></tr><tr><td>On-site Offset Area</td><td>Existing vegetation to be enhanced</td><td>106.6</td></tr></table></td><td>Y</td><td>Adbri has reached an agreement with NPWS regarding the transfer of land to satisfy the offsetting requirements of SSD_4978. The transfer of this land is pending.</td><td>D</td></tr>
<tr><td colspan="5">Security of Offsets</td></tr>
<tr><td>16.</td><td>Within 2 years of this consent, unless otherwise agreed with the Secretary, the Applicant shall make suitable arrangements to provide appropriate long-term security for the offset area, to the satisfaction of the Secretary.</td><td>Y</td><td>In February 2023, Adbri agreed to the subdivision of land to establish the biodiversity offset site with the Administration Sheet including the intention for the land to be reserved under the provisions of the National Parks and Wildlife Act 1974. The Administration Sheet was signed by a delegate for the Minister administering the National Parks and Wildlife Act 1974 and is therefore considered to have the effect of securing the land for conservation purposes.</td><td>D</td></tr>
<tr><td colspan="5">Rehabilitation Objectives</td></tr>
<tr><td>17.</td><td>The Applicant shall rehabilitate the site to the satisfaction of the Secretary. The final landform must:
(a) be generally consistent with the proposed rehabilitation strategy in the EIS, and the final landform shown conceptually in Appendices 4 and 5. and</td><td>Yes</td><td>Progressive rehabilitation is consistent with the EIS. The final landform is yet to be developed.</td><td>D</td></tr>
</table>

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<table>
<tr><th>Condition No.</th><th>Paraphrased Requirement</th><th>Compliance</th><th>Comment</th><th>Basis*</th></tr>
<tr><td colspan="5">SCHEDULE 3: ENVIRONMENTAL PERFORMANCE CONDITIONS (Cont'd)</td></tr>
<tr><td colspan="5">LANDSCAPE AND REHABILITATION (Cont'd)</td></tr>
<tr><td colspan="5">Rehabilitation Objectives (Cont'd)</td></tr>
<tr><td></td><td>(b) comply with the objectives in Table 7.
Table 7: Rehabilitation Objectives
<table>
<tr><th>Feature</th><th>Objective</th></tr>
<tr><td>Site (as a whole)</td><td>• Safe, stable and non-polluting
• Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of local native species and habitat, including at least 0.35 ha of Mellong Sandmass Sedgeland</td></tr>
<tr><td>Surface Infrastructure</td><td>• To be decommissioned and removed (unless the Secretary agrees otherwise)</td></tr>
<tr><td>Final Voids</td><td>• Minimise the size, depth, batter slope and the drainage catchment of the final void
• Ensure that the volume of VENM and ENM detailed in the EIS is imported for rehabilitation of the site
• Ensure that the surface area of the final voids is no greater than 16 ha in total
• Separated from the surface water drainage system, unless the Secretary agrees otherwise</td></tr>
<tr><td>Watercourses</td><td>• Restore alignment and hydraulic function, as far as practical</td></tr>
<tr><td>Community</td><td>• Ensure public safety</td></tr>
</table></td><td>Yes</td><td>Progressive rehabilitation complied with these objectives during the reporting period.</td><td>D</td></tr>
<tr><td colspan="5">Progressive Rehabilitation</td></tr>
<tr><td>18.</td><td>The Applicant shall rehabilitate the site progressively, that is, as soon as reasonably practicable following disturbance. Interim stabilisation measures must be implemented where reasonable and feasible to control erosion (both wind and water) in disturbed areas that are not active and which are not ready for final rehabilitation.</td><td>Yes</td><td>Rehabilitation continued in Domain 4 during the reporting period with this landform progressively being stabilised prior to revegetation.</td><td>D</td></tr>
<tr><td colspan="5">Landscape Management Plan</td></tr>
<tr><td>19.</td><td>The Applicant shall prepare and implement a Landscape Management Plan for the development to the satisfaction of the Secretary.</td><td>Yes</td><td>A Landscape Management Plan has been approved by the Secretary and is being implemented at the Quarry.
The Landscape Management Plan is available from the Adbri website.
An updated Landscape Management Plan is currently in preparation to revise ongoing management and monitoring measures.</td><td>D</td></tr>
</table>

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Condition No.	Paraphrased Requirement	Compliance	Comment	Basis*
SCHEDULE 3: ENVIRONMENTAL PERFORMANCE CONDITIONS (Cont'd)				
LANDSCAPE AND REHABILITATION (Cont'd)				
Conservation and Rehabilitation Bond				
20.	Within 6 months of the approval of the Landscape Management Plan, the Applicant shall lodge a Conservation and Rehabilitation Bond with the Department to ensure that the biodiversity offset strategy and rehabilitation of the site are implemented in accordance with the performance and completion criteria set out in the plan and relevant conditions of this consent. The sum of the bond shall be determined by: (a) calculating the cost of implementing the biodiversity offset strategy over the next 3 years; (b) calculating the cost of rehabilitating the site, taking into account the likely surface disturbance over the next 3 years of extraction operations; and (c) employing a suitably qualified quantity surveyor or other expert to verify the calculated costs, to the satisfaction of the Secretary.	Yes	A Conservation and rehabilitation bond was lodged with DPHI on 31 October 2025 and the updated estimated has been approved (04/02/2026).	D
21.	Within 3 months of each Independent Environmental Audit (see condition 9 of schedule 5), the Applicant shall review, and if necessary revise, the sum of the Conservation and Rehabilitation Bond to the satisfaction of the Secretary.	Yes	An Independent Environment Audit was undertaken between 1 and 8 July 2025. An updated estimate of the required Rehabilitation Conservation Bond was submitted to DPHI on 31/10/2025 and has been approved (04/02/2026).	D
TRANSPORT				
Monitoring of Product Transport				
22.	The Applicant shall keep accurate records of all laden truck movements to and from the site (hourly, daily, weekly, monthly and annually) and publish these records on its website every 6 months.	Yes	See Section 4.5 of the Annual Review. Truck movement records are also available from the Adbri website.	D

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Table A1-1 (Cont'd)
Internal Compliance Audit of Relevant Conditions of Development Consent SSD_4978
for Tinda Creek Sand Project from 01 January 2025 to 31 December 2025

Condition No.	Paraphrased Requirement	Compliance	Comment	Basis*
SCHEDULE 3: ENVIRONMENTAL PERFORMANCE CONDITIONS (Cont'd)				
TRANSPORT (Cont'd)				
Operating Conditions				
23.	The Applicant shall ensure that: (a) all laden vehicles have appropriate signage, including a contact phone number, so they be easily identified by road users; (b) all laden vehicles entering or exiting the site have their loads covered; (c) all laden vehicles exiting the site are cleaned of sand and other material that may fall on the road, before leaving the site; and (d) no trucks queue at the entrance to the site before 6am.	Yes	All laden vehicles complied with these requirements during the reporting period.	D
Access Road and Intersection Construction				
24.	Within 12 months from the date of this consent, unless the Secretary agrees otherwise, the Applicant shall upgrade the site access road and its intersection with Putty Road in accordance with applicable AUSTROADS standards, and to the satisfaction of RMS.	Yes	Intersection upgrade completed in November 2015.	D
Transport Management Plan				
25.	The Applicant shall prepare and implement a Transport Management Plan for the development to the satisfaction of the Secretary.	Yes	A Transport Management Plan has been approved by the Secretary and is implemented at the Quarry. The Transport Management Plan is available from the Adbri website	D
VISUAL				
26.	The Applicant shall: (a) implement all reasonable and feasible measures to minimise the visual and off-site lighting impacts of the development on local residences and road users; and (b) ensure that all external lighting associated with the development complies with the relevant Australian Standards…. to the satisfaction of the Secretary.	Yes	Visual amenity was managed effectively during the reporting period. No complaints were received during the reporting period regarding visual impacts.	
BUSHFIRE MANAGEMENT				
27.	The Applicant shall ensure that the development is suitably equipped to respond to any fires on site; and assist the Rural Fire Service, emergency services and National Parks and Wildlife Service as much as practicable if there is a fire in the surrounding area.	Yes	Firefighting equipment is readily available at the Quarry.	D

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Internal Compliance Audit of Relevant Conditions of Development Consent SSD_4978 for Tinda Creek Sand Project from 01 January 2025 to 31 December 2025

Condition No.	Paraphrased Requirement	Compliance	Comment	Basis*
SCHEDULE 3: ENVIRONMENTAL PERFORMANCE CONDITIONS (Cont'd)				
WASTE				
28.	The Applicant shall ensure that only certified VENM and ENM is imported to the site to aid in the minimisation of final voids.	Yes	No material was imported during the reporting period.	D
29.	The Applicant shall manage on-site sewage treatment and disposal in accordance with the requirements of its EPL, and to the satisfaction of the EPA and Council.	Yes	There were no compliance issues with regards to sewerage management during the reporting period.	D
30.	The Applicant shall: (a) minimise the waste generated by the development; (b) ensure that the waste generated by the development is appropriately stored, handled, and disposed of; and (c) report on waste management and minimisation in the Annual Review, to the satisfaction of the Secretary.	Yes	Waste is being managed appropriately at the Quarry Site.	O
SCHEDULE 4: ADDITIONAL PROCEDURES				
NOTIFICATION OF LANDOWNERS				
1.	As soon as practicable after obtaining monitoring results showing an exceedance of any relevant criteria in schedule 3, the Applicant shall notify affected landowners in writing of the exceedance, and provide regular monitoring results to each affected landowner until the development is again complying with the relevant criteria.	Yes	Adbri did not receive monitoring results that indicated impacts at a nearby residence.	D
INDEPENDENT REVIEW				
2.	If an owner of privately-owned land considers the development to be exceeding the relevant criteria in schedule 3, then he/she may ask the Secretary in writing for an independent review of the impacts of the development on his/her land. If the Secretary is satisfied that an independent review is warranted, then within 2 months of the Secretary's decision the Applicant shall:	NYA	No requests for an independent review of impacts of the Quarry were received during the reporting period.	
SCHEDULE 5: ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING				
ENVIRONMENTAL MANAGEMENT				
Environmental Management Strategy				
1.	The Applicant shall prepare and implement an Environmental Management Strategy for the development to the satisfaction of the Secretary.	Yes	An Environmental Management Strategy has been approved by the Secretary and is implemented at the Quarry. The Environmental Management Strategy Plan is available from the Adbri website.	D

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Condition No.	Paraphrased Requirement	Compliance	Comment	Basis*
SCHEDULE 5: ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING (Cont'd)				
ENVIRONMENTAL MANAGEMENT (Cont'd)				
Adaptive Management				
2.	The Applicant shall assess and manage development-related risks to ensure that there are no exceedances of the criteria and/or performance measures in schedule 3. Any exceedance of these criteria and/or performance measures constitutes a breach of this consent and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation. Where any exceedance of these criteria and/or performance measures has occurred, the Applicant shall, at the earliest opportunity: (a) take all reasonable and feasible measures to ensure that the exceedance ceases and does not recur; (b) consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and (c) implement remediation measures as directed by the Secretary; to the satisfaction of the Secretary.	Yes	All non-compliance issues that occurring during the reporting period were addressed in a manner consistent with this condition.	D
Management Plan Requirements				
3.	The Applicant shall ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines, and include: (a) detailed baseline data; (b) a description of: • the relevant statutory requirements (including any relevant approval, licence or lease conditions); • any relevant limits or performance measures/criteria; and • the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures; (c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;	Yes	All management plans and strategies have been approved by the Secretary.	D

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Condition No.	Paraphrased Requirement	Compliance	Comment	Basis*
SCHEDULE 5: ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING (Cont'd)				
ENVIRONMENTAL MANAGEMENT (Cont'd)				
Management Plan Requirements (Cont'd)				
	(d) a program to monitor and report on the: • impacts and environmental performance of the development; and • effectiveness of any management measures (see (c) above); (e) a contingency plan to manage any unpredicted impacts and their consequences; (f) a program to investigate and implement ways to improve the environmental performance of the development over time; (g) a protocol for managing and reporting any: • incidents; • complaints; • non-compliances with statutory requirements; and • exceedances of the impact assessment criteria and/or performance criteria; and (h) a protocol for periodic review of the plan.			
Annual Review				
4.	By the end of December each year, or other timing as may be agreed by the Secretary, the Applicant shall review the environmental performance of the development to the satisfaction of the Secretary.	Yes	This document.	D
Revision of Strategies, Plans and Programs				
5.	Within 3 months of a modification to this consent or following the submission of an: (a) annual review under condition 4 above: (b) incident report under condition 7 below; or (c) audit report under condition 9 below, the Applicant shall review, and if necessary revise, the strategies, plans, and programs required under this consent to the satisfaction of the Secretary. *Note: This is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the development.*	Yes	Adbri have advised that a review has been carried out accordingly.	D

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Condition No.	Paraphrased Requirement	Compliance	Comment	Basis*
SCHEDULE 5: ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING (Cont'd)				
ENVIRONMENTAL MANAGEMENT (Cont'd)				
Community Consultative Committee				
6.	The Applicant shall establish and operate a Community Consultative Committee (CCC) for the development to the satisfaction of the Secretary. This CCC must be operated in general accordance with the Guidelines for Establishing and Operating Community Consultative Committees for Mining Developments (Department of Planning, 2007, or its latest version), and be operating within 6 months of the date of this consent.	Yes	A CCC Meeting was held at the Quarry Site on 19 August 2025.	D
REPORTING				
Incident Reporting				
7.	The Applicant shall immediately notify the Secretary and any other relevant agencies of any incident that has caused, or threatens to cause, material harm to the environment. For any other incident associated with the Development, the Applicant shall notify the Secretary. Within 7 days of the date of the incident, the Applicant shall provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.	Yes	There were no incidents that threatened or caused material harm to the environment that required notification DPHI during the reporting period.	D
Regular Reporting				
8.	The Applicant shall provide regular reporting on the environmental performance of the development on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent.	Yes	All relevant documents and monitoring results are available from the Adbri website.	O
INDEPENDENT ENVIRONMENTAL AUDIT				
9.	Within a year of the date of this consent, and every 3 years thereafter, unless the Secretary directs otherwise, the Applicant shall commission and pay the full cost of an Independent Environmental Audit of the development.	Yes	An Independent Environment Audit was undertaken between 1 and 8 July 2025.	D

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Condition No.	Paraphrased Requirement	Compliance	Comment	Basis*
SCHEDULE 5: ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING (Cont'd)				
INDEPENDENT ENVIRONMENTAL AUDIT (Cont'd)				
10.	Within 6 weeks of the completion of this audit, unless the Secretary agrees otherwise, the Applicant shall submit a copy of the audit report to the Secretary, together with its response to any recommendations contained in the audit report, including a timetable for the implementation of any measures proposed to address the recommendations in the audit report. If the Applicant intends to defer the implementation of a recommendation, reasons must be documented.	Yes	The audit report and response from Adbri were provided to DPHI on 26 August 2025.	D
11.	Within 6 months of the date of this consent, the Applicant shall: (a) make copies of the following publicly available on its website: • the EIS; • current statutory approvals for the development; • approved strategies, plans and programs required under the conditions of this consent; • a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs; • a complaints register, which is to be updated monthly; • minutes of CCC meetings; • the annual reviews of the development (for the last 5 years); • any independent environmental audit of the development, and the Applicant's response to the recommendations in any audit; • any other matter required by the Secretary; and (b) keep this information up-to-date, to the satisfaction of the Secretary.	Yes	All relevant documents and monitoring results are available from the Adbri website.	D

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Table A1-2
Internal Compliance Audit of Relevant Conditions of Environment Protection Licence 12007 for Tinda Creek Sand Project from 01 January 2025 to 31 December 2025

<table>
<tr><th>Cond. No.</th><th>Paraphrased Requirement</th><th>Compliance</th><th>Comment</th><th>Basis*</th></tr>
<tr><td colspan="5">1. Administrative Conditions</td></tr>
<tr><td colspan="5">What the licence authorises and regulates</td></tr>
<tr><td>A1.1</td><td>This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.
Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.
<table>
<tr><th>Scheduled Activity</th><th>Fee Based Activity</th><th>Scale</th></tr>
<tr><td>Extractive activities</td><td>Water-based extractive activity</td><td>>100000 – 500000m^3 annual extractive capacity</td></tr>
</table></td><td>Yes</td><td>Scheduled Activity Fee Based Activity Scale > 100 000 – 500 000m^3 annual extractive capacity</td><td>D</td></tr>
<tr><td>A1.2</td><td>Notwithstanding condition A1.1, the scale of the water-based extractive activity authorised under this licence must not exceed more than 300,000 tonnes of sand extracted or processed in any calendar year, being the amount equivalent to the annual extraction limit approved by the development consent granted under the Environmental Planning and Assessment Act 1979 for the premises specified in A2.</td><td>Yes</td><td>Water-based extractive activity did not exceed more than 300 000 tonnes of sand extracted or processed during the reporting period.</td><td>D</td></tr>
<tr><td colspan="5">Premises or plant to which this licence applies</td></tr>
<tr><td>A2.1</td><td>The licence applies to the following premises:
TINDA CREEK QUARRY
6102 PUTTY ROAD
MELLONG NSW 2756
LOT 1 DP 628806, LOT 2 DP 628806, LOT 3 DP 628806
As depicted in the map of the approved Project Area for SSD 4978 in Condition A2.2</td><td>N/A</td><td></td><td></td></tr>
<tr><td>A2.2</td><td>The premises location is shown on the map below</td><td>N/A</td><td></td><td></td></tr>
</table>

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Internal Compliance Audit of Relevant Conditions of Environment Protection Licence 12007 for Tinda Creek Sand Project from 01 January 2025 to 31 December 2025

Cond. No.	Paraphrased Requirement	Compliance	Comment	Basis*
1. Administrative Conditions (Cont'd)				
Information supplied to the EPA				
A3.1	Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence. In this condition the reference to "the licence application" includes a reference to: a) the applications for any licences (including former pollution control approvals) which this licence replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998; and b) the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence.	Yes	Works and activities carried out in the reporting period complied with the EPL.	D
A3.2	Works and activities must be carried out in accordance with the Development Consent for State Significant Development 4978 approved by the Department of Planning and Environment on 10 April 2015.	No	A non-compliance recorded under SSD_4978 preclude the achievement of compliance with this condition.	D
2. Discharges to Air and Water and Applications to Land				
P1 Location of monitoring/discharge points and areas				
P1.1	The following points referred to in the table below are identified in this licence for the purposes of weather and/or noise monitoring and/or setting limits for the emission of noise from the premises.	Yes	A Noise Management Plan has been approved by the Secretary and is implemented at the Quarry. The Noise Management Plan is available from the Adbri website and identifies monitoring locations.	D

EPA ID No.	Type of monitoring point	Location Description
1	Noise monitoring	The boundary of "Receiver 1" as detailed in Figure 6.1 of the document titled "Tinda Creek Sand Quarry Noise Management Plan Final October 2015", submitted to the EPA on 18 November 2015

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<table>
<tr><th>Cond. No.</th><th>Paraphrased Requirement</th><th>Compliance</th><th>Comment</th><th>Basis*</th></tr>
<tr><td colspan="5">3. Limit Conditions</td></tr>
<tr><td colspan="5">L1 Pollution of waters</td></tr>
<tr><td>L1.1</td><td>Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.</td><td>Yes</td><td>There was no evidence or records of pollution as a result of the operation during the reporting period.</td><td>D</td></tr>
<tr><td colspan="5">L2 Waste</td></tr>
<tr><td>L2.1</td><td>The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.</td><td>Yes</td><td>No waste material was received on site during the reporting period.</td><td>D</td></tr>
<tr><td>L2.2</td><td>This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if those activities require an environment protection licence.</td><td>Yes</td><td>No waste material was received on site during the reporting period.</td><td>D</td></tr>
<tr><td colspan="5">L3 Noise Limits</td></tr>
<tr><td>L3.1</td><td>Noise generated at the premises that is measured at each noise monitoring point established under this licence must not exceed the noise levels specified in Column 4 of the table below for that point during the corresponding time periods specified in Column 1 when measured using the corresponding measurement parameters listed in Column 2.

POINT 1
<table><tr><th>Time period</th><th>Measurement parameter</th><th>Measurement frequency</th><th>Noise level dB(A)</th></tr><tr><td>All hours</td><td>LAeq (15 minute)</td><td>-</td><td>35</td></tr><tr><td>Night</td><td>Lmax OR LA1,1min</td><td>-</td><td>45</td></tr></table></td><td>Yes</td><td>Noise monitoring undertaken during the reporting period demonstrates that Adbri complied with the criteria. There were no noise complaints during the reporting period.</td><td>D</td></tr>
<tr><td>L3.2</td><td>For the purposes of the table under Condition L3.1 "Night" has the same meaning as in the NSW Industrial Noise Policy (EPA, 2000).</td><td>Noted</td><td></td><td></td></tr>
</table>

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Cond. No.	Paraphrased Requirement	Compliance	Comment	Basis*
3. Limit Conditions (Cont'd)				
L4 Hours of Operation				
L4.1	Unless permitted by another condition of this licence, activities at the premises must: a) only be undertaken between 7:00 am and 6:00 pm Monday to Friday; b) only be undertaken between 7:00 am and 3:00 pm Saturday; and c) not be undertaken on Sundays or public holidays.	Yes	Adbri reports that all hours of operation were complied with during the reporting period.	D
L4.2	In addition to the limitations imposed by Condition L4.1, construction activities must not be undertaken: a) between 7:00 am and 8:00 am Saturdays; and b) between 1:00 pm and 3:00 pm Saturdays.	Yes	No construction activities were undertaken in the reporting period with the exception of raising the northern wall of the sediment pond. Adbri reports that hours of operation were adhered to.	D
L4.3	In addition to the hours of operation specified in Condition L4.1, dispatch activities may be undertaken: a) between 5:00 am and 10:00 pm Monday to Friday; and b) between 6:00 am and 3:00 pm Saturdays	Yes	Adbri reports that dispatch occurred during the approved hours throughout the reporting period.	D
L4.4	Maintenance activities may be undertaken at any time if those activities are inaudible at all residential premises.	Yes	Adbri has confirmed that all maintenance activities were inaudible at residential premises. No noise complaints were received through the reporting period.	D
4. Operating Conditions				
O1 Activities must be carried out in a competent manner				
O1.1	Licensed activities must be carried out in a competent manner. This includes: a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.	Yes	All activities were carried out in a competent manner during the reporting period.	D

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Cond. No.	Paraphrased Requirement	Compliance	Comment	Basis*
4. Operating Conditions (Cont'd)				
O2 Maintenance of plant and equipment				
O2.1	All plant and equipment installed at the premises or used in connection with the licensed activity: a) must be maintained in a proper and efficient condition; and b) must be operated in a proper and efficient manner.	Yes	Adbri reports that all plant and equipment was maintained and operated in a proper and efficient manner.	D
O3 Dust				
O3.1	The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.	Yes	Adbri reports that quarry-generated dust was minimal throughout the reporting period. No complaints relating to dust impacts were received.	D
O3.2	The licensee must ensure that all laden vehicles exiting the site have their loads covered.	Yes	Adbri reports that all loads were covered during the reporting period.	D
5. Monitoring and Recording Conditions				
M1 Monitoring Records				
M1.1	The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.	Yes	All monitoring was conducted and retained in accordance with M1 of EPL 12007	D
M1.2	All records required to be kept by this licence must be: a) in a legible form, or in a form that can readily be reduced to a legible form; b) kept for at least 4 years after the monitoring or event to which they relate took place; and c) produced in a legible form to any authorised officer of the EPA who asks to see them.	Yes	All records have been kept in accordance with condition M1 of EPL 12007.	D
M1.3	The following records must be kept in respect of any samples required to be collected for the purposes of this licence: a) the date(s) on which the sample was taken; b) the time(s) at which the sample was collected; c) the point at which the sample was taken; and d) the name of the person who collected the sample.	Yes	Adbri confirms that all relevant details have been recorded for monitoring activities.	D

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Cond. No.	Paraphrased Requirement	Compliance	Comment	Basis*
5. Monitoring and Recording Conditions (Cont'd)				
M2 Environmental Monitoring				
M2.1	a) The licensee must undertake monthly inspections of the surface water management system at the premises. b) The monthly inspections must: i) be undertaken immediately upstream and downstream of the quarry disturbance area; ii) include visual inspection of litter, oil and grease and sediment levels within the surface water system, including diversion channels; iii) include visual inspection of the physical integrity of the surface water management system, including any signs of erosion; and iv) include visual inspection of the water level and flow in Tinda Creek.	Yes	Monthly inspections of the surface water management system were undertaken throughout the reporting period in accordance with condition M2 of EPL 12007.	D
M3 Recording of pollution complaints				
M3.1	The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.	Yes	A complaints register is maintained with no complaints received during the reporting period.	D
M3.2	The record must include details of the following: a) the date and time of the complaint; b) the method by which the complaint was made; c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect; d) the nature of the complaint; e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and f) if no action was taken by the licensee, the reasons why no action was taken.	Yes	A complaints register is maintained with no complaints received during the reporting period.	D
M3.3	The record of a complaint must be kept for at least 4 years after the complaint was made.	Yes	A complaints register is maintained with no complaints received during the reporting period.	D
M3.4	The record must be produced to any authorised officer of the EPA who asks to see them.	NYA	No requests were provided during the reporting period.	D
M4 Telephone complaints line				
M4.1	The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.	Yes	A telephone complaints line was maintained, however, no complaints were received during the reporting period.	D

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<tr><th>Cond. No.</th><th>Paraphrased Requirement</th><th>Compliance</th><th>Comment</th><th>Basis*</th></tr>
<tr><td colspan="5">5. Monitoring and Recording Conditions (Cont'd)</td></tr>
<tr><td colspan="5">M4 Telephone complaints line (Cont'd)</td></tr>
<tr><td>M4.2</td><td>The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.</td><td>Yes</td><td>The telephone complaints number is displayed on a sign at the front gate of the Quarry.</td><td>D</td></tr>
<tr><td>M4.3</td><td>The preceding two conditions do not apply until 3 months after: the date of the issue of this licence.</td><td>Noted</td><td></td><td></td></tr>
<tr><td colspan="5">M5 Noise Monitoring</td></tr>
<tr><td rowspan="2">M5.1</td><td>To assess compliance with the noise limits specified within this licence, the licensee must undertake operator attended noise monitoring at each specified noise monitoring point in accordance with the table below.</td><td>Yes</td><td rowspan="2">Noise monitoring was undertaken by Muller Acoustic Consultants in 2025 in accordance with the approved Noise Management Plan.</td><td rowspan="2">D</td></tr>
<tr><td>POINT 1
<table><tr><th>Assessment period</th><th>Minimum frequency in a reporting period</th><th>Minimum duration within assessment period</th><th>Minimum number of assessment period</th></tr><tr><td>All hours when in use</td><td>Yearly</td><td>1 hour</td><td>1 operation day</td></tr></table></td></tr>
<tr><td>M5.2</td><td>The licensee must undertake noise monitoring as directed by an authorised officer of the EPA.</td><td>NYA</td><td>No request was made for additional noise monitoring during the reporting period.</td><td>D</td></tr>
<tr><td>M5.3</td><td>All noise monitoring required by this licence must be undertaken in accordance with Australian Standard AS 2659.1 - 1998: Guide to the use of sound measuring equipment - Portable sound level meters, or any revisions of that standard that may be made by Standards Australia, and the compliance monitoring guidance provided in the NSW Industrial Noise Policy.</td><td>Yes</td><td>Noise monitoring was undertaken in accordance with Australian Standard AS 2659.1 – 1998.</td><td>D</td></tr>
<tr><td colspan="5">6. Reporting Conditions</td></tr>
<tr><td colspan="5">R1 Annual Return Documents</td></tr>
<tr><td>R1.1</td><td>The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:
1. a Statement of Compliance,
2. a Monitoring and Complaints Summary,
3. a Statement of Compliance - Licence Conditions,
4. a Statement of Compliance - Load based Fee,
5. a Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan,
6. a Statement of Compliance - Requirement to Publish Pollution Monitoring Data; and
7. a Statement of Compliance - Environmental Management Systems and Practices.
At the end of each reporting period, the EPA will provide to the licensee a copy of the form that must be completed and returned to the EPA.</td><td>Yes</td><td>Annual Return submitted to EPA on 7 July 2025.</td><td>D</td></tr>
</table>

Yes = Complied with during 2025 No = Not Complied with during 2025 ND = Not Determined
NYA = Not Yet Applicable HNC = Historical Non-Compliance ANC = Administrative Non-Compliance
* = Basis for assessment of compliance D = Documentation/Discussion O = Observation
Yes# / No# = Complied / not complied with and compliance no longer required to be assessed

Table A1-2 (Cont'd)
Internal Compliance Audit of Relevant Conditions of Environment Protection Licence 12007 for Tinda Creek Sand Project from 01 January 2025 to 31 December 2025

Cond. No.	Paraphrased Requirement	Compliance	Comment	Basis*
6. Reporting Conditions (Cont'd)				
R1 Annual Return Documents (Cont'd)				
R1.2	An Annual Return must be prepared in respect of each reporting period, except as provided below.	Noted		
R1.3	Where this licence is transferred from the licensee to a new licensee: a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.	Noted		
R1.4	Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on: a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.	Noted		
R1.5	The Annual Return for the reporting period must be supplied to the EPA via eConnect EPA or by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').	Yes	Annual Return submitted to EPA 7 July 2025	D
R1.6	The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.	Noted		
R1.7	Within the Annual Return, the Statements of Compliance must be certified and the Monitoring and Complaints Summary must be signed by: a) the licence holder; or b) by a person approved in writing by the EPA to sign on behalf of the licence holder.	Yes	Compliance declaration was signed by a Director and Company Secretary.	D
R2 Notification of environmental harm				
R2.1	Notifications must be made by telephoning the Environment Line service on 131 555.	Noted		

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Table A1-2 (Cont'd)
Internal Compliance Audit of Relevant Conditions of Environment Protection Licence 12007 for Tinda Creek Sand Project from 01 January 2025 to 31 December 2025

Cond. No.	Paraphrased Requirement	Compliance	Comment	Basis*
6. Reporting Conditions (Cont'd)				
R2 Notification of environmental harm (Cont'd)				
R2.2	The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.	Yes	No incidences occurred during the reporting period.	D
R3 Written Report				
R3.1	Where an authorised officer of the EPA suspects on reasonable grounds that: a) where this licence applies to premises, an event has occurred at the premises; or b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence, and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.	Yes	No requests for written reports of an event were made by the EPA.	D
R3.2	The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.	Yes	No requests for written reports of an event were made by the EPA.	D
R3.3	The request may require a report which includes any or all of the following information: a) the cause, time and duration of the event; b) the type, volume and concentration of every pollutant discharged as a result of the event; c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event; d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort; e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants; f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and g) any other relevant matters.	Yes	No requests for written reports of an event were made by the EPA.	D

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Table A1-2 (Cont'd)
Internal Compliance Audit of Relevant Conditions of Environment Protection Licence 12007 for Tinda Creek Sand Project from 01 January 2025 to 31 December 2025

Cond. No.	Paraphrased Requirement	Compliance	Comment	Basis*
6. Reporting Conditions (Cont'd)				
R3 Written Report (Cont'd)				
R3.4	The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.	Noted	No feedback has been received by EPA in relation to an R3 written Report.	D
R4 Other reporting conditions				
Noise Monitoring Results				
R4.1	a) The licensee must submit the results of any noise monitoring undertaken in accordance with the requirements of Condition M5.1 or Condition M5.2 to the EPA within three weeks of the noise monitoring being undertaken. b) The noise monitoring results submitted to the EPA must include: i) a map of each noise monitoring location in relation to the noise source, including relevant distances; ii) an analysis of the noise monitoring results; iii) any detected exceedance of the noise limits specified in Condition L4.1; iv) details of any remedial action taken or proposed to be taken in relation to any exceedance of the noise limits specified in Condition L4.1; v) details of the prevailing meteorological conditions during the period when the noise monitoring was undertaken; and vi) confirmation that noise monitoring was/was not undertaken in accordance with Condition M5.3.	Yes	A copy of the Noise Monitoring Assessment is available on the Adbri website and was provided to the EPA within the allocated timeframe. No exceedances were recorded during the reporting period.	D
Surface Water Management System reporting				
R4.2	In accordance with section 5.3 of the approved Water Management Plan for the premises, the licensee must notify the EPA when surface water triggers are exceeded and provide a written report to the EPA.	NYA	No surface water triggers were exceeded during the reporting period.	D
R4.3	The report to the EPA must include: a) the results of surface water management system inspections required in condition M2.1 for the month related to the exceedance, including photographs; and b) appropriate mitigation and contingency measures to be implemented within one month of the exceedance being detected.	NYA	No surface water triggers were exceeded during the reporting period.	D

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Table A1-2 (Cont'd)
Internal Compliance Audit of Relevant Conditions of Environment Protection Licence 12007
for Tinda Creek Sand Project from 01 January 2025 to 31 December 2025

Cond. No.	Paraphrased Requirement	Compliance	Comment	Basis*
6. Reporting Conditions (Cont'd)				
R4 Other reporting conditions (Cont'd)				
R4.4	The report must be submitted to the EPA within one month of surface water triggers being detected and be directed to the Manager, Sydney Industry Section by email to metro.regulation@epa.nsw.gov.au	NYA	No request was received for written reports during the reporting period.	D
7. General Conditions				
G1 Copy of licence kept at the premises or plant				
G1.1	A copy of this licence must be kept at the premises to which the licence applies.	Yes	A copy of the licence is available at the Quarry.	D
G1.2	The licence must be produced to any authorised officer of the EPA who asks to see it.	Noted		
G1.3	The licence must be available for inspection by any employee or agent of the licensee working at the premises.	Noted		

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Appendix 2

Noise Monitoring Assessment 2025

(Total No. of pages including blank pages = 23)

Noise Monitoring Assessment

Tinda Creek Quarry
Tinda Creek, NSW

April 2025

Prepared for: Adbri Quarries Sydney Pty Ltd
May 2025
MAC180647-01RP8V1

Muller Acoustic Consulting

Document Information

Noise Monitoring Assessment

Tinda Creek Quarry

Tinda Creek, NSW

April 2025

Prepared for: Adbri Quarries Sydney Pty Ltd
PO Box 6770

Silverwater NSW 1811

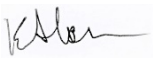
Prepared by: Muller Acoustic Consulting Pty Ltd

PO Box 678, Kotara NSW 2289

ABN: 36 602 225 132

P: +61 2 4920 1833

www.mulleracoustic.com

DOCUMENT ID	DATE	PREPARED	SIGNED	REVIEWED	SIGNED
MAC180647-01RP8V1	7 May 2025	Kristian Allen		Oliver Muller	

Field Officer: Kristian Allen

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APPENDIX A – GLOSSARY OF TERMS

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1 Introduction

Muller Acoustic Consulting Pty Ltd (MAC) has been commissioned by Adbri Quarries Sydney Pty Ltd (Adbri) to complete a Noise Monitoring Assessment (NMA) for the Tinda Creek Quarry, Tinda Creek, NSW (the project).

The monitoring has been conducted in accordance with the approved Tinda Creek Quarry Noise Management Plan and in general accordance with Conditions L3.1 and M5 of EPL#12007 (EPL).

The assessment was conducted in accordance with the following documents:

- NSW Environment Protection Authority (EPA), Noise Policy for Industry (NPI), 2017;
- NSW Environment Protection Authority (EPA's), Environment Protection Licence EPL#12007;
- NSW Environment Protection Authority (EPA's), Approved Methods for the measurement and analysis of environmental noise in NSW, 2022;
- Umwelt Pty Ltd, Tinda Creek Quarry Noise Management Plan (NMP); and
- Australian Standard AS 1055:2018 - Acoustics - Description and measurement of environmental noise.

The assessment was undertaken on Thursday 10 April 2025 and forms part of the noise monitoring program to address conditions of EPL#12007 and the Noise Management Plan.

A glossary of terms, definitions and abbreviations used in this report is provided in **Appendix A**.

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2 Noise Criteria

Noise criteria for the project are outlined in NSW Environment Protection Authority (EPA's) Environment Protection Licence EPL#12007. The relevant sections from the EPL pertaining to noise are reproduced below:

L3 Noise Limits

L3.1 Noise generated at the premises that is measured at each noise monitoring point established under this licence must not exceed the noise levels specified in Column 4 of the table below for that point during the corresponding time periods specified in Column 1 when measured using the corresponding measurement parameters listed in Column 2.

Point 1			
Time Period	*Measurement parameter*	*Measurement frequency*	*Noise level dB(A)*
All hours	*LAeq (15 minute)*	-	*35*
Night	*Lmax OR LA1,1min*	-	*45*

L3.2 For the purpose of the table under Condition L3.1 "Night" has the same meaning as in the NSW Industrial Noise Policy (EPA, 2000).

M5 Noise monitoring

M5.1 To assess compliance with the noise limits specified within this licence, the licensee must undertake operator attended noise monitoring at each specified noise monitoring point in accordance with table below.

Point 1			
Assessment Period	*Minimum frequency in a reporting period*	*Minimum duration within assessment period*	*Minimum number of assessment period*
All hours when in use	*Yearly*	*1 hour*	*1 operation day*

M5.2 The licensee must undertake noise monitoring as directed by an authorised officer of the EPA.

M5.3 All noise monitoring required by this licence must be undertaken in accordance with Australian Standard AS 2659.1 - 1998: Guide to the use of sound measuring equipment - Portable sound level meters, or any revisions of that standard that may be made by Standards Australia, and the compliance monitoring guidance provided in the NSW Industrial Noise Policy.

R4 Other reporting conditions

Noise monitoring results

R4.1

a) The licensee must submit the results of any noise monitoring undertaken in accordance with the requirements of Condition M5.1 or Condition M5.2 to the EPA within three weeks of the noise monitoring being undertaken.

b) The noise monitoring results submitted to the EPA must include:

(i) a map of each noise monitoring location in relation to the noise source, including relevant distances;

(ii) an analysis of the noise monitoring results;

(iii) any detected exceedance of the noise limits specified in Condition L4.1;

(iv) details of any remedial action taken or proposed to be taken in relation to any exceedance of the noise limits specified in Condition L4.1;

(v) details of the prevailing meteorological conditions during the period when the noise monitoring was undertaken; and

(vi) confirmation that noise monitoring was/was not undertaken in accordance with Condition M5.3

3 Methodology

3.1 Locality

The project is located on Putty Road, Tinda Creek, NSW, approximately 67km north of Windsor, NSW. Receivers in the locality surrounding the project are primarily rural/residential. Putty Road is situated to the west of the site with the Yengo National Park bordering the site in all other directions.

3.2 Noise Monitoring Locations

Section M5.1 of the EPL specifies that noise monitoring is to be conducted for a minimum duration of one hour at the boundary of R1, (6255 Putty Road, Mellong, NSW) as detailed in Figure 6.1 of the Tinda Creek Noise Management Plan.

It should be noted that access to the property was not possible during the time of the noise measurements. Therefore, attended measurements were conducted at the boundary gate (NM1) of the property, as shown in **Figure 1**.

Following a request from the Department of Environment and Planning (DPE) on 20 January 2017, two additional near-field monitoring locations were selected to quantify project noise levels and limiting noise influence from Putty Road. The locations include a position adjacent to the main plant area, (Q1) and a second location adjacent to the entrance and exit of the loading and transportation operations (Q2). The noise levels monitored at these locations were used to quantify the overall sound power of the onsite operations, which was then used to calculate the noise contribution at surrounding noise sensitive receivers (ie R2 and R3).

The three monitoring locations, their MGA 56 coordinates and duration of measurement period are outlined in **Table 1** and are presented visually in the locality plan shown in **Figure 1**.

Table 1 Receiver Locations

Receiver ID	Receiver Location	MGA56 Coordinates		Duration	Periods Monitored
		Easting	Northing		
R1	6255 Putty Road	284801	6329055	1 Hour	Morning Shoulder, Day
Q1	Main Plant	286115	6327982	15 mins	Morning Shoulder, Day
Q2	Loading Area	285986	6327974	15 mins	Morning Shoulder, Day

3.3 Assessment Methodology

All noise surveys were conducted in general accordance with the procedures described in Australian Standard AS 1055:2018, "Acoustics - Description and Measurement of Environmental Noise" and the EPL. The acoustic instrumentation used carries appropriate and current NATA (or manufacturer) calibration certificates with records of all calibrations maintained by MAC as per Approved Methods for the measurement and analysis of environmental noise in NSW (EPA, 2022) and complies with AS/NZS IEC 61672.1-2019-Electroacoustics - Sound level meters - Specifications. Calibration of all instrumentation was checked prior to and following measurements. Drift in calibration did not exceed ±0.5dBA.

Attended noise measurements were carried out using a Svantek Type 1, 971 noise analyser. Four noise measurements of 15 minutes in duration were conducted at NM1 (R1) monitoring location during the day and morning shoulder monitoring periods. Where possible, throughout each survey, the operator quantified the contribution of each significant noise source.

Additionally, unattended noise monitoring was conducted at nearfield locations for a period of one hour during the day and morning shoulder monitoring periods to quantify the noise emissions from the quarry. These measurements were carried out using Svantek Type 1, 977 noise analysers.

3.4 Operational Log

Transportation activities are approved to commence at 5am and work shifts including operation of processing equipment are approved to commence at 7am.

Maintenance activities are approved to be undertaken at any time if those activities are inaudible at all residential premises.

Morning shoulder measurements were conducted from 6am to 7am to capture the onsite loading and transportation operations. Daytime operations commenced at approximately 7am with the daytime monitoring conducted from approximately 7:20am to 8:20am.

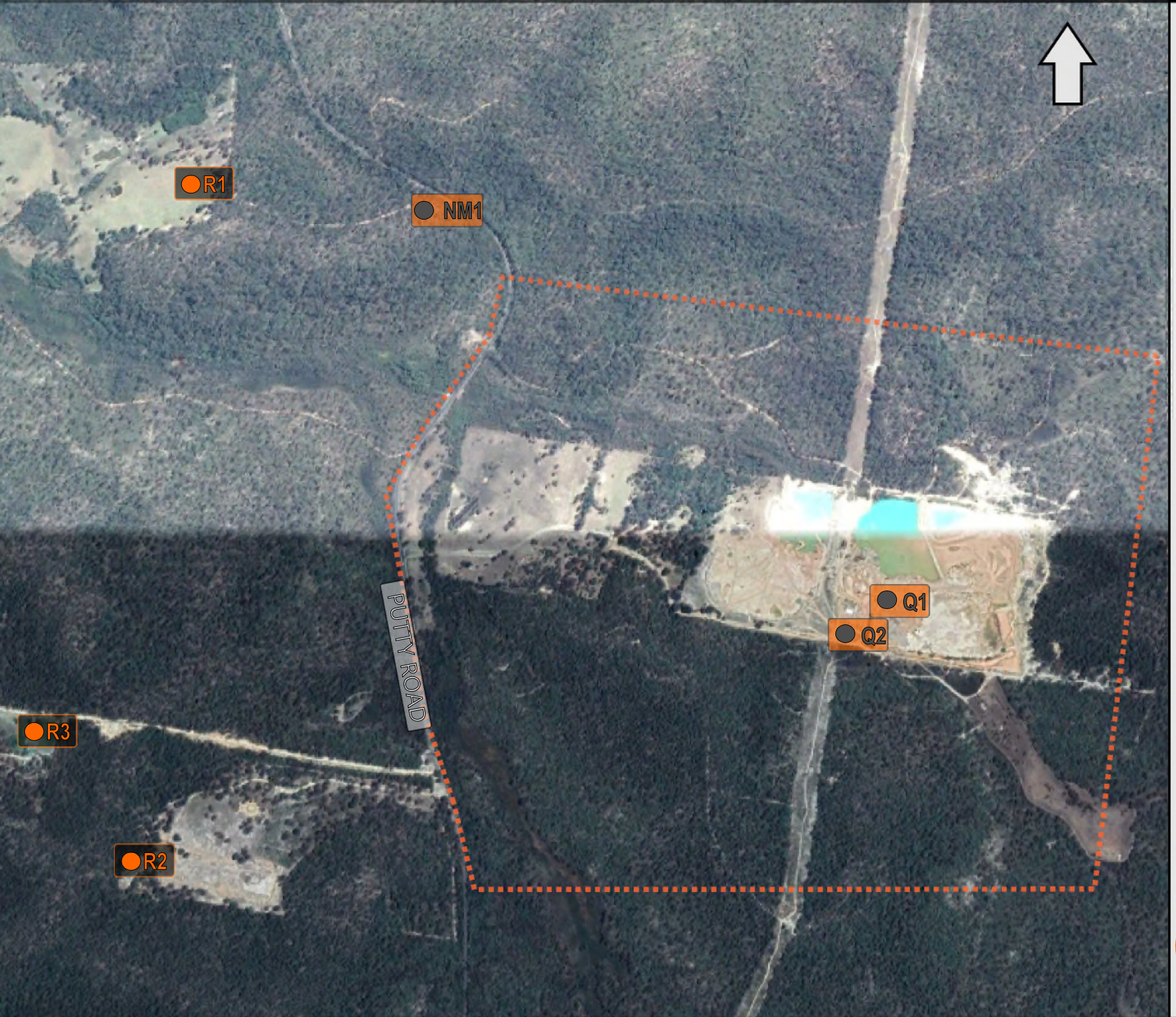

FIGURE 1

LOCALITY PLAN

REF: MAC180647

0 500m

KEY

- R1 — RECEIVER LOCATION
- NM1 — NOISE MONITORING LOCATION
- PROJECT BOUNDARY

MAC
Muller Acoustic Consulting

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4 Results

The results of the attended noise monitoring completed on Thursday 10 April 2025 (by field officer: Kristian Alen) are presented in the following sections.

4.1 Morning Shoulder Assessment Results

Four attended noise measurements of 15-minutes in duration were completed during the morning shoulder assessment period at NM1. **Table 2** presents the monitored noise level contributions and observed meteorological conditions for each measurement.

Table 2 Operator-Attended Noise Survey Results – Morning Shoulder Period, Location NM1

Date	Time[1] (hrs)	Descriptor (dBA re 20 µPa)			Meteorology	Description and SPL, dBA
		L_{Amax}	L_{Aeq}	L_{A90}		
10/04/2025	06:00	69	46	20	WD: N WS: <0.1m/s Rain: Nil	Birds 20-44 Traffic 20-69 Site Inaudible
	06:15	70	49	16	WD: N WS: <0.1m/s Rain: Nil	Birds 20-58 Traffic 20-70 Site Inaudible
	06:30	63	42	17	WD: N WS: <0.1m/s Rain: Nil	Birds 20-45 Traffic 20-63 Site Inaudible
	06:45	64	43	16	WD: N WS: <0.1m/s Rain: Nil	Birds 20-49 Traffic 20-64 Site Inaudible
Tinda Creek Contribution						<25

Unattended noise monitoring was completed during the morning shoulder assessment period at Q1 and Q2. **Table 3** presents the monitored 15-minute noise levels, noted on-site activities and meteorological conditions at the time of measurements.

Table 3 Unattended Noise Survey Results – Morning Shoulder Period, Location Q1 and Q2

Location	Date / Time (hrs)	Descriptor (dBA re 20 µPa)			Meteorology	Onsite Activities
		L_{Amax}	L_{Aeq}	L_{A90}		
Q1	10/04/2025 06:45 (Morning Shoulder)	60	42	41	WD: N WS: <0.1m/s Rain: Nil	Vehicle Movements and Loading Generator Noise 39-60
Q2		60	41	40		

4.2 Day Assessment Results

Four attended noise measurements of 15-minutes in duration were completed during the day assessment period at NM1. **Table 4** presents the monitored noise level contributions and observed meteorological conditions for each measurement.

Table 4 Operator-Attended Noise Survey Results – Day Period, Location NM1

Date	Time[1] (hrs)	Descriptor (dBA re 20 µPa)			Meteorology	Description and SPL, dBA
		L_{Amax}	L_{Aeq}	L_{A90}		
10/04/2025	07:20	62	43	21	WD: N WS: <0.1m/s Rain: Nil	Traffic 20-62 Birds 20-48 Sinte Inaudible
	07:35	61	41	16	WD: N WS: <0.1m/s Rain: Nil	Traffic 20-56 Birds 20-61 Aircraft 25-43 Sinte Inaudible
	07:50	67	43	17	WD: N WS: <0.1m/s Rain: Nil	Traffic 20-67 Birds 20-46 Road Works 20-28 Sinte Inaudible
	08:05	61	41	18	WD: N WS: <0.1m/s Rain: Nil	Traffic 20-61 Birds 20-48 Road Works 20-25 Aircraft 25-40 Sinte Inaudible
Tinda Creek Contribution						<25

Unattended noise monitoring was completed during the day assessment period at Q1 and Q2. **Table 5** presents the monitored 15-minute noise levels, noted on-site activities and meteorological conditions at the time of measurements.

Table 5 Unattended Noise Survey Results – Day Period, Location Q1 and Q2

Location	Date / Time (hrs)	Descriptor (dBA re 20 µPa)			Meteorology	Onsite Activities
		L_{Amax}	L_{Aeq}	L_{A90}		
Q1	10/04/2025 08:05 (Day)	63	60	59	WD: N WS: <0.1m/s Rain: Nil	Vehicle Movements and Loading Processing Operations Generator Noise 48-68
Q2		68	51	49		

5 Noise Compliance Assessment

5.1 Attended Noise Monitoring Compliance Assessment

The compliance assessment summary results for R1 are presented in **Table 6** for day and the morning shoulder assessment periods and compares project contributions against relevant criteria.

Table 6 Day and Morning Shoulder Noise Compliance Assessment

Period	Quarry Noise Contribution	Quarry Noise Criteria	Compliant
	dB $LA_{eq(15min)}$	dB $LA_{eq(15min)}$	
Day	<25	35	✓
Morning Shoulder	<25	35	✓

5.2 Calculated DPE Assessment Methodology

From the noise measurements at monitoring location Q1 and Q2 the $LA_{eq(15min)}$ sound power of the quarry was calculated to be 107dBA.The contribution at each of the receivers R1 to R3 has been calculated taking into account loss due to distance and topography. The quarry sound power level was propagated to the surrounding noise sensitive receivers, with the calculated received noise level presented in **Table 7**.

Table 7 Calculated DPE Compliance Assessment

Receiver	Quarry Sound Power dB	Distance to Receiver m	Distance attenuation dB	Attenuation due to Topography dB	Calculated Quarry Contribution dB $LA_{eq(15min)}$
R1	107	2050	74	12	21
R2	107	2250	75	12	20
R3	107	2070	74	12	21

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6 Discussion and Conclusion

Muller Acoustic Consulting Pty Ltd (MAC) has completed a Noise Monitoring Assessment (NMA) for Adbri Quarries Sydney Pty Ltd (Adbri) for the Tinda Creek Quarry, Tinda Creek, NSW. The assessment was completed to assess the quarry's compliance with the relevant criteria outlined in EPL#12007 for the nominated residential receiver surrounding the quarry.

Operator attended noise monitoring was undertaken on Thursday 10 April 2025 at the nominated monitoring locations with quarry noise contributions compared against the relevant criteria.

The assessment has identified that noise emissions generated by Tinda Creek Quarry comply with relevant noise criteria specified in EPL#12007 at the assessed receiver location for both the morning shoulder and daytime monitoring periods.

Furthermore, the calculated noise contribution at two nearfield reference locations demonstrate that project noise contributions satisfy relevant criteria at R1, R2 and R3.

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Appendix A – Glossary of Terms

A number of technical terms have been used in this report and are explained in **Table A1**.

Table A1 Glossary of Acoustical Terms

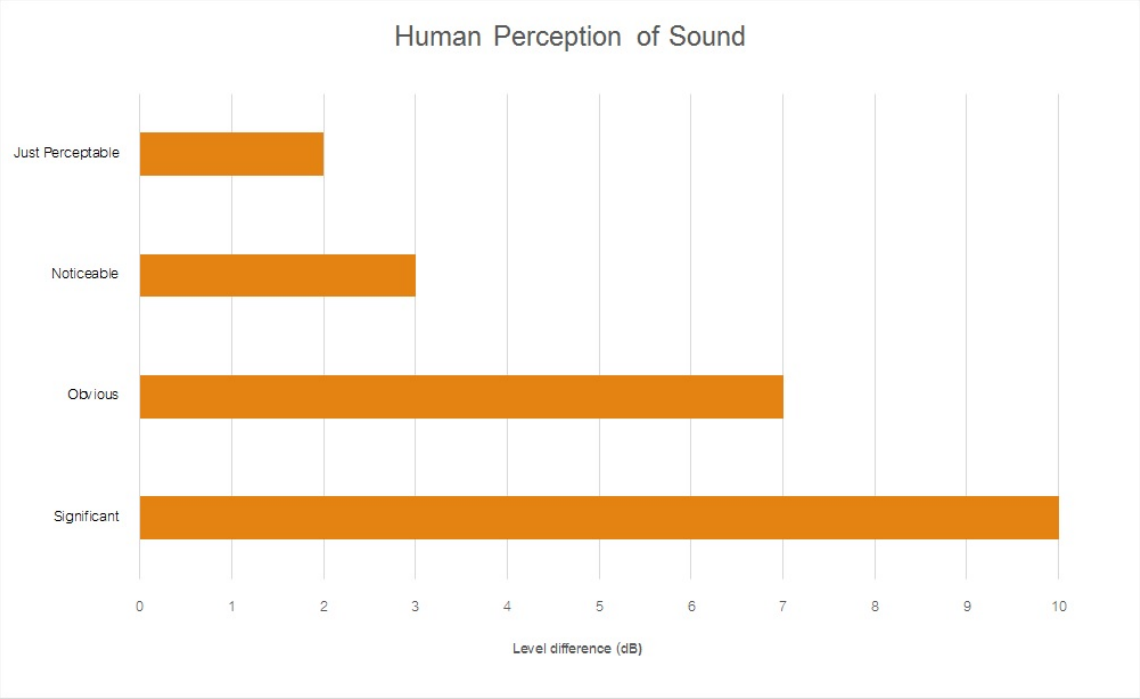
Term	Description
1/3 Octave	Single octave bands divided into three parts
Octave	A division of the frequency range into bands, the upper frequency limit of each band being twice the lower frequency limit.
ABL	Assessment Background Level (ABL) is defined in the NPI as a single figure background level for each assessment period (day, evening and night). It is the tenth percentile of the measured L90 statistical noise levels.
Ambient Noise	The total noise associated with a given environment. Typically, a composite of sounds from all sources located both near and far where no particular sound is dominant.
A Weighting	A standard weighting of the audible frequencies designed to reflect the response of the human ear to sound.
Background Noise	The underlying level of noise present in the ambient noise, excluding the noise source under investigation, when extraneous noise is removed. This is usually represented by the LA90 descriptor
dBA	Noise is measured in units called decibels (dB). There are several scales for describing noise, the most common being the 'A-weighted' scale. This attempts to closely approximate the frequency response of the human ear.
dB(Z), dB(L)	Decibels Z-weighted or decibels Linear (unweighted).
Extraneous Noise	Sound resulting from activities that are not typical of the area.
Hertz (Hz)	The measure of frequency of sound wave oscillations per second - 1 oscillation per second equals 1 hertz.
LA10	A sound level which is exceeded 10% of the time.
LA90	Commonly referred to as the background noise, this is the level exceeded 90% of the time.
LAeq	Represents the average noise energy or equivalent sound pressure level over a given period.
LAmax	The maximum sound pressure level received at the microphone during a measuring interval.
Masking	The phenomenon of one sound interfering with the perception of another sound. For example, the interference of traffic noise with use of a public telephone on a busy street.
RBL	The Rating Background Level (RBL) as defined in the NPI, is an overall single figure representing the background level for each assessment period over the whole monitoring period. The RBL, as defined is the median of ABL values over the whole monitoring period.
Sound power level (Lw or SWL)	This is a measure of the total power radiated by a source in the form of sound and is given by 10.log10 (W/Wo). Where W is the sound power in watts to the reference level of 10^{-12} watts.
Sound pressure level (Lp or SPL)	the level of sound pressure; as measured at a distance by a standard sound level meter. This differs from Lw in that it is the sound level at a receiver position as opposed to the sound 'intensity' of the source.

Table A2 provides a list of common noise sources and their typical sound level.

Table A2 Common Noise Sources and Their Typical Sound Pressure Levels (SPL), dBA

Source	Typical Sound Pressure Level
Threshold of pain	140
Jet engine	130
Hydraulic hammer	120
Chainsaw	110
Industrial workshop	100
Lawn-mower (operator position)	90
Heavy traffic (footpath)	80
Elevated speech	70
Typical conversation	60
Ambient suburban environment	40
Ambient rural environment	30
Bedroom (night with windows closed)	20
Threshold of hearing	0

Figure A1 – Human Perception of Sound



Muller Acoustic Consulting Pty Ltd
PO Box 678, Kotara NSW 2289
ABN: 36 602 225 132
Ph: +61 2 4920 1833
www.mulleracoustic.com

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Appendix 3

Biodiversity Monitoring Report 2025

(Total No. of pages including blank pages = 90)

Tinda Creek Quarry

Biodiversity monitoring report 2025

Prepared for Adbri Ltd

March 2026

Tinda Creek Quarry

Biodiversity monitoring report 2025

Adbri Ltd

E251149 RP1

March 2026

Version	Date	Prepared by	Reviewed by	Comments
V1	10/03/2026	Maddie Robertson and Luke Haeusler	Nicole McVicar	Draft
V2	17/03/2026	Luke Haeusler	Nicole McVicar	Final

Approved by

Nicole McVicar
Associate Ecologist – Team Leader Ecology
17 March 2026

Level 10 201 Pacific Highway
St Leonards NSW 2065
ABN: 28 141 736 558

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1 Introduction

1.1 Background

EMM Consulting Pty Limited (EMM) has been engaged by Adbri Ltd (Adbri) to carry out the eighth year of biodiversity monitoring as defined in the Landscape Management Plan (LMP) for the Tinda Creek Quarry (RW Corkery & Co, 2022). The first monitoring survey was undertaken by Niche Environment and Heritage (Niche) in December 2018 (Niche, 2019). The methods used by Niche (2019) to undertake the monitoring were based on the monitoring framework described in the previous iteration of the LMP, prepared by Umwelt (2016).

Monitoring surveys were completed by EnviroKey in 2019 and 2020 (EnviroKey, 2020; EnviroKey, 2021), while EMM has conducted annual monitoring surveys since 2021 (EMM, 2022; EMM, 2023; EMM, 2024; EMM, 2025).

1.2 The project

The Tinda Creek Quarry Extension Project is approximately 5 kilometres (km) south of Mellong (see Figure 1.1) and involves the extraction of up to 300,000 tonnes per annum (tpa) of sand from six extraction domains. Throughout the project planning process, Adbri was committed to the application of the avoid and minimise hierarchy on potential biodiversity impacts. This included avoiding and minimising impacts to key vegetation communities and threatened flora and fauna habitat.

The quarry site comprises six extraction domains, a Quarry Access Road and a Biodiversity Offset Area (BOA). The BOA is an area of 106.6 hectares (ha) of adjacent land which has been retained to offset the proposed disturbance area and will be managed for conservation in perpetuity. The BOA has recently been transferred to the National Parks and Wildlife Service (NPWS) as part of Yengo National Park however, it will continue to be managed by Adbri over the life of the quarry. The study area, which includes the BOA, is illustrated in Figure 1.2.

1.3 Terminology

Terms utilised within this report are defined in Table 1.1.

Table 1.1 Terminology

Term	Definition
Adbri	Adbri Ltd
BAM	Biodiversity Assessment Method
BBAM	BioBanking Assessment Methodology
BC Act	*Biodiversity Conservation Act 2016*
BOA	Biodiversity Offset Area
cm	centimetre
DBH	Diameter at breast height
EMM	EMM Consulting Pty Limited
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
GDEs	Groundwater dependent ecosystems
GPS	Global Positioning System
Ha	Hectare

Term	Definition
HBTs	Hollow-bearing trees
Hy-Tec	Hy-Tec Concrete and Aggregates (now Adbri Ltd)
km	Kilometres
LMP	Landscape Management Plan
NPWS	National Parks and Wildlife Service
OEH	NSW Office of Environment and Heritage
Quarry Site	The Hy-Tec Tinda Creek Quarry site, comprising: • six extraction domains • Quarry Access Road • Biodiversity Offset Area (BOA)
study area	The area within the Quarry Site boundary, including the Biodiversity Offset Area (BOA)
tpa	Tonnes per annum

1.4 Purpose and objectives

The LMP identifies the following key ecological values present within the Tinda Creek Quarry project area:

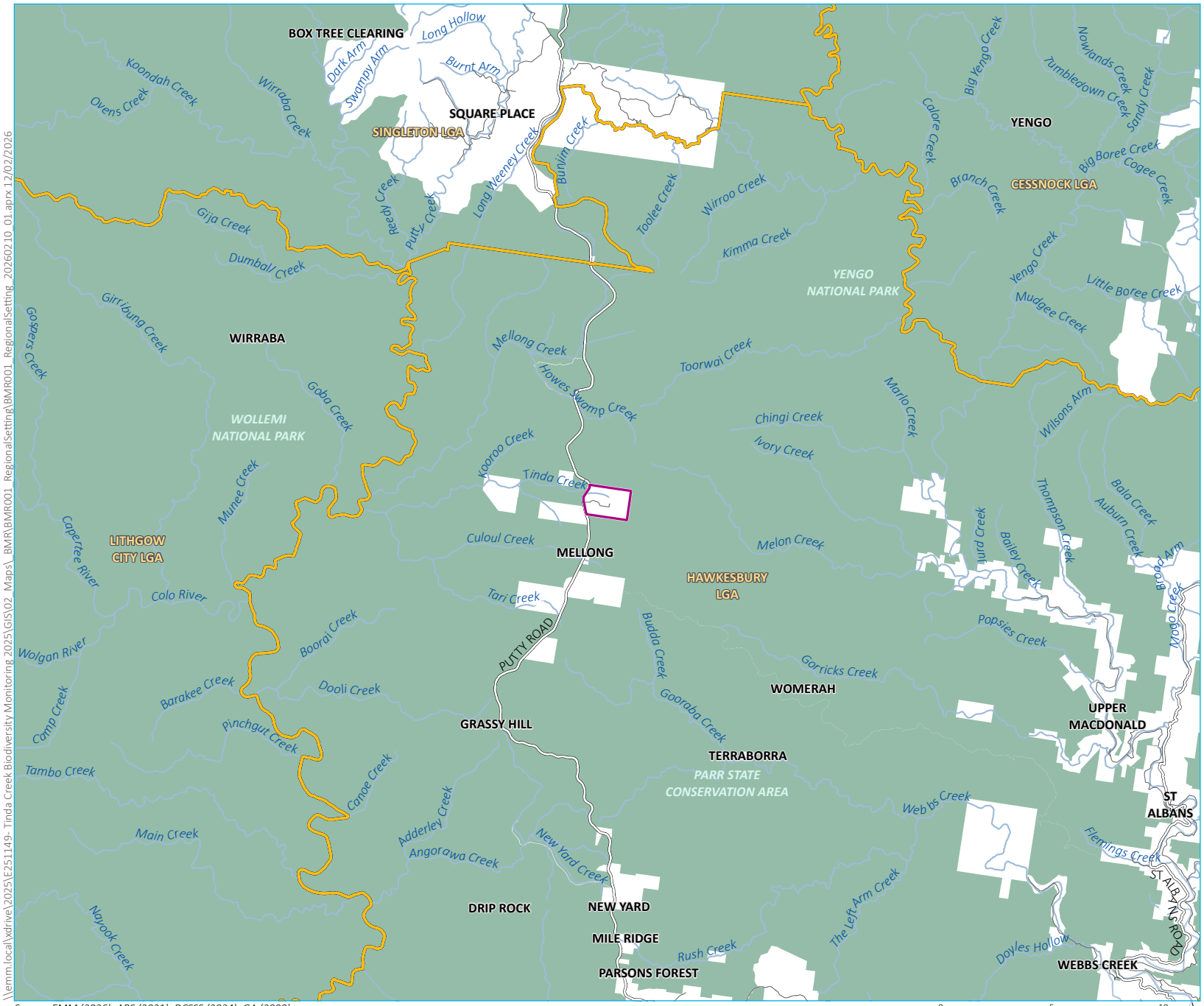
- Known and potential habitat for at least 18 threatened fauna species, listed under the NSW *Biodiversity Conservation Act 2016* (BC Act) and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- A large population of *Grevillea parviflora* subsp. *parviflora* (Small-flower Grevillea), listed as Vulnerable under the BC Act and EPBC Act.
- The presence of groundwater dependent ecosystems (GDEs), Mellong Sandmass Swamp Woodland and Mellong Sandmass Sedgeland, which are naturally rare and isolated communities considered to be of high conservation value.

1.4.1 Annual biodiversity monitoring

The LMP (RW Corkery & Co, 2022) outlines the ecological monitoring requirements for Tinda Creek Quarry. In line with these requirements, EMM undertakes annual monitoring of:

- nine established vegetation plots
- nine permanent *Grevillea parviflora* subsp. *parviflora* plots
- nest box condition and use (Fauna Field Ecology, 2025)
- Koala surveys conducted biennially (undertaken in 2024 and therefore not addressed in this report)
- general site vegetation assessment.

This monitoring report aims to assess the success of site management, rehabilitation, and the possible impacts to the BOA with reference to performance targets outlined in the LMP (RW Corkery & Co, 2022).



KEY

- Study area

Existing environment

- Major road
- Minor road
- Named watercourse
- Named waterbody
- NPWS reserve
- State forest
- Local government area

Source: EMM (2026); ABS (2021); DCSSS (2024); GA (2009)

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Regional setting

Tinda Creek Quarry
Biodiversity Monitoring Report 2025
Figure 1.1

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KEY

- Study area
- Extraction area domain
- Biodiversity offset area
- Area under rehabilitation
- Quarry access road
- Internal access track

Existing environment

- Major road
- Minor road
- Watercourse/drainage line
- NPWS reserve

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Source: EMM (2026); DCSSS (2024); GA (2009); Metormap (2025)

0 0.5 1 km

GDA2020 MGA Zone 56

N

Study area and Biodiversity Offset Area (BOA)

Tinda Creek Quarry
Biodiversity Monitoring Report 2025
Figure 1.2

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2 Methodology

This section provides a description of the methodology used to monitor the biodiversity values within the study area.

2.1 Qualification and experience of personnel

Preparation of this report and associated fieldwork were undertaken by ecologists Nicole McVicar (Accredited BAM Assessor BAAS 18077), Luke Haeuslerr, Candace Lim, and Maddie Robertson under the authority of a Scientific License (SL100409).

2.2 Vegetation monitoring

Field surveys were conducted from 15–17 December 2025.

The monitoring design and methodology follows the methods specified in the LMP (RW Corkery & Co, 2022), including:

- utilisation of the Biodiversity Assessment Method (BAM) data collection method for analysis of vegetation condition using BAM plots
- monitoring of BAM plots in areas that have been subject to rehabilitation
- BAM plots at analogue sites within areas of native vegetation that correspond to vegetation communities to be rehabilitated, to provide vegetation condition benchmarks
- comparison of data within rehabilitation areas and analogue sites to determine progress towards completion criteria.

Monitoring plots were established by Niche during the 2018 monitoring survey (Niche, 2019); however, the 2019 Gospers Mountain Wildfire resulted in damage to field equipment, including timber marker pegs. These plots comprised a 50 m x 20 m plot-transect conducted in accordance with the 'Biometric' method, as used in the BioBanking Assessment Methodology (BBAM) (OEH, 2014), with a number of extra parameters also recorded (Niche, 2019).

The LMP (RW Corkery & Co, 2022) specifies the locations of three BAM plots (B1, B2 and B3) in the rehabilitation area and six BAM plots (B4 to B9 analogue sites) within areas of remnant vegetation (Figure 1.2) to provide a benchmark in terms of species composition, diversity and structure. These analogue sites will be used for future monitoring assessment to determine if rehabilitation completion criteria outlined within the LMP are met. Monitoring will be undertaken annually within analogue sites throughout the operational period of the quarry. BAM plot data is provided in Appendix A.

BAM plot locations are illustrated within Figure 2.1, while Global Positioning System (GPS) coordinates of EMM's BAM plots are presented in Table 2.1. Photos were taken at each BAM plot to allow for visualisation of the changes in vegetation and habitat type over time. Photo reference points from the 2025 monitoring survey are presented in Appendix B. Plot B2 did not undergo a BAM plot assessment in this round of monitoring as it currently comprises unconsolidated fill (see image for B2 in Appendix B).

Table 2.1 EMM's BAM plot locations

BAM Plot ID	Latitude	Longitude	Bearing
B1	-33.1665	150.7060	84
B2	-33.1659	150.7087	140
B3	-33.1649	150.7106	350
B4	-33.1653	150.6937	325
B5	-33.1655	150.6947	350
B6	-33.1610	150.7075	335
B7	-33.1628	150.7126	0
B8	-33.1668	150.7131	338
B9	-33.1713	150.7122	150

2.3 *Grevillea parviflora* spp. *parviflora* monitoring

The nine 10 metre (m) x 10 m *Grevillea parviflora* subsp. *parviflora* monitoring plots established during the initial 2018 monitoring surveys (Niche, 2019), were resurveyed. It is noted that, while the first three years of monitoring (i.e. 2018–2020) utilised counts of individuals, stem counts have been employed since the 2021 monitoring period. Threatened flora plot locations are marked out with a star picket and are illustrated in Figure 2.1 and GPS coordinates of the threatened flora plots are presented in Table 2.2.

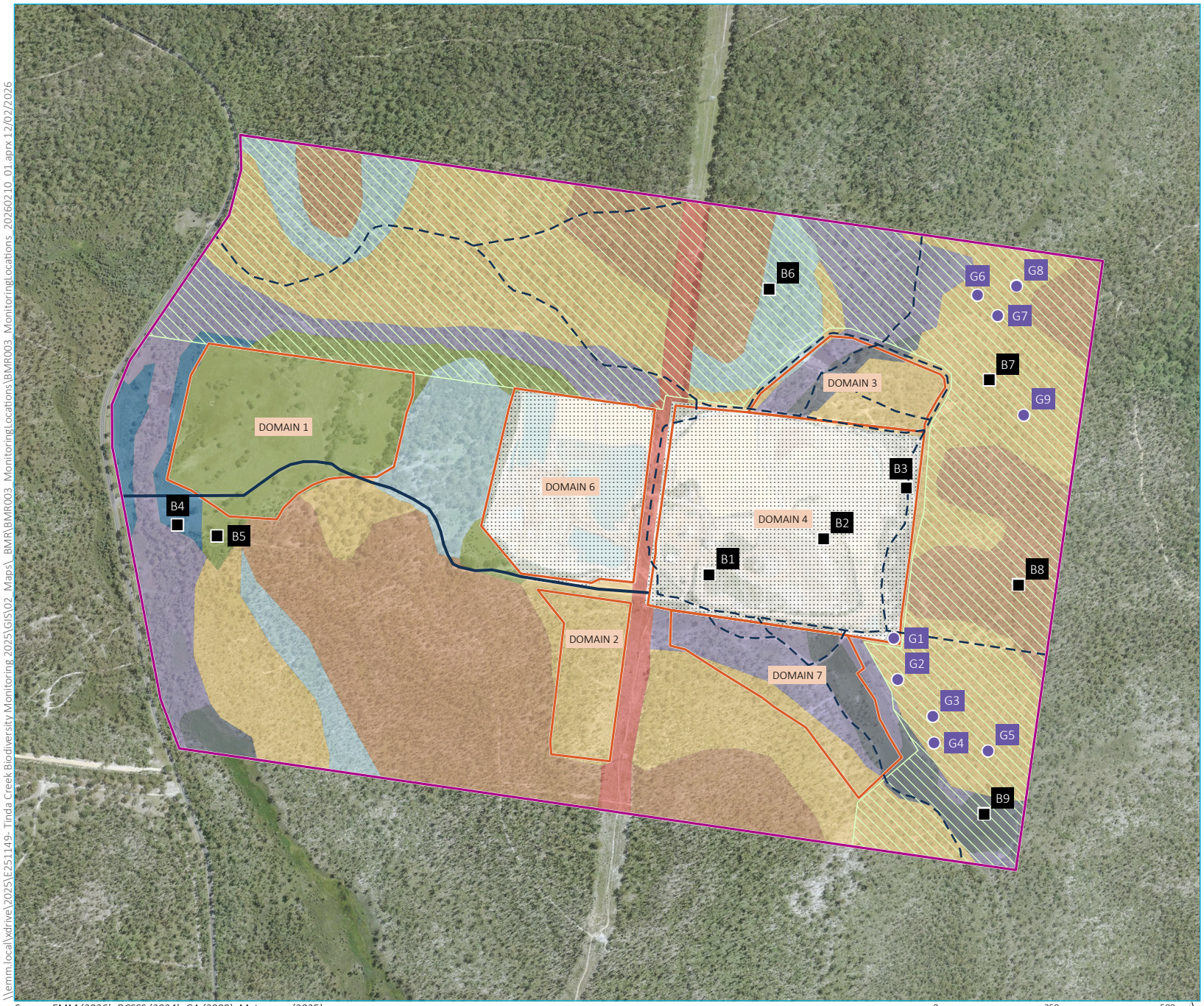
Table 2.2 *Grevillea parviflora* subsp. *parviflora* plot locations

Grevillea plot	Location	
	Latitude	Longitude
1	-33.16782	150.710237
2	-33.168618	150.710302
3	-33.16935	150.711094
4	-33.16987	150.711109
5	-33.170039	150.712354
6	-33.161185	150.712342
7	-33.161596	150.712797
8	-33.161022	150.713246
9	-33.163537	150.713348

In accordance with the methodology outlined in the Threatened Biodiversity Profile Search for *Grevillea parviflora* subsp. *parviflora* (OEH, 2024a), the stems of the *Grevillea parviflora* subsp. *parviflora* were counted rather than the individual plants. This is due to the reproductive and growth habits of this species which include suckering from rootstock and spreading vegetatively.

During the 2025 monitoring period permanent marker posts were installed marking the centre of each plot. This will improve the accuracy of data comparison between years and allow for quicker location of the plots in the field.

Photo monitoring for *Grevillea parviflora* subsp. *parviflora* can be found in Appendix C.



KEY

- Study area
- Extraction area domain
- Biodiversity offset area
- BAM plot
- *Grevillea parviflora* plot
- Quarry access road
- Internal access track

Vegetation community

- Disturbed area
- Hawkesbury Hornsby Plateau exposed woodland
- Hawkesbury Hornsby Plateau exposed woodland- derived grassland
- Mellong sandmass dry woodland
- Mellong sandmass dry woodland- derived grassland
- Mellong sandmass sedgeland
- Mellong sandmass swamp woodland
- Mellong sandmass swamp woodland (modified- overstorey absent)
- Stringybark-Ironbark forest

Source: EMM (2026); DCSSS (2024); GA (2009); Metormap (2025)

0 250 500 m

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Ecological monitoring locations

Tinda Creek Quarry
Biodiversity Monitoring Report 2025
Figure 2.1

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2.4 Koala population monitoring

The Koala (*Phascolarctos cinereus*), listed as Endangered under both the EPBC Act and the BC Act, has been historically recorded in the Tinda Creek Quarry region, during the 2018 monitoring survey (Niche, 2019), and during the 2020 monitoring survey (EnviroKey, 2021).

The LMP (RW Corkery & Co, 2022) recommends Koala surveys to be undertaken every two years in Domains 1, 2, 3 and 7. As Koala spotlighting and call playback was conducted in the 2024 monitoring period, therefore it was not required to be conducted during the 2025 monitoring period.

2.5 Nest box monitoring

The LMP (RW Corkery & Co, 2022) requires the installation of nest boxes as a mitigation strategy against habitat loss. As part of the nest box strategy, each nest box is inspected for condition and signs of use, including any contents, in addition to an assessment of the effectiveness of the nest box strategy. Nest box monitoring was conducted by Fauna Field Ecology (2025), where a mixture of methodologies were implemented including nest box cameras and inspection using headlamps (Fauna Field Ecology, 2025). The report is attached in Appendix D.

2.6 Limitations

2.6.1 BAM Plot B2

Monitoring in BAM Plot B2 was not undertaken during the 2025 survey period as it is understood that ongoing earthworks and landform alterations have yet to be completed in this area. Although BAM Plot B2 was surveyed during previous monitoring events (i.e. 2021 and 2022), monitoring in 2025 was not undertaken due to substantial ground disturbance in proximity to the plot (Photograph 3.1). Monitoring at BAM Plot B2 will be deferred until rehabilitation works have been undertaken.

3 Results

3.1 Vegetation monitoring

Vegetation monitoring was conducted at eight locations during the 2025 survey period. Plot B1 was established and surveyed for the first time after being revegetated. Plot B2 was inspected; however, it is understood that this area of the quarry (Domain 4) is under active quarry workings and the landform has not been completed to a stage where rehabilitation can be established. Once revegetation has commenced in this area, it is recommended that a monitoring plot be established within the revegetated area to monitor progress of rehabilitation (refer to Section 2.6.1 and Photograph 3.1).

Photograph 3.1 BAM Plot 2 – surveys deferred until rehabilitation has been undertaken

3.1.1 Species richness and composition

The year eight monitoring period (2025) recorded a total of 167 flora species within the BAM plots, comprising 155 native species and 12 exotic species (Appendix A). The average annual native species richness per vegetation community between 2019 and 2025 is displayed in Table 3.1.

Except for Regenerating Stringybark-Ironbark Forest where species richness increased and Mellong Sandmass Swamp Woodland where richness decreased, average species richness remained relatively stable when compared to 2024. The largest decrease between 2024 and 2025 was six species recorded within the Mellong Sandmass Swamp Woodland. The largest increase in species richness between 2024 and 2025 was recorded within Stringybark – Ironbark Forest , with an additional three species recorded.

On average, native species richness across the site has increased by 56 percent (%) since 2019. The biggest overall increase in native species richness occurred within the Hawkesbury Hornsby Plateau Exposed Woodland and Regenerating Mellong Sandmass Woodland, with an increase of 20 and 18 species respectively.

Table 3.1 Average native species richness per vegetation community within 400 m² plots (2019 – present)

Vegetation community	2018[1]	2019	2020	2021	2022	2023	2024	2025
Hawkesbury Hornsby Plateau Exposed Woodland	-	30.5	32.0	51	53	50	52	51
Mellong Sandmass Dry Woodland[2]	-	30.4	29.6	35.5	36	40	45.5	43.5
Mellong Sandmass Sedgeland	-	12.5	12	25	28	23	19	20
Mellong Sandmass Swamp Woodland	-	21.0	21.3	18	28	24	34	28
Stringybark – Ironbark Forest	-	23.7	31.0	40	47	37	36	39
Regenerating Mellong Sandmass Dry Woodland	-	27	18	25.5	28.5	38	46	45

Notes: 1. BAM plot monitoring was not undertaken during the 2018 monitoring period. 2. Including Mellong Sandmass Dry Woodland derived native grassland.

Plots B1, B2 and B3 are all located within the areas under rehabilitation; however as discussed, Plot B2 was not surveyed during the 2025 survey period (refer to Section 2.6.1) (Figure 1.2). Vegetation structure and composition within Plots B1 and B3 have been compared with Plot B7 (an analogue site containing benchmark values) and are presented in Table 3.2.

Table 3.2 BAM plot values within rehabilitation sites and Plot B7 (analogue site)

BAM plot	Site type	Native species richness	Tree count: ≥30 cm DBH	Tree count: <30 cm DBH*	Number of tree hollows	Length of logs (m)	Average litter cover (%)
B1	Rehabilitation	46	0	1	0	14	1.2
B2[1]	Rehabilitation	-	-	-	-	-	-
B3	Rehabilitation	44	0	2	0	0	40.8
B7	Analogue	46	5	4	4	6	76.6

Note: 1. Monitoring at this location has been deferred until rehabilitation has progressed.

- metric not measured.

* Records how many of the four tree size classes <30cm DBH are present, not the number of individual trees in these classes. Classes are <5 cm, 5-9 cm, 10-19 cm, and 20-29 cm.

Native species richness decreased at both Plot B3 and Plot B7, compared to 2024 surveys. Plot B3 had a substantial increase in litter cover compared to 2024 (up from 17.4%). Count of tree classes present with a diameter at breast height (DBH) of less than 30 centimetres (cm) remained at two at Plot B3. Vegetation structure and condition at Plot B7 differed slightly from 2024 results, with some parameters recording a slight increase while others recorded a slight decrease. Native species richness is similar across both rehabilitation and analogue sites however analogue Plot B7 has a greater number of large trees leading to increased structural value. Plot B1 was surveyed for the first time this monitoring season and has no historical data for comparison.

3.1.2 Occurrence and abundance of weeds

Exotic species were recorded within five plots (B1, B3, B4, B5 and B6) in 2025, all of which are in, or close to, areas of disturbance (i.e. the quarry access road, tracks and historic extraction areas). Weeds recorded that are considered of particular environmental risk (i.e. high threat exotics) include the perennial grasses African Lovegrass (*Eragrostis curvula*), Paspalum (*Paspalum dilatatum*), Whiskey Grass (*Andropogon virginicus*), *Juncus articulatus,* and Narrow-leafed Carpet Grass (*Axonopus fissifolius*), due to their particularly aggressive nature.

Plots B7, B8 and B9 contained vegetation in good condition with no exotic species recorded.

The number of weed species recorded during 2020 (EnviroKey), and 2021 to 2025 (EMM) are presented in Table 3.3. Plots established by the LMP (RW Corkery & Co, 2022) (Plots B1, B2, B4 and B5) have no equivalent plots to compare.

Table 3.3 Diversity of weed species 2020 – present

BAM Plot IDs (2021–2025)	BBAM Plot IDs (EnviroKey 2021)	Number of weed species					
		2020 (EnviroKey)	2021 (EMM)	2022 (EMM)	2023 (EMM)	2024 (EMM)	2025 (EMM)
B1	-	-	-	-	-	-	11
B2[1]	-	-	3	3	-	-	-
B3	Plot 18	2	3	3	2	3	3
B4	-	-	7	7	6	9	6
B5	-	-	3	3	1	3	2
B6	Plot 12	0	2	2	0	1	1
B7	Plot 16	0	0	0	0	0	0
B8	Plot 8	1	0	0	0	0	0
B9	Plot 6	0	1	0	0	1	0

Notes: 1. Monitoring at this location has been deferred until rehabilitation has progressed.
- metric not measured.

The diversity and associated cover of exotic species recorded within rehabilitation sites and the analogue site is presented in Table 3.4.

Table 3.4 Diversity and cover of exotic species in the rehabilitation site and analogue site

BAM plots	Site type	Number of exotic species	Cover of high threat exotic species (%)
B1[1]	Rehabilitation	11	2.6
B2[1]	Rehabilitation	-	-
B3	Rehabilitation	3	30.1
B7	Analogue	0	0

Notes: Monitoring at this location has been deferred until rehabilitation has progressed.
- metric not measured.

Across the rehabilitation and corresponding analogue plots (i.e. Plots B1, B3 and B7), weed diversity has remained at three at Plot B3 while at Plot B7 weed diversity has remained at zero, consistent with results from all previous years. Plot B1 was surveyed for the first time and has a weed diversity of 11 species. High threat exotic cover at Plot B3 has reduced (down from 40.4% in 2024) and has remained at 0% at Plot B7. Plot B1 has a low cover of high threat exotics despite having a high diversity of weeds. Plot B3 within the rehabilitation area has a high cover of African Lovegrass (30%) in line with 2023 and 2024 results.

3.1.3 Composition, structure and function

The composition, structure and function for each BAM plot is provided in Table 3.5.

Table 3.5 Composition, structure and function of the BAM plots surveyed (2025)

BAM plot	Vegetation community	Tree count: 80 cm plus	Tree count: 50–79 cm	Tree count: 30–49 cm	Tree count: 20–29 cm	Tree count: 10–19 cm	Tree count: 5–9 cm	Tree count: <5 cm	Number of hollow trees	Length of logs (m)	Subplot 1 – Litter cover (%)	Subplot 2 – Litter cover (%)	Subplot 3 – Litter cover (%)	Subplot 4 – Litter cover (%)	Subplot 5 – Litter cover (%)
B1	Regenerating Mellong Sandmass Dry Woodland	0	0	0	0	0	1	0	0	14	0	1	2	2	1
B2	Regenerating Mellong Sandmass Dry Woodland	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3	Regenerating Mellong Sandmass Dry Woodland	0	0	0	0	1	1	0	0	0	90	90	20	3	1
B4	Mellong Sandmass Swamp Woodland Modified -Overstory Absent	0	0	0	0	0	0	1	0	0	65	8	18	4	70
B5	Mellong Sandmass Dry Woodland Derived Native Grassland	0	1	0	0	0	0	1	0	2	7	5	68	10	5
B6	Stringybark – Ironbark Forest	0	3	3	1	1	1	1	0	32	75	60	98	100	99
B7	Mellong Sandmass Dry Woodland	1	2	2	1	1	1	1	4	6	99	96	77	46	65
B8	Hawkesbury Hornsby Plateau Exposed Woodland	0	0	3	1	1	1	1	0	36	78	95	97	46	45
B9	Mellong Sandmass Sedgeland	0	0	0	0	0	0	0	0	0	0	0	0	0	0

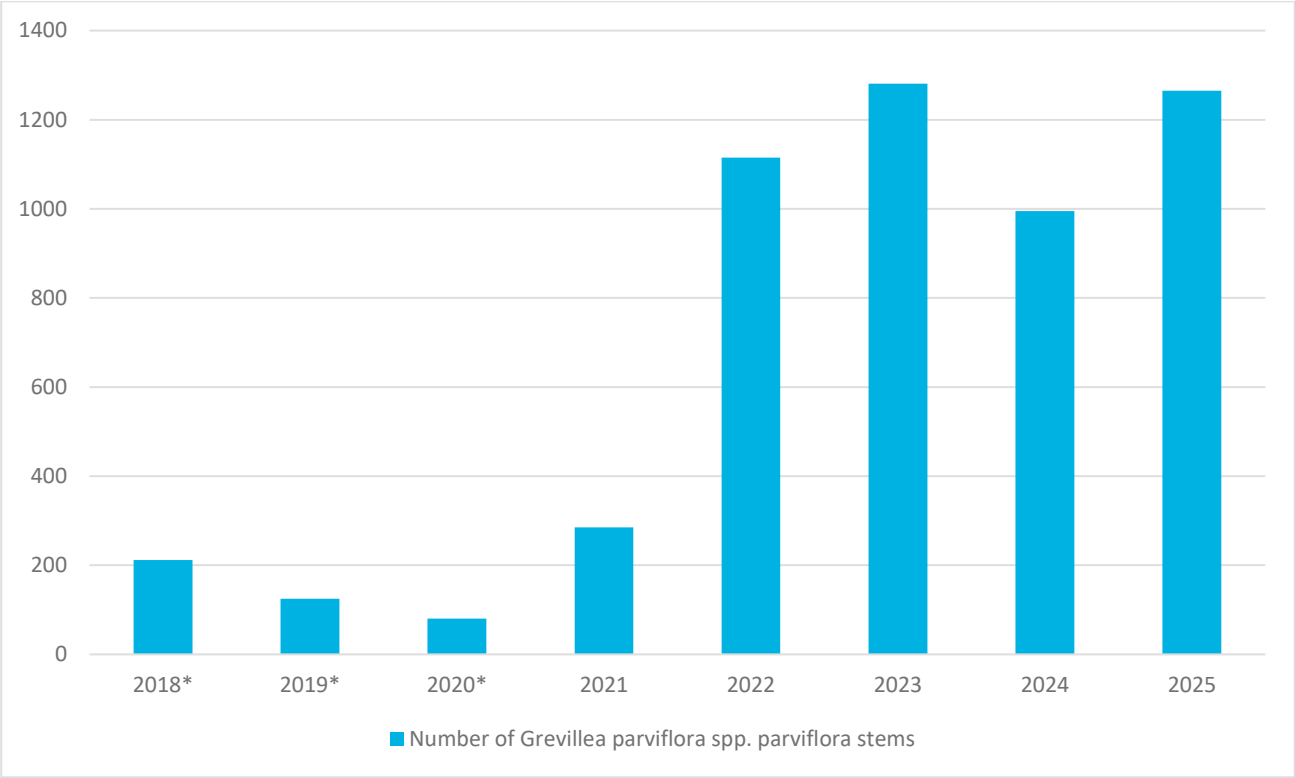
3.2 *Grevillea parviflora* spp. *parviflora* monitoring

Grevillea parviflora subsp. *parviflora* was recorded within eight of the nine monitoring plots during the 2025 survey period (Table 3.6). No stems were recorded in Plot 8 during the 2025 survey effort, consistent with results from the two previous years. Stem counts increased within seven of the nine plots (Plots 1, 2, 3, 5, 6, 7 and 9) compared to the previous monitoring period, and decreased at one plot (Plot 4). Total stem count across all plots in 2025 was 1,265 stems. This is an increase of 270 stems from the 2024 monitoring period bringing the total back to numbers similar to those observed in 2023 (Plate 3.1).

Table 3.6 Results from 2019-2025 Grevillea parviflora plot monitoring

Site	2018 count[1]	2019 count[1]	2020 count[1]	2021 count[2]	2022 count[2]	2023 count[2]	2024 count[2]	2025 count[2]
1	18	38	0	21	80	202	270	376
2	51	7	0	103	650	577	220	327
3	33	25	18	14	20	24	25	50
4	47	1	10	53	35	61	85	71
5	20	19	35	9	40	25	25	38
6	16	35	16	26	100	90	120	144
7	11	0	0	25	120	237	185	190
8	14	0	0	12	5	0	0	0
9	2	0	1	22	65	65	65	69
Total	**212**[1]	**125**[1]	**80**[1]	**285**[2]	**1,115**[2]	**1,281**[2]	**995**[2]	**1265**[2]

Notes: 1. Count of number of individuals. 2. Count of stems.



Note: * indicates count was based on number of individuals as opposed to stem count

Plate 3.1 Total Grevillea parviflora spp. parviflora stems observed across the nine sites

3.3 Nest box monitoring

Nest box monitoring was conducted by Fauna Field Ecology (2025) and the report containing the results of the monitoring can be found in Appendix D.

4 Discussion

4.1 Vegetation monitoring

The 2025 monitoring period showed an overall decrease in native flora species, with six fewer species when compared to the 2024 monitoring period. A comparison of 2024 and 2025 monitoring survey results indicate plant species richness has increased within two vegetation communities and decreased within four vegetation communities as identified in Table 3.1.

The average native species richness for each vegetation community was relatively stable in 2025 compared to 2024, with the exception of Mellong Sandmass Swamp Woodland and Stringybark - Ironbark Forest which decreased by six species and increased by three species respectively. Average species richness in the Hawkesbury Hornsby Plateau Exposed Woodland, Mellong Sandmass Sedgeland and Regenerating Mellong Sandmass Dry Woodland vegetation communities changed by one species from 2024 to 2025 and Mellong Sandmass Dry Woodland decreased in average species richness by two species.

Species richness within the Regenerating Mellong Sandmass Dry Woodland has not increased for the first time since 2020. It is likely that the native species richness at these regenerating sites will plateau as the richness is now in line with that of the benchmark conditions observed at analogue Plot B7.

Hawkesbury Hornsby Plateau Exposed Woodland (B8) and Mellong Sandmass Dry Woodland (B5 and B7) vegetation communities presented a slight decrease in species richness during the 2025 monitoring period, as indicated in Table 3.1. The Mellong Sandmass Dry Woodland vegetation community had a decrease in richness by an average of two, while Hawkesbury Hornsby Plateau Exposed Woodland had an average richness decrease of only one species, compared to the 2024 monitoring period.

Mellong Sandmass Sedgeland (B9) remained similar between the 2024 and 2025 monitoring periods, differing from previous monitoring periods that indicated a downward trend in diversity. Mellong Sandmass Swamp Woodland (B4) decreased by six species, with native diversity equal to that observed in 2022.

4.1.1 Vegetation composition, structure and function

The six BAM plots undertaken outside of the rehabilitation area show composition, structure, and function values that are consistent with their respective vegetation communities. Two BAM plots (B1 and B3) were undertaken within the rehabilitation area, with B2 omitted from survey due to earthworks as discussed. As B1 was a new plot for the 2025 monitoring period, there is no comparable data from previous monitoring periods. Therefore, it is a noted limitation that B3 is the only plot within the rehabilitation area that can be compared to previous monitoring periods. The number of hollow-bearing trees (HBTs), length of logs and tree stem count remained unchanged within B3 from 2024 to 2025, although there was an observed increase in average litter cover from 17.4% in 2024, to 40.8% in 2025.

When compared to the analogue site (Plot B7), the two plots undertaken in the rehabilitation site (Plot B1 and B3) contain a small number of trees within 5–9 cm and 10–19 cm size categories. Plot B1 contained trees with a DBH of 5–9 cm, while B3 contained trees with a DBH of 5–9 cm and 10–19 cm. No saplings or seedlings (<5 cm) were recorded in either of the two plots, similarly to the 2024 monitoring period where no new seedlings were recorded within B3. This is likely attributable to a lack of mature, fruit-bearing trees within close proximity to the plot (the nearest mature tree is more than 20 m away) and the presence of an artificial drainage line between the plot and intact vegetation to the east.

In contrast, the analogue site has trees present in all size range categories (Table 3.2) and notably higher scores to the rehabilitation area in the number of HBTs present and the length of logs, not surprising given the vegetation within this area is intact, with several large, mature trees present.

Grasses and sedges dominated native cover within plots B1 and B7, while B3 was observed contain a higher cover of shrubs. While the composition, structure and function of the rehabilitation area is expected to improve over time, it is considered likely that the rehabilitation area around Plot B3 may require additional revegetation of canopy species.

4.1.2 Weeds

The transmission line which traverses the study area and regeneration area, as well as Putty Road and the quarry access road, are ongoing source populations for weeds.

Plot B3 continues to present with the highest cover and abundance of exotic species. Monitoring within the plot recorded a high threat exotic cover of 30.1% during the 2025 period, which is a 10% reduction in high threat weed cover since the 2024 monitoring period. Of this total, African Lovegrass (*Eragrostis curvula*) dominates 30% of the cover, while only 0.1% is attributed to Whisky Grass (*Andropogon virginicus*). It must be noted that African Lovegrass also presented a 40% reduction from the 2023 to 2024 monitoring period. A continual decline in cover of this high threat weed over two years is a good indication of successful weed management within this plot and surrounds.

Whisky Grass (*Andropogon virginicus*) recorded in B3 in 2025 was not present in the previous monitoring period. Plot B1 was added as a new monitoring location during the 2025 period, therefore there is no available historical data that it can be compared to. Although there is no prior data for this plot, it is noted that B1 contained 11 exotic species, of which four were high threat, including African Lovegrass (*Eragrostis curvula*), Narrow-leafed Carpet Grass (*Axonopus fissifolius*) *Juncus articulatus* and *Paspalum dilatatum*. Recommendations have been detailed in Section 5 to mitigate and manage the colonisation and spread of weeds in this additional area. Proximity to substantial earthworks and landform profiling in both Domain 4 and Domain 7 are likely to be the source of weed spread within the plot.

4.1.3 Grevillea parviflora subsp. *parviflora*

Year eight (2025) plot monitoring indicates stem counts increased by 27% in 2025 compared to 2024 results. Seven monitoring plots (Plots 1, 2, 3, 5, 6, 7 and 9) recorded increases in stem counts, while one plot (Plot 4) decreased in count. Monitoring plots 1 and 2 presented the greatest increase in stem count from 2024, with an increase in 106 and 107 stems respectively, while monitoring Plot 4 had the largest decrease in stem count by 14 stems. Plot 8 had zero *Grevillea parviflora* subsp. *parviflora* recorded for the third consecutive year despite the species being recorded within the plot in 2022. It is recommended that this plot continues to be monitored, as in the event of a future bushfire or hazard reduction burn the species may regenerate.

Of *Grevillea parviflora* subsp. *parviflora*, the NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW, formerly the NSW Office of Environment and Heritage (OEH)) notes that 'Plants are capable of suckering from a rootstock and most populations demonstrate a degree of vegetative spread, particularly after disturbance such as fire. This can make counts of individual genets in a population very difficult, and stem counts are usually an acceptable means of assessment for management purposes'. (NSW DCCEEW, 2024).

A 27% increase in the abundance of *Grevillea parviflora* subsp. *parviflora* stems across the study area may indicate a recovery from poorer conditions leading up to the 2024 survey period with increases at all but one plot. Above average rainfall in 2025 (802 millimetres (mm) compared to a mean of 614.8 mm) may also be responsible for an increase in stem numbers however rainfall in 2024 was also above average (731 mm compared to a mean of 614.8 mm). Stem count is now similar to that observed in 2023 returning to a trend of increasing stem numbers across the nine plots.

4.2 Nest box monitoring

Nest boxes were installed within the study area following clearing of Domain 7 in 2023. This second-year monitoring included inspection of all 20 installed nest boxes in October 2025. The first year of monitoring in 2024 resulted in only one nest box (B7) showing signs of internal use (EMM, 2025). In comparison, the October 2025 monitoring results from Fauna Field Ecology showed that nest box usage has increased to six of the 20 boxes. One target species (Common Brushtail Possum (*Trichosurus vulpecula*)) and one non-target species (Peron's Tree Frog (*Litoria peronii*)) showed evidence of use.

A previous hypothesis on low utilisation (5%) from the first year of monitoring was that nest boxes may have been installed too close to active quarry operations with recommended relocation of all nest boxes at least 150 m from sand mining activity (EMM, 2025). However, the utilisation rate for the second year of monitoring (30%) demonstrated that not all nest boxes should be moved. A combination of factors may have applied to low utilisation rates during the initial year of monitoring in 2024, including high availability of natural hollows and abundance of mature bushland, therefore resulting in low reliance on nest boxes (Fauna Field Ecology, 2025).

Repositioning of some unused nest boxes in three clusters up to 150 m from their current locations could provide additional habitat. Recommendations relating to the Nest Box Strategy and nest box monitoring are outlined in Section 5.1.

4.3 Landscape Management Plan performance criteria

The approved LMP (RW Corkery & Co, 2022) details completion criteria and performance indicators for the rehabilitation area and the BOA. Table 4.1 details the matters reviewed during monitoring surveys within the rehabilitated areas.

Table 4.1 Completion criteria, performance indicators and monitoring strategy – rehabilitated areas

Objectives	Completion criteria	Performance measurement / indicator	Monitoring strategy	Comments
Ensure that the Quarry Site is safe, stable and non-polluting.	The final landform achieves the nominated design of the EIS or subsequent RehabilitationPlan.	Completed to the satisfactionof the Secretary.	Survey following completion of landform establishment activities.	Not within the scope of this monitoring report.
	The size, depth, batter slopes and the drainage catchment of the final voidare consistent with nominated design of the EIS or subsequent Rehabilitation Plan.			Not within the scope of this monitoring report.
	The surface area of the final voids is no greater than 16 ha in total.			Not within the scope of this monitoring report.
	Final voids are separated from the surface water drainage system unless the Secretary agrees otherwise.			Not within the scope of this monitoring report.

Objectives	Completion criteria	Performance measurement / indicator	Monitoring strategy	Comments
Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of local native species and habitat, including at least 0.35 ha of Mellong Sandmass Sedgeland.	Revegetation within the Quarry Site is generally consistent with the vegetation communities displayed on Figure 8.	At least 75% of trees are healthy. At least 0.35 hectares (ha) of Mellong Sandmass Sedgeland established within the quarry site.	Monitoring undertaken as per Section 13.2 of the LMP.	Trees recorded within rehabilitated areas were observed growing and healthy; however, they would not be considered to have achieved 'sustained growth and development' (as specified in Section 11.3.2 of the LMP). It is noted that there are now two monitoring locations within rehabilitated areas (Plot B1 and B3), where there was only one (Plot B3) during the 2024 monitoring period. Neither of these locations were observed to contain regenerating seedlings during survey efforts. Mellong Sandmass Sedgeland is not mapped within the current rehabilitation area, and as such, is not currently intended to be re-established within this area. This vegetation community is however, mapped within Domains 3 and 7.
Decommission and remove surface infrastructure (unless theSecretary agrees otherwise).	Infrastructure not requiredfor future land use removed.	Completed to the satisfactionof the Secretary.	Survey of infrastructureto be completed.	Not within the scope of this monitoring report.

Table 4.2 details the matters reviewed during monitoring surveys within the BOA.

Table 4.2 Completion criteria, performance indicators and monitoring strategy – BOA

Objectives	Completion criteria	Performance measurement / indicator	Monitoring strategy	Comments
Establish and secure a BOA.	BOA dedicated to Yengo National Park.	Land secured for conservation.	Monitoring of Koala, *Grevillea parviflora* subsp. *parviflora* and nest boxes as per Sections 13.3, 13.4 and 13.5 of the LMP throughout the life of the quarry.	Monitoring of Koalas was undertaken during the 2024 survey period, therefore no Koala monitoring was undertaken during the 2025 survey period, as per the LMP. Monitoring of *Grevillea parviflora* subsp.*parviflora* was undertaken in the dedicated plots for this species. Nest box monitoring was undertaken during the 2025 survey period by Fauna Field Ecology. Six nest boxes showed signs of use by target species, while some also showed signs of potential future deterioration. All nest boxes will require alterations to accommodate tree growth and increase next box life. Some will require re-installation at suitable heights, and some in alternate locations.

Objectives	Completion criteria	Performance measurement / indicator	Monitoring strategy	Comments
Maintain and where possible improve biodiversity values withinthe BOA.	Controlled access to the BOA achieved and maintained.	Unauthorised access to the BOA is prevented.	Monthly and quarterly inspections and/or weed control programs.	No obvious signs of vegetation trampling or damage via uncontrolled access during the monitoring surveys.
	No significant weed infestation.	There is no weed infestation greater than exists within the analogue sites and there are no contiguous areas of weeds that are greater than 25 m^2 in area.		Weeds were observed in low to moderate abundance along access tracks within the BOA. Weed cover in Plot B3 has decreased again in the eighth year round of monitoring to 30.1%, of which 30% is African Lovegrass. This continued reduction is an indication that ongoing weed management within proximity to the plot is yielding positive results.
	Feral animal control.	Site does not harbour feral animals.	Monthly inspections.	Not within the scope of this monitoring report.

5 Recommendations

5.1 General recommendations

EMM recommends an integrated approach of multiple techniques conducted seasonally to control the African Lovegrass population within the Tinda Creek Quarry:

- Priority of slashing/mechanical removal and/or burning (if feasible) of African Lovegrass in winter to remove cover.
- Priority of follow-up spraying of existing African Lovegrass extent and new shoots/growth in cleared/ burned areas at the beginning of spring and into summer.
- Re-seeding of bare soil with a native grass or non-invasive cover crop to reduce lovegrass re-establishment in cleared areas.
- Repeat process yearly or as required to prevent establishment of new plants and remove new seeds from the growth cycle.

General year-round measures of helping to control the spread of African Lovegrass include:

- Avoidance of vehicles and persons entering areas of lovegrass infestation, where practical.
- Where practicable, inspection for and cleaning of African Lovegrass seed/foliage from vehicles and clothing if contact with the species has occurred.

The following recommendations by Fauna Field Ecology (2025) have been described below as a direct outcome of the second year of nest box monitoring:

- Leave nest boxes with signs of use in place.
- Re-install microbat boxes within the narrow tree corridor adjacent to the regeneration area at suitable heights, and some on different aspects in the woodland area. Nest boxes targeting microbats should be re-installed at least 3 m above the ground with no vegetation blocking the nest box entrance, with a spacing of approximately 50 m from other microbat nest boxes.
- Inspection holes added to the front of microbat boxes to increase potential use and enable simplified inspection.
- Relocation of unused next boxes to create three clusters of boxes, creating options for various seasons and alternative shelter. Any currently utilised nest boxes are not to be relocated.
    - One cluster would remain within the tree corridor where five boxes are currently positioned, including adjustment of microbat boxes.
    - The second cluster within the woodland area would retain half of the nest boxes in their current location, while half would be moved to the third cluster.
    - The third cluster of nest boxes would be installed 20 m apart within the woodland area, at least 100 m in proximity their original locations.

- Add spacers on box attachments between the tree and the box to prevent damage or shift in position. This will require the boxes to be removed from the tree to make the adjustment. If any fauna are present inside a box, the adjustment would not be undertaken and would be attempted during the next inspection, if unoccupied.

- Annual maintenance inspections of nest box condition. Replace any boxes that become unusable due to deterioration or falling off tree.

    - Replacement nest boxes would be waterproof, contain thermal quality, contain an attachment allowing for tree growth (spacer) and designed for the target species.

- Add a hardwood panel with appropriate entry hole size onto parrot boxes that have no evidence of use, to reduce the possibility of entry hole alteration via chewing from Common Brushtail Possums (*Trichosurus vulpecula).*

5.2 Specific actions in the rehabilitation area

The following recommendations have been made within the rehabilitation area:

- Conduct monthly visual inspections of plant health, germination rates, natural regeneration, weed infestation, soil conditions and erosion, drainage and sediment control structures, and runoff water quality.

- Continued weed-control efforts combined with direct seeding to be implemented.

- Consideration of assisted regeneration of target canopy species within Plot B3, as recruitment has not occurred within this plot for two consecutive years. Consideration of assisted regeneration of target canopy species within Plot B1.

- For direct seeding, species should be sourced from the native tree and shrub seed bank indicated in previous monitoring reports; if this is not available, they should be sourced from local provenance only.

- Weed control should continue to target African Lovegrass, as this currently covers 30 percent of the area surveyed in Plot B3, and is also present in the new monitoring Plot B1. Weed control should follow the measures outlined in Section 9.3.2 of the LMP (RW Corkery & Co, 2022), which includes quarterly inspections.

- Weed control should utilise methods that minimise direct impact to native species, where possible.

- Re-establish Plot B2 within revegetated area of Domain 4 once revegetation has been undertaken, to monitor effectiveness of rehabilitation.

5.3 Specific actions in the BOA

The following recommendations have been made within the BOA:

- Continued spot spraying of weeds on foot and by hand only, to minimise weed seed being spread by vehicles and avoid herbicide overspray killing native plants nearby. It is important that adjacent native plants remain alive to maintain competition against weed growth.

- Monitor weeds visually at least every three months and spray as necessary to prevent seed-set. Always assess the efficacy of the control method over time (e.g. if native plants are inadvertently killed and weed cover is not decreasing, cease weed control and reassess methods).

6 Conclusion

Year eight of vegetation monitoring was completed by EMM during December 2025 by two suitably qualified ecologists. Year eight of nest box monitoring was completed by Fauna Field Ecology by two suitably qualified ecologists. This report details the methodologies and results of the year eight monitoring period, detailing recommendations going forward based on findings from this monitoring round.

The data captured within this report demonstrates that the biodiversity values of the BOA are continually improving, with native species richness increasing since monitoring began and weed numbers stable or declining in conjunction with implementing weed control. The quarry operations do not appear to be having an adverse impact on the BOA.

The rehabilitation area continues to require further action to establish vegetation communities to benchmark conditions. Weed cover within this area (i.e. Plot B3) remains moderate and is trending downwards. Within this area (plots B1 and B3), composition attributes such as tree numbers and leaf litter cover are well below that of the analogue site. It is understood that weed management continues to be undertaken, with a particular focus on controlling African Lovegrass (*Eragrostis curvula*) present on the site. The additional plot (B1) was observed to contain approximately 5% cover of African Lovegrass (*Eragrostis curvula*), in addition to other high threat weeds. Similarly to the 2024 monitoring year, the 2025 monitoring survey noted a significant decrease in cover of African Lovegrass, an indication that weed control efforts over the past few years has shown promising results for reduction and eradication.

The total number of *Grevillea parviflora* subsp. *parviflora* has increased since the last monitoring period (2024), a likely indication of improved conditions following a low stem count in the previous year. The increase may be as a result of above average rainfall however is likely attributable to a range of environmental and climatic factors.

Nest box utilisation within the study area has increased from 5% in 2024 to 30% in 2025, signifying a 500% utilisation increase. Availability of existing natural hollows within the vast area of mature bushland may be a contributing factor to low utilisation of nest boxes. To maximise potential use of nest boxes by target species, relocation and alteration is recommended for nest boxes that are not currently in use.

References

BoM. (2025). Climate Data Online. Bureau of Meteorology. Retrieved February 2026, from http://www.bom.gov.au/climate/data/index.shtml

EMM. (2022). Tinda Creek offset vegetation, revegetation and Koala monitoring report 2021. EMM Consulting Pty Ltd.

EMM. (2023). Tinda Creek Quarry Biodiversity Monitoring Report 2022. EMM Consulting Pty Ltd.

EMM. (2024). *Tinda Creek Quarry Biodiversity Monitoring Report 2023.* Sydney: EMM Consulting Pty Ltd.

EMM. (2025). *Tinda Creek Quarry Biodiversity Monitoring Report 2024.*

EnviroKey. (2020). *Tinda Creek Quarry Offset vegetation, revegetation and Koala monitoring report 2019.*

EnviroKey. (2021). *Tinda Creek Quarry Offset vegetation, revegetation and Koala monitoring report 2020.*

Fauna Field Ecology. (2025). *Tinda Creek Quarry Nestbox Monitoring Report.*

Niche. (2019). *Tinda Creek Quarry Offset vegetation, revegetation and Koala monitoring report 2018 .*

NSW BCT. (2020). *Guideline for Artificial Hollows.* Sydney: Biodiversity Conservation Trust, NSW Government.

NSW DCCEEW. (2024). Small-flower Grevillea - profile. NSW Department of Climate Change, Energy, the Environment and Water. Retrieved November 2024, from https://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10373

NSW RTA. (2011). *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects.* Sydney: NSW Government, Roads & Traffic Authority.

OEH. (2014). Biobanking Assessment Methodology (version 2). Sydney: Office of Environment and Heritage.

OEH. (2024a). Threatened biodiversity profile search. Sydney: Office of Environment and Heritage. Retrieved from https://www.environment.nsw.gov.au/threatenedspeciesapp/

OEH. (2024b). BioNet Atlas of NSW Wildlife. Sydney: NSW Government, Office of Environment and Heritage.

RW Corkery & Co. (2022). *Landscape Management Plan for the Tinda Creek Quarry.*

Umwelt. (2016). Tinda Creek Quarry Landscape Management Plan. A report prepared by Umwelt for Aus-10 Rhyolite Pty Ltd.

Appendix A
BAM plot data

EMM
creating opportunities

BAM Site – Field Survey Form

Plot ID:	B1	**Date:**	16/12/2025	**Project number:**	E251149	**Plot dimensions:**	50 x 20
Datum:	GDA94	**Easting:**	286,088	**Recorders:**	Nicole McVicar		
Zone:	56	**Northing:**	6,327,902	**IBRA region:**		**Midline bearing:**	84
Plant Community Type:				**Condition class:**		**PCT % cleared:**	
Vegetation Formation:				**Veg. Class:**			

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	3
	Shrubs:	18
	Grasses etc.:	13
	Forbs:	10
	Ferns:	1
	Other:	1
Sum of Cover of native vascular plants by growth form group	Trees:	0.5
	Shrubs:	2.1
	Grasses etc.:	61.3
	Forbs:	4.2
	Ferns:	0.1
	Other:	0.1
High Threat Weed cover:		2.6

BAM Attribute (1000 m2 plot) DBH			
DBH	**Tree stem count**	**Length of logs (m) (≥10 cm diameter, >50 cm in length)**	14
80 + cm:	0		
50 – 79 cm:	0		
30 – 49 cm:	0		
20 – 29 cm:	0	**Tree hollow count**	0
10 – 19 cm:	0		
5 – 9 cm:	1		
< 5 cm:	0		

Counts apply when no. of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For multi-stemmed tree, only largest living stem is included in the count. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)				
Subplot:	**1**	**2**	**3**	**4**	**5**
Subplot score (%):	0	1	2	2	1
Average litter cover (%):	1.2				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography and site features			
Soil colour:		**Landform element:**	
Soil texture:		**Landform pattern:**	

Plot Disturbance

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Project name:	E251149				
Recorders:	Nicole McVicar	**Plot ID:**	B1	**Date:**	16/12/2025

GF Code	Scientific name	Cover	Abundance	Voucher	N, E or HTE
Shrub (SG)	*Hibbertia fasciculata*	0.2	20		N
Grass & grasslike (GG)	*Eragrostis brownii (Brown's Lovegrass)*	0.2	20		N
Forb (FG)	*Gonocarpus micranthus*	2	100		N
Forb (FG)	*Laxmannia gracilis (Slender Wire Lily)*	0.1	10		N
Grass & grasslike (GG)	*Lepidosperma laterale (Variable Sword-sedge)*	0.1	5		N
Grass & grasslike (GG)	*Lepyrodia scariosa*	0.1	10		N
Grass & grasslike (GG)	*Schoenus melanostachys*	0.1	10		N
Grass & grasslike (GG)	*Lomandra longifolia (Spiny-headed Mat-rush)*	0.1	5		N
Shrub (SG)	*Acacia ulicifolia (Prickly Moses)*	0.1	10		N
Grass & grasslike (GG)	*Juncus continuus*	20	2000		N
Grass & grasslike (GG)	*Cynodon dactylon (Common Couch)*	40	1000		N
Shrub (SG)	*Leptospermum trinervium (Slender Tea-tree)*	0.1	5		N
Forb (FG)	*Epaltes australis (Spreading Nut-heads)*	0.5	200		N
Grass & grasslike (GG)	*Xyris spp.*	0.2	1000		N
Grass & grasslike (GG)	*Cyathochaeta diandra*	0.1	20		N
Grass & grasslike (GG)	*Schoenus imberbis*	0.1	20		N
Tree (TG)	*Acacia parramattensis (Parramatta Wattle)*	0.3	5		N
Forb (FG)	*Dampiera stricta*	0.1	10		N
Forb (FG)	*Hypericum gramineum (Small St John's Wort)*	0.1	20		N
Forb (FG)	*Goodenia paniculata*	1	100		N
Shrub (SG)	*Pimelea linifolia (Slender Rice Flower)*	0.2	30		N
	Eragrostis curvula (African Lovegrass)	0.5	30		HTE
	Axonopus fissifolius (Narrow-leafed Carpet Grass)	1	100		HTE
	Richardia spp.	0.2	20		E
	Gamochaeta spp.	0.1	5		E
Other (OG)	*Billardiera scandens (Hairy Apple Berry)*	0.1	2		N
	Hypochaeris radicata (Catsear)	0.1	20		E
Shrub (SG)	*Banksia marginata (Silver Banksia)*	0.1	1		N
	Conyza bonariensis (Flaxleaf Fleabane)	0.1	20		E
Forb (FG)	*Dianella revoluta (Blueberry Lily)*	0.1	10		N
	Solanum sisymbriifolium	0.1	2		E
Shrub (SG)	*Hibbertia spp.*	0.1	2		N
	Cyperus reflexus	0.1	2		E
Shrub (SG)	*Acacia rubida (Red-stemmed Wattle)*	0.2	4		N
Forb (FG)	*Patersonia sericea (Silky Purple-Flag)*	0.1	5		N
Grass & grasslike (GG)	*Austrostipa pubescens*	0.1	5		N
Shrub (SG)	*Micromyrtus spp.*	0.1	2		N
Grass & grasslike (GG)	*Entolasia stricta (Wiry Panic)*	0.1	10		N
Grass & grasslike (GG)	*Entolasia marginata (Bordered Panic)*	0.1	10		N
Tree (TG)	*Angophora bakeri (Narrow-leaved Apple)*	0.1	1		N
Shrub (SG)	*Dillwynia glaberrima*	0.1	2		N
	Digitaria violascens	0.1	2		E
	Juncus articulatus (A Rush)	1	100		HTE

Project name:	E251149				
Recorders:	Nicole McVicar	**Plot ID:**	B1	**Date:**	16/12/2025

GF Code	Scientific name	Cover	Abundance	Voucher	N, E or HTE
Shrub (SG)	*Platysace ericoides*	0.1	5		N
Shrub (SG)	*Epacris obtusifolia (Blunt-leaf Heath)*	0.1	2		N
Shrub (SG)	*Cryptandra spinescens*	0.1	2		N
	Paspalum dilatatum (Paspalum)	0.1	5		HTE
Shrub (SG)	*Bossiaea heterophylla (Variable Bossiaea)*	0.1	2		N
Shrub (SG)	*Conospermum taxifolium (Variable Smoke-bush)*	0.1	5		N
Forb (FG)	*Gonocarpus tetragynus (Poverty Raspwort)*	0.1	2		N
Forb (FG)	*Mitrasacme polymorpha*	0.1	2		N
Shrub (SG)	*Leucopogon spp. (A Beard-heath)*	0.1	1		N
Fern (EG)	*Pteridium esculentum (Bracken)*	0.1	10	no	N
Shrub (SG)	*Gompholobium spp.*	0.1	2		N
Shrub (SG)	*Platysace linearifolia*	0.1	5		N
Tree (TG)	*Eucalyptus parramattensis (Parramatta Red Gum)*	0.1	2		N
Shrub (SG)	*Melaleuca thymifolia (Thyme Honey-myrtle)*	0.1	2		N

BAM Site – Field Survey Form

Plot ID:	B3	**Date:**	17/12/2025	**Project number:**	E251149	**Plot dimensions:**	50 x 20
Datum:	GDA94	**Easting:**	286,506	**Recorders:**	Nicole McVicar		
Zone:	56	**Northing:**	6,328,100	**IBRA region:**		**Midline bearing:**	350
Plant Community Type:				**Condition class:**		**PCT % cleared:**	
Vegetation Formation:				**Veg. Class:**			

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	2
	Shrubs:	24
	Grasses etc.:	10
	Forbs:	8
	Ferns:	0
	Other:	0
Sum of Cover of native vascular plants by growth form group	Trees:	1.1
	Shrubs:	10.4
	Grasses etc.:	1.4
	Forbs:	0.8
	Ferns:	0
	Other:	0
High Threat Weed cover:		30.1

BAM Attribute (1000 m2 plot) DBH			
DBH	**Tree stem count**	**Length of logs (m) (≥10 cm diameter, >50 cm in length)**	0
80 + cm:	0		
50 – 79 cm:	0		
30 – 49 cm:	0		
20 – 29 cm:	0	**Tree hollow count**	0
10 – 19 cm:	1		
5 – 9 cm:	1		
< 5 cm:	0		

Counts apply when no. of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For multi-stemmed tree, only largest living stem is included in the count. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)				
Subplot:	**1**	**2**	**3**	**4**	**5**
Subplot score (%):	90	90	20	3	1
Average litter cover (%):	40.8				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography and site features			
Soil colour:		**Landform element:**	
Soil texture:		**Landform pattern:**	

Plot Disturbance

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Project name:	E251149				
Recorders:	Nicole McVicar	**Plot ID:**	B3	**Date:**	17/12/2025

GF Code	Scientific name	Cover	Abundance	Voucher	N, E or HTE
Shrub (SG)	*Leptospermum trinervium (Slender Tea-tree)*	5	30		N
Shrub (SG)	*Melaleuca thymifolia (Thyme Honey-myrtle)*	0.1	2		N
Grass & grasslike (GG)	*Lomandra longifolia (Spiny-headed Mat-rush)*	0.1	2		N
Shrub (SG)	*Persoonia oblongata*	2	10		N
	Eragrostis curvula (African Lovegrass)	30	700		HTE
Grass & grasslike (GG)	*Lepyrodia scariosa*	0.1	20		N
Shrub (SG)	*Hibbertia puberula*	0.1	2		N
Forb (FG)	*Gonocarpus tetragynus (Poverty Raspwort)*	0.1	20		N
Shrub (SG)	*Acacia ulicifolia (Prickly Moses)*	0.1	10		N
Forb (FG)	*Goodenia paniculata*	0.1	30		N
Forb (FG)	*Dianella revoluta (Blueberry Lily)*	0.1	10		N
Shrub (SG)	*Hibbertia fasciculata*	0.1	10		N
Shrub (SG)	*Callistemon rigidus (Stiff Bottlebrush)*	0.2	3		N
Grass & grasslike (GG)	*Lomandra obliqua*	0.1	20		N
Shrub (SG)	*Conospermum taxifolium (Variable Smoke-bush)*	0.2	10		N
Grass & grasslike (GG)	*Lomandra multiflora subsp. multiflora (Many-flowered Mat-rush)*	0.1	1		N
Shrub (SG)	*Cryptandra spinescens*	0.1	5		N
Forb (FG)	*Xanthosia atkinsoniana*	0.1	30		N
Shrub (SG)	*Bossiaea heterophylla (Variable Bossiaea)*	0.1	10		N
Forb (FG)	*Laxmannia gracilis (Slender Wire Lily)*	0.1	20		N
Shrub (SG)	*Grevillea mucronulata*	1	5		N
Shrub (SG)	*Pimelea linifolia (Slender Rice Flower)*	0.1	10		N
Shrub (SG)	*Dillwynia glaberrima*	0.2	10		N
Shrub (SG)	*Dillwynia spp.*	0.1	2		N
Shrub (SG)	*Platysace ericoides*	0.1	5		N
Grass & grasslike (GG)	*Cyathochaeta diandra*	0.1	2		N
Grass & grasslike (GG)	*Lepidosperma laterale (Variable Sword-sedge)*	0.1	2		N
Shrub (SG)	*Leucopogon spp. (A Beard-heath)*	0.1	2		N
Grass & grasslike (GG)	*Lomandra glauca (Pale Mat-rush)*	0.1	5		N
Forb (FG)	*Dampiera stricta*	0.1	10		N
Shrub (SG)	*Persoonia isophylla*	0.1	1		N
Tree (TG)	*Eucalyptus haemastoma (Broad-leaved Scribbly Gum)*	1	1		N
Grass & grasslike (GG)	*Austrostipa pubescens*	0.1	1		N
Forb (FG)	*Patersonia sericea (Silky Purple-Flag)*	0.1	1		N
	Andropogon virginicus (Whisky Grass)	0.1	5		HTE
Forb (FG)	*Patersonia spp.*	0.1	2		N
	Conyza bonariensis (Flaxleaf Fleabane)	0.1	5		E
Shrub (SG)	*Melichrus procumbens (Jam Tarts)*	0.1	1		N
Grass & grasslike (GG)	*Aristida warburgii*	0.5	10		N
Shrub (SG)	*Leptospermum juniperinum (Prickly Tea-tree)*	0.1	1		N
Shrub (SG)	*Brachyloma daphnoides (Daphne Heath)*	0.1	2		N
Shrub (SG)	*Persoonia linearis (Narrow-leaved Geebung)*	0.1	1		N
Shrub (SG)	*Micromyrtus spp.*	0.1	1		N

Project name:	E251149				
Recorders:	Nicole McVicar	**Plot ID:**	B3	**Date:**	17/12/2025

GF Code	Scientific name	Cover	Abundance	Voucher	N, E or HTE
Shrub (SG)	*Isopogon anemonifolius (Broad-leaf Drumsticks)*	0.1	1		N
Grass & grasslike (GG)	*Lepyrodia spp.*	0.1	1		N
Tree (TG)	*Allocasuarina littoralis (Black She-Oak)*	0.1	1		N
Shrub (SG)	*Monotoca elliptica (Tree Broom-heath)*	0.1	1		N

BAM Site – Field Survey Form

Plot ID:	B4	**Date:**	17/12/2025	**Project number:**	E251149	**Plot dimensions:**	50 x 20
Datum:	GDA94	**Easting:**	284,938	**Recorders:**	Nicole McVicar		
Zone:	56	**Northing:**	6,328,031	**IBRA region:**		**Midline bearing:**	325
Plant Community Type:				**Condition class:**		**PCT % cleared:**	
Vegetation Formation:				**Veg. Class:**			

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	2
	Shrubs:	11
	Grasses etc.:	8
	Forbs:	4
	Ferns:	3
	Other:	0
Sum of Cover of native vascular plants by growth form group	Trees:	26
	Shrubs:	5.1
	Grasses etc.:	21.5
	Forbs:	0.6
	Ferns:	0.4
	Other:	0
High Threat Weed cover:		6.1

BAM Attribute (1000 m2 plot) DBH			
DBH	Tree stem count	Length of logs (m) (≥10 cm diameter, >50 cm in length)	0
80 + cm:	0		
50 – 79 cm:	0		
30 – 49 cm:	0		
20 – 29 cm:	0	Tree hollow count	0
10 – 19 cm:	0		
5 – 9 cm:	0		
< 5 cm:	1		

Counts apply when no. of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For multi-stemmed tree, only largest living stem is included in the count. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)				
Subplot:	1	2	3	4	5
Subplot score (%):	65	8	18	4	70
Average litter cover (%):	33				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography and site features			
Soil colour:		**Landform element:**	
Soil texture:		**Landform pattern:**	

Plot Disturbance

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Project name:	E251149				
Recorders:	Nicole McVicar	**Plot ID:**	B4	**Date:**	17/12/2025

GF Code	Scientific name	Cover	Abundance	Voucher	N, E or HTE
Tree (TG)	*Eucalyptus haemastoma (Broad-leaved Scribbly Gum)*	25	100		N
	Eragrostis curvula (African Lovegrass)	5	100		HTE
Grass & grasslike (GG)	*Lomandra longifolia (Spiny-headed Mat-rush)*	2	100		N
Shrub (SG)	*Acacia parvipinnula (Silver-stemmed Wattle)*	0.1	2		N
Forb (FG)	*Gonocarpus tetragynus (Poverty Raspwort)*	0.2	200		N
Tree (TG)	*Angophora bakeri (Narrow-leaved Apple)*	1	50		N
Grass & grasslike (GG)	*Lomandra glauca (Pale Mat-rush)*	5	200		N
Shrub (SG)	*Leptospermum trinervium (Slender Tea-tree)*	2	20		N
Grass & grasslike (GG)	*Lomandra filiformis subsp. coriacea (Wattle Matt-rush)*	0.2	20		N
Shrub (SG)	*Persoonia linearis (Narrow-leaved Geebung)*	0.1	2		N
Grass & grasslike (GG)	*Eragrostis brownii (Brown's Lovegrass)*	0.2	30		N
	Axonopus fissifolius (Narrow-leafed Carpet Grass)	1	50		HTE
Forb (FG)	*Chrysocephalum apiculatum (Common Everlasting)*	0.2	30		N
Shrub (SG)	*Dillwynia glaberrima*	0.2	5		N
Grass & grasslike (GG)	*Aristida ramosa (Purple Wiregrass)*	2	100		N
	Hypochaeris radicata (Catsear)	0.1	10		E
Fern (EG)	*Schizaea bifida (Forked Comb Fern)*	0.1	5		N
Shrub (SG)	*Persoonia isophylla*	0.1	1		N
Forb (FG)	*Dianella revoluta (Blueberry Lily)*	0.1	20		N
Grass & grasslike (GG)	*Aristida vagans (Threeawn Speargrass)*	2	100		N
Shrub (SG)	*Brachyloma daphnoides (Daphne Heath)*	0.2	5		N
Shrub (SG)	*Persoonia oblongata*	0.1	2		N
Grass & grasslike (GG)	*Aristida warburgii*	10	200		N
	Andropogon virginicus (Whisky Grass)	0.1	20		HTE
Shrub (SG)	*Cryptandra amara (Bitter Cryptandra)*	0.1	2		N
Fern (EG)	*Pteridium esculentum (Bracken)*	0.2	10		N
Fern (EG)	*Cheilanthes sieberi (Rock Fern)*	0.1	30		N
Shrub (SG)	*Leptospermum polygalifolium (Tantoon)*	2	20		N
Grass & grasslike (GG)	*Cynodon dactylon (Common Couch)*	0.1	5		N
Shrub (SG)	*Melichrus procumbens (Jam Tarts)*	0.1	2		N
Forb (FG)	*Pomax umbellata (Pomax)*	0.1	10		N
	Richardia spp.	0.1	10		E
Shrub (SG)	*Cryptandra spinescens*	0.1	2		N
	Gamochaeta spp.	0.1	5		E

BAM Site – Field Survey Form

Plot ID:	B5	**Date:**	17/12/2025	**Project number:**	E251149	**Plot dimensions:**	50 x 20
Datum:	GDA94	**Easting:**	285,025	**Recorders:**	Nicole McVicar		
Zone:	56	**Northing:**	6,328,012	**IBRA region:**		**Midline bearing:**	350
Plant Community Type:				**Condition class:**		**PCT % cleared:**	
Vegetation Formation:				**Veg. Class:**			

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	5
	Shrubs:	18
	Grasses etc.:	13
	Forbs:	6
	Ferns:	2
	Other:	0
Sum of Cover of native vascular plants by growth form group	Trees:	16.4
	Shrubs:	63.2
	Grasses etc.:	13.3
	Forbs:	0.8
	Ferns:	0.2
	Other:	0
High Threat Weed cover:		0.1

BAM Attribute (1000 m2 plot) DBH			
DBH	Tree stem count	Length of logs (m) (≥10 cm diameter, >50 cm in length)	2
80 + cm:	0		
50 – 79 cm:	1		
30 – 49 cm:	0		
20 – 29 cm:	0	Tree hollow count	0
10 – 19 cm:	0		
5 – 9 cm:	0		
< 5 cm:	1		

Counts apply when no. of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For multi-stemmed tree, only largest living stem is included in the count. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)				
Subplot:	1	2	3	4	5
Subplot score (%):	7	5	68	10	5
Average litter cover (%):	19				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography and site features			
Soil colour:		**Landform element:**	
Soil texture:		**Landform pattern:**	

Plot Disturbance

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Project name:	E251149				
Recorders:	Nicole McVicar	**Plot ID:**	B5	**Date:**	17/12/2025

GF Code	Scientific name	Cover	Abundance	Voucher	N, E or HTE
Tree (TG)	*Eucalyptus punctata (Grey Gum)*	15	15		N
Shrub (SG)	*Acacia parvipinnula (Silver-stemmed Wattle)*	1	5		N
Shrub (SG)	*Exocarpos cupressiformis (Cherry Ballart)*	0.5	10		N
Shrub (SG)	*Leptospermum trinervium (Slender Tea-tree)*	50	500		N
Grass & grasslike (GG)	*Themeda triandra*	1	50		N
Grass & grasslike (GG)	*Lepyrodia scariosa*	0.2	100		N
Forb (FG)	*Gonocarpus tetragynus (Poverty Raspwort)*	0.2	100		N
Grass & grasslike (GG)	*Aristida warburgii*	10	500		N
Grass & grasslike (GG)	*Lomandra longifolia (Spiny-headed Mat-rush)*	1	40		N
Forb (FG)	*Laxmannia gracilis (Slender Wire Lily)*	0.1	20		N
Tree (TG)	*Allocasuarina littoralis (Black She-Oak)*	0.1	10		N
Grass & grasslike (GG)	*Cyathochaeta diandra*	0.2	30		N
Shrub (SG)	*Gompholobium spp.*	0.1	5		N
Shrub (SG)	*Conospermum taxifolium (Variable Smoke-bush)*	0.2	20		N
Shrub (SG)	*Persoonia linearis (Narrow-leaved Geebung)*	0.1	10		N
Tree (TG)	*Angophora bakeri (Narrow-leaved Apple)*	0.2	30		N
Shrub (SG)	*Dillwynia glaberrima*	0.1	2		N
Forb (FG)	*Dipodium spp.*	0.1	1		N
Fern (EG)	*Pteridium esculentum (Bracken)*	0.1	5		N
Fern (EG)	*Schizaea bifida (Forked Comb Fern)*	0.1	20		N
Forb (FG)	*Dianella revoluta (Blueberry Lily)*	0.2	20		N
	Axonopus fissifolius (Narrow-leafed Carpet Grass)	0.1	10		HTE
Grass & grasslike (GG)	*Aristida ramosa (Purple Wiregrass)*	0.2	30		N
Grass & grasslike (GG)	*Lomandra filiformis subsp. coriacea (Wattle Matt-rush)*	0.1	10		N
Shrub (SG)	*Leucopogon spp. (A Beard-heath)*	0.1	1		N
	Hypochaeris radicata (Catsear)	0.1	5		E
Shrub (SG)	*Leucopogon muticus (Blunt Beard-heath)*	0.1	5		N
Forb (FG)	*Patersonia sericea (Silky Purple-Flag)*	0.1	2		N
Tree (TG)	*Banksia serrata (Old-man Banksia)*	0.1	1		N
Forb (FG)	*Stylidium graminifolium (Grass Triggerplant)*	0.1	5		N
Grass & grasslike (GG)	*Lomandra glauca (Pale Mat-rush)*	0.1	10		N
Grass & grasslike (GG)	*Lepidosperma laterale (Variable Sword-sedge)*	0.1	2		N
Shrub (SG)	*Melichrus procumbens (Jam Tarts)*	0.2	5		N
Shrub (SG)	*Banksia marginata (Silver Banksia)*	0.2	2		N
Shrub (SG)	*Leptospermum juniperinum (Prickly Tea-tree)*	0.1	2		N
Shrub (SG)	*Leptospermum polygalifolium (Tantoon)*	10	200		N
Shrub (SG)	*Platysace ericoides*	0.1	2		N
Grass & grasslike (GG)	*Cynodon dactylon (Common Couch)*	0.1	2		N
Shrub (SG)	*Cryptandra amara (Bitter Cryptandra)*	0.1	10		N
Grass & grasslike (GG)	*Lomandra obliqua*	0.1	5		N
Grass & grasslike (GG)	*Lomandra multiflora subsp. multiflora (Many-flowered Mat-rush)*	0.1	5		N
Tree (TG)	*Eucalyptus haemastoma (Broad-leaved Scribbly Gum)*	1	20		N
Shrub (SG)	*Callistemon spp.*	0.1	1		N

Project name:	E251149				
Recorders:	Nicole McVicar	Plot ID:	B5	Date:	17/12/2025

GF Code	Scientific name	Cover	Abundance	Voucher	N, E or HTE
Shrub (SG)	*Persoonia oblongata*	0.1	1		N
Shrub (SG)	*Persoonia isophylla*	0.1	2		N
Grass & grasslike (GG)	*Eragrostis brownii (Brown's Lovegrass)*	0.1	2		N

BAM Site – Field Survey Form

Plot ID:	B6	**Date:**	17/12/2025	**Project number:**	E241149	**Plot dimensions:**	50 x 20
Datum:	GDA94	**Easting:**	286,213	**Recorders:**	Nicole McVicar		
Zone:	56	**Northing:**	6,328,529	**IBRA region:**		**Midline bearing:**	335
Plant Community Type:				**Condition class:**		**PCT % cleared:**	
Vegetation Formation:				**Veg. Class:**			

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	7
	Shrubs:	8
	Grasses etc.:	8
	Forbs:	8
	Ferns:	2
	Other:	6
Sum of Cover of native vascular plants by growth form group	Trees:	24.2
	Shrubs:	3.9
	Grasses etc.:	36.9
	Forbs:	0.8
	Ferns:	2.1
	Other:	0.7
High Threat Weed cover:		0

BAM Attribute (1000 m2 plot) DBH			
DBH	**Tree stem count**	**Length of logs (m) (≥10 cm diameter, >50 cm in length)**	32
80 + cm:	0		
50 – 79 cm:	3		
30 – 49 cm:	3		
20 – 29 cm:	1	**Tree hollow count**	0
10 – 19 cm:	1		
5 – 9 cm:	1		
< 5 cm:	1		

Counts apply when no. of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For multi-stemmed tree, only largest living stem is included in the count. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)				
Subplot:	**1**	**2**	**3**	**4**	**5**
Subplot score (%):	75	60	98	100	99
Average litter cover (%):	86.4				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography and site features			
Soil colour:		**Landform element:**	
Soil texture:		**Landform pattern:**	

Plot Disturbance

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Project name:	E241149				
Recorders:	Nicole McVicar	**Plot ID:**	B6	**Date:**	17/12/2025

GF Code	Scientific name	Cover	Abundance	Voucher	N, E or HTE
Tree (TG)	*Eucalyptus crebra (Narrow-leaved Ironbark)*	2	3		N
Tree (TG)	*Eucalyptus fibrosa (Red Ironbark)*	15	5		N
Shrub (SG)	*Bursaria spinosa (Native Blackthorn)*	3	25		N
Tree (TG)	*Acacia parramattensis (Parramatta Wattle)*	5	20		N
Shrub (SG)	*Polyscias sambucifolia (Elderberry Panax)*	0.3	10		N
Grass & grasslike (GG)	*Imperata cylindrica (Blady Grass)*	20	1000		N
Grass & grasslike (GG)	*Microlaena stipoides (Weeping Grass)*	15	750		N
Fern (EG)	*Cheilanthes sieberi (Rock Fern)*	0.1	30		N
Forb (FG)	*Lobelia purpurascens (whiteroot)*	0.1	20		N
Shrub (SG)	*Persoonia linearis (Narrow-leaved Geebung)*	0.1	5		N
Grass & grasslike (GG)	*Lomandra multiflora subsp. multiflora (Many-flowered Mat-rush)*	0.1	3		N
Other (OG)	*Macrozamia communis (Burrawang)*	0.2	1		N
Fern (EG)	*Pteridium esculentum (Bracken)*	2	100		N
Grass & grasslike (GG)	*Entolasia marginata (Bordered Panic)*	1	100		N
Other (OG)	*Glycine microphylla (Small-leaf Glycine)*	0.1	20		N
Forb (FG)	*Dianella caerulea var. producta*	0.1	5		N
Tree (TG)	*Allocasuarina torulosa (Forest Oak)*	1	10		N
Forb (FG)	*Hydrocotyle laxiflora (Stinking Pennywort)*	0.1	20		N
Other (OG)	*Clematis aristata (Old Man's Beard)*	0.1	2		N
Grass & grasslike (GG)	*Cynodon dactylon (Common Couch)*	0.1	10		N
Other (OG)	*Desmodium varians (Slender Tick-trefoil)*	0.1	20		N
Grass & grasslike (GG)	*Entolasia stricta (Wiry Panic)*	0.5	50		N
Shrub (SG)	*Acacia falcata*	0.1	1		N
Shrub (SG)	*Acacia implexa (Hickory Wattle)*	0.1	5		N
Shrub (SG)	*Homalanthus populifolius*	0.1	1		N
Other (OG)	*Hardenbergia violacea (False Sarsaparilla)*	0.1	2		N
Shrub (SG)	*Pomaderris spp.*	0.1	1		N
Tree (TG)	*Angophora costata (Sydney Red Gum)*	1	1		N
Forb (FG)	*Solanum prinophyllum (Forest Nightshade)*	0.1	2		N
Forb (FG)	*Dichondra repens (Kidney Weed)*	0.1	20		N
Shrub (SG)	*Daviesia ulicifolia (Gorse Bitter Pea)*	0.1	1		N
Tree (TG)	*Eucalyptus eugenioides (Thin-leaved Stringybark)*	0.1	1		N
Grass & grasslike (GG)	*Carex inversa (Knob Sedge)*	0.1	10		N
	Conyza bonariensis (Flaxleaf Fleabane)	0.1	10		E
Forb (FG)	*Euchiton spp. (A Cudweed)*	0.1	2		N
Forb (FG)	*Sigesbeckia orientalis subsp. orientalis (Indian Weed)*	0.1	5		N
Grass & grasslike (GG)	*Oplismenus imbecillis*	0.1	10		N
Forb (FG)	*Plectranthus parviflorus*	0.1	2		N
Tree (TG)	*Notelaea spp.*	0.1	3		N
Other (OG)	*Stephania japonica (Snake vine)*	0.1	1		N

BAM Site – Field Survey Form

Plot ID:	B7	**Date:**	16/12/2025	**Project number:**	E251149	**Plot dimensions:**	50 x 20
Datum:	GDA94	**Easting:**	286,688	**Recorders:**	Nicole McVicar		
Zone:	56	**Northing:**	6,328,331	**IBRA region:**		**Midline bearing:**	0
Plant Community Type:				**Condition class:**		**PCT % cleared:**	
Vegetation Formation:				**Veg. Class:**			

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	3
	Shrubs:	22
	Grasses etc.:	14
	Forbs:	6
	Ferns:	1
	Other:	0
Sum of Cover of native vascular plants by growth form group	Trees:	14
	Shrubs:	5.3
	Grasses etc.:	46.8
	Forbs:	0.7
	Ferns:	15
	Other:	0
High Threat Weed cover:		0

BAM Attribute (1000 m2 plot) DBH			
DBH	Tree stem count	Length of logs (m) (≥10 cm diameter, >50 cm in length)	6
80 + cm:	1		
50 – 79 cm:	2		
30 – 49 cm:	2		
20 – 29 cm:	1	Tree hollow count	4
10 – 19 cm:	1		
5 – 9 cm:	1		
< 5 cm:	1		

Counts apply when no. of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For multi-stemmed tree, only largest living stem is included in the count. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)				
Subplot:	1	2	3	4	5
Subplot score (%):	99	96	77	46	65
Average litter cover (%):	76.6				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography and site features			
Soil colour:		**Landform element:**	
Soil texture:		**Landform pattern:**	

Plot Disturbance

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Project name:	E251149				
Recorders:	Nicole McVicar	**Plot ID:**	B7	**Date:**	16/12/2025

GF Code	Scientific name	Cover	Abundance	Voucher	N, E or HTE
Tree (TG)	*Eucalyptus haemastoma (Broad-leaved Scribbly Gum)*	4	2		N
Tree (TG)	*Angophora bakeri (Narrow-leaved Apple)*	5	2		N
Tree (TG)	*Banksia serrata (Old-man Banksia)*	5	30		N
Shrub (SG)	*Banksia marginata (Silver Banksia)*	1	5		N
Shrub (SG)	*Leptospermum trinervium (Slender Tea-tree)*	1	10		N
Fern (EG)	*Pteridium esculentum (Bracken)*	15	200		N
Grass & grasslike (GG)	*Cyathochaeta diandra*	15	200		N
Grass & grasslike (GG)	*Lepyrodia scariosa*	30	300		N
Shrub (SG)	*Pimelea linifolia (Slender Rice Flower)*	0.1	2		N
Shrub (SG)	*Brachyloma daphnoides (Daphne Heath)*	0.1	20		N
Forb (FG)	*Dianella revoluta (Blueberry Lily)*	0.2	50		N
Shrub (SG)	*Micromyrtus spp.*	0.1	5		N
Grass & grasslike (GG)	*Lomandra glauca (Pale Mat-rush)*	0.1	20		N
Grass & grasslike (GG)	*Lomandra longifolia (Spiny-headed Mat-rush)*	0.5	20		N
Shrub (SG)	*Persoonia linearis (Narrow-leaved Geebung)*	0.2	10		N
Grass & grasslike (GG)	*Anisopogon avenaceus (Oat Speargrass)*	0.1	10		N
Shrub (SG)	*Platysace linearifolia*	0.1	10		N
Shrub (SG)	*Cryptandra spinescens*	0.1	5		N
Shrub (SG)	*Isopogon anemonifolius (Broad-leaf Drumsticks)*	0.2	10		N
Grass & grasslike (GG)	*Leptocarpus tenax*	0.2	30		N
Forb (FG)	*Dampiera stricta*	0.1	20		N
Forb (FG)	*Gonocarpus tetragynus (Poverty Raspwort)*	0.1	30		N
Shrub (SG)	*Platysace ericoides*	0.1	30		N
Shrub (SG)	*Grevillea parviflora*	0.5	50		N
Shrub (SG)	*Melichrus procumbens (Jam Tarts)*	0.2	10		N
Shrub (SG)	*Leptospermum juniperinum (Prickly Tea-tree)*	0.2	5		N
Forb (FG)	*Patersonia sericea (Silky Purple-Flag)*	0.1	2		N
Shrub (SG)	*Acacia brownii (Heath Wattle)*	0.1	5		N
Shrub (SG)	*Hakea dactyloides (Finger Hakea)*	0.5	20		N
Shrub (SG)	*Leucopogon spp. (A Beard-heath)*	0.1	5		N
Forb (FG)	*Laxmannia gracilis (Slender Wire Lily)*	0.1	5		N
Grass & grasslike (GG)	*Imperata cylindrica (Blady Grass)*	0.1	10		N
Grass & grasslike (GG)	*Lomandra multiflora subsp. multiflora (Many-flowered Mat-rush)*	0.1	20		N
Shrub (SG)	*Hibbertia puberula*	0.1	5		N
Grass & grasslike (GG)	*Eragrostis brownii (Brown's Lovegrass)*	0.1	20		N
Grass & grasslike (GG)	*Themeda triandra*	0.1	20		N
Grass & grasslike (GG)	*Aristida ramosa (Purple Wiregrass)*	0.1	20		N
Grass & grasslike (GG)	*Lepidosperma neesii*	0.1	20		N
Grass & grasslike (GG)	*Entolasia marginata (Bordered Panic)*	0.2	50		N
Shrub (SG)	*Melaleuca thymifolia (Thyme Honey-myrtle)*	0.2	20		N
Shrub (SG)	*Acacia rubida (Red-stemmed Wattle)*	0.1	1		N
Shrub (SG)	*Persoonia oblongata*	0.1	1		N
Forb (FG)	*Thysanotus spp.*	0.1	1		N

Project name:	E251149				
Recorders:	Nicole McVicar	**Plot ID:**	B7	**Date:**	16/12/2025

GF Code	Scientific name	Cover	Abundance	Voucher	N, E or HTE
Shrub (SG)	*Persoonia levis (Broad-leaved Geebung)*	0.1	1		N
Grass & grasslike (GG)	*Dichelachne micrantha (Shorthair Plumegrass)*	0.1	1		N
Shrub (SG)	*Callistemon linearis (Narrow-leaved Bottlebrush)*	0.1	1		N

BAM Site – Field Survey Form

Plot ID:	B8	**Date:**	16/12/2025	**Project number:**	E251149	**Plot dimensions:**	50 x 20
Datum:	GDA94	**Easting:**	286,749	**Recorders:**	Nicole McVicar		
Zone:	56	**Northing:**	6,327,890	**IBRA region:**		**Midline bearing:**	0
Plant Community Type:				**Condition class:**		**PCT % cleared:**	
Vegetation Formation:				**Veg. Class:**			

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	6
	Shrubs:	19
	Grasses etc.:	13
	Forbs:	9
	Ferns:	0
	Other:	4
Sum of Cover of native vascular plants by growth form group	Trees:	9.1
	Shrubs:	7.8
	Grasses etc.:	13.8
	Forbs:	0.9
	Ferns:	0
	Other:	0.4
High Threat Weed cover:		0

BAM Attribute (1000 m2 plot) DBH			
DBH	Tree stem count	Length of logs (m) (≥10 cm diameter, >50 cm in length)	36
80 + cm:	0		
50 – 79 cm:	0		
30 – 49 cm:	3		
20 – 29 cm:	1	Tree hollow count	0
10 – 19 cm:	1		
5 – 9 cm:	1		
< 5 cm:	1		

Counts apply when no. of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For multi-stemmed tree, only largest living stem is included in the count. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)				
Subplot:	1	2	3	4	5
Subplot score (%):	78	95	97	46	45
Average litter cover (%):	72.2				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography and site features			
Soil colour:		**Landform element:**	
Soil texture:		**Landform pattern:**	

Plot Disturbance

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Project name:	E251149				
Recorders:	Nicole McVicar	**Plot ID:**	B8	**Date:**	16/12/2025

GF Code	Scientific name	Cover	Abundance	Voucher	N, E or HTE
Tree (TG)	*Corymbia eximia (Yellow Bloodwood)*	5	10		N
Tree (TG)	*Eucalyptus punctata (Grey Gum)*	0.5	1		N
Shrub (SG)	*Acacia parvipinnula (Silver-stemmed Wattle)*	0.5	5		N
Tree (TG)	*Eucalyptus eugenioides (Thin-leaved Stringybark)*	3	20		N
Shrub (SG)	*Acacia penninervis (Mountain Hickory)*	1	20		N
Shrub (SG)	*Persoonia linearis (Narrow-leaved Geebung)*	0.5	20		N
Shrub (SG)	*Grevillea mucronulata*	1	20		N
Shrub (SG)	*Leucopogon muticus (Blunt Beard-heath)*	1	20		N
Grass & grasslike (GG)	*Entolasia stricta (Wiry Panic)*	10	1000		N
Shrub (SG)	*Cryptandra spinescens*	1	50		N
Grass & grasslike (GG)	*Aristida vagans (Threeawn Speargrass)*	1	50		N
Forb (FG)	*Dianella caerulea var. producta*	0.1	2		N
Grass & grasslike (GG)	*Lepidosperma laterale (Variable Sword-sedge)*	0.1	10		N
Shrub (SG)	*Leptospermum trinervium (Slender Tea-tree)*	1	20		N
Grass & grasslike (GG)	*Entolasia marginata (Bordered Panic)*	1	100		N
Grass & grasslike (GG)	*Lomandra multiflora subsp. multiflora (Many-flowered Mat-rush)*	0.1	10		N
Grass & grasslike (GG)	*Themeda triandra*	0.3	50		N
Grass & grasslike (GG)	*Anisopogon avenaceus (Oat Speargrass)*	0.2	20		N
Grass & grasslike (GG)	*Cyathochaeta diandra*	0.5	20		N
Grass & grasslike (GG)	*Lepyrodia scariosa*	0.1	20		N
Shrub (SG)	*Isopogon anemonifolius (Broad-leaf Drumsticks)*	0.2	20		N
Grass & grasslike (GG)	*Eragrostis brownii (Brown's Lovegrass)*	0.1	20		N
Forb (FG)	*Dianella revoluta (Blueberry Lily)*	0.1	10		N
Grass & grasslike (GG)	*Lomandra obliqua*	0.1	20		N
Shrub (SG)	*Persoonia levis (Broad-leaved Geebung)*	0.1	1		N
Shrub (SG)	*Phyllanthus hirtellus (Thyme Spurge)*	0.1	10		N
Shrub (SG)	*Podolobium ilicifolium (Prickly Shaggy Pea)*	0.1	10		N
Tree (TG)	*Angophora bakeri (Narrow-leaved Apple)*	0.2	30		N
Shrub (SG)	*Gompholobium latifolium (Golden Glory Pea)*	0.2	20		N
Shrub (SG)	*Platysace ericoides*	0.5	50		N
Other (OG)	*Billardiera scandens (Hairy Apple Berry)*	0.1	5		N
Shrub (SG)	*Acacia brownii (Heath Wattle)*	0.1	2		N
Forb (FG)	*Scaevola ramosissima (Purple Fan-flower)*	0.1	2		N
Other (OG)	*Hardenbergia violacea (False Sarsaparilla)*	0.1	2		N
Other (OG)	*Cassytha pubescens (Downy Dodder-laurel)*	0.1	10		N
Shrub (SG)	*Conospermum taxifolium (Variable Smoke-bush)*	0.1	2		N
Forb (FG)	*Gonocarpus tetragynus (Poverty Raspwort)*	0.1	2		N
Forb (FG)	*Dampiera purpurea*	0.1	2		N
Shrub (SG)	*Exocarpos cupressiformis (Cherry Ballart)*	0.1	2		N
Forb (FG)	*Brunoniella australis (Blue Trumpet)*	0.1	5		N
Forb (FG)	*Stackhousia viminea (Slender Stackhousia)*	0.1	5		N
Tree (TG)	*Banksia serrata (Old-man Banksia)*	0.2	2		N
Shrub (SG)	*Melichrus procumbens (Jam Tarts)*	0.1	2		N

Project name:	E251149				
Recorders:	Nicole McVicar	Plot ID:	B8	Date:	16/12/2025

GF Code	Scientific name	Cover	Abundance	Voucher	N, E or HTE
Grass & grasslike (GG)	*Lomandra longifolia (Spiny-headed Mat-rush)*	0.2	2		N
Grass & grasslike (GG)	*Lomandra filiformis subsp. filiformis*	0.1	5		N
Forb (FG)	*Opercularia diphylla (Stinkweed)*	0.1	1		N
Tree (TG)	*Corymbia gummifera (Red Bloodwood)*	0.2	3		N
Other (OG)	*Xanthorrhoea spp.*	0.1	2		N
Shrub (SG)	*Hibbertia acicularis*	0.1	2		N
Shrub (SG)	*Brachyloma daphnoides (Daphne Heath)*	0.1	10		N
Forb (FG)	*Hovea spp.*	0.1	5		N

BAM Site – Field Survey Form

Plot ID:	B9	**Date:**	16/12/2025	**Project number:**	E251149	**Plot dimensions:**	20 x 20
Datum:	GDA94	**Easting:**	286,674	**Recorders:**	Nicole McVicar		
Zone:	56	**Northing:**	6,327,398	**IBRA region:**		**Midline bearing:**	150
Plant Community Type:				**Condition class:**		**PCT % cleared:**	
Vegetation Formation:				**Veg. Class:**			

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m2 plot)		Sum values
Count of Native Richness	Trees:	0
	Shrubs:	7
	Grasses etc.:	10
	Forbs:	0
	Ferns:	1
	Other:	2
Sum of Cover of native vascular plants by growth form group	Trees:	0
	Shrubs:	0.8
	Grasses etc.:	130.5
	Forbs:	0
	Ferns:	0.1
	Other:	1.1
High Threat Weed cover:		0

BAM Attribute (1000 m2 plot) DBH			
DBH	**Tree stem count**	**Length of logs (m) (≥10 cm diameter, >50 cm in length)**	0
80 + cm:	0		
50 – 79 cm:	0		
30 – 49 cm:	0		
20 – 29 cm:	0	**Tree hollow count**	0
10 – 19 cm:	0		
5 – 9 cm:	0		
< 5 cm:	0		

Counts apply when no. of tree stems within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For multi-stemmed tree, only largest living stem is included in the count. Tree stems must be living.
For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)	Litter cover (%)				
Subplot:	**1**	**2**	**3**	**4**	**5**
Subplot score (%):	0	0	0	0	0
Average litter cover (%):	0				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography and site features			
Soil colour:		**Landform element:**	
Soil texture:		**Landform pattern:**	

Plot Disturbance

GF Code: see Growth Form definitions in Appendix 1; N: native, E: exotic, HTE: high threat exotic; GF – circle code if 'top 3'; Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover)
Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m
Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Project name:	E251149				
Recorders:	Nicole McVicar	**Plot ID:**	B9	**Date:**	16/12/2025

GF Code	Scientific name	Cover	Abundance	Voucher	N, E or HTE
Grass & grasslike (GG)	*Lepidosperma limicola*	5	30		N
Grass & grasslike (GG)	*Chorizandra cymbaria*	70	1000		N
Grass & grasslike (GG)	*Entolasia stricta (Wiry Panic)*	0.1	100		N
Grass & grasslike (GG)	*Lepyrodia muelleri*	40	1500		N
Shrub (SG)	*Callistemon citrinus (Crimson Bottlebrush)*	0.2	5		N
Grass & grasslike (GG)	*Deyeuxia spp. (A Bent Grass)*	0.1	10		N
Other (OG)	*Xanthorrhoea media*	1	10		N
Shrub (SG)	*Leptospermum juniperinum (Prickly Tea-tree)*	0.1	2		N
Shrub (SG)	*Leucopogon spp. (A Beard-heath)*	0.1	10		N
Grass & grasslike (GG)	*Themeda triandra*	0.1	10		N
Shrub (SG)	*Melaleuca thymifolia (Thyme Honey-myrtle)*	0.1	20		N
Shrub (SG)	*Almaleea paludosa*	0.1	2		N
Grass & grasslike (GG)	*Baumea articulata (Jointed Twig-rush)*	0.1	10		N
Grass & grasslike (GG)	*Schoenus brevifolius*	5	200		N
Shrub (SG)	*Epacris obtusifolia (Blunt-leaf Heath)*	0.1	10		N
Other (OG)	*Polymeria calycina*	0.1	20		N
Grass & grasslike (GG)	*Entolasia marginata (Bordered Panic)*	0.1	50		N
Fern (EG)	*Selaginella uliginosa (Swamp Selaginella)*	0.1	10		N
Grass & grasslike (GG)	*Lepyrodia anarthria*	10	500		N
Shrub (SG)	*Leptospermum parvifolium*	0.1	1		N

Appendix B

BAM plot photo point monitoring

EMM
creating opportunities

B.1 BAM plot photo point monitoring

Plot B1

Plot B2

Plot B3

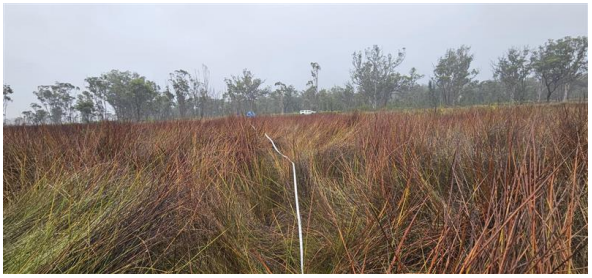
Plot B4

Plot B5

Plot B6

Plot B7

Plot B8



Plot B9

Appendix C

Grevillea parviflora subsp. parviflora photo point monitoring

EMM
creating opportunities

C.1 *Grevillea parviflora* subsp. *parviflora* photo point monitoring

Grevillea Plot 1

Grevillea Plot 2

Grevillea Plot 3

Grevillea Plot 4

Grevillea Plot 5

Grevillea Plot 6

Grevillea Plot 7

Grevillea Plot 8

Grevillea Plot 9

Appendix D

Nest box monitoring report (Fauna Field Ecology 2025)

EMM
creating opportunities

30th November 2025

Bryan Grant
Quarry Manager
ADBRI Quarries

Attention: Bryan Grant

Fauna Field Ecology was engaged by Bryan Grant, Quarry Manager at Tinda Creek Quarry, to undertake monitoring of 20 installed nest boxes within the Quarry. The purpose of this assessment was to evaluate current levels of nest box usage by targeted fauna groups and to determine whether any boxes require relocation or maintenance to improve their functionality and enhance their effectiveness as habitat resources.

The monitoring was undertaken on 3 October 2025 by Ecologists Narawan Williams and Lucinda Casey, using a combination of a headlamp and a nest box camera to assess signs of fauna usage, pest species presence, box condition, and requirements for repairs and maintenance.

Results indicated that six nest boxes (TC:04, TC:14, TC:15, TC:16, TC:18 and TC:20) showed evidence of fauna use, including Common brushtail possum (*Trichosurus vulpecula*) and Peron's Tree Frog (*Litoria peronii*). Three boxes (TC:17, TC:18 and TC:19) were identified as requiring relocation to improve habitat suitability during the next inspection recommended to occur in 2026. Some of the possum and parrot boxes that still show no signs of usage could be relocated to further distances from current locations also during the next inspection. All 20 nest boxes require repair works, which includes the addition of spacers to attachment points to allow for tree growth, with several boxes also affected by water damage which will need to be monitored.

Detailed nest box information and monitoring outcomes are provided in **Table 1. Nest Box Details and Monitoring Results** and **Table 2. Summary of Nest Box Monitoring Results**, with maintenance requirements outlined in **Table 3. Summary of Maintenance & Repairs**. The distribution of nest box locations across the Quarry is shown in **Figure 1. Nest Box Locations. Note:** On this map the **green lines** indicate the approximate boundary of the current mining works as recent maps don't appear available.

Figure 1: Nest Box Locations

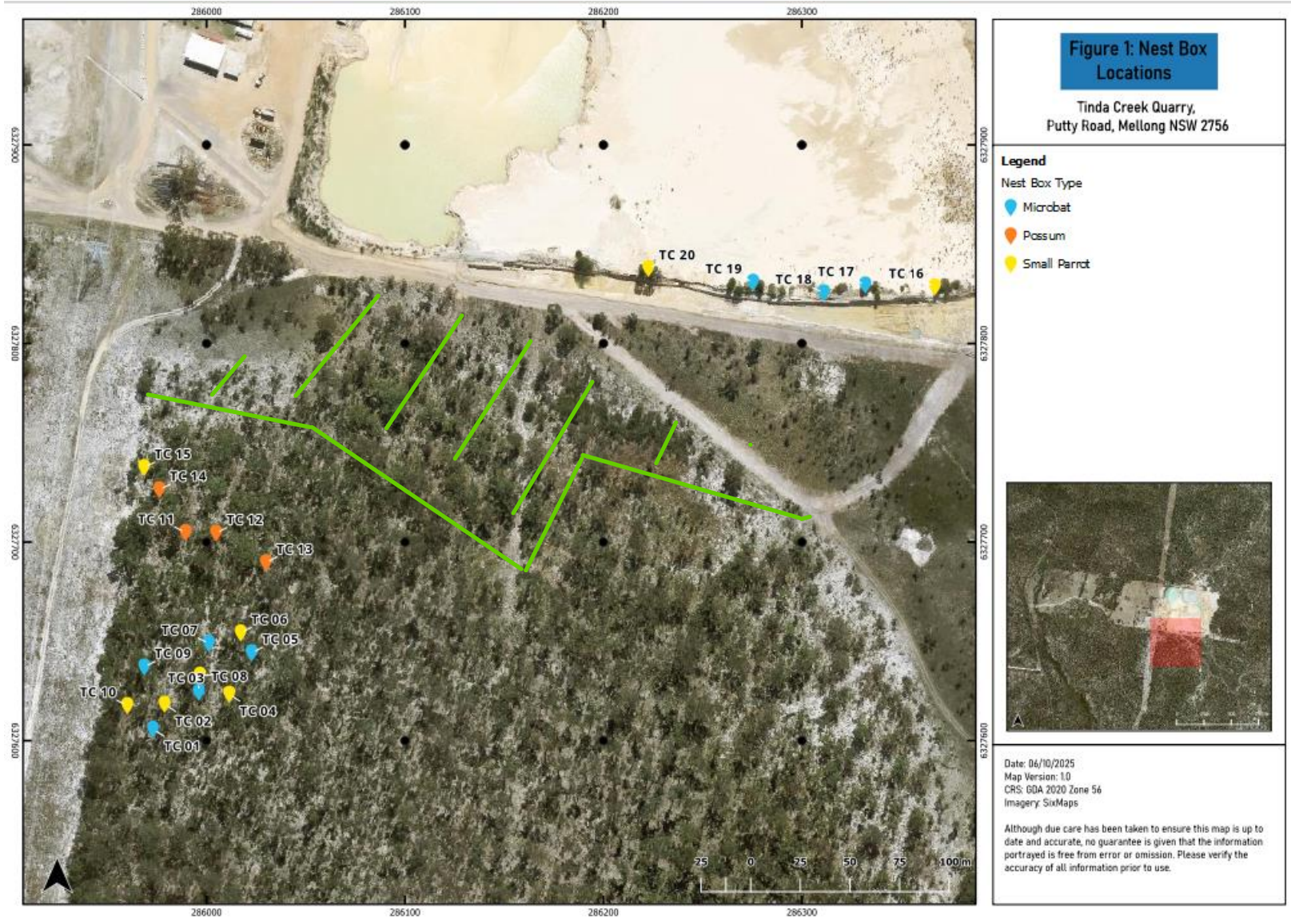
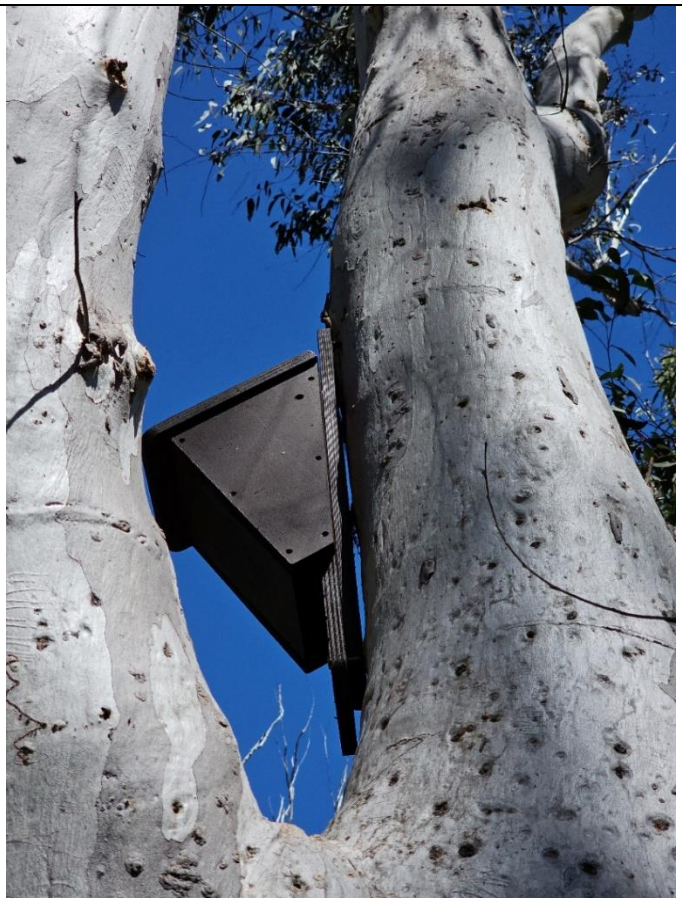


Table 1: Nest Box Details and Monitoring Results

Box Details	
Nest Box ID	TC:01
Box Type	Single Chamber Microbat
Manufacturer	Nest Boxes Australia
Materials	Painted Plywood
Host Tree	Scribbly Gum
Location	56 285973 6327605
Height	2.8m
Aspect	Southeast
Is relocation reamended?	No
Monitoring	
Monitoring methodology?	Headlamp
Occupation evidence?	No
Additional monitoring notes	Partial observation with torch, entry hole is too small for large headed plumbing camera, look at drilling hole in the side of the box to allow camera access
Evidence of pest species?	No
Maintenance & Repairs	
Are repairs required?	Yes
Repair Type	Add spacers to attachment points
Urgency	High
Box Photo	

Box Details	
Nest Box ID	TC:02
Box Type	Small Parrot
Manufacturer	Nest Boxes Australia
Materials	Painted Plywood
Host Tree	Scribbly Gum
Location	56 S 285979 6327618
Height	3m
Aspect	Southeast
Is relocation reamended?	No
Monitoring	
Monitoring methodology?	Nest Box Camera
Occupation evidence?	No
Additional monitoring notes	n/a
Evidence of pest species?	No
Maintenance & Repairs	
Are repairs required?	Yes
Repair Type	Add spacers to attachment points
Urgency	High
Additional Notes	Some water damage inside box
Box Photo	

Box Details	
Nest Box ID	TC:03
Box Type	Single Chamber Microbat
Manufacturer	Nest Boxes Australia
Materials	Painted Plywood
Host Tree	Scribbly Gum
Location	56 S 285996 6327624
Height	2.8m
Aspect	South Southeast
Is relocation reamended?	No
Monitoring	
Monitoring methodology?	Headlamp
Occupation evidence?	No
Additional monitoring notes	Partial observation with torch, entry hole is too small for large headed plumbing camera, look at drilling hole in the side of the box to allow camera access
Evidence of pest species?	No
Maintenance & Repairs	
Are repairs required?	Yes
Repair Type	Add spacers to attachment points
Urgency	High
Box Photo	

Box Details	
Nest Box ID	TC:04
Box Type	Smal Parrot
Manufacturer	Nest Boxes Australia
Materials	Painted Plywood
Host Tree	Mohogany / Stingy Bark
Location	56 286011 6327623
Height	2.9m
Aspect	Southeast
Is relocation reamended?	No
Monitoring	
Monitoring methodology?	Nest Box Camera
Occupation evidence?	Yes, Leaves (loose)
Additional monitoring notes	Slight bit of chewing on the entry and a small amount of fur on the entrance hole. Nest suggests Common brushtail possum (*Trichosurus vulpecula*).
Evidence of pest species?	No
Maintenance & Repairs	
Are repairs required?	Yes
Repair Type	Add spacers to attachment points
Urgency	High
Additional Notes	Some water damage inside box
Box Photo	

Box Details	
Nest Box ID	TC:05
Box Type	Single Chamber Microbat
Manufacturer	Nest Boxes Australia
Materials	Painted Plywood
Host Tree	Scribbly Gum
Location	56 S 286022 6327644
Height	2.6m
Aspect	Southeast
Is relocation reamended?	No
Monitoring	
Monitoring methodology?	Nest Box Camera, Headlamp
Occupation evidence?	No
Additional monitoring notes	Partial observation with torch, entry hole is too small for large headed plumbing camera, look at drilling hole in the side of the box to allow camera access. Huntsman spider.
Evidence of pest species?	No
Maintenance & Repairs	
Are repairs required?	Yes
Repair Type	Add spacers to attachment points
Urgency	High
Box Photo	

Box Details	
Nest Box ID	TC:06
Box Type	Small Parrot
Manufacturer	Nest Boxes Australia
Materials	Painted Plywood
Host Tree	Scribbly Gum
Location	56 S 286017 6327654
Height	3m
Aspect	Southeast
Is relocation reamended?	No
Monitoring	
Monitoring methodology?	Nest Box Camera
Occupation evidence?	No
Additional monitoring notes	Some spiders web present and some chewing on the entry hole.
Evidence of pest species?	No
Maintenance & Repairs	
Are repairs required?	Yes
Repair Type	Add spacers to attachment points
Urgency	High
Additional Notes	Water damage inside box
Box Photo	

Box Details	
Nest Box ID	TC:07
Box Type	Single Chamber Microbat
Manufacturer	Nest Boxes Australia
Materials	Painted Plywood
Host Tree	Mahogany/Stringy bark
Location	56 S 286001 6327648
Height	2.6m
Aspect	Southeast
Is relocation reamended?	No
Monitoring	
Monitoring methodology?	Headlamp
Occupation evidence?	No
Additional monitoring notes	Partial observation with torch, entry hole is too small for large headed plumbing camera, look at drilling hole in the side of the box to allow camera access
Evidence of pest species?	No
Maintenance & Repairs	
Are repairs required?	Yes
Repair Type	Add spacers to attachment points
Urgency	High
Box Photo	

Box Details	
Nest Box ID	TC:08
Box Type	Small Parrot
Manufacturer	Nest Boxes Australia
Materials	Painted Plywood
Host Tree	Scribbly Gum
Location	56 S 285996 6327633
Height	2.8m
Aspect	Southeast
Is relocation reamended?	No
Monitoring	
Monitoring methodology?	Nest Box Camera
Occupation evidence?	No
Additional monitoring notes	n/a
Evidence of pest species?	No
Maintenance & Repairs	
Are repairs required?	Yes
Repair Type	Add spacers to attachment points
Urgency	High
Box Photo	

Box Details	
Nest Box ID	TC:09
Box Type	Single Chamber Microbat
Manufacturer	Nest Boxes Australia
Materials	Painted Plywood
Host Tree	Scribbly Gum
Location	56 S 285968 6327637
Height	2.7m
Aspect	South Southeast
Is relocation reamended?	No
Monitoring	
Monitoring methodology?	Headlamp
Occupation evidence?	No
Additional monitoring notes	Cockroaches present. Partial observation with torch, entry hole is too small for large headed plumbing camera, look at drilling hole in the side of the box to allow camera access
Evidence of pest species?	No
Maintenance & Repairs	
Are repairs required?	Yes
Repair Type	Add spacers to attachment points
Urgency	High
Box Photo	

Box Details	
Nest Box ID	TC:10
Box Type	Small Parrot
Manufacturer	Nest Boxes Australia
Materials	Painted Plywood
Host Tree	Scribbly Gum
Location	56 S 285960 6327617
Height	2.9m
Aspect	Southeast
Is relocation reamended?	No
Monitoring	
Monitoring methodology?	Nest Box Camera
Occupation evidence?	No
Additional monitoring notes	Small amount of spider's web present
Evidence of pest species?	No
Maintenance & Repairs	
Are repairs required?	Yes
Repair Type	Add spacers to attachment points
Urgency	High
Box Photo	

Box Details	
Nest Box ID	TC:11
Box Type	Possum Box
Manufacturer	Nest Boxes Australia
Materials	Painted Plywood
Host Tree	Scribbly Gum
Location	56 S 285989 6327704
Height	2.7m
Aspect	Southeast
Is relocation reamended?	No
Monitoring	
Monitoring methodology?	Nest Box Camera
Occupation evidence?	No
Additional monitoring notes	Some fur on the entrance hole
Evidence of pest species?	No
Maintenance & Repairs	
Are repairs required?	Yes
Repair Type	Add spacers to attachment points
Urgency	High
Additional Notes	Small amount of water damage
Box Photo	

Box Details	
Nest Box ID	TC:12
Box Type	Possum Box
Manufacturer	Nest Boxes Australia
Materials	Painted Plywood
Host Tree	Scribbly Gum
Location	56 S 286004 6327704
Height	2.7m
Aspect	Southeast
Is relocation reamended?	No
Monitoring	
Monitoring methodology?	Nest Box Camera
Occupation evidence?	No
Additional monitoring notes	Some fur on the entrance hole
Evidence of pest species?	No
Maintenance & Repairs	
Are repairs required?	Yes
Repair type	Add spacers to attachment points
Urgency	High
Additional notes	Minimal water damage
Box Photo	

Box Details	
Nest Box ID	TC:13
Box Type	Possum Box
Manufacturer	Nest Boxes Australia
Materials	Painted Plywood
Host Tree	Scribbly Gum
Location	56 S 286030 6327689
Height	2.5m
Aspect	East
Is relocation reamended?	No
Monitoring	
Monitoring methodology?	Nest Box Camera
Occupation evidence?	No
Additional monitoring notes	Some fur on the entrance hole, an invertebrate mud nest, a small amount of spider web and, a possible scat.
Evidence of pest species?	No
Maintenance & Repairs	
Are repairs required?	Yes
Repair Type	Add spacers to attachment points
Urgency	High
Additional notes	Minimal water damage
Box Photo	

Box Details	
Nest Box ID	TC:14
Box Type	Possum Box
Manufacturer	Nest Boxes Australia
Materials	Painted Plywood
Host Tree	Narrow-leaved Apple
Location	56 S 285976 6327726
Height	2.6m
Aspect	East
Is relocation reamended?	No
Monitoring	
Monitoring methodology?	Nest Box Camera
Occupation evidence?	Yes, Leaves (loose)
Additional monitoring notes	Small collection of leaves, possible scats
Evidence of pest species?	No
Maintenance & Repairs	
Are repairs required?	Yes
Repair Type	Add spacers to attachment points
Urgency	High
Additional Notes	Minimal water damage
Box Photo	

Box Details	
Nest Box ID	TC:15
Box Type	Small Parrot
Manufacturer	Nest Boxes Australia
Materials	Painted Plywood
Host Tree	Narrow-leaved Apple
Location	56 S 285968 6327737
Height	2.1m
Aspect	Southeast
Is relocation reamended?	No
Monitoring	
Monitoring methodology?	Nest Box Camera
Occupation evidence?	Yes, Leaves (loose)
Additional monitoring notes	Cover of leaves on the base of box. Banded bird leg and small amount of fur on entrance hole (Base is 16cm across)
Evidence of pest species?	No
Maintenance & Repairs	
Are repairs required?	Yes
Repair Type	Add spacers to attachment points
Urgency	High
Box Photo	

Box Details	
Nest Box ID	TC:16
Box Type	Small parrot
Manufacturer	Nest Boxes Australia
Materials	Painted Plywood
Host Tree	Rough bark
Location	56 S 286368 6327828
Height	3.1m
Aspect	West
Is relocation reamended?	No
Monitoring	
Monitoring methodology?	Nest Box Camera
Occupation evidence?	Yes, Scats
Additional monitoring notes	Chewing around entrance hole and Common brushtail possum (*Trichosurus vulpecula*) Scats
Evidence of pest species?	No
Maintenance & Repairs	
Are repairs required?	Yes
Repair Type	Add spacers to attachment points
Urgency	High
Box Photo	

Box Details	
Nest Box ID	TC:17
Box Type	Single Chamber Microbat
Manufacturer	Nest Boxes Australia
Materials	Painted Plywood
Host Tree	Swamp Mahogany
Location	56 286332 6327829
Height	1.8m
Aspect	South
Is relocation reamended?	Yes, move to adjacent tree
Monitoring	
Monitoring methodology?	Headlamp
Occupation evidence?	No
Additional monitoring notes	Mud wasp nest present, bit of spider webs. Partial observation with torch, entry hole is too small for large headed plumbing camera, look at drilling hole in the side of the box to allow camera access. **Move box higher in tree to increase access for microbats.**
Evidence of pest species?	No
Maintenance & Repairs	
Are repairs required?	Yes
Repair Type	Add spacers to attachment points
Urgency	High
Box Photo	

Box Details	
Nest Box ID	TC:18
Box Type	Single Chamber Microbat
Manufacturer	Nest Boxes Australia
Materials	Painted Plywood
Host Tree	Acacia sp
Location	56 S 286311 6327825
Height	1.6m
Aspect	North Northeast
Is relocation reamended?	Yes, (Location TBD)
Monitoring	
Monitoring methodology?	Headlamp
Occupation evidence?	Yes, Observed – Peron's Tree Frog (*Litoria peronii*)
Additional monitoring notes	Entry hole is too small for large headed plumbing camera, look at drilling hole in the side of the box to allow camera access. **Move box higher in tree nearby to increase access microbats.**
Evidence of pest species?	No
Maintenance & Repairs	
Are repairs required?	Yes
Repair Type	Add spacers to attachment points
Urgency	High
Box Photo	

Box Details	
Nest Box ID	TC:19
Box Type	Single Chamber Microbat
Manufacturer	Nest Boxes Australia
Materials	Painted Plywood
Host Tree	Swamp Mahogany
Location	56 S 286275 6327831
Height	2m
Aspect	Northwest
Is relocation reamended?	Yes, (Location TBD)
Monitoring	
Monitoring methodology?	Headlamp
Occupation evidence?	No
Additional monitoring notes	Partial observation with torch, entry hole is too small for large headed plumbing camera, look at drilling hole in the side of the box to allow camera access. **Move box higher in tree to increase access for microbats.**
Evidence of pest species?	No
Maintenance & Repairs	
Are repairs required?	Yes
Repair Type	Add spacers to attachment points
Urgency	High
Box Photo	

Box Details	
Nest Box ID	TC:20
Box Type	Small Parrot
Manufacturer	Nest Boxes Australia
Materials	Painted Plywood
Host Tree	Swamp Mohogany
Location	56 S 286223 6327838
Height	2.2m
Aspect	Northwest
Is relocation reamended?	No
Monitoring	
Monitoring methodology?	Nest Box Camera
Occupation evidence?	Yes, Oil staining inside box
Additional monitoring notes	Chewing on the entrance hole, oil staining likely from Common Common brushtail possum (*Trichosurus vulpecula*)
Evidence of pest species?	No
Maintenance & Repairs	
Are repairs required?	Yes
Repair Type	Add spacers to attachment points
Urgency	High
Box Photo	

Table 2. Summary of Nest Box Monitoring Results

Box ID	Box Type	Monitoring Method	Occupation Evidence	Evidence type	Notes
TC:01	Microbat (Single Chamber)	Headlamp	No	n/a	Limited visibility; access hole modification suggested
TC:02	Small Parrot	Nest Box Camera	No	n/a	n/a
TC:03	Microbat (Single Chamber)	Headlamp	No	n/a	Limited visibility; access hole modification suggested
TC:04	Small Parrot	Nest Box Camera	Yes	Leaves (loose)	Slight bit of chewing on the entry and a small amount of fur on the entrance hole. Nest suggests Common brushtail possum (*Trichosurus vulpecula*).
TC:05	Microbat (Single Chamber)	Headlamp, Nest Box Camera	No	n/a	Limited visibility; access hole modification suggested
TC:06	Small Parrot	Nest Box Camera	No	n/a	Some spiders web present and some chewing on the entry hole.
TC:07	Microbat (Single Chamber)	Headlamp	No	n/a	Cockroaches present. Limited visibility; access hole modification suggested
TC:08	Small Parrot	Nest Box Camera	No	n/a	n/a
TC:09	Microbat (Single Chamber)	Headlamp	No	n/a	Limited visibility; access hole modification suggested
TC:10	Small Parrot	Nest Box Camera	No	n/a	Small amount of spider's web present
TC:11	Possum Box	Nest Box Camera	No	n/a	Some fur on the entrance hole
TC:12	Possum Box	Nest Box Camera	No	n/a	Some fur on the entrance hole
TC:13	Possum Box	Nest Box Camera	No	n/a	Some fur on the entrance hole, an invertebrate mud nest, a small amount of spider web and, a possible scat.
TC:14	Possum Box	Nest Box Camera	Yes	Leaves (loose)	Small collection of leaves, possible scats.
TC:15	Small Parrot	Nest Box Camera	Yes	Leaves (loose)	Cover of leaves on the base of box. Banded bird leg and small amount of fur on entrance hole.
TC:16	Small Parrot	Nest Box Camera	Yes	Scats	Chewing around entrance hole and Common brushtail possum (*Trichosurus vulpecula*) Scats
TC:17	Microbat (Single Chamber)	Headlamp	No	n/a	Limited visibility; access hole modification suggested
TC:18	Microbat (Single Chamber)	Headlamp	Yes	Observation	Peron's Tree Frog. Limited visibility; access hole modification suggested
TC:19	Microbat (Single Chamber)	Headlamp	No	n/a	Limited visibility; access hole modification suggested

Box ID	Box Type	Monitoring Method	Occupation Evidence	Evidence type	Notes
TC:20	Small Parrot	Nest Box Camera	Yes	Oil staining inside box	Chewing on the entrance hole, oil staining likely from Common Common brushtail possum (*Trichosurus vulpecula*)

Table 3. Summary of Maintenance & Repairs

Box ID	Box Type	Are repairs required?	Repair Type	Urgency	Additional Notes
TC:01	Microbat (Single Chamber)	Yes	Add spacers to attachment points	High	Limited visibility; access hole modification suggested
TC:02	Small Parrot	Yes	Add spacers to attachment points	High	Some water damage inside box
TC:03	Microbat (Single Chamber)	Yes	Add spacers to attachment points	High	Limited visibility; access hole modification suggested
TC:04	Small Parrot	Yes	Add spacers to attachment points	High	Some water damage inside box
TC:05	Microbat (Single Chamber)	Yes	Add spacers to attachment points	High	Limited visibility; access hole modification suggested
TC:06	Small Parrot	Yes	Add spacers to attachment points	High	Water damage inside box
TC:07	Microbat (Single Chamber)	Yes	Add spacers to attachment points	High	Limited visibility; access hole modification suggested
TC:08	Small Parrot	Yes	Add spacers to attachment points	High	–
TC:09	Microbat (Single Chamber)	Yes	Add spacers to attachment points	High	Limited visibility; access hole modification suggested
TC:10	Small Parrot	Yes	Add spacers to attachment points	High	-
TC:11	Possum Box	Yes	Add spacers to attachment points	High	Small amount of water damage
TC:12	Possum Box	Yes	Add spacers to attachment points	High	Minimal water damage
TC:13	Possum Box	Yes	Add spacers to attachment points	High	Minimal water damage
TC:14	Possum Box	Yes	Add spacers to attachment points	High	Minimal water damage
TC:15	Small Parrot	Yes	Add spacers to attachment points	High	–
TC:16	Small Parrot	Yes	Add spacers to attachment points	High	–

Box ID	Box Type	Are repairs required?	Repair Type	Urgency	Additional Notes
TC:17	Microbat (Single Chamber)	Yes	Add spacers to attachment points	High	Limited visibility; access hole modification suggested
TC:18	Microbat (Single Chamber)	Yes	Add spacers to attachment points	High	Limited visibility; access hole modification suggested
TC:19	Microbat (Single Chamber)	Yes	Add spacers to attachment points	High	Limited visibility; access hole modification suggested
TC:20	Small Parrot	Yes	Add spacers to attachment points	High	–

Nest Box inspection results

This second-year monitoring inspection of the nest boxes (Oct 2025) showed that there has been some usage by fauna, with 6 out of 20 boxes showing evidence of use by one target (Common brushtail possum) and one non-target species (Peron's tree frog). While there were no Common brushtail possums in any of the boxes on the day of inspection, there were signs of use observed and these included flattened eucalypt leaves, fur around the entry hole, scats inside the box and oil staining from fur of possum on the inside walls. Many fauna species rely on multiple shelter sites within their territories so it is not surprising that more than one box showed evidence of use.

In one parrot box there was the leg of an unidentified banded bird observed on top of a bed of eucalypt leaves. It is likely a Common brushtail possum brought in the leaves however it is uncertain on how the birds leg ended up in the box and what species it is from. The lids on the boxes are fixed, not hinged, so access inside this box is limited to investigate further.

Signs of usage were observed in both of the areas the nest boxes are installed. There was evidence of Common brushtail possum using both the target boxes as well as the parrot boxes, where the entry had been chewed wider for the animal to access. The Peron's tree frog was observed in one of the microbat boxes.

The condition of the nest boxes was adequate however water has entered some of the boxes which will cause decay and mould (refer to photo below). There was also some plywood splitting on the lid of one of the microbat boxes which will lead to the deterioration of the lid and then it will become unusable.

While the box attachment is currently holding well, as the tree grows the box will be pushed off the tree or the box will be damaged. The use of spacers between the tree and the box can help reduce this occurring. (See recommendations below)

Water entering box

bird leg with blue leg band on top of Common brushtail possum eucalypt nest

Common brushtail possum scats on base of box

Common brushtail possum eucalypt leaf nest

Staining from Common brushtail possum fur

Chewed entry hole of parrot box Common brushtail possum has used

Assessment of nest box placement

Nest box placement on the site is concentrated in two relatively small areas adjacent to the active mining areas. One is in a large area of woodland connected to vast expanses of woodland in the surrounding national park. The other is along a narrow corridor of trees adjacent to a previously disturbed area, now in the process of rehabilitation. (see figure 1)

There was a recommendation by EMM (Tinda Creek Quarry Biodiversity Monitoring Report 2024), to relocate all of the nest boxes to 150 meters away from the sand mining activity due to no signs of usage after the first monitoring in 2024.

The inspection in October 2025 demonstrated some boxes are now being used and consequently not all boxes should be relocated. There was also evidence of natural hollows being utilised within 150 meters of the mine workings. An observation was made during the inspection of a Common brushtail possum coming out of a natural hollow in a dead tree, near the possum boxes, due to a Lace monitor climbing up looking for prey species.

From my experience and after visiting the site during mining activity, the most likely reasons why the boxes showed no sign of use during the first inspection is:

1. There is a high availability of natural hollows in the surrounding bushland that displaced fauna could have used directly after the clearing works and were likely familiar with.

2. With the vast area of mature natural bushland surrounding the site, the likelihood of species needing to rely on nest boxes is low.

3. Nest boxes generally have low occupation rates by hollow using bird and microbat species. Moving the microbat and parrot boxes to the suggested locations by EMM are unlikely to increase the likelihood of use by the target species given the natural habitat that is already available. The parrot boxes may provide additional habitat for other species such as sugar gliders and possums that are able to enter the box.

4. Arboreal mammals such as Common brushtail possums, Sugar gliders, Squirrel glider, Brown antechinus, Ringtail possum and Brush-tailed Phascogale usually show higher occupation rates in areas particularly with limited hollows or adjacent to clearing works however in this case boxes are supplementing individual animals with additional shelter sites. The results of the 2025 inspections demonstrate there is some value with the boxes being retained within 150 meters of the clearing works and adjacent to the rehabilitation area for these species especially as more food resources become available in regenerating areas.

5. There is a benefit to moving some unused boxes up to 150 meters or more away from there current locations as this can provide additional habitat for other individuals, particular the arboreal mammals.

There was also a recommendation to increase the spacing between each box as per the guidelines from NSW BCT and NSW Roads and Traffic Authority.

For this site and the number of boxes available I would recommend having boxes in 3 clusters. Having clusters of boxes on a variety of aspects can be beneficial for species to give them options for different seasons of the year and also alternative shelter options due to predator disturbance.

One cluster being the corridor of trees which currently contains five nest boxes. Boxes placed adjacent to areas that are regenerating can be beneficial particularly for when the vegetation has gained some height and food resources become more abundant. The three microbat boxes currently in the corridor of trees, adjacent to the regenerating area have been installed between height of 1.6 to 2m and have some branches cluttering access to the boxes. There is benefit in altering their placement and height on the tree to increase detectability, access to entry and provide a variety of aspects for thermal variation.

The second cluster is to retain half of nest boxes in their current location in the woodland area and move the remaining boxes to a third cluster location within the woodland area, at a distance over 100 meters from their original locations. Boxes to be installed at a minimum of 20 meters apart. **Any boxes that are currently occupied are not to be relocated.**

List of Recommendations

1. It is recommended that boxes with signs of use are left in place for the species to continue using them.
2. Re-locate some of the boxes in the woodland area to a third cluster.
3. Re-Install some of the microbat boxes in more appropriate positions within the narrow corridor of trees adjacent to the regeneration area, and re-install a couple of the microbat boxes on different aspects in the woodland area.
4. Add spacers on the box attachments to allow for some tree growth increasing the life of the boxes. The boxes will need to be removed off the tree to make the attachment adjustments. If any fauna is present inside a box, then adjustment will not be carried out at this time. This task could be carried out during the next inspection session.
5. Add an inspection hole onto the front of the microbat boxes to make inspection easier and also to increase potential detection of the box cavity by microbats.
6. Add a hardwood panel with appropriate entry hole size onto any parrot boxes that have not shown signs of use. This will help to reduce the entry hole being chewed wider by Common brushtail possums to enter.
7. If a box becomes unusable due to deterioration or falls off the tree it should be replaced with a new nest box. The new box should have improved thermal quality, waterproof, suitable for the target species and have an attachment that allows for tree growth. E.g. Habisure method.
8. Log material placed on the ground in regeneration areas can create good habitat for terrestrial fauna species and assists in regeneration of native vegetation. Log material should only be salvaged from areas where

timber has been approved to be removed from, for example: future clearing works, plan to place branches, leaves and trunk sections across the ground in regeneration area.

9. For the boxes to continue to be available and of value for the local wildlife I recommend annual maintenance inspections along with following the monitoring plan.

If you have any questions, please feel free to get in touch.

Kind regards,

Narawan Williams
Fauna Field Ecology
Principal Ecologist

Australia

SYDNEY
Level 10 201 Pacific Highway
St Leonards NSW 2065
T 02 9493 9500

NEWCASTLE
Level 3 175 Scott Street
Newcastle NSW 2300
T 02 4907 4800

BRISBANE
Level 2, 95 North Quay
Brisbane QLD 4000
T 07 3648 1200

CANBERRA
Suite 2.04 Level 2
15 London Circuit
Canberra City ACT 2601

ADELAIDE
Level 4 74 Pirie Street
Adelaide SA 5000
T 08 8232 2253

MELBOURNE
Suite 9.01 Level 9
454 Collins Street
Melbourne VIC 3000
T 03 9993 1900

PERTH
Suite 3.03
111 St Georges Terrace
Perth WA 6000
T 08 6430 4800

Canada

TORONTO
2345 Yonge Street Suite 300
Toronto ON M4P 2E5
T 647 467 1605

VANCOUVER
2015 Main Street
Vancouver BC V5T 3C2
T 604 999 8297

CALGARY
700 2nd Street SW Floor 19
Calgary AB T2P 2W2

linkedin.com/company/emm-consulting-pty-limited

emmconsulting.com.au

Appendix 4

Aquatic Monitoring Report – Spring 2025

(Total No. of pages including blank pages = 39)

Niche

Tinda Creek Quarry – Aquatic Monitoring Report

Spring 2025

Prepared for Adbri Quarries Sydney Pty Ltd | 23 February 2026

Document control

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9317	Adbri Quarries Sydney Pty Ltd	David Wilkinson	Hawkesbury City Council

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Glossary and list of abbreviations

Term or abbreviation	Definition
Anthropogenic	Caused or produced by humans
ANZECC	Australian and New Zealand Environment and Conservation Council
ANZG	Australian and New Zealand Guidelines for Fresh and Marine Water Quality
Aquatic macroinvertebrates	Animals that have no backbone, are visible with the naked eye and spend all or part of their life in water
AUSRIVAS	Australian Rivers Assessment System
Drainage	Natural or artificial means for the interception and removal of surface or subsurface water
DGVs	Default Guideline Values
Ecology	The study of the relationship between living things and the environment
Ephemeral	Existing for a short amount of time after rainfall events
Habitat	The place where a species, population or ecological community lives (whether permanently, periodically or occasionally)
Intermittent	Existing as isolated pools for most of the year but will flow during, and after, rainfall events
In-Situ	In the original place measurements conducted at the site as opposed to laboratory
LMP	Landscape Management Plan
Riparian	Relating to the banks of a natural waterway
SIGNAL2	Stream Invertebrate Grade Number Average Level
Stress	Response to a stressor such as an environmental condition or a stimulus

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1. Introduction

1.1 Background

Adbri Quarries Sydney Pty Ltd (Adbri) commissioned Niche Environment and Heritage Pty Ltd (Niche) to undertake the spring 2025 aquatic ecology survey at Tinda Creek Quarry, NSW (the Quarry). Aquatic monitoring is undertaken in spring as part of an ongoing monitoring program established as a requirement of the Landscape Management Plan (LMP) for the Quarry. This involves assessing the aquatic ecological condition of Tinda Creek and its tributaries (the project), in relation to water management processes and licenced discharges associated with the operations of the Tinda Creek Quarry (the project area).

A baseline survey including assessment of eight monitoring sites was conducted in spring 2007 shortly after a period of heavy rainfall and runoff. Following the 2015 approval for expansion of the Quarry, another survey was conducted in November 2015 to update the baseline data, to establish baseline aquatic ecology conditions of Tinda Creek. Adbri has committed to annual monitoring under the approved LMP. Niche has completed annual spring monitoring each year between 2018 – 2025, including an additional assessment following a controlled release of stored water during July 2024 (Niche 2024a).

1.2 Catchment characteristics

Tinda Creek is an ephemeral/intermittent stream that flows to the west, away from the Quarry, and joins the Colo River approximately 16 kilometres (km) downstream. The creek has been diverted around the eastern and northern boundaries of the current Quarry operation zone via earth drainage channels and is met by ephemeral second order drainage lines on the northern boundary of the Quarry. These drainage lines do not typically hold water due to their artificial nature and the substrate having a high concentration of sand and silt, and as such, are usually dry due to the high permeability of the sandy substrate. Two small former farm dams are located within the property to the north of the Quarry. These dams have been partially overgrown with vegetation, with some sections continuing to recover from past bushfires events. More detailed information is provided in section 2.2.

1.3 Project aims

The aim of the aquatic monitoring program is to assess the aquatic ecological condition of Tinda Creek and its tributaries, describe any spatial variation in stream health conditions, and identify any indicators of adverse impacts to the health of the downstream environment associated with Quarry operations. Specifically, in regard to aquatic environment and aquatic habitat health of the Greater Blue Mountains World Heritage Area. The monitoring includes:

- Assessment of aquatic habitat and physico-chemical water quality conditions at each monitoring site.
- Evaluation of biological health using AUSRIVAS and other aquatic health indices to assess Tinda Creek and its tributaries.
- Undertake spatial and temporal comparisons to determine whether the Quarry operations are impacting aquatic health.

2. Methods

2.1 Survey methods

The Spring 2025 monitoring survey was conducted by David Wilkinson (Experienced Aquatic Ecologist) and Alan Davies (Aquatic Ecologist) of Niche on 12 November. AUSRIVAS was the primary survey method employed, which is a standard rapid aquatic assessment methodology for assessing river health using macroinvertebrates (Turak et al. 2024). Survey methods were consistent with the updated baseline monitoring in 2015 and all subsequent monitoring between 2018-2025, allowing for accurate comparison of data over time. Further information on sampling methods and analysis are provided in Section 2.4.

2.2 Sampling locations and study design

This report addresses a total of eight sites that were surveyed as part of the monitoring program (Table 1-Figure 1). This included four reference sites and four test sites. These same sites have been monitored on an annual basis since 2018 to allow for accurate comparison of data over time. The term 'test site' is used to describe sites that have a potential to be at risk of impacts and are located downstream of points which surface water may leave the Quarry operational area. Photographs of each site are provided in Appendix 2.

Table 1: Monitoring sites

Site	Stream	Location	Easting	Northing
Reference sites				
Site 1	Tinda Creek	Upstream of Quarry	286599	6327354
Site 2	Tinda Creek	Upstream of Quarry	286400	6328390
Site 5	Second-Order Tributary of Tinda Creek	Outside of Quarry influence	284913	6328247
Site 8	Third-Order Tributary of Tinda Creek	Outside of Quarry influence	284476	6329656
Test sites				
Site 3	Artificial diversion channel	Eastern diversion channel within Quarry	286405	6327957
Site 4	Tinda Creek	Downstream of Quarry	285711	6328427
Site 6	Tinda Creek	Downstream of Quarry	284048	6328633
Site 7	Tinda Creek	Downstream of Quarry	282998	6328847

A summary of the methods employed at each of the eight sites are provided in Table 2. The application of methods are limited at some sites due to the ephemeral or artificial nature of the areas. Upstream reference Sites 1, 2 and 3 do not hold sufficient water, outside of extreme weather conditions, to undertake macroinvertebrate sampling due to their highly ephemeral nature.

Table 2: Summary of methods for each site

Site	Macroinvertebrate sample	AUSRIVAS habitat assessment	Photographic monitoring
Reference sites			
Site 1	-	-	X
Site 2	-	-	X
Site 5	X	X	X
Site 8	X	X	X
Test sites			
Site 3	-	-	X
Site 4	X	X	X
Site 6	X	X	X
Site 7	X	X	X

2.2.1 Site descriptions

Detailed monitoring site notes are provided in Table 3 below.

Table 3: Location of monitoring sites

Site	Location
Reference sites	
Site 1	Site 1 is situated on the upper reaches of Tinda Creek, upstream and to the southeast of Quarry activities. In this location, Tinda Creek lacks a defined drainage channel, being characterised by an open, sandy sedgeland swamp.
Site 2	Site 2 is located upstream and to the north of the Quarry and is downstream of a former farm dam. Site 2 is located on a section of an upper tributary of Tinda Creek formed as a constructed drainage channel with an open floodplain.
Site 5	Site 5 comprises a tributary of Tinda Creek that runs generally parallel to the eastern side of Putty Road and joins Tinda Creek just upstream of the road culvert. The tributary at this site comprises a series of wide pools interspersed with narrower sections.
Site 8	Site 8 is located within a tributary of Tinda Creek to the north of the Quarry that is not influenced by Quarry operations. The site is directly above the culvert under Putty Road and comprises a broad open channel.
Test sites	
Site 3	Site 3 is situated along a diversion channel that was constructed to divert overland flows around the eastern edge of the Quarry and to the north towards Tinda Creek. The diversion channel is generally less than 2 m in width.
Site 4	Site 4 is located downstream of the Quarry along a section of Tinda Creek that occurs just upstream of a small former farm dam. Tinda Creek at Site 4 comprises a defined drainage channel which supports a number of small, isolated pools.

Site	Location
Site 6	Site 6 is situated on Tinda Creek, approximately 0.75 km downstream of Putty Road. Site 6 comprises a shallow channel with broad floodplain.
Site 7	Site 7 is positioned along Tinda Creek, approximately 2 km downstream of Putty Road. Site 7 comprises a broad, open channel.

Figure 1: Location of monitoring sites

Aquatic monitoring site
- Reference
- Test

Transport
- Major road

Hydrography
Strahler stream order
- 1
- 2
- 3
- 4
- Waterbody

Administrative and Property Boundaries
- Lot
- Local Government Area

N

0 500
m

GDA2020 MGA Zone 56

Niche

Figure 1

Aquatic Monitoring Sites

Tinda Creek

Niche PM: David Wilkinson
Niche Proj. #: 8837
Client: Hy-Tec / Adbri

Hillshade: Esri, Geoscience Australia, NASA, NGA, USGS/ World Imagery: Maxar | Watercourses, Waterbodies, Road and Rail alignments, Protected areas of NSW © Spatial Services 2021. | Niche uses GDA2020 as standard for all project-related data. In order to ensure that data from numerous sources and coordinate systems is aligned, on-the-fly transformation to GDA2020 MGA Zone 56 is used in the map above. For ease of reference, the grid tick marks and labels shown around the border of the map are presented in GDA2020 MGA Zone 56.

2.3 Water quality sampling

Surface water quality was measured in situ using a Yeokal 618 water quality probe at each of the relevant monitoring sites. The following variables were recorded:

- Temperature (°C)
- Electrical Conductivity (EC) (µS/cm)
- pH (pH units)
- Dissolved Oxygen (DO) (% Saturation and mg/L)
- Turbidity (NTU)

Alkalinity (mg $CaCO_3$/L) was also recorded with a standard field titration kit.

2.4 AUSRIVAS

2.4.1 Macroinvertebrate

The field methods were consistent with standardised techniques in field sampling as prescribed by the AUSRIVAS manual (Turak et al. 2004). Only pool edge habitat was sampled as part of the program as no riffle habitat is present at the monitoring sites. The macroinvertebrate sampling data are presented in Appendix 1.

Samples were collected from pool edges for a length of 10 metres (m) either as a continuous line or in disconnected segments. Sampling in segments was undertaken to ensure sampling of sub-habitats such as macrophyte beds, bank overhangs, submerged branches, and root mats. Segmented sampling was also employed where pool length was short, and it was logistically difficult to sample in a continuous line. A 250 micrometre (µ/m) dip net was drawn through the water with short sweeps towards the bank to dislodge benthic fauna while scraping submerged rocks and debris, sides of the stream bank and the bed substrate. Further sweeps in the water column targeted the suspended fauna (Plate 1).

Each sample was rinsed from the net onto a bucket and taken back to the laboratory. Samples were then transferred to a white sorting tray from which macroinvertebrates were picked using forceps, pipettes and/or paint brushes. Each tray was picked for a minimum period of 40 minutes, after which they were picked at 10-minute intervals for either a total of one hour or until no new specimens had been found. Care was taken to collect cryptic and fast-moving animals in addition to those that were conspicuous or slow. The animals collected at each site were placed into a labelled jar containing 70% ethanol.

Plate 1: Sampling method

2.4.1.1 Physical parameters

The chemical and physical variables required for the running the AUSRIVAS predictive model were also recorded. Alkalinity, modal width, percentage of bedrock, boulder or cobble were recorded at the time of survey. The following variables: latitude and longitude, distance from source, altitude, land slope were previously recorded during the baseline survey and were not recorded again.

2.4.2 Laboratory methods for macroinvertebrate identification

Macroinvertebrate samples were identified to family level except for Oligochaeta (to class), Polychaeta (to class), Ostracoda (to subclass), Nematoda (to phylum), Nemertea (to phylum), Acarina (to order) and Chironomidae (to subfamily). Keys used to identify taxa included:

- Dean, J., Rosalind, M., St Clair, M., and Cartwright, D. (2004). Identification keys to Australian families and genera of caddis-fly larvae (Trichoptera). Cooperative Research Centre for Freshwater Ecology.
- Gooderham, J. and Tsyrlin, E. (2002). The Water Bug Book: A guide to the Freshwater Macroinvertebrates of Temperate Australia, CSIRO Publishing.
- Hawking J. and Theischinger G. (1999). A guide to the identification of larvae of Australian families and to the identification of ecology of larvae from NSW. Cooperative Research Centre for Freshwater Ecology.
- Madden, C. (2010). Key to genera of Australian Chironomidae. Museum Victoria Science Reports 12, 1-31.
- Madden, C. (2011). Draft identification key to families of Diptera larvae of Australian inland waters. La Trobe University.
- Smith, B. (1996). Identification keys to the families and genera of bivalve and gastropod molluscs found in Australian inland waters. Murray Darling Freshwater Research Centre.
- Murray Darling Freshwater Research Centre - http://www.mdfrc.org.au/bugguide/.

2.4.3 Habitat assessment

A description of aquatic habitat was also produced using the AUSRIVAS proforma. The survey is a rapid visual assessment used to describe the habitat based on the following parameters:

- Geomorphology
- Channel diversity
- Bank stability
- Riparian vegetation and adjacent land use
- Water quality
- Macrophytes
- Local impacts and land use practices

2.5 Data analysis

2.5.1 Water quality

Water quality data was compared with the Australian and New Zealand Guidelines (ANZG) for Fresh and Marine Water Quality Default Guideline Values (DGVs) for the region as a benchmark for comparison for the program. Currently, no updated ANZG DGVs for the region have been provided (ANZG 2018). As such the DGVs applied in this report are consistent with the Australian and New Zealand Environment and Conservation Council (ANZECC 2000) physical and chemical stressors for protection of slightly upland aquatic ecosystems in South-Eastern Australia default guideline values, as recommended by the ANZG (2018).

The relevant ANZG (2018) DGVs for upland streams include:

- Electrical conductivity (30-350 µS/cm)
- Turbidity (2-25 NTU)
- pH (6.5-8.0)
- Dissolved oxygen (90-110%)

2.5.2 Aquatic health indicators

Macroinvertebrate samples were analysed using the AUSRIVAS predictive model for NSW edge habitats (Turak et al. 2004). The AUSRIVAS model predicts the aquatic macroinvertebrate fauna expected to occur at a site in the absence of environmental stress, such as pollution or habitat degradation based upon reference site data generated by the predictive model. The AUSRIVAS NSW spring model was used for the data collected.

The Observed to Expected ratio (OE50) and AUSRIVAS Band, as well as the Stream Invertebrate Grade Number Average Level (SIGNAL2) model outputs are key indicators utilised from the model. In addition, taxa richness and EPT taxa richness indicators are also considered. Collectively these indicators provide a robust assessment of stream health and water quality conditions.

2.5.2.1 OE50

The Observed to Expected ratio is the ratio of the number of invertebrate families observed at a site (NTC50) to the number of families expected (NTE50) at that site. Only macroinvertebrate families with a greater than 50% predicted probability of occurrences are used by the model. OE50 provides a measure of biological impairment at the test site. The OE50 ratios are divided into bands representing different levels of impairment (Table 4). This output is most commonly used as the incorporation of rare taxa (with less than 50% predicted probability of

occurrence) that may only be collected intermittently or at a small number of reference sites and can result in low observed to expected ratios at sites.

Table 4: AUSRIVAS Band interpretation

Band	Interpretation
Band X	Represents a more biologically diverse community than reference condition
Band A	Is considered similar to reference condition
Band B	Represents sites significantly impaired
Band C	Represents sites in a severely impaired condition
Band D	Represents sites that are extremely impaired

2.5.2.2 SIGNAL2 (Stream invertebrate Grade Number Average Level) scores

The revised SIGNAL2 biotic index developed by Chessman (2003a) was used to determine the "environmental quality" of sites. This method assigns grade numbers to each macroinvertebrate family or taxa found, based largely on their response to a range of environmental conditions The sum of all grade numbers for that habitat is then divided by the total number of families recorded in each habitat to calculate the SIGNAL2 index. The SIGNAL2 index therefore uses the average sensitivity of macroinvertebrate families to present a snapshot of biotic integrity at a site. Table 5 provides a guide for interpreting the health of the site according to the SIGNAL2 score of the site.

Table 5: Individual SIGNAL2 scores for macroinvertebrate families and respective pollution tollerance

SIGNAL2 Scores	Pollution tolerance
10-8	Indicates a greater sensitivity to pollution
7-5	Indicates a sensitivity to pollution
4-3	Indicates a tolerance to pollution
2-1	Indicates a greater tolerance to pollution

Table 6 provides a broad guide for interpreting the health of the site according to the SIGNAL2 score of the site. SIGNAL2 scores are indicative only and that "pollution" does not refer to just anthropogenic pollution, and that environmental stress, or harsh physical conditions, may result in poor water quality occurring naturally in waterways. Low family richness and the occurrence of pollution tolerant invertebrates can give a low SIGNAL2 score even though they are in a natural condition.

Table 6: Guide to interpreting the weighted SIGNAL2 scores

SIGNAL2 Grade	Classification	Interpretation
≥7	Unimpaired and rich in pollution-sensitive taxa	Excellent water quality
6-7	Unimpaired	Good water quality
5-6	Mildly impaired	Fair water quality
4-5	Moderately impaired	Poor water quality
<4	Severely impaired	Very poor water quality

Note: This guide is indicative only. Streams can have low SIGNAL2 scores when they are in natural condition, due to the natural dominance of pollution tolerant fauna (Gooderham and Tsyrlin 2002).

SIGNAL2 scores reported are those calculated by the AUSRIVAS predictive model (O0SIGNAL output). This is the observed SIGNAL2 score for taxa that have a probability of occurrence of more than 0% calculated by the AUSRIVAS model.

2.5.2.3 Taxa richness

The richness of macroinvertebrate taxa refers to the number of macroinvertebrate families collected (or class/orders if not identified to family level). In general terms, the higher the number of taxa recorded, the healthier the aquatic ecosystem.

2.5.2.4 EPT index

The EPT (Ephemeroptera, Plecoptera and Trichoptera) index is based on the insect orders that contain a majority of pollution sensitive taxa (Lenat 1988). All genera of Ephemeroptera (mayflies), Plecoptera (stoneflies) and Trichoptera (caddisflies) were identified, and the number of distinct taxa were counted as an indicator of stream health. In general terms, the higher the number of EPT taxa collected, the healthier the aquatic ecosystem.

2.5.2.5 SIGNAL2 and taxa richness Biplot

The taxa richness and SIGNAL2 scores can be considered together according to Chessman (2003b) using a Biplot to examine individual results in the context of previous data collection and identify potential outliers for further investigation. The Biplot (Figure 2) is divided into four quadrants which indicate the relative condition of waterways and are described below. The borders of the quadrants have been set by the average score recorded across reference sites in the period 2020-2025, providing a reference for nominal scores for the locality.

General descriptors to inform interpretation of sites that fall within the individual quadrants are described below:

- Quadrant 1 - sites plotted within this quadrant are representative of stream health being within the ranges typically observed within the locality.
- Quadrant 2 - sites plotted within this are representative of typical species diversity however high levels of salinity or nutrients may be present in the water.
- Quadrant 3 - sites plotted within this quadrant are representative of typical water quality, however harsh site conditions may be prevalent e.g. low water.
- Quadrant 4 - sites plotted within this quadrant are representative of poor stream health and macroinvertebrate community composition, this may reflect urban, industrial or agricultural pollution.

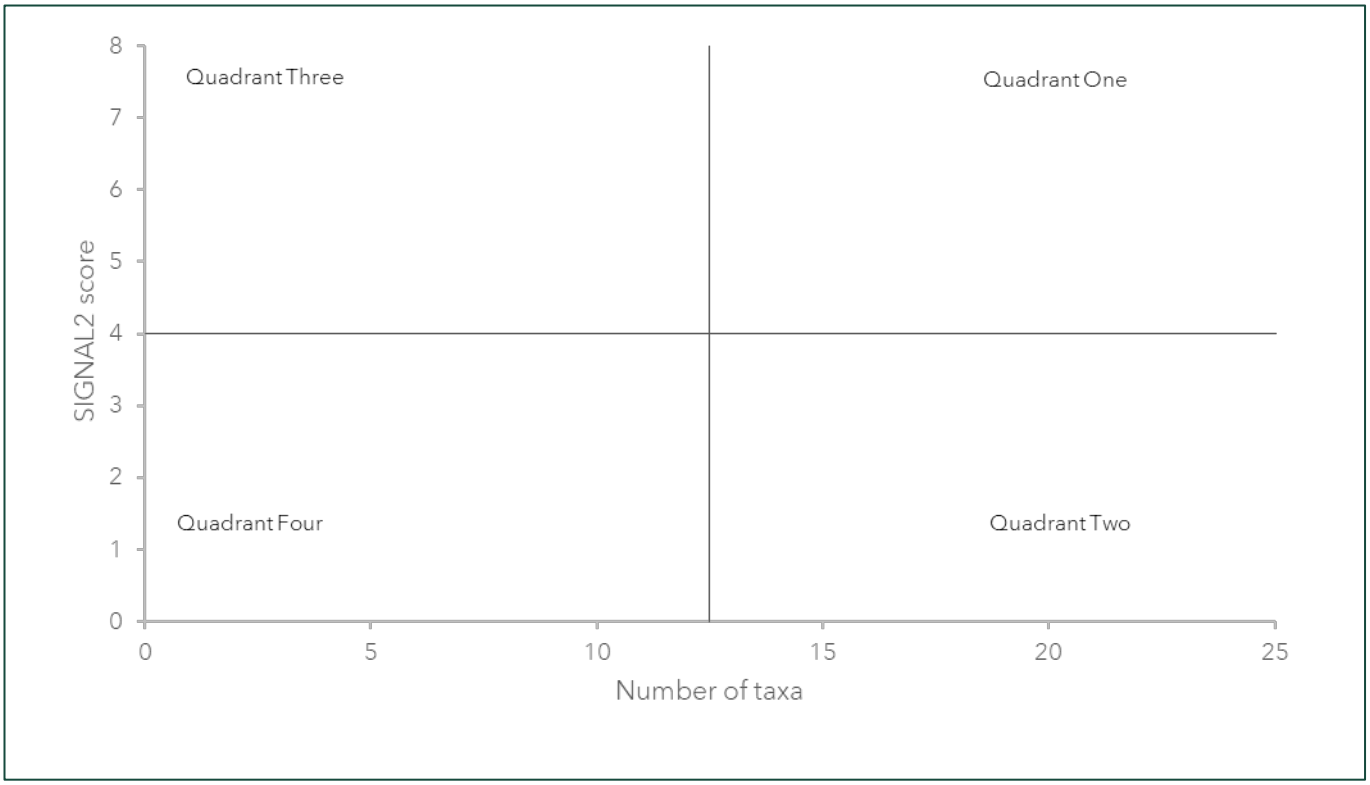

Figure 2: Biplot structure example (Chessman 2003b)

2.5.3 Limitations

The following limitations have been identified:

- The physico-chemical water quality data collected provides an indication of conditions at the time of sampling. Some of these parameters are typically variable and may change considerably over short time periods. These parameters should be considered highly sensitive to stochastic events (e.g. high rainfall periods). These physico-chemical readings are used to inform and support the interpretation of the biological analyses only.
- AUSRIVAS sampling procedures form part of a rapid assessment sampling protocol, rather than a quantitative sampling approach.
- The AUSRIVAS model has been developed with the use of reference sites across the state. There is the potential that macroinvertebrate taxa collected at sites remain unused, if the physical parameters of the monitoring site do not match an appropriate reference site. Leading to taxa being excluded from the OE50 score and associated Band ranking.
    - It is unlikely that the reference site data contained in the model represents a highly accurate comparison due to the restrictive physical parameters of Tinda Creek and it's tributaries, as such the AUSRIVAS results at these sites should be interpreted with caution, and with reference to previous conditions.
- Each site is represented by a single sample (edge).

These factors notwithstanding, the assessment is not considered to be subject to any significant limitations, and the level of assessment is considered comprehensive to the aims and objectives of the project.

3. Results and discussion

3.1 Weather conditions

At the time of survey, the weather was warm, with a temperature of approximately 25°C, and low winds. Stream water levels were described as low, and flow rates low during the survey. Over the 10 days leading up to the survey, there was only 0.6 millimetres (mm) of rainfall (061211, BOM 2026). The two months preceding the survey were characterised by below average rainfall conditions (Table 7,Figure 3). Earlier in the year during August, the region recorded an extreme weather event in which the region received four times the mean rainfall for this month. The below average rainfall in the months prior to sampling (and ephemeral nature of the landscape) led to low water levels within Tinda Creek and monitored tributaries when compared to previous years, with Site 4 being entirely dry. Site 5 adjacent to Putty Road (at the front of the Quarry property) however, had high water levels at the time of the 2025 survey. This site is fed by a tributary from the south and is largely influenced by groundwater levels that originate in swampland within the tributary's upstream environment, and as such was not impacted by the reduced rainfall levels to the same extent as the other monitoring sites. Importantly, no discharges into Tinda Creek from the Quarry occurred in the months preceding the spring 2025 survey.

Table 7: Monthyl rainfall 2025

Month	Mean (1962-2025) rainfall	Total monthly rainfall (2025)
January	127.1	202.1
February	140.2	46.6
March	137.7	137.2
April	83.8	87.8
May	60.9	163.4
June	69.4	11.2
July	43.7	67.8
August	49.0	197.2
September	51.5	46.4
October	78.4	15.8
November	89.6	20.4

Source: Bureau of Meteorology (BoM) Station 061211 (BoM 2026)

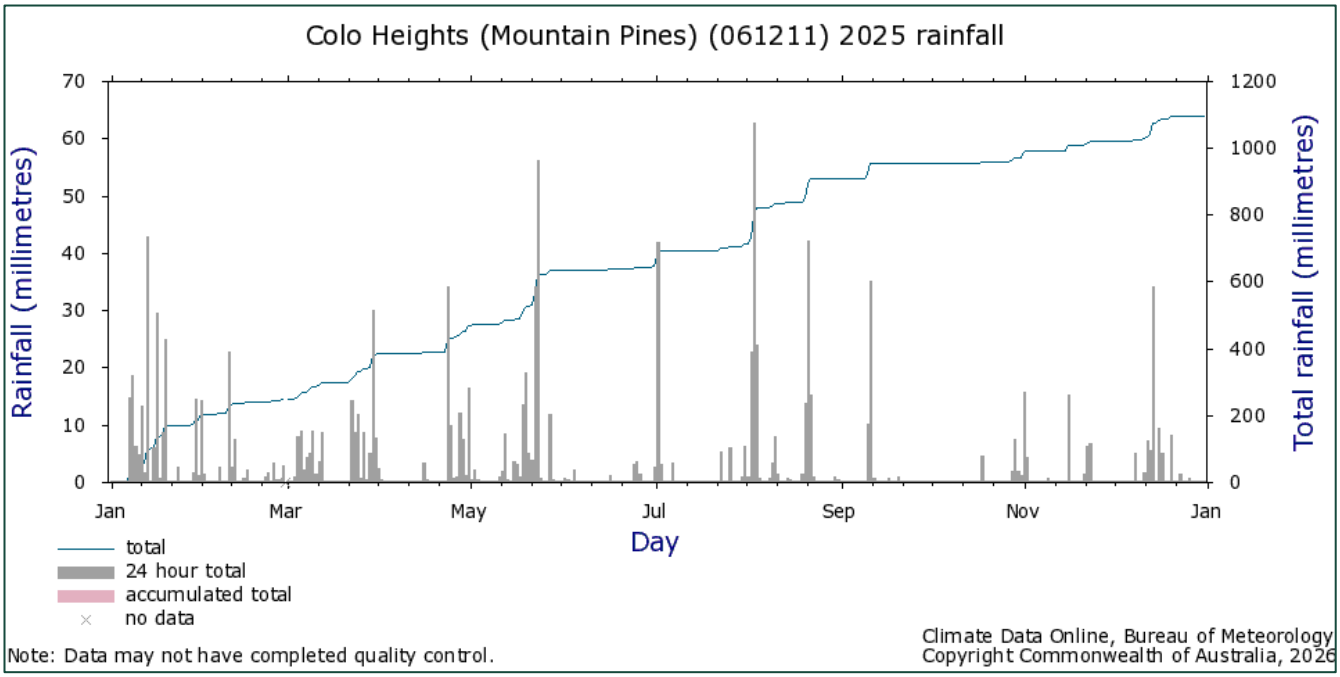

Figure 3: Daily rainfall for 2025 for the Colo Heights gauge – 061211. Source https://www.bom.gov.au/climate/data

3.2 Water quality

Field recorded physico-chemical water quality results are shown in Table 8. Electrical conductivity levels were within DGVs for all sites, with test sites being marginally higher than the reference sites. The pH levels were also all within DGVs for all sites, with the range of values recorded at the reference sites being comparable to the test sites. Alkalinity was comparable between reference and test sites, except test Site 7 which recorded approximately twice the concentration of the other sites. Dissolved oxygen levels were below DGVs at all sites, with readings ranging between 5.5% to 60.8%. Reference Site 8 and test Sites 6 and 7 recorded relatively low dissolved oxygen levels and are indicative of the low flow conditions at the time of sampling. Low dissolved oxygen levels being common among low flow and ephemeral environments and are not necessarily attributed to Quarry operations. Turbidity exceeded DGVs for both reference sites, with Site 5 and Site 8 being visually turbid at the time of sampling. Test Sites 6 and 7 were both within DGVs, although had concentrations of organic biofilm and iron flocculation present, covering a high proportion of the submerged debris and sediment. These concentrations loose accumulations, causing localised spikes in turbidity when disturbed, and are consistent with downstream observation during previous monitoring.

Aquatic habitat observations for the sites at the time of the spring 2025 monitoring are summarised in Appendix 2.

Table 8: Water quality sampling results

Location	DGV's (ANZG 2018)	Reference sites		Test sites		
Site		5	8	4	6	7
Temperature °C	-	17.99	14.81	Dry	15.23	13.56
Electrical conductivity (µS/cm)	30-350	154	90	Dry	227	225
Dissolved oxygen (DO %)	90-110	60.8	18.8	Dry	5.5	27.3
Turbidity (NTU)	2-25	53.8	30.3	Dry	16.4	6.05
pH	6.5-8.0	7.94	6.71	Dry	7.00	6.61
Alkalinity ($CaCO_3$/L)	-	40	80	Dry	60	140

Note: highlighted cells indicate variables that exceed the DGVs. Test Site 4 was dry at the time of sampling and as such no field readings could be recorded.

3.3 Stream health indicators

3.3.1 Edge habitat

AUSRIVAS results are presented in Table 9. A total of 25 different taxa were collected from the survey, marginally lower than the 28 recorded during 2024 (Niche 2025), with the number of taxa collected at each site ranging from between 10 to 15. The most commonly recorded taxa was Leptophlebiidae (Ephemeroptera – SIGNAL grade 8), which made up 23% of the total number of macroinvertebrates collected and is considered a 'pollution sensitive' taxa.

Test Site 7 and reference Site 8 both recorded the highest taxa richness score (15), with the other reference Site 5 recording relatively high numbers of taxa (14). Test Site 6 recorded the lowest richness score (10). Although the taxa that were present included pollution sensitive taxa, with the site having 19% of the total taxa abundance comprising EPT taxa. Test Sites 6 and 7 had relatively high abundances of Leptophlebiidae, with the total taxa abundance at Site 6 being comprised of 15% Leptophlebiidae, and dominated at Site 7 which comprised of 58%. The low richness scores of test Site 6 are indicative of the restrictive accessible surface water at the time of survey, with the stream being heavily overgrown with *Typha* spp and gasses/sedges, as well as the homogeneous nature of the submerged substrate, being dominated by fine grain sediments.

In comparison to the reference site data generated by the AUSRIVAS model, edge habitat macroinvertebrate assemblages at reference Site 5 recorded an OE50 score within Band A, indicating 'similar to reference' conditions. Reference Site 8 and test Site 7 were deemed to be 'significantly impaired', recording OE50 scores within Band B. The OE50 score record at test Site 6 (0.49) was very close to Band B (0.51-0.83), indicating that even though the site scored within Band C, it was at the upper limit of what is considered to be Band C (Table 9). All sites are consistent with the long-term monitoring program (Table 10 and Table 11). Although is it notable that this is only the second time since 2015 that a site has recorded an OE50 score within Band A.

For SIGNAL2, sites ranged between 3.13 and 5.00, indicating macroinvertebrate assemblages that are dominated by taxa that can withstand moderate-mild levels of pollution, indicative of poor water quality (Table 6). The highest SIGNAL2 score was recorded at test Site 6 (5.00), while the lowest was recorded at test Site 7 (3.13), with the test sites being comparable to reference Site 5 (3.50) and Site 8 (4.10).

The EPT richness at each site was comparable, with most sites recording 2 EPT taxa. Test site 7 recorded a lower EPT taxa score (1), although it did record the highest abundance of EPT taxa (55 individuals), indicating comparable water quality downstream regardless of the more limited aquatic habitat.

When the number of taxa and SIGNAL2 scores are considered together in a Biplot , reference Sites 5 and 8 cluster together with test Site 7 (Figure 4) within quadrant one and two, representative of typical stream health and species diversity (section 2.5.2.5). Test Site 6 fell within quadrant three and is indicative of the harsh physical conditions noted regarding the low flow and limited surface water conditions at the time of sampling. With the exception of Site 6, these results reflect the relatively comparable conditions between reference and test sites and no indicators of any effects of operations on stream health are evident.

Overall, the stream health indices recorded during spring 2025 at the test sites are comparable to those at the reference sites in spring 2025. Despite some marginal decreases in index scores likely associated with harsh low flow conditions, the appears to be no indication of impacts associated with Quarry operations at the time of the spring 2025 survey, with results indicating that some test site results are comparable to the reference sites.

Table 9: Stream health indicator results for edge habitat (2025)

Status	Reference sites		Test sites		
Site	**5**	**8**	**4**	**6**	**7**
OE50	1.01	0.68	N.S	0.49	0.58
AUSRIVAS Band	A	B	N.S	C	B
No. of taxa	14	15	N.S	10	15
SIGNAL2	3.50	4.10	N.S	5.00	3.13
EPT taxa richness	2	2	N.S	2	1

N.S indicates sites not sampled due to low flow/dry conditions

Table 10: SIGNAL2 scores (2015, 2018-2025)

Site	Spring 2015	Spring 2018	Spring 2019	Spring 2020	Spring 2021	Spring 2022	Spring 2023	Spring 2024	Spring 2025
Reference sites									
Site 5	2.00	3.54	3.35	2.86	3.34	4.00	3.26	3.75	3.50
Site 8	2.50	3.00	3.19	3.71	4.11	4.09	3.86	3.79	4.10
Test sites									
Site 4	2.25	N.S	N.S	2.83	N.S	3.99	N.S	2.25	N.S
Site 6	3.50	2.60	N.S	2.73	3.71	5.07	4.60	3.50	5.00
Site 7	4.66	N.S	N.S	N.S	N.S	4.66	N.S	4.66	3.13

N.S indicates sites not sampled due to low flow/dry conditions

Table 11: AUSRIVAS Band results (2018-2025)

Site	Spring 2015	Spring 2018	Spring 2019	Spring 2020	Spring 2021	Spring 2022	Spring 2023	Spring 2024	Spring 2025
Reference sites									
Site 5	-	D	B	B	B	B	B	B	A
Site 8	-	C	B	B	B	B	A	B	B
Test sites									
Site 4	-	N.S	N.S	B	N.S	C	N.S	B	N.S
Site 6	-	C	N.S	C	B	D	B	B	C
Site 7	-	N.S	N.S	N.S	N.S	C	N.S	B	B

N.S indicates sites not sampled due to low flow/dry conditions

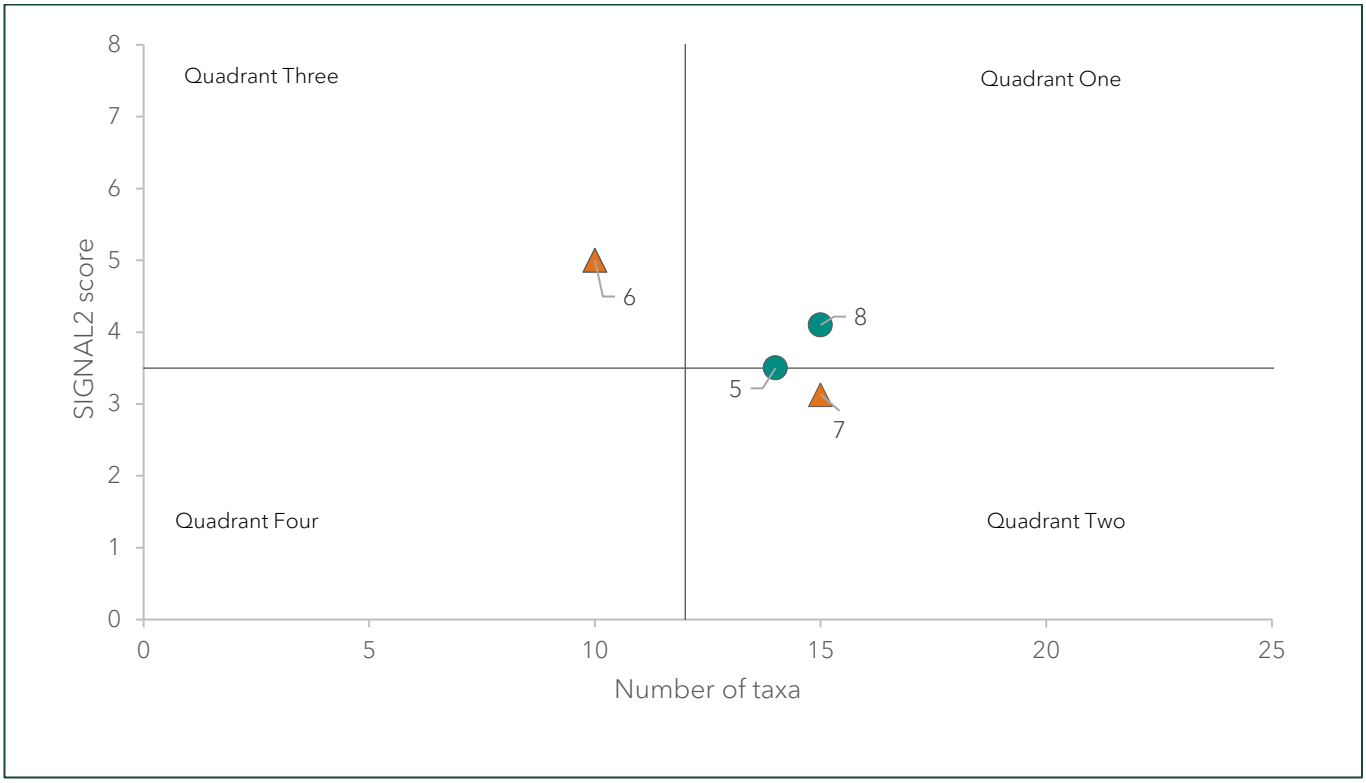

Figure 4: Biplot diagram of macroinvertebrate assesmbalges based on Chessman (2003b) for interpretion of the SIGNAL2 scoring system. The reference site is indicated by a circle, and treatment sites by triangles.

3.3.2 Fauna observation

European Carp (*Cyprinus carpio*) were observed to be present within the dam a Site 5.

4. Conclusion and recommendations

Water quality conditions in spring 2025 were generally comparable between the reference and test sites. The physico-chemical results show no indicators of acute water quality issues identified during the spring 2025 survey that could be attributed to the Quarry and its operations and the readings reflect the environmental conditions and flow conditions at the time of survey.

Stream health index results and macroinvertebrate assemblages were comparable between reference and test sites and are indicative of low-moderate levels of biological health across the sites in spring 2025. Although OE50 scores were somewhat lower at test Site 6, this was likely attributed to the harsh physical conditions associated with the low flow and limited availability of surface water at the site. Indeed, the OE50 score at Site 6 was only marginally below the lower limit for Band B. While there are individual scores in other key indices (SIGNAL2, number of taxa) that are slightly lower at some test sites in comparison to reference sites, when taken as a group the results at the test sites are comparable to the reference sites. No indicators of declining conditions, or observations of impacts to physical habitats or water quality therefore suggest no deleterious impacts to water quality associated with Quarry operations.

Overall, the long-term AUSRIVAS and SIGNAL2 scores since the updated baseline in 2015 continue to remain relatively stable with only marginal increases or decreases driven by prevailing environmental conditions, indicating no significant change in the overall impairment to the macroinvertebrate assemblages over time.

The sites downstream of the Quarry continue to exhibit good riparian and channel morphology conditions, with native riparian vegetation showing continued levels of stabilisation and health of the maturing native species that were damaged during the bushfires in 2019-2020.

Ongoing monitoring will continue to assist in identifying any long-term trends in stream conditions and macroinvertebrate assemblages over time and distinguishing indicators of potential impact from levels of natural variability and change

5. References

Australian and New Zealand Environment and Conservation Council (ANZECC) and Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) (2000). National water quality management strategy and assessment guidelines: Australian and New Zealand guidelines for fresh and marine water quality ANZECC/ARMCANZ. Environment Australia.

Chessman, B.C. (1995). Rapid Assessment of rivers using macroinvertebrates: a procedure based on habitat-specific sampling, family-level identification and a biotic index. Australian Journal of Ecology, 20: 122-9.

Chessman, B.C., Growns, J.E. and Kotlash, A.R., (1997). Objective derivation of macroinvertebrate family sensitivity grade numbers for the SIGNAL biotic index: application to the Hunter River system, New South Wales. Marine and Freshwater Research 48: 159-172.

Chessman B.C. (2003). Signal 2. A scoring system for macroinvertebrates ('water bugs') in Australian rivers user manual. Department of Environment and Heritage.

Dean, J., Rosalind, M., St Clair, M., and Cartwright, D. (2004). Identification keys to Australian families and genera of caddis-fly larvae (Trichoptera). Cooperative Research Centre for Freshwater Ecology.

Gooderham, J. and Tsyrlin, E. (2002). The Water bug Book: A guide to the Freshwater Macroinvertebrates of Temperate Australia, CSIRO Publishing.

Hawking and Theischinger (1999). A guide to the identification of larvae of Australian families and to the identification of ecology of larvae from NSW.

Madden, C. (2010). Key to genera of Australian Chironomidae. Museum Victoria Science Reports 12: 1-31.

Madden, C. (2011). Draft identification key to families of Diptera larvae of Australian inland waters. La Trobe University.

Murray darling freshwater research Centre- http://www.mdfrc.org.au/bugguide/.

Niche (2019) Tinda Creek Quarry Aquatic Monitoring – Spring 2018. Report Prepared for Hy-Tec

Niche (2020) Tinda Creek Quarry Aquatic Monitoring – Spring 2019. Report Prepared for Hy-Tec

Niche (2021) Tinda Creek Quarry Aquatic Monitoring – Spring 2020. Report Prepared for Hy-Tec

Niche (2022) Tinda Creek Quarry Aquatic Monitoring – Spring 2021. Report Prepared for Hy-Tec

Niche (2023) Tinda Creek Quarry Aquatic Monitoring – Spring 2022. Report Prepared for Hy-Tec

Niche (2024) Tinda Creek Quarry Aquatic Monitoring – Spring 2023. Report Prepared for Hy-Tec

Niche (2024a) Tinda Creek Quarry Aquatic Ecological Assessment DA Approval modification – July 2024. Report Prepared for Adbri

Niche (2025) Tinda Creek Quarry Aquatic Monitoring – Spring 2024. Report Prepared for Adbri

Smith, B. (1996). Identification keys to the families and genera of bivalve and gastropod molluscs found in Australian inland waters. Murray Darling Freshwater Research Centre.

Turak, E., Waddel, l N., and Johnstone, G. (2004). New South Wales Australian River Assessment System (AUSRIVAS): Sampling and Processing Manual, 2004. Natural Heritage Trust, Department of Environment and Conservation NSW.

Umwelt (2015) Aquatic sampling and condition assessment – Tinda Creek Sandy Quarry. Prepared for AUS-10 Rhyolite Pty Ltd

Umwelt (2016) Aquatic sampling and condition assessment – Tinda Creek Sandy Quarry. Prepared for AUS-10 Rhyolite Pty Ltd

Wood., P.J. and Armitage, P.D.(1997). Biological Effects of Fine Sediment in the Lotic Environment. Environmental Management. 21 (2): 203–217.

Online resources:

http://ausrivas.ewater.com.au

http://www.mdfrc.org.au/bugguide

Appendix 1 Macroinvertebrate taxa

Location	Reference sites		Test sites	
Site	**Site 5**	**Site 8**	**Site 6**	**Site 7**
Atyidae	2	0	0	0
Physidae	0	0	4	0
Leptophlebiidae	4	10	55	1
Coenagrionidae	27	14	0	1
Megapodagrionidae	0	1	1	2
Aeshnidae	13	1	2	1
Libellulidae	0	0	0	2
Hemicorduliidae	0	0	0	1
Synthemistidae	0	0	10	1
Corixidae	2	0	1	0
Notonectidae	1	0	1	0
Veliidae	1	0	1	0
Dytiscidae (larvae and adult)	12	0	3	1
Hydreanidae	9	0	3	5
Hydrophilidae (larvae and adult)	7	0	2	2
Ceratopogonidae	0	0	4	0
Chironominae (subfamily)	2	15	0	12
Tanypodinae (subfamily)	12	4	4	2
Orthocladiinae (subfamily)	0	0	2	0
Dixidae	0	1	0	0
Stratiomyidae	0	0	1	0
Leptoceridae	1	2	0	1
Acarina	7	13	0	6

Location	Reference sites		Test sites	
Site	Site 5	Site 8	Site 6	Site 7
Ostracoda	0	2	0	0
Copepoda	0	0	0	3

Appendix 2 Aquatic habitat observations

Criteria	Attribute	Site 1
Riparian	Vegetation	Canopy absent. Scattered Parramatta Red Gum (*Eucalyptus parramattensis*) regenerating within this location. Mid-story absent. Groundcover dominated by sedge, rush, low shrub, herb and grasses including Leptocarpus tenax; Juncus sp.; *Lepyrodia scariosa; Schoenus brevifolius; Entolasia stricta; Gonocarpus micranthus; Melaleuca thymifolia; Micromyrtus ciliata* and *Dampiera stricta*.
	Stream shading	Low <5%.
	Exotic vegetation	-
Stream characteristics	Width (m)	<1 m.
	Substrate	Coarse grain sediments
	Flow/depth	Dry
	Macrophytes/algae	Macrophytes present
	Water quality observations	Dry
Comments		Very shallow and generally narrow channel form (<1 m). Open sandy floodplain with the flow channel identified by the change in vegetation, indicating the more permanent presence of surface water or subsurface flow.
Plate 2: Site 1	Upstream	
	Downstream	

Criteria	Attribute	Site 2
Riparian	Vegetation	Canopy consisted of sparse Scribbly Gums (*Eucalyptus haemastoma*), with a scattered grass/shrub land dominated by *Chorizandra spaerocephala*.
	Stream shading	Low/moderate.
	Exotic vegetation	-
Stream characteristics	Width (m)	<1 m.
	Substrate	Sand 80%, Silt 20%.
	Flow/depth	Dry
	Macrophytes/algae	Absent.
	Water quality observations	Dry
Comments		Constructed channel to drain farm dam
Plate 3: Site 2	Upstream	
	Downstream	

Criteria	Attribute	Site 3
Riparian	Vegetation	Canopy and mid-story absent. Groundcover dominated by *Chorizandra spaerocephala*.
	Stream shading	Low/none.
	Exotic vegetation	-
Stream characteristics	Width (m)	<2 m.
	Substrate	Sand 70%, silt 30%.
	Flow/depth	Dry
	Macrophytes/algae	Absent.
	Water quality observations	Dry
Comments		Constructed drainage channel. Very loose and unstable banks.
Plate 4: Site 3	Upstream	
	Downstream	

Criteria	Attribute	Site 4
Riparian	Vegetation	Canopy composed of *Eucalyptus haemastoma* (<5%). Mid-story dominated by small trees and tall shrubs. Ground cover was sparse with signs of slight post fire regrowth and dominated by *Chorizandra spaerocephala*. The pool was densely vegetated with *Typha* spp.
	Stream shading	Low.
	Exotic vegetation	-
Stream characteristics	Width (m)	2 m.
	Substrate	80% silt, 20% sand.
	Flow/depth	Dry
	Macrophytes/algae	*Typha* spp.
	Water quality observations	Dry
Comments		Pool was densely vegetated with macrophytes.
Plate 5: Site 4	Upstream	
	Downstream	

Criteria	Attribute	Site 5
Riparian	Vegetation	Canopy present and comprised of *Eucalyptus haemastoma*, Mid-story supporting dense cover of small trees and tall shrubs (*Acacia* spp. and *Cassurina* spp.). There were signs of regrowth of ground covering including regenerative Cat-tailed Bulrush (*Typha* spp.) and Round headed bristle sedge (*Chorizandra spaerocephala*).
	Stream shading	Low-moderate.
	Exotic vegetation	-
Stream characteristics	Width (m)	6 m.
	Substrate	Silt 90%, sand 10%.
	Flow/depth	No flow/deep >1 metre.
	Macrophytes/algae	Cat-tail Bulrush (*Typha* spp.) and floating macrophyte *Potamogetan sulcus*
	Water quality observations	Water availability was relatively high; conditions were highly turbid.
Comments		Riparian and macrophyte vegetation present. European Carp (*Cyprinus carpio*) observed at time of sampling
Plate 6: Site 5	Upstream	
	Downstream	

Criteria	Attribute	Site 6
Riparian	Vegetation	Forest Red Gum (*Eucalyptus tereticornis*), White Stringybark (*Eucalyptus globoidea*) dominated the canopy vegetation. The mid-storey was dominated by small trees and tall shrubs. The ground cover consisted of regenerating native grasses, herbs and ferns.
	Stream shading	Low/moderate.
	Exotic vegetation	-
Stream characteristics	Width (m)	>5 m.
	Substrate	Sand 20%, silt 80%.
	Flow/depth	No flow/ <1 metre deep.
	Macrophytes/algae	Large amount of biofilm and iron flocculant present. Cat tail Bulrush (*Typha* spp.), and sedge sp. growing in creek bed.
	Water quality observations	Water was clear, though iron flocculant and biofilm were easily disturbed.
Comments		Heavily vegetated bank and creek bed.
Plate 7: Site 6	Upstream	
	Downstream	

Criteria	Attribute	Site 7
Riparian	Vegetation	Canopy vegetation included Grey Gums (*Eucalyptus punctata*) and Scribbly Gums (*Eucalyptus haemastoma*). The ground cover consisted of by native grasses, herbs and ferns, as well as macrophytes.
	Stream shading	Low/moderate.
	Exotic vegetation	-
Stream characteristics	Width (m)	4 m.
	Substrate	Silt 100%.
	Flow/depth	Low flow
	Macrophytes/algae	Cat tail Bulrush (*Typha* spp.), Saw sedge (*Gahnia* spp.).
	Water quality observations	Water availability was relatively high, conditions visually very turbid and tannin stained. Though probe turbidity reading was low.
Comments		Large amount of suspended biofilm when disturbed.
Plate 8: Site 7	Upstream	
	Downstream	

Criteria	Attribute	Site 8
Riparian	Vegetation	Canopy vegetation included Grey Gums (*Eucalyptus punctata*) and Scribbly Gums (*Eucalyptus haemastoma*). The mid-storey continuing to regenerate. The ground cover consisted of by native grasses, herbs and ferns along with Eucalyptus and *Casuarina* regeneration post fires.
	Stream shading	Low/moderate.
	Exotic vegetation	-
Stream characteristics	Width (m)	<3 m.
	Substrate	Pebble 30%, sand 20%, silt 50%.
	Flow/depth	No flow. <1 metre
	Macrophytes/algae	A green macro algae was present
	Water quality observations	Turbid, no flow (disconnected pool)
Comments		
Plate 9: Site 8	Upstream	
	Downstream	

Niche

Contact us

info@niche-eh.com
niche-eh.com

NSW office

Sydney: Gadigal Country
02 9630 5658
Level 3, 31 Alfred Street
Sydney NSW 2000

QLD office

Brisbane: Turrbal and Jagera Country
07 2104 8594
Level 6, 200 Adelaide Street
Brisbane QLD 4000

VIC office

Melbourne: Wurundjeri Country
0488 224 036
Level 3, 162 Collins Street
Melbourne VIC 3000

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Appendix 5

Minutes of Tinda Creek Quarry Community Consultative Committee Meetings

(Total No. of pages including blank pages = 6)

TINDA CREEK QUARRY
COMMUNITY CONSULTATIVE COMMITTEE
MINUTES OF MEETING HELD ON SITE
TUESDAY 19 AUGUST 2025

	NAME	ORGANISATION
PRESENT	Lisa Andrews (LA)	Independent Chairperson
	Bryan Grant (BG)	ADBRI – Quarry Manager
	Matthew Hook (MH)	ADBRI – NSW Operations Manager
	Margaret Ferguson (MF)	Putty Community Association delegate (Secretary)
	Ken Ferguson (KF)	Putty Community Association member
	Jocelyn Thompson (JT)	Colo Heights Rural Fire Brigade delegate
APOLOGIES	David Cilento (DC)	ADBRI – NSW General Manager
	Ray Campbell (RC)	Community Representative

WELCOME & INTRODUCTIONS	The chair opened the meeting at 10.09 am with LA conducting an acknowledgment of Country and welcoming all present. LA introduced MF as the new delegate for the Putty Community Association, replacing Tim Spooner and KF.	
APOLOGIES	As above.	
DECLARATION OF INTEREST	LA advised that she is an approved Independent Chairperson with the Department of Planning, appointed by the Secretary to chair this CCC and engaged by ADBRI.	
BUSINESS ARISING	In accordance with the guidelines, the minutes from the previous meeting held on site, 27 August 2024 were finalised on 19 September 2024.	**1 Complete, email sent to PCA on 22/11/24 advising of vacancy.*** **2 Complete, sent with draft minutes on 9/9/24 and finalised on 19/9/24.** **3 Complete. Following application by PCA, sponsorship provided for**

ITEM	DESCRIPTION	RESPONSIBILITY
1	Send any job vacancy advertisement to JR for distribution on Putty Valley Community Association website. Complete. Email sent to PCA on 22/11/24.	BG
2	Draft Terms of Reference to be sent to members for review & input Complete, sent with draft minutes on 9/9/24 and finalised on 19/9/24.	LA
3	PCA to email proposal for sponsorship of the Putty Spring Fair to ADBRI	TS

Further discussions:
Item 1 – BG advised that Tinda Creek still has vacant position for an operator. Would prefer to employ

	someone locally. Send email to MF for inclusion in newsletter. **Action.** Item 3 – MF commented that sponsorship for this year's event would be appreciated. PCA encouraged to submit another application for ADBRI's consideration. BG will provide MF with a copy of the previous application to assist. **Action.**	**the Putty Spring Fair.**
CORRESPONDENCE (as sent with Meeting Notice on 25/7/25) with 2 additional items	• 9/9/24 – Email to CCC members with the draft minutes & draft Terms of Reference for review • 19/9/24 - Email to CCC members with the finalised minutes and Terms of Reference. • 19/9/24 – Letter to Ray Campbell with the same information • 22/11/24 – Email from Adbri Quarries to Putty Community Committee with information about a job vacancy at the quarry. • 10/2/25 – Email from Adbri Quarries to PCC regarding vacancy. • 23/5/25 – Email from James Hart Consulting seeking input from CCC members regarding the upcoming Independent Environmental Audit. Forwarded on to members for consideration. • 26/5/25 – Letter to RC with same information. • 25/7/25 – Email to members with meeting notice and agenda for this CCC. • 25/7/25 – Email to RC with meeting notice. • 15/8/25 – Email to members with reminder. • 17/8/25 – Email from PCA advising of new delegates. Acknowledged – previous minutes & ToR sent.	
REPORT/PROJECT UPDATE	BG commenced the project update with a PowerPoint presentation on: ○ Overview of current operations ○ Current extraction area in Domain 7 ○ Production face KF asked about the dredge activities and how deep the water is. BG advised that the dredge can reach 5m and the consent allows dredging to 15m, however, they usually hit rock before then. KF asked if the mine can be expanded out. BG advised that the extraction areas are very well defined. The current consent allows mining to 2045. JT asked if it was worth applying for an extension. LA explained the process for State Significant Developments (10-15 yr process), EIS, etc. MH advised that a decision would need to be made at the corporate level and there are no current plans at this stage.	**See attached presentation.** **Questions were asked and answered throughout update.**

	All agreed that there is a need for the resource for the construction industry in Sydney. ○ Rehabilitation: Old Historic silt dam rehabilitation • Rehab progressing well, have now covered a significant portion of the old Domain 4. • Cleared areas from Domain 7 mulched and soils spread into new area to allow natural regrowth. BG explained how the capping material is used and tree hollows are stored and then reinstated. ○ Tubestock • Muru Mittigar, traditional landowner non-for-profit organization collected seed from site last year and propagated 1000 tube stock from the local environment • Planted late last year along with strong natural regrowth ○ Projects and Improvements Old Cyclone Tower Removal: • Completed December 2024. Removing the tower finalizes the new Terex Washplant section project • Old tower redundant, and its removal eliminates significant working at heights hazards ○ Off-grid solar for office – Reduce fuel burn, emissions and risk • Historically the office was powered off over night as no generator running. Morning shift has to get the small generator running, come back to office turn everything on and wait for network. • Now the office runs off-grid battery/solar system, meaning always online. • Zero fuel burn now required when not producing ○ Office Renovation Weighbridge Truck Position Beams • Old trucker trick when overloaded is to partially run the steer or rear tyre partially off the bridge to reduce measured weight = Illegal, and potential overloaded vehicles leaving site on an 'unmanned' weighbridge • New beams installed at bridge ends means vehicle needs to be central to the bridge,	

	computer will not invoice load unless beams are unbroken. • If a tyre is breaking the beam a red light comes on the screen advising of positional error and will not allow docket to be produced • Cameras also record all truck movements and activity o Last 12 months key points • Lee Attard Operations Manager resigned to take up role with Resources Regulator. Matt Hook – Ex Penrose Quarry has been appointed the position • Supervisor Stuart resigned late December, new replacement David Baker developing into the role. • ADBRI acquired by CRH, global leader in construction materials • Another wet year, high rainfall levels means plenty of water again. • Have been advertising for an additional FTE since November last year, including on Putty Community Association site, difficulty finding anyone still ongoing.	
GENERAL BUSINESS	o KF asked about potential access to water on site for use by RFS during bush fires. BG confirmed that any assistance that TC could provide would be given. Explaining that Colo Heights RFS had previously visited the site to familiarise themselves. Water that is in the dam at the front of the property is available, however, the area around it is very boggy at the moment, due to the rain. BG advised that TC are happy to fill any of the tankers. o MH explained the current arrangements that the ADBRI quarry at Penrose has with NSW Forestry. o BG stated that bore water is also available, however, the pump would probably take 20 minutes to fill the truck. o Following discussions it was agreed that JT & KF would go back to their respective RFS brigades (Colo Heights & Putty) to arrange a site inspection with BG. **Action.** o BG also stated that it would be an opportune time for the project's Bush Fire Management Plan to be reviewed to ensure that it is fit for purpose. o BG enquired whether African Lovegrass located on site could be burned by RFS or perhaps a Cultural Burn. KF advised that there is a mitigation group that could come and burn it, however, Putty is part of the Hunter RFS, therefore	

	Tinda Creek is outside their area. KF suggested digging it out was a better option. ○ JT offered for BG to put in an application with Colo Heights RFS for them to come and burn the weed. ○ It was suggested that "Koori Fire Sticks" could conduct a cultural burn.	
NEXT MEETING	Following discussion, it was agreed that the CCC would continue to meet on an annual basis, with LA advising that extra-ordinary meetings may be called at the request of CCC members. **Tuesday 18 August 2026 at 10am.**	**On site.**

The meeting was closed by the chair at 11.10am with LA thanking all for their attendance.

ACTION ITEM:

ITEM	DESCRIPTION	RESPONSIBILITY
1	Send any job vacancy advertisement to MF for distribution on Putty Valley Community Association website & newsletter	BG (ongoing)
2	PCA to make application to ADBRI for sponsorship of Putty Spring Fair	MF
3	Invite representatives of Colo Heights RFS & Putty RFS to contact BG and arrange for site tour.	JT/KF
4	Review Bush Fire Management Plan to ensure it is current and fit for purpose.	BG