



Annual Review - Tritton

Reporting year ending: 31st December 2022





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.





TRITTON RESOURCES PTY LTD

ABN 88 100 095 494

2022 Annual Review

for the

Tritton Copper Mine

Period: 1 January 2022 to 31 December 2022

Prepared for:

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Ref No. 440/23

March 2023

Table 1
Title Block

Name of operation	Tritton Mines
Name of operator	Aeris
Development consent / project approval #	DA41/98
Mining lease #	ML 1544
Name of holder of mining lease	Tritton Resources Limited
Water Licence #	80AL702814
Name of holder of water licence	Tritton Resources Limited
Annual Review start date	January 1st 2022
Annual Review end date	December 31st 2022
I, Scott Ramsey, certify that this audit report is a true and accurate record of the compliance status of Tritton Mines for the 2022 period, and that I am authorised to make this statement on behalf of Aeris Resources. <i>Note.</i> a) <i>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.</i> b) <i>The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement—maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents—maximum penalty 2 years imprisonment or \$22,000, or both).</i>	
Name of authorised reporting officer	Quinton Bruwer
Title of authorised reporting officer	Environmental Superintendent
Signature of authorised reporting officer	
Date	31/03/2023

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1. Statement Of Compliance

Table 2
Statement of Compliance

Were all conditions of the relevant approval(s) complied with?	
DC# DA41/98	Yes
ML# ML 1544	Yes

Table 3
Non-compliances

Relevant Approval	Condition #	Condition Description	Compliance Status	Comment	Where Addressed in Annual Review
No non-compliances were recorded during the reporting period.					

2. Introduction

This Annual Review (AR) has been compiled by R.W. Corkery & Co . Pty Limited (RWC) on behalf of Aeris Resources. The Annual Review summarises site activities and monitoring for the 12-month period covering the 2022 calendar year and has been prepared in accordance with the NSW Department of Planning and Environment “Annual Review Guidelines” October 2015.

The Tritton Copper Mine “the Mine” is one hundred percent owned and operated by Aeris Resources and is located approximately 15km East of the boundary of the Cobar Local Government Area. **Figure 1** presents the location of the Mine and the mineral authorities owned by the Company.

The approved layout of mining operations and infrastructure in the area of Mining Lease (ML) 1544 “the Mine Site” is displayed in **Figure 2**.

Aeris Resources operates three other mines in the nearby vicinity; ML 1280 (Murrawombie Copper Mine), ML 1383 (North East Mine), and ML 1818 (Avoca Tank Mine) which are displayed on **Figure 3**.

This Annual Review covers the following aspects of the Tritton operation:

- Mining activities undertaken on Tritton Mining Lease - ML1544; and
- Exploration activities undertaken on:
 - Tritton ML 1544;
 - Exploration Lease (EL) 6126;
 - EL 4962
 - EL 6346; and
 - EL6785

A copy of this document has been provided to the following regulatory bodies for review:

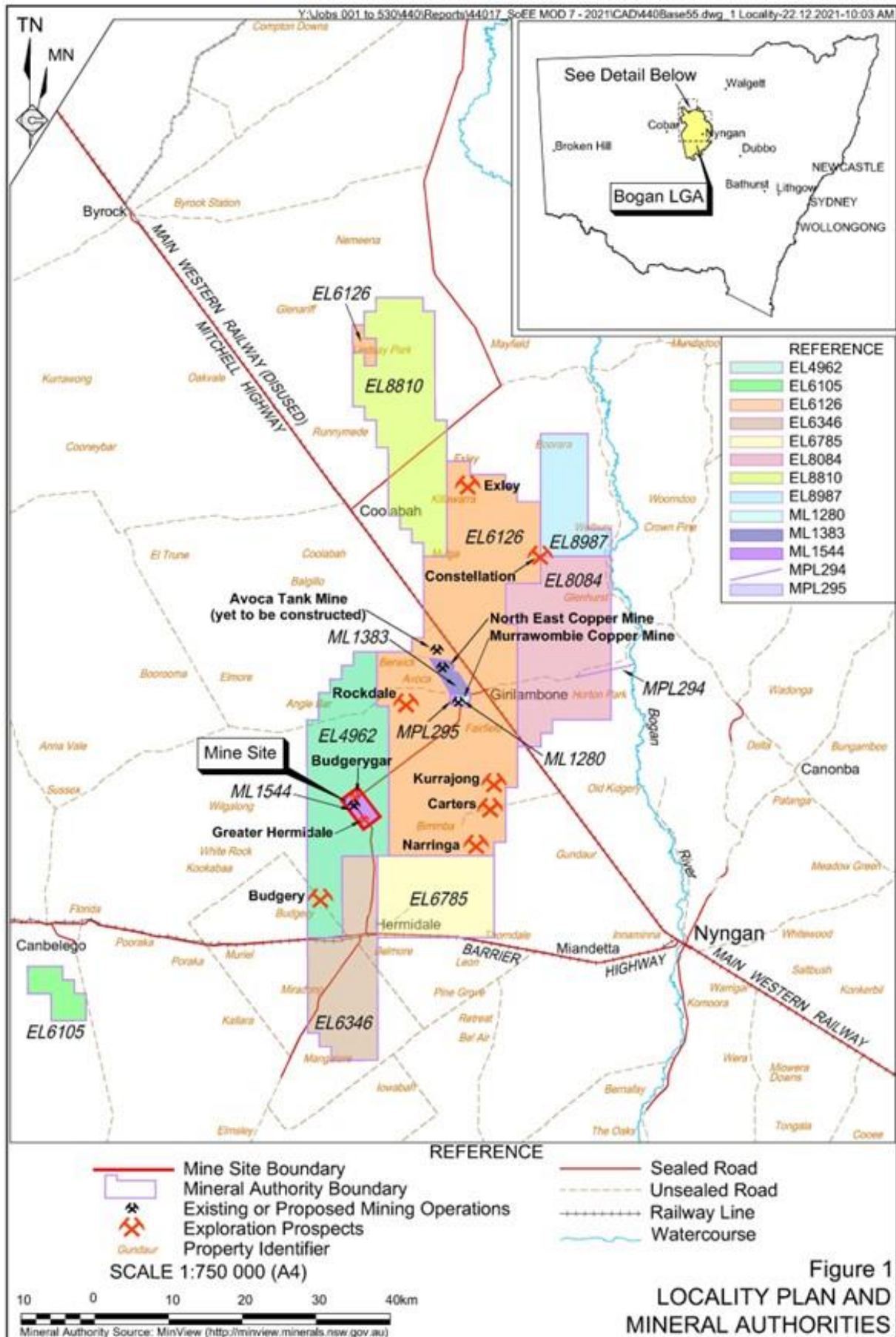
- Resources Regulator (RR);
- Department of Planning, Industry and Environment – Water (DPIE - Water)
- Department of Planning and Environment (DPE);
- NSW Environmental Protection Authority (EPA)
- Bogan Shire Council (BSC).

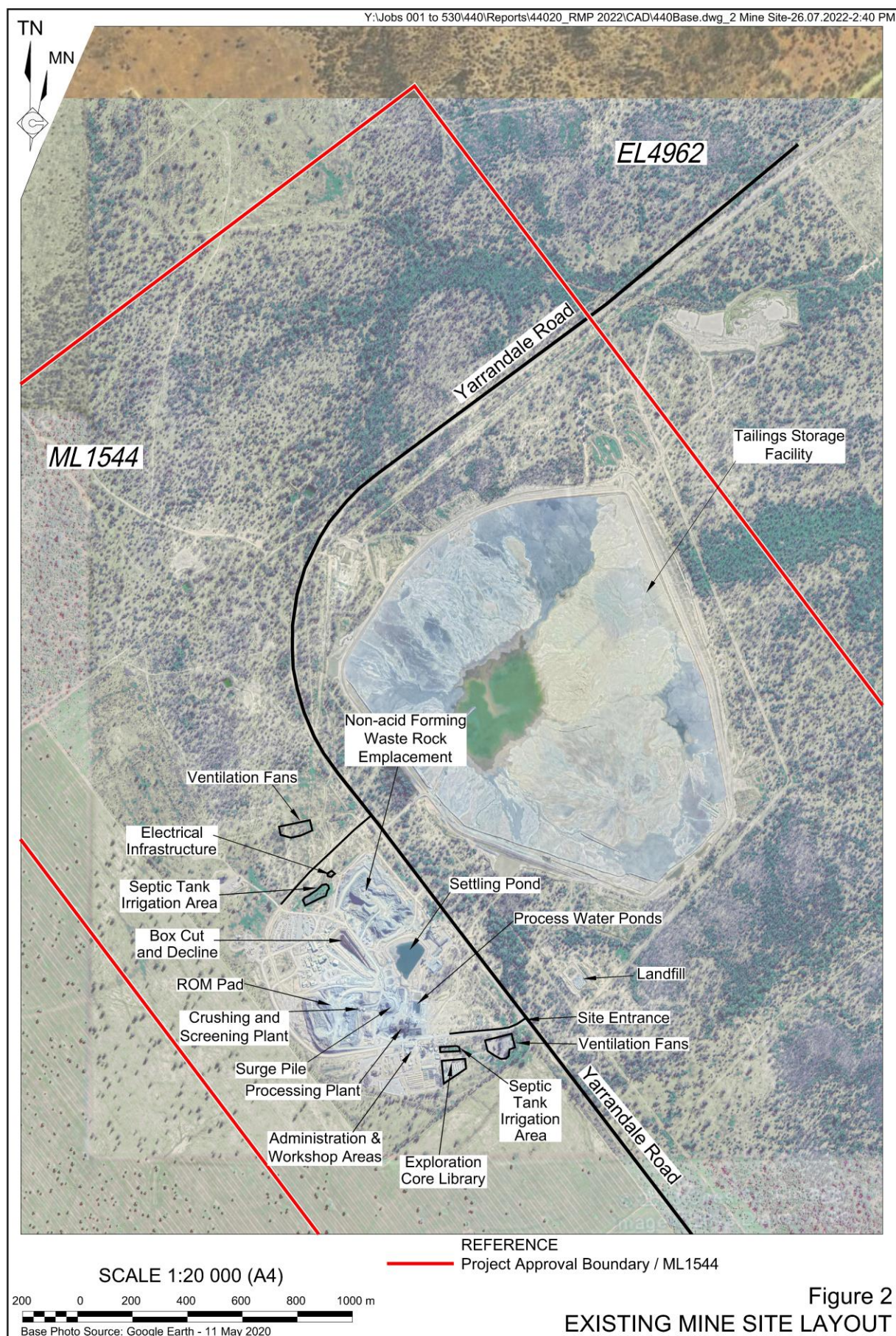
2.1 Mine Contacts

Table 4 provides a list of the site personnel responsible for the activities described in this Annual Review.

Table 4
Contacts

Position	Name	Site Phone Number
General Manager	Scott Ramsay	(02) 6838 1192
Regional Exploration Manager	Chris Raymond	(02) 6838 1130
Health, Safety, Environment Superintendent	Shae Martin	(02) 6838 1146
Environmental Superintendent	Quinton Bruwer	(02) 6838 1100





3. Approvals

A range of consents, leases and licences have been applied for and granted to enable mining operations to occur and continue at the Mine Site. These are listed in **Table 5**.

It is noted that DA 41/98 has been modified eight times as follows. Approved dates are identified in parenthesis.

- MOD 1 (26 August 2004) – various minor amendments.
- MOD 2 (22 September 2005) – to permit modifications to concentrate transport operations between the Mine Site and the Hermidale rail siding.
- MOD 3 (12 June 2007) – to permit construction of the existing Non-acid Forming Waste Rock Emplacement and ancillary infrastructure.
- MOD 4 (19 December 2007) – to permit an increase in the throughput for the processing plant from 0.4Mtpa to 1.4Mtpa, as well as an enlarged Tailings Storage Facility and ancillary infrastructure.
- MOD 5 (7 April 2015) – to permit an increase in the height of the Waste Rock Emplacement, importation of ore material, and exportation of waste rock.
- MOD 6 (30 January 2019) – to permit the excavation and export of tailings from the Tailings Storage Facility (TSF) for use in the Paste Fill Plant at the Applicant's Murrawombie Copper Mine
- MOD 7 (12 October 2021) – to permit the construction of two ventilation rises to support underground exploration activities.
- MOD 8 (June 2022) – to permit underground mining of 2.6 million tonnes of copper from the Budgerygar deposit, installation of surface infrastructure, increase the Waste Rock Emplacement height by 10m, additional disposal of drill cuttings and waste material within the Tailings Storage Facility (TSF), and an extension of the mine life to 22 December 2028.

Table 5
Consents, Lease and Licences

Page 1 of 5

Act	Instrument	Instrument Number	Date of Approval	Date of expiry	Site	Purpose
Protection of the Environment Operations Act 1997	Environmental Protection Licence	11254	19/10/12	On-going	Tritton	Mining (Other than coal)
Environmental Planning and Assessment Act 1979	Development Consent	029/2007	25/05/07	24/05/12	Tritton	Tritton new office block and bath house
Environmental Planning and Assessment Act 1979	Development Consent	30/2004	20/12/04	29/12/09	Tritton	Rail Loading Hardstand

Table 5 (Cont'd)
Consents, Lease and Licences

Page 2 of 5

Act	Instrument	Instrument Number	Date of Approval	Date of expiry	Site	Purpose
Environmental Planning and Assessment Act 1979	Construction Certificate	52/2004	01/02/05	N/A	Tritton	Rail Loading Hardstand
Environmental Planning and Assessment Act 1979	Development Consent	2010/028	04/11/10	4/11/15	Tritton	Communication Tower
Environmental Planning and Assessment Act 1979	Construction Certificate	2010/016	04/11/10	N/A	Tritton	Communication Tower (DC 2010/028)
Environmental Planning and Assessment Act 1979	Development Consent	2010/006	25/05/10	25/05/15	Tritton	Paste fill Plant
Water Management Act 2000	Water Access Licence	WAL009374	24/02/05	Ongoing	Tritton and Murrawombie	High Security Water Licence (705ML)
Water Management Act 2000	Water Access Licence	WAL009375	24/02/05	Ongoing	Tritton and Murrawombie	General Security Water Licence (210ML)
Water Management Act 2000	Water Access Licence	WAL009940	01/07/04	Ongoing	Tritton and Murrawombie	Supplementary Water Licence (16ML)
Water Management Act 2000	Water Use and Works Approval	80WA702816	24/02/05	23/02/30	Tritton and Murrawombie	Gunningbar Creek and Bogan River Pumps
Water Management Act 2000	Water Use and Works Approval	80WA704315	20/05/09	30/06/27	Tritton and Murrawombie	Water supply via Nyngan-Cobar pipeline
Water Management Act 2000	Authority for Joint Supply Scheme	80SA010630	24/02/10	03/10/25	Tritton and Murrawombie	Joint Supply Works Pumps on Bogan River
Water Management Act 2000	Water Supply Works	80WA716044	16/01/12	28/05/27	Tritton	Dewatering Tritton U/G Mine
Water Act 1912	Water Bore Licence	80BL239188	04/01/01	Perpetuity	Tritton	Tritton TSF Monitoring Bore. PZH001D

Table 5 (Cont'd)
Consents, Lease and Licences

Page 3 of 5

Act	Instrument	Instrument Number	Date of Approval	Date of expiry	Site	Purpose
Water Act 1912	Water Bore Licence	80BL239189	04/01/01	Perpetuity	Tritton	Tritton TSF Monitoring Bore. PZH001S
Water Act 1912	Water Bore Licence	80BL239190	04/01/01	Perpetuity	Tritton	Tritton TSF Monitoring Bore. PZH002D
Water Act 1912	Water Bore Licence	80BL239191	04/01/01	Perpetuity	Tritton	Tritton TSF Monitoring Bore. PZH002S
Water Act 1912	Water Bore Licence	80BL239192	04/01/01	Perpetuity	Tritton	Tritton TSF Monitoring Bore. PZH003D
Water Act 1912	Water Bore Licence	80BL239193	04/01/01	Perpetuity	Tritton	Tritton TSF Monitoring Bore. PZH003S
Water Act 1912	Water Bore Licence	80BL245086	12/09/08	Perpetuity	Tritton	Tritton TSF Monitoring Bore. PZH12
Water Act 1912	Water Bore Licence	80BL239194	04/01/01	Perpetuity	Tritton	Tritton TSF Monitoring Bore. PZH004
Water Act 1912	Water Bore Licence	80BL245969	25/06/10	Perpetuity	Tritton	Tritton TSF Monitoring Bores. PZH013, PZH014, PZH015, TIP001, TIP002.
Water Act 1912	Water Bore Licence	80BL245250	20/03/09	Perpetuity	Tritton	Tritton TSF Pumping Bore. PB001
Water Act 1912	Weir	80SL050393	05/12/06	05/12/26	'Marlow'	Gunningbar Creek Off Take Weir
Mining Act 1992	Mining Lease	1544	22/12/03	22/12/24	Tritton	Tritton Mine
Mining Act 1992	Mining Purpose Lease	294	01/07/97	05/08/34	Tritton and Girilambone	Water pipeline route access
Mining Act 1992	Exploration Licence	4962	19/03/96	19/03/22	Regional	Tritton regional 123 units

Table 5 (Cont'd)
Consents, Lease and Licences

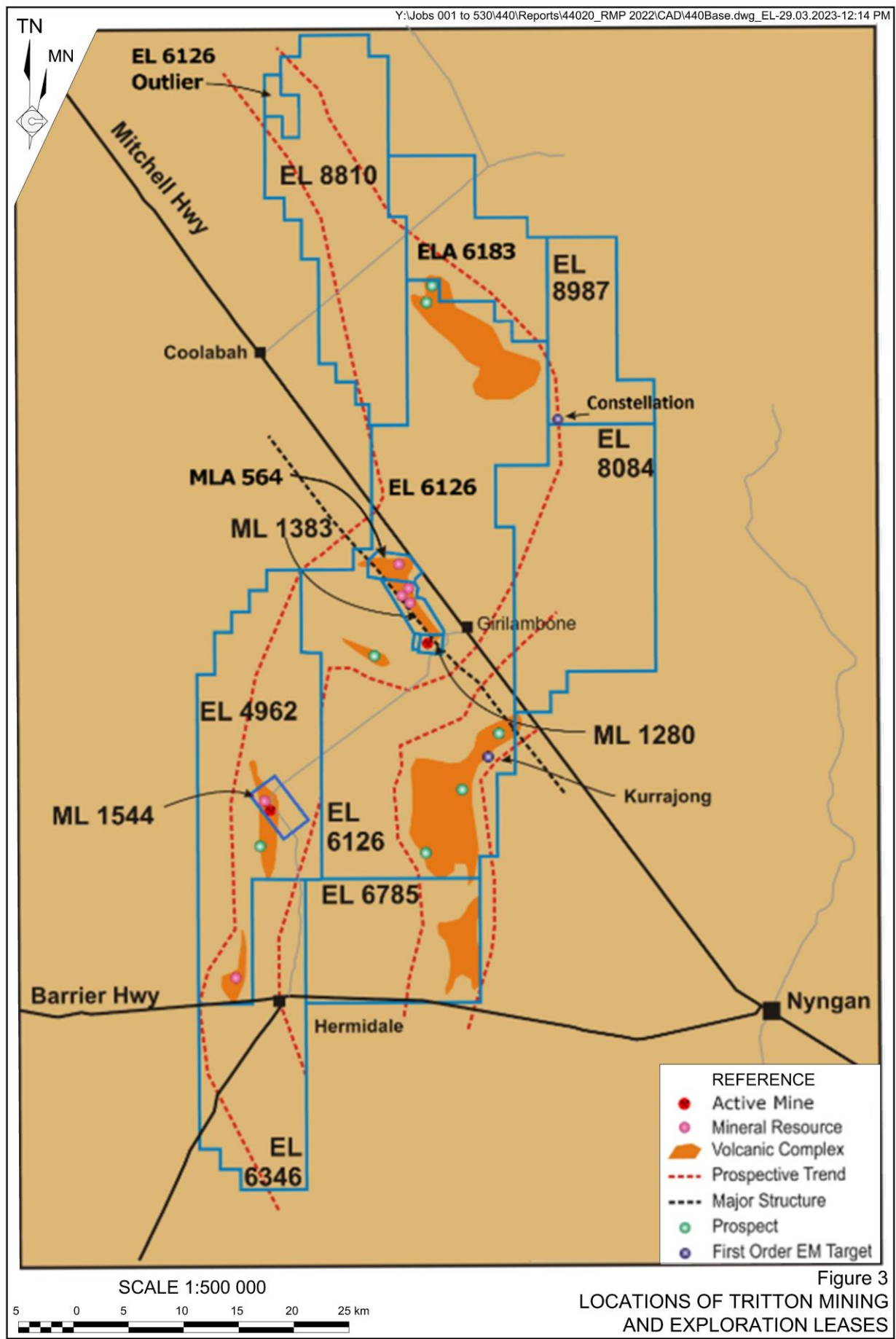
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Act	Instrument	Instrument Number	Date of Approval	Date of expiry	Site	Purpose
Mining Act 1992	Exploration Licence	6346	07/05/07	23/11/22	Regional	Hermidale 78 units, Renewal Pending
Mining Act 1992	Exploration Licence	6126	15/09/03	14/09/26	Regional	Girilambone
Mining Act 1992	Exploration Licence	6785	31/05/10	22/05/26	Regional	Miandetta 80 units
Mining Act 1992	Exploration License	8084	10/05/13	10/05/23	Regional	Girilambone East
Radiation Control Act 1990	Licence to Sell / Possess / Store or give away regulated material	5061178	26/02/15	26/02/22	Tritton	Possess radiation gauges
Explosives Act 2003 & Regulation 2013	Work Cover License	XMNF20000 1	05/01/14	05/01/22*	Tritton	License to Manufacture
Radio Communications Act 1992	Registration certificate	1232170/1	13/09/22	27/08/23	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1232171/1	13/09/22	27/08/23	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1232172/1	13/09/22	27/08/23	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1232173/1	13/09/22	27/08/23	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1232174/1	13/09/22	27/08/23	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1922737/1	13/09/22	27/08/23	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1232165/1	13/09/22	27/08/23	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1232166/1	13/09/22	27/08/23	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1232167/1	13/09/22	27/08/23	Tritton	Land mobile radio licence

Table 5 (Cont'd)
Consents, Lease and Licences

Page 5 of 5

Act	Instrument	Instrument Number	Date of Approval	Date of expiry	Site	Purpose
Radio Communications Act 1992	Registration certificate	1232168/1	13/09/22	27/08/23	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1232169/1	13/09/22	27/08/23	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1233234/1	13/09/22	27/08/23	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1922738/1	13/09/22	27/08/23	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1930848/1	13/09/22	27/08/23	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1930849/1	13/09/22	27/08/23	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1939233/1	13/09/22	27/08/23	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1939234/1	13/09/22	27/08/23	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1953086/1	14/07/22	18/07/23	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	10762506/1	13/09/22	27/08/23	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	10762507/1	13/09/22	27/08/23	Tritton	Land mobile radio licence
*Explosives Licence XMNF200001 application for extension submitted and permission to continue operating under current licence granted until renewal is approved.						



4. Operations Summary

4.1 Exploration

Exploration activities within ML1544, during 2022, focused on completion of shallow auger drilling, to map mineralised trends and identify geochemical anomalies for follow up drill testing. This was completed utilising a small auger drill mounted on a Landcruiser operated by Tritton Resources Limited. Samples of the bedrock were taken nominally 1.5-3m depth below surface. 14 samples were collected within 2022.

One exploration underground diamond drill hole was completed for 803.4m, targeting the Budgerygar deposit at depth, with drilling undertaken from underground development at the Tritton deposit.

Expenditure on the Tritton leases and licences for the 2022 period is listed in **Table 6**.

Table 6
Exploration Expenditure 2022

Tritton - ML1544	\$ 392,712
Murrawombie - ML1280	\$ 301,410
North East - ML1383	\$ 23,223
Avoca Tank – ML1818	\$ 244,621
EL4962	\$ 285,184
EL6126	\$ 4,797,327
EL6346	\$ 18,578
EL6785	\$ 6,553
EL8084	\$ 1,133,607
EL8987	\$ 1,377,862
EL8810	\$ 295,878
EL9285	\$ 186,529
Total	\$ 9,063,484

The rehabilitation status of the 2022 and prior years' exploration programs is as follows:

- All previous exploration activities have been fully rehabilitated to the satisfaction of Tritton Resources Limited.
- Rehabilitation has not been signed off by the department.

4.2 Land Preparation

All site surface disturbance activities require the completion of a Surface Disturbance Permit. No disturbances occurred in the 2022 reporting period.

4.3 Construction

During the 2022 reporting period the following construction work was completed.

4.3.1 TSF

Stage 7 construction of the TSF commenced in April 22, comprising a 2m embankment lift. Construction was approximately 50% completed by the end of 2022.

4.3.2 Budgerygar RAR

Construction of 140m return air rise hole to connect the Budgerygar deposit directly with the surface commenced during the current reporting period. Works are ongoing into 2023.

4.4 Mining Operations

In 2022 the underground mine at Tritton (inclusive of its Budgerygar Deposit) produced 838,500t of ore with an average grade of 1.23% copper. The primary mining method employed at Tritton during 2022 was sub level open stoping in conjunction with a cemented paste backfill. The stope blocks were nominally 50m high and 20 to 40m wide across strike.

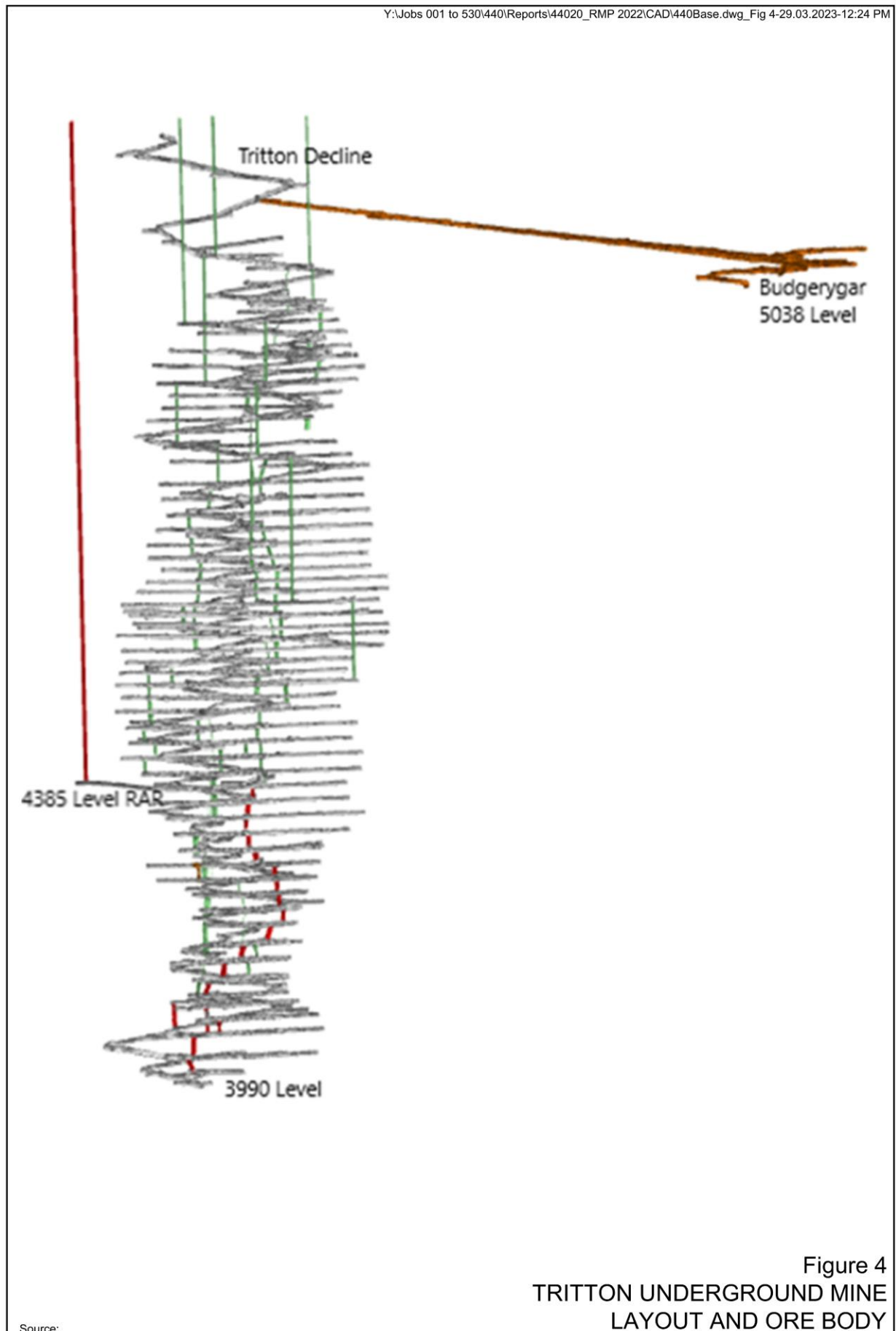
A summary of production is provided in **Table 7**.

Table 7
Production Summary

Material	Approved limit (specify source)	Previous reporting period (actual)	This reporting period (actual)	Next reporting period (forecast)
Waste Rock/ Overburden		229,620t	202,345t	250,770t
ROM Coal / Ore	2Mt	1.04Mt	838,500t	872,00t
Coarse reject				
Fine reject (Tailings)		Total tailings 1,453,241t Portion of tailings to paste 338,421t	Total tailings 1,283,451t Portion of tailings to paste 234,507t	Total tailings 1,400,000t Portion of tailings to paste 350,000t
Saleable product		97,298t	87,308t	90,000t

The current underground mine layout is shown in **Figure 4**.

During this reporting period there was 2,925m of development undertaken in the Tritton underground mine. This development was in the form of 1,917m of capital development, 1,008m of operating development (ore and waste). In addition, 247m paste dig and stripping was undertaken & 261m of vertical development. Of the 202,345t of waste rock produced from this development, 110,403t was used underground as backfill and the remainder (91,942t) trucked to the surface waste rock emplacement. At the end of December 2022, the deepest part of the mine was RL 3990 m, which places it approximately 1,280m below the surface.



The major mining equipment items in use at Tritton are shown below in **Table 8**.

Table 8
Major Mining Equipment used at Tritton

Equipment	Make	Model	Quantity
Dump Truck	Caterpillar	AD55B	1
Dump Truck	Sandvik	Th663	9
Loaders	Sandvik	LH621	6
Jumbo	Sandvick	DD421	1
		DD420	1
		DS420	1
Cable Bolter	Sandvick	DS420	1
Integrated Tool Carrier	Volvo CAT	L120, L50E	3
		950M, IT28G	3
Grader	Caterpillar	140H	1
Charge Up	Maclean Normet	AC3-80	1
		1610B	1
Store Truck	Hino	GT1322	1
	Isuzu	FVZ1400, FTS800	2
Agitator	Atlas	TM5010	1
	Utimec	1600	1

4.5 Mineral Processing

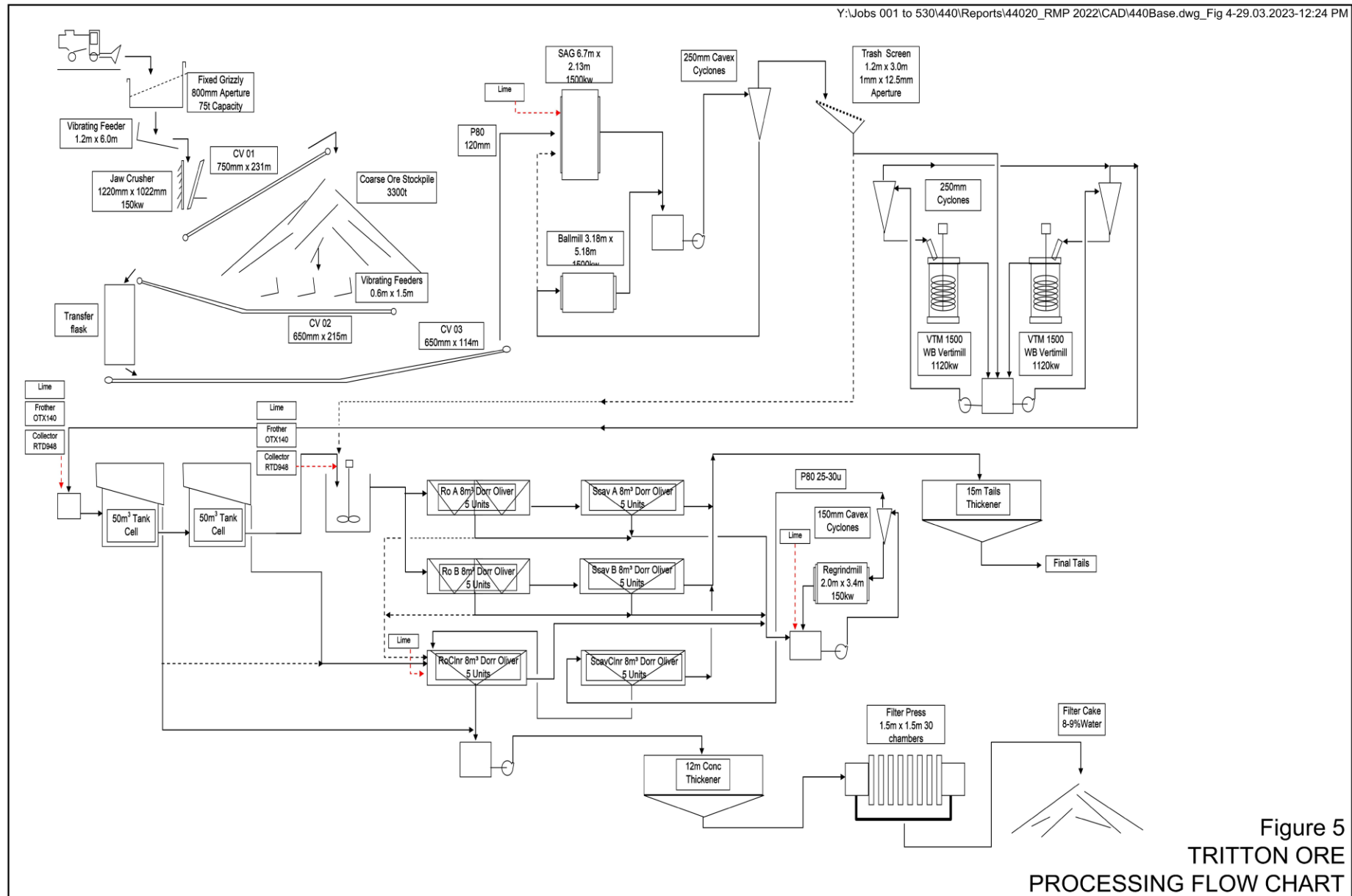
The mineral processing circuit is described in the following sections and a flow diagram of the process is depicted in **Figure 5**.

4.5.1 Crushing and Stockpiling Ore

Ore from the underground mines is delivered to the Run-of-Mine (ROM) pad. Stockpiled ore is fed by front end loader into the ROM bin at the head of the crushing circuit.

The crushing circuit consist of a fixed grizzly at the top of the ROM bin, with an aperture of 800 mm, which limits the size of ore fed into the circuit. From the ROM bin ore is discharged onto a vibrating feeder which in turn feeds a single toggle jaw crusher. The crushed ore, with a diameter of approximately 100mm, is conveyed to the crushed ore stockpile. A tramp iron magnet is strategically located after the crusher for the recovery of tramp steel.

From the crushed ore stockpile, ore is reclaimed via three vibrating feeders underneath the stockpile which discharge onto a reclaim conveyor. The reclaim conveyor transports the crushed ore to the Semi-Autogenous Grinding (SAG) mill.



4.5.2 Grinding

Primary, secondary and tertiary grinding is utilised to liberate valuable chalcopyrite (copper pyrite) from the ore to facilitate efficient concentrate flotation within the floatation circuit. The reclaim conveyor discharges into the primary grinding circuit which consist of an open circuit SAG mill. Lime slurry is also added to the SAG mill for pyrite depression to a target pH of 10.5. The SAG mill discharges to a trommel screen to remove oversize materials. Material passing through the trommel reports to the secondary grinding circuit.

The secondary circuit consists of an overflow ball mill operating in closed circuit with a cluster of hydrocyclones fed by a horizontal centrifugal pump. As with the SAG mill, the ball mill discharges to a trommel screen to remove oversize particles and worn media from within the mill. This oversize material discharges to a collecting drum ready for disposal.

The secondary circuit hydrocyclones discharge onto a trash screen which feeds the tertiary grinding circuit. The tertiary circuit is comprised of 2 parallel Metso Vertimills. Each Vertimill is in closed circuit with a cluster of hydrocyclones. Following the tertiary hydrocyclones, ground material reports to a second trash screen which feeds the appropriately sized material to the floatation circuit.

The grinding circuit is designed to produce product with an 80 % particle size distribution (P80) of 75 microns at 30-35% w/w solids density.

4.5.3 Flotation

The tertiary cyclone overflow feeds into two tank cells in series for primary rougher flotation. Flotation collector solution, lime and frother solution are also added to the first primary rougher tank to clump the concentrate. Concentrate from the first primary rougher tank is then directed to the thickener and the dewatering circuit. The primary roughing circuit can recover up to 70% of the total copper in the feed.

The primary rougher tailings are pumped to a rougher feed conditioning tank before being fed to two parallel banks of rougher/scavengers. Each bank consists of Dorr Oliver cells (5 roughers and 5 scavengers). The concentrate recovered from the tailings materials at the roughing stages is sent directly to the rougher cleaner while the concentrate from the scavenger stages is sent to a regrind circuit for further size reduction.

The regrind circuit consists of a ball mill in a closed circuit with a cluster of Cavex hydrocyclones. The feed to the cyclones is generated from the scavenger concentrate and rougher cleaner tailings. The underflow reports to the regrind mill and the overflow (P80 of 38 microns) to a scavenger cleaner. The scavenger cleaner concentrate reports to the rougher cleaner which produces a final concentrate. The scavenger tailings are recycled back to the rougher feeder conditioning tank.

Flotation collection solution is added to the head of each rougher and scavenger bank as well as to the scavenger cleaner. The pH in the roughing circuit remains around 9.5 with lime addition to the scavenger cleaner used to increase the pH to 10.8 to assist in liberated pyrite depression.

The combined primary rougher concentrate and rougher cleaner concentrate report to the concentrate thickener, while the tailings from the scavenger flotation tanks reports to the final tailing thickener.

The Tritton flotation circuit produces a copper concentrate with minor concentrations of gold and silver and recovers 94% copper, 50% gold and 80% silver from a typical ROM feed (1.4% Cu, 0.21ppm Au and 5.0ppm Ag).

4.5.4 Flotation Product Dewatering

Flotation product dewatering is required to:

- remove water from the final copper concentrate product; and
- remove excess water from the tailings material for use back through the process plant.

Copper Concentrate Dewatering

The processing plant consists of two main dewatering mechanisms for copper concentrate, these are the thickeners and a plate pressure filter. The final copper concentrate is pumped from the flotation circuit to a thickener. Flocculent is added to the thickener to enhance the solids settling rate. The thickener overflow water is recycled through the grinding circuit or directed to the process water dam. The underflow, containing the copper concentrate, is pumped via a surge tank to a horizontal plate pressure filter which squeezes the water out producing a cake with moisture of 8-10% ready for transportation.

Tailings Thickening

The flotation tailings are also pumped from the flotation circuit to a thickener where flocculent is also added. The thickener overflow water gravitates to the process water dam and the underflow is pumped to the tailings dam. Water is reclaimed from the tailings dam decant pond and pumped back into the process water dam for recycling back through the process plant. A seepage reclaim pump recovers water from the tailings dam underdrainage system via a seepage trench which is returned back to the tailings dam.

4.5.5 Concentrate Handling and Transport

The copper concentrate is loaded by front-end loader into purpose-built containers with sealable lids. Two such containers are loaded onto a single road train for transport to Hermidale, where they are temporarily stored and then loaded onto trains for transport to Newcastle. The concentrate is then stored and loaded onto ships at Newcastle's Carrington Con Ports Pty Ltd ship loader facility, for transportation for further processing.

4.5.6 Paste Plant

Paste fill provides a product comprised of tailings and cement to Tritton's underground mining operation to fill voids left after mining. Filling of these voids with paste provides the required geotechnical stability to allow adjacent ore blocks to be extracted. Paste is made by filtering thickened tailings through a horizontal belt filter and then mixing in cement and tailings slurry. Once thoroughly mixed the paste fill is delivered to the required section of the underground mine via a bore line reticulation system.

4.5.7 Summary of Processing Operations in 2022

The mill treated 1,370,759t of ore during 2022, producing 87,308t of copper concentrate. The paste plant continued operation, with 173,860t placed underground. The Paste plant handled 9,989t of bulk cement during the reporting period.

4.6 Waste Rock Management

Waste rock from the underground mine is placed in a Waste Rock Emplacement (WRE) on the surface, which is located to the east of the underground entry. Where practicable waste rock is also returned underground as backfill or used as road base. Approximately 202,345t of waste rock was produced from development of the underground mine at Tritton with 110,403t returned underground as backfill and the remainder (91,942t) trucked to the WRE.

Potentially acid forming (PAF) waste rock can occur at Tritton and therefore appropriate management is required. Based on an industry standard produced by Environment Australia and site expertise, rock samples are retrieved while in-situ in order to continuously build a database of compositional rock samples to enable effective management of the waste rock stream. The sampling and characterisation process is based on four overarching steps - Plan, Sample, Model and Check. Each of these steps is explained below:

- **Plan** for sampling – ensure that drill holes are drilled at least 20 m beyond the footwall contact, to provide information on the typically mined waste rock expected after extraction.
- Routinely sample drill holes for PAF rock material using the Net Acid Producing Potential (NAPP) and Net Acid Generation (NAG) tests.
- Model potential waste rock zones by extending the geology ore block model and using Sulphate content (S%) within the waste rock as a comparable replacement to PAF testing. A “sulphur domain” is then created and incorporated into all operational level plans.
- Check to ensure that the correlation between S% and PAF is correct by regularly reviewing the results of PAF testing and checking the statistics for the break point where S% equals PAF. Also spot checks are regularly undertaken by wall sampling the underground waste rock zones and submitting for PAF testing.

During the last reporting period the PAF material was sent to the underground waste tip. Oversize material reporting to the Run Of Mine Pad classified as PAF are taken back underground to use as backfill.

Table 9 provides a breakdown of the quantities of waste rock (including tailings) produced at Tritton over the life of the development.

Table 9
Waste Rock Summary

Parameter	Start of reporting period	At end of reporting period	End of next reporting (estimated)
Waste Rock to the WRE (t)	1,682,803	1,817,803	1,960,803
Waste Rock to Tailings Storage Facility (t)	4,181,385	5,242,889	6,236,838
Waste Rock (as tailings) to Paste fill (t)	3,631,692	4,126,433	4,631,692

4.7 Ore and Product Stockpiles

ROM and product stockpiling is an important component of the beginning of the processing operation. Section 4.5.1 describes the role that the ROM pad has in processing. The Tritton ROM and product stockpiles have remained consistent with expectations throughout the reporting period. No significant changes to the stockpile footprint or capacity are planned at this stage. Stockpile levels at the end of each month are detailed in **Table 10**.

Table 10
Ore and Product Balances

Date	Surveyed Closing Balances (t)		Copper Concentrate Produced (t)
	Tritton ROM	Crushed Ore	
January	4,257	116,787	6,506
February	4,721	101,708	4,674
March	9,108	133,282	8,605
April	5,047	121,832	7,592
May	6,975	121,429	8,321
June	6,918	130,380	9,820
July	5,945	126,630	8,439
August	983	85,339	4,933
September	4,333	102,772	6,974
October	2,486	124,279	8,015
November	4,097	99,215	5,726
December	6,065	107,105	7,703

4.8 Hazardous and Waste Material Management

Hazardous Materials

In accordance with the License to Manufacture (under license number: XMNF200001) issued by Workcover, Tritton Resources is permitted to store hazardous materials (explosives and related products).

Control measures required for the storage and use of hazardous materials include the requirement to provide Safety Data Sheets (SDSs) for all hazardous materials on site. The SDSs are accessed using a database or sourced direct from the supplier. SDSs are displayed on/near the product or in a manifest within the area.

Explosives are stored in a registered magazine bunded in accordance with AS2187. The magazine is fenced and access is restricted.

Diesel fuel is stored in self-bunded tanks with the delivery and refuelling areas bunded to contain spills. Oils and lubricants are stored in designated and bunded areas. Processing chemicals are stored in designated areas with bunds as required.

General and Recyclable Waste

As an active mine site Tritton generates quantities of recyclable and general waste. This waste is segregated and placed into designated skip bins which have different colour lids to distinguish the difference between the two, the recycling skip has a yellow lid and the general waste skip has a green lid. The recycling skips take all clean products displaying the recycling symbol with the exception of glass. General waste skips take all general/domestic waste products. No hydrocarbon or chemical contaminated material is permitted within these skips.

Tritton employs a contractor to manage the service of general waste and recycling skips. The process involves collecting general waste located in the skip bins with the garbage truck where it undergoes compaction and then is disposed of at the Cobar landfill. Any oversized items that don't fit into the skip bins are disposed of in the Tritton landfill. All recyclables are collected and taken to Dubbo for processing. The collection is carried out on a fortnightly basis or as otherwise required.

During the 2022 reporting period the collective operations of the Tritton, Murrawombie, and North East mines recycled a total of approximately 20.1t of waste and a total of approximately 109.6t general waste was taken to an offsite landfill facility for disposal.

Table 11 presents the approximate volume of each waste stream generated during the reporting period, together with the proportion of waste recycled.

Table 11
Waste Management Summary

Waste Class	Waste Stream	Total	
		(kg)	(t)
Non-Hazardous (Recycled)	Mixed Recycling	20,110	20.11
	% of Total Waste	18.34%	
Non-Hazardous (Disposal)	Mixed Solid Waste	89,515	89.52
	% of Total Waste	81.66%	

4.9 Other Infrastructure Management

A range of other infrastructure is utilised on site as part of the Tritton operation. This infrastructure is described below.

Power Supply

Electrical power enters Tritton via a 66kV line and using a transformer is stepped down to 11kV to feed the site's electrical facilities.

Ventilation Fans

Tritton underground is ventilated using twin centrifugal 1.3MW fans in association with other auxiliary fans. These fans are located to the south east of the underground portal.

Explosives Magazine and Emulsion Plant

The explosives magazine and emulsion plant are appropriately designed and are located at Tritton to not be a hazard to personnel or infrastructure in the event of an explosion.

Bioremediation Facility

The Bioremediation Facility is located to the west of the site. Hydrocarbon contaminated soil is placed within this facility and treated with micro-organisms which break down the hydrocarbons. The area is sprayed with water and the soil is turned to assist with the breakdown of hydrocarbons. The cells have a combined capacity of 20 m³. The soil within the facility is tested on a quarterly basis and is compared NEPC (NEPM) 1999 guidelines. Once the soil has been successfully treated the soil will then be removed and used in rehabilitation or stockpiled for future use.

5. Actions Required at Previous Annual Review

No actions were required following the previous Annual Review.

6. Environmental Performance

6.1 Air Quality

Tritton is situated in a semi-arid environment where yearly evaporation rates generally exceed annual rainfall by an approximate factor of five. High evaporation rates cause bare, disturbed ground to be susceptible to wind erosion and the associated formation of dust. Activities that contribute to soil dispersal/dust include haulage of ore, crushing of ore and vehicle use on unsealed roads and tracks. As the Tritton Mine is an underground mining operation, dust generated from blasting and loading of ore is not expected at the surface. Ventilation fans are a source of particulates.

6.1.1 Environmental Management

Vehicle movement on unsealed roads is considered the major contributor to dust dispersion at Tritton. To combat this source, water trucks equipped with spray systems are utilised on roads to suppress dust.

Development activities, such as the establishment of exploration drilling sites, can also increase exposed soil and dust dispersion through the clearing of vegetation. If clearing of vegetation is required, the area to be cleared is demarcated and only the minimum amount of clearing required is permitted to occur. To further limit the impact of development clearing on dust emission, where possible prompt rehabilitation of disturbed areas is undertaken.

In order to track the effectiveness of these strategies, dust fallout gauges are located around the Tritton Mining Lease area to monitor the effects of dust dispersion. Dust monitoring activities are carried out in accordance with Australian Standard 3580.10.1-1991. Dust monitoring is routinely sampled on a monthly basis with all dust gauges replaced every 30 days (+/- 2 days). Insoluble solids are measured in a laboratory and compared to the NSW government guideline, *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (DEC 2005). In addition, samples are tested for heavy metal content.

6.1.2 Environmental Performance

Depositional dust gauges are located around the Tritton Mining Lease area at suitable locations with respect to the locations of sensitive receptors and prevailing wind direction. Background air quality sampling is also undertaken to separate dust generated from the operation from that of the background.

A review of the dust gauge metal results continues to identify the presence of heavy metal concentrations above the background data retrieved at the Budgery and the Girilambone gauges (Table 12). Tritton monitors heavy metal concentration to understand the site and the environment, but there are no compliance triggers set out in either DA 41/98 or the Dust Management Plan.

Generally, Tritton dust monitoring locations showed elevated metal concentrations. Dust gauges with high elevations of metal concentrations are located in the middle of operations, therefore are expected to have abnormally high results. For example, **Figure 6** shows locations of gauge TD26 is in the middle of the site, amongst operations.

Table 12
Air Quality Metals Analysis

Site	Dust Gauge Identification	Average Analyte Concentrations (µg/m²)			
		Copper	Iron	Lead	Zinc
Background					
Budgery	B01	3597.8	27792.5	93.25	537.3
Budgery	B02	1501.1	15007.1	53.9	392.7
Budgery	B03	1564.9	48961.3	89.0	336.7
Budgery	B04	912.2	6288.7	24.4	161.9
Budgery	TD8A	2608.4	4600.8	48.6	427.8
Girilambone	BG1	2203	4919.0	16.2	149.7
Girilambone	BG2	8223.6	11054.1	16.9	177.6
Tritton					
Yarrandale Rd	TD1	4765.5	12368.0	39.1	461.4
Rail Load Out	TD11	3418.2	39353.0	453.6	995.7
Yarrandale Rd	TD2	2912.7	14360.0	82.3	726.1
Tritton	TD23	2740.0	8835.8	44.5	487.2
Tritton	TD24	3713.2	28900.0	118.9	708.6
Tritton	TD25	11725.4	28990.0	97.59	1716.6
Tritton	TD26	34125.5	161020.0	538.7	6357.4
Tritton	TD27	4737.5	26413.3	69.6	730.1
Tritton	TD3	2793.2	12136.4	91.56	432.9
Tritton	TD3B	4821.0	29498.0	65.6	868.4

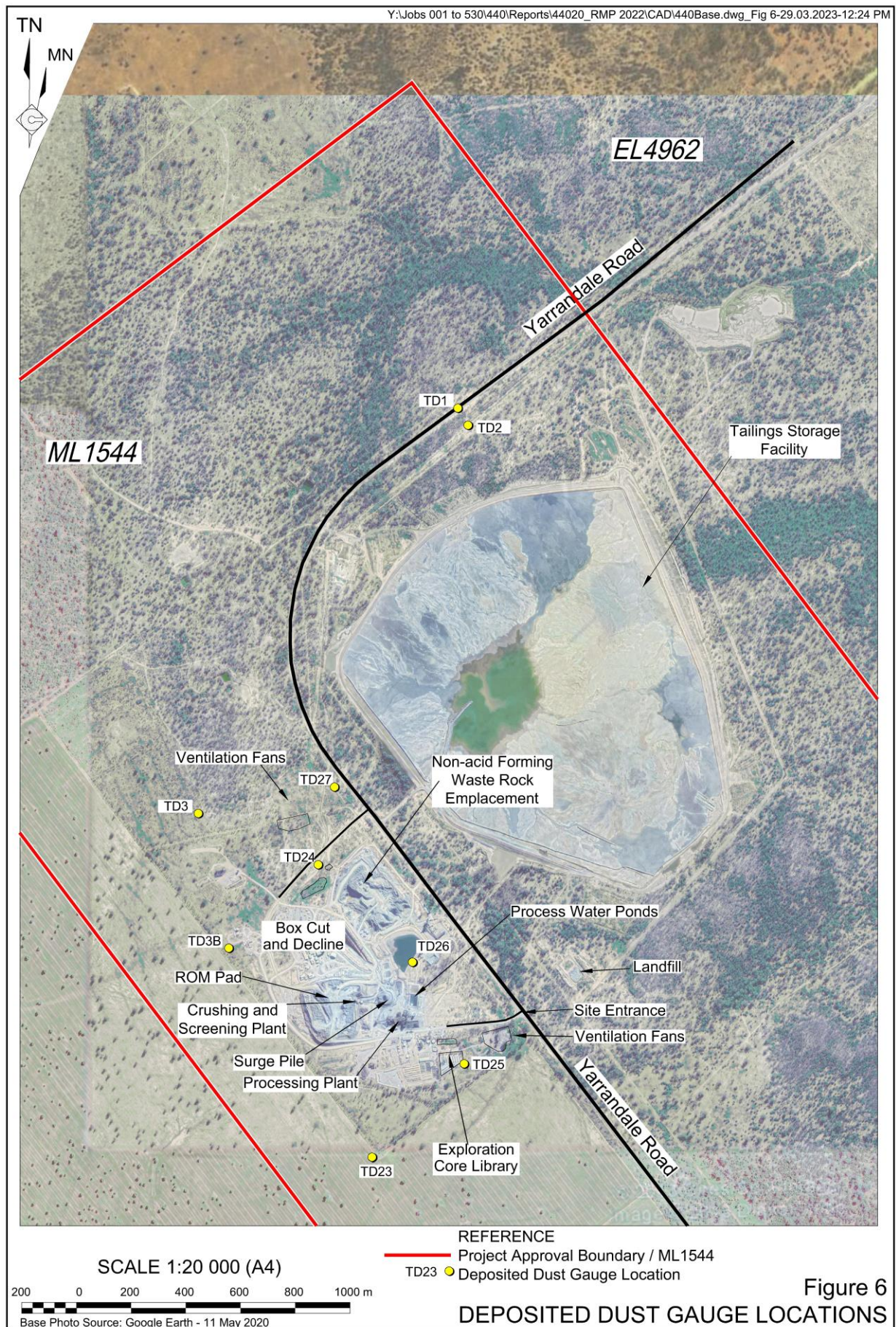


Table 13 presents the data from the analysis of insoluble solids in the air at a range of dust gauges.

Table 13
Insoluble Solids

Site	Compliance Criteria	Dust Gauge Identification	Insoluble Solids (g/m² month)			Seasonal Averages Insoluble Solids (g/m² month)			
			Average	Min	Max	Autumn	Winter	Spring	Summer
Background									
Budgery	N/A	B01	2.8	0.5	9.4	0.9	3.3	4.9	1.3
Budgery	N/A	B02	1.7	0.5	6.8	1.3	2.7	0.6	1.6
Budgery	N/A	B03	9.6	0.3	41.1	11.2	8.9	20.7	2.5
Budgery	N/A	B04	0.9	0.2	2.9	1.0	0.5	0.4	1.7
Budgery	N/A	TD8A	1.7	0.1	6.8	0.5	0.5	3.5	0.7
Girilambone	N/A	BG1	0.6	0.2	1.1	0.6	0.3	0.4	0.9
Girilambone	N/A	BG2	0.7	0.1	2.1	0.6	0.2	0.5	1.1
Girilambone									
Yarrandale Rd	>4g/m²month	TD1	0.7	0.3	1.1	0.9	0.4	0.6	0.8
Rail Load Out	N/A	TD11	3.4	1.0	6.7	4.0	2.6	2.4	3.4
Yarrandale Rd	>4g/m²month	TD2	0.9	0.3	1.6	1.0	0.5	0.7	1.2
Tritton	>4g/m²month	TD23	0.7	0.2	1.2	0.7	0.4	0.7	0.8
Tritton	N/A	TD24	1.6	0.6	3.3	1.9	107	0.9	1.7
Tritton	>4g/m²month	TD25	1.2	0.4	1.9	1.4	0.8	1.0	1.7
Tritton	N/A	TD26	5.9	0.6	45.8	2.4	2.4	2.1	16.6
Tritton	N/A	TD27	1.5	0.1	3.2	2.5	0.9	1.0	1.6
Tritton	>4g/m²month	TD3	0.8	0.2	1.3	1.0	0.5	0.6	0.9
Tritton	N/A	TD3B	1.6	0.3	7.5	1.5	3.0	0.7	1.4

A Dust Monitoring Plan was developed in line with the requirements from the DA 41/98, which sets out dust trigger levels. The trigger value for insoluble solids is > 4g/m²/month at the gauges TD1, TD2, TD3, TD23, and TD25. Each of the required monitoring location dust gauges are compliant.

No complaints from neighbouring properties were received throughout the reporting period in regard to dust being generated from the Tritton operation.

6.1.3 Reportable Incidents

No reportable incidents occurred during this reporting period.

6.1.4 Further Improvements

Air quality management at the Tritton Copper Mine during 2023 will continue to be undertaken as per the existing management procedures.

Tritton will continue to adopt an adaptive management approach to air quality management, with ongoing inspections and monitoring of depositional dust results to ensure that the monitoring program is efficient and meets the needs of legislation and operational requirements.

6.2 Contaminated Land

Mining activities at Tritton have the potential to impact on the intrinsic values of the surrounding landscape. These impacts may be caused by chemical, hydrocarbon or material spills, the release of contaminated water or structural failure of infrastructure.

Tritton endeavours to manage existing contaminated areas and prevent and/or minimise further contamination by ensure infrastructure and piping arrangements are suitable for their given purpose and that chemical, hydrocarbon and any other potential contamination materials are handled, stored and disposed of appropriately.

Sites of existing land contamination recorded on the Tritton Contaminated Sites Register include the ROM and coarse ore stockpiles, waste rock emplacements, the tailings storage facility, the ore processing areas and landfill sites. These areas are identified on Figure 2.

6.2.1 Environmental Management

Contaminated land at Tritton is generally associated with liquid spillage. All spills in excess of 20L requires clean up and reporting via the Tritton incident reporting system and entry into the onsite database. All spills require clean up irrespective of volume and size.

All hydrocarbon spills are remediated at the Tritton bioremediation facility whilst process slurry spills are either returned to the plant for reprocessing or disposed at the tailings storage facility. Impacted areas are generally cleaned up immediately however larger, long-term impacted sites are listed on the Tritton Contaminated Sites Register and are managed and rehabilitated accordingly at mine closure or sooner where possible.

Management and rehabilitation of the registered contaminated sites will primarily be undertaken at mine closure as these areas are still active components of the operation, such as the stockpiles, processing areas, waste rock emplacement and the tailings storage facility. Tritton is also the custodian of an active landfill located to the east of Yarrandale Road near the tailings storage facility and two closed and rehabilitated landfills. The closed landfills are located within the current tailings storage facility footprint and the other is near the existing operational landfill.

The active landfill is licensed under EPL11254 and allows for the disposal of *Inert waste – Class 1 and 2; and Solid Waste – Class 1*. Waste is managed by Tritton. Designated waste bins are used to segregate waste streams and increase recycling and reduce landfill waste (General waste). The landfill is fenced and employees are educated on landfill disposal requirements. Two groundwater piezometers are in place near the active landfill to assess any potential landfill leachate to groundwater.

6.2.2 Environmental Performance

Tritton onsite incident management system recorded one hydrocarbon spill during the 2022 reporting period. The spill occurred on the 29 January 2022, and included spillage of 20L of diesel.

A chemical spill was also recorded. The chemical spill was the result of a leaking intermediate bulk container.

6.2.3 Reportable Incidents

No reportable incidents occurred during the reporting period.

6.2.4 Further Improvements

Contaminated land management at the Tritton Copper Mine during 2022 will continue to be undertaken as per the existing management procedures. Tritton will continue to adopt an adaptive management approach to contaminated land management, with ongoing inspections and monitoring of contaminated land to ensure that the monitoring program is efficient and meets the needs of legislation and operational requirements. Progressive rehabilitation of contaminated sites will also be undertaken where possible. The rehabilitation of these sites at mine closure is discussed further in Section 5.

6.3 Threatened Flora

The presence of mining and associated activities can impact flora (including “threatened” species). No species of flora listed in either Schedule 1 or 2 of the Threatened Species Conservation Act 1995 (NSW) or in Schedule 13 of the National Parks and Wildlife Act 1974 (NSW) have been identified within the Tritton mining lease area. However, two species, the Cobar Green Orchid and the Pine Donkey Orchid were identified as potentially/likely to occur within the Tritton site.

6.3.1 Environmental Management

In order to minimise/eliminate harm to flora species, all personnel complete a land surface disturbance permit for any proposed land disturbance. As part of the permit a pre-clearance survey is undertaken to establish the likelihood of listed species being present within the proposed clearance area prior to the removal, clearance or destruction of any vegetation (including work associated with exploration). The pre-clearance survey is carried out by the site Environmental Advisor. Periodically, flora and fauna surveys are conducted by external consultants prior to major disturbance and/ or for Tritton to gather more comprehensive data.

6.3.2 Environmental Performance

In 2011 a flora and fauna survey was undertaken at the tailings storage facility in preparation for the expansion of the facility during this reporting period. No threatened flora species were observed by either EnviroKey (the external consultant) who undertook the flora and fauna survey of the area or when Tritton staff conducted pre-clearance surveys. No small or large scale pre-clearance surveys were undertaken during the reporting period.

A land disturbance incident occurred in June of the 2022 reporting period, due to an occurrence of vehicles onsite not using the designated roads.

6.3.3 Reportable Incidents

No incidents were recorded during the reporting period.

6.3.4 Further Improvements

Pre-clearance surveys will continue to be undertaken prior to any surface disturbance. No large scale clearing is proposed during 2023.

6.4 Threatened Fauna

Mining and its associated activities can impact fauna species, including “threatened” species, either directly (road kills) or indirectly through habitat removal. Of particular importance are the 18 threatened fauna species which have been recorded within the Tritton area since 1998. These species include:

- Kultarr (*Antechinomys laniger*);
- Pink cockatoo (*Cacatua leadbeateri*);
- Inland forrest bat (*Vespadelus baverstocki*);
- Little pied bat (*Chalinolobus picatus*);
- South-eastern long-eared bat (*Nyctophilus sp*);
- Yellow-bellied sheath-tail bat (*Saccolamus flaviventris*);
- Grey crowned babbler (*Pomatostomus temporalis temporalis*);
- Superb parrot (*Polytelis swainsonii*);
- Pied honeyeater (*Certhionyx variegatus*);
- Varied sittella (*Daphoenositta chrysoptera*);
- Chestnut quail-thrush (*Cinclosoma castanotus*);
- Hooded robin (*Melanodryas cucullata*);
- Malleefowl (*Leipoa ocellata*);

- Grey falcon (*Falco hypoleucos*);
- White-browed wood swallow (*Artamus superciliosus*);
- White-fronted chat (*Epthianura albifrons*);
- Turquoise parrot (*Neophema pulchella*); and
- Squatter pigeon (*Geophaps scripta*).

6.4.1 Environmental Management

The key threatening process at Tritton is land clearance activities. As discussed above in regards to threatened flora, a land surface disturbance permit is required prior to any land disturbance activities taking place. This permit also includes a pre-clearance survey of the proposed disturbance area. The pre-clearance survey in regards to fauna aims to identify potential habitat features such as hollow logs and trees with nests or hollows as well as any fauna persisting in the area. Vertebrate fauna species found during pre-clearing surveys are relocated to areas of rehabilitation or to adjacent vegetation where possible. Hollow logs are also relocated to rehabilitation areas or to nearby undisturbed vegetation to continue to provide animal habitat.

Other risks to fauna at Tritton include potential interaction or collision with mobile machinery and the consumption of mine affected water. These risks are mitigated on site by the use of fences around the Mine Site perimeter and around dams and the provision of alternative water sources such as the environmental dam located north of the tailings storage facility.

6.4.2 Environmental Performance

During the reporting period no fauna surveys were conducted. To ensure interactions with wildlife are minimised and undertaken with due care and safety for both the fauna and site personnel, a number of staff members have been trained to handle and remove snakes from site.

A land disturbance incident occurred in June of the 2022 reporting period, due to an occurrence of vehicles onsite not using the designated roads.

6.4.3 Reportable Incidents

No reportable incidents occurred during the reporting period.

6.4.4 Further Improvements

Pre-clearance surveys will continue to be carried out prior to any habitat disturbance during 2023.

6.5 Weeds

Tritton is committed to the continual improvement of all land owned as part of the Tritton operations. The management of noxious weeds plays an integral role in achieving this commitment and in maintaining successful land management practices. Noxious weeds declared for the Bogan Shire Council that have been identified on Tritton include:

- Bathurst Burr;
- Noogoora Burr
- African Box Thorn; and
- Galvanised Burr

6.5.1 Environmental Management

Tritton has in place a Weed Management Plan. This plan calls for all noxious weeds to be managed and controlled in accordance with the requirements within the *Biosecurity Act 2015* and any control works to be undertaken in consultation with the Bogan Shire Council, Livestock Health and Pest Authority (LHPA) and any relevant Weeds Advisory Committee where appropriate.

Management strategies employed at Tritton to control weeds include:

- Consultation with interested parties including environmental staff, local Councils, neighbouring landholders, the Central West Catchment Management Authority, and other identified stakeholders;
- Document the noxious weed species that occur within the mining lease area;
- Ensure that topsoil stockpiles are regularly checked for weeds. If any are located, these are to be removed;
- Restrict vehicular access to areas of heavy weed infestation;
- Rehabilitate disturbed areas as soon as practicable; and
- The status of weeds will be regularly monitored especially within rehabilitation areas or areas of high disturbance.

6.5.2 Environmental Performance

Tritton utilise environmental staff for weed control across the site. The personnel monitored, documented weed type and population for eradication and removed/sprayed. A total area of 6.16ha was sprayed during the reporting period.

6.5.3 Reportable Incidents

No incidents were recorded during the reporting period.

6.5.4 Further Improvements

Weed management at the Tritton Copper Mine during 2023 will continue to be undertaken as per the existing management procedures. Tritton will continue to adopt an adaptive management approach to weed management, with ongoing inspections and monitoring of the site to ensure that the monitoring/control program is efficient and meets the needs of legislation and operational requirements.

6.6 Blasting

Development and stoping activities utilise explosives in the mining process. All blasting activities undertaken on site were associated with underground mining. No surface production blasting was undertaken during the reporting period.

6.6.1 Environmental Management

Blasting is primarily confined to underground mining activities and therefore the effects of blasting are effectively contained within the mining lease area. During the reporting period blasting was undertaken within the Tritton underground operation. Explosives used were licensed (**Table 1**) and stored appropriately within the site explosives magazine.

6.6.2 Environmental Performance

The nearest sensitive receptors/neighbours reside 4.7km north and 4.8km south of the Tritton mine site. No complaints were received during the reporting period and therefore no monitoring for blasting was undertaken.

6.6.3 Reportable Incidents

No complaints were received during the reporting period.

6.6.4 Further Improvements

Tritton will continue to manage blasting in order to restrict its impact on nearby neighbours and sensitive receptors throughout 2023.

6.7 Operational Noise

Operational noise which may impact surrounding neighbours is primarily generated by surface vehicles, including trucks containing ore, travelling to and from Tritton and activities associated with ore processing such as operation of the plant, underground vehicles moving on the surface and earth moving equipment.

6.7.1 Environmental Management

To minimise unnecessary noise all equipment is maintained regularly to reduce noise and work efficiently. To further ensure Tritton is not generating noise which impacts on any surrounding residents, both noise monitoring and a complaints process is in place. In the event of a noise complaint from any surrounding residences, site personnel will investigate the complaint and implement appropriate mitigation measures and noise monitoring where appropriate.

6.7.2 Environmental Performance

During the reporting period Tritton Resources conducted noise monitoring at the most noise-affected point at the boundary of the most affected receiver. The possibility of surrounding residences being impacted by Tritton operations is considered to be low due to the distances between residences and the mine site. **Table 14** outlines the results of the noise monitoring conducted during 2022. Generally, rural noise such as wind in trees, insects, and birds were the dominant noise source.

The Noise Monitoring Assessment prepared by Muller Acoustic Consulting Pty Ltd explains that the daytime exceedance of noise criteria guidelines was attributed to intermittent passing traffic and not the hum from the mine. As the noise exceedance was not generated by the development, it is not a non-compliance.

Table 14
Noise Monitoring Results

Location	Date	Time	L _{Aeq} Reading [dB(A)]	Tritton Contribution [dB(A)]	L _{Aeq} Noise Emission Criteria as per EPL guidelines [dB(A)]
Wilga Downs Boundary	20/09/2022	11:31AM	50	<35	35
Wilga Downs Boundary	20/09/2022	8:36 PM	17	<25	35
Wilga Downs Boundary	20/09/2022	10:07 PM	14	<25	33

6.7.3 Reportable Incidents

No complaints were received during this reporting period.

6.7.4 Further Improvements

Tritton will continue to manage noise in order to restrict its impact on nearby neighbours and sensitive receptors throughout 2023.

6.8 Visual, Stray Light

The Tritton operation is situated within a predominantly rural setting across a gently undulating to flat landscape. Within this landscape, possible sensitive light receptors are restricted to neighbouring residences (the nearest is over 4.5 km away) and vehicles using the Yarrandale Road. Yarrandale Road is not a major connecting path between towns and is mainly used by local properties and vehicles accessing the mining operations. The impact of the operation on local visual amenity and the lighting environment is low.

6.8.1 Environmental Management

Site infrastructure is generally shielded by intervening vegetation and gentle topography. Lights are pointed downwards towards site infrastructure to reduce the impact of stray light at night.

6.8.2 Environmental Performance

Lights from the Tritton site can be seen from Yarrandale Road. An additional tree screen was planted between Yarrandale Road and Tritton during 2016, however due to ongoing dry weather conditions a number of trees did not mature. Further plantings of trees were undertaken in 2018 with a lack of success due to drought. Tritton planted additional tubestock trees along the fenceline in front of the WRE in March 2021 to ensure the site tree screens are complete.

6.8.3 Reportable Incidents

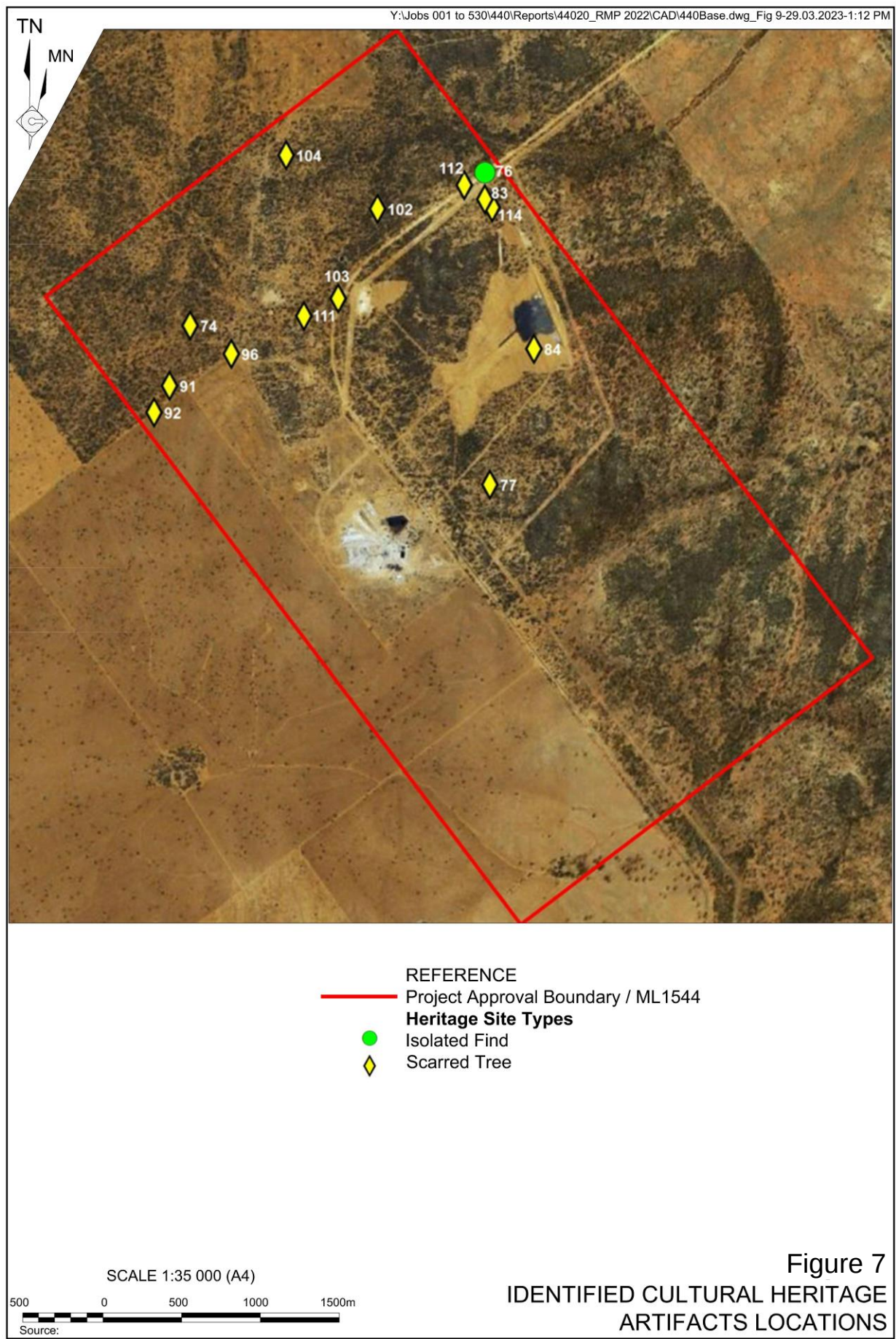
No complaints from surrounding residents in regards to visual amenity or lighting were recorded during the reporting period.

6.8.4 Further Improvements

Tritton will continue to assess, and manage where necessary, the visual amenity of the project throughout the next reporting period.

6.9 Aboriginal Heritage

Aboriginal Heritage was assessed during the initial approval stage for the Tritton operation. No new archaeological sites were identified within the high potential impact areas of the operation during the reporting period (**Figure 7**). However, as exploration within the exploration leases and the expansion of the tailings facility progresses a number of sites, determined to be of low significance, have been discovered.



6.9.1 Environmental Management

To ensure Aboriginal Heritage is not affected, particularly during on-going exploration activities, surface disturbance permits are used to assess areas that are required to be cleared. A component of the surface disturbance permit requires a pre-clearance survey to be undertaken which involves an Environmental Officer inspecting the area to be disturbed for archaeological and heritage items or places of interest. If an item/site of possible Aboriginal heritage is discovered either during the pre-clearance survey or during exploration activities the following procedure is followed:

1. Cease work immediately.
2. Construct a barrier with flagging tape (or similar) around the potential item.
3. Notify the Environmental Officer for identification of the site.
4. Should work activity require continuing in the vicinity of the item the General Manager will be notified.
5. The General Manager will:
 - a) Request a suitably qualified archaeologist to attend the site and assess the significance; and/or
 - b) Request members from the Nyngan Local Aboriginal Land Council (NLALC) to also assess the significance of the item.
6. A Site Register Card will be forward to the Office of Environment and Heritage (OEH) for inclusion on the Aboriginal Heritage Information Management System (AHIMS) database if required.
7. Subject to the recommendations from the archaeologist and/or NLALC, the appropriate permit to transfer will need to be sought prior to further work being undertaken in the vicinity of the site. Any such action to disturb or transfer items may also require the development of a salvage strategy in consultation with OEH.
8. The General Manager will implement any other procedures or recommendations issued by the OEH.

In the event that skeletal remains are uncovered, the following procedure is undertaken:

1. Cease work immediately within the area of discovery.
2. The area is cordoned off with flagging tape and marked “No Entry”.
3. The General Manager notifies the Nyngan Police.
4. No handling of the remains is permitted without the above-mentioned parties present.
5. Where the remains are determined to be Aboriginal, determination of procedures to be followed will be undertaken through consultation between NLALC and/or suitably qualified archaeologist and OEH and only under the authority of an appropriate permit.
6. No activity will be allowed in the vicinity of the find until such time as the relevant party(ies) provide formal advice to proceed.

6.9.2 Environmental Performance

No Aboriginal heritage surveys were undertaken during 2022 within the Tritton mining area. No previously unidentified items or sites were found during the reporting period.

6.9.3 Reportable Incidents

No reportable incidents occurred within the 2022 reporting period.

6.9.4 Further Improvements

The current Aboriginal heritage management procedures will continue to be adhered to during 2023. Furthermore, any external contractors or members of the public who are given permission to undertake any activities on Mine Site land are to be availed the importance of and due diligence required when working around registered Aboriginal sites.

6.10 Natural Heritage

No natural or non-Aboriginal heritage sites or artefacts have been discovered within the Tritton or exploration areas during the reporting period.

6.10.1 Environmental Management

To ensure natural and non-aboriginal Heritage is not affected, particularly during on-going exploration activities, surface disturbance permits are used to assess areas that are required to be cleared. A component of the surface disturbance permit requires a pre-clearance survey to be undertaken which involves an Environmental Advisor inspecting the area to be disturbed for archaeological and heritage items or places of interest. However, it is unlikely that sites or artefacts of significance are present within the area.

6.10.2 Environmental Performance

No natural or non-Aboriginal heritage artefacts or sites were identified during this reporting period.

6.10.3 Reportable Incidents

No incidents regarding natural or non-Aboriginal heritage occurred during the reporting period.

6.10.4 Further Improvements

The current heritage management procedures will continue to be adhered to during 2023.

6.11 Bushfire

Bushfire poses a serious threat to both the operation and the surrounding properties. The following are recognised as the principal potential causes of bushfire within the operational area.

- Fires on plant and equipment and/or occurring as a consequence of maintenance activities on that plant or equipment;
- Personnel actions for example smoking or undertaking activities in inappropriate areas or without adequate controls; or
- Natural incidents such as lightning strikes.

6.11.1 Environmental Management

To protect the mining operation and minimise the potential for the operation to cause a bushfire the following controls are in place:

- Activities requiring an open flame or spark (such as welding or cutting) are conducted within workshop areas where practicable, if these duties are to be undertaken outside of the workshop areas a permit is required. In the event that welding or cutting is to be conducted outside of the workshop areas, the following safeguards will be considered:
 - All flammable material will be removed from within a 20m radius;
 - All flammable liquid will be cleared from the work area;
 - Fire extinguishers will be positioned within 10m of the work area; and/or
 - All controls identified under a hot work permit must be put in place.
- All workshops and offices will be installed within an approved fire extinguisher. Their location will be indicated by an appropriate sign.
- All fuel and oil storage will be located and constructed in accordance with the requirements the applicable legislation and will be fitted with suitable fire extinguishers.
- The ground around fuel and oil storage areas will be kept free of combustible vegetation for at least 3m.
- Designated No Smoking Areas will be clearly marked. These areas include:
 - Within 10 m of fuel and oil storage areas;
 - Within 10 m of explosive magazines;
 - When transporting explosives, or within 20 m of a vehicle transporting explosives;
 - Within workshops;
 - All buildings and offices; and
 - Any areas containing gas cylinders.

- Equipment / vehicles will not be stored / parked on uncleared ground.
- Vehicular access areas will be maintained free of combustible vegetation and windblown litter around all areas of mining-related activities.
- Fire extinguishers are kept on all mobile equipment.
- All fire extinguishers will comply with AS/NZS 1841.11:1997.
- All fire equipment and extinguishers are to be kept in a serviceable condition.
- All fire equipment, where appropriate, will be compatible with that of the Rural Fire Service.
- A fully equipped fire tender will be maintained to provide immediate response to a bushfire.
- Water for firefighting purposes will be sourced from various water storages within the management area.
- A suitable fire break will be established and maintained around the perimeter of the mine. Fire breaks should be a minimum of 6 m wide and kept free of flammable material as far as practicable. Additional fire breaks will be maintained around explosive magazines and flammable material storage areas where necessary.
- Fire breaks are inspected at 6 monthly intervals by the Environmental Officer.

6.11.2 Environmental Performance

There were no outbreaks of fire during 2022 at the Tritton Mine Site.

6.11.3 Reportable Incidents

No incidents were recorded during the reporting period.

6.11.4 Further Improvements

The bushfire management procedures will continue to be adhered to during 2023.

6.12 Hydrocarbon Contamination

Active mining at Tritton Resources involves the use of hydrocarbon-fuelled machinery including diesel heavy machinery and processing plant equipment, which in turn utilises a variety of hydrocarbon products and volumes. The storage, transfer and use of hydrocarbon products, creates potential for hydrocarbon contamination events.

6.12.1 Environmental Management

Tritton has a Hydrocarbon Management Plan in place to assist it in meeting Australian Standards and statutory obligations for hydrocarbon management. As part of the management plan, employees and contractors at Tritton are educated about hydrocarbon contamination management during the induction phase prior to commencing work on the mine site. This includes “The three C’s” (Control, Contain, Clean-up). Spill response kits are located in areas where a risk of hydrocarbon contamination can exist, these areas include:

- Fuel bays;
- Workshops;
- Processing plant; and
- Stores.

All spills require clean up irrespective of volume and size. However, spills in excess of 20L requires clean up and reporting via the Tritton incident reporting system and entry into the onsite database. Soil that has been contaminated by hydrocarbons is removed and placed in the bioremediation facility for treatment and rehabilitation.

6.12.2 Environmental Performance

One hydrocarbon spill were recorded during the reporting period, a 20L diesel spill in January.

All hydrocarbon waste was removed from site during the reporting period by an approved contractor for recycling. Tritton utilises the contractor on a monthly basis throughout the year to prevent a large build-up of hydrocarbon waste on site.

The bioremediation facility was treated and tested four times during the reporting period, with the results of the testing shown in **Table 15**. The results do now fall within the specific contamination concentration for general solid waste.

Table 15
Bioremediation Facility Testing Results

Date	Total Petroleum Hydrocarbons					Total Recoverable Hydrocarbon - NEPM 2013 Fractions					
	C6-C9	C10-C14	C15-C28	C29-C36	C10-C36 Fraction (sum)	C6-C10	C6-C10 Fraction minus BTEX (F1)	>C10-C16	>C16-C34	>C34-C40	>C10-C40
Cell 1											
4/01/2022	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100
Cell 2											
4/01/2022	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100

6.12.3 Reportable Incidents

No externally reportable incidents were recorded during the reporting period for hydrocarbon contamination.

6.12.4 Further Improvements

Hydrocarbon management procedures will continue to be adhered to throughout 2023.

6.13 Methane Drainage/Ventilation

Methane gas is generated from carbonaceous soil types. Evidence of carbonaceous material within the Tritton underground operation has not been identified during the reporting period and therefore no methane has been detected or released.

6.13.1 Environmental Management

Gas detectors are used on site on diamond drill rigs as a frontline safety/environmental identification tool. If methane is identified, work is to stop and the risk is assessed.

6.13.2 Environmental Performance

No methane has been detected during the reporting period.

6.13.3 Reportable Incidents

No incidents were recorded during the reporting period.

6.13.4 Further Improvements

No further environmental improvements are anticipated for the next reporting period as the likelihood of methane being present is low.

6.14 Public Safety

Any operating mine can be a potential safety hazard to persons who have not been properly trained or authorised to enter the site. It is therefore imperative that any threat to public safety is eliminated and/or managed appropriately.

6.14.1 Environmental Management

A number of management measures have been developed to maintain public safety. These include:

- Fencing around the perimeter of the operation;
- Procedural site entry is via induction and sign-in/out registers through the main gate access points. Vehicle entry is via approved use of electronic swipe cards at boom gates.
- Signage has been installed around the site boundary advising the public that unauthorised entry into active mining areas is not permitted.
- Inspections of boundary fences are conducted in-line with routine groundwater sampling to ensure no access can be gained to site other than through the access gates.

Also to ensure public road safety all haul trucks are required to have a flashing beacon and are to abide by speed limits.

6.14.2 Environmental Performance

Security cameras were installed around the main boom gate entry in 2015 and boundary fences were inspected regularly throughout 2022, to minimise and reduce unauthorised entry. No breaches of the site access procedures occurred during the reporting period.

6.14.3 Reportable Incidents

No incidents were recorded during the reporting period.

6.14.4 Further Improvements

No further improvements have been planned.

7. Water Management

7.1 Introduction

The primary source of water for the Tritton operation is the surface water allocation from Burrendong Dam. Tritton Resources extracts water from a metered off take point at a small weir at the confluence of Gunningbar Creek. Gunningbar Creek and Burrendong Dam are connected via the Macquarie River. Water is pumped to the Girilambone Raw Water dam by an electric pump station incorporating two booster pumps along the pipeline. The pumps are able to be operated remotely from the Tritton site and have the capacity to pump water at 130 m³ per hour. Water is pumped from the Girilambone Raw Water dam to the Tritton Raw Water dam via a buried pipeline where it is distributed across the Mine Site.

As a result of the drought conditions experienced in 2018 and 2019, DPIE Water approved the closure of the Gunningbar Weir and flows ceased from 1 December 2019. The closure of the Gunningbar Weir resulted in TRL's inability to access its water allocation for a portion of the reporting period. In response TRL constructed a pipeline from the Mine to an off-take point on the Nyngan-Cobar pipeline near the village of Hermidale to allow TRL to access its water allocation. The pipeline is approximately 18km in length extending from Hermidale to the Tritton Mine Site.

Table 16 shows the details of the three Water Access Licences (WALs) Tritton Resources holds to obtain water from the Macquarie and Cudgegong Regulated Rivers Water Source of the Water Sharing Plan of the same name. There is also a single WAL to obtain water from the Lower Bogan Unregulated River Water Source of the Water Sharing Plan for the Macquarie Bogan Unregulated and Alluvial Water Sources 2012. The details of these licences are as follows:

1. High Security Licence, licence number 9374 (705 Unit Shares);
2. General Security Licence, licence number 9375 (210 Unit Shares); and
3. Supplementary Licence, licence number 9940 (16 Unit Shares).

The total combined allocation (for Tritton, Girilambone and North East operations) is 931 ML. It should be noted that the total allocation doesn't reflect the reduction in access imposed by drought restrictions, or the addition of temporary water purchased throughout the year. It should also be noted that the licence allocation season is 1 July to 30 June and therefore does not align with the reporting period. Approximately 623.5ML of raw water from these licences was utilised between Tritton, Girilambone and North East during the reporting period.

Other sources of water supply include:

- Pit dewatering
- Tritton surface water catchment;
- Nyngan town water supply (trucked to site for potable and ablutions);
- Bottled water provided for drinking purposes (15L bottles);
- Reclaimed water from the tailings storage facility; and
- Reticulated underground water from the underground operations.

Table 16
Water Take

Water licence #	Water sharing plan, source and management zone (as applicable)	Entitlement (FYI)	Passive take/inflows	Total pumping
9374	Macquarie and Cudgegong Regulated Rivers Water Source	705 Unit Shares	-	970ML
9375	Macquarie and Cudgegong Regulated Rivers Water Source	210 Unit Shares	-	
9940	Macquarie and Cudgegong Regulated Rivers Water Source	16 Unit Shares	-	

Tritton are currently licensed for the groundwater extraction of 30ML (WAL31090) and 304ML (WAL31041). During 2022 approximately 39ML of water was dewatered from Tritton. A total of 173.9ML was dewatered from Hartman's Pit at North East Mine Site, and the volume from the Murrawombie pit is unknown.

Water infrastructure at Tritton is displayed on **Figures 2 and 6**.

Stored water capacities have been provided in **Table 9**. A number of water storages are directly used for operational purposes and are therefore maintained at specific levels. These storages include:

- TSW08 – Environmental Pond
- TWS04 – Tritton Raw water dam
- TWS09 – Process Water Pond
- GSW03 – Girilambone Raw Water Dam

Tritton also has a number of fluctuating water storage structures which are not direct operational structures and are therefore particularly influenced by natural occurrences such as rainfall, catchment runoff and evaporation. These storages include:

- TSW01 – Tritton Containment Dam
- TSW02 – Decant Water Pond
- TSW03 - Seepage Trench

7.2 Erosion and Sediment Control

Mining activities can generate exposed soil formations such as stockpiles, waste rock emplacements, drains, and roads. Interaction with water in the form of rain or runoff and wind can lead to sediment loss and erosion. Locations at Tritton that are susceptible to erosion include the topsoil and subsoil stockpiles, dam walls and drains.

An Erosion and Sediment Control Plan was prepared in 2015 which establishes a number of best management practices that have been implemented at the Mine Site. The plan addresses construction, rehab, monitoring, and self-auditing.

7.2.1 Environmental Management

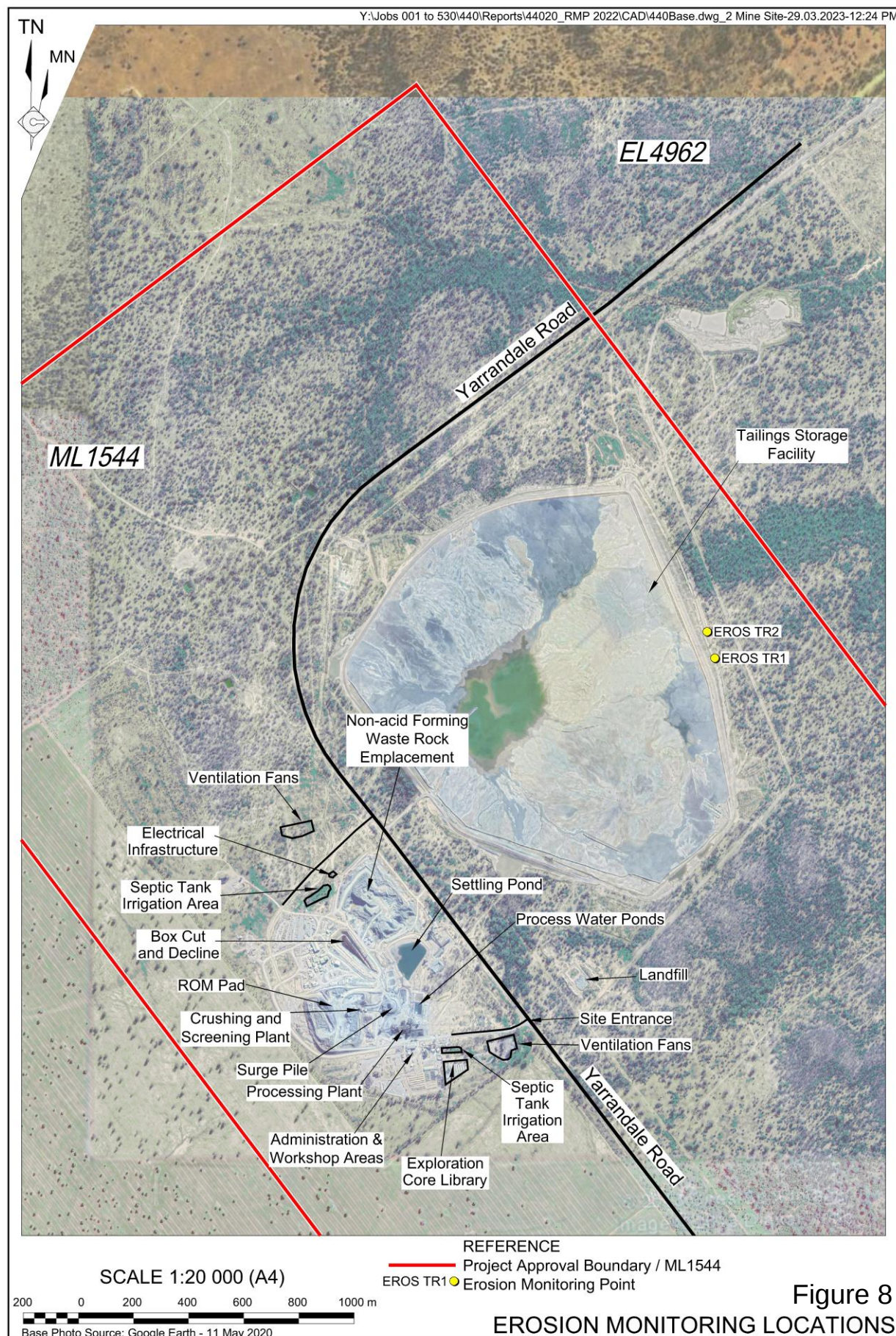
Soil resources need to be managed to ensure soils are not eroded in their natural or stockpiled state so it is available for rehabilitation of disturbed mining areas. The objectives of good erosion and sediment control practices are:

- To minimise the impact of construction and operational activities on erosion and the sedimentation of disturbed land, watercourses and water bodies;
- To minimise the loss of topsoil from areas disturbed by mining activities;
- Disturbance is restricted to those areas identified in the MOP;
- Surface water discharges from disturbed areas are captured by sediment control systems;
- There is no increase in erosion / sediment deposition in downstream watercourses; and
- The water quality in downstream watercourses and water bodies is not negatively impacted by Tritton's operations.

To meet the above objectives, on-going erosion and sediment control activities include:

- Inspection and replacement of sediment fencing and straw bales as required;
- Inspection and re-shaping/reinstatement/upgrading of temporary sediment control structures;
- Replanting of underperforming revegetation areas;
- Fauna and pest control;
- Track maintenance; and
- Rehabilitation trial areas.

Monitoring of erosion is undertaken annually. The method involves taking hand held GPS geo-reference information and photos with relevant photo-scaling and/or transect dimension information (depending on the extent of erosion), to gather data, assess condition and identify areas of maintenance improvements. It also involves measuring the distance from a fixed metal band extended between two pegs to the surface of a rill or erosion feature to establish an erosion profile of risk areas. If observed erosion within rehabilitation monitoring sites is more than 30% greater than at analogue monitoring sites, remediation works will commence. The location of each monitoring point is shown in **Figure 8**.



7.2.2 Environmental Performance

Erosion and sediment control monitoring conducted during 2022 was primarily concerned with the TSF embankment wall rehabilitation areas. Tritton have established three transect dimension monitoring points, two on the TSF embankment wall and one on an analogue site within the mine lease. Cross sections of each of the monitoring points are provided in Cross Section Graphs 1-3.

Improved rainfall in the reporting period resulted in the improved plant growth on the TSF embankments providing greater ground cover and soil protection.

The depth and width data at EROSTR001 and EROSTR002 is consistent with the previous reporting period. The analogue site results are stable, the most significant change being a decrease in depth of 10mm. EROSTR001 saw no changes in depth of more than 5mm. The most significant change at EROSTR002 was an increase in depth of 10mm. The results are in line with the expectations of less than 30% change.

7.2.3 Reportable Incidents

No incidents were recorded during the reporting period.

7.2.4 Further Improvements

Erosion and Sediment controls at the Tritton Copper Mine during 2023 will continue to be undertaken as per the existing management procedures.

7.3 Surface Water

Mining operations have the potential to impact upon surrounding surface water catchments. A range of geological and process substances are utilised by the operation which can lead to surface water contamination. However, as a site with no off site water discharge capability this potential is limited to water storage failure or overtopping. Water collected in water storages across the site is therefore monitored to enable effective management of both water resources and the surrounding landscape in case of an incident.

7.3.1 Environmental Management

Tritton aims to reduce the level of impact associated with mining operations on the surrounding surface water by putting in place the following controls:

- Implementation of the Tritton Water Management Plan;
- Implementation of the Erosion and Sediment Control Plan;
- Diversion channels to deflect unnecessary rainfall runoff from surrounding undisturbed catchments entering mine affected areas;

- Management and separation of contaminated and dirty water;
- Site-wide management and bunding of chemicals and hydrocarbons to reduce/eliminate secondary sources of potential water contamination;
- Surface water sampling to assess water quality and identify areas of improvement.

Surface water monitoring is conducted regularly in order to comply with conditions set in the site development approvals and to continuously determine the effectiveness of the Water Management Plan, associated mitigation measures and suitability to Australia and New Zealand Environment Conservation Council (ANZECC) criteria.

Table 17 identifies the surface monitoring locations, water storage classifications and associated sampling schedule.

Surface water samples are sent via courier under Chain of Custody to Australian Laboratory Services (ALS Environmental) in Sydney for analysis. The ALS lab uses National Association of Testing Authorities (NATA) accredited methods to carry out analysis of all water samples collected. All results are compared to the following criteria/guidelines:

- ANZECC - Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000) Volume 1 Chapter 4 Primary Industries Livestock Drinking Water Guidelines; and
- ANZECC - Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000) Volume 1 Chapter 4 Primary Industries Irrigation and General Use Water Guidelines.

These guidelines will be referenced in the remainder of the document as “selected criteria” ANZECC (stock) and/or ANZECC (irrigation).

7.3.2 Environmental Performance

Tritton Surface water analytical results have been summarised in Appendix Table 1. The following presents a description of the relevant trigger values used for analysis of the results, as well as a summary of the environmental performance by water storage.

Relevant Trigger Levels

Tritton Resources notes that clean water storages surrounding the Tritton Copper Mine, namely TSW08 – Environmental Pond, may on occasion be used by travelling stock or wildlife. As a result, it has selected the ANZECC Livestock Drinking Water trigger values for cattle (the most likely stock to drink the water) as relevant criteria for these storages. However, as livestock access to contaminated storages is restricted and as these storages offer poor habitat for wildlife, no criteria have been selected for these storages. Rather, significant deviations from previous results are investigated.

Table 17
Surface Water Monitoring Schedule

Water Facility Classification*1	Monitoring Identification	Function and Description	Sampling Frequency	Analytical Suite	Beneficial Use*2
Clean	TSW04	Tritton Raw Water Dam is the main receptacle for river water via the Girilambone Raw Water Dam (GSW03). It is located next to the processing pond, on the northern side of the processing plant. It has no surrounding catchment; it is lined with High-Density Polyethylene (HDPE) liner and regulated with pumps. The intended final land use for the site is agricultural and this water is utilised for dust suppression. The analytes in the water have the potential to build up in the soil, therefore a conservative approach is used by comparing this water quality to that of the irrigation guidelines.	Monthly	- pH - Electrical Conductivity - Total Dissolved Solids Anions: Bicarbonate, Chloride, Nitrate, Nitrite, Sulphate Cations: Calcium, Magnesium, Potassium, Sodium Metals: Antimony, Arsenic, Cadmium, Chromium, Copper, Iron, Manganese, Mercury, Nickel, Lead, Vanadium	Stock & Irrigation
	TSW08	Environmental Pond is a requirement of Tritton's DA 41/98 as an alternative water source to that of the tailings dam for fauna. It is situated on the Travelling Stock Reserve and is utilised as a watering dam for any stock on this route. For these reasons it was compared against the stock drinking guidelines. The water is primarily rain water and when the levels drop site operating conditions require it be filled with water which is sourced from the Tritton raw water line.			Stock & Irrigation
Contaminated	TSW01	Tritton Containment Dam is located down topographic gradient to the east of major mining activity. It is designed to catch all contaminated water from the Mine Site. This includes the run of mine (ROM) pad, the coarse ore stockpile (COS), copper concentrate load out area and the processing plant all of which contain ore. Elevated Total Dissolved Solid (TDS) and Sulphate (SO ₄) levels along with cadmium and copper are expected to be a direct result of contamination collected by surface water runoff within the catchment area. TSW01 is lined to contain seepage and was designed to capture all runoff from areas disturbed by mining and possibly contaminated.			None – Industrial
	TSW02	Decant Water collects all the water which is separated from the tailings. This area replaces the former decant trench which was backfilled and compacted in 2008 due to likely groundwater impact via seepage.			None – Industrial
	TSW03	Seepage trench is designed to collect any seepage that may occur from the TSF main embankment.			None – Industrial
	TSW09	Process Water Pond collects discharge water from the processing plant and return water from the Tailings decant (TSW02) and is lined with a HDPE liner. The process water pond is located next to the TSW04 (Raw water pond). It receives water which is pumped directly out of the processing plant and TSW02 (decant water). This water storage has no surrounding catchment.			None – Industrial
	TSW10	Return water from Underground. Groundwater intercepted by underground operations is pumped to the surface and stored in TSW10 as part of the reticulation system. In the event of potential overflow, pipework enables water to be sent to either the TSF or drainage channels enable waters to flow into TSW01 Tritton containment dam.			None – Industrial

*1 As per I&I NSW classification EDG03 – Guidelines to the Mining, Rehabilitation and Environmental Management Process, NSW DPI, January 2006.

*2 As per ANZECC (stock) and ANZECC (irrigation) guideline definitions.

Clean Water Storages

TSW04 Raw Water Pond

Results indicate elevated copper levels with an average of 2.94 mg/L, the highest recorded in December at 23.50 mg/L. These values are expected due to the deliberate mixing of raw water with pit water from the Murrawombie operation.

TSW08 Environmental Pond

Water within the Environmental Pond was within the relevant trigger values. This pond receives water from the raw water pipeline from the Bogan River, with limited potential for mining-related contamination. The pH of the Environmental Pond was more acidic in April, measuring 4.0.

Contaminated Water Storages

Waters within contaminated water storages at Tritton are used for processing ore only and are collected and recycled through the process plant. Though these waters are not suitable for stock watering or irrigation, they are of a quality which is acceptable for use within mine processing. Water from contaminated water storages is not discharged off site and is therefore not a threat to the surrounding environment.

Selected assessment criteria is not necessarily required for the following water storage facilities as the contained water is either evaporated or returned to the processing circuit and not discharged from the Mine. However, selected criteria have been applied with the intention of defining environmental risk and the degree of harm associated with a potential spill.

TSW01 Containment Dam 1

A review of the results against the selected criteria shows concentrations of a range of parameters to be of a level not suitable for either stock or irrigation purposes. However, this water is used for ore processing only and is not released from site for either stock watering or irrigation. pH, cadmium, copper, and sulphate all exceeded guideline values during the year at this location.

TSW02 Decant Water

A review of the results against the selected criteria shows concentrations of a range of parameters to be of a level not suitable for either stock or irrigation purposes. However, this water is used for ore processing only and is not released from site for either stock watering or irrigation. Water within the Tailings Storage Facility typically had a low pH, elevated levels of cadmium, cobalt, copper, conductivity, sulphate, and total dissolved solids. December recorded a high level of lead at 0.202mg/L, exceeding the guideline level of 0.1mg/L.

TSW03 Seepage Trench

Three samples were taken from this location during the reporting period. Water within the seepage trench had a low pH, elevated levels of sulphate, EC and total dissolved solids.

TSW09 Process Water Pond

This pond collects discharge water from the processing plant and tailings storage facility and is therefore expected to be of a similar poor quality to the tailings facility. This storage recorded low pH levels, and elevated conductivity, sulphate, and total dissolved solid levels throughout the year.

TSW10 Return water from Underground

Groundwater that is intercepted by underground operations and used by the underground operations is pumped to the surface and used for processing, sent to the Tailings Storage Facility for evaporation and/or is stored in the Containment Dam (TSW01), or utilised by the mill for processing. As a result, the conductivity, sulphate and total dissolved solids concentrations of the water during 2022 were elevated.

TSW11 Tritton Paste Plant Pond

This pond is located adjacent to the Paste Plant and is designed to capture water runoff from the WRE and immediate operating area of the Paste Fill Plant. A review of the results against the selected criteria shows elevated concentrations of copper and sulphate, and low pH. The water is therefore not suitable for either stock or irrigation purposes. This water is pumped into the containment dam and then used for processing purposes only and is not released from the Mine Site.

7.3.3 Reportable Incidents

No reportable surface water quality incidents occurred during the reporting period.

7.3.4 Further Improvements

Surface water management at the Tritton Copper Mine during 2023 will continue to be undertaken as per the existing management procedures. In 2019 Tritton engaged an Environmental Consult to conduct a site wide water monitoring data and procedure review. Recommendations were made to reduce monitoring frequency at a number of locations. These recommendations have not yet been implemented; however, it is anticipated monitoring frequencies will change following approval of a revised Water Management Plan.

Tritton will continue to adopt an adaptive management approach to surface water management, with ongoing inspections and monitoring of surface water results to ensure that the monitoring program is efficient and meets the needs of legislation and operational requirements. The results of these inspections and monitoring will be reviewed on receipt and, in the event anomalous results are observed or received, the reason for those results will be investigated and measures implemented to ensure the potential for adverse surface water impacts are minimised.

7.4 Groundwater

Mining operations have the potential to impact upon the regional groundwater. These potential impacts can be from extraction of groundwater to enable safe and efficient underground mining activities or via seepage of contaminated surface waters to underground aquifers. To ensure that any impact on groundwater resources is identified and managed, regular monitoring is undertaken. This section describes the results of that monitoring for 2022.

7.4.1 Environmental Management

To determine the potential impact on groundwater from operational activities, groundwater monitoring is undertaken. **Table 18** defines the frequency of sampling, the type of analysis undertaken and any associated conditional requirements. **Figure 9** identifies the monitoring locations.

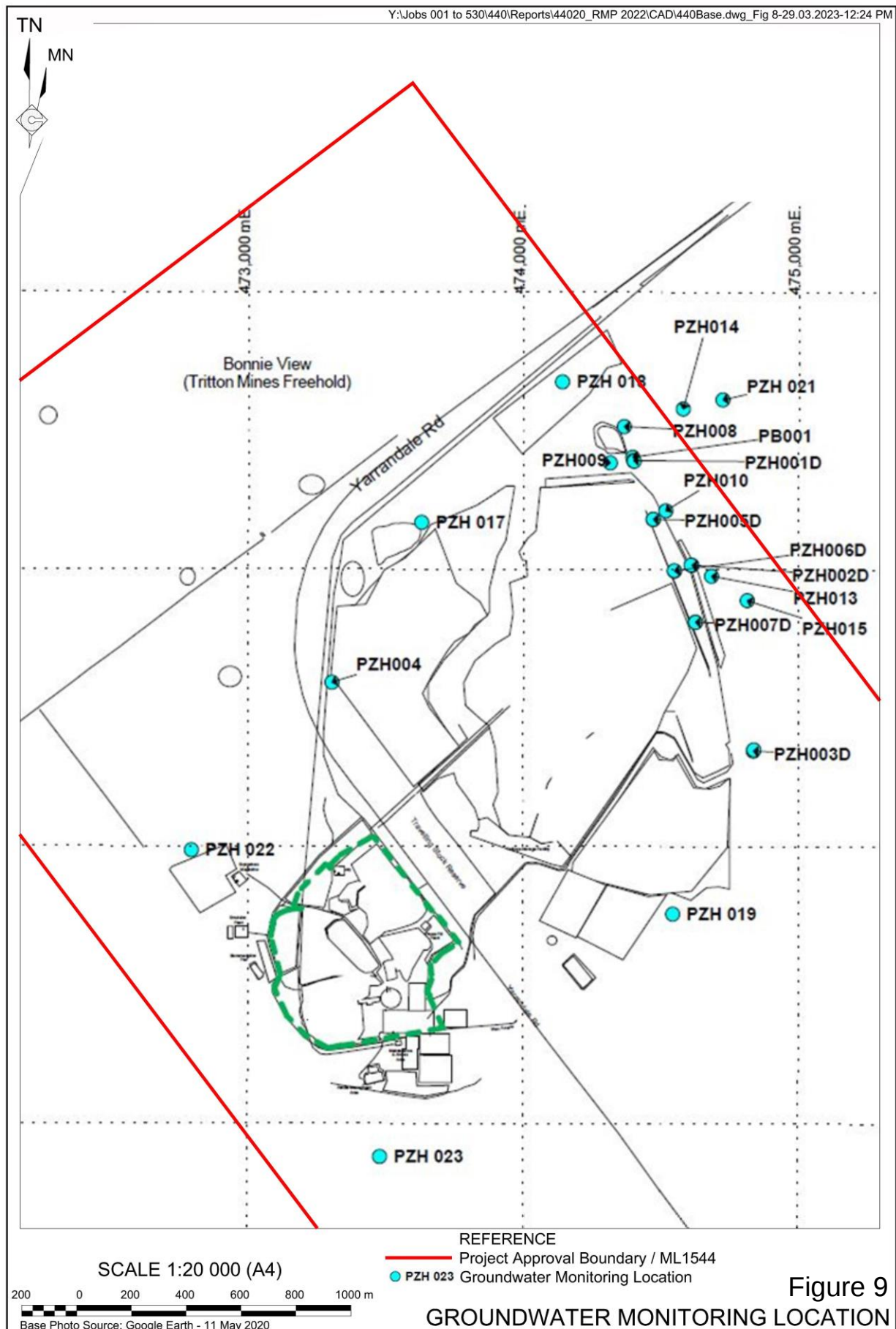
Groundwater sampling is undertaken in accordance with Groundwater Sampling Guidelines, EPA June 2000 utilising low flow purging and bailing techniques. All equipment is decontaminated to prevent cross-contamination and samples are chilled for storage and transportation.

Table 18
Monthly Groundwater Monitoring Schedule

Groundwater Monitoring Point	Analysis requirements	Purpose
PZH001-PZH012, PZH014 – PZH015 and PZH017-PZH023	Arsenic, Barium, Beryllium, Cadmium, Chloride, Chromium, Cobalt, Conductivity, Copper, Iron, Lead, Manganese, Mercury, Nickel, Standing water level, Sulphate, Vanadium, Zinc, pH.	Potential impacts associated with TSF leachate.
PB001	No analysis is required however SWL's are recorded when access is available. A pump & float trigger regulate water levels at this pump. This pump has now been removed as per the RAP recommendations.	
PZH001S, 2S, 3S, 5S, 6S, 7S,	No data collected for 2022 as bores were dry.	
Tip 1 - 2	Bores were dry throughout 2022	Potential landfill leachate.

7.4.2 Environmental Performance

An investigation was commenced in 2012 to clarify potential groundwater impacts underlying the tailings storage facility. This investigation was initiated by the Environmental Protection Authority (EPA) and was required as a Remedial Action Plan “RAP” under the Tritton Environmental Protection Licence. During 2013 the RAP was developed and submitted to the EPA. The objective of the RAP was to assess possible groundwater contamination with the aim of ensuring that the Mine Site is suitable for ongoing mining land use and the historical Mine Site activities do not pose an unacceptable risk to human health or the environment in accordance with the Contaminated Land Management Act 1997.



The RAP concluded that whilst there have been changes in standing water levels within the groundwater monitoring bores, there was no evidence of groundwater contamination identified on the site. It also concluded that these changes are attributable to the pressure of the TSF contents compressing the aquifer and do not represent leakage of the TSF to the groundwater system.

On 14 July 2014 the EPA concurred with the findings of the Tailings Storage Facility RAP. Following this, the dewatering of PB001 has ceased and the closure of bores PZH011 Deep and Short, PZH012 and PB002 were undertaken as per the RAP recommendations.

Groundwater analytical results have been summarised in Appendix Table 2. The following is a summary of the groundwater monitoring program against applicable criteria. Monitoring locations are depicted on **Figure 9**. Groundwater results were also compared to the ANZECC guidelines for stock watering and irrigation.

It should be noted that all background groundwater exceeds the guidelines for conductivity, Sulphate and Total Dissolved Solids and there is no beneficial use currently for groundwater at or near the Mine Site.

Water Quality

The results of the routine water quality sampling undertaken throughout the reporting period is summarised below.

pH remained stable for all of the monitoring bores throughout Tritton (pH 7.27 – 8.23). Conductivity, Sulphate and Total Dissolved Solid levels, though constant for the year at each location, were generally above the selected criteria. These variations are considered normal for a mine such as the Tritton Copper Mine and represent historical results.

The landfill monitoring piezometers (Tip 1 and Tip 2) were installed to detect and assess potential landfill leachate. These bores have remained dry since installation. The dry conditions do suggest the absence of leachate.

Standing Water Levels

The Tritton piezometers generally recorded stable SWL readings (**Table 19**). There is a common theme amongst all piezometers, where the SWL decreases towards the end of the year.

Ground Water Pumping

Subsequent to the Tritton Tailings Storage Facility RAP acceptance by the EPA, the pump at the dewatering bore (PB001) was removed from the well as to reduce the waste of the site groundwater resource and water licence capacity, and unnecessary load to the TSF as the receiving body of pumped water.

7.4.3 Reportable Incidents

No reportable incidents occurred during the reporting period.

Table 19
Groundwater Average Standing Water Levels (mRL)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
PZH001		8.91			8.75			8.33			8.04	
PZH002		30.37			30.17			28.49			25.42	
PZH003		60.93			60.15			59.15			58.72	
PZH005		14.02			13.89			13.19			8.59	
PZH006		37.85			38.04			37.52			31.59	
PZH007			42.44			42.56			40.71			35.11
PZH008			17.2			17.39			15.28			14.97
PZH009			12.95			12.95			11.21			10.74
PZH013			39.54			36.55			36.59			36.59
PZH014			46.37			46.49			42.94			42.57
PZH015			50.38			50.49			48.91			48.62
PZH017	43.07			42.21			42.42			39.96		
PZH018	20.68			18.71			16.71			13.74		
PZH019	93.91			93.54			93.59			92.07		
PZH020	73.34			72.96			73.03			71.03		
PZH021	48.35			48.03			48.16			44.94		

* An excel spread sheet of the 2022 data is available upon request

7.4.4 Further Improvements

During a previous reporting period Tritton engaged an Environmental Consult to conduct a monitoring data and procedure review. The report indicated many of the monitoring locations were stable and the monitoring frequency could be significantly reduced. An updated monitoring program is presented in the Water Management Plan

Tritton will continue to adopt an adaptive management approach to groundwater management, with ongoing inspections and monitoring of groundwater results to ensure that the monitoring program is efficient and meets the needs of legislation and operational requirements.

8. Rehabilitation

8.1 Buildings

No rehabilitation of existing building areas occurred during 2022. The existing buildings will be rehabilitated as part of mine closure.

8.2 Rehabilitation of Disturbed Land

A summary of the disturbed areas is provided in **Table 20**.

Table 20
Rehabilitation Summary

Area	To Date (ha)	2022 (ha)	2023 (estimate) (ha)
Mine Lease Area			
ML 1544	1400		
Disturbed Areas			
Infrastructure	21.5	0	0
Active Mining Area	1.6	0	0
Waste Emplacements (Active)	6	0	0
Tailings Emplacements	152.7	0	0
Shaped Waste Emplacements	N/A	0	0
All Disturbed Areas (includes diversion drains)	216.2	0	0
Rehabilitation Progress			
Total Rehabilitation Area	2.8	0	
Rehabilitation on Slopes			
10 to 18 degrees	0	0	0
Greater than 18 degrees	3.8	0.0	0.0
Surface of Rehabilitated Land			
Pasture and grasses	3.8	0.0	0.0
Native Forest/Ecosystem	0	0	0
Plantations and crops	0	0	0

All areas of the Mine Site are still being actively used as part of the operation.

Areas listed on the Tritton Contaminated Lands Register, such as the Tailings Storage Facility (TSF), Waste Rock Emplacement and processing hardstand, will be rehabilitated progressively where available and/or at mine closure.

In the reporting period Tritton hydroseeded 10,000m² of the Northern TSF embankment. Tritton modified its hydroseeding approach to that completed in 2018 based on advice from its restoration ecologist in 2020. The modifications included maintaining dozer rip lines following soil amelioration (addition of gypsum) and trial the addition of biological resources. It is anticipated that maintaining the rip lines and the addition of retained timber logs will accelerate ecological function and stability.

The hydroseeding in 2022 was a trial and given favourable climatic conditions Tritton intend to replicate this approach on approximately 80,000m² of the main embankment during 2023.

Table 21 provides a summary of the maintenance activities undertaken on rehabilitated land during the reporting period.

Table 21
Maintenance Activities on Rehabilitated Land

Nature of Treatment	Area Treated (ha)		Comment /Control Strategies/Treatment Details
	Report period	Next period	
Additional erosion control works	>0.1	To be determined	
Re-covering	0.0	0.0	
Soil treatment	0.0	To be determined	Tritton will continue to treat contaminated soil within the bioremediation facility
Treatment/Management	0	0	
Re-seeding/Replanting	1	8	A trial occurred in the reporting period, and will expand in the 2023 reporting period.
Adversely affected by weeds	>0.01	To be determined	Areas of weed infestation are sprayed with herbicide or physically removed.
Feral animal control	N/A	0	Aerial shooting on Tritton owned properties adjacent to the mining lease

8.3 Other Infrastructure

Rehabilitation of any currently existing infrastructure was not undertaken during the reporting period. All current infrastructures are in use and at this time are expected to remain in use until mine closure.

8.4 Rehabilitation Trials and Research

8.4.1 TSF Feasibility Assessment

In 2020 a feasibility assessment for future tailings storage at the Tritton site was conducted. The study examined the feasibility of further raising of the TSF embankments above the current approved design level. The results of the feasibility assessment indicated that with strict water management procedures additional embankment lifts are possible.

Further work in future phases of the design review will involve:

- Prior to raising TD1 from RL272 m to RL278 m, additional CPT investigations to confirm the tailings strength parameters in key sections of the facility.

- Further detailed hydraulic analyses for the dam break study to examine flow paths towards the plant in particular.
- A detailed design for raising of the TSF in accordance with the new NSW Dam Safety act.

8.5 Rehabilitation Forward Program

The Forward Program describes the planned rehabilitation activities during the “Forward Program Period” which includes the period from 1 January 2023 to 31 December 2025.

Table 22 summarises the rehabilitation research that is intended to be completed during the Forward Program Period.

Table 22
Rehabilitation Planning Schedule

Year	Studies
2023	Undertake Rehabilitation Ecological Monitoring. Commence preparation of a concept design of TSF cover and final landform. Other studies to assist in preparation for mine closure will commence including the Seed Balance and Procurement Strategy (completed by end 2023) and Post Closure Water Management Strategy (completed by end 2025).
2024	Continue to undertake studies to inform closure plans including preparation of a Post Closure Water Management Strategy (completed by end 2025) and concept design of TSF cover and landform (completed by end 2024).
2025	Commence Landform Evolution Modelling once the final TSF cover has been designed. Continue to undertake studies to inform closure plans including the Post Closure Water Management Strategy.

8.6 Rehabilitation Risk Assessment

In accordance with Clause 7 of Schedule 8A the *Mining Regulations 2016*, a Rehabilitation Risk Assessment for the Mine was prepared during December 2021. Further information on the outcomes of the Rehabilitation Risk Assessment are presented as part of the *Rehabilitation Management Plan* (RWC, 2023).

The current version of the Rehabilitation Risk Assessment is Version 4.0.

No hazards or incidences were identified or occurred within the Mine Site during the reporting period that required further review of the Rehabilitation Risk Assessment.

9. Community

9.1 Environmental Complaints

No complaints were received during this reporting period.

9.2 Community Liaison

As a major employer to the local community, Tritton Resources has continued to provide employment to the local community either directly, via engagement of local sub-contractors from Nyngan, Hermidale and Girilambone townships or by prioritising sourcing of required materials from local businesses.

Statistical information gathered by Tritton Resources recorded a total workforce of 411 staff at year end 2022. Of the 411 staff, 72% are residential and contribute to the community of Nyngan whilst 28% are staff that travel from elsewhere and reside locally during their rostered working period. Tritton Mines has been actively working towards increasing “local region” employment and believes this is one of the best ways the business can contribute to the community. Employment within the local region has increased from 50% in 2012 to 72% currently and Tritton Mines is now contributing more than four million dollars per month in salary and wages to the local regions of Nyngan, Hermidale and Girilambone.

Tritton Resources is dedicated to supporting the local community by working with local business and Australian owned suppliers where possible. Currently 99% of Tritton Resources suppliers are Australian businesses, and 50% of them are based in NSW. This equates to Tritton Resources spending \$10.1 Million with local and regional suppliers and \$77.9 Million with NSW suppliers.

Tritton Resources provided in kind and financial donations to a number of local charities, groups and individuals throughout 2022.

Community groups included; Bogan Shire Council, Nyngan Amateur Swimming Club, Nyngan Golf Club, Nyngan High School, Hermidale Gymkhana, and Cobar Show Society.

Tritton’s General Manager and Environmental Superintendent attended the Nyngan Community Consultative Committee meeting in December

The committee was established with the local Council, Land Councils and local community representatives to provide updates and information on Tritton Mines operation.

10. Independent Audit

The previous independent environmental audit of the Mine Site was undertaken in 2018 and in accordance with Condition 8 of Schedule 2 of DA 41/98.

The audit undertaken in 2021 covered the period from 1 December 2018 to 9 December 2021. The audit identified a total of 11 non-compliances and 4 administrative non-compliances.

Table 23 provide a summary of the non-compliances identified.

Table 23
Summary of Statutory Compliance from Independent Environment Audit

Approval / Licence	Compliant	Non- Compliant	Administrative Non- compliance	Not Verified	Observation	Noted	Not Applicable or Not Triggered
Consolidated Consent (DA 41/98)	51	9	3	1	3	7	25
EPL No. 11254	33	2	0	0	3	8	11
Mining Lease 1544	19	0	1	0	3	12	15
Total	102	11	4	1	9	27	52

Table 24 provides a summary of the matters identified and the status of Tritton Resources response to the identified issue.

The next Independent Environmental Audit will occur in late 2024.

Table 24
Summary of Non-Compliances and Corrective Actions

Page 1 of 3

NC Identifier	Condition	Non-Compliance	Corrective Action	Response	Status
1	DA 48 EPL O3.1	Dust release was observed during site inspection from heavy vehicle movement in the mine operational area. Dust management measures (water cart) was not observed on site.	Operate water cart during truck movements around site. If the truck is under maintenance, have adequate back up plan implemented.	Whilst unplanned maintenance limited water cart availability during the site inspection a water cart was in operation during the audit period despite not being sited by the auditors. Tritton will develop a Trigger Action Response Plan (TARP) to ensure appropriate dust management measures are implemented in the event of a breakdown and unplanned maintenance	Trigger Action Response Plan completed
2	ML 28	Mine Closure Plan has not been revised/updated as per gap analysis. Previous IEA (2018) had raised an observation to update MCP to refer to the correct Strategic Framework for MCP as required.	Update the Mine Closure Plan referring to the correct requirements and addressing the gap analysis by Okane.	The Mine Closure Plan (MCP) gap analysis was completed March 2021. Following completion of the MCP gap analysis an action plan and schedule was completed May 2021.	As of 2022, the amended standard conditions for mines means that the Aeris Resources Mining Leases no longer require preparation of a Mining Closure Plan. This has been replaced with a Rehabilitation Management and Forward Program.
3	DA 1(ii) DA 8	A number of non-compliances were raised in the 2018 IEA and in this report. This NC will be closed out when other NCs are closed out.	Include a clear timeline and measures of progress for all responses to audit recommendations to review at subsequent IEA. In the Tritton response document, discuss progress made in implementing the Action Plan developed as an outcome of the most recent Independent Audit. Discuss progress made in implementing the Action Plan in section 10 of future Annual Review.	Noted.	Clear timeline has been prepared. Tritton Resources are currently continuing to work through previous non-compliances. - Land Management Plan and Flora and Fauna Management Plans completed. - TMP has been revised multiple times since the 2018 audit. It is ready to be sent out for consultation. - The Environmental Management Plan has been updated. Correspondence log for past consultation is being looked into. - A spreadsheet register of management plans is to be developed. - Waste Management Plan has been reviewed and revised. - The TSF Manual is still pending revision. - Pre-start procedure has been completed. - AS aforementioned, Waste Management Plan has been reviewed and revised. - Noise and Vibration Management Plan has been completed. - A Rehabilitation Management Plan is currently under preparation. - The Environmental Management Plan addresses the Preliminary Hazard Analysis. The outcomes from the Final Hazard Analysis will be considered in future. - The revised Landscape Management Plan has been issued to council. - Tritton Resources sought advice from OEH Nyngan Catchment Advisory Officer. - The Traffic Management Plan was updated to include access details. - The Aeris Resources / Tritton Mine website clearly indicates the public complaints number. - The Resource Regulator advised they no longer make endorsements such as the condition requests.

Table 23 (Cont'd)
Summary of Non-Compliances and Corrective Actions

Page 2 of 3

NC Identifier	Condition	Non-Compliance	Corrective Action	Response	Status
4	DA 5 (v)	The authority and independence required in this condition is not clearly stated in the EMP (section 2) or the Position Description of Environmental Coordinator. EMP is not clear about stop work authorities.	Review and update the Framework EMP to reflect current position titles and position descriptions. Review and update Framework EMP to make sure the nominated personnel have adequate authority.	Tritton will implement this recommendation.	Text has been amended in most recent management plan updates.
5	DA 6(iii)	Consultation with RMS on updated Traffic Management Plan not sighted.	Provide evidence of consultation with RMS for Traffic Management Plan update.	Tritton will implement this recommendation.	Tritton has sought consultation with Transport for NSW (previously RMS).
6	DA 6(v)	Consultation with EPA on 2015 Dust Management Plan not sighted. This plan is overdue for review (biennially)	Provide evidence of consultation with EPA in preparing the DMP. Review and update DMP as required, in consultation with EPA.	Tritton will review and update the DMP in consultation with the EPA.	Draft DMP is in process of being prepared.
7	DA 6(ix)	No specific reference to the Preliminary Hazard Analysis was found in the Framework EMP and sub-plans. The 2018 IEA had raised an observation to address this in next revision of the plans.	Review all strategies, plans and programs within 3 months of this audit report.	Tritton will implement this recommendation.	The current Environmental Management Plan includes the Preliminary Hazard Analysis. Findings of the Final Hazard Analysis will be added to an updated Environmental Management Plan that is due to be submitted in April 2023.
	DA 6B	The EMP has not been reviewed within 3 months of submission of previous audit report or after modification of DA.	Ensure Preliminary Hazard Analysis recommendations are addressed in the next revision of the Framework EMP and sub-plans.	Tritton will implement this recommendation.	All environmental management plans have been recently reviewed and are currently at various stages of consultation and approval by DPE.
8	DA 23	TSF OMM: Specific requirements on chemicals and reagents are not addressed in the updated version. Evidence of consultation in this regard with RR and EPA not sighted.	Update Tailings Dam1 OMM Manual to address requirements of condition 23 including consultation with regulators.	Tritton will update the TSF OMM to reflect the recommendation and seek consultation with the EPA and RR.	Tailings Dam 1 OMM Manual is being reviewed.
9	DA 37A	Evidence of consultation with Council not sighted in preparing Drivers' code of conduct.	Provide evidence of consultation with Council in preparing the Drivers' Code of Conduct.	Tritton will provide Council with the Drivers' Code of Conduct and seek feedback.	Tritton Resources provided Council with the Drivers' Code of Conduct.
10	DA 52	Final hazard analysis was not available to verify.	Prepare a final hazard analysis as per HIPAP No 6.	Tritton will use the frameworks outlined in HIPAP No.6, site operational data and experience to prepare a hazard analysis as per HIPAP No 6. The following components would apply; 1. Hazard Identification as per Section 4 2. Consequence Analysis as per Section 5 and Appendix 2 3.The Hazard Analysis Report as per Section 9.	Final Hazard Analysis has been drafted.
11	DA 53 (a)	Emergency Management Plan does not specifically refer to the HIPAP No1 or the preliminary hazard analysis as required in this condition.	Update Emergency Plan as per HIPAP No 1 and Preliminary Hazard Analysis.	Tritton will conduct a gap analysis using the current Emergency Plan and HIPAP No.1. Following the gap analysis an action plan and schedule will be developed and implemented to satisfy this condition.	Update of the Emergency Management Plan is ongoing.
12	DA 53 (b)	Safety Management System documentation does not specifically refer to the HIPAP No9 or the preliminary hazard analysis as required in this condition.	Update HSEMS policies and SMS/HS&EMS as per the HIPAP No9 and Preliminary Hazard Analysis	Tritton will review the SMS and identify links to elements listed in HIPAP No. 9. A gap analysis will then be conducted and a subsequent action plan and schedule developed and implemented.	Update of the Safety Management System documentation is ongoing.

Table 23 (Cont'd)
Summary of Non-Compliances and Corrective Actions

Page 3 of 3

NC Identifier	Condition	Non-Compliance	Corrective Action	Response	Status
13 14 15	EPL O4.4	This audit found some containers to be placed without proper bunding or labelling (see Appendix D of this report). The drainage pit and pump in a bunded area near the maintenance yard was found to be inoperable. Ground contamination was noted in storage yard that appeared to be from contaminated water. A diesel tank was spotted near TSF for stormwater dewatering pump, without bunds or trays.	Store all chemical and fuel drums within bunds and ensure the bunds have adequate containment volume. Ensure containers are correctly labelled. Store waste materials with hydrocarbons in accordance with AS 1940. And ensure they are classified and disposed of in accordance with EPA Waste Classification Guidelines.	An environmental inspection program is in place to routinely inspect areas for issues such as those identified in the audit.	An Environmental Inspection Program has been prepared and is in place.

11. Incidents and Non-compliances during the Reporting Period

No non-compliances were recorded during the reporting period.

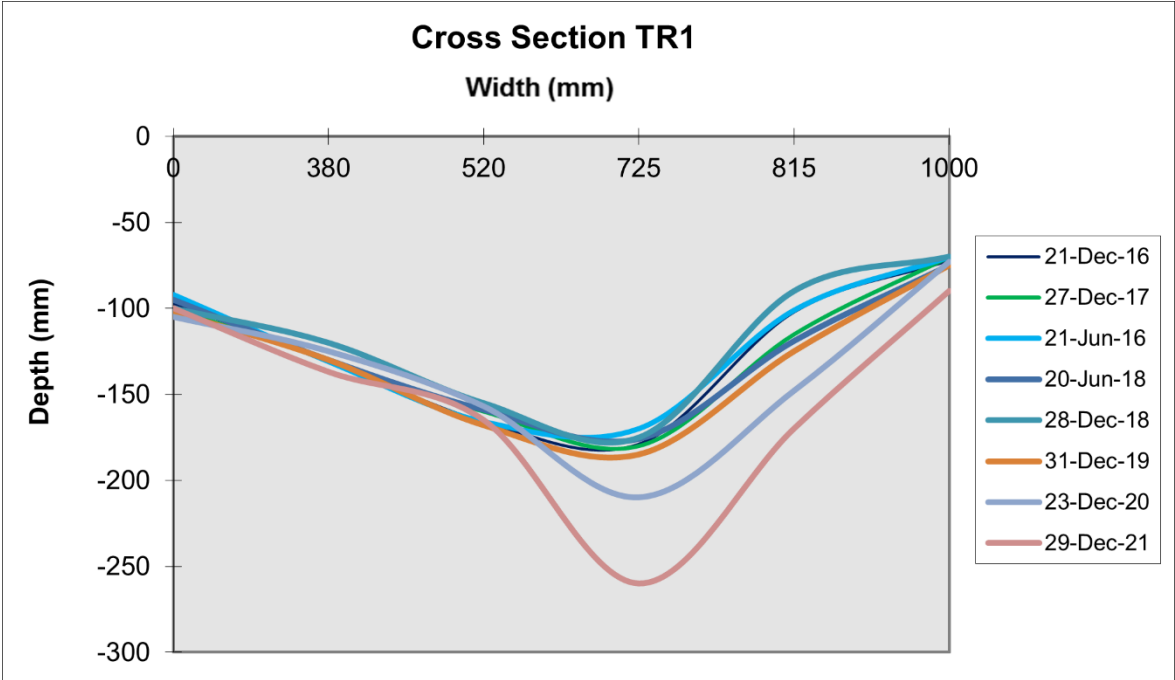
12. Activities Proposed in the Next Annual Review Period

The following mining activities are proposed to occur during the next reporting period:

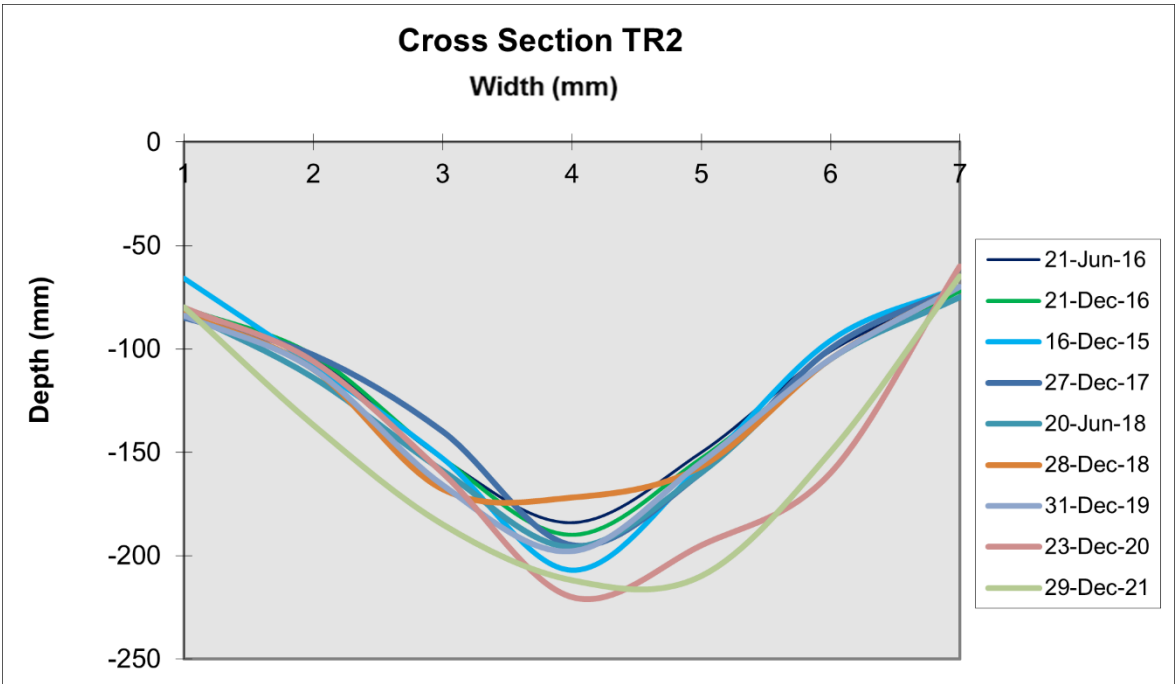
- Continuation of underground mining and ore processing activities;
- Continued monitoring of surface water, groundwater, air quality and noise emissions;
- Rehabilitation planning as described in the Forward Program.
- Revegetation of sections of the TSF Main embankment.

Erosion Cross-Section Graphs

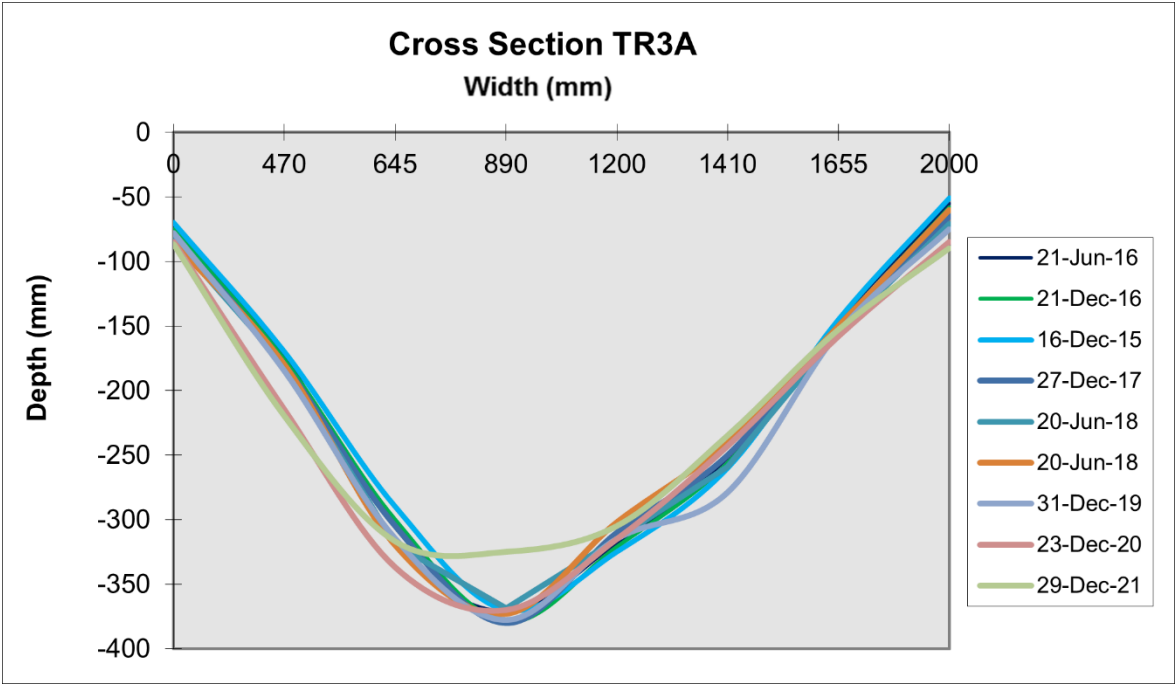
Graph 1 EROSTR001



Graph 2 EROSTR002



Graph 3 EROSTR003A



Appendix Tables

Appendix Table 1 2022 Surface Water Quality Results (mg/L)

Page 1 of 3

Date	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chloride	Chromium	Cobalt	Conductivity	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	pH	Potassium	Sodium	Sulfate as SO4	Total Dissolved Solids @180°C	Vanadium	Zinc
Stock Watering Triggers *	0.5	-	-	0.01	1000	-	1	1	6000	1	N/A	0.1	-	N/A	0.002	1	6 - 9	-	-	1000	4000	-	20
Irrigation Triggers #	2	-	0.5	0.05	-	350	1	0.1	6000	5	10	5	-	10	0.002	2	6 - 9	-	230	-	-	0.5	5
TSW01																							
5/01/2022	0.004	0.051	0.001	0.018	610.000	907.000	0.004	0.336	5830.000	4.380	5.500	0.008	101.000	1.780	0.000	0.063	3.080	34.000	453.000	2010.000	5170.000	0.010	3.780
3/02/2022	0.003	0.056	0.001	0.014	524.000	766.000	0.003	0.272	4720.000	6.570	2.880	0.005	88.000	1.440	0.000	0.045	3.810	36.000	440.000	1600.000	4250.000	0.010	2.880
14/03/2022	0.004	0.049	0.001	0.025	462.000	637.000	0.007	0.433	4870.000	14.000	9.070	0.007	94.000	2.220	0.000	0.079	3.160	30.000	385.000	1790.000	3620.000	0.010	5.580
6/04/2022	0.002	0.050	0.001	0.015	402.000	921.000	0.001	0.255	5490.000	1.680	1.950	0.002	113.000	1.460	0.000	0.048	4.200	28.000	533.000	1670.000	4300.000	0.010	3.040
10/05/2022	0.002	0.056	0.001	0.014	416.000	564.000	0.006	0.258	3640.000	7.440	5.700	0.005	66.000	1.360	0.000	0.057	3.450	26.000	354.000	1430.000	2950.000	0.010	3.800
1/06/2022	0.003	0.040	0.001	0.017	352.000	474.000	0.008	0.286	3700.000	12.600	8.810	0.005	62.000	1.430	0.000	0.065	3.500	24.000	296.000	1380.000	2760.000	0.010	4.320
6/07/2022	0.001	0.045	0.001	0.009	226.000	483.000	0.001	0.155	3180.000	4.810	0.540	0.001	73.000	0.934	0.000	0.039	3.780	18.000	305.000	954.000	2170.000	0.010	2.290
3/08/2022	0.002	0.059	0.001	0.003	330.000	545.000	0.001	0.063	3210.000	1.480	0.440	0.001	46.000	0.417	0.000	0.014	6.530	24.000	321.000	927.000	2380.000	0.010	0.625
12/09/2022	0.004	0.055	0.001	0.008	522.000	1060.000	0.003	0.154	6200.000	5.240	2.310	0.006	107.000	0.905	0.000	0.031	3.360	39.000	673.000	1830.000	4530.000	0.010	1.880
12/10/2022	0.008	0.042	0.001	0.021	409.000	699.000	0.001	0.317	4290.000	5.120	3.380	0.001	81.000	1.620	0.000	0.075	3.660	34.000	406.000	1360.000	3330.000	0.010	5.200
7/11/2022	0.001	0.110	0.001	0.010	239.000	362.000	0.001	0.138	2520.000	2.730	1.680	0.002	46.000	0.896	0.000	0.032	3.980	21.000	255.000	746.000	1740.000	0.010	2.110
7/12/2022	0.002	0.072	0.001	0.007	568.000	977.000	0.001	0.121	5920.000	1.890	1.690	0.001	87.000	1.010	0.000	0.026	4.000	41.000	587.000	1870.000	4080.000	0.010	1.280
Average	0.003	0.057	0.001	0.014	421.667	699.583	0.003	0.232	4464.167	5.662	3.663	0.004	80.333	1.289	0.000	0.048	3.876	29.583	417.333	1463.917	3440.000	0.010	3.065
TSW02																							
5/01/2022	0.005	0.012	0.002	0.046	478.000	325.000	0.037	1.370	4270.000	7.070	10.700	0.027	212.000	5.300	0.000	0.173	3.370	14.000	167.000	2370.000	4690.000	0.010	9.310
3/02/2022	0.007	0.005	0.004	0.122	637.000	432.000	0.140	3.520	6720.000	19.100	41.000	0.022	517.000	12.900	0.000	0.420	3.120	20.000	240.000	4680.000	8240.000	0.010	23.400
14/03/2022	0.007	0.006	0.006	0.153	439.000	281.000	0.144	4.590	6510.000	26.900	47.200	0.025	604.000	16.400	0.000	0.478	3.110	9.000	144.000	4960.000	7520.000	0.010	31.300
6/04/2022	0.010	0.006	0.005	0.140	592.000	438.000	0.129	4.420	7240.000	23.500	30.700	0.044	602.000	15.300	0.000	0.482	3.030	15.000	225.000	4980.000	8220.000	0.010	29.200
10/05/2022	0.005	0.008	0.003	0.083	493.000	367.000	0.070	2.430	5140.000	12.200	15.200	0.039	374.000	8.670	0.000	0.296	3.410	14.000	213.000	3420.000	5320.000	0.010	16.100
1/06/2022	0.004	0.009	0.001	0.038	335.000	229.000	0.027	1.050	3340.000	6.030	9.000	0.027	181.000	4.550	0.000	0.136	3.720	10.000	134.000	1960.000	3200.000	0.010	7.270
6/07/2022	0.007	0.018	0.001	0.031	423.000	359.000	0.019	0.920	3910.000	4.330	6.790	0.043	151.000	4.070	0.000	0.120	3.430	17.000	206.000	2060.000	3450.000	0.010	6.180
3/08/2022	0.004	0.018	0.001	0.026	528.000	464.000	0.020	0.809	4320.000	3.600	7.680	0.050	162.000	3.730	0.000	0.110	3.470	21.000	285.000	2200.000	3810.000	0.010	5.390
12/09/2022	0.004	0.020	0.001	0.024	572.000	546.000	0.017	0.876	4900.000	3.650	7.440	0.061	155.000	3.480	0.000	0.114	3.650	24.000	334.000	2200.000	4160.000	0.010	5.370
12/10/2022	0.006	0.017	0.001	0.019	440.000	369.000	0.015	0.602	3540.000	2.520	8.840	0.035	106.000	2.880	0.000	0.087	4.210	20.000	218.000	1760.000	3160.000	0.010	3.990
7/11/2022	0.004	0.023	0.001	0.016	552.000	509.000	0.013	0.512	4260.000	2.120	7.500	0.071	109.000	2.650	0.000	0.077	3.500	24.000	325.000	2080.000	2900.000	0.010	3.330
9/12/2022	0.008	0.037	0.001	0.017	768.000	685.000	0.036	0.554	6190.000	2.180	21.100	0.202	115.000	3.160	0.000	0.089	3.220	38.000	446.000	2800.000	3470.000	0.010	3.660
Average	0.006	0.015	0.002	0.060	521.417	417.000	0.056	1.804	5028.333	9.433	17.763	0.054	274.000	6.924	0.000	0.215	3.437	18.833	244.750	2955.833	4845.000	0.010	12.042
TSW03																							
6/04/2022	0.004	0.026	0.001	0.000	450.000	1230.000	0.001	0.091	14700.000	0.028	808.000	0.001	2410.000	11.400	0.000	0.018	3.920	74.000	652.000	11600.000	19800.000	0.010	0.077
10/05/2022	0.006	0.021	0.001	0.000	493.000	1260.000	0.001	0.086	15500.000	0.050	737.000	0.001	2220.000	12.200	0.000	0.016	3.850	75.000	713.000	12300.000	19800.000	0.010	0.082
9/12/2022	0.010	0.017	0.010	0.001	699.000	1520.000	0.010	0.243	19900.000	0.099	841.000	0.010	3200.000	30.000	0.000	0.074	3.010	119.000	1080.000	14200.000	25900.000	0.100	0.150
Average	0.007	0.021	0.004	0.000	547.333	1336.667	0.004	0.140	16700.000	0.059	795.333	0.004	2610.000	17.867	0.000	0.036	3.593	89.333	815.000	12700.000	21833.333	0.040	0.103

Appendix Table 1 2022 Surface Water Quality Results (mg/L) (Cont'd)

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Date	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chloride	Chromium	Cobalt	Conductivity	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	pH	Potassium	Sodium	Sulfate as SO4	Total Dissolved Solids @180°C	Vanadium	Zinc
Stock Watering Triggers *	0.5	-	-	0.01	1000	-	1	1	6000	1	N/A	0.1	-	N/A	0.002	1	6 - 9	-	-	1000	4000	-	20
Irrigation Triggers #	2	-	0.5	0.05	-	350	1	0.1	6000	5	10	5	-	10	0.002	2	6 - 9	-	230	-	-	0.5	5
TSW04																							
5/01/2022	0.002	0.074	0.001	0.009	208.000	539.000	0.001	0.143	3300.000	1.440	1.120	0.001	77.000	0.963	0.000	0.032	3.970	18.000	298.000	892.000	2800.000	0.010	1.450
3/02/2022	0.003	0.046	0.001	0.001	17.000	57.000	0.001	0.010	581.000	0.326	1.980	0.001	13.000	0.178	0.000	0.007	6.390	13.000	40.000	56.000	347.000	0.010	0.114
14/03/2022	0.001	0.073	0.001	0.005	113.000	303.000	0.001	0.072	1950.000	1.500	1.250	0.001	55.000	0.401	0.000	0.016	6.860	12.000	199.000	527.000	1290.000	0.010	0.918
6/04/2022	0.002	0.058	0.001	0.001	35.000	141.000	0.004	0.008	881.000	1.720	2.950	0.004	29.000	0.107	0.000	0.005	6.780	7.000	73.000	134.000	484.000	0.010	0.106
10/05/2022	0.001	0.051	0.001	0.002	48.000	83.000	0.001	0.025	674.000	0.782	1.010	0.001	18.000	0.145	0.000	0.008	6.750	9.000	59.000	128.000	458.000	0.010	0.339
1/06/2022	0.002	0.047	0.001	0.002	10.000	31.000	0.002	0.034	282.000	0.919	2.430	0.002	8.000	0.302	0.000	0.009	6.550	8.000	26.000	37.000	346.000	0.010	0.204
6/07/2022	0.002	0.052	0.001	0.014	205.000	1410.000	0.004	0.192	7710.000	1.280	1.180	0.001	287.000	1.210	0.000	0.072	7.110	21.000	1070.000	2220.000	5700.000	0.010	1.520
3/08/2022	0.002	0.085	0.001	0.003	219.000	375.000	0.001	0.050	2240.000	1.160	0.930	0.001	43.000	0.353	0.000	0.013	5.540	19.000	249.000	706.000	1710.000	0.010	0.527
12/09/2022	0.003	0.053	0.001	0.013	402.000	1730.000	0.002	0.157	9380.000	2.630	1.110	0.003	307.000	0.960	0.000	0.036	5.370	34.000	1310.000	2480.000	6840.000	0.010	1.330
12/10/2022	0.005	0.049	0.005	0.204	284.000	907.000	0.027	3.040	6910.000	23.500	18.100	0.008	369.000	9.780	0.000	0.955	3.640	25.000	589.000	3530.000	6690.000	0.010	22.700
7/11/2022	0.001	0.104	0.001	0.000	19.000	50.000	0.001	0.001	436.000	0.016	0.080	0.001	12.000	0.001	0.000	0.003	7.500	11.000	45.000	52.000	248.000	0.010	0.007
9/12/2022	0.001	0.053	0.001	0.000	14.000	18.000	0.001	0.001	226.000	0.022	0.630	0.001	5.000	0.080	0.000	0.003	6.870	12.000	17.000	11.000	333.000	0.010	0.010
Average	0.002	0.062	0.001	0.021	131.167	470.333	0.004	0.311	2880.833	2.941	2.731	0.002	101.917	1.207	0.000	0.097	6.111	15.750	331.250	897.750	2270.500	0.010	2.435
TSW08																							
5/01/2022	0.009	0.072	0.001	0.000	2.000	37.000	0.001	0.006	335.000	0.014	0.710	0.001	11.000	0.268	0.000	0.002	6.710	5.000	41.000	14.000	350.000	0.010	0.008
3/02/2022	0.001	0.026	0.001	0.000	1.000	4.000	0.001	0.001	58.000	0.010	0.180	0.001	2.000	0.020	0.000	0.001	6.880	2.000	9.000	4.000	49.000	0.010	0.005
14/03/2022	0.002	0.026	0.001	0.000	1.000	9.000	0.001	0.002	114.000	0.014	0.200	0.001	5.000	0.028	0.000	0.001	7.040	3.000	15.000	7.000	91.000	0.010	0.013
28/04/2022	0.001	0.022	0.001	0.000	1.000	5.000	0.001	0.001	71.000	0.007	0.740	0.001	2.000	0.013	0.000	0.001	4.060	2.000	8.000	4.000	47.000	0.010	0.005
10/05/2022	0.001	0.024	0.001	0.000	1.000	9.000	0.001	0.001	94.000	0.012	0.190	0.001	4.000	0.007	0.000	0.001	6.910	2.000	13.000	10.000	66.000	0.010	0.005
1/06/2022	0.001	0.018	0.001	0.000	1.000	8.000	0.001	0.001	89.000	0.011	0.050	0.001	3.000	0.006	0.000	0.001	6.560	2.000	11.000	8.000	77.000	0.010	0.009
6/07/2022	0.001	0.028	0.001	0.000	1.000	12.000	0.001	0.001	110.000	0.011	0.160	0.001	3.000	0.014	0.000	0.001	6.480	2.000	16.000	17.000	96.000	0.010	0.008
3/08/2022	0.002	0.049	0.001	0.000	3.000	23.000	0.001	0.002	196.000	0.022	0.340	0.001	7.000	0.024	0.000	0.001	7.420	2.000	24.000	29.000	120.000	0.010	0.008
12/09/2022	0.001	0.048	0.001	0.000	4.000	30.000	0.001	0.002	212.000	0.026	0.200	0.001	7.000	0.015	0.000	0.001	6.810	4.000	32.000	36.000	135.000	0.010	0.019
12/10/2022	0.001	0.023	0.001	0.000	1.000	10.000	0.001	0.002	91.000	0.017	0.420	0.001	3.000	0.016	0.000	0.001	6.350	2.000	14.000	10.000	73.000	0.010	0.022
7/11/2022	0.002	0.029	0.001	0.000	1.000	19.000	0.001	0.001	141.000	0.006	0.050	0.001	4.000	0.001	0.000	0.001	7.410	2.000	22.000	10.000	92.000	0.010	0.005
9/12/2022	0.008	0.091	0.001	0.000	5.000	103.000	0.001	0.004	517.000	0.021	1.500	0.001	12.000	0.059	0.000	0.003	7.320	8.000	78.000	29.000	376.000	0.010	0.005
Average	0.003	0.038	0.001	0.000	1.833	22.417	0.001	0.002	169.000	0.014	0.395	0.001	5.250	0.039	0.000	0.001	6.663	3.000	23.583	14.833	131.000	0.010	0.009
TSW09																							
5/01/2022	0.004	0.040	0.001	0.022	707.000	901.000	0.017	0.676	5390.000	3.110	4.930	0.012	130.000	2.600	0.000	0.084	4.890	36.000	382.000	2220.000	5450.000	0.010	4.540
3/02/2022	0.006	0.019	0.003	0.093	575.000	713.000	0.103	2.730	6670.000	14.400	30.300	0.018	408.000	9.890	0.000	0.325	3.650	34.000	344.000	3830.000	6930.000	0.010	18.000
14/03/2022	0.002	0.059	0.001	0.022	868.000	1110.000	0.011	0.620	6670.000	3.490	7.380	0.007	123.000	2.310	0.000	0.073	4.510	45.000	606.000	2340.000	5430.000	0.010	4.100
6/04/2022	0.002	0.046	0.001	0.012	531.000	678.000	0.002	0.280	4330.000	0.978	1.080	0.003	84.000	1.380	0.000	0.034	6.190	24.000	343.000	1620.000	3590.000	0.010	1.470
10/05/2022	0.001	0.041	0.001	0.002	626.000	800.000	0.009	0.059	4480.000	0.018	1.020	0.003	42.000	0.368	0.000	0.011	4.980	37.000	455.000	1800.000	3870.000	0.010	0.224
1/06/2022	0.003	0.024	0.001	0.021	460.000	519.000	0.016	0.600	4400.000	3.230	5.060	0.016	114.000	2.460	0.000	0.075	4.570	28.000	336.000	1860.000	3780.000	0.010	3.970
6/07/2022	0.003	0.048	0.001	0.005	775.000	1700.000	0.003	0.124	7500.000	0.029	0.750	0.004	56.000	0.677	0.000	0.016	6.840	43.000	814.000	2470.000	5780.000	0.010	0.587
3/08/2022	0.005	0.057	0.001	0.001	684.000	1110.000	0.004	0.014	6000.000	0.014	1.650	0.008	66.000	0.243	0.000	0.004	7.230	53.000	691.000	1880.000	4640.000	0.010	0.116
12/09/2022	0.003	0.070	0.001	0.001	1181																		

Appendix Table 1 2022 Surface Water Quality Results (mg/L) (Cont'd)

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Date	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chloride	Chromium	Cobalt	Conductivity	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	pH	Potassium	Sodium	Sulfate as SO4	Total Dissolved Solids @180°C	Vanadium	Zinc
Stock Watering Triggers *	0.5	-	-	0.01	1000	-	1	1	6000	1	N/A	0.1	-	N/A	0.002	1	6 - 9	-	-	1000	4000	-	20
Irrigation Triggers #	2	-	0.5	0.05	-	350	1	0.1	6000	5	10	5	-	10	0.002	2	6 - 9	-	230	-	-	0.5	5
TSW10																							
6/01/2022	0.001	0.038	0.001	0.004	316.000	1930.000	0.001	0.048	8220.000	0.163	1.480	0.005	312.000	0.984	0.000	0.015	6.820	42.000	1380.000	1740.000	6480.000	0.010	0.129
3/02/2022	0.003	0.060	0.001	0.003	280.000	1820.000	0.005	0.032	8830.000	0.142	2.940	0.010	260.000	0.729	0.000	0.012	7.380	38.000	1150.000	1710.000	6570.000	0.010	0.106
14/03/2022	0.006	0.080	0.001	0.006	433.000	2500.000	0.011	0.059	11000.000	0.300	9.090	0.015	368.000	1.280	0.000	0.018	7.640	47.000	1410.000	2530.000	7900.000	0.010	0.216
28/04/2022	0.001	0.027	0.001	0.000	158.000	2510.000	0.001	0.001	8390.000	0.002	1.760	0.001	347.000	0.148	0.000	0.001	7.810	14.000	1970.000	606.000	5490.000	0.010	0.108
10/05/2022	0.001	0.092	0.001	0.000	117.000	2280.000	0.001	0.008	8590.000	0.002	0.050	0.001	138.000	0.111	0.000	0.002	7.610	16.000	1270.000	648.000	4790.000	0.010	0.034
30/11/2022	0.005	0.067	0.001	0.001	806.000	1440.000	0.004	0.006	5930.000	0.009	2.050	0.047	25.000	0.201	0.000	0.005	7.130	64.000	542.000	1810.000	3980.000	0.010	0.036
9/12/2022	0.005	0.066	0.001	0.001	789.000	1420.000	0.004	0.006	6010.000	0.011	2.090	0.043	24.000	0.227	0.000	0.004	6.910	57.000	513.000	1830.000	4500.000	0.010	0.028
28/12/2022	0.004	0.062	0.001	0.001	766.000	1570.000	0.001	0.002	6100.000	0.003	0.050	0.004	23.000	0.162	0.000	0.002	8.130	56.000	510.000	1890.000	4730.000	0.010	0.005
Average	0.003	0.062	0.001	0.002	458.125	1933.750	0.004	0.020	7883.750	0.079	2.439	0.016	187.125	0.480	0.000	0.007	7.429	41.750	1093.125	1595.500	5555.000	0.010	0.083
TSW11																							
6/04/2022	0.002	0.027	0.001	0.004	188.000	55.000	0.001	0.106	1940.000	0.844	0.070	0.001	48.000	0.481	0.000	0.026	3.150	9.000	32.000	634.000	1100.000	0.010	1.100
10/05/2022	0.002	0.016	0.001	0.000	78.000	29.000	0.001	0.009	682.000	0.110	0.070	0.001	30.000	0.040	0.000	0.003	6.760	10.000	22.000	297.000	542.000	0.010	0.067
6/07/2022	0.001	0.017	0.001	0.002	191.000	41.000	0.001	0.066	1280.000	1.060	0.390	0.001	34.000	0.403	0.000	0.015	4.850	5.000	28.000	554.000	984.000	0.010	0.482
12/09/2022	0.004	0.019	0.003	0.006	338.000	258.000	0.005	0.254	2670.000	6.730	2.050	0.004	62.000	0.873	0.000	0.062	4.040	11.000	161.000	1110.000	2210.000	0.010	1.800
9/12/2022	0.003	0.041	0.001	0.003	671.000	1060.000	0.003	0.200	5150.000	3.970	2.480	0.001	32.000	0.622	0.000	0.047	6.920	39.000	445.000	1590.000	4080.000	0.010	0.671
Average	0.002	0.024	0.001	0.003	293.200	288.600	0.002	0.127	2344.400	2.543	1.012	0.002	41.200	0.484	0.000	0.031	5.144	14.800	137.600	837.000	1783.200	0.010	0.824

* ANZECC Stock water guidelines for cattle (Primary)

ANZECC Irrigation and general use guidelines for wheat (Secondary)

N/A – Not sufficiently toxic to stock

Appendix Table 2 2022 Groundwater Quality Result (mg/L)

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Date	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chloride	Chromium	Cobalt	Conductivity	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	pH	Potassium	Sodium	Sulfate as SO4	Total Dissolved Solids @180°C	Vanadium	Zinc
Stock Watering Trigger *	0.5	-	-	0.01	1000	-	1	1	6000	1	N/A	0.1	-	N/A	0.002	1	6 - 9	-	-	1000	4000	-	20
Irrigation Triggers #	2	-	0.5	0.05	-	350	1	0.1	6000	5	10	5	-	10	0.002	2	6 - 9	-	230	-	-	0.5	5
PZH001																							
22/02/2022	0.001	0.010	0.001	0.000	138.000	4190.000	0.001	0.001	14000.000	0.019	0.060	0.001	537.000	0.008	0.000	0.003	8.050	8.000	2660.000	2260.000	11100.000	0.010	0.037
17/05/2022	0.001	0.010	0.001	0.000	145.000	3710.000	0.009	0.001	14400.000	0.015	0.050	0.001	522.000	0.006	0.000	0.003	7.730	9.000	2520.000	2220.000	10000.000	0.010	0.030
19/08/2022	0.001	0.010	0.001	0.000	142.000	4140.000	0.002	0.001	14800.000	0.030	0.230	0.001	528.000	0.013	0.000	0.004	8.020	9.000	2590.000	1930.000	9890.000	0.010	0.055
21/11/2022	0.001	0.010	0.001	0.000	148.000	4060.000	0.001	0.001	15000.000	0.017	0.060	0.001	527.000	0.002	0.000	0.002	7.880	9.000	2660.000	2160.000	9890.000	0.010	0.034
Average	0.001	0.010	0.001	0.000	143.250	4025.000	0.003	0.001	14550.000	0.020	0.100	0.001	528.500	0.007	0.000	0.003	7.920	8.750	2607.500	2142.500	10220.000	0.010	0.039
PZH002																							
23/02/2022	0.001	0.016	0.001	0.000	156.000	3530.000	0.001	0.004	12400.000	0.014	0.050	0.001	399.000	0.197	0.000	0.002	8.010	12.000	2360.000	1950.000	9670.000	0.010	0.031
17/05/2022	0.001	0.016	0.001	0.000	166.000	3130.000	0.006	0.001	12700.000	0.003	0.050	0.001	384.000	0.130	0.000	0.001	7.610	14.000	2250.000	1940.000	8600.000	0.010	0.011
19/08/2022	0.001	0.015	0.001	0.000	164.000	3500.000	0.001	0.001	13100.000	0.009	0.050	0.001	390.000	0.097	0.000	0.002	7.980	13.000	2280.000	1680.000	8540.000	0.010	0.013
21/11/2022	0.001	0.015	0.001	0.000	164.000	3450.000	0.001	0.001	13000.000	0.002	0.050	0.001	396.000	0.039	0.000	0.001	7.660	13.000	2390.000	1880.000	8870.000	0.010	0.008
Average	0.001	0.016	0.001	0.000	162.500	3402.500	0.002	0.002	12800.000	0.007	0.050	0.001	392.250	0.116	0.000	0.002	7.815	13.000	2320.000	1862.500	8920.000	0.010	0.016
PZH003																							
23/02/2022	0.001	0.020	0.001	0.000	250.000	5400.000	0.001	0.004	16600.000	0.007	0.980	0.001	698.000	0.274	0.000	0.004	7.990	31.000	3200.000	2290.000	13000.000	0.010	0.022
17/05/2022	0.001	0.020	0.001	0.000	266.000	5170.000	0.013	0.005	18200.000	0.006	1.330	0.002	672.000	0.223	0.000	0.004	7.610	33.000	3050.000	2290.000	13000.000	0.010	0.039
19/08/2022	0.001	0.019	0.001	0.000	263.000	5670.000	0.002	0.006	18700.000	0.015	1.220	0.002	691.000	0.233	0.000	0.006	7.920	30.000	3160.000	2010.000	12600.000	0.010	0.035
21/11/2022	0.001	0.020	0.001	0.000	260.000	5660.000	0.001	0.004	18500.000	0.020	0.170	0.001	701.000	0.235	0.000	0.004	7.700	32.000	3230.000	2300.000	12700.000	0.010	0.085
Average	0.001	0.020	0.001	0.000	259.750	5475.000	0.004	0.005	18000.000	0.012	0.925	0.002	690.500	0.241	0.000	0.005	7.805	31.500	3160.000	2222.500	12825.000	0.010	0.045
PZH005																							
23/02/2022	0.002	0.011	0.001	0.000	148.000	4980.000	0.001	0.003	14700.000	0.010	0.050	0.001	651.000	0.168	0.000	0.034	7.810	11.000	2560.000	1140.000	11400.000	0.010	0.023
17/05/2022	0.001	0.014	0.001	0.001	172.000	3850.000	0.009	0.006	14900.000	0.038	0.260	0.001	523.000	0.160	0.000	0.005	7.840	16.000	2550.000	2230.000	10100.000	0.010	0.059
19/08/2022	0.001	0.016	0.001	0.000	232.000	4500.000	0.002	0.008	15900.000	0.044	0.850	0.003	630.000	0.162	0.000	0.008	8.010	27.000	2950.000	1850.000	10700.000	0.010	0.083
21/11/2022	0.002	0.010	0.001	0.000	147.000	4910.000	0.001	0.002	15600.000	0.007	0.050	0.002	628.000	0.150	0.000	0.025	7.630	11.000	2480.000	1090.000	10100.000	0.010	0.021
Average	0.002	0.013	0.001	0.000	174.750	4560.000	0.003	0.005	15275.000	0.025	0.303	0.002	608.000	0.160	0.000	0.018	7.823	16.250	2635.000	1577.500	10575.000	0.010	0.047
PZH006																							
23/02/2022	0.002	0.016	0.001	0.001	152.000	4410.000	0.001	0.008	13900.000	0.101	0.550	0.001	548.000	0.179	0.000	0.015	8.100	12.000	2600.000	1790.000	8610.000	0.010	0.095
17/05/2022	0.001	0.013	0.001	0.001	171.000	3930.000	0.008	0.006	14900.000	0.038	0.400	0.001	519.000	0.166	0.000	0.004	7.840	15.000	2530.000	2140.000	10200.000	0.010	0.058
19/08/2022	0.001	0.014	0.001	0.001	151.000	4070.000	0.002	0.010	14800.000	0.094	0.330	0.002	501.000	0.116	0.000	0.007	8.120	20.000	2540.000	1880.000	9750.000	0.010	0.159
21/11/2022	0.001	0.020	0.001	0.000	144.000	2780.000	0.001	0.008	11300.000	0.008	0.050	0.001	482.000	0.216	0.000	0.005	7.340	7.000	1770.000	2040.000	7670.000	0.010	0.034
Average	0.001	0.016	0.001	0.001	154.500	3797.500	0.003	0.008	13725.000	0.060	0.333	0.001	512.500	0.169	0.000	0.008	7.850	13.500	2360.000	1962.500	9057.500	0.010	0.087
PZH007																							
29/03/2022	0.003	0.275	0.001	0.000	126.000	1440.000	0.006	0.008	7610.000	0.003	5.840	0.014	191.000	1.730	0.000	0.012	7.730	28.000	1110.000	721.000	3820.000	0.030	0.067
21/06/2022	0.004	0.086	0.001	0.000	121.000	2200.000	0.001	0.006	7970.000	0.016	0.680	0.001	307.000	1.540	0.000	0.007	7.830	24.000	1940.000	932.000	5720.000	0.010	0.025
19/09/2022	0.004	0.033	0.001	0.001	174.000	4320.000	0.001	0.008	17200.000	0.306	0.270	0.001	557.000	0.064	0.000	0.011	8.050	14.000	2840.000	2140.000	11200.000	0.010	0.133
9/12/2022	0.004	0.130	0.001	0.003	146.000	1600.000	0.015	0.056	7490.000	0.046	14.200	0.043	204.000	3.300	0.000	0.041	8.190	26.000	1240.000	891.000	4930.000	0.060	0.418
Average	0.004	0.131	0.001	0.001	141.750	2390.000	0.006	0.020	10067.500	0.093	5.248	0.015	314.750	1.659	0.000	0.018	7.950	23.000	1782.500	1171.000	6417.500	0.028	0.161
PZH008																							
29/03/2022	0.028	0.021	0.001	0.000	155.000	3550.000	0.001	0.001	14000.000	0.037	1.170	0.001	509.000	0.083	0.000	0.001	7.270	10.000	2330.000	1660.000	9970.000	0.010	0.053
21/06/2022	0.020	0.019	0.001	0.000	162.000	4110.000	0.001	0.003	13800.000	0.017	0.860	0.001	468.000	0.095	0.000	0.001	7.540	10.000	2260.000	1540.000	9220.000	0.010	0.028
19/09/2022	0.009	0.018	0.001	0.000	161.000	3680.000	0.001	0.001	14700.000	0.009	0.170	0.001	499.000	0.051	0.000	0.001	7.650	11.000	2400.000	1890.000	9510.000	0.010	0.016
9/12/2022	0.006	0.020	0.001	0.000	151.000	4060.000	0.001	0.002	14000.000	0.012	0.560	0.001	464.000	0.060	0.000	0.002	8.110	10.000	2210.000	1830.000	9120.000	0.010	0.057
Average	0.016	0.020	0.001	0.000	157.250	3850.000	0.001	0.002	14125.000	0.019	0.690	0.001	485.000	0.072	0.000	0.001	7.643	10.250	2300.000	1730.000	9455.000	0.010	0.039

Appendix Table 2 2022 Groundwater Quality Result (mg/L) (Cont'd)

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Date	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chloride	Chromium	Cobalt	Conductivity	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	pH	Potassium	Sodium	Sulfate as SO4	Total Dissolved Solids @180°C	Vanadium	Zinc
Stock Watering Trigger *	0.5	-	-	0.01	1000	-	1	1	6000	1	N/A	0.1	-	N/A	0.002	1	6 - 9	-	-	1000	4000	-	20
Irrigation Triggers #	2	-	0.5	0.05	-	350	1	0.1	6000	5	10	5	-	10	0.002	2	6 - 9	-	230	-	-	0.5	5
PZH009																							
29/03/2022	0.001	0.048	0.001	0.001	179.000	4840.000	0.001	0.001	18200.000	0.070	0.090	0.001	611.000	0.035	0.000	0.016	7.760	16.000	3180.000	2210.000	11800.000	0.010	0.098
21/06/2022	0.001	0.048	0.001	0.001	187.000	5090.000	0.001	0.002	17900.000	0.071	0.210	0.001	584.000	0.040	0.000	0.014	7.970	18.000	3140.000	2040.000	12200.000	0.010	0.122
19/09/2022	0.001	0.044	0.001	0.001	181.000	4940.000	0.001	0.001	19000.000	0.064	0.080	0.001	597.000	0.013	0.000	0.015	7.880	16.000	3270.000	2810.000	12500.000	0.010	0.105
9/12/2022	0.001	0.045	0.001	0.001	180.000	5350.000	0.001	0.001	18200.000	0.062	0.050	0.001	600.000	0.017	0.000	0.014	8.170	16.000	3350.000	2300.000	11800.000	0.010	0.086
Average	0.001	0.046	0.001	0.001	181.750	5055.000	0.001	0.001	18325.000	0.067	0.108	0.001	598.000	0.026	0.000	0.015	7.945	16.500	3235.000	2340.000	12075.000	0.010	0.103
PZH014																							
30/03/2022	0.004	0.036	0.001	0.000	169.000	4250.000	0.001	0.002	16100.000	0.014	0.050	0.001	572.000	0.067	0.000	0.013	7.800	14.000	2860.000	1960.000	8230.000	0.010	0.039
21/06/2022	0.004	0.046	0.001	0.001	180.000	4850.000	0.001	0.006	17100.000	0.067	0.400	0.001	545.000	0.126	0.000	0.011	8.020	17.000	2850.000	1940.000	11400.000	0.010	0.124
19/09/2022	0.001	0.003	0.001	0.000	200.000	4070.000	0.001	0.001	16100.000	0.007	0.050	0.001	573.000	0.019	0.000	0.002	7.590	13.000	2600.000	2100.000	10700.000	0.010	0.014
9/12/2022	0.001	0.003	0.001	0.000	197.000	4380.000	0.001	0.001	15300.000	0.004	0.050	0.001	584.000	0.020	0.000	0.002	8.050	13.000	2640.000	1940.000	9860.000	0.010	0.007
Average	0.003	0.022	0.001	0.001	186.500	4387.500	0.001	0.003	16150.000	0.023	0.138	0.001	568.500	0.058	0.000	0.007	7.865	14.250	2737.500	1985.000	10047.500	0.010	0.046
PZH015																							
30/03/2022	0.015	0.037	0.001	0.001	167.000	4260.000	0.001	0.002	16200.000	0.084	0.970	0.001	566.000	0.077	0.000	0.009	7.810	14.000	2800.000	1930.000	11100.000	0.010	0.232
21/06/2022	0.004	0.041	0.001	0.001	156.000	4250.000	0.002	0.008	12500.000	0.102	0.440	0.001	572.000	0.151	0.000	0.016	8.100	17.000	3030.000	1680.000	10100.000	0.010	0.182
19/09/2022	0.002	0.012	0.001	0.001	190.000	4400.000	0.001	0.003	16800.000	0.107	0.070	0.001	568.000	0.038	0.000	0.005	7.860	14.000	2690.000	1930.000	10800.000	0.010	0.056
9/12/2022	0.001	0.033	0.001	0.003	167.000	4750.000	0.001	0.041	16400.000	0.513	0.310	0.001	501.000	0.439	0.000	0.021	8.180	14.000	2450.000	2100.000	10800.000	0.010	0.224
Average	0.006	0.031	0.001	0.001	170.000	4415.000	0.001	0.014	15475.000	0.202	0.448	0.001	551.750	0.176	0.000	0.013	7.988	14.750	2742.500	1910.000	10700.000	0.010	0.174
PZH017																							
11/01/2022	0.001	0.027	0.001	0.000	105.000	3570.000	0.001	0.001	10600.000	0.001	0.530	0.001	287.000	0.047	0.000	0.001	7.940	14.000	2140.000	891.000	7560.000	0.010	0.005
10/05/2022	0.001	0.027	0.001	0.000	113.000	3190.000	0.006	0.001	11900.000	0.003	0.050	0.001	288.000	0.049	0.000	0.001	7.830	15.000	2160.000	973.000	7480.000	0.010	0.009
12/07/2022	0.001	0.031	0.001	0.001	283.000	7480.000	0.001	0.004	22300.000	0.026	0.610	0.001	781.000	0.162	0.000	0.003	7.930	30.000	4180.000	2570.000	16800.000	0.010	0.062
24/11/2022	0.001	0.026	0.001	0.000	113.000	3600.000	0.001	0.001	12500.000	0.002	0.050	0.001	290.000	0.031	0.000	0.001	7.870	14.000	2250.000	964.000	7350.000	0.010	0.011
Average	0.001	0.028	0.001	0.000	153.500	4460.000	0.002	0.002	14325.000	0.008	0.310	0.001	411.500	0.072	0.000	0.002	7.893	18.250	2682.500	1349.500	9797.500	0.010	0.022
PZH018																							
11/01/2022	0.001	0.029	0.001	0.000	293.000	8270.000	0.001	0.001	21200.000	0.006	0.380	0.001	848.000	0.343	0.000	0.003	7.910	30.000	4480.000	2580.000	19600.000	0.010	0.016
10/05/2022	0.001	0.030	0.001	0.000	319.000	7560.000	0.020	0.001	25500.000	0.018	0.200	0.001	837.000	0.105	0.000	0.003	7.920	35.000	4430.000	2470.000	18300.000	0.010	0.031
12/07/2022	0.001	0.028	0.001	0.000	292.000	7740.000	0.001	0.001	23400.000	0.019	0.080	0.001	804.000	0.060	0.000	0.003	7.870	32.000	4300.000	2620.000	17600.000	0.010	0.030
24/11/2022	0.001	0.027	0.001	0.000	313.000	8270.000	0.001	0.001	26100.000	0.014	0.050	0.001	864.000	0.053	0.000	0.001	7.960	32.000	4680.000	2540.000	18200.000	0.010	0.030
Average	0.001	0.029	0.001	0.000	304.250	7960.000	0.006	0.001	24050.000	0.014	0.178	0.001	838.250	0.140	0.000	0.003	7.915	32.250	4472.500	2552.500	18425.000	0.010	0.027

Appendix Table 2 2022 Groundwater Quality Result (mg/L) (Cont'd)

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Date	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chloride	Chromium	Cobalt	Conductivity	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	pH	Potassium	Sodium	Sulfate as SO4	Total Dissolved Solids @180°C	Vanadium	Zinc
Stock Watering Trigger *	0.5	-	-	0.01	1000	-	1	1	6000	1	N/A	0.1	-	N/A	0.002	1	6 - 9	-	-	1000	4000	-	20
Irrigation Triggers #	2	-	0.5	0.05	-	350	1	0.1	6000	5	10	5	-	10	0.002	2	6 - 9	-	230	-	-	0.5	5
PZH019																							
11/01/2022	0.001	0.036	0.001	0.002	305.000	7160.000	0.001	0.015	19300.000	0.061	0.890	0.001	912.000	0.609	0.000	0.007	7.950	32.000	4640.000	2180.000	16200.000	0.010	0.074
10/05/2022	0.001	0.034	0.001	0.001	271.000	6670.000	0.017	0.007	22100.000	0.125	0.720	0.001	702.000	0.171	0.000	0.007	7.970	33.000	3900.000	2080.000	15400.000	0.010	0.126
12/07/2022	0.002	0.122	0.001	0.000	144.000	4260.000	0.002	0.004	14500.000	0.004	0.720	0.001	422.000	1.020	0.000	0.009	7.850	21.000	2390.000	2190.000	10200.000	0.010	0.057
21/11/2022	0.001	0.029	0.001	0.000	199.000	4480.000	0.001	0.005	15400.000	0.096	1.570	0.002	561.000	0.382	0.000	0.007	8.230	17.000	2600.000	1810.000	10200.000	0.010	0.077
Average	0.001	0.055	0.001	0.001	229.750	5642.500	0.005	0.008	17825.000	0.072	0.975	0.001	649.250	0.546	0.000	0.008	8.000	25.750	3382.500	2065.000	13000.000	0.010	0.084
PZH020																							
11/01/2022	0.001	0.034	0.001	0.001	263.000	7690.000	0.001	0.014	18600.000	0.085	1.120	0.001	782.000	0.517	0.000	0.007	7.990	28.000	4050.000	2370.000	17000.000	0.010	0.080
10/05/2022	0.001	0.037	0.001	0.001	274.000	6650.000	0.017	0.009	22500.000	0.214	1.410	0.003	718.000	0.193	0.000	0.009	8.040	34.000	3950.000	2120.000	15500.000	0.010	0.183
12/07/2022	0.001	0.032	0.001	0.001	286.000	7540.000	0.001	0.004	22600.000	0.031	0.690	0.001	775.000	0.177	0.000	0.003	8.010	31.000	4150.000	2530.000	16800.000	0.010	0.068
24/11/2022	0.001	0.026	0.001	0.000	189.000	5070.000	0.001	0.006	16300.000	0.113	1.110	0.002	568.000	0.377	0.000	0.008	8.010	17.000	2600.000	1300.000	10800.000	0.010	0.078
Average	0.001	0.032	0.001	0.001	253.000	6737.500	0.005	0.008	20000.000	0.111	1.083	0.002	710.750	0.316	0.000	0.007	8.013	27.500	3687.500	2080.000	15025.000	0.010	0.102
PZH021																							
11/01/2022	0.001	0.067	0.001	0.000	218.000	4970.000	0.001	0.001	12600.000	0.005	7.400	0.001	556.000	1.350	0.000	0.001	7.900	14.000	2380.000	1550.000	11000.000	0.010	0.010
10/05/2022	0.001	0.068	0.001	0.000	252.000	4500.000	0.009	0.001	15600.000	0.003	5.980	0.001	573.000	1.270	0.000	0.001	7.700	18.000	2530.000	1460.000	11000.000	0.010	0.012
12/07/2022	0.001	0.062	0.001	0.000	225.000	4740.000	0.001	0.001	14900.000	0.001	4.990	0.001	528.000	1.300	0.000	0.001	7.670	15.000	2390.000	1660.000	10400.000	0.010	0.006
21/11/2022	0.001	0.066	0.001	0.000	250.000	4970.000	0.001	0.001	16200.000	0.002	7.520	0.001	585.000	1.230	0.000	0.001	7.680	16.000	2730.000	1420.000	11200.000	0.010	0.005
Average	0.001	0.066	0.001	0.000	236.250	4795.000	0.003	0.001	14825.000	0.003	6.473	0.001	560.500	1.288	0.000	0.001	7.738	15.750	2507.500	1522.500	10900.000	0.010	0.008

* ANSECC Stock water guidelines for cattle (Primary)

ANZECC Irrigation and general use guidelines for wheat (Secondary)

N/A – Not sufficiently toxic to stock