



Annual Environmental Management Report (AEMR) - Tritton

Reporting year ending: 31st December 2021



CONTENTS

1.	STATEMENT OF COMPLIANCE	1
2.	INTRODUCTION	2
2.1	Mine Contacts	2
3.	APPROVALS	3
4.	OPERATIONS SUMMARY	8
4.1	Mining Operations	8
4.2	Exploration	9
4.3	Land Preparation	10
4.3.1	Mining Operation	10
4.3.2	Powerline Easement	10
4.4	Construction	10
4.4.1	TSF	10
4.5	Mineral Processing	10
4.5.1	Crushing and Stockpiling Ore	11
4.5.2	Grinding	11
4.5.3	Flotation	11
4.5.4	Flotation Product Dewatering	12
4.5.5	Concentrate Handling and Transport	13
4.5.6	Paste Plant	13
4.5.7	Summary of Processing Operations in 2021	13
4.5.8	Focus Areas and Improvements for 2022	13
4.6	Waste Rock Management	13
4.7	Ore and Product Stockpiles	14
4.8	Hazardous Material Management	15
4.9	Other Infrastructure Management	16
5.	ACTIONS REQUIRED AT PREVIOUS AEMR REVIEW	17
6.	ENVIRONMENTAL PERFORMANCE	18
6.1	Air Pollution	18
6.1.1	Environmental Management	18
6.1.2	Environmental Performance	18
6.1.3	Reportable Incidents	20
6.1.4	Further Improvements	20
6.2	Erosion and Sediment	20
6.2.1	Environmental Management	21
6.2.2	Environmental Performance	21
6.2.3	Reportable Incidents	21
6.2.4	Further Improvements	22
6.3	Surface Water Pollution	22
6.3.1	Environmental Management	22
6.3.2	Environmental Performance	24
6.3.3	Reportable Incidents	25
6.3.4	Further Improvements	25
6.4	Groundwater Pollution	26

6.4.1	Environmental Management	26
6.4.2	Environmental Performance	26
6.4.3	Reportable Incidents	28
6.4.4	Further Improvements	28
6.5	Contaminated Polluted Land	28
6.5.1	Environmental Management	29
6.5.2	Environmental Performance	29
6.5.3	Reportable Incidents	29
6.5.4	Further Improvements	30
6.6	Threatened Flora	30
6.6.1	Environmental Management	30
6.6.2	Environmental Performance	30
6.6.3	Reportable Incidents	30
6.6.4	Further Improvements	30
6.7	Threatened Fauna	31
6.7.1	Environmental Management	31
6.7.2	Environmental Performance	32
6.7.3	Reportable Incidents	32
6.7.4	Further Improvements	32
6.8	Weeds	32
6.8.1	Environmental Management	32
6.8.2	Environmental Performance	33
6.8.3	Reportable Incidents	33
6.8.4	Further Improvements	33
6.9	Blasting	33
6.9.1	Environmental Management	33
6.9.2	Environmental Performance	33
6.9.3	Reportable Incidents	33
6.9.4	Further Improvements	34
6.10	Operational Noise	34
6.10.1	Environmental Management	34
6.10.2	Environmental Performance	34
6.10.3	Reportable Incidents	35
6.10.4	Further Improvements	35
6.11	Visual, Stray Light	35
6.11.1	Environmental Management	35
6.11.2	Environmental Performance	35
6.11.3	Reportable Incidents	35
6.11.4	Further Improvements	35
6.12	Aboriginal Heritage	36
6.12.1	Environmental Management	36
6.12.2	Environmental Performance	37
6.12.3	Reportable Incidents	37
6.12.4	Further Improvements	37
6.13	Natural Heritage	37

6.13.1	Environmental Management	37
6.13.2	Environmental Performance	38
6.13.3	Reportable Incidents	38
6.13.4	Further Improvements	38
6.14	Bushfire	38
6.14.1	Environmental Management	38
6.14.2	Environmental Performance	39
6.14.3	Reportable Incidents	39
6.14.4	Further Improvements	39
6.15	Hydrocarbon Contamination	40
6.15.1	Environmental Management	40
6.15.2	Environmental Performance	40
6.15.3	Reportable Incidents	41
6.15.4	Further Improvements	41
6.16	Methane Drainage/Ventilation	41
6.16.1	Environmental Management	41
6.16.2	Environmental Performance	41
6.16.3	Reportable Incidents	41
6.16.4	Further Improvements	42
6.17	Public Safety	42
6.17.1	Environmental Management	42
6.17.2	Environmental Performance	42
6.17.3	Reportable Incidents	42
6.17.4	Further Improvements	42
6.18	Other Issues and Risks	42
7.	WATER MANAGEMENT	43
8.	REHABILITATION	45
8.1	Buildings	45
8.2	Rehabilitation of Disturbed Land	45
8.3	Other Infrastructure	46
8.4	Rehabilitation Trials and Research	46
8.4.1	TSF Feasibility Assessment	46
8.4.2	Mine Closure Plan Gap Analysis Report, Action Plan and Schedule Rehabilitation Trials and Research	47
9.	COMMUNITY	48
9.1	Environmental Complaints	48
9.2	Community Liaison	48
10.	INDEPENDENT AUDIT	49
11.	INCIDENTS AND NON-COMPLIANCES DURING THE REPORTING PERIOD	49
12.	ACTIVITIES PROPOSED IN THE NEXT AEMR PERIOD	49

LIST OF TABLES

Table 1	Annual Review Title Block	v
Table 2	Statement of Compliance.....	1
Table 3	Non-compliances	1
Table 4	Contacts	2
Table 5	Consents, Lease and Licences.....	4
Table 6	Production Summary	8
Table 7	Major Mining Equipment used at Tritton	8
Table 8	Exploration Expenditure 2021.....	9
Table 9	Waste Rock Summary	14
Table 10	Ore and Product Balances.....	15
Table 11	Actions Required at Previous AEMR Review	17
Table 12	Air Quality Metals Analysis	19
Table 13	Air Quality Insoluble Solids Analysis.....	19
Table 14	Surface Water Monitoring Schedule	23
Table 15	Monthly Groundwater Monitoring Schedule.....	26
Table 16	Groundwater Average Standing Water Levels (mRL)	27
Table 17	Noise Monitoring Results	34
Table 18	Bioremediation Facility Testing Results.....	41
Table 19	Water take.....	43
Table 20	Rehabilitation Summary.....	45
Table 21	Maintenance Activities on Rehabilitated Land	46

LIST OF FIGURES

Figure 1	Location of the Tritton Resources Operation	51
Figure 2	Layout of the Tritton Operation	52
Figure 3	Locations of Tritton Mining and Exploration Leases	53
Figure 4	Tritton Underground Mine Layout and Ore Body	54
Figure 5	Tritton Ore Processing Flow Chart.....	55
Figure 6	Surface Water Monitoring Locations.....	56
Figure 7	Groundwater Monitoring Locations	57
Figure 8	Identified Cultural Heritage Artefact Locations	58
Figure 9	Depositional Dust Gauge Locations.....	59
Figure 10	Diversion channels on the TM site	60

LIST OF GRAPHS

Graph 1	EROSTR001	62
Graph 2	EROSTR002	62
Graph 3	EROSTR003A.....	63

LIST OF APPENDIX TABLES

Appendix Table 1	2021 Surface Water Quality Results (mg/L).....	65
Appendix Table 2	2021 Groundwater Quality Result (mg/L).....	68

Table 1 Annual Review 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
MOP/RMP start date	February 2016
MOP/RMP end date	December 2022
Annual Review start date	January 1st 2021
Annual Review end date	December 31st 2021
I, Dean Woods, certify that this audit report is a true and accurate record of the compliance status of Tritton Mines for the 2021 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	Dean Woods
Title of authorised reporting officer	Senior Environmental Advisor
Signature of authorised reporting officer	
Date	25 February 2022

This page has intentionally been left blank

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

Preparation of the Annual Environmental Management Report (AEMR) is a Tritton Resources Limited (Tritton) Mining Lease (ML) requirement. This AEMR 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

The AEMR summarises site activities for the 12 month period covering the 2021 calendar year and has been prepared in accordance with the NSW Department of Planning and Environment “Annual Review Guidelines” October 2015.

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, Industry and Environment (DPIE);
- NSW Environmental Protection Authority (EPA)
- Bogan Shire Council (BSC).

A map of the operations is in the Appendices as Figure 2.

2.1 Mine Contacts

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

Table 4 Contacts

Position	Name	Site Phone Number
General Manager	David Hume	(02) 6838 1103
Mining Manager	Scott Ramsay	(02) 6838 1192
Regional Exploration Manager	Chris Raymond	(02) 6838 1130
Acting Health, Safety, Environment and Training Manager	Tania Burls	(02) 6838 1146
Senior Environmental Adviser	Dean Woods	(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 our mining operation. These are listed in Table 5.

It is noted that DA 41/98 has been modified seven times as follows. Approved dates are identified in parenthesis. A further modification (MOD 8) to allow for mining of the Budgerygar Deposit is currently under assessment.

- 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.

Table 5 Consents, Lease and Licences

Page 1 of 4

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 Modification	41/98	19/12/07	22/12/24	Tritton	TEP Stage II Tritton Plant Upgrade
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	41/98	01/09/99	22/12/24	Tritton	Tritton Project Development
Environmental Planning and Assessment Act 1979	Development Consent	30/2004	20/12/04	29/12/09	Tritton	Rail Loading Hardstand
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 Girilambone	High Security Water Licence (705ML)
Water Management Act 2000	Water Access Licence	WAL009375	24/02/05	Ongoing	Tritton and Girilambone	General Security Water Licence (210ML)
Water Management Act 2000	Water Access Licence	WAL009940	01/07/04	Ongoing	Tritton and Girilambone	Supplementary Water Licence (16ML)
Water Management Act 2000	Water Use and Works Approval	80WA702816	24/02/05	23/02/30	Tritton and Girilambone	Gunningbar Creek and Bogan River Pumps

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

Page 2 of 4

Act	Instrument	Instrument Number	Date of Approval	Date of expiry	Site	Purpose
Water Management Act 2000	Water Use and Works Approval	80WA704315	20/05/09	30/06/27	Tritton and Girilambone	Water supply via Nyngan-Cobar pipeline
Water Management Act 2000	Authority for Joint Supply Scheme	80SA010630	24/02/10	03/10/25	Tritton and Girilambone	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
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
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

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

Page 3 of 4

Act	Instrument	Instrument Number	Date of Approval	Date of expiry	Site	Purpose
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	XMNF200001	05/01/14	05/01/22*	Tritton	License to Manufacture
Radio Communications Act 1992	Registration certificate	1232170/1	10/09/21	27/08/22	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1232171/1	10/09/21	27/08/22	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1232172/1	10/09/21	27/08/22	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1232173/1	10/09/21	27/08/22	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1232174/1	10/09/21	27/08/22	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1922737/1	10/09/21	27/08/22	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1232165/1	10/09/21	27/08/22	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1232166/1	10/09/21	27/08/22	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1232167/1	10/09/21	27/08/22	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1232168/1	10/09/21	27/08/22	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1232169/1	10/09/21	27/08/22	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1233234/1	10/09/21	27/08/22	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1922738/1	10/09/21	27/08/22	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1930848/1	10/09/21	27/08/22	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1930849/1	10/09/21	27/08/22	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1939233/1	10/09/21	27/08/22	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	1939234/1	10/09/21	27/08/22	Tritton	Land mobile radio licence

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

Page 4 of 4

Act	Instrument	Instrument Number	Date of Approval	Date of expiry	Site	Purpose
Radio Communications Act 1992	Registration certificate	1953086/1	10/09/21	27/08/22	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	10762506/1	10/09/21	27/08/22	Tritton	Land mobile radio licence
Radio Communications Act 1992	Registration certificate	10762507/1	10/09/21	27/08/22	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 Mining Operations

Table 6 Production Summary

Material	Approved limit (specify source)	Previous reporting period (actual)	This reporting period (actual)	Next reporting period (forecast)
Waste Rock/ Overburden		152,447t	229,620t	368,256t
ROM Coal / Ore	2Mt	1.02Mt	1.04Mt	0.92Mt
Coarse reject				
Fine reject (Tailings)		Total tailings 1,467,601t Portion of tailings to paste 492,251t	Total tailings 1,453,241t Portion of tailings to paste 338,421t	Total tailings 1,400,000t Portion of tailings to paste 350,000t
Saleable product		123,640t	97,298t	90,000t

In 2021 the underground mine at Tritton produced 1.02Mt of ore with an average grade of 1.29% copper. The primary mining method employed at Tritton during 2021 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.

During this reporting period there was 3,397m of development undertaken in the Tritton underground mine. This development was in the form of 2,129m of capital development, and 1,244m of operating development (ore and waste). In addition, 412m paste dig was undertaken. Of the 229,620t of waste produced from this development, 94,248t was used underground as backfill and the remainder (137,372t) trucked to the surface waste rock emplacement. A schematic of the mine and its ore body is shown in Figure 4. At the end of December 2021 the deepest part of the mine was RL 4,030m, which places it approximately 1,240m below the surface.

The major mining equipment items in use at Tritton are shown below in Table 7.

Table 7 Major Mining Equipment used at Tritton

Equipment	Make	Model	Quantity
Dump Truck	Caterpillar	AD45/55	2
Dump Truck	Sandvik	Th663	9
Loaders	Sandvik Cat	LH621 2900	6 1
Jumbo	Tamrock	Axera	2
Longhole Drill	Atlas	E7C	1
Cable Bolter	Tamrock	GC	1
Integrated Tool Carrier	Volvo CAT	L120 -	5 1
Grader	Caterpillar	12G	1
Charge Wagon	Normet	1610B	1
Store Truck	Isuzu	-	1

Equipment	Make	Model	Quantity
Shotcrete	Jacon	Maxi Jet	1
Concrete Agitator	Normet	Ultimtec LF 600	1
Water Cart	CAT	55B	1
	CAT	-	1
Rock Breaker	CAT	-	1

4.2 Exploration

Exploration activities within ML1544, during 2021, 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.

Expenditure on the Tritton leases and licences for the 2021 period is listed in Table 8.

Table 8 Exploration Expenditure 2021

Tritton - ML1544	\$ 90,635
Murrawombie - ML1280	\$ 2,240
North East - ML1383	\$ 38,174
Avoca Tank – ML1818	\$ 91,966
EL4962	\$ 141,364
EL6126	\$ 767,169
EL6346	\$ 9,040
EL6785	\$ 15,843
EL8084	\$ 5,566,717
EL8987	\$ 3,642,896
EL8810	\$ 23,185.17
Total	\$ 10,389,229

The rehabilitation status of the 2021 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.

4.3 Land Preparation

4.3.1 Mining Operation

All site surface disturbance activities require the completion of a Surface Disturbance Permit. The 2021 year recorded one request for surface disturbance at Tritton to disturb 6,000m² for the installation of new vent fans. Approximately 1,800m² of this land was previously disturbed for exploration drilling activities. As per the MOP all disturbance activities, including exploration drilling, must follow the Tritton Resources Standard Operating Procedure – Topsoil Management and Rehabilitation and Standard Operating Procedure – Drill-hole sampling, capping and plugging. It is noted that

Topsoil and subsoil materials are stripped and stockpiled prior to disturbance. Topsoil and subsoil is stripped for any area that is proposed for development that has not previously been disturbed. When stockpiled, topsoil stockpiles do not exceed 1.5m in height whilst subsoil stockpiles do not exceed 3m in height. This helps maintain the viability of soil long term.

4.3.2 Powerline Easement

During the reporting period 3.78ha of vegetation, of which 2.82ha is native, was cleared beyond the Mining Lease boundary for the purpose of installing a permanent power supply to a dam at Hermidale. A 30m wide corridor was established along the northern side of the Barrier Highway, approximately 840m from the road edge. Biodiversity assessments completed by Ozark determined the clearing to not have significant impact on the biodiversity values of the area.

As the work was approved under Part 5 of the EP&A Act and there was no significant impact on threatened species or communities, it did not trigger entry into the Biodiversity Offset Scheme (BOS). Additionally, referral to the Federal Minister for a “strategic assessment” was not required under the EPBC Act.

4.4 Construction

During the 2021 reporting period the following construction work was completed.

4.4.1 TSF

During the reporting period no construction work was undertaken at the TSF.

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 mine is hauled by specialised underground dump trucks and deposited on the surface at 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 100 mm, 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, 0.23ppm 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 8-9% 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 2021

The mill treated 1,550,539 dry tonnes of ore during 2021, producing 97,298 tonnes of copper concentrate. The paste plant continued operation, with 249,036 m³ placed underground. The Paste plant handled 12,998 tonnes of bulk cement during the reporting period. The breakup of ore supplied to the Tritton ROM, was approximately 65% Tritton Mine and 35% Murrawombie mine.

4.5.8 Focus Areas and Improvements for 2022

The key focus area for 2022 will be Work Packages (WP) 1, 3, 4, 7 and 8 from the Mine Closure Plan (MCP) and continue work on raising the TSF embankments, including the installation of some exclusion fencing.

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 158kt of waste rock was produced from development of the underground mine at Tritton with 94kt returned underground as backfill and the remainder (64kt) 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 was reclassified as PAF and was then crushed and utilized for underground road base.

Table 9 provides a breakdown of the quantities of waste rock (including tailings) produced at Tritton during the reporting period.

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)	1,817,803	1,881,758	1,956,272
Waste Rock to Tailings Storage Facility (t)	5,242,889	6,357,709	7,472,529
Waste Rock (as tailings) to Paste fill (t)	4,126,433	4,464,854	4,803,275

4.7 Ore and Product Stockpiles

As described in section 4.5, ROM and product stockpiling is an integral component of the processing operation. The Tritton ROM and product stockpiles have remained consistent with the Tritton Mining Operations Plan 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	4,167	137,343	10,554
February	7,724	112,603	6,624
March	5,488	135,108	8,581
April	3,507	118,608	6,618
May	12,685	135,495	9,763
June	22,591	139,338	10,797
July	11,499	117,360	5,980
August	8,197	115,826	6,635
September	13,582	135,814	8,509
October	4,851	149,098	8,933
November	18,812	125,337	7,206
December	4,796	131,610	7,376

4.8 Hazardous 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 2021 reporting period Tritton, Girilambone and North East recycled a total of approximately 273t of waste and a total of approximately 315t general waste was taken to an offsite landfill facility for disposal.

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.

Landfill Facility

In accordance with *EPL11254 Condition L2 - Waste*, Tritton is approved to store "Inert Waste Class 1 and 2 and Solid Waste 1" within the nominated landfill area as stated within EPL11254. This facility is managed in accordance with the Tritton Landfill Management Plan.

Tritton disposed approximately 5.3t of waste to the landfill during the reporting period. The Landfill was compacted and covered during September 2013, and at the current rate of waste disposal the life span of the current landfill is 4-5yrs. Tritton have introduced skip bins to site to divert damaged ventilation materials away from the landfill. Damaged ventilation materials make up for most of the waste deposited in the landfill, thereby diverting this will increase the life of the facility.

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 AEMR REVIEW

Table 11 describes the comments received from the previous AEMR and the actions taken to address them in this document.

Table 11 Actions Required at Previous AEMR Review

Action required from previous Annual Review	Requested by	Action taken by the Operator	Where discussed in Annual Review
Table 17 does not include noise levels due to the mine only (i.e. excluding background noise) and it incorrectly lists EPL night-time limit as 45dB(A) instead of 40dB(A).	DPIE	Noise levels due to the mine only added to Table 17 and EPL night-time limit amended to 40dB(A).	Section 6.10.2
Environmental Management Plan must be reviewed and, if necessary, revised before implementing any changes to surface and ground water monitoring frequencies. This must be submitted for Secretary's approval prior to implementation in accordance with Schedule 2, Condition 6 of the consent.	DPIE	Revised Water Management Plan submitted for Secretary's approval in December.	Section 6.3.4
Status update for any outstanding actions provided in last Independent Environmental Audit Report 2018 must be included in 2021 Annual Review.	DPIE	The Traffic Management Plan has been updated multiple times since the audit however Tritton is unable to demonstrate consultation with the Roads and Maritime Services (RMS) was undertaken. The TSF Operations and Maintenance Manual has been reviewed however Tritton is unable to demonstrate consultation with EPA or Resources Regulator. Tritton has previously been advised by the EPA that the EPA does not review and/or comment on management plans unless there is a specific reason. If there are issues identified during site inspections the management plans may then likely be reviewed. No review of the TSF Operations and Maintenance Manual was conducted in the reporting period. Tritton will seek consultation with the RMS and EPA, evidence of consultation will be included in the management plans to demonstrate compliance. Tritton are of the opinion all other outstanding actions have been satisfied.	Not applicable

6. ENVIRONMENTAL PERFORMANCE

6.1 Air Pollution

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.

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 ML 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 compared to the NSW government guideline, *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (DEC 2005).

6.1.2 Environmental Performance

Depositional dust gauges are located around the Tritton ML 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). Generally, Tritton dust monitoring locations showed elevated metal concentrations. All of these gauges are located around operational areas and therefore elevated levels can be expected to be above background.

Table 12 Air Quality Metals Analysis

Site	Dust Gauge Identification	Average Analyte Concentrations (µg/m²)			
		Copper	Iron	Lead	Zinc
Background					
Budgery	B01	1133.2	12334.9	14.49	328.62
Budgery	B02	801.7	5831.7	89.5	153.6
Budgery	B03	3529.3	28686.5	85.4	597.4
Budgery	B04	2696.8	10479.2	47.3	188.9
Budgery	TD8A	1071.9	6661.7	40.0	157.0
Girilambone	BG1	4675.8	13272.5	32.6	814.1
Girilambone	BG2	10862.1	7626.7	4.3	239.3
Tritton					
Yarrandale Rd	TD1	2851.3	10415.8	62.8	361.4
Rail Load Out	TD11	5010.8	41966.7	457.8	1271.3
Yarrandale Rd	TD2	2713.9	10640	34.5	319.5
Tritton	TD23	5280.8	14135.8	54.1	809.4
Tritton	TD24	5322.5	31372.5	86.3	616.4
Tritton	TD25	7547.5	19025	40.7	844.5
Tritton	TD26	40375	87475	138.6	5335
Tritton	TD27	4876.7	20555.8	131.2	668.4
Tritton	TD3	2425.8	9189.2	77.0	421.9
Tritton	TD3B	7075.5	42690.9	72.0	1938.5

The seasonal averages appear to follow the yearly cycle for the region with regard to weather and agricultural activity. Dust gauge TD23 is located outside of the operational areas and is situated along the property boundary. The residential neighbours to TD23 operate an active cropping and grazing farm.

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

Table 13 Air Quality Insoluble Solids Analysis

Page 1 of 2

Page 1 of 2

Site	Dust Gauge Identification	Insoluble Solids (g/m ² month)			Seasonal Averages Insoluble Solids (g/m ² month)			
		Average	Min	Max	Autumn	Winter	Spring	Summer
Background								
Budgery	B01	1.4	0.1	7.0	0.67	0.47	3.8	1.5
Budgery	B02	0.92	0.2	3.3	0.7	0.47	0.7	1.73
Budgery	B03	3.76	0.5	11.3	2.27	0.97	6.25	6.4
Budgery	B04	1.24	0.2	2.3	1.2	0.5	1.9	1.57
Budgery	TD8A	0.93	0.2	2	0.93	0.57	0.75	1.43
Girilambone	BG1	1.47	0.2	6.5	0.73	0.2	2.65	2.7
Girilambone	BG2	0.88	0.3	1.5	0.93	0.43	0.8	1.33

Table 13 Air Quality Insoluble Solids Analysis (Cont'd)

Page 2 of 2

Site	Dust Gauge Identification	Insoluble Solids (g/m ² month)			Seasonal Averages Insoluble Solids (g/m ² month)			
		Average	Min	Max	Autumn	Winter	Spring	Summer
Girilambone								
Yarrandale Rd	TD1	1.61	0.1	1.6	0.87	0.4	0.8	1.17
Rail Load Out	TD11	1.62	1.6	7.8	4.4	3.03	4.3	2.87
Yarrandale Rd	TD2	1.64	0.2	1.5	1.0	0.8	1.05	1.2
Tritton	TD23	1.67	0.4	2.3	0.87	0.57	0.8	1.3
Tritton	TD24	1.67	0.5	3.3	1.7	1.43	2.35	2.5
Tritton	TD25	1.67	0.5	1.9	0.77	0.9	1.5	1.13
Tritton	TD26	1.67	1.1	3.7	2.67	1.67	2.15	2.83
Tritton	TD27	1.67	0.3	2.4	1.47	1.03	1.15	1.53
Tritton	TD3	1.67	0.2	3.6	0.63	1.53	0.6	0.7
Tritton	TD3B	1.67	<0.1	11.3	6.57	5.5	1.25	1.97

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 2022 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 Erosion and Sediment

Mining activities can generate exposed soil formations such as stockpiles, waste rock emplacements, drains, roads and urban infrastructure walls. 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.

6.2.1 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 both 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 and 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.

6.2.2 Environmental Performance

Erosion and sediment control monitoring conducted during 2021 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.

6.2.3 Reportable Incidents

No incidents were recorded during the reporting period.

6.2.4 Further Improvements

Erosion and Sediment management at the Tritton Copper Mine during 2022 will continue to be undertaken as per the existing management procedures.

6.3 Surface Water Pollution

Mining operations have the potential to impact upon the surrounding surface water shed. 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.

6.3.1 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 14 identifies the surface monitoring locations, water storage classifications and associated sampling schedule. Figure 6 shows the surface water monitoring locations at Tritton.

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).

Table 14 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, and as the analytes in the water have the potential to build up in the soil 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 Tritton 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 specifications and was designed to capture any of the water during these events.			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.

6.3.2 Environmental Performance

Tritton Surface water analytical results have been summarised in Appendix Table 1 located at the back of this document. 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. Monitoring locations are depicted on Figure 6.

Relevant Trigger Levels

The Company 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.

Clean Water Storages

TSW04 Raw Water Pond

Results indicate elevated copper levels with an average of 1.25 mg/L, the highest recorded in December at 8.05. These values are expected due to Tritton mixing raw water with pit water from the Girilambone 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. Water was not released into the pond whilst the site was reliant of pit water to sustain its operation.

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 Tritton. 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 site. 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, sulphate and total dissolved solids.

TSW03 Seepage Trench

Four 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 elevated 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 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 2021 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 paste area. A review of the results against the selected criteria shows elevated concentrations of copper and sulphate, and low pH, and 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 site for either stock watering or irrigation.

6.3.3 Reportable Incidents

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

6.3.4 Further Improvements

Surface water management at the Tritton Copper Mine during 2022 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 submitted in December 2021.

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.

6.4 Groundwater Pollution

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 2021.

6.4.1 Environmental Management

To determine the potential impact on groundwater from operational activities, groundwater monitoring is undertaken. Table 15 defines the frequency of sampling, the type of analysis undertaken and any associated conditional requirements. Figure 7 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 15 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 2021	
Tip 1 - 2	Bores were dry throughout 2021	Potential landfill leachate.

6.4.2 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 forms part of the Tritton Environmental Protection Licence. During 2013 a Remedial Action Plan (RAP) was developed and submitted to the EPA. The objective of the RAP was to address the EPL conditions with the aim of ensuring that the site is suitable for ongoing mining land use and the historical 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. And 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 14/7/14 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 located at the back of this document. The following is a summary of the groundwater monitoring program against applicable criteria. Monitoring locations are depicted on Figure 7. Groundwater results were also compared to the ANZECC guidelines for stock watering and irrigation. However, it should be noted that all background ground water exceeds the guidelines for EC, Sulphate and Total Dissolved Solids and there is no beneficial use currently for groundwater at or near the Tritton site.

Water Quality

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

The pH remained stable for all of the monitoring bores throughout Tritton (pH 7.17 – 8.22). EC, 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 16). PZH001 recorded a reduction of approximately 4m in late in the reporting period.

Table 16 Groundwater Average Standing Water Levels (mRL)

Page 1 of 2

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
PZH001		13.88			13.94			13.98			9.18	
PZH002		34.19			34.26			34.33			34.42	
PZH003		62.62			62.71			62.79			62.86	
PZH005		14.04			14.21			14.27			14.13	
PZH006		38.58			38.66			38.69			38.15	
PZH007			42.18			42.25			42.29			42.39
PZH008			17.66			17.02			17.14			17.22
PZH009			13.47			12.69			12.79			12.83
PZH014			45.91			46.02			46.14			46.14
PZH015			50.14			50.22			50.31			50.39

Table 16 Groundwater Average Standing Water Levels (mRL) (Cont'd)

Page 2 of 2

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
PZH017	45.13			45.31			42.96			42.98		
PZH018	21.17			20.48			20.56			20.62		
PZH019	96.51			96.59			93.67			93.76		
PZH020	72.81			72.98			73.11			73.27		
PZH021	48.76			48.11			48.19			48.27		
PZH022	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
PZH023	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY

* An excel spread sheet of the 2021 data is available upon request

Ground Water Pumping

Subsequent the Tritton Tailings Storage Facility Remedial Action Plan acceptance the pump at the dewatering bore (PB001) has been 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.

6.4.3 Reportable Incidents

No reportable incidents occurred during the reporting period.

6.4.4 Further Improvements

During the 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. Tritton submitted an application to EPA NSW in June 2020 to seek an amendment to the current environmental protection licence conditions to reflect the recommendations of the report this was approved June 2021. It is anticipated monitoring frequencies will change following approval of a revised Water Management Plan submitted in December 2021.

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

6.5 Contaminated Polluted 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.

6.5.1 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.

6.5.2 Environmental Performance

Tritton onsite incident management system recorded four spills during the 2021 reporting period. Three hydrocarbon spills were recorded during the reporting period, one occurred whilst transporting a mobile plant, another occurred whilst transporting a light vehicle. The third spill resulted from an overflow of the oil/water separator at the Tritton Heavy Vehicle Workshop.

A chemical spill was also recorded. The chemical spill was the result of a forklift tine puncturing an intermediate bulk container whilst loading it for transport.

6.5.3 Reportable Incidents

No reportable incidents occurred during the reporting period.

6.5.4 Further Improvements

Contaminated land management at the Tritton Copper Mine during 2021 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.

6.6 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.

6.6.1 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.

6.6.2 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.

6.6.3 Reportable Incidents

No incidents were recorded during the reporting period.

6.6.4 Further Improvements

Pre-clearance surveys will continue to be undertaken prior to any surface disturbance. No large scale clearing is proposed during 2022 .

6.7 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*).

6.7.1 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 perimeter and around dams and the provision of alternative water sources such as the environmental dam located north of the tailings storage facility.

6.7.2 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.

6.7.3 Reportable Incidents

No reportable incidents occurred during the reporting period.

6.7.4 Further Improvements

Pre-clearance surveys will continue to be carried out prior to any habitat disturbance during 2022.

6.8 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

6.8.1 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 of areas of high disturbance.

6.8.2 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. During the reporting period the Tritton magazine was sprayed on four occasions totalling an area of 0.4 ha, and the Tritton offices and ancillary buildings were sprayed on two occasions, totalling 0.08ha, focusing on noxious and non-native weeds using a non-selective herbicide.

6.8.3 Reportable Incidents

No incidents were recorded during the reporting period.

6.8.4 Further Improvements

Weed 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 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.

6.9 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.

6.9.1 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.

6.9.2 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.

6.9.3 Reportable Incidents

No complaints were received during this reporting period.

6.9.4 Further Improvements

Tritton will continue to manage blasting in order to restrict its impact on nearby neighbours and sensitive receptors throughout 2022.

6.10 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.

6.10.1 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.

6.10.2 Environmental Performance

During the reporting period Tritton 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 17 outlines the results of the noise monitoring conducted during 2021. Generally, rural noise such as wind in trees and birds were the dominant noise source. The day and night exceedance of development consent criteria was attributed to intermittent passing traffic and not the hum from the mine.

Table 17 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	2/08/2021	3:48 PM	40	<28	50
Wilga Downs Boundary	2/08/2021	8:32 PM	38	33	45
Wilga Downs Boundary	2/08/2021	10:36 PM	36	32	40
Location	Date	Time	L _{A10} Reading [dB(A)]	Tritton Contribution [dB(A)]	L _{A10} Noise Emission Criteria as per Development Consent [dB(A)]
Wilga Downs Boundary	2/08/2021	3:48 PM	37	<28	35
Wilga Downs Boundary	2/08/2021	8:32 PM	41	33	35
Wilga Downs Boundary	2/08/2021	10:36 PM	38	32	33

6.10.3 Reportable Incidents

No complaints were received during this reporting period.

6.10.4 Further Improvements

Tritton will continue to manage noise in order to restrict its impact on nearby neighbours and sensitive receptors throughout 2022.

6.11 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.

6.11.1 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.

6.11.2 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, 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.

6.11.3 Reportable Incidents

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

6.11.4 Further Improvements

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

6.12 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 8). 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.

6.12.1 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.

6.12.2 Environmental Performance

No aboriginal heritage surveys were undertaken during 2021 within the Tritton mining area. No previously unidentified items or sites were found during the reporting period.

6.12.3 Reportable Incidents

In October 2020 an identified scarred tree was inadvertently harmed by a neighbouring property owner when maintaining an existing access track on Tritton-owned land.

The incident was reported via the Environment Line and investigated by DPIE – Biodiversity & Conservation Division. Tritton worked with the DPIE in their investigation into the incident which included a site inspection, assessment by an archaeological expert and an interview with the property owner who conducted the clearing which resulted in the damage to the scarred tree.

The matter was finalised in February 2021 and it was advised that a regulatory response would be taken against the neighbouring landholder, who was determined to be acting independently of Tritton.

6.12.4 Further Improvements

The current aboriginal heritage management procedures will continue to be adhered to during 2022. Furthermore, any external contractors or members of the public who are given permission to undertake any activities on mine land are to be availed the importance of and due diligence required when working around registered Aboriginal sites.

6.13 Natural Heritage

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

6.13.1 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 Officer 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.

6.13.2 Environmental Performance

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

6.13.3 Reportable Incidents

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

6.13.4 Further Improvements

The current heritage management procedures will continue to be adhered to during 2022.

6.14 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.

6.14.1 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.

6.14.2 Environmental Performance

There were no outbreaks of fire during 2021 at Tritton.

6.14.3 Reportable Incidents

No incidents were recorded during the reporting period.

6.14.4 Further Improvements

The bushfire management procedures will continue to be adhered to during 2022.

6.15 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.

6.15.1 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.

6.15.2 Environmental Performance

Three hydrocarbon spills were recorded during the reporting period, one occurred whilst transporting a mobile plant, another occurred whilst transporting a light vehicle. The third spill resulted from an overflow of the oil/water separator at the Tritton Heavy Vehicle Workshop.

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 18. When comparing the topsoil sampling results from the control sample to the contaminated soil from the bioremediation facility results it is evident that the cells require ongoing treatment. Results do however fall within the specific contamination concentration for general solid waste.

Table 18 Bioremediation Facility Testing Results

Date	Total Petroleum Hydrocarbons					Total Recoverable Hydrocarbons – NEPM 2013 Fractions						
	C6–C9 Fraction	C10–C14 Fraction	C15–C28 Fraction	C29–C36 Fraction	C10–C36 Fraction (sum)	C6–C10 Fraction	C6–C10 Fraction minus BTEX (F1)	>C10–C16 Fraction	>C16–C34 Fraction	>C34–C40 Fraction	>C10–C40 Fraction (sum)	>C10–C16 Fraction minus Naphthalene (F2)
Topsoil 12 – Control												
22/01/2015	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50
Cell 1												
30/03/2021	<10	<50	120	<100	120	<10	<10	<50	180	<100	180	<50
30/03/2021	<10	<50	170	130	300	<10	<10	<50	260	<100	260	<50
30/03/2021	<10	<50	130	120	250	<10	<10	<50	220	<100	220	<50
24/06/2021	<10	<50	<100	<100	<50	<10	<10	<50	140	<100	140	<50
28/09/2021	<10	<50	<100	<100	<50	<10	<10	<50	<100	<100	<50	<50
22/12/2021	<10	<50	130	110	240	<10	<10	<50	200	<100	200	<50
Cell 2												
30/03/2021	<10	<50	2100	4490	6590	<10	<10	<50	5400	3660	9060	<50
30/03/2021	<10	<50	1160	2350	3510	<10	<10	<50	2870	1960	4830	<50
30/03/2021	<10	<50	320	640	960	<10	<10	<50	770	610	1380	<50
24/06/2021	<10	<50	570	1080	1650	<10	<10	<50	1320	800	2120	<50
28/09/2021	<10	<50	460	590	1050	<10	<10	<50	830	480	1310	<50
22/12/2021	<10	<50	540	790	1330	<10	<10	<50	1050	620	1670	<50

6.15.3 Reportable Incidents

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

6.15.4 Further Improvements

Hydrocarbon management procedures will continue to be adhered to throughout 2022.

6.16 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.

6.16.1 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.

6.16.2 Environmental Performance

No methane has been detected during the reporting period.

6.16.3 Reportable Incidents

No incidents were recorded during the reporting period.

6.16.4 Further Improvements

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

6.17 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.

6.17.1 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.

6.17.2 Environmental Performance

Security cameras were installed around the main boom gate entry in 2015 and boundary fences were inspected regularly throughout 2021, to minimise and reduce unauthorised entry. No breaches of the site access procedures occurred during the reporting period.

6.17.3 Reportable Incidents

No incidents were recorded during the reporting period.

6.17.4 Further Improvements

No further improvements have been planned.

6.18 Other Issues and Risks

All issues and risks have been identified within this report.

7. WATER MANAGEMENT

Table 19 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	-	

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 site.

As mentioned previously 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 18 kilometres in length extending from Hermidale to the Tritton site.

Tritton Resources holds three Water Access Licences (WALs) to obtain water from the Macquarie and Cudgegong Regulated Rivers Water Source of the Water Sharing Plan of the same name, and 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 970ML 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.

Tritton are currently licensed for the groundwater extraction of 30ML (WAL31090) and 304ML (WAL31041). During 2021 approximately 50ML of water was dewatered from Tritton. A total of 200.5ML was dewatered from Girilambone pits for operational use. The dewatering estimate is based on the water performance study completed during the previous reporting period. It is estimated 50ML of water was dewatered from Tritton. It should also be noted the dewatering from the Girilambone pits is an overestimate. This occurred as raw water was pumped to the pits for storage however additional infrastructure is required to accurately account for this activity in the site water balance.

Water infrastructure at Tritton can be seen 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

8. REHABILITATION

8.1 Buildings

No rehabilitation of existing building areas occurred during 2021. 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)	2021 (ha)	2022 (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	3.3	0.5	0.5
Surface of Rehabilitated Land			
Pasture and grasses	3.3	0.5	0.5
Native Forest/Ecosystem	0	0	0
Plantations and crops	0	0	0

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

Areas listed on the Tritton Contaminated Lands Register, such as the tailings storage facility, waste rock emplacement and processing hardstand, will be rehabilitated progressively where available and/or at mine closure.

In the reporting period Tritton hydroseeded 5000m² 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. Previously dozer rip lines were tracked-in to provide a smooth surface for the hydromulch to ensure maximum coverage. It is anticipated that maintaining the rip lines and the addition of retained timber logs will accelerate ecological function and stability.

Given favourable climatic conditions Tritton intend to duplicate this approach on approximately 10,000m² of the Main embankment 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	>0.01	>0.01	
Adversely affected by weeds	>0.01	To be determined	Areas of weed infestation are sprayed with herbicide or physically removed.
Feral animal control	0	0	Tritton generally has very minimal feral animal interactions.

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.

8.4.2 Mine Closure Plan Gap Analysis Report, Action Plan and Schedule Rehabilitation Trials and Research

Tritton engaged environmental consultants Okane Consultants Pty Ltd (Okane) to prepare a gap analysis of the current Mine Closure Plan (MCP). A MCP was prepared for the Tritton Operations in 2009 and subsequently updated in 2011 and 2014. The most recent revised MCP provides a foundation for which future Rehabilitation Management Plans (RMPs) will be developed.

A detailed background review of relevant information and data available for the project was conducted. Following the background review, Okane completed a gap analysis of the Tritton Operations MCP and the supporting closure/rehabilitation knowledge base. The gap analysis includes a review against the following documents:

- Environmental Sustainability Unit – Mineral Resources, 2013. ESG3: Mining Operations (MOP) Guidelines;
- NSW Resources Regulator, 2021. Rehabilitation Management Plan for Large Mines; and
- NSW Resources Regulator, 2021. Rehabilitation Objectives, Rehabilitation Completion Criteria and Final Landform and Rehabilitation Plan for Large Mines.

In addition to the Gap Analysis Report, an Action Plan and Schedule for key identified closure knowledge and data gaps has also been completed. The action plan:

- Identifies key closure and data gaps;
- Recommends actions to address gaps;
- Prioritises activities;
- Provides an outline for work scopes that can be used to develop scope of works/tender documents for distribution to contractors/consultants; and
- Indicates realistic timeframes for completion.

A Project Initiation and kick-off meeting was conducted in December 2020. The gap analysis report and action plan and schedule have been developed and delivery commenced. The following work packages have commenced and will continue to be delivered in 2022.

- Work Package 3 – Final Land Use Definition;
- Work Package 4 – Rehabilitation Risk Assessment and Trigger Action Response Plan update;
- Work Package 7 – Rehabilitation Quality Assurance Program;
- Work Package 8 - Detailed Closure Designs (Murrawombie WRE extension)

9. COMMUNITY

9.1 Environmental Complaints

During the reporting period Tritton was advised by Bogan Shire Council of a community concern raised at Council. The concern was regarding retained timber located outside the clearing zone created for the installation of the powerline easement along Barrier Highway. The community member described the timber as “unsightly and a fire hazard.” In response to this Tritton engaged an arboriculture contractor (Fork In Trees) to mulch the material where practical and spread the mulch within the clearance zone to mitigate the impact on visual amenity and the potential fire risk.

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 383 staff at year end 2021. Of the 383 staff, 56% of our people are local and 26% regional, whilst 18% are staff that travel from elsewhere and reside locally during their rostered working period. Tritton Resources 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 82% currently and Tritton Resources is now contributing around 50 Million dollars 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 2021.

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

Tritton’s People & Safety Manager and General Manager attend the Nyngan Community Consultative Committee meeting on a (nominal) quarterly basis. Scheduled meetings in Aug and November were cancelled by mutual agreement due to COVID restrictions.

In lieu of these meetings the General Manager held bi-monthly meetings with BSC representatives (usually the mayor and the GM) to ensure appropriate communication and consultation continued. Meetings were held in June, August and November.

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

An independent audit was scheduled for 2021, however an extension was granted until the end of March 2022 due to COVID-19 restrictions. A site visit occurred in December.

11. INCIDENTS AND NON-COMPLIANCES DURING THE REPORTING PERIOD

Noise levels for the Tritton sites closest residence were within the EPL guidelines. Noise levels exceeded the LA10 noise emission criteria set out in the development consent. As outlined in the previous AEMR's the development consent conditions seem unachievable as background environmental noise exceeds the requirement.

12. ACTIVITIES PROPOSED IN THE NEXT AEMR PERIOD

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

- Continuation of underground mining and ore processing activities as per the MOP;
- Continued monitoring of surface water, groundwater, air quality and noise emissions;
- Continue work on WP# 1, 3, 4, 7 and 8 of Mine Closure Plan (MCP) Gap Analysis Action Plan and Schedule;
- Revegetation of sections of the TSF Main embankment.

Figures

Figure 1 **Location of the Tritton Resources Operation**

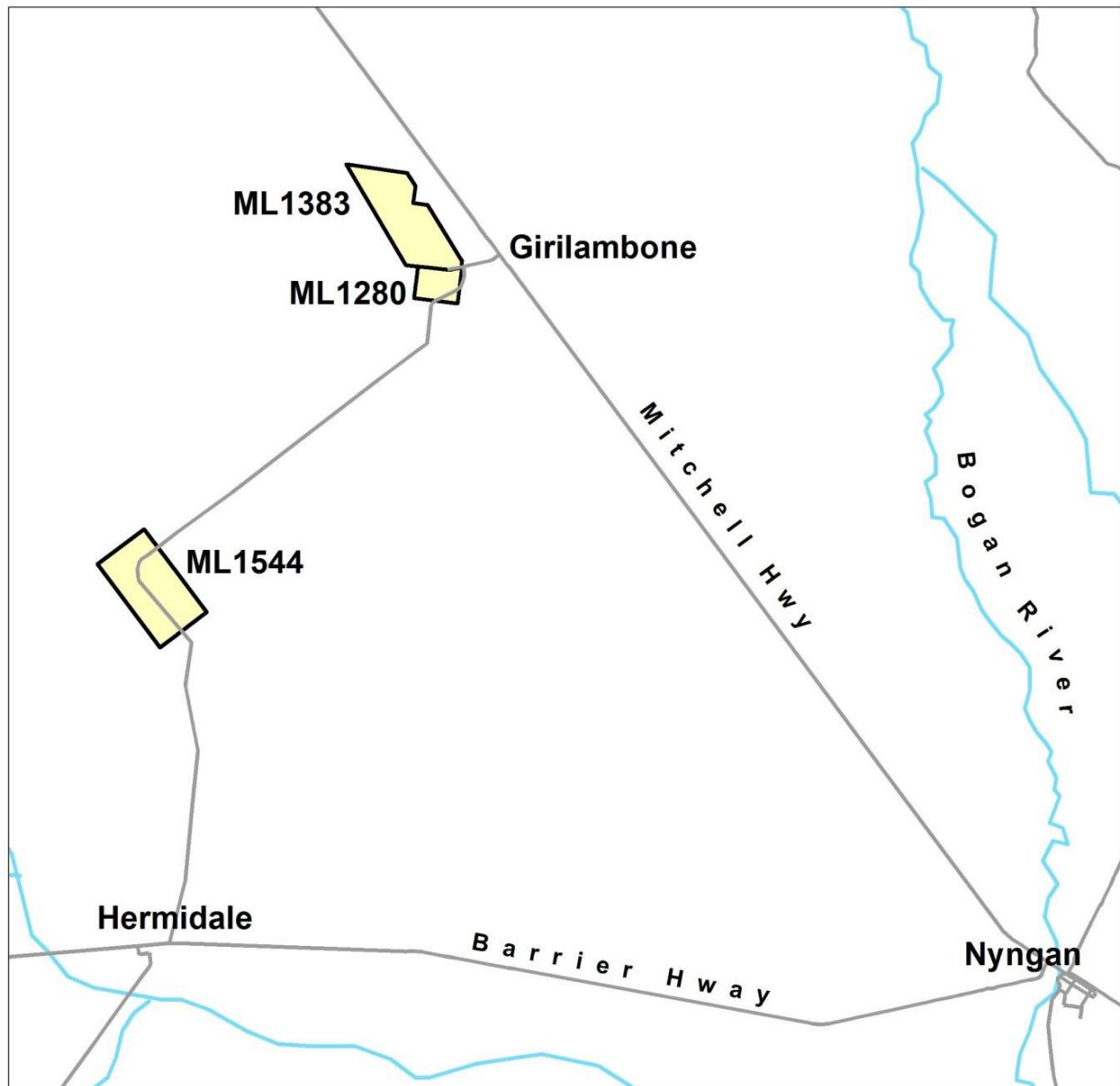


Figure 2 Layout of the Tritton Operation

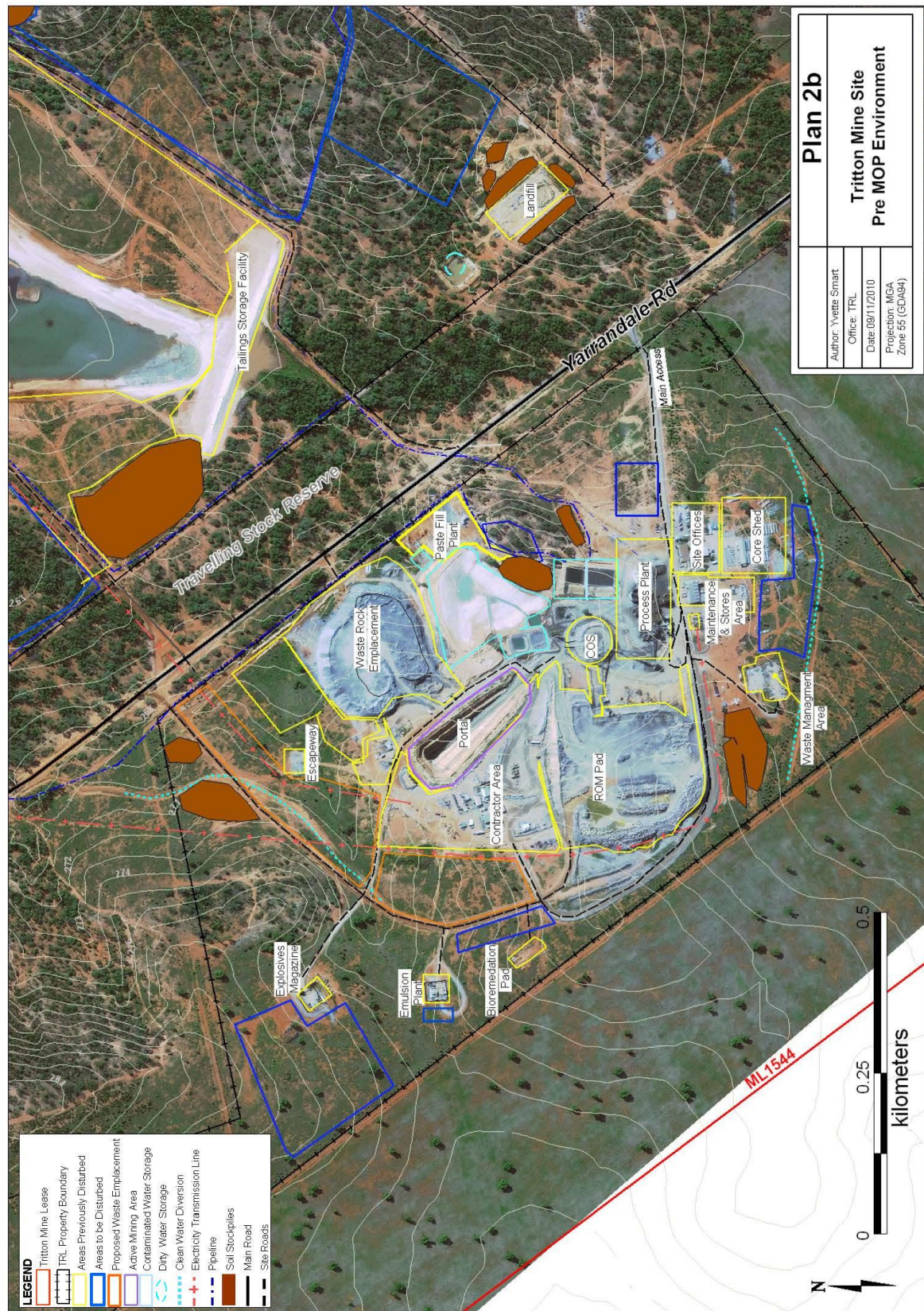


Figure 3 Locations of Tritton Mining and Exploration Leases

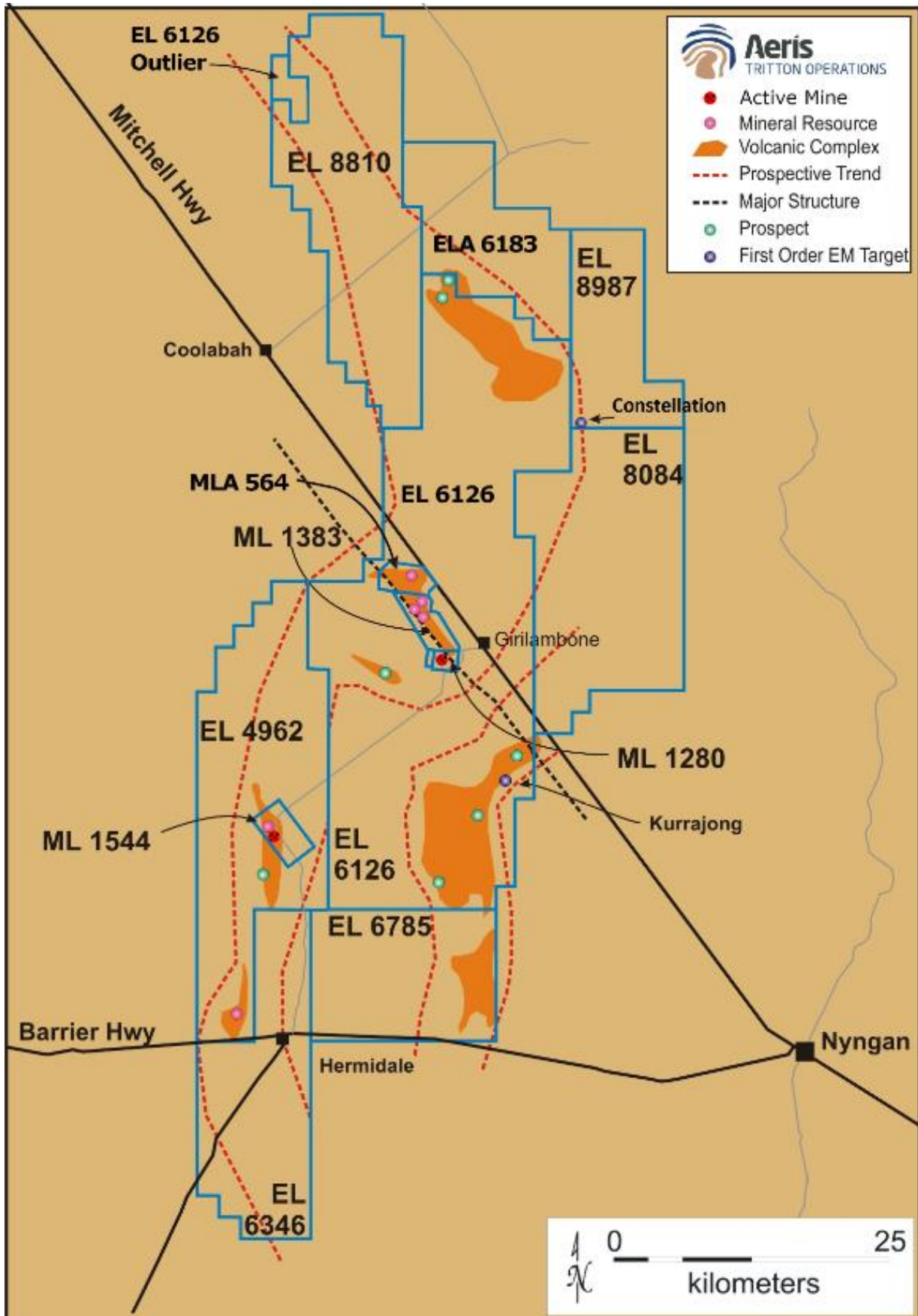


Figure 4 Tritton Underground Mine Layout and Ore Body

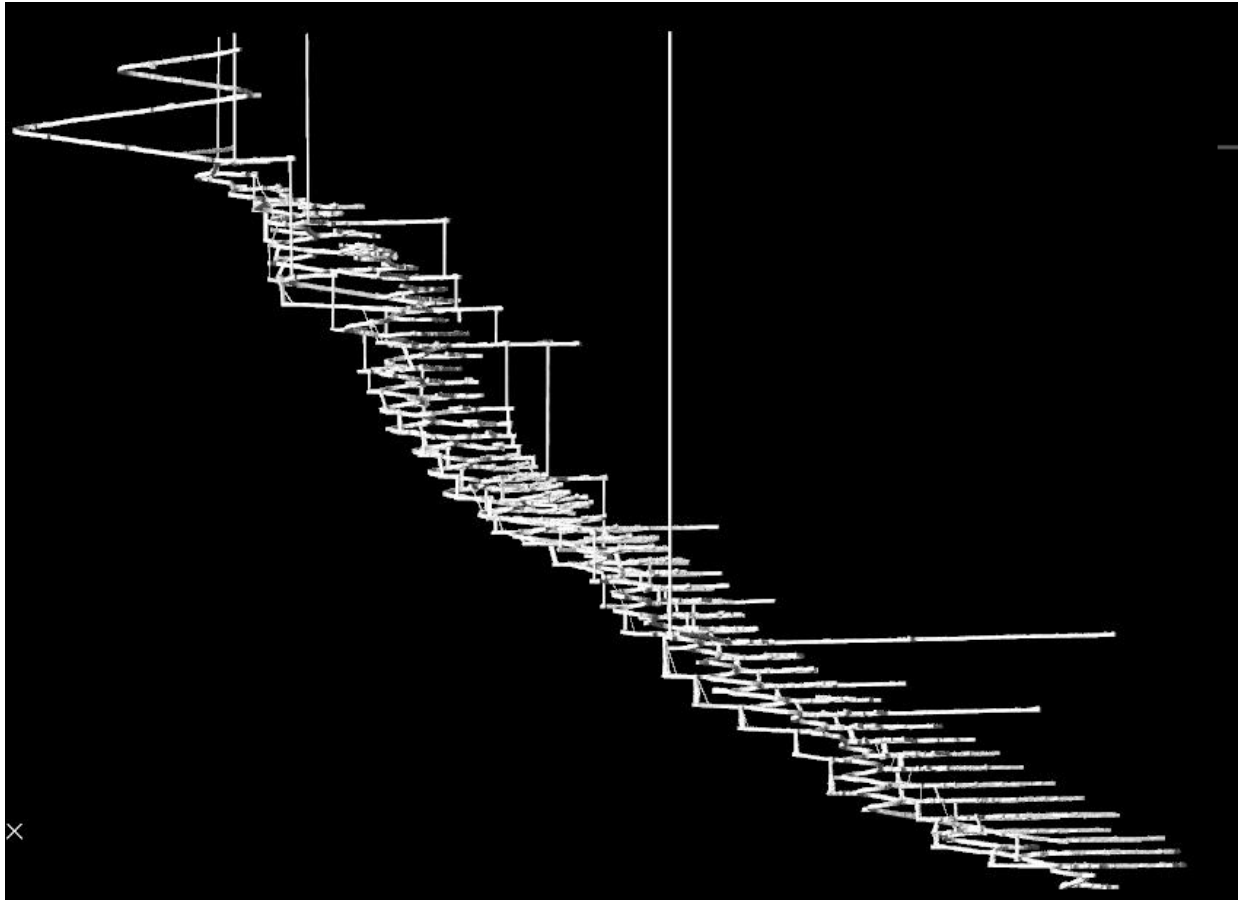


Figure 6 Surface Water Monitoring Locations

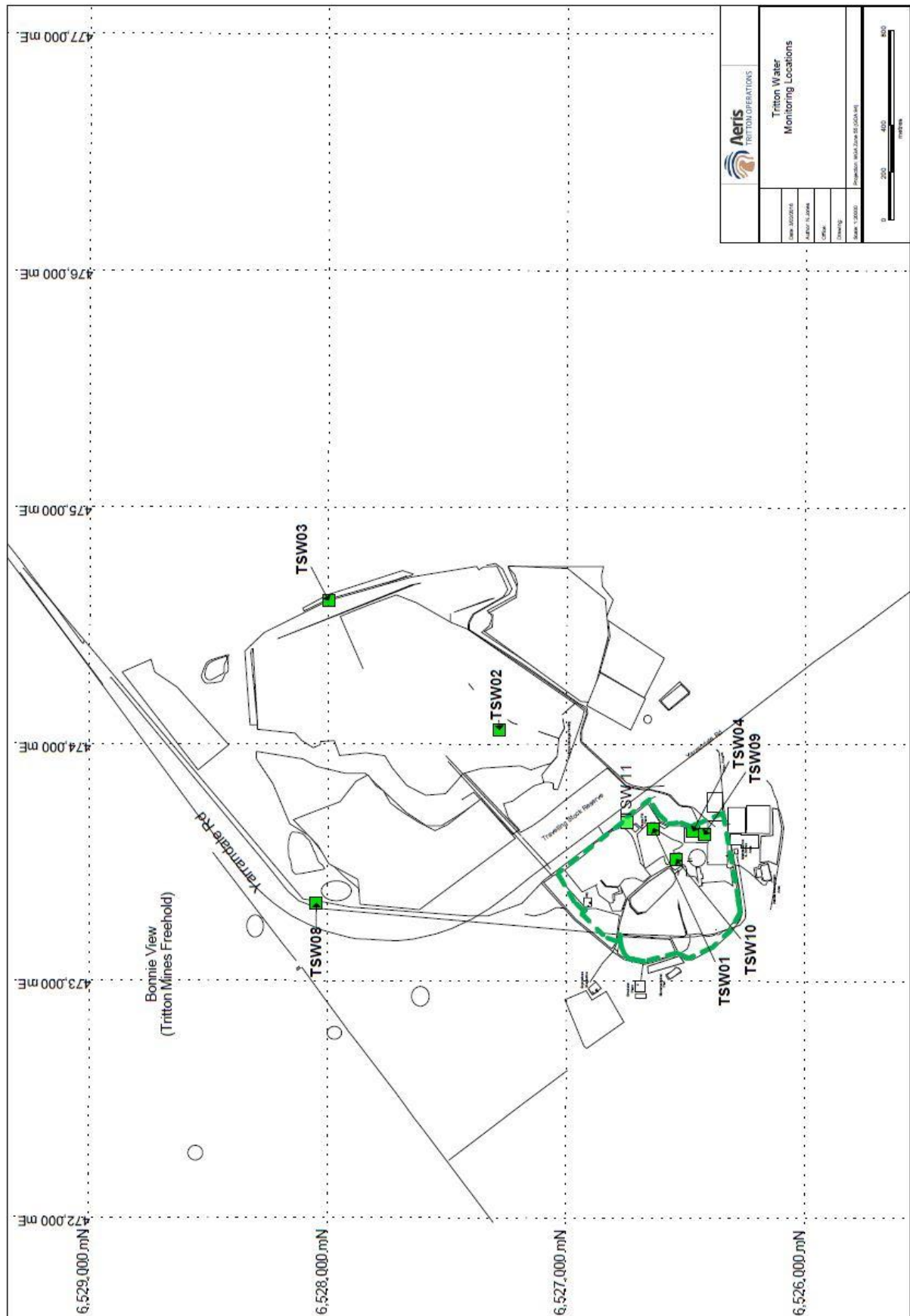


Figure 7 Groundwater Monitoring Locations

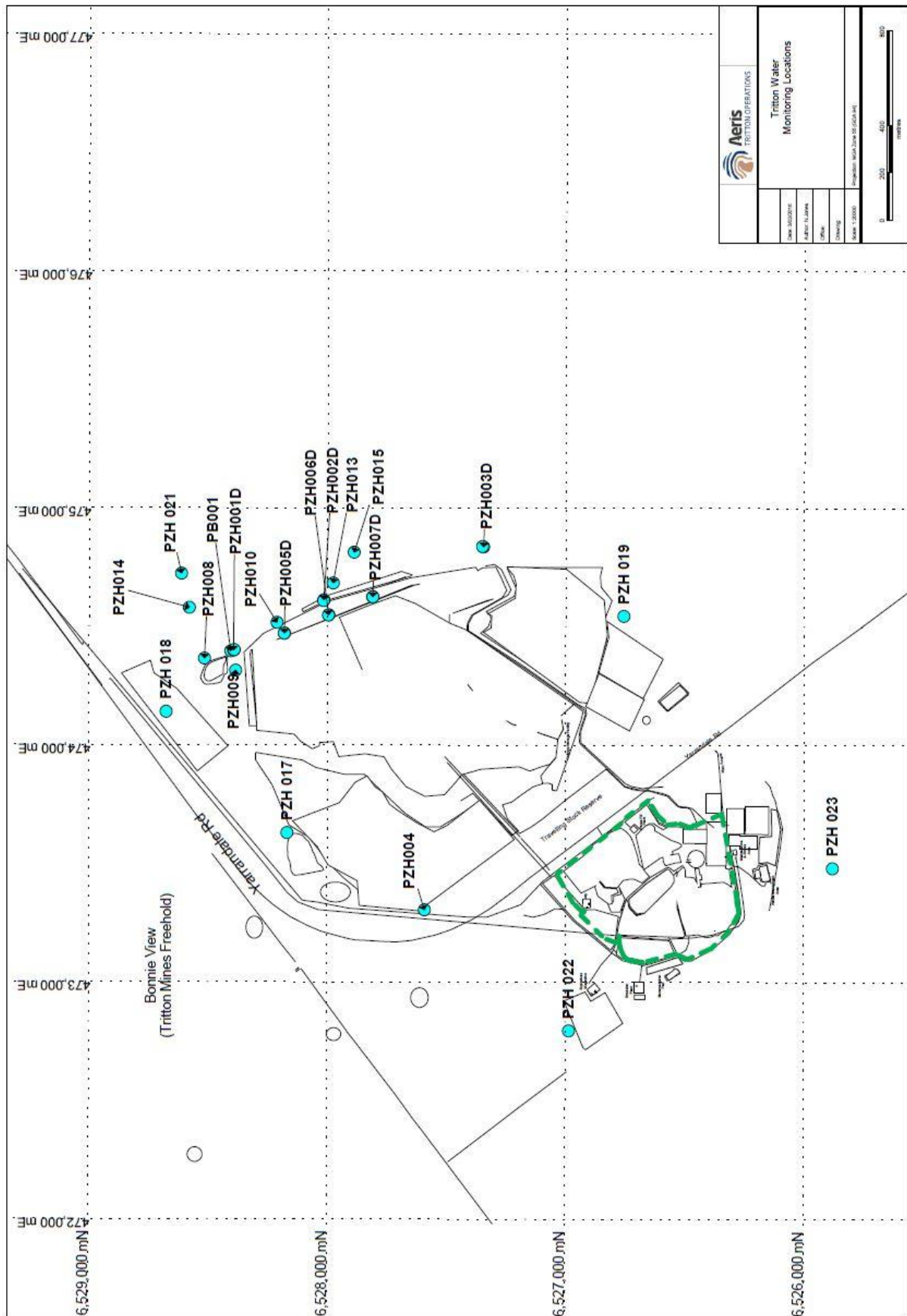
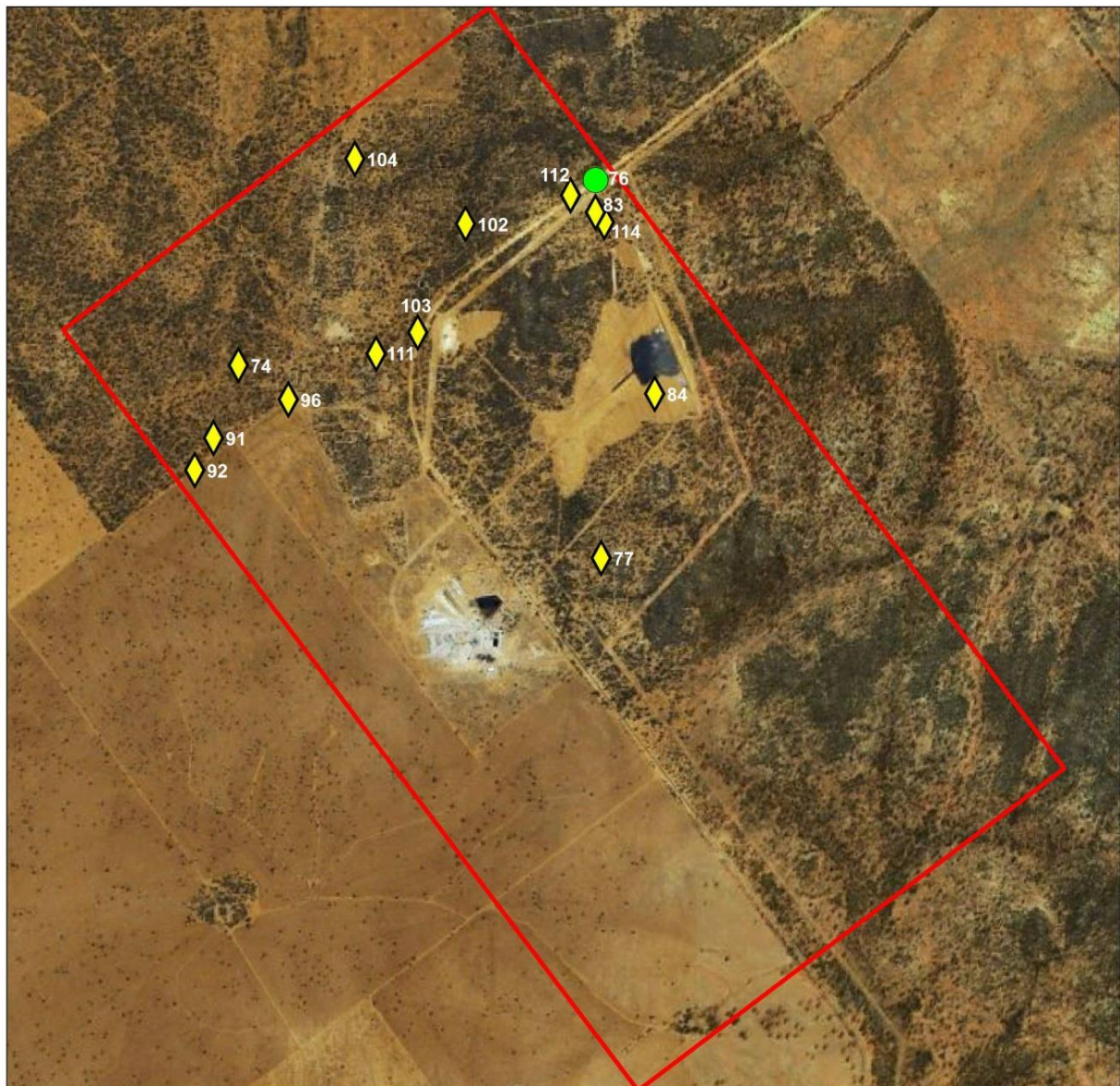


Figure 8 Identified Cultural Heritage Artefact Locations



Legend

Site type

● Isolated Find

◆ Scarred Tree

ML 1544 boundary

Map Projection: Transverse Mercator
Horizontal Datum: AGD 1966
Grid: Map Grid of Australia, Zone 55

Datasources:
ML boundary: TRL
Aerial image: Google Earth
Site data: AHIMS

Mapping date: May 2012

Scale 1:30,000 (A4)

0 120240 480 720 960 Meters



EnviroKey

PO Box 7231 Tathra NSW 2550. t: 02 6494 5422

Figure 9 Depositional Dust Gauge Locations

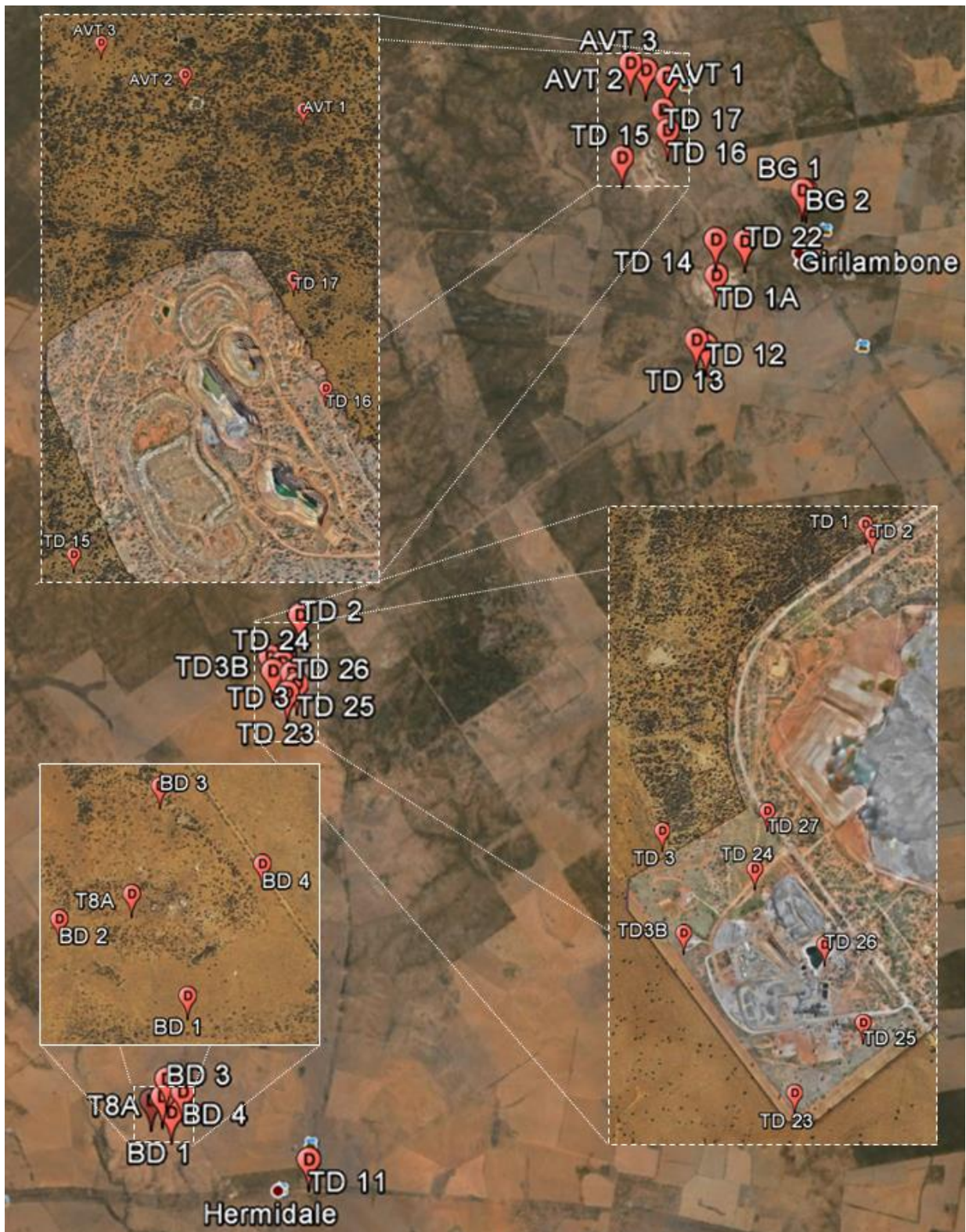
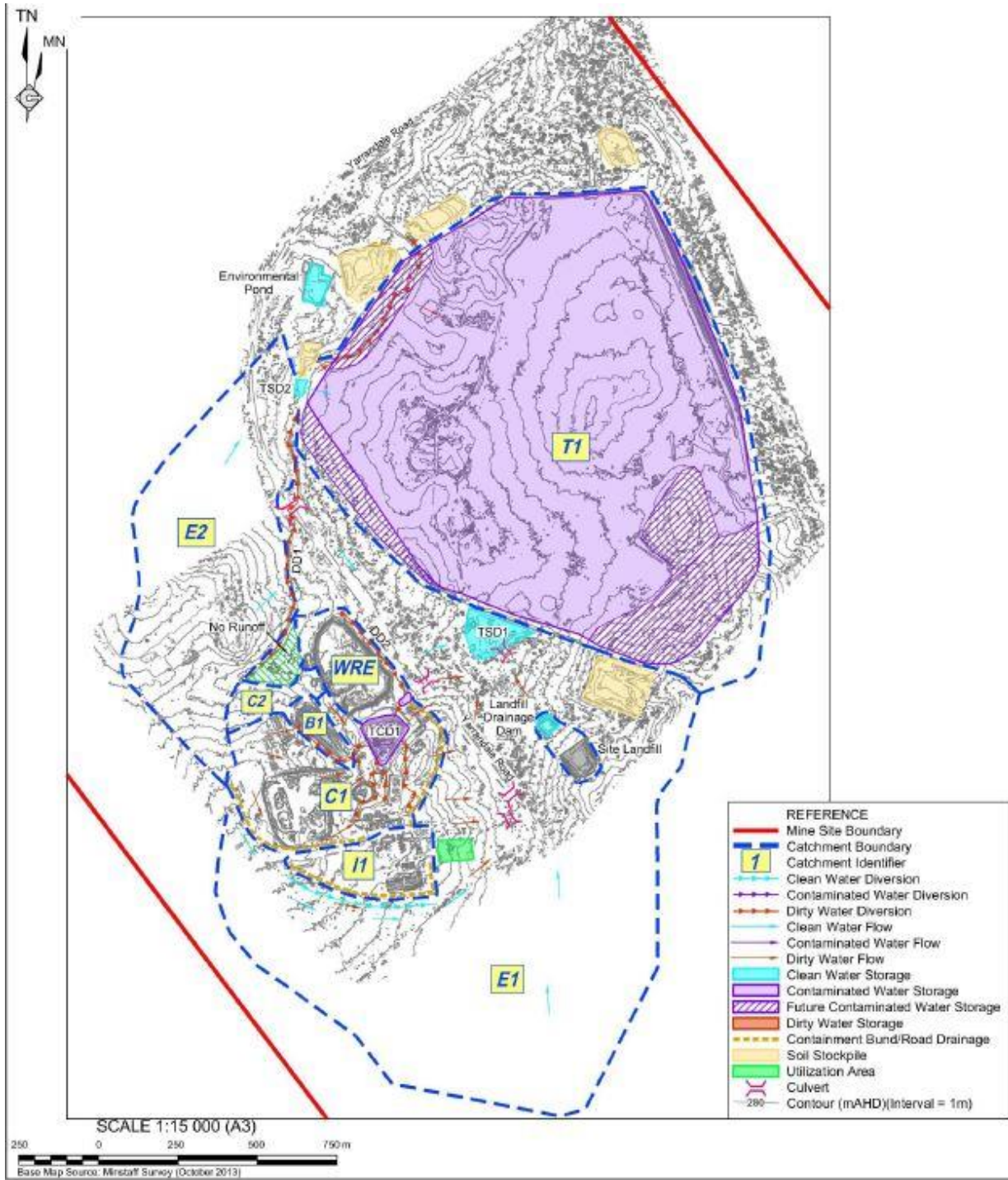
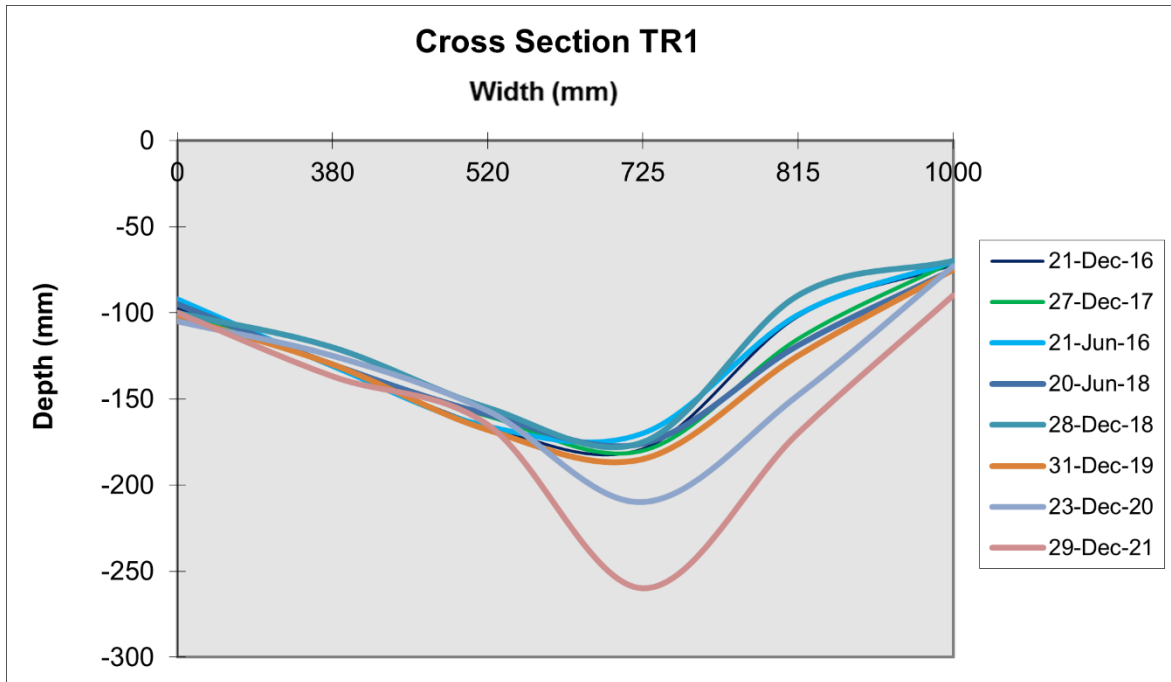


Figure 10 Diversion channels on the TM site

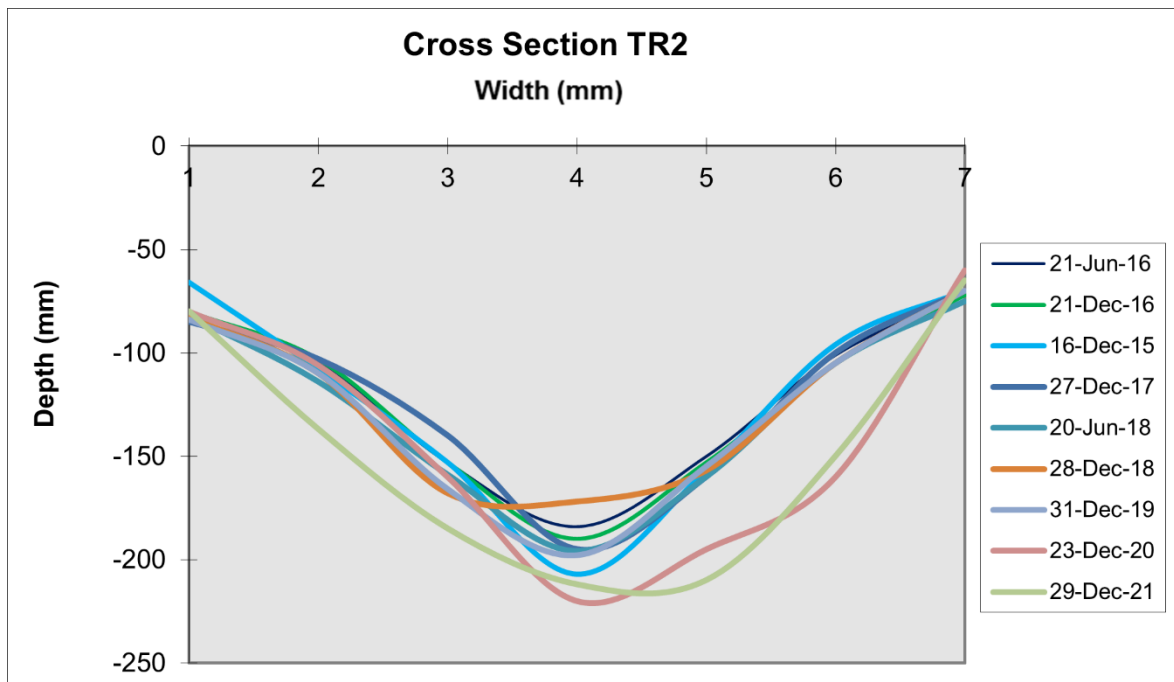


Erosion Cross-Section Graphs

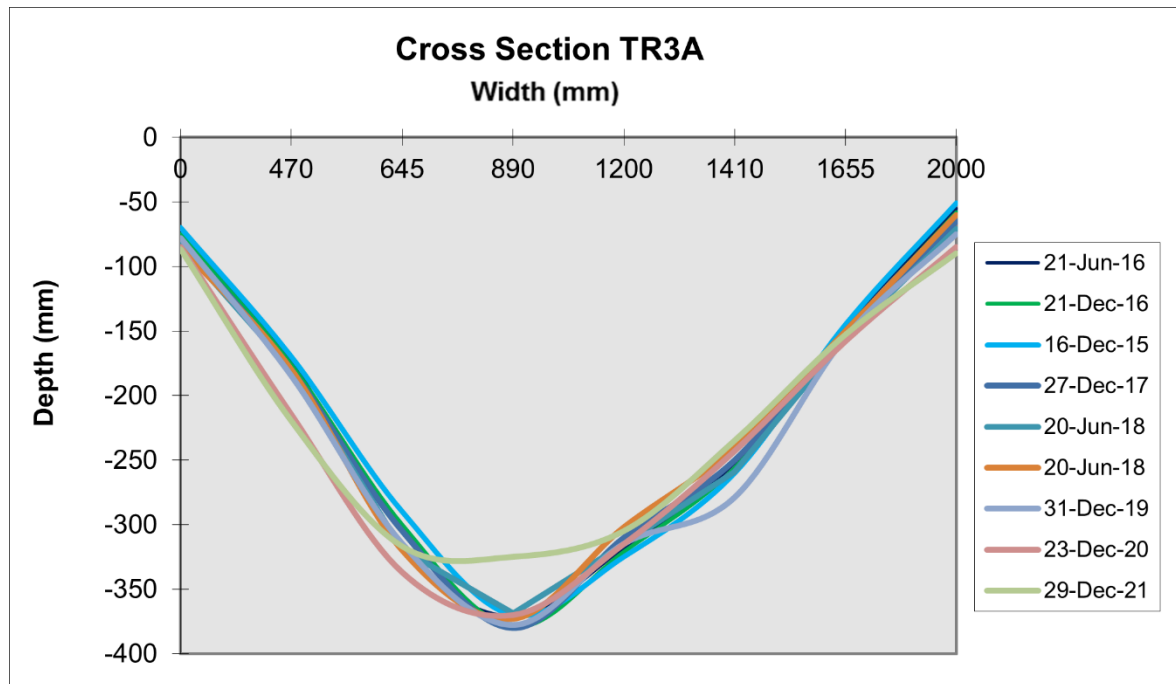
Graph 1 EROSTR001



Graph 2 EROSTR002



Graph 3 EROSTR003A



Appendix Tables

Appendix Table 1 2021 Surface Water Quality Results (mg/L)

Page 1 of 3

Date	Arsenic	Barium	Beryllium	Calcium	Cadmium	Chloride	Cobalt	Chromium	Copper	EC µS/cm	Iron	Mercury	Potassium	Magnesium	Manganese	Sodium	Nickel	Lead	pH	Sulphate	Total Dissolved Solids	Vanadium	Zinc
Stock Watering Triggers *	0.5	-	-	1000	0.01	-	1	1	1	6000	N/A	0.002	-	-	N/A	-	1	0.1	6 – 9	1000	4000	-	20
Irrigation Triggers #	2	-	0.5	-	0.05	350	0.1	1	5	6000	10	0.002	-	-	10	230	2	5	6 – 9	-	-	0.5	5
TSW01																							
06/01/2021	0.002	0.049	<0.001	381	0.0216	446	0.298	0.006	10.3	3620	4.93	<0.0001	23	77	1.76	268	0.066	0.005	3.43	1380	3000	<0.01	5.24
10/02/2021	0.005	0.06	<0.001	491	0.0327	435	0.562	0.017	10.1	4230	13.3	<0.0001	27	109	2.89	264	0.092	0.028	3.07	1940	3500	<0.01	6.91
01/03/2021	0.005	0.059	<0.001	578	0.0183	935	0.362	0.01	2.93	5880	12.4	<0.0001	51	90	1.94	489	0.064	0.024	3.75	2300	5010	<0.01	4.16
12/04/2021	0.003	0.045	<0.001	359	0.013	502	0.26	0.006	3.74	3660	5.83	<0.0001	27	54	1.32	231	0.054	0.009	3.46	1280	2940	<0.01	3.24
12/05/2021	0.002	0.06	<0.001	697	0.0045	836	0.098	<0.001	2.17	5000	2.35	<0.0001	57	42	0.53	451	0.021	<0.001	4.56	1860	4350	<0.01	1.01
08/06/2021	0.002	0.042	<0.001	536	0.0097	723	0.164	0.002	3.54	4710	3.01	<0.0001	36	46	0.833	371	0.033	0.002	3.52	1440	3560	<0.01	2.15
05/07/2021	0.003	0.106	<0.001	243	0.0041	284	0.067	<0.001	1.53	2200	0.55	<0.0001	21	25	0.424	178	0.014	<0.001	6.6	650	1640	<0.01	0.899
23/08/2021	0.002	0.066	<0.001	464	0.0007	566	0.021	<0.001	0.026	3970	0.98	<0.0001	29	55	0.593	372	0.006	<0.001	3.92	1360	2990	<0.01	0.146
09/09/2021	0.004	0.057	<0.001	629	0.0043	828	0.078	0.001	1.37	5080	1.22	<0.0001	44	42	0.39	458	0.008	0.003	4.4	1670	4100	<0.01	0.605
06/10/2021	0.002	0.057	<0.001	424	0.0288	558	0.538	<0.001	9.07	4500	3.23	<0.0001	26	116	0.59	378	0.099	0.002	4	1500	3460	<0.01	6.94
03/11/2021	0.003	0.076	<0.001	569	0.0128	1070	0.214	<0.001	1.98	6410	1.42	<0.0001	42	110	1.17	717	0.058	0.003	4.54	2030	5060	<0.01	1.98
07/12/2021	0.003	0.045	0.001	315	0.0282	493	0.447	0.009	15.8	3820	8.73	0.0001	17	96	2.38	285	0.098	0.008	3.21	1320	2820	0.01	6.12
Average	0.003	0.0602	0.001	473.833	0.014892	639.6667	0.2591	0.007286	5.213	4423.333	4.8292	0.0001	33.33333	71.83333	1.235	371.833	0.0511	0.00933	4.0383	1560.833	3535.833	0.01	3.28333
TSW02																							
06/01/2021	0.002	0.006	0.003	421	0.0908	117	1.89	0.085	11.5	4220	24.6	<0.0001	3	343	7.74	70	0.243	0.016	3.28	2970	5210	<0.01	16
11/02/2021	0.004	0.004	0.004	452	0.104	172	2.12	0.104	13.6	4860	19.4	<0.0001	9	395	9.04	101	0.288	0.015	2.98	3410	5410	<0.01	16.8
01/03/2021	0.006	0.002	0.005	460	0.149	254	3.58	0.153	22	6430	17.1	<0.0001	11	542	12.9	148	0.448	0.01	2.83	4310	7020	<0.01	27.5
12/04/2021	0.004	0.005	0.002	433	0.057	214	1.47	0.077	9.05	4270	11	<0.0001	11	188	5.32	120	0.189	0.028	2.97	2450	3880	<0.01	11.6
12/05/2021	0.008	0.008	0.003	659	0.0696	374	2.15	0.154	10.2	5740	45.9	<0.0001	25	281	7.12	241	0.262	0.071	3.05	3340	5800	<0.01	15.4
08/06/2021	0.004	0.002	0.001	369	0.0231	178	0.748	0.051	3.98	3050	14.5	<0.0001	8	91	2.44	96	0.086	0.012	3.19	1390	2500	<0.01	5.33
05/07/2021	0.004	0.006	<0.001	492	0.0163	426	0.594	0.042	2.93	3690	10.8	<0.0001	22	77	1.95	250	0.071	0.015	3.29	1890	3460	<0.01	3.64
09/08/2021	0.011	0.012	<0.001	845	0.0027	927	0.086	0.013	0.013	5840	14.2	<0.0001	48	33	0.515	540	0.017	0.014	4.85	2060	4750	<0.01	0.398
09/09/2021	0.007	0.001	0.001	732	0.0276	700	0.751	0.149	5.86	6120	42.4	<0.0001	36	92	2.63	434	0.118	0.008	2.85	2390	4960	<0.01	5.57
06/10/2021	0.007	0.004	0.006	555	0.182	402	6.51	0.324	35.7	8910	156	<0.0001	12	927	18	245	0.762	0.028	2.97	6980	11000	<0.01	45.2
03/11/2021	0.02	0.002	0.01	616	0.266	1070	8.66	0.526	49.3	13700	129	<0.0001	20	1540	3.11	781	1.02	0.011	2.68	9720	16500	<0.01	62.5
07/12/2021	0.011	0.015	0.001	301	0.0236	169	0.661	0.022	3.42	2460	17.4	0.0001	7	95	3.04	91	0.088	0.022	3.64	1250	2210	0.01	4.6
Average	0.0073	0.0056	0.0036	527.917	0.084308	416.917	2.435	0.141667	13.963	5774.17	41.86	0.0001	17.66667	383.6667	6.150417	259.75	0.2993	0.0208	3.215	3513.33	6058.333	0.01	17.878
TSW03																							
11/02/2021	<0.001	0.104	<0.001	240	0.0008	412	0.052	<0.001	0.4	6140	187	<0.001	38	885	4.93	250	0.013	<0.001	4.22	4060	6990	<0.01	0.354
08/06/2021	0.001	0.123	<0.001	202	0.0006	369	0.053	0.001	0.078	5470	76.7	<0.001	33	584	4.09	170	0.011	<0.001	4.28	3300	5810	<0.01	0.153
05/07/2021	0.002	0.045	<0.001	404	0.0003	787	0.111	<0.001	0.037	12400	404	<0.001	63	1960	11.3	474	0.026	<0.001	4.26	9770	16600	<0.01	0.137
07/12/2021	0.001	0.097	0.001	42	0.0001	65	0.007	0.001	0.012	758	6.56	0.0001	11	44	0.58	34	0.002	0.001	6.26	308	505	0.01	0.012
Average	0.00133	0.0923	0.001	222	0.00045	408.25	0.0558	0.001	0.13175	6192	168.57	0.0001	36.25	868.25	5.225	232	0.013	0.001	4.755	4359.5	7476.25	0.01	0.164

Appendix Table 1 2021 Surface Water Quality Results (mg/L) (Cont'd)

Page 2 of 3

Date	Arsenic	Barium	Beryllium	Calcium	Cadmium	Chloride	Cobalt	Chromium	Copper	EC µS/cm	Iron	Mercury	Potassium	Magnesium	Manganese	Sodium	Nickel	Lead	pH	Sulphate	Total Dissolved Solids	Vanadium	Zinc
TSW04																							
06/01/2021	<0.001	0.074	<0.001	71	0.0078	324	0.061	<0.001	0.602	1950	<0.05	<0.0001	11	70	0.632	213	0.021	<0.001	6.63	424	1320	<0.01	0.615
10/02/2021	<0.001	0.059	<0.001	35	0.0002	61	0.001	<0.001	0.049	532	0.06	<0.0001	8	19	0.022	49	0.003	<0.001	7.55	48	356	<0.01	0.08
01/03/2021	0.002	0.063	<0.001	433	0.0129	510	0.251	0.002	1.82	3600	7.89	<0.0001	31	67	1.35	287	0.046	0.012	4	1430	2950	<0.01	2.84
12/04/2021	0.002	0.046	<0.001	92	0.0033	133	0.051	0.002	0.837	1130	1.6	<0.0001	15	24	0.381	83	0.016	0.002	5.64	354	867	<0.01	0.638
12/05/2021	<0.001	0.051	<0.001	391	0.0026	500	0.056	<0.001	1.2	3260	0.52	<0.0001	34	29	0.378	262	0.011	<0.001	5.18	1120	2550	<0.01	0.56
08/06/2021	0.001	0.045	<0.001	299	0.0055	438	0.092	<0.001	1.9	2780	0.16	<0.0001	24	30	0.451	215	0.019	<0.001	5.89	863	2050	<0.01	1.12
05/07/2021	<0.001	0.066	<0.001	44	0.0002	96	0.003	<0.001	0.008	682	0.63	<0.0001	10	20	0.056	60	0.002	<0.001	7.71	88	428	<0.01	0.04
23/08/2021	<0.001	0.059	<0.001	159	0.0003	219	0.008	<0.001	0.031	1560	1.42	<0.0001	15	23	0.244	145	0.005	0.001	6.17	480	1190	<0.01	0.062
09/09/2021	0.002	0.061	<0.001	44	<0.0001	67	0.005	0.001	0.13	549	2.38	<0.0001	9	9	0.101	46	0.004	0.003	6.07	114	738	0.01	0.061
06/10/2021	0.002	0.206	<0.001	24	0.0001	35	0.003	<0.001	0.048	411	0.26	<0.0001	11	11	0.02	43	0.004	<0.001	7.62	25	284	<0.01	0.025
03/11/2021	0.001	0.059	<0.001	38	0.0008	121	0.009	<0.001	0.317	836	0.71	<0.0001	9	27	0.101	85	0.008	<0.001	7.21	130	577	<0.01	0.093
07/12/2021	0.001	0.05	0.001	185	0.0177	371	0.248	0.002	8.05	2550	4.66	0.0001	13	72	1.5	226	0.057	0.003	4.44	849	1630	0.01	3.32
Average	0.0016	0.0699	0.001	151.25	0.004673	239.583	0.066	0.00175	1.2493	1653.33	1.845	0.0001	15.83333	33.41667	0.436333	142.83	0.0163	0.0042	6.1758	493.75	1245	0.01	0.7878
TSW08																							
06/01/2021	<0.001	0.018	<0.001	3	<0.0001	4	<0.001	0.001	0.006	66	0.62	<0.0001	4	3	0.015	6	<0.001	<0.001	6.63	1	66	<0.01	0.027
10/02/2021	0.001	0.027	<0.001	8	<0.0001	17	0.001	<0.001	0.03	206	0.19	<0.0001	6	7	0.011	19	0.001	<0.001	7.62	24	118	<0.01	0.033
01/03/2021	<0.001	0.063	<0.001	30	0.0003	70	0.001	<0.001	0.066	625	0.11	<0.0001	7	20	0.007	50	0.002	<0.001	7.16	84	418	<0.01	0.024
12/04/2021	0.002	0.039	<0.001	10	0.0026	25	0.044	0.002	0.53	268	1.02	<0.0001	12	9	0.236	24	0.011	<0.001	6.73	31	256	<0.01	0.514
12/05/2021	<0.001	0.05	<0.001	16	0.0005	42	0.005	<0.001	0.057	358	0.4	<0.0001	12	12	0.059	32	0.006	<0.001	6.53	27	284	<0.01	0.042
08/06/2021	<0.001	0.015	<0.001	1	0.0001	6	0.008	<0.001	0.037	95	0.19	<0.0001	7	3	0.018	16	0.002	<0.001	5.98	2	68	<0.01	0.037
05/07/2021	<0.001	0.032	<0.001	2	<0.0001	10	<0.001	<0.001	0.012	106	0.23	<0.0001	2	4	0.003	13	<0.001	<0.001	6.74	10	72	<0.01	<0.005
09/08/2021	0.001	0.055	<0.001	11	0.0007	28	0.004	<0.001	0.065	216	2.02	<0.0001	8	7	0.082	21	0.003	0.002	6.67	16	394	0.01	0.043
09/09/2021	0.001	0.068	<0.001	11	0.0002	28	0.003	0.001	0.046	212	2.36	<0.0001	8	6	0.076	21	0.004	0.003	5.95	10	472	0.01	0.026
06/10/2021	0.002	0.048	<0.001	3	<0.001	14	<0.001	<0.001	0.014	137	0.45	<0.0001	4	7	0.023	19	<0.001	<0.001	6.74	8	132	<0.01	0.026
03/11/2021	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
07/12/2021	0.002	0.024	0.001	2	0.0001	10	0.002	0.001	0.012	95	0.3	0.0001	3	3	0.03	14	0.001	0.001	6.6	8	116	0.01	0.014
Average	0.0015	0.0399	0.001	8.81818	0.000643	23.0909	0.009	0.00125	0.0795	216.727	0.717	0.0001	6.636364	7.363636	0.050909	21.364	0.0038	0.002	6.6682	20.0909	217.8182	0.01	0.0786
TSW09																							
06/01/2021	0.001	0.077	<0.001	941	0.0037	1680	0.046	<0.001	1.37	7140	0.35	<0.0001	69	41	0.311	687	0.012	<0.001	6.01	2320	5720	<0.01	0.714
10/02/2021	0.001	0.066	<0.001	789	0.0056	1510	0.11	<0.001	0.382	5710	0.66	<0.0001	57	45	0.523	478	0.015	0.001	5.94	2080	4800	<0.01	1.25
01/03/2021	<0.001	0.07	<0.001	973	0.0018	1800	0.003	<0.001	0.049	7760	0.22	<0.0001	68	42	0.076	687	0.002	<0.001	5.94	2510	6370	<0.01	0.148
12/04/2021	0.002	0.066	<0.001	796	0.0001	1440	0.001	<0.001	0.002	5740	0.14	<0.0001	69	30	0.008	482	0.002	<0.001	8.89	1960	4650	<0.01	0.018
12/05/2021	0.004	0.058	<0.001	806	0.0002	1580	0.001	<0.001	0.002	6510	0.06	<0.0001	72	22	0.013	638	<0.001	<0.001	6.07	2010	5350	<0.01	0.006
08/06/2021	0.002	0.047	<0.001	812	0.0012	1310	0.03	<0.001	<0.001	5940	0.15	<0.0001	52	31	0.186	525	0.007	<0.001	5.99	1970	4790	<0.01	0.035
05/07/2021	0.004	0.045	<0.001	623	0.0016	1010	0.052	0.003	0.044	5080	0.86	<0.0001	44	24	0.251	447	0.007	0.002	8.02	1750	3800	<0.01	0.203
09/08/2021	0.001	0.039	<0.001	692	0.0003	1250	0.004	0.007	0.008	5200	0.75	<0.0001	38	22	0.044	512	0.003	0.002	9.64	1320	4110	<0.01	0.035
16/09/2021	0.005	0.061	<0.001	846	0.0003	1340	0.008	0.002	0.008	6150	0.78	<0.0001	63	24	0.073	576	0.002	0.005	6.93	1930	4850	<0.01	0.095
06/10/2021	0.003	0.08	<0.001	664	0.0004	897	0.014	0.002	0.01	5390	0.73	<0.0001	43	25	0.092	443	0.003	0.005	8.53	1750	4220	<0.01	0.035
03/11/2021	0.004	0.065	<0.001	740	0.0037	1630	0.063	0.002	0.139	6790	0.84	<0.0001	65	52	0.418	758	0.018	0.003	6.91	1980	5470	<0.01	0.578
07/12/2021	0.003	0.024	0.001	412	0.0168	381	0.389	0.009	1.56	3180	6.35	0.0001	17	67	1.98	201	0.052	0.01	5.13	1300	2630	0.01	2.75
Average	0.0027	0.0582	0.001	757.833	0.002975	1319	0.060	0.004167	0.3249	5882.5	0.991	0.0001	54.75	35.41667	0.33125	536.17	0.0112	0.004	7	1906.67	4730	0.01	0.4889

Appendix Table 1 2021 Surface Water Quality Results (mg/L) (Cont'd)

Page 3 of 3

Date	Arsenic	Barium	Beryllium	Calcium	Cadmium	Chloride	Cobalt	Chromium	Copper	EC µS/cm	Iron	Mercury	Potassium	Magnesium	Manganese	Sodium	Nickel	Lead	pH	Sulphate	Total Dissolved Solids	Vanadium	Zinc
TSW10																							
07/01/2021	0.003	0.066	<0.001	358	0.0070	1690	0.039	<0.001	0.048	9000	0.08	<0.0001	44	281	1.07	1080	0.012	<0.001	7.35	2280	6540	<0.01	0.356
10/02/2021	0.002	0.055	<0.001	392	0.0041	2890	0.045	<0.001	0.047	11300	<0.05	<0.0001	42	379	0.951	1590	0.012	<0.001	7.58	2290	8130	<0.01	0.252
01/03/2021	0.002	0.061	<0.001	911	0.0012	1620	0.005	<0.001	0.035	7180	0.05	<0.0001	66	40	0.187	631	0.004	<0.001	6.56	2470	6140	<0.01	0.014
12/04/2021	0.014	0.074	<0.001	494	0.0014	1490	0.024	0.034	1.39	7990	13.2	<0.0001	53	210	0.507	883	0.018	0.078	7.88	2170	6300	0.02	0.332
27/05/2021	0.003	0.068	<0.001	348	0.0012	1100	0.021	<0.001	0.051	6690	0.19	<0.0001	71	225	0.568	772	0.013	<0.001	7.54	1870	5090	<0.01	0.077
08/06/2021	0.01	0.065	<0.001	433	0.0038	1900	0.057	0.019	0.528	8840	11.8	<0.0001	48	233	0.882	1110	0.024	0.056	6.42	1860	6490	0.01	0.535
06/07/2021	0.005	0.073	<0.001	439	0.0022	2930	0.03	0.003	0.141	12000	1.57	<0.0001	56	358	0.741	1730	0.01	0.008	8.01	2440	8560	<0.01	0.098
09/08/2021	0.001	0.035	<0.001	502	0.003	3460	0.039	<0.001	0.051	10400	0.07	<0.0001	48	286	0.954	1320	0.011	<0.001	7.7	2370	7790	<0.01	0.108
09/09/2021	0.002	0.067	<0.001	453	0.0021	1640	0.025	<0.001	0.028	8860	<0.05	<0.0001	55	254	0.558	1130	0.011	<0.001	6.2	2100	6660	<0.01	0.071
29/10/2021	0.003	0.073	<0.001	380	0.0038	2410	0.045	0.002	0.13	11000	1.58	<0.0001	51	356	0.981	1640	0.015	0.006	7.39	2120	7930	<0.01	0.098
03/11/2021	0.008	0.074	<0.001	366	0.0046	2420	0.055	0.013	0.801	10100	7.79	<0.0001	46	330	1.33	1410	0.018	0.025	7.51	2020	7770	<0.01	0.244
07/12/2021	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
Average	0.0048	0.0646	<0.001	461.455	0.003127	2140.91	0.035	0.0142	0.2955	9396.36	4.037	<0.0001	52.72727	268.3636	0.793545	1208.7	0.0135	0.0346	7.2855	2180.91	7036.364	0.015	0.1986
TSW11																							
08/06/2021	0.003	0.021	0.002	163	0.0053	56	0.373	0.005	4.48	1400	2.02	<0.0001	8	40	1.08	35	0.069	0.002	4.35	687	1180	<0.01	1.81
06/07/2021	0.002	0.017	0.002	323	0.0046	196	0.271	0.004	4.02	2460	2.05	<0.0001	13	42	1.01	119	0.047	0.004	3.58	1140	1990	<0.01	1.36
09/08/2021	0.002	0.027	0.001	389	0.0028	408	0.144	0.002	2.99	3180	0.92	<0.0001	23	33	0.578	267	0.032	0.004	4.08	1060	2480	<0.01	0.826
06/10/2021	0.005	0.029	0.003	423	0.0092	190	0.695	0.007	7.44	2970	0.89	<0.0001	18	104	2.05	111	0.134	0.006	4.28	1400	2680	<0.01	3.06
07/12/2021	0.001	0.056	0.001	183	0.001	74.000	0.003	0.001	0.033	1540.000	0.420	<0.0001	11.000	80.000	0.111	54	0.003	0.001	6.850	715.000	1300	0.010	0.028
Average	0.0026	0.03	0.0018	296.2	0.00458	184.8	0.2972	0.0038	3.7926	2310	1.26	<0.0001	14.6	59.8	0.9658	117.2	0.057	0.0034	4.628	1000.4	1926	0.01	1.4168

* 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 2021 Groundwater Quality Result (mg/L)

Page 1 of

Date	Arsenic	Barium	Beryllium	Calcium	Cadmium	Chloride	Cobalt	Chromium	Copper	EC µS/cm	Iron	Mercury	Potassium	Magnesium	Manganese	Sodium	Nickel	Lead	pH	Sulphate	Total Dissolved Solids	Vanadium	Zinc
Stock Watering Triggers *	0.5	-	-	1000	0.01	-	1	1	1	6000	N/A	0.002	-	-	N/A	-	1	0.1	6 – 9	1000	4000	-	20
Irrigation Triggers #	2	-	0.5	-	0.05	350	0.1	1	5	6000	10	0.002	-	-	10	230	2	5	6 – 9	-	-	0.5	5
PZH001																							
24/02/2021	0.001	0.01	<0.001	148	0.0001	3870	<0.001	<0.001	0.011	13800	<0.05	<0.0001	8	518	<0.001	2480	0.002	<0.001	7.93	2300	9870	<0.01	0.019
14/05/2021	0.002	0.01	<0.001	132	0.0001	3480	<0.001	<0.001	0.01	12400	<0.05	<0.0001	9	540	<0.001	2570	0.002	<0.001	7.73	2210	10200	<0.01	0.029
10/08/2021	<0.001	0.01	<0.001	147	0.0002	3650	<0.001	<0.001	0.012	14200	0.1	<0.0001	8	512	0.002	2550	0.002	<0.001	7.73	2190	9980	<0.01	0.036
24/11/21	0.001	0.009	0.001	140	0.0001	3880	0.001	0.001	0.014	15600	0.05	0.0001	8	499	0.006	2430	0.003	0.001	7.77	2260	10700	0.01	0.024
Average	0.001333	0.00975	0.001	141.75	0.000125	3720	0.001	0.001	0.01175	14000	0.075	0.0001	8.25	517.25	0.004	2507.5	0.00225	0.001	7.79	2240	10187.5	0.01	0.027
PZH002																							
24/02/2021	<0.001	0.014	168	0.0001	<0.0001	3230	<0.001	<0.001	0.006	11700	0.22	<0.0001	12	391	0.201	2240	0.001	<0.001	7.84	1970	8730	<0.01	0.014
14/05/2021	0.001	0.016	153	0.0001	<0.0001	2950	<0.001	<0.001	0.005	11200	0.82	<0.0001	13	396	0.219	2290	<0.001	<0.001	7.61	1950	8730	<0.01	0.014
10/08/2021	<0.001	0.015	166	0.0001	<0.0001	3090	<0.001	<0.001	0.003	12400	0.23	<0.0001	12	369	0.2	2220	0.002	<0.001	7.61	1950	8520	<0.01	0.011
24/11/21	0.001	0.014	160	160	0.0001	3290	0.001	0.001	0.002	13300	0.05	0.0001	11	371	0.195	2200	0.001	0.001	7.78	1920	9190	0.01	0.005
Average	0.001	0.01475	161.75	40.00008	0.0001	3140	0.001	0.001	0.004	12150	0.33	0.0001	12	381.75	0.20375	2237.5	0.00133	0.001	7.71	1947.5	8792.5	0.01	0.011
PZH003																							
24/02/2021	<0.001	0.021	263	0.0002	0.0002	5120	0.001	<0.001	0.009	16400	1.1	<0.0001	30	675	0.226	3020	0.012	<0.001	7.88	2370	13000	<0.01	0.038
14/05/2021	<0.001	0.023	237	0.0001	<0.0001	4670	0.002	<0.001	0.002	16400	0.6	<0.0001	32	665	0.245	2980	0.003	<0.001	7.54	2250	13600	<0.01	0.017
10/08/2021	<0.001	0.022	239	0.0001	0.0001	5020	0.002	<0.001	<0.001	17700	0.58	<0.0001	28	634	0.28	2920	0.002	<0.001	7.6	2270	12600	<0.01	0.019
24/11/21	0.001	0.016	255	255	0.0001	5350	0.003	0.001	0.003	18900	0.84	0.0001	28	647	0.189	2960	0.002	0.001	7.75	2340	13400	0.01	0.043
Average	0.001	0.0205	248.5	63.7501	0.000133	5040	0.002	0.001	0.00467	17350	0.78	0.0001	29.5	655.25	0.235	2970	0.00475	0.001	7.693	2307.5	13150	0.01	0.0293
PZH005																							
24/02/2021	0.003	0.014	162	0.0002	0.0002	4780	0.001	<0.001	0.018	14300	<0.05	<0.0001	12	647	0.093	2500	0.043	0.001	7.83	1270	11100	<0.01	0.037
14/05/2021	0.003	0.013	147	0.0001	<0.0001	4250	0.002	<0.001	0.014	13100	0.07	<0.0001	13	671	0.13	2530	0.037	0.001	7.44	1220	10600	<0.01	0.031
10/08/2021	0.002	0.012	134	0.0001	0.0001	4480	0.002	<0.001	0.013	14800	0.07	<0.0001	10	561	0.132	2190	0.034	0.001	7.51	1190	10200	<0.01	0.023
24/11/21	0.001	0.011	151	151	0.0001	4700	0.003	0.002	0.02	16100	0.08	0.0001	11	606	0.158	2360	0.033	0.001	7.7	1160	11200	0.01	0.041
Average	0.00225	0.0125	148.5	37.7501	0.000133	4552.5	0.002	0.002	0.01625	14575	0.073333	0.0001	11.5	621.25	0.12825	2395	0.03675	0.001	7.62	1210	10775	0.01	0.033
PZH006																							
24/02/2021	0.002	0.024	<0.001	147	0.0002	2610	0.009	<0.001	0.014	9860	0.34	<0.0001	7	469	0.223	1650	0.006	0.001	7.71	2300	8060	<0.01	0.03
14/05/2021	0.002	0.023	<0.001	136	0.0007	2430	0.018	<0.001	0.036	9080	0.06	<0.0001	7	499	0.036	1730	0.007	0.001	7.23	2130	7860	<0.01	0.077
10/08/2021	0.005	0.023	<0.001	134	0.0001	2570	0.008	<0.001	0.012	10300	0.09	<0.0001	6	450	0.238	1620	0.006	0.002	7.17	2130	7650	<0.01	0.032
24/11/21	0.001	0.021	0.001	140	0.0001	2680	0.007	0.001	0.008	11200	0.05	0.0001	6	454	0.207	1610	0.004	0.001	7.49	2150	8080	0.01	0.028
Average	0.0025	0.02275	0.001	139.25	0.000275	2572.5	0.0105	0.001	0.0175	10110	0.135	0.0001	6.5	468	0.176	1652.5	0.00575	0.00125	7.4	2177.5	7912.5	0.01	0.0418

Appendix Table 2 2021 Groundwater Quality Result (mg/L) (Cont'd)

Page 2 of

Date	Arsenic	Barium	Beryllium	Calcium	Cadmium	Chloride	Cobalt	Chromium	Copper	EC µS/cm	Iron	Mercury	Potassium	Magnesium	Manganese	Sodium	Nickel	Lead	pH	Sulphate	Total Dissolved Solids	Vanadium	Zinc
PZH007																							
24/03/2021	0.003	0.067	<0.001	182	0.001	2990	0.014	0.004	0.095	12100	2.55	<0.0001	22	325	0.364	2020	0.032	0.01	7.71	2010	8430	0.01	0.125
24/06/2021	<0.001	0.107	<0.001	149	0.0002	2730	0.003	<0.001	<0.001	9880	0.71	<0.0001	24	317	0.292	2010	0.012	0.001	7.85	1560	7310	<0.01	0.033
13/09/2021	0.016	0.028	<0.001	163	0.0009	4190	0.005	<0.001	0.04	16300	0.74	<0.0001	12	518	0.126	2500	0.006	<0.001	7.23	1960	11100	<0.01	0.072
16/12/2021	0.005	0.031	<0.001	172	0.0020	4650	0.016	0.004	0.198	15900	0.44	<0.0001	18	560	0.210	2770	0.011	<0.001	8.05	2250	12400	<0.01	0.120
Average	0.00625	0.05825	<0.001	166.5	0.001025	3640	0.01625	0.0025	0.0835	13545	1.11	<0.0001	19	430	0.248	2325	0.01525	0.00325	7.71	1945	9810	<0.01	0.0875
PZH008																							
24/03/2021	0.032	0.021	<0.001	180	<0.0001	3660	<0.001	0.006	0.018	14000	1.42	<0.0001	11	507	0.0065	2350	0.002	0.001	7.62	1820	9700	<0.01	0.015
17/06/2021	0.013	0.016	<0.001	148	<0.0001	3960	<0.001	<0.001	0.002	13100	0.54	<0.0001	9	492	0.0047	2370	<0.001	<0.001	7.57	1720	9170	<0.01	0.007
13/09/2021	0.016	0.018	<0.001	155	<0.0001	3580	<0.001	<0.001	0.003	13400	0.66	<0.0001	10	478	0.053	2220	<0.001	<0.001	7.25	1710	9580	<0.01	0.014
16/12/2021	0.020	0.019	<0.001	142	0.0006	3970	0.010	<0.001	0.044	13300	1.12	<0.0001	9	473	0.108	2240	0.004	<0.001	7.92	1810	10200	<0.01	0.065
Average	0.02025	0.0185	<0.001	156.25	0.0006	3792.5	0.0085	<0.00225	0.01675	13450	0.935	<0.0001	9.75	487.5	0.04305	2295	0.003	0.001	7.59	1765	9662.5	<0.01	0.0253
PZH009																							
24/03/2021	<0.001	0.05	<0.001	208	0.0008	4770	0.003	0.001	0.082	17900	0.21	<0.0001	17	606	0.172	3220	0.02	<0.001	8.22	2290	12700	<0.01	0.108
16/06/2021	<0.001	0.042	<0.001	172	0.0008	5120	<0.001	<0.001	0.082	17300	<0.05	<0.0001	16	585	0.095	3200	0.016	<0.001	7.83	2160	12200	<0.01	0.094
13/09/2021	<0.001	0.046	<0.001	173	0.0006	4700	<0.001	0.001	0.102	18300	0.07	<0.0001	16	577	0.099	3020	0.016	<0.001	7.6	2110	12400	<0.01	0.106
16/12/2021	0.001	0.045	<0.001	161	0.0008	5380	0.002	0.001	0.098	17200	0.18	<0.0001	16	564	0.072	3050	0.018	<0.001	8.0	2280	13500	<0.01	0.127
Average	0.001	0.04575	<0.001	178.5	0.00075	4992.5	0.0025	0.001	0.091	17675	0.153333	<0.0001	16.25	583	0.1095	3122.5	0.0175	<0.001	7.913	2210	12700	<0.01	0.1088
PZH014																							
24/03/2021	0.001	0.005	<0.001	218	0.0002	4080	<0.001	0.004	0.011	15300	0.37	<0.0001	14	578	0.007	2550	0.003	<0.001	8.12	1760	10600	<0.01	0.02
29/06/2021	0.002	0.004	<0.001	178	0.0002	4380	<0.001	0.003	0.013	14200	0.43	<0.0001	12	562	0.008	2510	0.003	0.002	7.68	1750	10100	<0.01	0.015
14/09/2021	0.001	0.004	<0.001	186	<0.0001	4180	<0.001	0.002	0.009	16000	0.24	<0.0001	13	537	0.012	2370	0.002	<0.001	7.37	1840	11000	<0.01	0.015
16/12/2021	0.001	0.004	<0.001	174	0.0002	4480	<0.001	<0.001	0.005	14500	<0.05	<0.0001	12	532	0.019	2390	0.003	<0.001	7.86	1870	11600	<0.01	0.015
Average	0.00125	0.00425	<0.001	189	0.0002	4280	<0.001	0.003	0.0095	15000	0.346667	<0.0001	12.75	552.25	0.0115	2552.5	0.00275	0.001	7.758	1805	10825	<0.01	0.0163
PZH015																							
24/03/2021	<0.001	0.009	<0.001	125	0.0001	3300	<0.001	0.014	0.01	12400	0.2	0.0001	39	424	0.024	2160	0.003	<0.001	8.19	2000	8640	<0.01	0.02
29/06/2021	<0.001	0.006	<0.001	190	<0.0001	4830	<0.001	0.009	0.005	16100	0.06	<0.0001	24	602	0.024	3090	0.002	<0.001	7.55	2510	12500	<0.01	0.009
14/09/2021	<0.001	0.008	<0.001	201	<0.0001	4750	0.001	0.019	0.016	17900	0.11	<0.0001	25	600	0.029	3010	0.003	<0.001	7.49	2590	12700	<0.01	0.024
16/12/2021	<0.001	0.007	<0.001	186	0.0001	4950	<0.001	0.012	0.016	16900	0.42	<0.0001	24	592	0.012	3000	0.004	<0.001	7.88	2830	13200	<0.01	0.019
Average	<0.001	0.0075	<0.001	175.5	0.0001	4457.5	0.0025	0.0135	0.01175	15825	0.1975	0.0001	28	554.5	0.02225	2815	0.003	<0.001	7.778	2482.5	11760	<0.01	0.018
PZH017																							
25/01/2021	<0.001	0.029	<0.001	116	<0.0001	3260	<0.001	<0.001	0.005	12100	2.01	<0.0001	14	270	0.066	2040	<0.001	<0.001	7.9	799	7460	<0.01	0.028
27/04/2021	<0.001	0.031	<0.001	121	<0.0001	3360	<0.001	<0.001	0.002	12100	1.78	<0.0001	14	298	0.068	2210	<0.001	<0.001	7.93	907	7850	<0.01	<0.005
26/07/2021	<0.001	0.029	<0.001	107	<0.0001	3230	<0.001	<0.001	0.004	11500	0.51	<0.0001	14	279	0.058	2080	<0.001	<0.001	8.04	856	7460	<0.01	0.015
28/10/2021	<0.001	0.028	<0.001	115	0.0002	3630	0.004	<0.001	0.017	12000	0.29	<0.0001	14	272	0.068	2060	0.002	<0.001	8.18	971	7400	<0.01	0.033
Average	<0.001	0.029	<0.001	114.75	0.0001	3370	0.0017	<0.001	0.00525	11925	1.1475	<0.0001	14	279.75	0.065	2097.5	0.002	<0.001	8.01	883.25	7542.5	<0.01	0.0203

Appendix Table 2 2021 Groundwater Quality Result (mg/L) (Cont'd)

Page 3 of

Date	Arsenic	Barium	Beryllium	Calcium	Cadmium	Chloride	Cobalt	Chromium	Copper	EC µS/cm	Iron	Mercury	Potassium	Magnesium	Manganese	Sodium	Nickel	Lead	pH	Sulphate	Total Dissolved Solids	Vanadium	Zinc
PZH018																							
25/01/2021	<0.001	0.03	<0.001	340	<0.0001	7450	<0.001	<0.001	0.002	25800	0.38	<0.0001	30	804	0.332	4240	0.002	<0.001	7.76	2370	18700	<0.01	0.006
27/04/2021	<0.001	0.032	<0.001	342	0.0001	8040	0.002	0.001	0.006	25700	0.52	<0.0001	32	882	0.442	4590	0.003	<0.001	7.8	2580	19200	<0.01	0.014
14/07/2021	<0.001	0.032	<0.001	299	<0.0001	7510	0.002	0.001	0.007	24300	0.52	<0.0001	30	826	0.333	4400	0.003	<0.001	7.81	2700	19100	<0.01	0.015
28/10/2021	<0.001	0.031	<0.001	341	<0.0001	8240	0.003	0.001	0.011	24800	0.6	<0.0001	29	796	0.36	4240	0.003	<0.001	8.07	2460	18700	<0.01	0.021
Average	<0.001	0.031	<0.001	330.5	<0.0001	7810	0.002	0.001	0.0065	25150	0.505	<0.0001	30.25	827	0.36675	4367.5	0.00275	<0.001	7.86	2527.5	18925	<0.01	0.014
PZH019																							
25/01/2021	0.01	0.032	<0.010	253	<0.0010	6070	<0.010	<0.010	0.013	21200	2.54	<0.0001	26	713	0.092	3720	<0.010	<0.010	7.85	2010	15000	<0.10	0.069
27/04/2021	<0.001	0.03	<0.001	250	<0.0001	5720	0.002	<0.001	0.008	18900	0.63	<0.0001	29	614	0.242	3500	0.002	<0.001	7.8	1700	12900	<0.01	0.015
26/07/2021	0.003	0.023	<0.001	81	<0.0001	2970	<0.001	<0.001	0.006	10600	0.06	<0.0001	10	276	0.006	1840	0.014	<0.001	7.95	776	6730	<0.01	0.048
28/10/2021	<0.001	0.059	<0.001	248	0.0002	6140	0.003	<0.001	0.052	21600	5.38	<0.0001	18	622	1.08	2910	0.002	<0.001	8.11	2360	16100	<0.01	0.034
Average	0.0065	0.036	<0.001	208	0.0002	5225	0.0025	<0.001	0.01975	18075	2.1525	<0.0001	20.75	556.25	0.0355	2992.5	0.006	<0.001	7.928	1711.5	12682.5	<0.01	0.0415
PZH020																							
25/01/2021	<0.001	<0.001	<0.001	27	<0.0001	694	<0.001	<0.001	0.002	2730	<0.05	<0.0001	6	67	0.002	418	<0.001	<0.001	7.56	232	1580	<0.01	0.009
27/04/2021	<0.001	0.01	<0.001	126	<0.0001	3590	<0.001	<0.001	0.003	13000	0.07	<0.0001	34	314	0.014	2340	<0.001	<0.001	7.67	1090	8320	<0.01	0.013
14/07/2021	<0.001	0.008	<0.001	128	<0.0001	3760	0.001	<0.001	0.006	13400	0.07	<0.0001	31	357	0.02	2480	0.001	<0.001	7.79	1380	8890	<0.01	0.02
27/10/2021	<0.001	0.032	<0.001	308	0.0006	7850	0.01	<0.001	0.097	23800	0.64	<0.0001	28	750	0.411	4050	0.006	<0.001	8.07	2270	17600	<0.01	0.098
Average	<0.001	0.01667	<0.001	147.25	0.00026	3973.5	0.0055	<0.001	0.027	13232.5	0.26	<0.0001	24.75	372	0.11175	2322	0.00235	<0.001	7.773	1243	9097.5	<0.01	0.035
PZH021																							
25/01/2021	<0.001	0.062	<0.001	256	<0.0001	4480	<0.001	<0.001	0.003	16100	5.97	<0.0001	16	533	1.18	2390	<0.001	<0.001	7.67	1600	10700	<0.01	0.007
27/04/2021	<0.001	0.069	<0.001	271	<0.0001	4700	<0.001	<0.001	0.001	16000	6.69	<0.0001	16	585	1.29	2590	<0.001	<0.001	7.74	1500	11400	<0.01	0.005
14/07/2021	<0.001	0.06	<0.001	215	<0.0001	4400	<0.001	<0.001	0.004	15100	5.94	<0.0001	15	508	1.02	2300	<0.001	<0.001	7.72	1680	10600	<0.01	0.01
28/10/2021	<0.001	0.063	<0.001	257	<0.0001	4990	<0.001	<0.001	0.003	15800	6.28	<0.0001	16	539	1.24	2440	<0.001	<0.001	8.01	1500	11700	<0.01	0.007
Average	<0.001	0.0635	<0.001	249.75	<0.0001	4642.5	<0.001	<0.001	0.00275	15750	6.22	<0.0001	15.75	541.25	1.1825	2430	<0.001	<0.001	7.785	1570	11100	<0.01	0.0073

* ANSECC Stock water guidelines for cattle (Primary)

ANZECC Irrigation and general use guidelines for wheat (Secondary)

N/A – Not sufficiently toxic to stock