29 March 2022

2021 Calendar Year Annual Review and Safety Standards Report Tailings Dam 1 Aeris Tritton Mine

Tritton Resources Pty Ltd

PER2021-0387AC rev0

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Date	Revision	Comments
15/03/2022	A	Internal review, issued to client for review
29/03/2022	0	Final Report

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1 INTRODUCTION

This report presents the results and findings of the annual (surveillance) review of Tailings Dam 1 undertaken at Aeris Resources, Tritton Mine located west of Nyngan near Hermidale in NSW. The mine is operated by Tritton Resources Pty Ltd. This report also presents the Annual Dams Safety Standards Report for the Tritton site (refer to Appendix E).

The annual review was undertaken by John V Smith (CPEng), Principal Engineering Geologist and Chartered Engineer, CMW Geosciences Pty Ltd (CMW) on Thursday 17 February 2022 in the company of Jamie Barrow of Aeris Resources Tritton Mine. This is the seventeenth (17th) annual independent review of Tailings Dam 1 (TD1) undertaken by a specialist independent consulting organisation. This review covers activities and information pertaining to the 2021 calendar year. The previous surveillance review was undertaken in March 2021 that covered the 2020 calendar year.

The tailings dam was commissioned in December 2004, the first (1st) review was undertaken in January 2006 and covered the 2005 calendar year, subsequent reviews have been undertaken on an annual basis generally in January or February of each year which satisfied the then annual reporting requirements specified by the NSW Dams Safety Committee (NSW DSC). Reviews of tailings dams (or dams) are now covered by the newly introduced Dams Safety Act 2015 No.26 and Dam Safety Regulation 2019.

The annual review was commissioned by Jamie Barrow of Aeris Resources Pty Ltd by way of a signed authority and purchase order 20208569.

1.1 2021 Surveillance Summary

The findings of this surveillance review are presented in the body of this report. Pertinent information has been summarised as:

- It has been concluded that the tailings dam is being operated and managed to an acceptable standard during the review period, with no reportable safety incidents;
- No reportable environmental incidents were advised;
- Stage 6 embankment raising was completed in December 2020. A construction report was prepared by Barnson (2021) titled '*Earthworks Quality Control Construction Report, Stage 6 Works Embankment Raising by 2.5m to 270.0 Tailings Dam 1*'.
- Stage 7 construction will be commenced in the first half of 2022. During Stage 7 construction, ensure that the spillway is maintained at the current level until the final phase of Stage 7 construction.
- There were no visible signs of distress (cracking) of the embankments;
- Surface erosion has continued to form rills on the embankment surface. The rilling was observed above and below the intermediate berm on the main embankment. Various erosion control measures are evident on parts of the outer wall of the TD. Where these measures include solid objects, such as logs or coir rolls it was observed that local increase of water velocity around the objects had led to minor local scouring. No changes to the erosion and sediment control procedure are required at this stage.
- Water level falls were recorded in six of the bores associated with TD1. Rises were recorded in 9 piezometers during 2021 in PZH001, PZH006D, PZH008, PZH009, PZH014, PZH0017, PZH018, PZH019 and PZH021.
- The largest water level rise during 2021 was +4.63 m in PZH001, which is located in the northern abutment of main embankment. It is recommended that the RAP document be reviewed by a

hydrogeologist to assess whether pumping be recommenced from PB001 to assist in controlling the rate of rise of ground water.

1.2 2020 Surveillance Actions

The 2020 surveillance review outlined various recommendations and actions. Pertinent information is summarised from last year's review as:

- It has been concluded that the tailings dam is being operated and managed to an acceptable standard during the review period, with no reportable safety incidents;
- No signage was observed at the gated entrances to the fenced tailings dam area. Clear signage is required to advise the public the tailings dam is a no go area and access is strictly prohibited. Of Note: At the time of submitting this report (May 2021) new signage had been installed
- No reportable environmental incidents were advised;
- The Stage 6 and 7 design was acknowledged by the NSWDSC in correspondence date 22nd May 2018 – ref INW18/8228;
- Stage 6 construction commenced in October 2018, but was temporarily suspended in November 2019 due to a lack of adequate construction water. Embankment raising was completed in late 2020.
- It is strongly recommended that when Stage 7 works are commenced, the embankment with the existing spillway should be raised last.
- There were no visible signs of distress (cracking) of the embankments;
- Variably sized minor 'piping' holes were observed on the intermediate berm of the main embankment, it was assessed that these features currently do not have an adverse effect on the overall integrity of the embankment.
- Water level falls were recorded in nine of the bores associated with TD1. Exceptions were rises in bores PZH003, PZH007D, PZH008, PZH009, PZH014 and PZH015.
- In 2020 DnA Environmental undertook a Rehabilitation Monitoring survey which included the Tailings Dam, their report is dated January 2021.

1.3 Figures and Appendices

Figures 1 to 6 are attached to this document, behind the text. A site location plan is presented as Figure 1. Design details covering Stage 2 are presented as Figures 2 and 3. The location of the monitoring bores is shown on Figure 4. Figure 5 show guidelines for freeboard nomenclature. Survey information previously supplied is presented as Figure 6.

Photographs taken during the surveillance review are attached in Appendix A as Figures A1 to A7. Appendix B contains monitoring information including monitoring bore water levels, water quality information and copies of inspection sheets (daily log sheets) which are a requirement of the operations manual.

Appendix C contains stability information prepared for the design of embankment raises for Stages 6 and 7. Liquefaction potential plots of the tailings are also presented in Appendix C, these plots indicate the tailings have a low likelihood of liquefaction based on the seismic intensity assessed.

For completeness purposes, Appendix D contains as constructed details of the Stage 6 and 7 design details.

The 2021 Annual Dams Safety Standards Report for the site which includes TD1 is presented in Appendix E.

2 GENERAL INFORMATION

The tailings dam is used to store milled mine waste (tailings slurry). Tailings slurry is deposited into the dam from a perimeter distribution system that fully encircles the dam. At the time of the February 2022 review tailings slurry deposition was being undertaken from the western side of TD1. No construction works were being undertaken. Stage 6 construction that commenced in October 2018was delayed and stopped during 2019 due to a severe drought that affected the mine, due to a lack of water suitable for construction activities, the works were temporarily suspended. Stage 6 construction was completed towards the end of 2020 when adequate water became available.

Stage 7 works are being planned for commencement in the first half of 2022. Careful planning needs to be undertaken to ensure the spillway embankment is raised last so it remains the preferred outflow channel or the new spillway location at the eastern end of the main embankment is constructed.

The tailings deposition philosophy is based on the fact that when the tailings slurry is discharged there is a rapid decrease in velocity causing the coarser tailings solids fraction to settle out and then consolidate in close proximity to the embankment. Sloped beaches are formed that slope away from the perimeter embankment towards the water recovery pond and pump (refer to the photographs). Water liberated from the deposited slurry water flows down the sloped tailings beach and is concentrated around the recovery pump where it is pumped back to the processing plant.

2.1 General Details

The tailings dam is situated at the Aeris Resources, Tritton Mine which is located approximately 65km west of Nyngan on the Yarrandale Road, which joins the townships of Hermidale and Girilambone. The approximate centre of the tailings dam is at mine grid 20,200mN and 31,500mE or AMG 6,527,300mN and 474,500mE.

TD1 is a valley type storage facility where the main embankment has dammed a small valley in its upper reaches. Diversion channels and bunds were constructed upstream of the tailings dam as part of Stage 1 works to intercept and divert any runoff around the facility. TD1 is now surrounded by perimeter embankments and the catchment reporting into TD1 is from incident rainfall only.

The perimeter containment embankments are currently at the Stage 6 level of RL270.0m.

There is one spillway associated with this tailings dam. The spillway has been designed to pass the 1:100 year average exceedance probability (AEP) rainfall event with an average flow depth of less than 0.5m and the PMP event at less than 1m depth. The spillway is located through the northern abutment and has an invert level at RL269.0m or 1m below the Stage 6 embankment crest, the invert is raised as part of each staged construction lift. Views of the spillway are shown on Figure A5.

The 2018 design document for Stages 6 and 7 re-examined the consequence category (hazard rating). Based on the DSC3A and DSC3F Guidelines, the consequence category for TD1 has been assessed as ‘Significant’, based on Table 2 in the guide, with the following considerations:

- Population at risk (PAR): <1. Note if the PAR was >1 to 10, the consequence category would be the same.
- Receiving Environment: Rural / Productive.
- Severity of Damage or Loss: Medium – saline liquid and possible solids.

The consequence rating in accordance with the ANCOLD (2019) is also ‘Significant’.

3 DESIGN AND CONSTRUCTION ACTIVITIES AND REPORTS

The following section provides a chronological summary of the history of the tailings dam, the information is included in each annual surveillance report for completeness and continuity purposes and remains unchanged except for the current year's activities.

3.1 Design History and Reports

The tailings dam was located and partially designed by Knight Piesold (KP) prior to Tritton Resources becoming the owners of the project. A geotechnical investigation was undertaken by SRE in November 2003, the associated geotechnical report was dated January 2004.

The original design by KP was reviewed and reassessed by SRE, based on changed production rates and life of mine projections, design information and assumptions are outlined in SRE's design report titled "*Design Report, Tailings Storage Facility 1, Tritton Copper Project*", Revision 1, dated 2 March 2004. The report required minor amendments following a review by the NSW DSC.

An Operations Manual co-authored by Coffey and Tritton Resources was submitted to the NSW DSC in July 2005. The operations manual was reviewed and revised by Tritton in conjunction with Coffey in 2011 and 2016 and by CMW Geosciences in 2018 and February 2021.

3.2 Stages 1 to 7 Design Reports

Table 1 summarises staged construction information. Stage 1 - SRE (2004) prepared and submitted design documentation covering the starter embankment (Stage 1) and staged upstream construction of the embankments, (Stages 2 to 5). The design was based on investigation and design information provided by others. SRE became part of Coffey in October 2003.

Stage 2 - Coffey (2006) prepared the Stage 2 embankment design and earthworks scope of works reports during 2006 titled "*Stage 2 Design Report, Tailings Storage Facility 1 Tritton Resources Limited*" - reference P6926.03-BB-stage 2 design report, dated 19 July 2006. Stage 2 earthworks were completed during 2007.

Stage 3 Coffey (2007) prepared embankment design and earthworks scope of works documentation during 2007, titled "*Stage 3 Design Report, Tailings Storage Facility 1 Tritton Resources Limited*", reference MH00100AD-Stage 3 design report Rev 1, dated March 2007. The Stage 3 earthworks specification document is titled "*Scope of Works - Stage 3, Embankment Raising by 2m to RL264.0m, Tailings Storage Facility 1 Tritton Copper Mine, Hermidale*" reference MH00100AD-AC-sowrep-Rev A, dated 20 June 2007. The Stage 3 earthworks commenced in December 2007 and were completed in 2011. A construction report covering Stage 3 activities was prepared by Barnson (engineering organisation) titled '*Construction Report Tritton Copper Mine, Stage 3 Tailings Storage Facility Works'*, dated October 2011. Stage 3 as constructed details are presented in Appendix D.

Stage 4 (Coffey 2010) embankment design documentation and earthworks scope of works was prepared by Coffey during 2010 and is titled '*Stage 4 Design Report, Tailings Storage Facility 1 Tritton Copper Project'*, reference MINEWPER00100AN-Stage 4 design report Rev 0, dated August 2010. The Stage 4 design provides for embankment raising by 2m to RL266.0m. Stage 4 construction details are shown in Appendix D. The scope of works is titled '*Scope of Works - Stage 4, Embankment Raising by 2m to RL266.0m, Tailings Storage Facility 1 Tritton Copper Mine, Hermidale'*, reference MWP00100AN-AC-sowrep-Rev 0, dated 20 June 2010. A construction report covering Stage 4 activities was prepared by Barnson's titled '*Earthworks Quality Control Construction Report, Tritton Copper Mine, Stage 4 Tailings Storage Dam Facility Works'*, dated April 2015. The Stage 4 as constructed survey plan is presented in Appendix D.

Stage 5 (Coffey 2015) embankment design documentation and earthworks scope of works was prepared by Coffey during 2015 and is titled '*Stage 5 Design Report, Tailings Storage Dam 1 Straits Tritton Copper Mine'*, reference MWP00100AW-Stage 5 design report Rev 0, dated August 2015. The

Stage 5 design provides for embankment raising by 1.5m to RL267.5m. Stage 5 construction details are shown in Appendix D. The scope of works outlining construction details is titled '*Scope of Works - Stage 5, Embankment Raising by 1.5m to RL267.5m, Tailings Storage Facility 1 Tritton Copper Mine, Hermidale'*, reference MINEWPER00100AW Rev 0, dated 10 August 2015.

The Stage 5 design (dated August 2015) was acknowledged by the NSW Dams Safety Committee in correspondence dated 26 October 2015 which also confirmed that a Type 3 surveillance review is required on an annual basis. A construction report covering Stage 5 activities was prepared by Barnson's titled '*Earthworks Quality Control Construction Report, Tritton Copper Mine, Stage 5 Tailings Storage Dam Facility Works'*, dated 2017. The Stage 5 as constructed survey plan is presented in Appendix D.

Stages 6 and 7 (CMW Geosciences 2018) embankment design documentation and earthworks scope of works was prepared by new consultants namely CMW Geosciences. The design report is titled '*Stages 6 and 7 Design Report, Tailings Dam 1, Tritton Mine'*, reference PER2017-0066AB Design Report Rev0, dated March 2018. The design provides for embankment raising in two stages by 4.5m from RL267.5m to RL272.0m. The design report includes electric friction probe results, laboratory test results and design information including stability and seepage analyses and liquefaction assessments. Stage 6 and 7 construction details presented in Appendix D. The Stage 6 and 7 design report was acknowledged by the NSWDSC in correspondence dated 21st March 2018.

Table 1 - Staged Construction Information

Stage	RL	Design report date	Start date of construction	End date of construction	Construction report
1	260.0m	2004	2004	2004	2004
2	262.0m	2006	2006	2007	2007
3	264.0m	2007	2007	2011	2011
4	266.0m	2010	2013	Early 2015	April 2015
5	267.5m	August 2015	Mid-2016	Late 2017	Late 2017
6	270.0m	March 2018	December 2018	December 2020	March 2021,
7	272.0m	March 2018	Pending	n.a.	n.a.

3.3 2004 Activities – Stage 1 Starter Embankment

Stage 1 construction (starter embankment) was completed to RL260.0m in September 2004, with a spillway invert at RL259.0m. Initial construction also comprised an underdrainage water interception system located immediately upstream of the main embankment, a downstream toe drain, collection sump and recovery pump. The catchment area was 330,000 m^2. Four monitoring bores were installed prior to commissioning in November 2004.

Coffey prepared a construction report[4] titled "*Stage 1 to RL260.0m Tailings Storage Facility 1 Construction Report, Tritton Copper Project*", dated 17 November 2004. The works were supervised on a full time basis with associated soil testing. Stage 1 as constructed details are presented in Appendix D.

3.4 2005 Activities

Activities included, installing additional spigot off-takes and valves to the tailings distribution line, the decant water recovery trench was increased in length with the recovery pump relocated further up the valley. These additional works were completed in September 2005.

3.5 2006 Activities – Stage 2

Stage 2 construction works commenced in October 2006 and were completed in early 2007 and entailed raising the embankments by 2m to RL262.0m and extending both abutments. A new saddle embankment was constructed along the northern abutment, the spillway invert was raised by 2m to RL261.1m. A low permeability clay layer was placed over the base of the Stage 2 area. Embankments and the clay blanket were constructed using compacted clayey borrow materials sourced from within the impoundment area.

3.6 2007 Activities – Stages 2 and 3

The Stage 2 works were completed in early 2007. A construction report was prepared by Barnson's, who provided testing and supervision services, titled "Construction Report Stage 2 Tailings Dam, Tritton Copper Mine, Straits Tritton Resources Limited" ref 10265, dated December 2007. As constructed details are presented in Appendix D.

Stage 3 embankment design is presented in Coffey's document, dated March 2007 while the scope of works is dated June 2007. Approval for Stage 3 construction was received from the DSC in late 2007. Stage 3 works commenced in early December 2007 and were completed in mid-2011. By the end of 2007, the main embankment had been raised by only 0.3m, while the northern saddle embankment raising had been raised by approximately 0.5m.

3.7 2008 Activities – Stage 3

Embankment raising by 2m to RL264.0m was continuing, the spillway invert was raised to RL263.0m, the decant trench was backfilled with low permeability clay materials and new areas of the tailings dam floor were covered with low permeability clayey material. The Stage 3 works in 2008 were under the supervision and testing regime of Tritton and Barnson personnel.

3.8 2009 Activities – Stage 3

New areas of the tailings dam floor were covered with compacted low permeability clay material; and construction of the Western Saddle Embankment to RL264.0m was completed. The downstream batter slope of the main embankment was seeded in mid-2009.

3.9 2010 Activities – Stage 3

New areas of the tailings dam floor were covered with low permeability compacted material, final trimming of the Western Saddle Embankment to RL264.0m was completed. An underground paste plant was constructed during 2010, it uses tailings as a feed product on a campaign basis. The plant was commissioned over the period November 2010 to mid-2011.

3.10 2011 Activities

The operations manual was revised and updated (rev 3) titled "*Straits Tritton Mines Tailings Dam 1 Operations and Maintenance Manual & DSC Emergency Action Plans Tritton Copper Mine*", Rev 3b dated 5 October 2011.

During 2011 the following activities were completed: Final trimming of the western saddle embankment, Stage 3 footprint areas were cleared of vegetation and topsoil and covered with low permeability compacted materials, refer to the plan presented in Appendix D.

The Stage 3 construction report was issued by Barnson's dated October 2011. The report was acknowledged by the DSC in correspondence dated 18 January 2012. A hydrogeological assessment was completed by SMEC, titled "Groundwater Assessment and Management Plan, November 2011". A new recovery bore PZH011 was installed on the southern abutment, west of the main embankment with an associated causeway. A long causeway was constructed to PZH012 as it was located inside the dam and was surrounded by tailings and water.

3.11 2012 Activities

Stage 4 construction activities commenced in late 2012, comprising vegetation and topsoil clearing and stockpiling, and an existing topsoil stockpile was relocated. The Stage 4 design report was submitted to the NSW DSC in mid-2010, with acknowledgement from the department received by Straits Tritton on 9 November 2010. The DSC made particular comment on the requirement of an Engineer's "Dam Construction Certificate", and the provision of a construction report containing as built drawings and photographs. The DSC also emphasised the need for appropriate construction supervision, with this is being undertaken by representatives from Straits, Neill's and Barnson's.

A detailed groundwater assessment was undertaken by EES to obtain information in respect to EPA amended licence conditions (U1) requiring a Remedial Action Plan and conceptual site model to be developed. This also included the installation of additional bores during 2012.

3.12 2013 Activities – Stage 4

Stage 4 construction continued during 2013, comprising vegetation and topsoil clearing and stockpiling. A low permeability layer was placed over cleared areas. Construction of the western saddle embankment was completed by late 2013. Setting out of the main embankment and the northern abutment was also completed.

3.13 2014 Activities – Stages 4 and 5

Stage 4 construction continued during 2014. The low permeability layer was continued to be placed over cleared areas. Construction of the main embankment was completed by mid-2014. The northern embankment including the spillway were all but complete by the end of 2014. The only active work area was the western end of the northern embankment which was expected to be completed by early 2015.

Monitoring bores PZH011, PZH012 and PB002, located inside the dam, were decommissioned in June 2014 (last readings May 2014) and were sealed by The Impax Group.

During late 2014 work commenced on a small section of the Stage 5 embankments, namely in the SW corner. These works were commenced to prevent the encroachment of tailings slurry in to this potential work area.

3.14 2015 Activities – Stages 4 and 5

Stage 4 construction was completed by mid-2015 and entailed placement of the low permeability layer over cleared areas. The western end of the northern embankment was completed in early 2015. A construction report was prepared by Barnson titled "*Earthworks Quality Control Construction Report*" dated April 2015.

Confirmation of the Stage 5 embankment design to RL267.5m was received from the DSC in correspondence dated 26 October 2015. A small section of the Stage 5 embankment in the SW corner was completed in mid-2015 and was undertaken to prevent the encroachment of tailings slurry in to this potential work area.

3.15 2016 Activities – Stage 5

Stage 5 construction commenced in mid-2016, entailing the placement of a low permeability layer over cleared areas, the excavation of cut-off trenches and the placement of embankment materials. Construction was being undertaken based on Coffey's design report dated August 2015. Construction was undertaken by Neill's, with earthworks supervision shared between Tritton personnel and Neill's, while compliance testing was undertaken by Barnson's.

3.16 2017 Activities – Stage 5

The Stage 5 construction commenced in mid-2016 and was completed by August 2017. Works completed during 2017 included the placement of a low permeability layer over cleared areas, the excavation of cut-off trenches and the placement of embankment materials. Construction was undertaken by Neill's, with earthworks supervision shared between Tritton personnel and Neill's, while compliance testing was undertaken by Barnson's.

A construction report was prepared by Barnson (2017) titled *'Earthworks Quality Control Construction Report, Stage 5 Works Embankment Raising by 1.5m to 267.5 Tailings Dam 1'*. During 2017 a geotechnical investigation of TD1 was undertaken that included electric friction cone probing, tailings sampling and specialist laboratory testing.

3.17 2018 Activities – Stage 6

The Stage 6 and 7 design report, prepared by CMW Geosciences, was submitted to the regulators on 5 March 2018 by Aeris Resources, the document was acknowledged by DSC on 21 March 2018. Stage 6 construction comprising a 2.5m lift to RL 270.0m, commenced in October 2018 concentrating on the northern and western sides of the facility. Works commenced include embankment crest preparation, cut off excavation and material placement. Construction was undertaken by Neill's, with earthworks supervision shared between Tritton and Neill's personnel, compliance testing was undertaken by Barnson's.

The downstream batter of the western saddle embankment was reprofiled and seeded in late 2018.

3.18 2019 Activities – Stage 6

Stage 6 works continued during 2019 along the northern ,eastern (main embankment) and western sides of the facility. These walls were within 300mm of design height and were awaiting final trim and gravel placement. Works were suspended in mid-November 2019 due to the severe drought, resulting in a lack of suitable water. General photos are present in Appendix A. Construction was undertaken by Neill's, with earthworks supervision shared between Tritton and Neill's personnel, compliance testing was undertaken by Barnson's.

3.19 2020 Activities – Stage 6

Stage 6 works recommenced during mid 2020 when sufficient water was available and the contractor became available to complete the works. Work included gravel sheeting and the raising of the northern "spillway" embankment, windrows and pipe installation.

Other activities included an ARCADIS report dated 27th May 2020 requesting a variation to the EPA Licence in respect to the frequency (change to annually) of water sampling and testing from nominated piezometers PZH0001 to PZH023. DnA Environmental Rehabilitation Monitoring Report dated April 2021 covering in part the progress of rehabilitation to the tailings dam embankments. Revision for the Operations Manual and associated documents by CMW Geosciences.

3.20 2021 Activities – Stage 6

No construction activities were conducted on TD1 during 2021. Stage 6 was completed in December 2020 and Stage 7 is planned for commencement in 2022.

A construction report was prepared by Barnson (2021) titled *'Earthworks Quality Control Construction Report, Stage 6 Works Embankment Raising by 2.5m to 270.0 Tailings Dam 1'*.

Sources of tailings were a combination of ore from Tritton underground (estimated 70%) and satellite deposits (estimated 30%). There was reduced demand for fine aggregate for underground paste fill at the Tritton mine. Deposition of tailings was conducted at locations all around the TD1 perimeter to maintain an even filling of the TD. Extensions of the spigot lines were used to extend the exposed tailings beaches into the TD, particularly on the eastern side.

4 INFORMATION PROVIDED

The following information and data pertaining to the compilation of this review was provided by Tritton Mine site personnel.

- Copies of Tritton generated dam monitoring information and inspection records.
- An aerial photo of TD1 with levels of decant water pond and spillway level (dated 12/2/22).
- Monitoring bore information including water levels and water quality.
- Production tonnages and water return figures for 2021.
- Document titled, '*Determination of Development Application under Section 91 of the Unamended Environmental Planning and Assessment Act 1979'*, including *'Conditions of Development Consent'*.
- NSW EPA, Licence 11254, Licence Variation, dated 8 June 2021.
- Barnson (2021) report titled '*Earthworks Quality Control Construction Report, Stage 6 Works Embankment Raising by 2.5m to 270.0 Tailings Dam 1'*.

Some previously supplied documents provided by Tritton Resources may have been referenced to update this report.

4.1 Tailings Production

The ore being treated is primary ore sourced from the underground operations, the specific gravity of the ore averages 3.0. Production figures for the 2021 calendar year are outlined in the following sections. The total dry tonnes of tailings production was advised to be 1,453,241 (dry) tonnes. Discharge to the tailings dam totalled of 1,114,820 (dry) tonnes of solids 77% of tailings production, the remaining 338,421 (dry) tonnes (23%) was directed to the paste plant for use underground. Table 2 summarises tailings production information since the commencement of operations in 2005.

Table 2 - Tailings Production Parameters						
Year	Ore Production (tonnes)	Tailings Solids to Tailings Dam (tonnes)	Cumulative Tailings Solids to TD (tonnes)	Average Slurry Density (%)	Estimated Water Tonnage (tonnes)	Estimated Slurry Weight (tonnes)
2005	715,364	675,598	675,598	45	825,731	1,501,329
2006	818,460	727,038	1,402,636	50	727,038	1,454,076
2007	733,637	659,193	2,061,829	62	404,022	1,137,659
2008	886,676	804,925	2,866,754	62	493,341	1,298,266
2009	915,792	823,113	3,689,867	64	463,001	1,286,114
2010	971,258	892,801	4,582,668	67.6	465,514	1,358,315
2011	1,260,465	958,022	5,540,690	63	562,647	1,520,670
2012	1,242,496	875,870	6,415,560	62	536,824	1,412,694
2013	1,415,264	862,434	7,277,994	63	528,588	1,391,022
2014	1,538,480	1,156,629	8,434,623	64	650,604	1,807,233
2015	1,664,072	1,085,803	9,521,426	63	637,694	1,723,497
2016	1,657,133	1,134,544	10,656,070	62	637,694	1,723,497
2017	1,351,050	797,312	11,453,382	61	509,757	1,307,069
2018	1,629,231	938,024	12,391,306	62	574,918	1,528,979
2019	1,672,226	1,061, 504	13,452,810	63	623,423	1,684,927
2020	1,591,240	975,350	14,428,160	63	572,824	1,548,174
2021	1,550,539	1,114,820	15,542,980	62	683,277	1,798,097

The tonnage of tailings solids deposited into the dam, from the time of commissioning, in December 2004, has been estimated at 15,542,980 dry tonnes. The paste plant was commissioned in 2011, a variable percentage of tailings are directed to the paste plant in campaigns. When the plant is not operating the full tailings stream is sent to the tailings dam, when the paste plant is operating small tonnages (volumes) of tailings are sometimes directed to the tailings dam.

5 SITE REVIEW

5.1 General

The site visit was undertaken on Friday 17 February 2022 by a CMW Principal Geotechnical Engineer. The review involved a physical dam inspection and a walk over review of specific areas and the containment embankments (main, northern and western), downstream batter slopes, downstream toe areas, spillway, spigotting operations, the water recovery systems and discussions with site personnel. Reference should be made to the photographs, presented in Appendix A, as figures A1 to A7.

The findings of the surveillance review are based on a visual review of the facility on the date specified above, site discussions and an assessment of information provided by the mine, the findings of the review are presented in the following sections of this report and are also summarised as bullet points in Section 1.1. Conclusions and recommendations are presented in Sections 11 and 12, respectively.

5.2 Main Valley Embankment

Tailings Dam 1 (TD1) is a valley type facility and was formed in Stage 1 by the construction of the main valley embankment.

No notable edge or embankment cracking was observed along the main embankment crest or the intermediate berm. No visual signs of distress in the form of slumping or cracking of the downstream batter slopes was noted where these areas were reviewed.

Surface erosion has continued to form rills on the embankment surface. The rilling was observed above and below the intermediate berm. The intermediate berm has bunds to limit water flow parallel to the wall. The intermediate berm has a safety bund which is locally eroded. Some rip-rap armoured channels have been constructed to control water flows from the intermediate berm. One location of incipient slumping (approximately 3m long and 1m into the berm) of the crest of the intermediate berm was observed. This slumping was inferred to be surficial in nature and related to the steep face of the berm formed locally by the berm's safety bund (refer photo on Figure A6).

Similar erosion processes were observed on other parts of the TD wall but are less developed than the east wall due to wall height variations and time since initial construction.

Piezometers on the wall were observed to be in good order and capped. Some piezometers surrounding the TD were observed and were also in good order and capped.

5.3 Northern and Western Embankments

Construction of the northern saddle embankment commenced as part of Stage 2 works and includes the spillway which traverses the embankment at right angles. The embankment is currently at the Stage 6 level of RL270.0m while the spillway invert is at RL269.0m.

The road crest at the spillway forms a smooth depression as expected. The tailings level at the spillway is lower than the adjacent parts of the wall as expected. Based on survey provided by Aeris, there is approximately 5 m of freeboard from the decant pond to the spillway level.

Construction of the western saddle embankment commenced in 2010 as part of Stage 3 works and was completed in early 2011. This embankment is now at the Stage 6 crest level of RL 270.0m.

The dam at the toe of the western wall is separated from the TD embankment by a berm formed at the level of the external roadway. It was noted that water levels had been higher than the berm during heavy rain periods in 2021 but that pumping was generally effective in maintaining the water level. No visible signs of distress were noted.

A small water dam is present to the northwest of the TD. The dam is separated from the toe of the TD by the external perimeter road.

Another small dam is present to the south of the TD. The dam is located between the external road and temporary tailings bunding. It is understood that the Stage 7 embankment will be constructed over the location of this dam (pond).

5.4 Erosion Management

During 2018, an erosion and sediment control procedure was developed specifically for the tailings dam, the August 2018 document is titled "Erosion and Sediment Control Procedure – Tritton Tailings Dam 1 – Management Recommendations". The document comprises tabulated information under the following four headings Background and Scope – Management Objectives – Implementation – Reporting. It was advised that the following actions were implemented based on the development of the Procedure:

- Construction of perpendicular intermediate berms at 100m centre along the downstream berm;
- Geotextile and rock protection to areas of observed erosion; and
- Use of jute mesh and coir logs to assist in sediment control.

Various erosion control trials are evident on parts of the outer wall of the TSF. Where these trials include solid objects, such as logs or coir rolls it was observed that local increase of water velocity around the objects had led to minor local scouring.

5.5 Monitoring Bores and Piezometers

Numerous piezometers and monitoring bores have been installed to allow groundwater levels to be monitored. The original bore installations (PZH001 to PZH010) were located in areas outside any intended tailings inundation areas. Additional bores (PZH011to PZH019) have since been installed around the facility.

Of note, bores PHZ011 and PZH012 were installed inside the dam and were decommissioned, due to access issues, in May 2014 following confirmation from the EPA. These two bores were sealed and are now covered by tailings. As a regular maintenance regime, instruments should be checked for missing or damaged caps and replaced, as necessary. Several bores are shown on Figure A3.

5.6 Future Embankment Raising

To date, Stages 1 to 6 have been constructed achieving a crest level of RL270.0m (Stage 6). It has been advised that further staged construction (Stage 7) has been approved by the EPA to RL 272.0. Table 3 summarises completed and planned staged embankment construction activities.

Table 3 - Staged Construction

	Stage 1-Starter	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7
RL	RL260.0 completed	RL262.0 completed	RL264.0 completed	RL266.0 completed	RL267.5 completed	RL270.0 completed	RL272.0
Period of Const'n	2004	2006/ 2007	Late 2007/ Early 2011	Mid 2014 to mid-2015	2016 to 2017	Oct 2018 to Dec 2020	Pending

It is understood that commencement of Stage 7 construction is planned for the first half of 2022 and may take up to 18 months for completion, according to Aeris.

The Tritton mill and TD are strategically located for future mining in the district. It is understood that conceptual plans for future vertical or lateral expansion of the TD facility are being considered.

5.7 Water Recovery

5.7.1 Tailings Dam Surface Water Recovery System

Water liberated from the deposited tailings slurry is recovered via a floating pump located in the water recovery pond, refer to Figure A2. The float pump was located on the southern side of the access berm. Recovered water is returned to the processing plant for reuse, however during construction some water is used for moisture conditioning of materials and dust suppression purposes.

The decant pond appears to be slightly larger in size compared to previous recent observations (aerial photo provided by Aeris, refer Figure 7). Decant water appears clear. The decant access roadway, safety bunds and accessories appear to be stable and well maintained.

The mine advised that a total of 133,840 m^3 (59,100 m^3 in 2020) of water was recovered via the pump system for reuse (mainly to the processing plant). Based on a calculated slurry water inflow of 683,277 m^3, the annual recovery was assessed at 19.6 %, i.e. water returned to the plant as a percentage of total water contained in the discharged tailings slurry. This compares to previous value of 10.3 % in 2020. It is understood that 2021 was a relatively wet year in central NSW (2021 recorded rainfall 459.5 mm, which is above average) .

5.7.2 Return Water Sump

An underdrainage interception system was installed as part of the original construction. This system comprises two lines of slotted pipes surrounded by gravel which have been placed parallel to the inside toe of the main embankment and extend part way up either abutment. One pipe is located on natural ground while the other is located in a shallow trench. Collected water flows by gravity to the lowest point in the valley floor. At the low point, these pipes are connected to a solid pipe which is located under the main embankment that discharges water by gravity into a large diameter concrete sump located near the downstream toe of the main embankment (refer to Figure A2).

The underdrainage sump and pump structure were observed. Clear underdrainage water was observed flowing into the sump (refer Figure A2). Collected water is pumped over the main embankment and is discharge some distance from the embankment onto the tailings beach.

5.8 Tailings Beaches

Cyclic deposition is undertaken in a methodical manner and is managed to maintain the water pond around the pump recovery area. The high SG of the tailings has resulted in the formation of relatively steeply sloped beaches that slope away from the embankments towards the water recovery point. An average grade of 1(v):60(h) was determined based a January 2006 survey.

5.9 Spigotting

The tailings delivery line is welded with Victaulic couplings and spigot off-takes tees located at regular intervals with a single emergency discharge point located at the southern end of the line near the main embankment. The tailings discharge arrangement comprises valved off-takes that are opened and closed in a systematic and cyclic manner to change the active discharge points.

Due to the steep beach slope infilling of the available storage area is further optimised by extending the spigot pipelines out over the tailings beach, with the line supported on empty 200 litre drums. This activity is an operational consideration in optimising the storage capacity of the facility by extending the storage life and extending the time frame between each embankment lift.

It is apparent that spigotting (deposition) has been undertaken in an acceptable manner due to the presence of well-formed sloped beaches and the fact the water pond was located away from the perimeter embankments. Spigotting was being undertaken from the western side of TD1 around the time of the site visit (note: no active deposition during site reconnaissance).

5.10 Seepage

There were no visible signs of near surface seepage in the areas downstream of the embankments, in the way of seepage flows, wet or damp areas, soil discolouration, distressed or dead vegetation. Downstream areas are shown in some of the photographs which also show a variable coverage of vegetation.

5.11 Freeboard

The freeboard is the height difference between the embankment crest, the tailings beach level and the operating water level at the decant (water recovery point). Freeboard comprises four components which are represented schematically on Figure 5 of this report.

The mine has installed marker pegs adjacent to the embankments marking a 300mm encroachment height limited below the embankment crest so operators can more easily assess tailings deposition limits.

The following relating to TD1 freeboard has been assessed based on information provided to CMW by Aeris:

- Embankment crest RL270.0 m – Stage 6 level.
- Spillway invert RL269.0 m.
- Tailings beach level varies.
- Water level at the water recovery point was calculated at RL264.7.
- Based on this information the Total Freeboard has been calculated at 5.3 m.
- Noting the EPA Licence requires a minimum freeboard of 1m.

Please note the mine has added 5,000 m to the local RL due to underground mining activities which may be present on some survey information.

The rainfall freeboard requirement, based on the ½ PMP rain event has been estimated at 0.26m. Rainfall collection into the tailings dam is by incident rainfall over the dam area. It has been estimated that the ½ PMP event will produce a water pond approximately 0.8m deep due to the sloped nature of the tailings beaches. The dam has a varying capacity dependent on the tailings filling rate and currently has sufficient capacity to contain the nominated PMP event.

The design includes a spillway which has been provided to allow excess water accumulations to be discharged such that the main embankment and the northern and western saddle embankments are not overtopped. A summary of the freeboard criteria and the current status of the tailings dam at the Tritton Mine are outlined in Table 4.

Table 4 - Freeboard Criteria

	Beach Freeboard	Operational Freeboard	Environmental Containment Freeboard	Total Freeboard
DSC requirement	72 hour storm or 0.2m	0.3m	72 hour storm or 0.2m	AEP event
Status February 2022	5.0 m	0.3m	4.5 m	5.3 m
Operational freeboard:- At the main embankment, the tailings were higher compared to the invert level at the spillway. No issues are envisaged with this situation due to overall total freeboard.				

5.12 Spillway

TD1 is now surrounded by perimeter embankments and the catchment reporting into TD1 is from incident rainfall only. The tailings dam has an incident catchment area of 132 ha (RL270.0m). The estimated inflow volume from a 0.5 probable maximum flood (PMF), 3 hour event (0.26 m), assuming a runoff coefficient of 1.0 has been determined at 343,200 m^3.

The current spillway is located through the northern embankment. The spillway has been designed to pass a 0.5 PMF event and has a design capacity of 14 m^3/sec.

The final intended location of the spillway is on the southern/eastern side of the dam excavated through natural ground, refer to the Stage 6 and 7 Design Report.

5.13 Design Rainfall Events

Rainfall design information was provided by the Bureau of Meteorology Hydro-meteorological Advisory Service, Melbourne (BMHAS).

The dam and spillway have been designed to contain and discharge flood events of at least the ½ PMP event. To model this both IDF curves and PMP rainfall event calculations were obtained from the Bureau of Meteorology Hydro-meteorological Advisory Service and confirmed by calculation.

The 1 in 100 year ARI (average recurrence interval) 72-hour rainfall event equates to 191 mm of rainfall. This amount of rain could produce a maximum volume of water assessed at 252,120 m^3 assuming a conservative runoff coefficient of 1.0 over the full area of the catchment (132 ha). The 3 hour ½ PMP event indicates a rainfall of 260 mm thus a total of 343,200 m^3 of water could be expected to accumulate from this rainfall event assuming a runoff coefficient of 1.0. A rainfall event of this severity (PMF event) would cause major flooding and disruption to the surrounding area. Based on total freeboard of 3.6 m (i.e. less than the current freeboard) the estimated available capacity was assessed to be approximately of 1,500,000 m^3 which is currently sufficient to contain the above PMP event, noting this is not a volume available for tailings storage due to freeboard requirements.

Based on the above information it has been recommended that the dam be operated with a minimum operational freeboard of between 250 mm to 300 mm to adequately contain the projected ½ PMP rainfall event. This 250 mm freeboard is in addition to the water storage capacity available in the depressed cone area surrounding the water recovery point, refer also to section 5.8. The recent survey confirms there is adequate freeboard capacity. It should be further noted that the design spillway invert is 1.0 m lower than the embankment crest.

It was advised that the site can typically expect 2,000 mm of evaporation during the year ranging from 40 mm in the winter period to 350 mm in summer.

6 TAILINGS PROPERTIES

6.1 2006 Review

As part of the 2006 design review, hand held pocket penetrometer tests were undertaken along the beach area adjacent to the main embankment. Only those areas where safe access was available were tested, which ranged from dry hard areas to soft damp areas. The values obtained were used to assist in determining or confirming strength parameters for the stability analyses that were undertaken for the Stage 3 design report reference Coffey "*Design Report – Stage 3 Tailings Storage Facility 1 Tritton Resources Limited"* dated March 2007, reference MH00100AD Rev 1.

The penetrometer results obtained, ranged from 0.75kg/cm^2 in areas of recent deposition that had only partially dried to 4kg/cm^2 in areas where dried tailings beach areas were present, noting that overnight rain had wet all beach areas. The mine regularly relocates the tailings slurry deposition

point away from the embankment prior to the commencement of any staged construction to allow all tailings areas to dry and gain strength.

The mine also sample and test the tailings discharge in respect to grading. A 2006 averaged particle size distribution indicates a P_{60} of 33µm, P_{70} of 57µm a P_{80} of 91µm and a P_{90} of 147µm. These values are consistent with the design values estimated prior to commissioning. Two tube samples were obtained from the beach area near the main embankment in January 2007. Test results are summarised in Table 5.

Table 5 – 2007 Tailings Laboratory Results

	Sand fraction > 75 microns	Silt/ clay fraction < 75 microns	Dry Density	Cohesion	Phi
Tube 1	34%	66%	1.72t/m^3	3kPa	20.5°
Tube 2	25%	75%	1.87t/m^3	5kPa	22.5°

The laboratory gradings are within the limits advised for average particle sizes measured as a discharge from the processing plant with due allowance for segregation when the tailings are deposited. The strength parameter information supplemented existing information and was used in the Stage 3 design assessment. The previous stability analyses use a lower cohesion value but a higher phi value for the tailings.

6.2 Stage 6 and 7

A geotechnical investigation was performed by Barnson Pty Ltd in September 2017, which was based on a scope prepared by CMW Geosciences Pty Ltd, setting out minimum requirements. The investigation comprised the following:

- Sampling of existing borrow areas comprising Sheather's Pit, Yarran Pit and Existing Dam Stockpile;
- Undisturbed tube sampling of insitu tailings from the tailings beaches adjacent to the CPT probe locations (i.e. at the surface of the tailings);
- Laboratory testing comprising: particle size distribution (PSD) tests, standard compaction (SMDD) tests, undrained triaxial tests, Atterberg limits determinations, laboratory constant head permeability tests and moisture content tests; and
- Truck mounted Cone Penetration Testing (CPT) through the deposited tailings stored in TD1 at 6 locations.

The CPT testing was conducted by Probedrill Pty Ltd based on a CMW Geosciences scope. The CPT results and interpretation of the CPT results are referenced or included in Section 8 of this report. The results of the CPT testing indicated the tailings were typically soft to firm silty sands / sandy silts with intermittent layers of firm to stiff clayey silt / silty clay.

The results of the classification tests on the tailings samples indicated the samples were a non-plastic sandy silt.

The results of the consolidated undrained triaxial testing on the tailings materials gave an average of the results of cohesion, 0 kPa and angle of internal friction of 37.2^o. An inferred angle of internal friction of 30^o from the CPT probing was utilised in stability analyses. From the triaxial testing of undisturbed tube samples of near surface tailings, the dry densities varied between 1.60 t/m^3 to 1.89 t/m^3 with an average of 1.73 t/m^3 (i.e. similar to densities recorded in previous sampling and testing regimes in 2007).

7 GROUNDWATER MONITORING

As part of the start-up operation of TD1, four (4) monitoring bores were installed at various locations around the perimeter of the dam at the completion of the Stage 1 embankment in mid-2004, which was before the dam was commissioned in December 2004. Three embankment piezometers (PZH005 to PZH007) were installed in May 2007.

A further five (5) piezometers/bores (PZH008 to PZH012 and PB001) were installed in September 2007. PZH013, PZH014 and PZH015 were installed in 2010, while PZH016 and PZH017 were installed in 2011/2012. A pumping bore (PB002) was installed in 2011 near PZH011.

PZH006 and PZH007 have shallow holes drilled adjacent to them, extending to a depth of at least 15m. Bores located in the valley immediately downstream of the main embankment include PZH010, PZH002, PZH013 and PZH015, refer to Figure 4. Bores PZH001 and PZH003 are also located adjacent to the main embankment but on the northern and southern abutments, respectively.

A total of seventeen (17) monitoring bores are read, the approximate locations are shown on Figure 4. No bores are now pumped based on approvals from the regulators. Installation details are summarised in Table 6.

Table 6 - Monitoring Bore Installation Information							
Bore number	Easting	Northing	RL(m)	Depth (m)	Year Installed	Initial water level (RLm)	Initial water level-depth (m)
PZH001	474,405* (31,753)	6,528,393 (20,800)	264.487 (5,262)	90	2004	186.84	Dry*
PZH002	474,614* (31,915)	6,528,016 (20,420)	254.412 (5,262)	90	2004	186.66	61.5
PZH003	474,838* (31,980)	6,527,350 (19,665)	267.995 (5,267)	90	2004	181.50	Dry*
PZH004	473,302* (30,540)	6,527,591 (20,180)	269.521 (5,267)	90	2004	187.47	Dry*
PZH005	474,471	6,528,181	264.784	N/A	2007	230.68	34.17
PZH006D	474,548	6,527,994	264.588	N/A	2007	214.97	49.65
PZH006S	474,548	6,527,994	264.588	N/A	2008	248.12	16.34
PZH007D	474,625	6,527,811	264.817	N/A	2007	195.40	69.45
PZH007S	474,625	6,527,811	264.817	N/A	2008	252.71	12.66
PZH008	474,364	6,528,516	262.422	100	2007	202.28	60.22
PZH009	474,315	6,528,385	263.016	100	2007	211.06	52.02
PZH010	474,517	6,528,212	258.169	100	2007	207.20	51.05
PZH011D	474,490	6,527,559	264.205	100	2007	225.73	38.17
PZH011S	474,490	6,527,559	264.205	4.5	2007	Dry	Dry
PZH012	474,490	6,527,559	264.205	100	2007	200.20	38.17
PZH013	474,683	6,527,976	254.609	40	2010	Dry	Dry
PZH014	474,579	6,528,579	256.722	73	2010	197.10	59.62
PZH015	474,813	6,527,889	256.081	73	2010	187.93	68.15
PZH016	473,598	6,527,569	N/A	N/A	2012	N/A	N/A
PZH017	473,742	6,527,949	N/A	N/A	2012	N/A	N/A
PZH018	474,137*	6,528,676*	N/A	N/A	2012	N/A	N/A
PZH019	474,700*	6,526,889*	N/A	N/A	2012	N/A	N/A
PZH020	N/A	N/A	N/A	N/A	2012	N/A	N/A
PZH021	474,724*	6,528,613*	N/A	N/A	2012	N/A	N/A
PZH022	472,786*	6,526,984*	N/A	N/A	2012	N/A	N/A
PZH023	473,480*	6,525,879*	N/A	N/A	2012	N/A	N/A
PB001	474,396	6,528,406	263.920	110	2007	N/A	43.78
PB002	474,491*	6,527,527*	N/A	N/A	2011	N/A	N/A

Note:
(*) – Dry but the holes were moist and natural ingress of water may have occurred with time after their installation, rather than them being affected by seepage from the tailings dam.
(#) – Digitised (approximated) from bore location map (EES, 2013) and map received 4 February 2016.
N/A – Information not available to CMW.

Table 7 provides a broad summary of the general location of the bores in respect to the orientation of the TD.

Table 7 - General Monitoring Bore Location

Southern Abutment	Below Main Embankment	Northern Abutment	In Main Embankment	West side of TD	South side of TD	Comments
PB002#	PZH002	PB001	PZH005	PZH004*	PZ019*	(*) - Some distance from the tailings dam (TD)
PZH003	PZH010	PZH001	PZH006S	PZH012#		
PZH011S#	PZH013	PZH008	PZH006D	PZH016		(#) - decommissioned in June 2014
PZH011D#	PZH015	PZH009	PZH007S	PZH017		
		PZH014*	PZH007D	*		
		PZH021*				

Notes are as per Table 6

During 2021, groundwater levels and groundwater quality were measured on a quarterly basis. An assessment of the monitoring bore water level and quality information is presented in the following sections.

7.1 Water Levels

In 2021, water level readings were taken in 17 monitoring points located in the vicinity of the tailings dam. Tabular and graphical plots covering 2021 are presented in Appendix B. Water level trends for the bores are summarised in Table 8 for the 2021 calendar year, while historical trends since installation are summarised in Table 9.

7.1.1 Groundwater Trends for the 2021 Calendar Year

Table 8 outlines trends determined for water level changes determined for the 2021 calendar year.

Table 8 - Water Level Changes - 2021 Calendar Year			
Monitoring Bore Number	Nov/Dec 2020 Reading (mbgl)	Nov/Dec 2021 Reading (mbgl)	Water Level Change During 2021 (m)
PZH001	13.81	9.18	+4.63
PZH002	34.11	34.42	-0.31
PZH003	62.51	62.86	-0.35
PZH005	13.97	14.13	-0.16
PZH006D	38.46	38.15	+0.31
PZH007D	42.27	42.39	-0.12
PZH008	18.67	17.22	+1.45
PZH009	14.64	12.83	+1.81
PZH011	decommissioned	decommissioned	N/a
PHZ012	decommissioned	decommissioned	N/a
PZH014	46.36	46.24	+0.12
PZH015	49.49	50.39	-0.90
PZH017	45.02	43.07	+1.95
PZH018	21.05	20.62	+0.43
PZH019	96.26	93.76	+2.50
PZH020	72.67	73.27	-0.60
PZH021	48.67	48.27	+0.40

Note: N/a – Not applicable.

The following water level trends have been assessed for the period December 2020 to December 2021.

- No readings were recorded for six (6) bores which were advised to be dry.
- Groundwater level falls were recorded in six (6) bores, the largest fall was recorded in PZH015 (-0.9 m) which is downstream of the main embankment. Water level falls varied in other instruments from -0.12 m in PZH007D to -0.60 m in PZH0020.
- Measured groundwater levels in 2021 indicated rises in PZH001, PZH006D, PZH008, PZH009, PZH014, PZH0017, PZH018, PZH019 and PZH021. The largest water level rise during 2021 was +4.63 m in PZH001, which is located in the northern abutment of main embankment .
- The other piezometers located in the main embankment PZH005 and PZH006 all recorded water level variations over 2021 between -0.16 m (fall) and -+0.31 m (rise), respectively.
- The closest water level to the surface was recorded in PZH001 at 9.18 m (which is located near the main embankment northern abutment), while the deepest measurement was recorded in PZH019 at 93.76 m.
- PZH002 is located downstream of the main embankment (refer to Figure 4) in the lowest point of the valley. The groundwater table in this bore was recorded at 34.42 mbgl (34.11 mbgl in

2020). During the year, the water level records indicated a fall of -0.31 m, following a previous fall of -4.18 m in 2020.

Groundwater reviews were previously undertaken by Earth Environmental Science (EES) in 2012 and 2013. The latter report (EES) concluded that groundwater migrates in an easterly direction. Mounding is restricted to the TD footprint with a sharp gradient to the east.

7.1.2 Trends since Installation (variable dates) to 2021

Table 9 outlines historical trends determined for water level changes since regular readings were commenced which in some bores was March 2005 (or when installed) to December 2021. The following historical water level trends are noted.

- Overall groundwater level rises have been recorded in the all the bores except PZH020.
- The largest water level rise since installation has been recorded in PZH001 of + 68.47 m (noting that the groundwater was at 9.18 mbgl in December 2021). The water level fell in this bore during 2018, 2019 and 2020 and rose during 2021.
- A water level fall of -1.155 m was recorded in PZH020. The groundwater levels observed at PZH020 are likely to be representative of deeper groundwater regime that may not be connected hydraulically to the upper groundwater regime situated underneath the tailings dam.

Table 9 - Water Level Changes Since Installation			
Monitoring Bore Number	Initial Reading (m)	Nov/Dec 2021 Reading	Change (m) Since Installation to Nov/Dec 2021
PZH001	77.65 (03/2005)	9.18	+ 68.47
PZH002	61.5 (03/2005)	34.42	+ 27.08
PZH003	86.5 (03/2005)	62.86	+ 23.64
PZH005	34.17 (06/2007)	14.13	+ 20.04
PZH006D	49.65 (06/2007)	38.15	+ 11.50
PZH007D	69.45 (06/2007)	42.39	+ 27.06
PZH008	60.22 (10/2007)	17.22	+ 43.00
PZH009	52.02 (10/2007)	12.83	+ 39.19
PZH011	38.17 (10/2007)	decommissioned	N/a
PZH012	62.01 (10/2007)	decommissioned	N/a
PZH014	59.62	46.24	+ 13.38
PZH015	67.15	50.39	+ 16.76
PZH017	77.86 (09/2012)	43.07	+ 34.79
PZH018	37.059 (01/2013)	20.62	+16.439
PZH019	102.08 (09/2012)	93.76	+ 8.32
PZH020	72.115 (01/2013)	73.27	- 1.155
PZH021	60.91 (01/2013)	48.27	+ 12.64

Note: N/a – Not applicable.

7.2 Groundwater Quality

Routine monthly water samples are taken from the decant pond (TSW02) and process water dam (TSW09). There were four (4) rounds of groundwater sampling from fifteen (15) monitoring bores in 2021. There are no prescribed water quality criteria outlined in the regulatory guidelines which only specify that the sampling and testing regime be undertaken on a yearly basis (changed from quarterly).

The following 2021 water quality trends are summarised for the bores, and tables are presented in Appendix B.

- The lowest pH reading of 7.17 was recorded in PZH006 (08/2021), the highest reading of 8.22 was recorded in PZH009 (03/2021).
- The lowest TDS reading was 6,730 mg/l in PHZ019 (07/2021) (except 1,580 mg/l PZ020, 01/2021, which is believed to be erroneous) whilst the highest reading was 19,200mg/l in PZH018 (04/2021). Sulphate as SO_4 2- varied between 776 mg/l in PZH19 (07/2021) to 2,700 mg/l in PZH018 (07/2021).
- Copper readings ranged from <0.001mg/l in PZ003, PZ007 to a high of 0.198 mg/l in PZH007 (12/2021).
- Lead readings were mostly <0.001mg/l to 0.01 mg/l (PZH009, 01/2021).

The information was provided in tabular form for the bores. The results were generally similar to recent years with no discernible trends for the analytes that were tested for the bores. EES (2013) reported water geochemistry had been stable for 5 years.

The following 2021 water quality trends are summarised for the decant water pond (TWS02).

- The pH readings ranged from 2.68 (11/2021) to 4.85 (08/2021).
- The TDS readings ranged from 2,210 mg/l (12/2021) to 16,500 mg/l (11/2021).

The decant water quality is typically characterised by a pH between 3 and 4 and a TDS of less than 6,000 mg/L.

8 STABILITY ANALYSES

8.1 Method of Analysis

Stability analyses were undertaken to assess the stability of the TD1 embankment up to an intended Stage 7 stage with a crest RL272.0m (i.e. 20m embankment height). The analyses were undertaken in general accordance with ANCOLD (2012). The analyses presented in the CMW (2018) Design Report were reviewed as part of this surveillance review. Note the crest is currently at RL270, the Stage 6 level and the stability analyses presented here are for a future embankment raise.

The computer software package 'Slide' was utilised to undertake the analyses. Slide is a two-dimensional slope stability program for evaluating the safety factor of circular and non-circular failure surfaces in soil and rock slopes. The stability of the slip surfaces for static loading was assessed using vertical slice limit equilibrium methods and simplified Bishop method.

The following cases were examined in the stability analyses:

- Case 1: Static Analysis - Downstream failure of the TD embankment, future crest level of RL272m (20m embankment height) under drained condition based on limit equilibrium method.
- Case 2: Static Analysis - Downstream failure of the TD embankment, future crest level of RL272m (20m embankment height) under undrained condition based on limit equilibrium method.

A post-seismic analysis was not required as the tailings have been assessed as non-liquefiable at the design earthquake loads. In addition, in compliance with ANCOLD (2012) and in lieu of pseudo

static analyses, a deformation assessment was performed (refer Section 8.5). The phreatic surface adopted in the cases was a 'worst' case phreatic surface emanating from a pond near the embankment and a saturated toe, noting that these conditions have never been experienced at the dam. The phreatic surface inferred and modelled in the stability analyses within the embankment was at least 3m to 4m above the measure level in the highest piezometer, refer to Section 7. Furthermore, the phreatic surface inferred from the CPT plots (CPT3 and CPT4 located adjacent to the highest embankment profile) was located approximately 9m below the tailings surface (Sept. 2017).

ANCOLD (2019) was referenced with respect to earthquake design. The analyses conducted generally comply with the requirements of ANCOLD (2019).

8.2 Parameters

The parameters adopted in the analyses were based the geotechnical investigation undertaken by Barnson's (CMW scope) and the 2017 CPT data interpretation (refer to Appendix C). Table 10 provides a summary of the strength parameters used in the stability analyses.

Table 10 Summary of Strength Parameters*

Material Type	Bulk Density (kN/m³)	Undrained	Effective Strength Parameter *	
		Cohesion Su (kPa)	Cohesion C' (kPa)	Friction Angle Φ' (Degrees)
Tailings (Drained)	18	-	0	30
Tailings (Undrained)	18	40	-	-
Embankment	18.5	-	5	30
Foundation	18.5	-	25	33
Bedrock	18.5	-	25	33

8.3 Results of the Stability Analyses

The results of the stability analyses for the various cases examined are summarised in Table 11, with the computer printouts presented in Appendix C.

Table 11 - Results of Stability Analyses

Case	Factor of Safety	Recommended Minimum Factors of Safety*
1	2.14	1.5
2	1.51	1.5

*Note: Recommended factors of safety in accordance with ANCOLD (2012).

The stability analyses indicate that the cases examined have adequate factors of safety (FOS) for the drained and undrained conditions under an assumed worst case scenario (i.e. elevated phreatic surface) when compared with the recommended minimum factors of safety in ANCOLD (2019). The actual FOS are expected to be higher than the s quoted in the above table when modelling a lower phreatic surface as inferred from current (2018) piezometer readings.

8.4 General Comments in Respect to Stability

The tailings dam has been designed to provide temporary water storage following extreme storm events. If water does extend to the embankment, which is considered very unlikely, it is anticipated this will be a temporary occurrence given 'continuous' water removal from the tailings dam. The tailings dam should be operated in such a manner as to ensure that the `normal' return water pond is kept a minimum of 200m away from the main embankment and perimeter embankments at all times.

8.5 Deformation Analysis

Figure 6 in ANCOLD (2012) provides guidance on deformation assessment dependent on whether liquefaction occurs. Based on the liquefaction assessment carried out, liquefaction of the tailings forming the foundation of the upstream embankment raises is unlikely for the design earthquake loads that have been assessed. A preliminary assessment of embankment deformation due to an earthquake was estimated using the Swaisgood (2003) method. This method utilises an empirical formula based on observed crest settlement resulting from analysed 'real' earthquakes, with no liquefaction.

Permanent displacements or settlements, expected for a 20m high embankment, were estimated for a Magnitude 6 earthquake, corresponding to a loading of 0.08g for 1 in 1,000 AEP MDE event. The MDE (or Safety Evaluation Earthquake, SEE) adopted is as per ANCOLD (2019) for Significant consequence facilities.

From the analysis, it is concluded that for the highest embankment section (worst case), the deformation due to an MDE event is likely to be in the order of 35mm. Such deformation is within acceptable criteria when compared with the operational freeboard of 300mm.

8.6 Liquefaction

8.6.1 General

Liquefaction is a complex process that typically occurs in loose, saturated coarse silt to fine grained sandy soils whereby dynamic loading, such as from an earthquake, results in the build-up of pore water pressures. When the pore water pressure exceeds the overburden stress, the effective stress reduces to zero and the soil inter-granular contact stresses reduce to zero resulting in a loss of shear strength. At this point, the soil is said to have liquefied and behaves like a fluid.

If liquefaction of the deposited tailings underlying the upstream embankment raise occurs, the reduction in saturated strength may result in failure or settlement of the upstream embankment into the liquefied tailings.

Static liquefaction can also occur in tailings storage facilities triggered by factors such as slope instability and high rates of tailings / construction rates of rise. Given the relatively low rate of construction and filling rate, static liquefaction is not considered likely to be an issue for TD1.

This section provides assessment of cyclic liquefaction occurring in the deposited tailings that provide the foundation for the upstream raise from RL 259.7 to RL 269.5.

The cyclic liquefaction assessment was carried out using Geologismiki software, CLiq, using the recent CPTU data (2017). CLiq outputs provide consistent output results by applying the National Centre for Earthquake Engineering Research (NCEER) method (Youd et al, 2001; Robertson & Wride, 1998). It also includes the latest assessment procedure developed by Robertson (2010) which is applicable to all soil types combining a check for cyclic liquefaction (sands) and cyclic softening (clays).

8.6.2 Input Parameters

The earthquake parameters relied upon for this assessment were based on a Maximum Design Earthquake (MDE) for a Significant consequence category (ANCOLD, 2012) as presented in Section 3.2. The following cases were examined for liquefaction assessment:

Case 1

- Design Earthquake Magnitude = 5.5;
- Maximum Design Earthquake (MDE), 1:475-year, Peak Ground Acceleration (PGA) = 0.06g (ref: AS 1170.4-2007) (SEE in ANCOLD 2019 is the same); and
- Phreatic surface at top of tailings (never expected to occur).

Case 2

Case 2 examined a Significant consequence category storage (refer DSC3F Guidelines).

- Design Earthquake Magnitude = 6;
- MDE, 1: 1,000-year, Peak Ground Acceleration (PGA) = 0.08g (ref: AS 1170.4-2007); and
- Phreatic surface at top of tailings (never expected to occur).

Case 3

Case 3 examined a Significant consequence category storage (refer DSC3F Guidelines).

- Design Earthquake Magnitude = 6;
- MDE, 1: 1,000-year, Peak Ground Acceleration (PGA) = 0.08g (ref: AS 1170.4-2007); and
- Phreatic surface 4m below top of tailings, similar to stability analyses presented in Section 8. The phreatic surface from the CPT plots (CPT3 and 4 adjacent the highest embankment) was inferred to be approximately 9m below the tailings surface (Sept. 2017).

The CPT probes and thus results were performed through deposited tailings to depths of between 5m and 15m. The probes were located adjacent to the embankments around the facility in the area where future upstream embankment construction would occur. The details of the locations of the CPTU's and the results are presented in Appendix C.

8.6.3 Results

The CPT results identified that the tailings generally comprise layers of silty sand and sandy silt with intermittent layers of clayey silt and silty clay.

The FoS for liquefaction is assessed based on a ratio of the cyclic resistance ratio, determined by CPT strength profile, and the cyclic stress ratio, determined by the earthquake event.

The phreatic surface adopted in Cases 1 and 2 assumed a surface at the top of the tailings, with all tailings material been fully saturated. Case 3 assumed a phreatic surface 4m below the top-surface. Noting however that is NOT the actual case with TD1 with the phreatic surface being well below the tailings beach surface generally in excess of 12m depth or not being present at all in the tailings profile.

A summary of the liquefaction assessment results is presented in Table 12.

Table 12: Summary of Liquefaction Assessment Results					
CPTU	**Average Cone Tip Resistance, q_c (MPa)**	**Description of tailings**	**Factor of Safety for liquefaction potential (Case1)**	**Factor of Safety for liquefaction potential (Case 2)**	**Factor of Safety for liquefaction potential (Case 3)**
CPTU01	0.5 to 2.5	Soft to firm silty sand/sandy silt intermittent layers of firm clayey silt/ silty clay	>1.5	Generally >1 with several discrete layers just below <1	>1.5
CPTU02	0.9 to 3.8	Soft to firm silty sand/sandy silt intermittent layers of stiff clayey silt/ silty clay	>1.5	Generally >1 with several discrete layers just below <1	>1.2
CPTU03	2.1 to 4.9	Soft to firm silty sand/sandy silt intermittent layers of stiff clayey silt/ silty clay	>1.5	Generally >1 with several discrete layers just below <1	>1.0
CPTU04	1.1 to 3.5	Soft to firm silty sand/sandy silt intermittent layers of stiff clayey silt/ silty clay	>1.5	Generally >1 with several discrete layers just below <1	>1.0
CPTU05	0.4 to 2.5	Soft to firm silty sand/sandy silt intermittent layers of firm clayey silt/ silty clay	>1.5	Generally >1 with several discrete layers just below <1	>1.5
CPTU06	0.4 to 3.5	Soft to firm silty sand/sandy silt intermittent layers of firm clayey silt/ silty clay	>1.5	Generally >1 with several discrete layers just below <1	>1.3

Based on the results of the liquefaction assessment summarised in Table 12, the tailings material is generally considered to be non-liquefiable for the earthquake loads adopted. Only in the Case 2 'worst case' scenario, was there potential for liquefaction in discrete minor (thin) layers, with the Factor of Safety for liquefaction just below 1. It is important to highlight that for the assessment a worst-case scenario has been considered, with the tailing material fully saturated below surface level. Provided operational practices, particularly regarding water management (i.e. that water pond is located around the water recovery point well away from the perimeter embankments), as described in this TD Design Report, Operations Manual and Annual Review, are followed, it is considered the tailings underlying the proposed upstream raise have a low risk of liquefaction (refer to Case 3).

9 MANAGEMENT OF THE TAILINGS DAM

The overall management of the tailings dam was assessed as being of a high standard.

Spigotting has been undertaken in an adequate and orderly manner with a relatively even build-up of tailings immediately adjacent to the perimeter embankments. Where steep beaches have developed, the spigots off-take pipes have been extended across the tailings beach to utilise available capacity.

There was a relatively small water pond on the dam which assists in reducing possible seepage, the pond was located away from the perimeter embankments. Copies of inspection sheets are included in Appendix B.

There are several pipes that occasionally discharge water into the dam (the return water sump and underground water). These pipes have been extended further out onto the tailings beaches such that water flows to the decant pond.

Safety and regulatory signs have been installed adjacent to the gated entrances to the tailings dam to warn the public that access is prohibited.

9.1 Operations Manual

An operations manual has been in use since the tailings dam was commissioned in 2004. A draft operations manual was in use until November 2005. The draft document was reviewed in October 2005 by operational staff and Coffey and was updated to a finalised document to reflect actual site operational procedures. The manual covers general operational considerations as well as inspection forms which are filled out by various staff members, refer to Appendix B. The operations manual also contains an Emergency Action Plan. The following provides a summary of the operations manual revisions that have been undertaken since the commissioning of the tailings dam.

- Rev 1 was issued in Draft in 2004.
- Rev 2 was issued in July 2005.
- Rev 3a was issued May 2011 as draft.
- Rev 3b was issued in September 2011 following receipt of client comments.
- Rev 3 entailed an overall review and text revisions as required. In particular, the following changes are noted: Updating to comply with DSC guidelines and Adoption of MOP requirements and in particular water management and environmental sampling.
- Rev 4 reviewed and revised as required, dated May 2016
- Rev 5 reviewed and revised as required, dated June 2018
- Rev 6 reviewed and revised as required, dated February 2021

The Operations Manual document was reviewed as part of an assessment of compliance to the new NSW government regulations, the manual was subsequently reissued as Rev 6. The manual should revised to satisfy condition 23 of the Tritton development consent and provided to the Resources Regulator (RR) and the Environmental Protection Authority (EPA) for comment. Feedback received from the RR and EPA along with evidence of consultation should be included in the revised manual.

10 DOCUMENTATION REVIEW

10.1 New NSW Dam Safety Act

During 2019, there were changes in NSW dam safety legislation, which included enactment of the Dams Safety Act 2015 and new Dams Safety Regulations 2019. The legislation changes include the Tritton tailings dam, TD1.

Aeris Tritton Coper mine engaged CMW Geosciences in 2019 to undertake a review of their current procedures and where necessary update documentation to comply with any 'gaps' that may now be present in any of the reviewed documentation. As a result of the review process the Operations Manual has been updated and has been reissued as Rev 6 document.

The following additional documentation is required for TD1:

- Complete compilation of a risk plan report. Risk assessments have been performed, however these need to be reviewed and then documented in a report (it is understood the plan needs to be completed by the end of 2025). This report will likely be compiled when design work for further raising of TD1 is performed.
- Compile a brief safety management system document that links the site/company safety management system with the TD1 operations manual.

10.2 Other Documents

TD1 is operated in accordance with NSW EPA licence 11254, last amended 8 June 2021. The following points were noted:

- The table in Section P1.2 stipulates the groundwater monitoring points.
- Section Q4 stipulates tailings storage facility operating conditions, including
  - A minimum stormwater storage capacity of a 1:100 year AEP 72 hour storm event.
  - A minimum freeboard from the embankment crest to the decant pond level of 1 m.
  - The floor of TD1 to be lined with a clay layer of a permeability of not more than 10^{-9} m/s.
- Section M2 provides requirements for monitoring concentration of pollutants in monitoring bores . Frequency of monitoring is provided in a table. 14 monitoring locations are monitored yearly and 5 monitoring locations are monitored quarterly.

The operation of TD1 conforms to these licence requirements.

Reference to the document on '*Conditions of Development Consent'* indicates that TD1 (Tailings Storage Facility, Section 9 to 13) is being operated and monitored in general accordance with this development consent.

11 CONCLUSIONS

There were no observations made in respect to the tailings dam that required urgent attention in that they could affect the short term integrity of the dam, however, several items do need to be actioned as outlined in the recommendations section of this report.

The Tailings Dam (TD1), at the time of the visit and review in February 2022, was being managed adequately with respect to tailings deposition. The following comments are made:

- Records confirm that regular inspections of the dam are being undertaken by mine personnel. Random copies of inspection sheets are included with this report in Appendix B.
- Embankment raising and extensions have been undertaken in a timely manner
- The water pond was considered to be of an acceptable size (small).
- Piezometer water level and water quality information has continued to be regularly monitored (refer to Appendix B). Piezometer water level and water quality information is submitted as part of Aeris' EPL and AEMR reporting regimes to several regulators.
- Provided the operations and maintenance manual procedures continue to be followed and the specified freeboard criteria is maintained, Tailings Dam 1 can be safely operated.
- The information gathered for the monitoring bores (water levels and water quality) show a variation in both water level changes (falls in piezometers (i.e. PZH005) on the main embankment, PZH006, PZH007 had levels below the original ground level) while water quality results largely remained static with no discernible trends.
- There were no visible signs of seepage.

12 RECOMMENDATIONS

The following recommendations are made as part of this surveillance review:

- Erosion control trials should continue, however, the use of solid objects (i.e. erosion protection devices should be free draining) with potential to promote scouring should be avoided. In the rehabilitation of embankment slopes observation of the embankment face during inspections should be considered. No changes to the erosion and sediment control procedure are required at this stage.
- The Stage 7 embankment will pass over a current small dam on the south perimeter of the TD. Foundation preparation for Stage 7 should ensure that silt from settlement in the dam is removed and replaced with appropriate granular fill or material to comply with 10^{-9} m/s if in the floor of the dam.
- During Stage 7 construction, ensure that the spillway is maintained at the current level until the final phase of Stage 7 construction.
- A water level rise was recorded in bore PZH001 over 2021 (previous years showed falling water levels). It is recommended that the RAP document be reviewed by a hydrogeologist to assess whether pumping be recommenced from PB001 to assist in controlling the rate of rise of ground water.
- Future plans developed for underground mining below and near the TD should include consideration of the risk of interaction between underground workings and the TD especially any hydrogeological and hydraulic links which may provide preferred flow paths for slurry water. This should also include a review of the location of any exploration, sterilisation and monitoring bore/piezometer boreholes.

- It is recommended that a conceptual cover design for TD1 be developed to ensure rehabilitation objectives and proposed final land use is included in the TD1 design.

The following comments are provided on the status of recommendations from last year's review.

- Clearer signage is required at the access points (gates) to the fenced tailings dam. *CMW comment: Safety signage was visible at entry to TSF area.*
- Additional piezometers should be installed in the embankments and the embankment stability should be reviewed based on this additional piezometer monitoring. It is recommended that a minimum of three (3) piezometers be installed at the Stage 5 crest level and aligned with piezometers PZ005, PZ006, PZ007. *CMW comment: These piezometers have not been installed. Installation is planned for 2022. Aeris requested an outline of the recommended monitoring schedule (water level and chemistry) for these piezometers and any associated trigger response levels. CMW confirm that piezometer water levels should be read monthly as a minimum. No water quality testing is required as the piezometers are within the tailings. Trigger levels will be established after installation based on past stability analyses.*
- Several monitoring bores previously had missing or damaged caps. All bores should be regularly inspected, damaged or missing caps should be replaced. The bores that were inspected had caps but instrumentation needs to be well maintained. *CMW comment: Bores and bore caps were present and undamaged on bores observed during the visit. Aeris report that personnel collecting data have been instructed to report any damage or missing caps.*
- Groundwater data and in particular water levels should be assessed at the time of the reading. A trigger rise (fall) value should be adopted such that the information can be reviewed by site personnel or an outside organisation. It is understood that at present, groundwater data is reviewed by internal personnel throughout the year. *CMW comment: Monthly/quarterly piezometer readings are compared to trends to identify anomalous values*
- Any rainfall runoff collected behind the western saddle embankment should be monitored, the temporary use of this area as a source of construction water is considered acceptable in the short term. The embankment crest should be monitored (visually) for any signs of distress in the way of cracking or slumping. Of note the mine has placed a berm along the downstream toe to prevent water ponding against the original embankment toe. *CMW comment: Water levels are generally kept below the bench of the road at the toe of the western wall.*

13 REFERENCES AND REPORTS

The following provides a summary of standards, references and reports that are applicable to the Tritton Mine Tailings Dam. Some of these documents have been used in the preparation of this surveillance report.

ANCOLD (1994). "Guidelines on Dam Safety Management".

ANCOLD (2019). "Guidelines on Tailings Dams Planning, Design, Construction, Operation and Closure".

ANCOLD (2019). "Guidelines for Design of Dams and Appurtenant Structures for Earthquake".

ARCADIS (2020) "Request for Variation to Environmental Protection Licence No. 11254 Tritton Copper Mine (M1544)

Barnson (2011). "Construction Report Stage 3".

Barnson (2015). "Construction Report Stage 4".

Barnson (2017). "Construction Report Stage 5". Barnson (2021). "Construction Report stage 6".

Coffey Geosciences Pty Ltd (2004). DRAFT Operations Manual report titled "Tailings Storage Facility Operations and Maintenance Manual & DSC Emergency Action Plan" dated November 2004.

Coffey Geosciences Pty Ltd (2004). Construction Report titled "Stage 1 to RL260.0m Tailings Storage Facility Construction Report Tritton Copper Project", reference PS6253.02-AG-construction report rev 2, dated 17 November 2004.

Coffey Geosciences Pty Ltd surveillance reports (2005, 2006). Reference P6926.02-AC-surv1-rev 2 dated 27 June 2006 and MH00100AC-surv2rep, dated June 2007.

Coffey Geosciences Pty Ltd (2006). Design Report titled "Stage 2 Design Report Tailings Storage Facility 1, Tritton Resources Limited", reference P6926.03-BB-stage 2 design report, dated 19 July 2006.

Coffey Mining Pty Ltd (2007). Design Report titled "Design Report Stage 3 Tailings Storage Facility 1, Tritton Resources Limited", reference MH00100AD-stage 3 design report rev 1, dated March 2007.

Coffey Mining Pty Ltd. Numerous Surveillance Reports (2007 to 2016).

Coffey Mining Pty Ltd (2010). Design Report titled "Stage 4 Design Report Tailings Storage Dam 1, Straits Tritton Copper Mine", reference MWP00100AN-stage 4 design report rev 1, dated 30 August 2010.

Coffey Mining Pty Ltd (2015). Design Report titled "Stage 5 Design Report Tailings Storage Dam 1, Straits Tritton Copper Mine NSW", reference MWP00100AW-Stage 5 Design Report Rev 0, dated 10 August 2015.

CMW Geosciences Pty Ltd (2018). "Raising of TD1, Stages 6 and 7 Tritton Mine, NSW DSC Design Report" ref PER2017-0066AB Design Report dated 9 March 2018.

CMW Geosciences Pty Ltd (2021). 2020 Calendar Year Surveillance Report.

CMW Geosciences Pty Ltd (2018). "TD1 Tailings Excavation Tritton Mines, NSW, Operational Guidelines, dated 6 June 2018.

Dams Safety Committee guidelines, proformas and documents.

DnA Environmental (2021) “2020 Tritton Copper Mine Rehabilitation Monitoring Report”

Environmental Earth Sciences (2013). “Conceptual Site Hydrogeological Model for ML1544 Tailings Storage Facility” Tritton Copper Mine, dated 26 March 2013.

Environmental Strategies (2013). “Remedial Action Plan Tailings Storage Facility (ML1544)”, dated 26 June 2013.

Kevin Morgan and Associates (2009). Report titled “Evaluation of Monitoring Data Tailings Impoundment Piezometers Tritton Mine”.

SMEC report (2008). “Tritton Copper Mine Tailings Storage Facility, Groundwater Investigation, project no. 3001442, dated 4 February 2008.

SMEC (2011). “Tritton Copper Mine Tailings Storage Facility – Groundwater Assessment and Management Plan” dated 3 November 2011 rev 2 ref 30011076.

Soil & Rock Engineering Pty Ltd (2004). Geotechnical Investigation report titled “Tailings Storage Facility Geotechnical Investigation, Tritton NW of Nyngan, NSW”, reference mkd6253_01tsfrep, dated 15 January 2004.

Soil & Rock Engineering Pty Ltd (2004). Design Report titled “Design Report Tailings Storage Facility 1 Tritton Copper Project, Revision 1”, reference ig6253_01_2003 arep.doc, dated 2 March 2004, rev 1.

Tritton Mine. Reports titled “Tailings Storage Facility Operations and Maintenance Manual & DSC Emergency Action Plan” Rev 2, Rev3, Rev3a, Rev 4 various dates.

Straits Tritton Mines (Aeris Resources) (2018), document titled “Erosion and Sediment Control Procedures - Tritton Tailings Dam 1 – Management Recommendations”.

Straits Tritton Mines revised Operations Manual tilted “Tailings Dam 1 Operations and Maintenance Manual & DSC Emergency Action Plans”, Tritton Mine Rev 5, dated June 2018.

- NSW Department of Panning Tritton Copper Mine DA 41/98 MOD 4: Notice of Modification, Section 96(2) of the Environmental Planning & Assessment Act 1979, dated 19 December 2007.
- Department of Planning Notice of Modification DA41/98 MOD3, dated 21 December 2007.
- Mining Operations Plan Conditions of Development Consent Appendix I, II and III, undated copy.

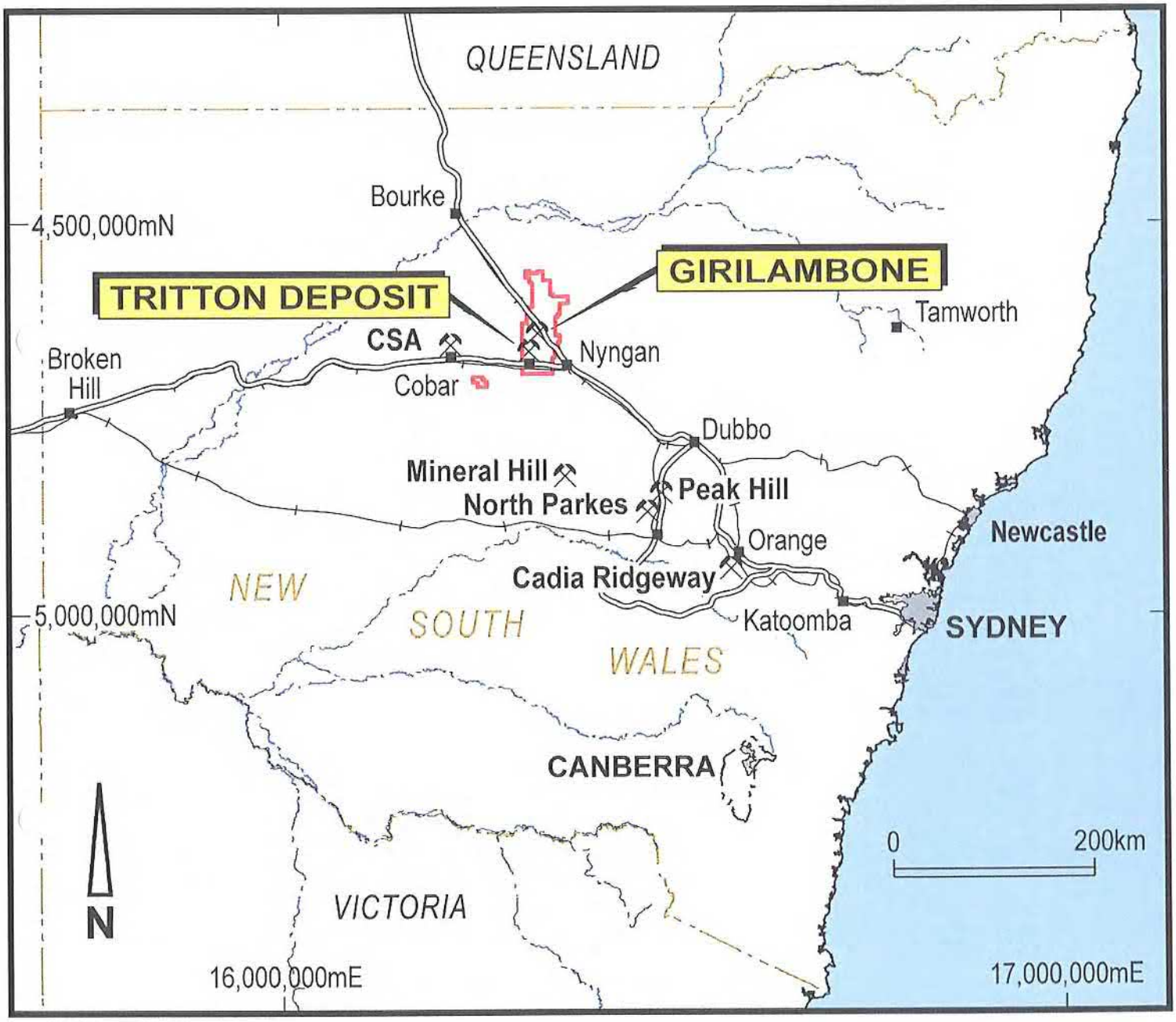
For and on behalf of
CMW Geosciences Pty Ltd

John V. Smith
Principal Engineering Geologist

For and on behalf of
CMW Geosciences Pty Ltd

Christopher Hogg
Principal Tailings Engineer

Distribution: 1 copy to Aeris Resources (electronic)
Original held by CMW Geosciences Pty Ltd



Tritton Resources Limited

PROJECT LOCATION PLAN

FIGURE 1

NOTES.

1. ALL WORKS TO BE CONSTRUCTED TO THE SCOPE OF WORKS DOCUMENT, REF
2. FOR SECTIONS AND DETAILS REFER TO DRAWING P6926/03/02.

EXISTING TEMPORARY SPILLWAY GRADE 1:150

31465.653mE 20760.032mN

C-C 02

31634.515mE 20767.823mN

C-C 02

31715.847mE 20764.567mN

STAGE 2 CREST RL 262.6m

B-B 02

NEW SADDLE EMBANKMENT

K 259.0m

31551.638mE 20696.002mN

EXTEND DOWNSTREAM SEEPAGE RECOVERY TRENCH (ACCESS ROAD ADJACENT)

MINE LEASE BOUNDARY

EXISTING PUMP SUMP

A-A 02

EXISTING DOWNSTREAM SEEPAGE RECOVERY TRENCH (ACCESS ROAD ADJACENT)

POSSIBLE BORROW AREA (TO BE CONFIRMED ON SITE)

EXISTING DECANT ACCESSWAY (NO WORK REQUIRED)

POSSIBLE BORROW AREA (TO BE CONFIRMED ON SITE)

GRADE UP MATERIAL TO DIVERT TAILINGS SLURRY FROM WORK AREA. LOCATION TO BE CONFIRMED ON SITE

TOP FREEHOLD PURCHASE BOUNDARY

EXTEND TOE DRAIN AND ROAD

31915.765mE 20041.536mN

B-B

STAGE 2 CREST RL 262.6m

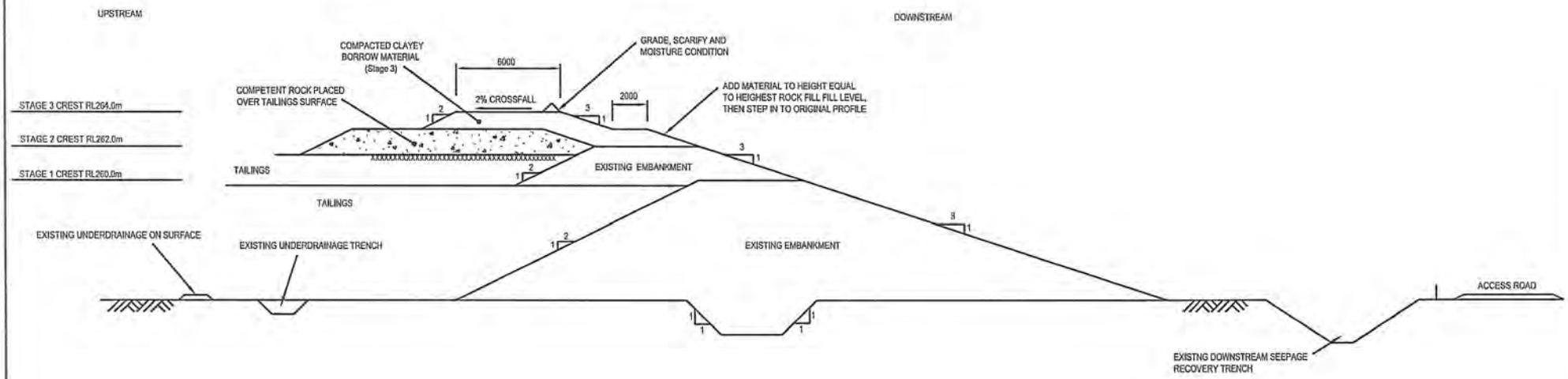
31915.682mE 19662.231mN

FUTURE SOUTH EMBANKMENT ALIGNMENT, CONSTRUCTED STAGE 3 OR LATER

Coffey

FIGURE 2

A	ISSUED FOR CLIENT APPROVAL	11/04/08		Coffey Geosciences Pty Ltd ACN 056 333 910	Geotechnical | Environmental | Testing | Project Management	
				Drawn: DAC	TRITTON RESOURCES LIMITED TRITTON COPPER PROJECT TAILINGS STORAGE FACILITY 1 PLAN EARTHWORKS - STAGE 2 (RL260.0m TO RL262.0m)	Drawing No: P6926/03/01 REV A
				Approved:		
				Date: 12/4/08		
Rev By	Revision Note	Date	Approved	Scale: 1:3834 (A1)		Job No: P6926/03



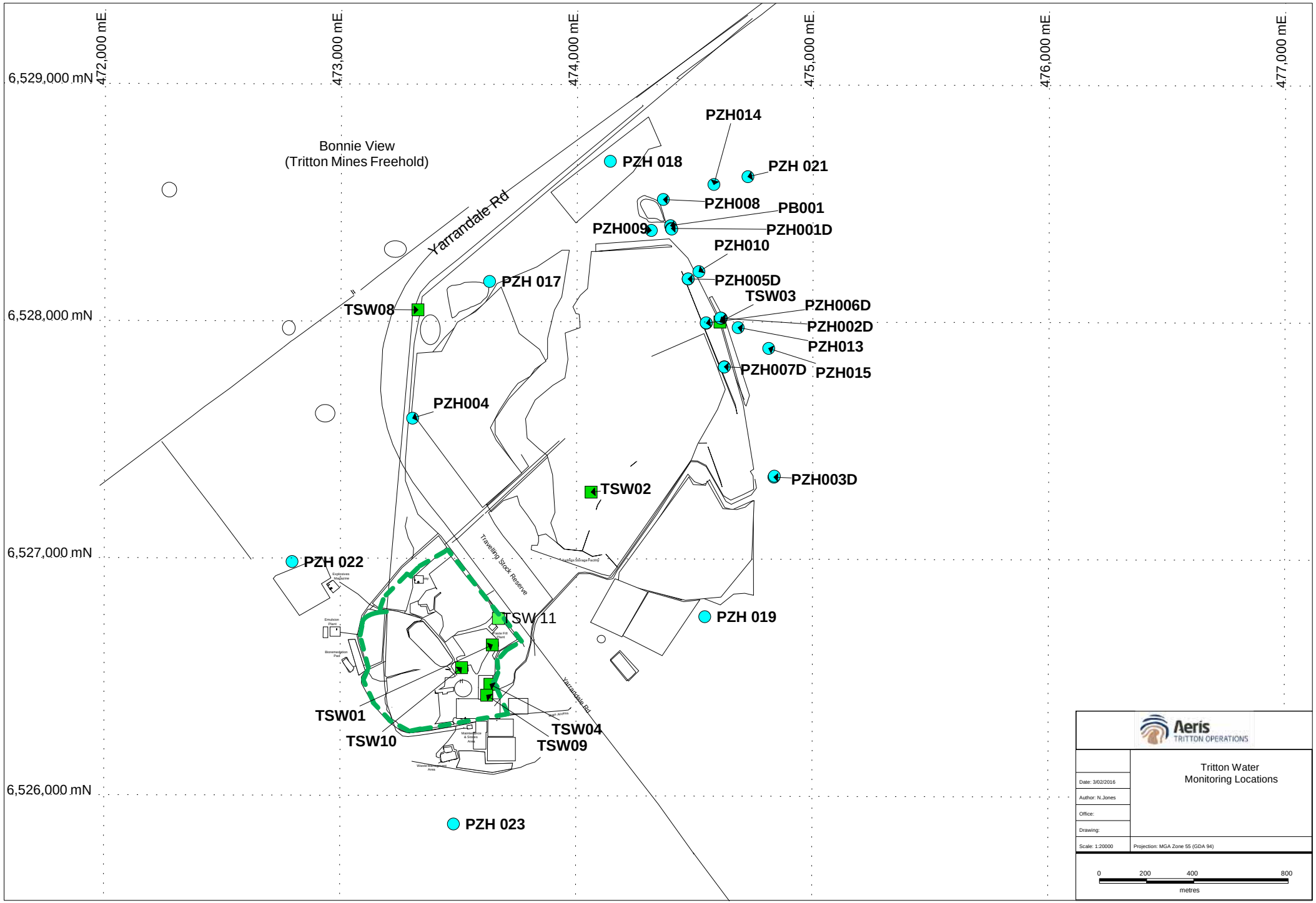
DRAWING PATH: F:\MINE\MH00001 to MH00173\MH00100AD Tritton TSF Stage 3\DWG\Stage3\Drawing 1 & 2\MH00100AD_fig11 revb.dwg

coffey mining
SPECIALISTS FROM BOARDROOM TO MINE FACE

Drawn	PP
Approved	IG
Date	24/09/07
Scale	NTS

TRITTON RESOURCES LIMITED
TRITTON COPPER PROJECT
TAILINGS STORAGE FACILITY 1
TYPICAL EMBANKMENT CROSS SECTION

Original Size	A4
Project no:	MH00100AD
Drawing	FIGURE 3


472,000 mE
473,000 mE
474,000 mE
475,000 mE
476,000 mE
477,000 mE
6,529,000 mN
6,528,000 mN
6,527,000 mN
6,526,000 mN
Bonnie View
(Tritton Mines Freehold)
Yarrandale Rd
PZH014
PZH 018
PZH 021
PZH008
PB001
PZH009
PZH001D
PZH010
PZH005D
PZH 017
TSW08
TSW03
PZH006D
PZH002D
PZH013
PZH007D
PZH015
PZH004
TSW02
PZH003D
PZH 022
Travelling Stock Reserve
TSW 11
PZH 019
TSW01
TSW10
TSW04
TSW09
PZH 023
Aeris
TRITTON OPERATIONS
Tritton Water
Monitoring Locations
Date: 3/02/2016
Author: N.Jones
Office:
Drawing:
Scale: 1:20000
Projection: MGA Zone 55 (GDA 94)
0
200
400
800
metres

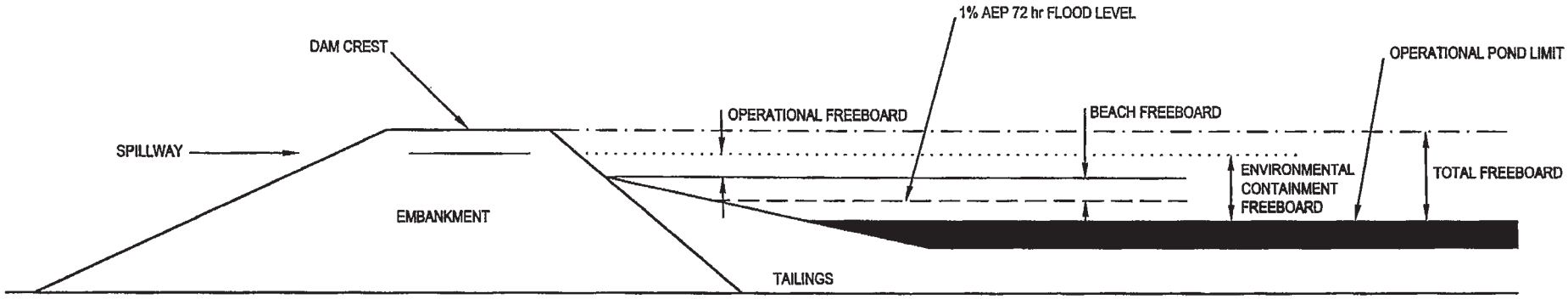


Figure 5

Drawn	MF	coffey	Client:	AERIS TRITTON OPERATIONS	
Approved	IG		Project:	TRITTON COPPER PROJECT TAILINGS DAM 1	
Date	24/03/2017		Title:	FREEBOARD	
Scale	NTS		Project no: PERGE199655	Figure no: 7	Rev:
Original size	A4				

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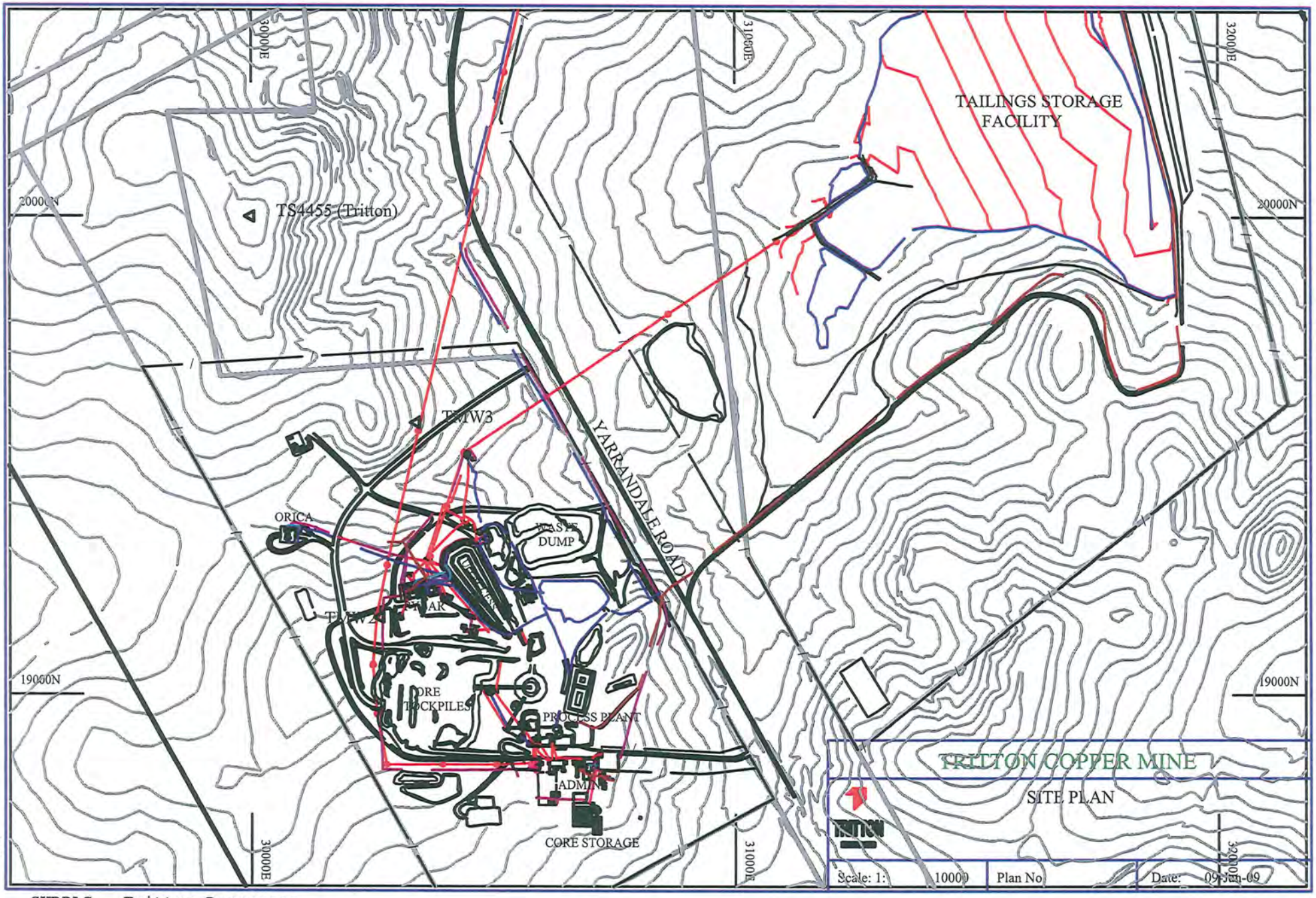
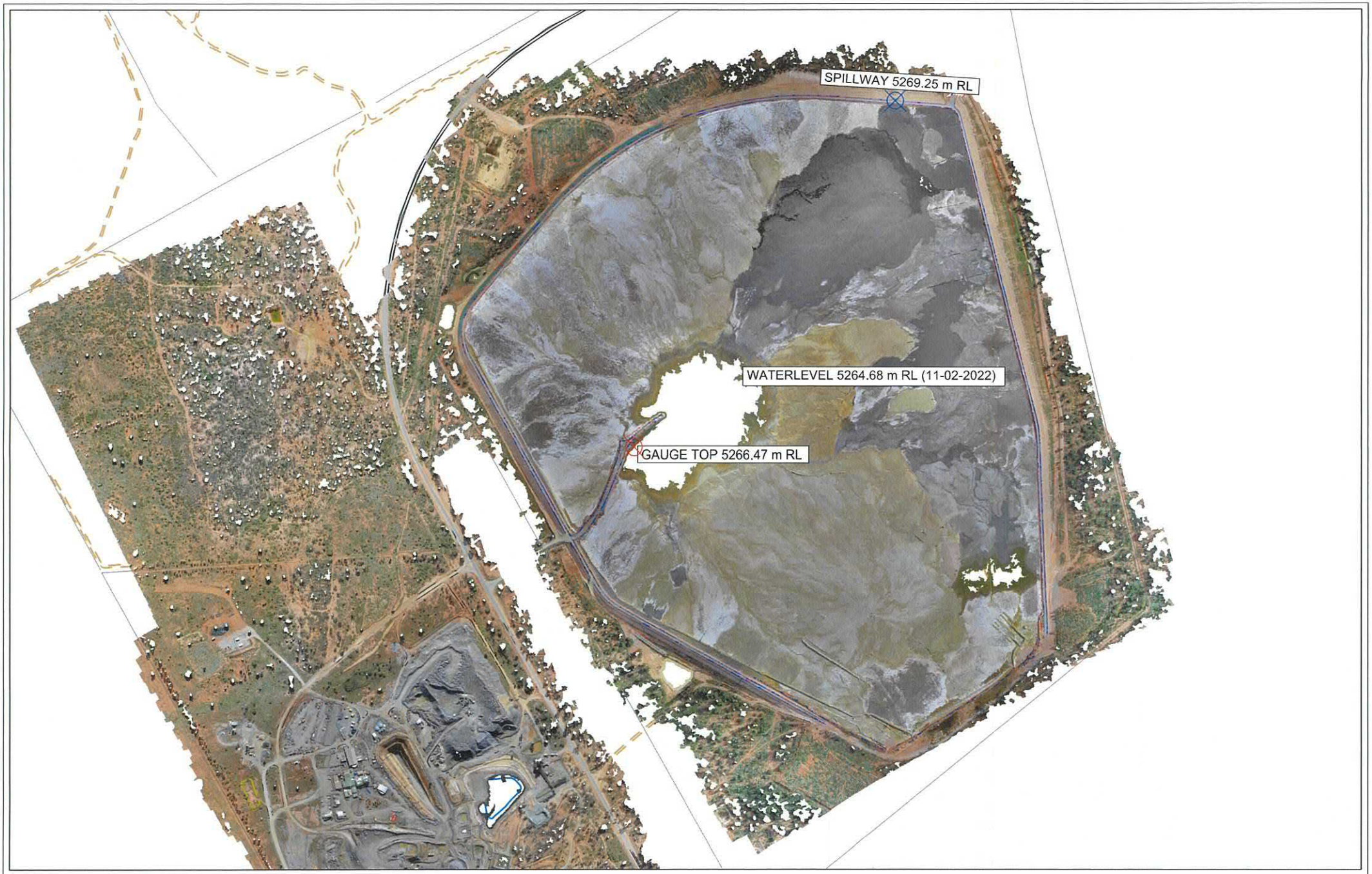


SURPAC - Tritton Resources

Figure 6



12/02/2022	TRITTON SURFACE.duf	1:7500
Aeris	Tritton TSF - Local Grid Datum	TRITTON
		cchallinor