NSW GOVERNMENT

Tritton Copper Mine

Modification Assessment
(DA 41/98 MOD 6)

January 2019

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Executive Summary

Tritton Resources Pty Ltd (Tritton) owns and operates the Tritton Copper Mine, an existing underground mine located about 45 kilometres northeast of Nyngan, within the Bogan local government area.

Proposed Modification

Tritton is proposing to extract and export 265,000 tonnes of tailings per year from the Tritton Copper Mine tailings storage facility (TSF) for use at the Murrawombie Copper Mine paste fill plant. Transportation of and receipt of tailings to the underground Murrawombie Copper Mine was recently approved by Bogan Shire Council under a separate application for that mine, which is also owned and operated by Tritton.

Engagement

The Department publicly exhibited the application and received advice from five government agencies, none of which objected to the proposed modification. There were no submissions from the general public.

Assessment

The proposed modification includes excavation and stockpiling and ongoing emplacement of tailings within the existing TSF. Tritton has proposed design measures and operational controls to ensure that the embankment walls and liner of the TSF remain intact during these activities, including minimum buffer distances and excavation depths and drains to ensure water does not migrate towards the perimeter embankment. The Department has included new conditions requiring Tritton to ensure any water in the excavated cells drains away from the embankment walls and to prepare a Tailings Extraction Management Plan in consultation with the Environment Protection Authority (EPA) and Dams Safety Committee (DSC) to address how water would be managed at the TSF. With these measures, and additional conditions of consent, the Department and DSC consider that there would be no impacts to the integrity of the TSF as a result of the proposed modification.

While the EPA acknowledged that the potential for damage to the TSF liner would be negligible, it raised concerns about the potential impacts of truck movements on the stability of the TSF embankment as well as surface water management within the stockpiling areas. The EPA also raised concerns about potential dust generation when tailings are excavated, handled, stockpiled and transported. The Department has recommended that the Tailings Extraction Management Plan address how these potential impacts would be managed, including a trigger action response plan for dust management. The Department has also recommended additional operating conditions requiring Tritton to implement best practice dust mitigation and management measures. The EPA has reviewed the recommended conditions and advised it has no residual concerns.

Summary

The proposed modification would facilitate the effective reuse of waste material at the Tritton Copper Mine, enable more effective resource recovery at the Murrawombie Copper Mine and increase the stability of the underground workings at that operation. Additionally, the use of paste fill at the Murrawombie Mine would enable Tritton to extract ore that would otherwise remain in situ, therefore enhancing the economic benefits of Tritton's operations and helping to ensure ongoing job security in the region.

Consequently, the Department considers that the proposed modification is in the public interest, and should be approved, subject to conditions.

Contents

1. Introduction

Tritton Resources Pty Ltd (Tritton), a wholly owned subsidiary of Aeris Resources Limited, owns and operates the Tritton Copper Mine, an underground mine located about 45 kilometres (km) northwest of Nyngan in the Bogan local government area (see **Figure 1**).

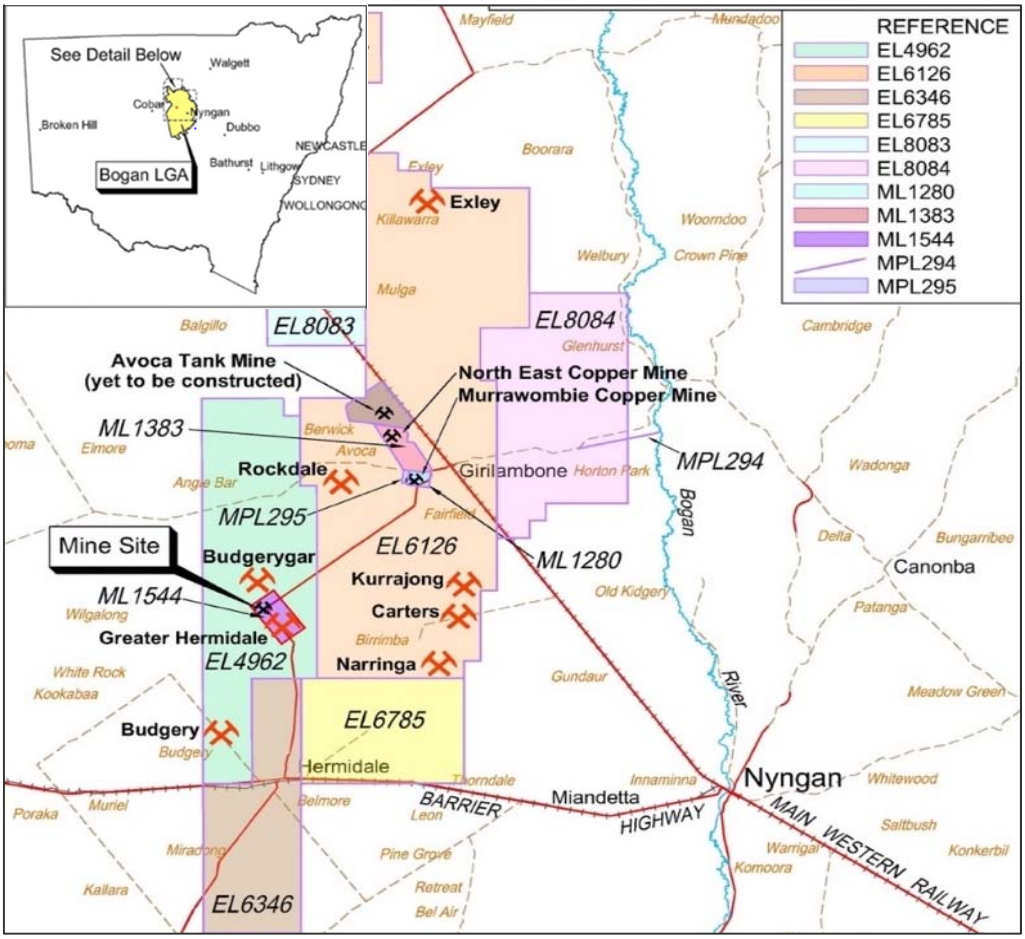

Figure 1 | Regional context

The Tritton Copper Mine operates under a development consent granted by the then Minister for Urban Affairs and Planning on 1 September 1999 (DA 41/98). The development consent has been modified on five occasions and allows Tritton to extract approximately 10.2 million tonnes (Mt) of copper ore over the life of the project (i.e. until 2024), import 1 Mt of ore from its other mines in the region, and process up to 1.4 Mt of ore per year at the on-site processing plant. The consent also allows Tritton to transport copper concentrate from the site by road to the Hermidale rail siding, where it is then transported to the Port of Newcastle for export.

Tritton's other mining operations include the Murrawombie Copper Mine (operational), the North East Copper Mine (under care and maintenance) and the Avoca Tank Copper Mine (not yet constructed). These mines are approximately 22 km northeast of the Tritton Copper Mine (see **Figure 1**). While each of these mines operates under a different approval, operations are undertaken in a holistic manner, with Tritton Copper Mine being the primary site of ore processing.

2. Proposed Modification

Tritton is seeking a further modification to the development consent under Section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

Tritton recently identified that the geotechnical stability of the underground workings at the Murrawombie Copper Mine could be increased by replacing ore pillars with tailings paste fill. This would also facilitate more effective resource recovery at the mine. Accordingly, Tritton lodged a modification application (DA 10/2018/027/001) with Bogan Shire Council (Council) for the construction of a paste fill plant at the Murrawombie Copper Mine, which was approved on 7 November 2018.

As Tritton intends to source tailings for use at the Murrawombie paste fill plant from the Tritton Copper Mine tailings storage facility (TSF), it is seeking to modify the Tritton Copper Mine development consent to enable the extraction and export of tailings from the mine.

Tritton is proposing to extract and export up to 265,000 tonnes of tailings per year from the Tritton Copper Mine TSF. Tailings would be excavated from discrete extraction cells and dried at a new stockpile pad within the TSF and transported off-site via haul trucks. These activities would occur during 'extraction campaigns', the timing of which would depend on the demand for tailings at the Murrawombie Copper Mine.

The TSF would continue to be used for tailings deposition and there would be no changes to the approved mine life, mining methods, ore processing, tailings production rate or approved disturbance footprint.

The proposed modification is described in Tritton's Environmental Assessment (EA) (see **Appendix B**) and summarised below. The proposed changes to the project layout are shown in **Figure 2.**

Table 1 | Summary of proposed modification

Aspect	Description
Proposed Modification	• Key aspects of the modification include: – constructing a stockpile pad within the TSF and access ramps to this area using waste rock; – excavating tailings from discrete extraction cells during extraction campaigns; – transferring tailings via dump trucks to the stockpile pad for drying; and – loading dried tailings into haul trucks for transport off-site.
Volumes of Tailings Extraction and Transport	• Up to 175,000 cubic meters (m^3) of tailings would be extracted each year. • Up to 265,000 tonnes of dried tailings would be exported each year.
Extraction Campaigns	• The duration and number of extraction campaigns per year would depend on operations at the Murrawombie Copper Mine. • During a typical campaign, about 15,000 m^3 of tailings would be excavated over a 7-day period (i.e. 23,000 tonnes of dry tailings). Up to 12 extraction campaigns would be required to export 265,000 tonnes of tailings per year.
Transport	• Haul trucks would access the TSF area via the southern site access driveway and existing internal haul roads. • Based on a typical campaign, up to 32 trucks would access this area each day for a period of two weeks.
Tailings Deposition	• Tailings slurry would be preferentially discharged into excavated cells. An extraction cell would be re-filled with tailings before excavation of the next cell commences.

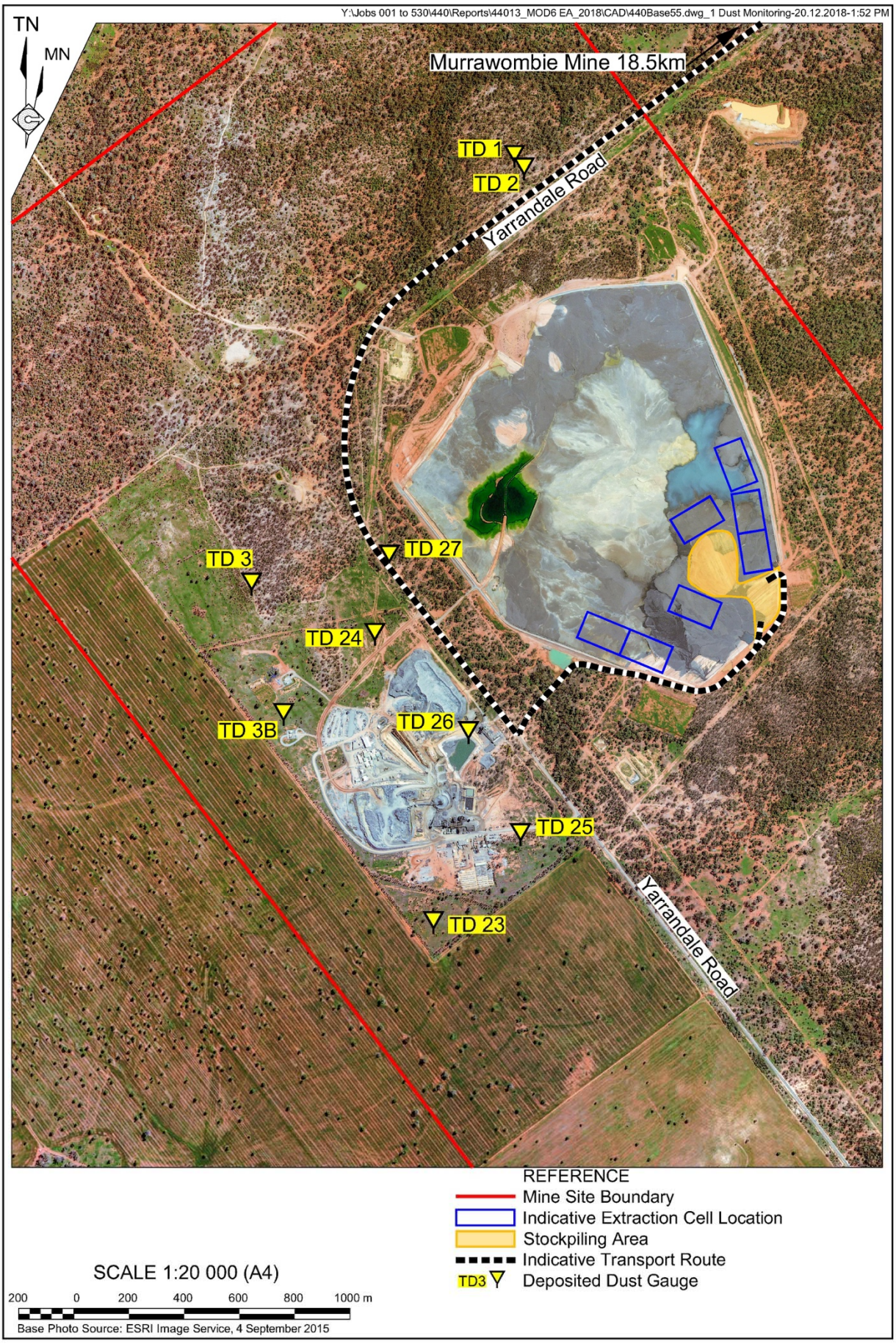

Figure 2 | Location of proposed modification

3. Strategic Context

The Tritton Copper Mine is located on a 1,400 ha site that is transected by Yarrandale Road (see **Figure 2**). Key mining infrastructure (i.e. the mine portal, run-of-mine pad, waste rock emplacement and processing plant) is located southwest of Yarrandale Road and the TSF is situated immediately to the northeast. Yarrandale Road connects directly with the Mitchell Highway to the north and the Barrier Highway to the south.

The surrounding rural area is sparsely populated, with only four privately-owned residences located within 6 km of the mine, the closest of which is approximately 4.5 km north. Land surrounding the mine is primarily used for agricultural purposes, including wheat cropping and grazing.

Operations in the region first commenced at the Murrawombie Copper Mine in 1992. The Tritton Copper Mine ore deposit was discovered in 1995 and mining began in 2004. Operations at the Avoca Tank Mine are yet to commence.

Tritton also has a number of other prospects in the region including the Kurrajong, Budgerygar and Budgery prospects (see **Figure 1**). These projects would supplement and then replace production from the Tritton and Murrawombie mines.

4. Statutory Context

4.1 Section 75W

The project was originally approved under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). As the modification request was lodged prior to 1 March 2018, under Schedule 2 of the *Environmental Planning and Assessment (Savings, Transitional and Other Provisions) Regulation 2017*, the modification can still be assessed under the former section 75W of the EP&A Act.

The Department has considered the nature of the proposed modification and is satisfied that it is within the scope of section 75W of the EP&A Act, as it would not change the approved mining and processing methods or the extent of the approved disturbance area and would not significantly increase the approved environmental impacts of the mine. Given these considerations, the Department considers that the proposal is within the scope of section 75W and may be determined accordingly.

4.2 Consent Authority

The Minister for Planning is the consent authority for the modification application. However, under the Minister's delegation dated 11 October 2017, the A/Director, Resource and Energy Assessments, may determine the application because Tritton has not made any reportable political donations, Bogan Shire Council does not object to the proposal, and there were no submissions from the community.

5. Engagement

The Department publicly exhibited the application from 12 September 2018 until 26 September 2018 (14 days) and advertised the exhibition in the Cobar Weekly and Nyngan Observer.

During the exhibition, the Department received comments or advice from five government agencies, none of which objected to the proposed modification. No submissions were received from the public.

A summary of the agency comments is provided below, and full copies are attached in **Appendix C**. Tritton also provided responses to requests for additional information from the Department and agencies throughout the assessment process, which are provided in **Appendix D**.

Bogan Shire Council (Council) is supportive of the proposed modification and has no concerns about the potential traffic impacts, including the use of Yarrandale Road and the southern site access driveway (see **section 6.3** of this report).

The **Environment Protection Authority** (EPA) acknowledged that the potential for damage to the TSF liner would be negligible, however raised concerns about the potential impacts of truck movements on the stability of the TSF embankment as well as surface water management within the stockpiling areas. The EPA also raised concerns about potential dust emissions from the proposed activities and requested additional information about the volume and timing of tailings extraction and stockpiling, and the proposed air quality management measures. Tritton subsequently provided this information, and the Department's consideration of these matters is provided in **section 6.1 and 6.2** of this report.

The **Dams Safety Committee** (DSC) raised no objections to the proposed modification subject to Tritton regularly inspecting the TSF, providing annual reports to the DSC and ensuring that the proposed cell excavation of the tailings does not lead to water being ponded against the embankment wall. The Department has recommended conditions to ensure that drainage from the cells is appropriately designed to meet the DSC's objectives, as discussed further in **section 6.1** of this report.

The **Division of Resources and Geoscience** (DRG) within the Department of Planning confirmed that it had no concerns about potential resource sterilisation and made no recommendations.

The **Resources Regulator** within the Department of Planning raised no concerns and made no recommendations.

6. Assessment

In assessing the merits of the proposed modification, the Department has considered the:

- modification application and supporting information;
- existing conditions of consent for the Tritton Copper Mine and Murrawombie Copper Mine;
- agency advice on the application and Tritton's response to advice;
- relevant environmental planning instruments, policies and guidelines; and
- requirements of the EP&A Act.

A list of the key documents that informed the assessment is provided in **Appendix A**.

The key issues for the proposed modification relate to potential impacts on the integrity of the TSF (and associated potential for groundwater impacts) and dust emissions.

6.1 Water Resources

The TSF covers an area of 153 ha. The embankment walls and liner have been constructed and maintained to minimise leakage from the facility. The existing conditions of consent require the TSF to be managed in accordance with the requirements of the EPA. The EPA in its Environment Protection Licence (EPL) for the mine has specified that the floor and wall of the TSF be lined with clay or other material with a permeability of no more than $1x10^{-9}$ m/sec. Additionally, the mine is also a nil discharge site and the proposed activities would be located within the dirty water catchment system associated with the TSF.

Tritton has proposed design measures to ensure that the embankment walls and liner remain intact during the proposed extraction and emplacement activities. These include buffers of 20 – 35 m between the embankment walls and extraction cells, and a minimum buffer of 4.4 m between the TSF liner and the base of the extraction cells.

The stockpile pad would be located on an elevated area within the footprint of the TSF and the surrounding surface water management structures would be maintained. Waste rock from the mine would be used to construct the base of the stockpile pad on top of dried tailings.

Tritton would preferentially discharge tailings into the excavated extraction cells, with each cell filled before progressing to the next cell allowing tailings to settle and limiting surface water ponding. Consistent with advice from the DSC, the Department has recommended a condition requiring Tritton to ensure the drainage for the excavated cells is designed so water in the excavated cells drains away from the embankment walls to minimise any ponding.

Tritton would also undertake weekly inspections during extractive campaigns and provide monthly reports to the DSC, consistent with its recommendations. Tritton has also committed to provide the DSC with a copy of the mine's Annual Environmental Management Report. On this basis, the DSC has no residual concerns about the proposed modification.

The EPA requested additional information about the location and extent of the stockpile pad, the depth and permeability of the pad base and the access points to this area. The EPA and the Department accept that this information can be provided following determination of the modification. Accordingly, the Department has recommended a new condition of consent requiring Tritton to prepare a Tailings Extraction Management Plan in consultation with the EPA and the DSC, which would document this information.

As part of the Tailings Extraction Management Plan, Tritton would also be required to:

- provide details of the extraction campaigns, stockpile pad, access arrangements and water management system at the TSF; and
- include a program to monitor and report on the effectiveness of the implementation of the measures in this plan.

With the proposed design measures, operational controls and recommended conditions, the Department and EPA consider that the proposed modification would not significantly impact water resources.

6.2 Air quality

Tritton maintains an air quality monitoring network around the mine, including two dust deposition gauges located immediately north of the TSF (TD1 and TD2) and seven gauges surrounding the mining area (see **Figure 2**).

Monitoring data indicates that mine operations have consistently complied with the relevant dust deposition criteria, except for a limited number of occasions when background dust deposition levels have been significant. Further, no recorded exceedances have occurred to the north of the TSF (i.e. the direction of prevailing winds).

Tritton anticipates that the moisture content of the tailings would be high enough (i.e. 15%) to limit dust emissions during excavation and handling of tailings. When the tailings are stockpiled, dried and transported, the moisture content would decrease to ~12%, which would still act to minimise dust lift-off.

Tritton also proposes to implement the following dust mitigation and management measures:

- use water carts during dry and/or windy conditions to suppress dust lift-off;
- undertake regular visual inspections to ensure that no visible dust is dispersed, and cease operations if dust is dispersed beyond the TSF boundary;
- construct the tailings stockpile to have slopes no greater than 1:3 (V:H) to improve the stability of the stockpile and minimise dust generation; and
- cover loads of haul trucks prior to exiting the stockpile pad.

The Department and the EPA consider that the proposed dust mitigation measures are appropriate. However, the EPA requested additional information about the extent of the stockpile area, the volume of material stored and the duration of the storage period, as well as a detailed air quality management, monitoring and response plan.

Accordingly, the Department requires Tritton to provide this information as part of the recommended Tailings Extraction Management Plan, including details about the air quality management system at the TSF, and a trigger action response plan and air quality monitoring plan specific to the proposed modification.

Additionally, the Department has recommended new air quality operating conditions requiring Tritton to minimise any off-site dust and visible air pollution and ensure that all trucks transporting tailings cover their loads during transportation. Tritton would also be required to carry out any monitoring required by the EPA under its EPL.

With the proposed management measures and recommended conditions, the Department and the EPA consider that the proposed modification would be managed to ensure there are negligible additional impacts on air quality surrounding the mine.

6.3 Other Issues

Table 1 summarises the Department's consideration of other issues related to the modification.

Table 1 | Assessment of other issues

Issue	Consideration	Recommendation
Traffic	• Road transport of tailings is already approved by Council as part of the consent for the Murrawombie Copper Mine. However Council's assessment did not consider the use of the southern site access point, at the intersection with Yarrandale Road. • Ore trucks returning to the Murrawombie Copper Mine would be backloaded with tailings at the Tritton TSF. Empty ore trucks would travel from the processing area to the TSF stockpile via Yarrandale Road and the southern site access driveway (see **Figure 2**). • Yarrandale Road is a sealed two-way local road. There is adequate sight distance at its intersection with the southern site access driveway. The road is primarily used by mine related vehicles, including approximately 72 heavy vehicles and 6 light vehicles per day. A small number of private vehicles also use the road to access rural properties (20 light vehicles per day). • Based on a typical tailings campaign, up to 32 trucks would access the TSF stockpile per day over a two-week period. • With the proposed modification, Yarrandale Road would maintain a good level of service, and Council has confirmed it has no significant concerns about additional vehicles using the southern site access. • In regard to road safety, the existing conditions require Tritton to implement a code of conduct for waste rock transport on public roads. The Department has recommended that this code be updated to include tailings transport.	• Update the existing condition requirement to include heavy vehicle transport of tailings.
Noise	• Noise would be generated during construction of the stockpile pad and when tailings are excavated, loaded, unloaded and transported off-site. • However, noise from the modification would be consistent with noise generated by existing activities at the TSF and the distance between the TSF and the nearest residence (4.5 km) would continue to mitigate any potential noise impacts at this residence. • The Department and the EPA consider that the modification would have no significant impact on the amenity of surrounding receivers.	• Comply with existing conditions.
Visual	• The proposed tailings stockpile may temporarily reach a height of 4 m above ground level and would be visible from Yarrandale Road. However, tailings would be routinely removed from the stockpile pad for use at the Murrawombie processing plant. • The modification would be visually consistent with existing mining structures, and the waste rock emplacement would continue to be the tallest structure at the site (20 m above ground level). • The Department considers that the proposed modification would not result in any significant additional visual amenity impacts.	• Comply with existing conditions.
Rehabilitation	• Rehabilitation is detailed in the approved Mining Operations Plan (MOP) for the mine. • At mine closure, the TSF would be capped with non-acid forming waste rock and a layer of topsoil, shaped to be water shedding and revegetated to provide a stabilising groundcover. • The proposed modification would not change the long-term land use strategy for the TSF (i.e. return the land to light grazing and native vegetation conservation). • The Resources Regulator raised no concerns about rehabilitation and the Department considers that the proposed modification would have no significant impact on the approved rehabilitation strategy and final land use.	• Comply with existing conditions.

7. Evaluation

The Department has assessed the modification application and supporting information in accordance with the relevant requirements of the EP&A Act.

The Department considers that any additional environmental impacts associated with the proposed modification would be negligible. The proposed design measures, operational controls and recommended conditions would ensure that the embankment walls and TSF liner remain intact during excavation and emplacement activities, therefore the existing controls would continue to protect water resources.

The proposed dust management measures and recommended conditions would also ensure there would be negligible additional impacts on air quality surrounding the mine. Further, there would be no new land disturbance, and therefore no impacts on soil and land, biodiversity or heritage associated with the proposed modification.

Importantly, the proposed modification would facilitate the effective reuse of a waste material at the Tritton Copper Mine, enable more effective resource recovery at the Murrawombie Copper Mine and increase the stability of the underground workings at that mine. Additionally, the use of paste fill at the Murrawombie Mine would enable Tritton to extract ore that would otherwise remain in situ, therefore enhancing the economic benefits of Tritton's operations and helping to ensure ongoing job security in the region.

Consequently, the Department considers that the proposed modification is in the public interest, and should be approved, subject to conditions.

8. Recommendation

The Department has drafted a Notice of Modification (see **Appendix E**) for the proposed modification, as well as a consolidated version of the development consent as modified (see **Appendix F**).

It is recommended that the A/Director, Resource and Energy Assessments, as delegate of the Minister for Planning:

- **considers** the findings and recommendations of this report;
- **determines** that the application (DA 41/98 MOD 6) falls within the scope of section 75W of the EP&A Act;
- **accepts and adopts** all of the findings and recommendations in this report as the reasons for making the decision to grant approval to the application;
- **modifies** the approval (DA 14/98); and
- **signs** the attached approval of the modification (**Appendix E**).

Recommended by:

21/1/19

Phillipa Duncan
Team Leader
Resource and Energy Assessments

9. Determination

The recommendation is **Approved / Refused by:**

30/1/19

Steve O'Donoghue
A/Director
Resource and Energy Assessments

Appendices

Appendix A – List of Documents

Environmental Assessment for the Tritton Copper Mine Modification 6, prepared by RW Corkery & Co. Pty Ltd on behalf of Tritton Resources Pty Ltd, dated August 2018

Additional information including:

- Letter titled *Tritton Mine – DA 41/98 Modification 6 – Response to EPA Comments*, prepared by RW Corkery & Co. Pty Ltd on behalf of Tritton Resources Pty Ltd, dated 8 November 2018;
- Letter titled *Tritton Mine – DA 41/98 Modification 6 – Response to Dam Safety Committee Comments*, prepared by RW Corkery & Co. Pty Ltd on behalf of Tritton Resources Pty Ltd, dated 23 November 2018;
- Letter titled *Tritton Mine – DA 41/98 Modification 6 – Response to EPA Feedback on RTS*, prepared by RW Corkery & Co. Pty Ltd on behalf of Tritton Resources Pty Ltd, dated 4 December 2018;
- Email titled *440 - Tritton Mine - Additional Information Request*, from RW Corkery & Co. Pty Ltd on behalf of Tritton Resources Pty Ltd, dated 9 Jan 2019; and
- Letter titled *Tritton Mine – DA 41/98 Modification 6 – Review of Transport Activities*, prepared by RW Corkery & Co. Pty Ltd on behalf of Tritton Resources Pty Ltd, dated 16 January 2019.

Appendix B – Environmental Assessment

http://www.majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=9589

Appendix C – Agency Advice

http://www.majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=9589

Appendix D – Additional Information

http://www.majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=9589

Appendix E – Notice of Modification

http://www.majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=9589

Appendix F – Consolidated Approval

http://www.majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=9589