
Snapper Mine

Environmental Audit of Compliance with Development Consent

Tronox Mining Australia Pty Ltd

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TELFORD
ENVIRONMENTAL CONSULTING SERVICES

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Document Control

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1 Introduction

1.1 Background

1.1.1 Operations

Tronox Mining Australia Pty Ltd (Tronox) operates the Snapper Mine at Nob Road, Pooncarie, NSW. The mine is located approximately 90 km north of Mildura and 180 km south east of Broken Hill.

The mine uses wet plant technology in a floating concentrator with subsequent processing at Ginkgo Mine to concentrate titanium-bearing mineral sands. Mineral sand concentrate from Snapper Mine, along with concentrate from the Ginkgo Mine, is delivered by road to the Mineral Separation Plant in Broken Hill for further concentration and separation.

Plant at the mine includes:

- main dredge;
- auxiliary dredge;
- floating concentrator (wet) plant;
- stacker;
- water bores and overland piping;
- 10 km 22 kV supply overhead transmission line and associated sub-stations; and
- internal access and haulage roads.

Accommodation is provided for Snapper Mine employees, contractors and visitors at the Ginkgo Mine complex.

1.1.2 Consents, licences, approvals and leases

Development consent

The NSW Minister for Planning approved development application PA 06_0168 under s 89E of the *Environmental Planning and Assessment Act 1979* on 28 August 2007. Since the project approval, the Department has made seven modifications to the project approval. A summary of the modifications is provided in Table 1.

Table 1 Summary of project approval and modifications

Modification	Date	Brief Description
0	27 August 2002	Project approval.
1	19 June 2009	Offset changes.
2	11 December 2009	Transport of ore.
3	18 October 2010	Mine plan changes.
4	20 October 2014	Integration with other operations.
5	20 March 2015	Production increase.

Modification	Date	Brief Description
6	5 December 2014 (predates MOD 5)	Changes to production and haulage.
7	18 March 2020	Northward extension of mine.

The audit checklist was derived from the consolidated Project Approval (MOD 7) dated March 2020.

Environment Protection Licence

The NSW EPA issued an environment protection licence 12799 to BEMAX Resources Limited for the Snapper Mine on 21 December 2007. A summary of licence variations is provided in Table 2.

Table 2 Summary of environment protection licence variations

Variation	Date	Brief Description
0	21 December 2007	Licence issued
1	10 July 2012	Variation of licence to: <ul style="list-style-type: none"> remove the requirement for trucks travelling between Ginkgo and Snapper mines to have loads covered; increase the scale of activity; and update waste conditions.
2	26 August 2019	Add condition L2.6 regarding stockpiling of waste tyres.
3	22 September 2020	Vary condition M2.2 to change frequency of air quality monitoring – deposited matter to quarterly.

Mining Leases

Details of mining leases issued for the Snapper Mine are summarised in Table 3.

Table 3 Summary of mining leases

Mining Lease	Issue date	Expiry	Brief Description
ML1621	10 Jul 2008	10 Jul 2029	Original issue to Bemax Resources Limited
ML1809	3 Aug 2020	14 Oct 2032	Northern extension of the Snapper Mine.

Groundwater certificate of title and water supply works approval

Details of the approval for Snapper Mine groundwater supply works and abstraction title are summarised in Table 4.

Table 4 Summary of groundwater supply works approval and title

Variation	Number	Date	Brief Description
Water supply works approval	60WA582837	16 Jan 2012	Authorises construction of bores and excavation at location 1929//763907 (Part Lot). Identifies requirements for the works, monitoring and recording and reporting.
Certificate of title	WAL27918	4 Feb 2013	Entitles Cristal Mining Australia (Tronox) to a share of 14,000 units (ML per year) of groundwater.

2 Audit Details

2.1 Audit Objective

To assess compliance of operations conducted by Tronox at the Snapper Mine against conditions of the project approval in order to meet the requirement of schedule 4 condition 6 of the project approval.

2.2 Audit Scope

2.2.1 Activity audited

The audit assessed mining and ancillary operations conducted by Tronox at the Snapper Mineral Sands Project, Pooncarie, NSW.

2.2.2 Period of time covered by the audit

The time period covered by the audit is from the date of the site inspection for the previous audit, 1 November 2017, to that of the present audit, 30 November 2020.

2.2.3 Audit criteria

The audit considered compliance of operations at the premises with conditions specified in:

- Minister for Planning project approval for development application 06_0168, granted on 28 August 2007, specifically MOD 5 up to 17 March 2020, and MOD 7 from 18 March 2020; and
- consideration of matters identified by stakeholder representatives who responded to the invitation to comment issued during the audit planning stage.

2.2.4 Exclusions from the audit scope

The scope of the audit was limited to the activities conducted at the Snapper Mine referenced in the project approval. Independent site sampling or monitoring was not conducted as part of the audit.

Section 4 Condition 6(a) of the project approval requires that the audit "be prepared in accordance with the relevant Independent Audit Post Approval Requirements (DPE 2018)". Section 3.3(1)(c) of these requirements states that the audit scope must include an assessment of compliance with "all environmental licences and approvals applicable to the development excluding environmental protection licences issued under the Protection of the Environment Operations Act 1997". Accordingly, the audit included assessment of general environmental protection, but did not include a direct assessment of compliance with Environment Protection Licence 12799.

2.2.5 Auditor

The audit was conducted by Dr David Telford of Telford Environmental Consulting Services Pty Ltd. David is an EPA Victoria-appointed environmental auditor of industrial facilities. Information presented in this audit report is subject to the limitations given in section 2.4 of

this report. The Department of Planning, Industry and the Environment approved the engagement by Tronox of David to conduct the audit.

2.3 Audit Method

2.3.1 Site meetings and inspections

The desk-top audit of compliance was conducted on 30 November to 1 December 2020 in the company of Brendan Isaacs, Environmental Lead Tronox Mining Australia Limited.

An opening meeting was held with the Environmental Lead at the Ginkgo Mine offices on 30 November 2020. An inspection of the Snapper Mine and associated areas was conducted in the company of the Environmental Lead.

Preliminary audit findings were discussed with the Environmental Lead on 1 December 2020.

2.3.2 Audit checklists

A checklist reproducing the requirements of the project approval was prepared before the site visit and completed during the audit. The completed checklist is provided in Appendix A of this report.

2.3.3 Compliance assessment criteria

Compliance assessment criteria used for this audit were:

- Compliance
- Non-compliance
- Opportunity for Improvement
- Not Applicable (N/A).

Compliance findings denote that the requirements of the permit condition have been met.

Non-compliance denotes that part or all of the project approval condition requirements have not been met.

An **opportunity for improvement** is a practice that could be modified to improve environmental performance or management and does not identify a non-compliance.

Not applicable (N/A) denotes that the approval condition is not relevant due to expiry of its requirement or that Tronox has not conducted activities relevant to the condition during the audit period.

2.3.4 Tronox personnel interviewed

Tronox personnel who participated in the audit were:

- Brendan Isaacs –Environmental Lead Tronox Mining Australia Limited.

2.3.5 Stakeholder involvement

Prior to the site inspection, contact was made by email with the following regulatory authorities:

- NSW Department of Planning, Industry and Environment – Biodiversity and Conservation;

- NSW Department of Planning, Industry and Environment – Planning and Assessment;
- NSW Environment Protection Authority;
- Heritage NSW;
- NSW Resources Regulator; and
- NSW Office of Water.

Representatives of these authorities were invited to provide comment on elements of the mine operations that they considered were of potential environmental concern and required particular attention during the audit.

2.3.6 Documents viewed

A list of documents and correspondence viewed during the audit is provided in Appendix B.

2.4 Limitations

This report was prepared for Tronox Mining Australia Ltd [the Client] for the purpose of an independent audit of project approval and environmental protection licence compliance at the Snapper Mine commissioned by the Client. The contents of this report are based on information gathered during execution of the commission and on information provided by the Client. The conclusions presented in this report are conditional upon accurate and complete information being provided by the client.

The representations (relevancy) of the information contained in this report are subject to, and conditional upon, site conditions, activities and personnel changes (“Factors”) as they occur from time to time. Accordingly, the report may need to be reviewed in light of the time that has elapsed since its release, and changes including but not limited to, the Factors outlined above.

This report shall only be presented in full and may not be altered, amended, abbreviated or issued in part without prior approval by Telford Environmental Consulting Services.

This report has been prepared by Telford Environmental Consulting Services for the sole use of the Client. No warranties, expressed or implied, are offered to any parties other than the Client and no liabilities will be accepted for the use of this report by any third party.

3 Audit Findings

3.1 Comments Made by Stakeholder Contacts

NSW Resource Regulator – Department of Planning, Industry and Environment

Comments regarding the scope of the audit were by the Principal Compliance Auditor of Department of Planning Industry & Environment in a letter dated 16 November 2020. Comments received and findings for those comments are provided in Table 5.

Table 5 DPIE - Resource Regulator comments and findings

Comment received	Finding
Review relevant mining leases and exploration licences as agreed with Resources Regulator.	<p>Environmental conditions set out in mining lease ML1621 and ML1809 (in effect from 14 October 2020) require Tronox to (in brief):</p> <ul style="list-style-type: none"> • conduct operations so as to prevent, minimise any harm to the environment that may result from the construction, operation or rehabilitation of the development; • for the above to be identified in the mining operations plan (MOP); • for the leaseholder to lodge environmental management reports on compliance with the MOP, rehabilitation, regulatory compliance and other guidelines; • rehabilitate disturbed land to an end land use to the satisfaction of the Minister; • not cause or aggravate air pollution, water pollution or soil contamination or erosion, unless otherwise authorised; • minimise harm to roads and tracks and compensate the designated authority for damage to roads; and • not harm trees unless necessitated by the conduct of the operations. <p>These requirements are incorporated into the MOP, with relevant environmental management plans developed and implemented by Tronox in response to the project approval conditions.</p>
Undertake an assessment of compliance against the conditions of title related to environmental management.	<p>Compliance of operations against the conditions of the mining leases is reported in the Annual Environmental Management Reports written and submitted to regulatory authorities by Tronox each year.</p> <p>This audit constitutes an independent assessment of compliance of the Snapper Mine operations with the planning approval and accordingly, the MOP.</p>

Comment received	Finding
<p>Verify that there is a current Mining Operations Plan (MOP) in place and it has been approved by the Regulator – review compliance against any conditions of approval of the MOP.</p>	<p>The current Snapper Mineral Sands Mine Mining Operations Plan covers the period November 2015 to November 2020. It was approved by the Secretary Department of Industry Resources & Energy in a letter dated 1 December 2015.</p> <p>The letter advised that the term of acceptance for the MOP was for the period from 9 November 2015 to 30 June 2020.</p> <p>In a letter dated 16 June 2020, the NSW Resources Regulator advised that the approval period for the MOP was extended from the date of the letter until 30 November 2020. In an undated letter (document properties indicate it was created on 17 November 2020), the NSW Resources Regulator advised that the approval period for the MOP was extended until 31 January 2021. This extension allows time for the regulator to review the revised MOP, which includes the northern extension of Snapper Mine.</p>
<p>Undertake a critical review of the MOP, including an assessment of its compatibility with the description of operations contained in the planning approval. In particular:</p> <ul style="list-style-type: none"> • Review the rehabilitation strategy as outlined in the MOP to determine if it is consistent with the Project Approval in terms of progressive rehabilitation schedule; and proposed final land use(s); • Review the rehabilitation objectives and completion criteria as outlined in the MOP to determine if they have been developed in accordance with the proposed final land use(s) as outlined in the Project Approval. 	<p>The mine rehabilitation plan is included in the sections 4 to 9 of the MOP. These address:</p> <ul style="list-style-type: none"> • rehabilitation objectives; • rehabilitation phases for identified domains; • performance indicators; • rehabilitation implementation; • rehabilitation monitoring and research; • intervention and adaptive management; and • reporting. <p>The revised MOP, which includes the rehabilitation strategy, is currently being assessed by the NSW Resources Regulator.</p>
<p>Review the development and implementation of any rehabilitation monitoring programs to assess performance against the nominated objectives and completion criteria – verified by reviewing monitoring reports and rehabilitation inspection records.</p>	<p>Mine rehabilitation implementation, management, monitoring, and research and maintenance objectives are described in sections 7, 8, and 9 of the MOP.</p> <p>Results of rehabilitation monitoring are presented in each Snapper Mine AEMR. The objectives are being met to the extent possible as constrained by progress of the run of mine and difficulties presented by regional drought conditions.</p>
<p>Determine if a rehabilitation care and maintenance program has been developed and implemented based on the outcomes of monitoring program – verified by reviewing Annual Rehabilitation Programs or similar documentation.</p>	<p>Inspection of the rehabilitation areas for Snapper mine determined that the rehabilitation outcomes are consistent with those described in the AEMRs. See also project approval condition 19 in Appendix A of this report.</p>

Comment received	Finding
Confirm that mining operations are being conducted in accordance with the approved MOP (production, mining sequence etc.), including within the designated MOP approval boundary – to be verified by site plans and site inspection.	The additional Snapper Mine northern extension disturbance area approved in MOD7 has been included in MOP Amendment B. It includes an updated rehabilitation plan showing the new disturbance areas. See MOP-B page 12 (blue text) and areas marked in Figure 1. This has been included in the new MOP. NB: MOP-B does not refer to ML1809, as the new lease had not been issued at the time of its preparation.
Confirm that rehabilitation progress is consistent with the approved MOP as verified by site plans and a site inspection. This should include an evaluation against rehabilitation targets and whether the final landform is being developed in accordance with conceptual final landform in the Project Approval.	Progressive rehabilitation is described each year in the Annual Environmental Management Report (AEMR). Rehabilitation works conducted at Snapper Mine are discussed below in section 3.2.
Based on a visual inspection, determine if there are any rehabilitation areas that appear to have failed or that have incurred an issue that may result in a delay in achieving the successful rehabilitation.	All areas are stable. No major erosion issues apart from some minor localised rill erosion and runouts. These are addressed when access to the affected area can be made without causing further local deterioration.
In addition to the above, the audit should note observations where rehabilitation procedures, practices and outcomes represent best industry practice.	Trials are described in each AEMR and include use of different methods for ground preparation and seeding, hand planting, fencing for protection from browsers, and irrigation. Tronox has funded a PhD student who investigated the effects of temperature and water potential on the survival of woody plants in reconstructed soils such as those in the rehabilitation areas.

Environment Protection Authority

Comments regarding the audit scope were received from the Unit Head, Regulatory Operations Regional, NSW Environment Protection Authority in an email of 18 November 2020. Comments received and findings for those comments are provided in Table 6.

Table 6 EPA comments and findings

Comment received	Finding
Identify and comment on the status of stockpiles of wastes and recyclables present at the premises.	Earthmoving works for the Snapper Mine are conducted by the contractor BSL (Basin Sands Logistics). BSL has established a compound on the Tronox mining lease at which it manages and services its earthmoving equipment. Details of audit observations of the compound are discussed below in section 3.3.

Planning and Assessment - Department of Planning, Industry and Environment

Comments regarding the audit scope were received from the Team Leader of Planning and Assessment, Department of Planning Industry & Environment in an email of 18 November 2020. Comments received and findings for those comments are provided in Table 7.

Table 7 DPIE - Planning & Assessment comments and findings

Comment received	Finding
Update on requirements approved following Modification 7	Tronox is not proceeding with the realignment of Nob Road identified in MOD 7.
Update on noise monitoring that nearest landowner has requested be reinstated at their property (such as if this has occurred and any monitoring results)	Details of noise monitoring undertakings at Snapper Mine are presented in section 3.4.
Truck movements	There is only one heavy metal concentrate truck running between Snapper Mine and the Ginkgo Mine heavy metal concentrate treatment facility. There is an average of three heavy mineral concentrate transport vehicle movements per hour, with one truck running 24 hours per day, taking an average of 40 minutes per round trip.
Rehabilitation	Progressive rehabilitation is described each year in the Annual Environmental Management Report. Details of rehabilitation implementation at Snapper Mine are presented in section 3.2.

Heritage NSW

Comments regarding the scope of the audit were received from the Senior Team Leader, Aboriginal Cultural Heritage Regulation – South in an email dated 25 November 2020. Comments received and findings regarding those comments are provided in Table 8. Further details of cultural heritage at Snapper Mine are presented in section 3.5.

Table 8 Heritage NSW comments and findings

Comment received	Finding
Ensure the Aboriginal cultural heritage component of the environmental management plan has been updated to reflect all Modifications undertaken to date (approximately 8).	There has not been a requirement to update the heritage requirements for MOD7. The archaeologist assessed the site and did not identify any artefacts. The rest of the Modifications have been administrative and have not affected the land.

Comment received	Finding
All Aboriginal objects (sites) authorised for harm should be checked to ensure that Aboriginal Site Impact Reporting Forms (ASIRF) have been submitted to the Aboriginal Heritage Information Management System (AHIMS) so that the state register for Aboriginal cultural heritage remains up to date.	All have been identified in the Ginkgo and Snapper Mines Cultural Heritage Environmental Management Plan (2015). Stone artefacts and hearthstones collected from the exposed surfaces of nineteen Aboriginal archaeological sites with the Snapper mining lease were reported in Analysis of Aboriginal lithic assemblages and hearths, Landskape Natural and Cultural Heritage Management, May 2008. The report was submitted to the NSW Department of Environment and Climate Change. All artefacts were labelled and marked with a unique numeric identifier that included the DECC site number.
All Aboriginal objects that were authorised for collection and storage should be accounted for, including ensuring that the relevant paperwork is contained with the collection, as per Requirement 26 of the Code of Practice for Archaeological Assessment of Aboriginal Objects in NSW	Aboriginal objects collected during the site survey are held in a keeping place within the Ginkgo Mine administrative compound area. A catalogue of the objects is held in the keeping place.
All Aboriginal objects and conservation zones, where Aboriginal cultural heritage values were not to be harmed, should be checked to confirm that no harm has occurred.	Aboriginal cultural heritage sites 20 & 22 (Project Approval Appendix 6), protected within a fenced area, were inspected during the audit with no evidence of harm being identified.
As modifications occur regularly at Snapper Mine, we recommend it would be wise to ensure that consultation with Registered Aboriginal Parties (RAPs) is ongoing, with minimum contact occurring at least once every 6 months, to provide any regular updates about the project. Consultation logs should be maintained and checked accordingly.	Tronox invited registered Aboriginal parties to participate in heritage surveys for the Snapper Mine but did not received a response from the invitees.

Biodiversity and Conservation – Department of Planning, Industry and Environment

Comments regarding the scope of the audit were by the Senior Team Leader, Planning – South West in an email dated 27 November 2020. Comments received and findings for those comments are provided in Table 9.

Table 9 DPIE – Biodiversity and Conservation comments and findings

Comment received	Finding
Biodiversity	
Assess Tronox’s progress towards satisfying the consent conditions in relation to offset area management, including the mechanisms to secure offsets.	Details of offset area management of the offset area at Snapper Mine are presented in section 3.6.

Comment received	Finding
<p>Assess how well actions that have been carried out to meet the management measures detailed in the Flora and Fauna Management Plan (FFMP) and the requirements of approval condition 16.</p>	<p>Mitigation measures incorporated in the FFMP ecological management program (s. 4) are the vegetation clearance protocol (s. 4.4), the threatened species management protocol (s. 4.5) and various measures in other management plans (ss. 4.7, 4.8).</p> <p>Details of flora and fauna management of the offset area at Snapper Mine are presented in section 3.8.</p>
<p>Groundwater</p>	
<p>In February 2020 BCD provided comment on the Response to Submissions for Snapper Mod 7 development.</p> <p>The BCD response referred to recent declines in levels for the GW036669 bore and suggested that variability could indicate an impact of the Snapper Mine on groundwater. Raw data was requested.</p> <p>The response also recommended installation of water pressure loggers to allow collection of data at daily intervals.</p> <p>In addition, comment was provided on the potential environmental impacts of brine disposal on the environment as the proposal did not provide sufficient information about the operation of the reverse osmosis plant.</p> <p>The audit should specifically address Tronox’s performance in hydrogeology issues in light of these previous comments, particularly in relation to managing impacts on groundwater. An assessment of groundwater levels in the GW036669 bore is of most relevance.</p>	<p>Details of groundwater management at Snapper Mine are presented in section 3.9.</p>

3.2 Rehabilitation

Mining lease ML1621 and mining lease ML1809, which came into effect from 14 October 2020, require Tronox to rehabilitate disturbed land to an end land use to the satisfaction of the Minister. Mine rehabilitation implementation, management, monitoring, and research and maintenance commitments are described in sections 7, 8 and 9 of the MOP. Progressive rehabilitation is being implemented following Mining Operation Plan (MOP), which sets out the rehabilitation to be conducted for the next five years. The current, approved MOP is for 2015-2020, with an extension to 31 January 2021.

Rehabilitation activities undertaken during each AEMR reporting period are summarised in section 6 of each report. Up to 31 August 2020, as reported in the 2020 AEMR (s. 6.10), the total mine lease area (ML1621) is 2,378 ha, the total disturbed area is 782 ha, the total rehabilitated area is 650 ha (497 ha native forest/ecosystems, 153 ha other).

Rehabilitation areas were inspected during the audit and progressive rehabilitation observed were consistent with the MOP and achievements reported in the AEMRs. It included suitable land forming, establishment of protected tree plots planted from tube stock, and germination of locally harvested native vegetation seeds in the 2020 seeded areas. See photo 1.

3.3 Earthmoving Contractor Compound

The mine earthmoving contractor, BSL, occupies a compound to the north of the Snapper Mine path at which it operates a vehicle maintenance workshop and lay down area. Facilities within the compound include administration offices, a vehicle maintenance and servicing workshop, tyre fitting building, above-ground diesel fuel store, engine oil recycling unit, bays for storage of waste tyres, waste oil and oil filters, and waste timber and areas for open storage of used hydraulic hoses, air filters, and various other waste equipment and materials (see Photo 2, Appendix C). Within the lay down area are located accumulations of:

- waste/unserviceable heavy vehicle tyres (Photo 3);
- hydraulic hoses, air filters, light vehicle bodies (Photo 4);
- waste oil (Photo 5); and
- mine vehicle bodies (Photo 6).

BSL has a Waste Management Plan in place describing the waste management requirements of the contractor. It includes commitments to limitation of stockpiling of wastes on site, and includes the EPA licence limitation of not more than 50 tonnes of waste tyres to be present at any one time on site.

Non-compliance: 1: The number and type of waste tyres present on site at the time of the audit substantially exceeded the EPA licence limit of 50 tonnes. [NB: although this is not a direct requirement of project approval conditions, it has been identified as a non-compliance, as it was a specific point of concern identified by EPA in response to the invitation to comment.]

In addition to the storage bays, waste tyres have been placed at various locations within the contractor compound and mine to act as traffic guidance barriers or for other civil engineering purposes. Use of tyres for civil engineering is permissible within the EPA Resource Recovery Exemption under Part 9, Clauses 91 and 92 of the *Protection of the Environment Operations (Waste) Regulation 2014* to use tyres for civil construction. Hence these tyres are not included in the 50 tonne limit.

The timber waste, hydraulic hoses, tyres, waste oil, and fire debris all present a fire hazard that needs to be minimised, particularly given the bulk diesel fuel storage present on site.

Performance and relinquishment criteria identified in Section 6, Table 13 of the MOP (Phase 1 decommissioning Domain 4 – Void) include removal of all earthmoving contractor's machines and equipment. This requirement is included as a conceptual completion criterion in Table 25 of the AEMR (yet to be completed). Condition L2.6 of the Environmental Protection Licence for Snapper Mine specifies that waste tyres stockpiled on the premises must not exceed 50 tonnes at any one time, be located in a clearly defined area, be managed to prevent any tyres from catching fire, and be managed in accordance with the Fire and Rescue NSW Guideline for bulk storage of rubber tyres. During the audit, it was noted that more than 50 tonnes of waste tyres were present in the compound, their location was not clearly defined, as they were stored in a number of locations, and they were not meeting the minimum boundary clearance distance requirements of the Fire and Rescue guideline. The close proximity of the stockpiled tyres to native vegetation on the south-eastern boundary of the compound presents a substantial hazard if there were to be a scrub fire in that area of the site.

Disposal of most of the solid materials will require specialist action due to the nature of the materials, their size, and the distance of the site from suitable waste processing facilities. The waste materials should be progressively removed to minimise the potential for orphan wastes to be present at the end of the contractor's tenure.

3.4 Noise Monitoring

Tronox stated that residents of Manilla Station contacted Tronox to discuss noise detected at the station residence, which is located around 4 km from the active Snapper mining face as they felt that the noise levels were rising the Manilla Station. They did not, however, ask for noise monitoring to be reinstated at the residential property. The contact was recorded as a complaint.

Tronox engaged an external consultant who discussed noise monitoring results with the residents. Tronox agreed with the residents to make some modifications to the residence, which will be tied in with the pending land access agreement. Recent noise monitoring has determined that noise emissions from the mining activities are not exceeding regulatory limits (Snapper Noise Monitoring Acoustic Report; Renzo Tonin & Associates, September 2019). Tronox has an agreement in place for monitoring to be reinstated only if requested. This agreement is in accord with the letter of approval from the Department of Planning & Environment dated 26 October 2017.

3.5 Cultural Heritage

Aboriginal cultural heritage artefacts have been identified in the Ginkgo and Snapper Mines Cultural Heritage Environmental Management Plan (2015). Aboriginal objects collected during the site survey are held in a secure keeping place within the Ginkgo Mine administrative compound. A catalogue of the objects is held in the keeping place. Aboriginal cultural heritage sites 20 & 22 (Project Approval Appendix 6), protected within a fenced area, were inspected during the audit with no evidence of harm being identified.

Project approval schedule 3 condition 21 requires Tronox to protect non-indigenous cultural heritage site SNH1 by, at a minimum, erecting temporary protective barriers around the site. Section 4.2.2 of the Murray Basin Mineral Sands Mines Cultural Heritage Management Plan, September 2015, notes that "Snapper location SNH1 (Kertne Nob outstation and stockyard run) has been located on land not currently under Tronox ownership and therefore fencing this site...has been outside the control of Tronox. Tronox must construct protective fencing around this site if this site comes under Tronox ownership/control in future". Tronox is now leasing the paddock and has control over activities on that land, therefore Tronox is now required to erect a temporary protective barrier around heritage site SNH1.

3.6 Offset Management

Tronox has prepared an offset management plan (the Murray Basin Mines Offset Management Plan, Rev C, 2 July 2019) in accordance with the development consent. The plan was approved by the Department of Planning Industry & Environment in a letter dated 3 September 2020. The approval letter stated that the Department is satisfied that the revised plan addresses the requirements of DA 06-0168 Schedule 3 condition 17.

Tronox obtained a change of lease purpose to conservation and holds Certificates of Title for 9,065 hectares for grazing, cultivation and conservation issued on 21 January 2015, and for

7,284 hectares for grazing and conservation issued on 22 January 2015. The areas allotted for the offset areas are contained within the conservation purpose of the leases. Alteration of the purpose of the Western Lands Leases 913 and 4087 was published in the NSW Government Gazette No 103, 14 November 2014. These leases are identified in section 2.2 of the Murray Basin Mines Offset Management Plan, July 2019.

The initial ecological survey of Offset Area 1 was conducted in April/May 2007. Subsequent surveys were conducted in December 2008, December 2009, October 2011, October/November 2012, August/September 2015, and September 2018. The next survey is planned for Spring 2021.

The initial ecological survey of Offset Area 2 was conducted in October/November 2008, with subsequent surveys undertaken in May and October 2011, October 2012, September 2015, and September 2018. The next survey is planned for Spring 2021.

Details of biodiversity management in the offset management and monitoring results are reported in each Annual Environmental Management Report.

The Ogyris Ecological Research report Vegetation Monitoring of the Cristal Mining Australia Ltd Conservation Offset 1 Site at Pooncarie West, Southwest New South Wales in September 2018 concludes:

The enhancement of flora and fauna values of Offset 1 was achieved in the period post construction of the perimeter fence in 2008 with major gains leading up to spring 2015. Recovery from a very low flora baseline in spring 2018 can be achieved in line with OMP objectives, after abatement from the current drought conditions. Currently however, the most important measures to improve biodiversity within Offset 1 will be to complete the missing section of exclusion fencing as well as to provide adequate resources on an ongoing basis to fix fence breaches caused by kangaroos excavating under the existing fence. Sheep will need to be removed from Offset 1 and current pest animal reduction strategies maintained.

The Ogyris Ecological Research report Vegetation Monitoring of the Cristal Mining Australia Ltd Conservation Offset 2 Site at Pooncarie West, Southwest New South Wales concludes:

The enhancement of flora and fauna values of Offset 2 was achieved in the period post construction of the perimeter fence in 2011 with major gains leading up to spring 2015. Recovery from a very low flora baseline in spring 2018 can be achieved in line with OMP objectives, after abatement from the current drought conditions. Currently, however, the most important measure to improve biodiversity within Offset 2 will be to provide adequate resources on an ongoing basis to fix fence breaches caused by kangaroos excavating under the existing fence. Sheep will need to be removed from Offset 2 and current pest animal reduction strategies maintained.

Since receipt of these reports, Tronox has completed construction of the missing section of perimeter fence, removed sheep and goats, upgraded the perimeter fence around the entire Snapper Mine lease, installed goat exclusion devices, removed unwanted farm fencing, ripped unnecessary access tracks, regraded the area of an in-ground 'tank', laid licensed fox baits, conducted licensed kangaroo culls, and maintained restricted access to the area.

3.7 Offset Bond

The project approval requires Tronox to lodge a suitable offset bond with the Secretary after the first independent environmental audit following the tenth year of mining operations. The

bond must be determined by the audit team in consultation with the Proponent and contain sufficient funds to ensure the remaining works in the Offset Management Plan are fully implemented. As Snapper Mine operations commenced in late 2009, the bond determination requirement came into effect during this, the 2020 audit (project approval schedule 3, condition 18).

As required by the Snapper and Ginkgo mine project approvals, Tronox established two conservation offset areas in close proximity to the mines to compensate for loss of biodiversity and habitat from mine construction. The two Snapper Mine conservation offset areas — Area 1 (1,510 hectares total (989 ha for Snapper and 521 ha for Ginkgo), adjacent to Snapper Mine) and Area 2 (4,482 hectares, to the north-east of Snapper Mine; see plan of the areas in Appendix 3 of the Project Approval) — were established on the Trelega Property, which is leased to Tronox. These provide a total conservation offset area of 5,992 ha for the two mines.

Tronox maintains and implements the Murray Basin Mines Offset Management Plan (June 2019) which identifies the process by which Tronox manages the ecological assets within the offset areas. The plan includes offset management requirements for all Tronox Murray Basin mines, these being Snapper, Ginkgo, Crayfish and Atlas. The plan was revised on 23 August 2018 to include the MOD 13 offset areas for Ginkgo Mine and on 2 July 2019 to address DPIE comments.

Offset area performance completion criteria for each monitoring period are specified in Table 10, section 3 of the Offset Management Plan. Criteria for Spring year 4 and subsequent years are listed in Table 10.

Table 10 Offset management plan performance completion criteria

Criterion	Details
Perimeter fencing has been maintained and stock excluded.	Perimeter fencing has been installed around the two asset areas. It has been upgraded where monitoring identified a need due to resist kangaroos trying to scratch entry points under the fence.
Revegetation activities within possible revegetation areas are underway.	Revegetation of removed farming activities is being achieved through natural regeneration. An example is of Spinifex becoming established along the alignment of a former fence in Area 2. Ogyris recommended that active regeneration is not warranted in areas of former Belah-Rosewood Woodland, which are demonstrating strong perennial plant growth. Ogyris reported that Tronox has complied with this criterion.
Selective planting has been commenced within offset if required.	See above.
Planted vegetation is establishing.	See above.
Erosion control measures are effective.	Damage to soil structure from grazing animals is being controlled through exclusion of these animals from the offset areas. Due to the flat topography of the land, there is low potential for rill erosion from surface water runoff. Ogyris reported that Tronox has complied with this criterion.

Criterion	Details
Pest animal control measures are effective.	Domestic and feral stock removal musters have been conducted with further feral stock removal musters planned. Goat exclusion fittings have been installed at strategic locations on the perimeter fences. Temporary wing fences area in place to facilitate future mustering of feral goats. Ogyris reported that the systematic goat removal program instigated between 2018 and 2018 was very successful in reducing the impacts of the goats in both offset areas. Ogyris reported that Tronox has complied with this criterion.
Weed control measures are effective.	Tronox is removing isolated occurrences of Bathurst Burr. Removal of the water supply from drinking troughs and exclusion of grazing animals has reduced the incidence of weeds in these areas. The prevailing drought conditions have also limited the growth of weeds. Ogyris reported that Tronox has complied with this criterion.
Monitoring for Marble-faced Delma, Western Blue-tongue Lizard and Bolam's Mouse have been conducted within the relevant offsets.	This criterion applies to the offset area for Crayfish Mine, and not to the Snapper Mine offset areas.

As identified in table 10, Tronox has completed works necessary to meet each of these criteria and to protect and enhance the ecological integrity of the two Snapper Mine ecological offset areas. No further capital works are required to implement these Offset Management Plan performance objectives. Ongoing maintenance and monitoring of the area are being conducted by Tronox personnel and consultants as part of the recurrent Tronox environmental sustainability budget.

Implementation of the Offset Management Plan is required by condition 17 of the project approval, which must be approved by the Secretary. Each year, Tronox reports progress against the Offset Management Plan performance criteria in section 4.4.2.2 of the AEMR.

It is concluded that the completion criteria have been met and there are no outstanding works required to achieve the criteria, with maintenance and monitoring of the offset areas included in ongoing environmental management commitments at the mine. Hence, it is not necessary for the Proponent to lodge an offset bond with the Secretary.

3.8 Flora and fauna

In a letter dated 17 August 2020, DPIE approved temporary changes to the environmental monitoring requirements for Tronox sites including temporary suspension of flora and fauna monitoring at the Snapper Mine. The Murray Basin Mines Flora and Fauna Environmental Management Plan (August 2020) was revised to include this monitoring modification.

Tronox sought approval from the Biodiversity and Conservation Division to bring forward clearance of vegetation to December 2020, which is outside of the standard time window of 1 February to 31 May (email of 18 November 2020). Tronox supported the application with a document identifying the proposed mitigation measures to minimise impacts on flora and ground dwelling fauna. The Division approved the clearing by email dated 26 November 2020, asking for results of the proposed monitoring to be reported in the following Snapper AEMR (August 2021).

3.9 Groundwater

3.9.1 Potential impacts of groundwater abstraction

Modelling of impacts of groundwater abstraction for the mine is presented in Appendix A of the Snapper Mine Environmental Assessment prepared for the original project approval.

In its Snapper Mine Norther Extension Modification Submissions Report (section 4.3, January 2020) to the Department of Planning and Environment, Tronox reported that Geo-Eng conducted a hydrogeological review of the predicted and measured groundwater level results to date. In their report, Geo-Eng concluded that the observed groundwater levels at the Snapper Mine reasonably match the predicted groundwater levels from the existing groundwater model, and that the predicted groundwater levels are considered conservative.

Groundwater level observations for monitoring bore GW36669 have made on a quarterly basis since February 2017. All consecutive observations have been within 0.07 metres of each other apart from the 20 February 2020 reading, which was 0.52 metres lower than the 19 November 2019 reading. This difference resolved with the 14 May 2020 reading being 0.51 metres higher than the February reading. This appears to have been a misreading of the depth, as the average of the six readings taken before February was 20.26 metres, and that of the six readings taken after February was 20.25 metres. **Opportunity for improvement 1:** A step change in groundwater level monitoring result was not identified and investigated at the time of data collation.

Over the past three years since 1 November 2017 (the period covered by the audit) Tronox has conducted quarterly groundwater monitoring in accordance with the EPL. During that time the net change in groundwater levels are listed in Table 11.

Table 11 Monitoring bore water levels (from top of casing)

Bore	Start of audit period		End of audit period		Change (m)
	Date	Level (m)	Date	Level (m)	
GW36669	27/11/17	20.20	26/11/20	20.24	-0.04
SM2	27/11/17	51.11	26/11/20	50.80	+0.31
SN3	27/11/17	39.75	26/11/20	39.41	+0.34
SM4	27/11/17	32.03	26/11/20	32.13	-0.10
Trelega	07/11/17	27.43	26/11/20	27.50	-0.07

3.9.2 Potential impacts on groundwater of reverse osmosis plant rejects

[Section 4.3.3 of the mine extension submission report states...]. The RO plant is approved to supply up to 21 litres per second of desalinated water. The desalinated water is used at the salt washing facility and WHIMS circuit (not constructed to date), as well as for dust suppression and a potable water supply.

Brine produced by the RO plant is approved to be disposed in the mine path with process wastes (e.g. sand residues) behind the advancing mining operations, which is subsequently covered by overburden. The supplier of the reverse osmosis used at the Snapper mine

reported that the average TDS of reject water (salty wastewater remaining after extraction of treated water) from the unit supplied is 23,667 mg/L, with an average reject flow rate of 91 L/hour. Disposal of brine into the mine path would have no detrimental impact on groundwater due to the high salinity of the groundwater (i.e. TDS in excess of 35,000 milligrams per litre [mg/L]) in the upper aquifer. As brine is disposed in the mine path in accordance with approved management measures, brine disposal would not have any impact on soils or surface water.

3.10 Actions taken to Address 2017 Audit Findings

The audit of compliance of operations at the Snapper Mine with project approval and Environment Protection Licence conditions identified four opportunities for improvement. Actions taken to address those opportunities for improvement are listed in Table 12.

Table 12 Summary of 2017 Audit Findings

Identifier	Condition	Opportunity for Improvement	Action taken
Ofi-1	PA Sched 3-17	During the next revision of the Offset Management Plan, amend s 4.1 of the Plan to read “triennial (third-yearly)” rather than “triannual”.	The Offset Management Plan (s. 4.1, p. 46; July 2019) was amended to read triennial.
Ofi-2	PA Sched 3-20	Identify a specific process for action to be taken following discovery of human skeletal remains and incorporate it into the Cultural Heritage Management Plan.	Still pending; carried forward. (See Ofi-4 of this report.)
Ofi-3	PA Sched 4-10	Upload December 2016 environmental monitoring results to the Tronox website.	The December 2016 environmental monitoring results have been published on the Tronox website.
Ofi-4	EPL M4.1	Amend cross-referencing with the Community Consultation Plan during the next revision so that section 3.5.1 refers to Appendix B rather than G	Amended to refer to Appendix B.

3.11 Compliance with Project Approval Conditions

3.11.1 Overall compliance

Tronox has complied with all but one of the project approval conditions. A copy of the completed project approval checklist for the Snapper Mine is provided in Appendix A. Details of non-compliances and general audit findings are provided below.

3.11.2 Non-compliance and opportunities for improvement

Details of the condition non-compliances are provided in Table 13 and of opportunities for improvement are provided in Table 14.

Table 13 Summary of audit findings – Non-compliance

Identifier	Condition	Details
NC-1	EPA comment	The number and size of waste tyres present within the mine earthmoving contractor's compound at the time of the audit substantially exceeded the EPA licence limit of 50 tonnes.
NC-2	s. 3 c. 21	A temporary protective barrier had not been installed around site SNH1 at the time of the audit site inspection. Tronox reports that a temporary fencing has been installed since then, meeting the requirement of this condition.

Table 14 Summary of audit findings – Opportunities for improvement

Identifier	Condition	Details
OfI-1	Biodiversity and Conservation comment	A step change in groundwater level monitoring result was not investigated at the time of data collation and review.
OfI-2	s. 3, c. 3	A small gap in the Offset area 2 fence and lifting of the fence due to a damaged fence strainer were noted in the southern boundary of the area.
OfI-3	s. 3, c. 3	The perimeter fencing is a critical component of maintenance and protection of the Snapper Mine offset areas. Given the observed stresses on the fence from livestock attempting to enter the areas, occasional impact with the fence by farming machinery, and general wear and tear, the fences need to be inspected frequently.
OfI-4	s. 3, c. 20	The Cultural Heritage Management Plan describes management of previously unidentified Aboriginal objects, however, it does not specifically describe management of skeletal remains.
OfI-5	s. 4, c. 1	Section 6.1 of the Environment Management Strategy states that review of the strategy is triggered by any modification of the regulatory consent conditions. As MOD7 of the project approval came into effect on 18 March 2020, the EMS is due for review.

3.12 Recommendations

Recommended measures to improve the environmental performance with respect to the project approval are described in Table 6.

Table 15 Recommendations to improve environmental performance

Ref.	Identifier	Recommendation
1.	NC-1	Reduce the quantity of waste tyres present within the mine earthmoving contractor's compound to meet the EPA licence limit of 50 tonnes. At the same time, conduct an audit of waste management and potential for land contamination within the compound to ensure that hazards to the environment are being minimised.
2.	Of1-1	Review each round of monitoring results for consistency with previous results to promptly identify any anomalies. Investigate any anomalies and resample if necessary.
3.	Of1-2	Promptly repair damaged areas of offset area fencing.
4.	Of1-3	Conduct regular, say fortnightly, inspections of the offset area perimeter fences. (Depending on monitoring results, these may be reduced to monthly.) Include offset area perimeter fence inspection as a specific task in the Mine Environmental Monitoring Program.
5.	Of1-4	Identify a specific process for action to be taken following discovery of human skeletal remains and incorporate it into the Cultural Heritage Management Plan.
6.	Of1-5	Review the Environment Management Strategy to incorporate changes to approval conditions included in MOD7 of the project approval.

4 Conclusions

Tronox operations at the Snapper Mine have continued over the past three years without any notifiable environmental incidents having occurred. One non-compliance with a project approval condition regarding installation of a temporary protective barrier around an identified European heritage site was identified, along with an exceedance of an environmental protection licence (EPL) limit on waste tyres specifically identified as a potential environmental issue by EPA in their invited comments on the audit scope. Five opportunities for improvement were identified during the audit. Tronox reported that protection fencing had been installed around the heritage site during the time of audit report preparation.

The presence of waste tyres at the mine earthmoving contractor's compound in excess of the 50 tonne EPL limit was identified by EPA as an issue of ongoing concern. Inspection of the compound identified an accumulation of other waste materials including oil, hydraulic hoses, oil filters, air filters, fuel tanks, heavy and light vehicle chassis, and timber that should be progressively removed from site. The accumulation of materials such as oily wastes, tyres, and timber present a substantial fire hazard. Oil spills within the compound present a potential source of contamination of land and waters (should there be heavy rain). The remoteness of the site from potential recycling or suitable disposal facilities and the size and weight of much of the waste presents a logistical and cost burden on its removal for disposal. Tronox should implement a progressive removal of these materials from site to avoid any orphan wastes being present at the cessation of operations at the mine.

The audit included assessment of the need for an offset bond to cover the cost of any works required to meet completion criteria identified in the Offset Management Plan. The audit determined that Tronox had achieved all completion criteria and an offset bond was not, therefore, required. The critical protection measure for the two conservation offset areas was the perimeter fence installed to exclude grazing and browsing animals such as domestic livestock (sheep), feral goats, and kangaroos. The presence of several points of damage to the fence from animals attempting to pass through or under the fence and impact from farm machinery Tronox highlighted the importance of regularly inspecting the fence at a suitable frequency, promptly followed by repair where needed. Assessment of the offset areas by an ecologist determined that the areas had recovered well once the grazing pressure had been removed and that natural regeneration was sufficient for recovery of vegetation within the areas.

In all other aspects of environmental management at Snapper Mine, Tronox was meeting the requirements of the project approval.

Appendix A
Snapper Mine Project Approval Checklist

Appendix A. Snapper Mine Project Approval Checklist

Date of consent: 18 March 2020

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
	SCHEDULE 2 ADMINISTRATIVE CONDITIONS	—	—
	Obligation to Minimise Harm to the Environment	—	—
1.	The Proponent shall implement all practicable measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the project.	All required environmental management plans have been prepared and are being implemented. The management plans are structured to prevent or mitigate environmental harm from mining activities.	Compliance
	Terms of Approval	—	—
2.	The Proponent shall carry out the project in compliance with the conditions of this approval and generally in accordance with the: (a) EA; and (b) statement of commitments. Notes: <ul style="list-style-type: none"> The general layout of the project is shown in Appendix 5; and The statement of commitments is included in Appendix 4 (excluding the commitments which are reflected in, or inconsistent with, this approval). 	The operations are being conducted in general accordance with the requirements of the project approval. There have not been any non-compliances with the Environment Protection Licence during the 2017, 2018, and 2019 reporting years.	Compliance
3.	If there is any inconsistency between the above documents, the most recent document shall prevail to the extent of the inconsistency. However, the conditions of this approval shall prevail to the extent of any inconsistency.	Noted. No inconsistency has been identified.	N/A
4.	The Proponent shall comply with any reasonable and feasible requirements of the Secretary arising from the Department’s assessment of: (a) any reports, plans or correspondence that are submitted in accordance with the conditions of this approval; and (b) the implementation of any actions or measures contained in these reports, plans or correspondence.	Comments regarding management plans received from the Department have been addressed in the respective plans. There have not been any requirements received from the Secretary other than those specified in the permit.	Compliance

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance																
	Limits on Approval	—	—																
5.	The Proponent may undertake mining operations on the site until 10 July 2026. Note: Under this approval, the Proponent is required to rehabilitate the site and perform additional undertakings to the satisfaction of the Secretary and the Resources Regulator. Consequently, this approval will continue to apply in all other respects other than the right to conduct mining operations until the site has been properly rehabilitated.	Noted. The operations are continuing within the date limit.	Compliance																
6.	The Proponent shall not: (a) extract more than 14 million tonnes of ore from the site in a calendar year; (b) produce more than 621,000 tonnes of mineral concentrate from ore extracted from the site per calendar year; and (c) transport more than 975,000 tonnes of mineral concentrate from the site and the Ginkgo Mine combined in a calendar year.	Tonnes of: (a) ore extracted, (b) mineral concentrate produced, and (c) mineral concentrate transported from Snapper and Ginkgo Mines. <table border="1"> <thead> <tr> <th>tonnes</th> <th>2018</th> <th>2019</th> <th>2020 *</th> </tr> </thead> <tbody> <tr> <td>(a)</td> <td>11,201,142</td> <td>10,875,898</td> <td>7,825,494</td> </tr> <tr> <td>(b)</td> <td>421,957</td> <td>276,506</td> <td>193,024</td> </tr> <tr> <td>(c)</td> <td>649,203</td> <td>380,076</td> <td>260,969</td> </tr> </tbody> </table> * Forecast total for 2020. These quantities are within the approved rates.	tonnes	2018	2019	2020 *	(a)	11,201,142	10,875,898	7,825,494	(b)	421,957	276,506	193,024	(c)	649,203	380,076	260,969	Compliance
tonnes	2018	2019	2020 *																
(a)	11,201,142	10,875,898	7,825,494																
(b)	421,957	276,506	193,024																
(c)	649,203	380,076	260,969																
7.	The Proponent may only transport mineral concentrate off-site via the haulage route, using TfNSW approved vehicles.	All mineral concentrate haulage trucks are permitted by the National Heavy Vehicle Regulator as AAB Quad Road Trains and are registered in NSW. They are operated by Basin Sands Logistics, which possesses the permits to operate the road trains. Operation of the trucks is described in the Tronox Traffic Management Plan and Code of Conduct, November 2020.	Compliance																
7A.	The Proponent may transport up to 4 million tonnes of unprocessed mineral sands ore to the Ginkgo Mine until 31 December 2011, unless otherwise agreed by the Secretary, limited to a maximum of 2 laden and 2 unladen vehicle movements per hour. All vehicle loads must be covered during transport.	Unprocessed mineral sands ore is no longer transported to the Ginkgo Mine.	Compliance																

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
7B.	A maximum of 300,000 tonnes per annum of processed waste material may be transported to the Ginkgo and Snapper Mines from the Broken Hill Mineral Separation Plant.	Processed waste material transported to the Ginkgo Mine from the MSP totalled: <ul style="list-style-type: none"> • 2018 – 79,693; • 2019 – 70,141; • 2020 – 40,404. These quantities are within the licensed amount.	Compliance
	Updating and Staging Strategies, Plans or Programs	—	—
8.	With the approval of the Secretary, the Proponent may submit any strategies, plans or programs required by this approval on a progressive basis. To ensure the strategies, plans or programs under the conditions of this approval are updated on a regular basis, the Proponent may at any time submit revised strategies, plans or programs to the Secretary for approval. With the agreement of the Secretary, the Proponent may prepare any revised strategy, plan or program without consultation with all parties under the applicable condition of approval. Note: <ul style="list-style-type: none"> • While any strategy, plan or program may be submitted on a progressive basis, the Proponent must ensure that the existing operations on site are covered by suitable strategies, plans or programs at all times. • If the submission of any strategy, plan or program is to be staged, then the relevant strategy, plan or program must clearly describe the specific stage to which the strategy, plan or program applies, the relationship of this stage to any future stages, and the trigger for updating the strategy, plan or program. 	Revised management plans and strategies are submitted to the department as they are prepared.	Compliance
	Structural Adequacy	—	—
9.	The Proponent shall ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the BCA. Notes: <ul style="list-style-type: none"> • Under Part 4A of the EP&A Act, the Proponent is required to obtain construction and occupation certificates for the proposed building works. • Part 8 of the EP&A Regulation sets out the requirements for the certification of the project. 	There have not been any new buildings erected in the last three years.	Compliance

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
	Demolition	—	—
10.	The Proponent shall ensure that all demolition work is carried out in accordance with <i>Australian Standard AS 2601-2001: The Demolition of Structures</i> , or its latest version.	There have not been any demolition works conducted in the last three years.	Compliance
	Operation of Plant and Equipment	—	—
11.	The Proponent shall ensure that all plant and equipment used on site is: (a) maintained in a proper and efficient condition; and (b) operated in a proper and efficient manner.	Works are scheduled through the MAINPAC maintenance ordering system. Operators are trained to operate the plant and equipment in a suitable manner. From 25 May 2020, the Snapper Mine has been operated on a 5 day on, 5 day off cycle.	Compliance
	SCHEDULE 3 SPECIFIC ENVIRONMENTAL CONDITIONS	—	—
	SOIL AND WATER	—	—
	Discharges	—	—
1.	Except as may be expressly provided for by an EPL, the Proponent shall not discharge any water from the site.	Water is not discharged from the site.	Compliance
	Water Management Plan	—	—
2.	The Proponent shall prepare and implement a Water Management Plan for the project to the satisfaction of the Secretary. This plan must: (a) be prepared in consultation with the EPA and DPIE Water by suitably qualified expert/s whose appointment/s have been approved by the Secretary; (b) be submitted to the Secretary for approval prior to carrying out any development on the site; and (c) include: <ul style="list-style-type: none"> • Erosion and Sediment Control Measures; • Surface Water Management Measures; and • Borefield Management Measures. 	The Ginkgo and Snapper Mines Water Environmental Management Plan, October 2016. Tronox reports that a copy of the plan was submitted to the Department for comment and approval during late 2016, however, due to a loss of archived emails caused by a computer virus attack in 2017, Tronox is unable to provide direct evidence of Department approval.	Compliance

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
	Erosion and Sediment Control Measures	—	—
3.	<p>The Erosion and Sediment Control Measures must:</p> <ul style="list-style-type: none"> (a) be consistent with the Managing Urban Stormwater: Soils and Construction manual (Landcom, 2004 or its latest version); (b) identify activities that could cause soil erosion and generate sediment; (c) describe measures to minimise soil erosion and the potential for the transport of sediment; (d) describe the location, function, and capacity of erosion and sediment control structures; and (e) describe what measures would be implemented to monitor and maintain the integrity of the structures over time. 	<p>These measures are specified in the Ginkgo and Snapper Mines Water Environmental Management Plan, October 2016.</p> <ul style="list-style-type: none"> (a) The plan incorporates erosion and sediment control techniques identified in the Blue Book, as summarised in Appendix F of volume 2E (Mines and Quarries) 2008, adapted to the local context. (b) s 2.7: Summary of potential environmental impacts, which refers to the EMS of which Appendix E contains a risk assessment table. (c) s 4.3: Environmental mitigation measures. (d) s 4.3.2: Snapper erosion and sediment control structures. (e) s 4.3.3: Mitigation, s 4.3.4 Monitoring, s 4.3.5 Contingency measures and Table 4 Water, erosion, sediment control and salinity mitigation measures. 	Compliance
	Surface Water Management Measures	—	—
4.	<p>The Surface Water Management Measures must:</p> <ul style="list-style-type: none"> (a) describe the salinity management measures on site including the design measures proposed to be used to minimise any lateral seepage of brackish water from the initial water dam, initial emplacement containing the overburden slurry, and initial sand residue dam which could contaminate adjacent soils and cause vegetation dieback; (b) describe measures to manage dust suppression water along the haulage route between the Silver City Highway and the site; (c) include a program to monitor the effectiveness of these measures, with specific reference to vegetation and soil performance criteria; and (d) describe the measures that would be implemented if any exceedances of the performance criteria are detected. 	<p>These measures are specified in the Ginkgo and Snapper Mines Water Environmental Management Plan, October 2016.</p> <ul style="list-style-type: none"> (a) s 4.3.3, Table 4: Salinity mitigation measures (b) s 4.3.2: Snapper erosion and sediment control measures – site access roads, and Table 3 (c) s 4.3.3: Mitigation, s 4.3.4 Monitoring, and Table 4 Water, erosion, sediment control and salinity mitigation measures. (d) s 4.3.5: Contingency measures. 	Compliance

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
	Borefield Management Measures	—	—
5.	<p>The Borefield Management Measures must include:</p> <p>(a) a site water balance;</p> <p>(b) data to benchmark the natural variation in groundwater levels and quality prior to any development on site within the predicted drawdown impact zone (identified in the EA);</p> <p>(c) groundwater impact trigger levels for relevant landholder bores (e.g. Chalky Well);</p> <p>(d) a program to monitor the groundwater impacts of the project;</p> <p>(e) the procedures that would be implemented if the groundwater impact trigger levels are exceeded; and</p> <p>(f) measures to mitigate and/or compensate landholders who are adversely affected by the groundwater impacts of the project, including the provision of alternative water.</p>	<p>The Borefield management plan (March 2011) is incorporated into the Ginkgo and Snapper Mines Water Environmental Management Plan, October 2016.</p> <p>(a) s 2.5: Site water balance</p> <p>(b) s 4.4.1: Baseline monitoring</p> <p>(c) s 4.4.2: Trigger levels for commencement of preventive action</p> <p>(d) s 4.3.3: Mitigation, s 4.3.4 Monitoring, and Table 4 Water, erosion, sediment control and salinity mitigation measures.</p> <p>(e) s 4.4.3: Trigger levels for commencement of preventative action.</p> <p>(f) ss 4.4.2: Remedial actions, 3.6.2 Independent dispute resolution process, 4.4.3 Groundwater remedial actions.</p>	Compliance
	WASTE MANAGEMENT	—	—
	Waste Management Plan	—	—
6.	<p>The Proponent shall prepare and implement a Waste Management Plan for the project to the satisfaction of the Secretary. This plan must:</p> <p>(a) be prepared in consultation with the EPA by suitably qualified expert/s whose appointment/s have been approved by the Secretary,</p> <p>(b) be submitted to the Secretary for approval prior to carrying out any development on the site; and</p> <p>(c) include:</p> <ul style="list-style-type: none"> • Landfill Management Measures; and • Waste Minimisation Measures. 	<p>Tronox has prepared the Murray Darling Basin Mine Landfill and Waste Environmental Management Plan, June 2019. This incorporates waste management procedures into one document that supersedes four landfill and waste management plans.</p> <p>The revised plan was submitted to DPIE for approval and revised to address comments provided by DPIE.</p> <p>The Secretary approved the 2019 Landfill & Waste Management Plan by a letter dated 15 October 2019.</p>	Compliance

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
	Landfill Management Measures	—	—
7.	<p>The Landfill Management Measures must:</p> <p>(a) generally meet the environmental goals listed in <i>Environmental Guidelines: Solid Waste Landfills</i> (EPA, 2016 or its latest version) and;</p> <p>(b) include:</p> <ul style="list-style-type: none"> • design and operation details of waste disposal areas; • a management program for backloaded MSP process waste; • a system to monitor the movement of backloaded MSP waste; and • disposal techniques and handling practices consistent with the Code of Practice and Safety Guide for Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing (ARPANSA, 2005 or its latest version). 	<p>The Murray Darling Basin Mine Landfill and Waste Environmental Management Plan, June 2019</p> <p>(a) Monazite returns from the Mineral Separation Plant are returned to the WHIMS area at the Ginkgo Mine along with the run of mine tails stream, while domestic waste is deposited at the onsite landfill operated by Wentworth Shire Council. Table 1 of the plan identifies the waste streams and their method of disposal. Appendix B of the Waste Management Plan refers to benchmarking techniques adopted from the Landfill Guidelines.</p> <p>(b)</p> <ul style="list-style-type: none"> • ss 2.3, 4.2: Landfill management • s 2.2: Disposal of MSP rejects • s 4: Waste management program • s 4.6: Monitoring and inspections • s 4.6.3: Waste tracking • s 4.6.2: Radiation monitoring • Appendix B: Mitigation measures for the Ginkgo onsite landfill • Appendix C: Landfill standard operating procedures 	Compliance

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
	Waste Minimisation Measures	—	—
8.	<p>The Waste Minimisation Measures must:</p> <ul style="list-style-type: none"> (a) identify the various waste streams of the project; (b) describe what measures would be implemented to reuse, recycle or minimise the waste generated by the project; and (c) include a program to monitor the effectiveness of these measures. <p>Note: The waste minimisation measures are not relevant to backloaded MSP process waste, overburden or sand residues.</p>	<p>Specified in the Murray Darling Basin Mine Landfill and Waste Environmental Management Plan, May 2019.</p> <ul style="list-style-type: none"> (a) s 2.1: Non-process waste generation; Table 1 Waste streams. (b) s 4.3: Waste management and minimisation strategy including recycling, including Table 5. (c) s 4.6: Monitoring and inspections. Results are presented monthly in the environmental performance chapter of the mine operations report. Statistics provided include, waste oil, tyres, cardboard, sewage, cooling oil, grease trap waste and compost generated for the month. <p>Due to COVID19 precautions including PPE and food container wastes, the wastes to landfill have increased (more by volume than weight).</p>	Compliance

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
	RADIATION MANAGEMENT	—	—
	Radiation Management Plan	—	—
9.	<p>The Proponent shall prepare and implement a Radiation Management Plan for the project to the satisfaction of the Secretary. This plan must:</p> <p>(a) be prepared in consultation with the EPA by suitably qualified expert/s whose appointment/s have been approved by the Secretary;</p> <p>(b) be submitted to the Secretary for approval prior to carrying out any development on the site;</p> <p>(c) be consistent with the Code of Practice and Safety Guide for Radiation Protection and Radioactive Waste Management in mining and Mineral Processing (ARPANSA, 2005); and</p> <p>(d) include:</p> <ul style="list-style-type: none"> • a description of operation and control measures; • a description of waste generating processes and waste; • demonstration of access to professional expertise; • details of radiation monitoring; • details of appropriate equipment, staff, facilities and operational procedures; • a description of induction and training courses; • reporting and periodic review procedures; • emergency plans; • baseline radiological information; • description of the waste management system; • radioactive waste monitoring; and • a conceptual decommissioning plan. 	<p>The Murray Basin Sands Radiation Management Plan, September 2020, now includes the Atlas Mine. The revised plan was approved by DPIE in a letter dated 25 September 2020. The approval letter states that the Department is satisfied that the revised plan addresses the conditions DA 06-0168 condition 7 and 9 of Schedule 3 and has approved the Plan. The approved plan has been published on the Tronox website as required by the approval letter.</p>	Compliance

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
	NOISE		
	Noise Impact Assessment Criteria	—	—
10.	<p>The Proponent shall ensure that the noise generated by the project does not exceed 35dB(A) LAeq(15 minute) at any residence on non-Proponent held land.</p> <p>Notes:</p> <ul style="list-style-type: none"> To determine compliance with the LAeq(15 minute) limit, noise from the project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the development is impractical, the EPA may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable. The noise limit above applies under the following meteorological conditions: <ul style="list-style-type: none"> wind speeds of up to 3 m/s at 10 metres above ground level; or temperature inversion conditions of up to 30C/100m, and wind speeds of up to 2 m/s at 10 metres above ground level. These limits do not apply if the Proponent has an agreement with the relevant owner/s of these residences to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement. 	<p>Tronox has obtained a written agreement with each of the landowners surrounding the Snapper and Ginkgo Mines, stating that they do not require noise monitoring at their Woodlands and Manilla residences.</p> <p>Tronox has received approval from the Department of Planning and Environment to discontinue annual noise monitoring at the Woodlands and Manilla residences (letter dated 26 October 2017). This change has not yet been incorporated into the Project Approval.</p> <p>Tronox amended section 4.4.1 of the Mine Noise Management Plan to reflect the approval granted in the letter.</p> <p>Recent noise monitoring (Snapper Noise Monitoring Acoustic Report; Renzo Tonin & Associates, September 2019) has determined that noise emissions from mining activities are not exceeding regulatory limits.</p>	Compliance
	Traffic Noise Criteria	—	—
11.	<p>The Proponent shall ensure that traffic noise generated by the project does not exceed the following noise goals at any residence on non-Proponent held land along the haulage route between the Silver City Highway and the site:</p> <ul style="list-style-type: none"> LAeq(1 hour) 50 dB(A) for 7:00 am to 10:00 pm; and LAeq(1 hour) 45 dB(A) for 10:00 pm to 7:00 am. 	<p>Recent noise monitoring (Snapper Noise Monitoring Acoustic Report; Renzo Tonin & Associates, September 2019) has determined that noise emissions from mining activities, including traffic noise, are not exceeding regulatory limits.</p> <p>Tronox has agreements with Manilla and Woodlands residents that they not to do the monitoring unless requested.</p>	Compliance

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance									
	Noise Monitoring											
12.	<p>The Proponent shall prepare and implement a Noise Monitoring Program for the project to the satisfaction of the Secretary. This program must:</p> <ul style="list-style-type: none"> (a) be prepared in consultation with the EPA; (b) be submitted to the Secretary for approval prior to carrying out any development on the site; and (c) use a combination of attended and unattended monitoring measures to monitor the performance of the project. 	<p>Tronox has revised the Murray Basin Mines Noise Management Plan (August 2018). The Department of Planning and Environment approved the plan in a letter dated 19 February 2019, stating that it is satisfied that it addresses the condition 12 Schedule 3 of project approval DA 06-0168.</p> <p>The revised plan includes reference to the agreement not to monitor in the appendix/attachment to the plan</p>	Compliance									
	AIR QUALITY											
	Air Quality Impact Assessment Criteria											
13.	<p>The Proponent shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the project do not cause exceedances of the criteria listed in Tables 1 to 3 at any residence on non-Proponent-held land.</p> <p>Table 1: Long term impact assessment criteria for particulate matter</p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging period</th> <th>Criterion</th> </tr> </thead> <tbody> <tr> <td>Total suspended particulate (TSP) matter</td> <td>Annual</td> <td>90 µg/m³</td> </tr> <tr> <td>Particulate matter < 10 µm (PM10)</td> <td>Annual</td> <td>25 µg/m³</td> </tr> </tbody> </table>	Pollutant	Averaging period	Criterion	Total suspended particulate (TSP) matter	Annual	90 µg/m ³	Particulate matter < 10 µm (PM10)	Annual	25 µg/m ³	See below	—
Pollutant	Averaging period	Criterion										
Total suspended particulate (TSP) matter	Annual	90 µg/m ³										
Particulate matter < 10 µm (PM10)	Annual	25 µg/m ³										
	<p>Table 2: Short term impact assessment criteria for particulate matter</p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging period</th> <th>Criterion</th> </tr> </thead> <tbody> <tr> <td>Particulate matter < 10 µm (PM10)</td> <td>24 hour</td> <td>50 µg/m³</td> </tr> </tbody> </table>	Pollutant	Averaging period	Criterion	Particulate matter < 10 µm (PM10)	24 hour	50 µg/m ³	See below	—			
Pollutant	Averaging period	Criterion										
Particulate matter < 10 µm (PM10)	24 hour	50 µg/m ³										

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance								
	<p>Table 3: Long term impact assessment criteria for deposited dust</p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging period</th> <th>Maximum increase in deposited dust level</th> <th>Maximum total deposited dust level</th> </tr> </thead> <tbody> <tr> <td>Deposited dust</td> <td>Annual</td> <td>2 g/m2/month</td> <td>4 g/m2/month</td> </tr> </tbody> </table> <p>Note: Deposited dust is assessed as insoluble solids as defined by Standards Australia, 1991, AS/NZS 3580.10.1- 2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulates - Deposited Matter - Gravimetric Method.</p>	Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level	Deposited dust	Annual	2 g/m2/month	4 g/m2/month	See below.	—
Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level								
Deposited dust	Annual	2 g/m2/month	4 g/m2/month								
	Monitoring										
14.	<p>The Proponent shall prepare and implement an Air Quality Monitoring Program for the project to the satisfaction of the Secretary. This program must:</p> <ul style="list-style-type: none"> (a) be prepared in consultation with the EPA; (b) be submitted to the Secretary for approval prior to carrying out any development on the site; and (c) include details of how the air quality performance of the project would be monitored, and a protocol for evaluating compliance with the air quality criteria in this approval. 	<p>Tronox has prepared the Murray Basin Mineral Sands Mines Air Quality Management Plan, August 2020.</p> <p>In a letter dated 17 August 2020, DPIE approved temporary changes to the environmental monitoring requirements for Tronox sites including reduction of air quality (dust deposition) monitoring at the Snapper Mine from monthly to quarterly.</p> <ul style="list-style-type: none"> (b) The previous revision of the Plan (September 2015) was approved by DPE in a letter dated 20 January 2016. (c) Air quality monitoring commitments are identified in section 4.5 and reporting procedure in section 4.8, which refers to the AEMR. Dust monitoring results are presented and reviewed in section 4.1 of the AEMR. 	Compliance								

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
	METEOROLOGICAL MONITORING		
15.	During the life of the project, the Proponent shall ensure that there is a suitable meteorological station in the vicinity of the site that complies with the Approved Methods for Sampling of Air Pollutants in New South Wales (EPA, 2017 or its latest version).	An automatic meteorological monitoring station is installed at the Ginkgo Mine, within 10 km of the Snapper Mine. It is connected by telemetry to WeatherMation website which subscribers can log in to.	Compliance
	FLORA AND FAUNA		
	Flora and Fauna Management		
16.	<p>The Proponent shall prepare and implement a Flora and Fauna Management Plan for the project to the satisfaction of the Secretary. This plan must:</p> <p>(a) be prepared in consultation with the BCD by a suitably qualified expert(s) whose appointment(s) has been approved by the Secretary;</p> <p>(b) be submitted to the Secretary for approval prior to carrying out any development on the site: and</p>	<p>In a letter dated 17 August 2020, DPIE approved temporary changes to the environmental monitoring requirements for Tronox sites including temporary suspension of flora and fauna monitoring at the Snapper Mine. The Murray Basin Mines Flora and Fauna Environmental Management Plan (August 2020) was revised to include this monitoring modification.</p> <p>The Planning Secretary approved the updated plan in a letter dated 7 September 2020.</p> <p>Tronox sought approval from the Biodiversity and Conservation Division to bring forward clearance of vegetation to December 2020, which is outside of the standard time window of 1 February to 31 May (email of 18 November 2020). Tronox supported the application with a document identifying the proposed mitigation measures to minimise impacts on flora and ground dwelling fauna. The Division approved the clearing by email dated 26 November 2020, asking for results of the proposed monitoring to be reported in the following Snapper AEMR (August 2021).</p>	Compliance

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
<p>16. (cont'd)</p>	<p>(c) include a:</p> <ul style="list-style-type: none"> • vegetation clearance protocol which must include procedures for notifying BCD of any clearing activities outside of late summer to early autumn, including any additional mitigation measures to be implemented to minimise impacts on fauna; • threatened species management protocol; • description of the detailed measures that would be implemented to: <ul style="list-style-type: none"> - control weeds, feral pests, and access; - salvage and reuse material from the site for habitat enhancement; - collect and propagate seed; - manage grazing, fauna entrapment in the dredge pond, bushfires, and remnant vegetation on site; and • program to monitor the effectiveness of the protocols and management measures in the plan. 	<p>c)</p> <ul style="list-style-type: none"> • s 4.4: Vegetation clearance protocol • s 4.5: Threatened species management protocol • s 2.2.1: Snapper – Flora – Introduced and noxious weeds; <ul style="list-style-type: none"> - s 4.3 Table 6 s. 6 (p. 19) of Ginkgo and Snapper Mines Land Management Plan (October 2015) — Feral animal control; - s 4.4.5: Vegetation clearance - s 4.4.5: Vegetation clearance - Mine Site Land Management Plan Environmental Management. Cristal Mining (Tronox), October 2015 s 4.3: Environmental mitigation measures. <p>The Ginkgo and Snapper Bushfire Management Plan, October 2015 is available on the Tronox website.</p> <ul style="list-style-type: none"> • s 4.4: Monitoring 	<p>Compliance</p>

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
	Offset Management Plan		
17.	<p>The Proponent must prepare and implement an Offset Management Plan to the satisfaction of the Secretary. This plan must:</p> <ul style="list-style-type: none"> (a) be prepared in consultation with the BCD by a suitably qualified expert(s) whose appointment(s) has been approved by the Secretary; (b) be submitted to the Secretary for approval prior to carrying out any development on the site; and (c) describe the measures to implement the flora and fauna offset (see statement of commitment 4 in Appendix 4 and the detailed description of this offset in the EA), including: <ul style="list-style-type: none"> • the objectives for the offset; • a description of the short, medium, and long term measures that would be implemented, including appropriate fencing to exclude grazing, incrementally de-stocking the offset area over three years, removal of unnecessary existing fences, erosion control, signage of the offset, revegetation of unnecessary access tracks, animal pest control, weed management, fire management and threatened species management; • detailed performance and completion criteria for the implementation of the offset; • a detailed description of how the performance of the offset would be monitored, using techniques such as photographic monitoring and permanent flora quadrats; • a description of how the offset would be protected in the long-term; and • details of who would be responsible for monitoring, reviewing and implementing the plan. 	<p>The Murray Basin Mines Offset Management Plan (June 2019) was revised on 23 August 2018 to include the MOD 13 offset areas for Ginkgo Mine and on 2 July 2019 to include DPIE comments. DPIE approved the revised plan in a letter dated 3 September 2020. The approval letter stated that the Department is satisfied that the revised plan addresses the requirements of DA 06-0168 condition 17 of Schedule 3. Implementation of offset management plan actions is reported in section 4.4.2 of each AEMR.</p> <p>c) s 2.5: Objectives for the offset</p> <ul style="list-style-type: none"> • s 2.5.2: Short, medium, and long term measures • s 3: Performance and completion criteria • s 4: Monitoring • s 5: Long-term protection of the offset • s 9: Plan review, monitoring and implementation; ss 5.1 and 7.2: identification of suitably qualified person to conduct monitoring. 	Compliance

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
	Offset Bond		
18.	<p>After the first Independent Environmental Audit (see Schedule 4) after year 10 of the mining operations, the Proponent shall lodge a suitable offset bond with the Secretary. This bond must be determined by the audit team in consultation with the Proponent, and contain sufficient funds to ensure the remaining works in the Offset Management Plan are fully implemented. The Proponent shall revise this bond to the satisfaction of the Secretary after each subsequent audit.</p> <p>NB: Performance criteria are derived from the Offset Management Plan (July 2019), pages 39 to 43 and discussed below. The Snapper Mine offsets comprise Area 1 (the Southern Mallee Offset Area) and Area 2 (the Snapper Biodiversity Offset Area). Area 1 includes offset areas for the Snapper Mine (989 hectares approx.) and Ginkgo Mine (521 hectares), and Area 2 provides an area for Snapper Mine of 4,482 hectares (approx.) giving a total Snapper Mine offset area of 5,471 hectares.</p>	<p>The two Snapper Mine offset areas — Area 1 (adjacent to Snapper Mine) and Area 2 (to the north-east of Snapper Mine; see plan of the areas in Appendix 3 of the Project Approval) — have been established with no further capital works remaining. Ongoing maintenance and monitoring of the area are being conducted by Tronox personnel.</p> <p>Tronox reports progress against the Offset Management Plan performance criteria in section 4.4.2.2 of the AEMR.</p> <p>Ogyris Ecological Research conducted vegetation monitoring of the two conservations offset areas during September 2018.</p> <p>Comments below are based on direct observations made during the site inspection and results presented in the Ogyris reports.</p>	Compliance

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
<p>18. (cont'd)</p>	<ul style="list-style-type: none"> Perimeter fencing of offsets to exclude grazing stock. 	<p><i>Area 1</i></p> <p>Offset Area 1 incorporates all of the Southern Mallee Offset Area designated to the Ginkgo Mine and some of the Snapper Mine Biodiversity Area. It was first fenced in January 2009. Fencing around the entire Snapper Mine lease was upgraded in July 2019 to include a 30 cm apron at the base of the fence to protect against scratching of holes under the fence by kangaroos.</p> <p><i>Area 2</i></p> <p>The Snapper offset area was established in 2011. A stock movement corridor, approximately 80 m wide, is included along the southern boundary of the Offset Area. This access corridor also serves as a fire break.</p> <p>A land maintenance contractor engaged by Tronox inspects the offset perimeter fences on an average monthly basis.</p> <p>Opportunity for Improvement-2: A small gap in the fence and lifting of the fence due to a damaged fence strainer were noted in the southern boundary of the area.</p> <p>Opportunity for Improvement-3: The perimeter fencing is a critical component of maintenance and protection of the Snapper Mine offset areas. Given the observed stresses on the fence from livestock attempting to enter the areas, occasional impact with the fence by farming machinery, and general wear and tear, the fences need to be inspected frequently.</p>	<p>Compliance</p> <p>Ofi-2</p> <p>Ofi-3</p>

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
18. (cont'd)	<ul style="list-style-type: none"> Unnecessary fences and tracks have been removed from the offsets. 	<p>Internal residual farm fences were progressively removed between 2016 and 2019.</p> <p>Two wing fences were recently constructed in Area 2 to facilitate goat mustering. Tronox proposes to remove the fences once goat mustering is no longer required.</p> <p>Unnecessary tracks for vehicular access have been ripped to assist regrowth of vegetation.</p> <p>Ogyris noted that these areas had become revegetated through natural regeneration.</p>	Compliance
18. (cont'd)	<ul style="list-style-type: none"> Artificial water sources have been fenced in offsets. 	<p>Artificial water sources such as stock drinking troughs have been disconnected from the water supply. An in-ground 'tank' located in the neck of Offset 1 has been graded to remove constructed embankments and return the area to the natural grade.</p> <p>In their 2019 report Ogyris recommended removal of two small in-ground 'tanks' in the north-western end of Area 1. Tronox inspected the area and determined that demolition of the earthen tanks would cause substantial damage to Black Box trees that had become established around the two tanks. These tanks are set back from the boundary by over 500 metres.</p>	Compliance
18. (cont'd)	<ul style="list-style-type: none"> Signage has been provided for offsets. 	<p>Signage has been installed at key points on the perimeter fences to identify the offset area (see Photo 8).</p> <p>Access to the areas is restricted to environmental personnel or authorised personnel involved in maintenance or monitoring works.</p>	Compliance

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
18. (cont'd)	<ul style="list-style-type: none"> Revegetation activities within identified selective revegetation areas are underway. Planted vegetation is becoming established. 	<p>Tronox offset areas are monitored annually for the first three years after establishment and then every third year. Ogyris Pty Ltd conducted vegetation surveys in 2010, 2013, 2015 and 2018. The next vegetation survey is due in Spring 2021.</p> <p>Ogyris reported that recovery of vegetation in the area through natural regeneration was progressing well, particularly with removal of browsing animals. This progress was substantially reversed by the prevailing drought conditions experienced during the 2018 survey.</p> <p>Ogyris concluded that no revegetation actions other than natural revegetation are warranted in the conservation areas.</p>	Compliance
18. (cont'd)	<ul style="list-style-type: none"> Erosion control measures are effective. 	<p>Due to the relatively flat topography of the offset areas, land in these areas is not susceptible to erosion. Ogyris reported that the control of grazing by feral animals has enabled ground vegetation to re-establish a degree of stable cover of indigenous species, providing some stabilisation of the topsoil.</p>	Compliance

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
<p>18. (cont'd)</p>	<ul style="list-style-type: none"> Pest animal control measures are effective. 	<p>One-way spring gates and fence aprons ramps are installed at strategic locations in the perimeter fence to allow for the exit of goats and possible kangaroos from the lease area. Kangaroos provide an ongoing pressure on the integrity of the fence, with some able to jump the fence, and others attempting to dig under the fence. Inspection of the fence during the audit identified minor, localised damage in three locations of the fence (see Photo 9), which require repair.</p> <p>Systematic mustering of goats was initiated in late 2014, with substantial numbers being removed from the Tronox mining area. Goat traps and goat exclusion devices such as spring gates around dams have been installed to provide ongoing management of the goats.</p> <p>Licensed baiting of foxes is being conducted within the offset areas. Ripping of rabbit warrens was conducted during mid-to late 2017.</p> <p>Licensed kangaroo culling has been undertaken to reduce the browsing pressure on the conservation areas.</p> <p>Firebreaks around the perimeter are graded annually, as required.</p> <p>The September 2018 Ogyris report for Offset 1 noted the presence of small herds of Dorper Sheep in the area, which exacerbated the impact on vegetation survival of the drought conditions occurring at that time. These sheep had entered the area through a break in the fence which was adjacent to farming land. The sheep were removed and the fence repaired in mid-2019.</p>	<p>Compliance</p>
<p>18. (cont'd)</p>	<ul style="list-style-type: none"> Weed control measures are effective. 	<p>During the past three AEMR reporting periods Tronox has reported that inspections for Bathurst Burr were carried out, but not were identified due to the prevailing drought conditions.</p>	<p>Compliance</p>

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
	REHABILITATION		
	Rehabilitation Objectives		
19.	The Proponent shall rehabilitate the site in accordance with the conditions imposed on the mining lease(s) associated with the Project under the Mining Act 1992. This rehabilitation must be generally consistent with the proposed rehabilitation objectives described in the EA (and shown conceptually in Appendix 7), and must comply with the objectives in Table 4.	<p>Mining lease ML1621 and mining lease ML1809 (which came into effect from 14 October 2020) require Tronox to rehabilitate disturbed land to an end land use to the satisfaction of the Minister.</p> <p>Mine rehabilitation implementation, management, monitoring, and research and maintenance commitments are described in sections 7, 8 and 9 of the MOP.</p> <p>Progressive rehabilitation is being implemented following Mining Operation Plan (MOP), which sets out the rehabilitation to be conducted for the next six years. The current, approved MOP is for 2015-2020, with an extension to 31 January 2021.</p> <p>Rehabilitation activities undertaken during each AEMR reporting period are summarised in section 6 of each report.</p> <p>Up to 31 August 2020, as reported in the 2020 AEMR (s. 6.10), the total mine lease area (ML1621) is 2,378 ha, the total disturbed area is 782 ha, the total rehabilitated area is 650 ha (497 ha native forest/ecosystems, 153 ha other).</p> <p>See Photo 1.</p>	Compliance

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
	Progressive Rehabilitation		
19A.	<p>The Proponent shall rehabilitate the site progressively, that is, as soon as reasonably practicable following disturbance. All reasonable and feasible measures must be taken to minimise the total area exposed for dust generation at any time. Interim stabilisation measures must be implemented where reasonable and feasible to control dust emissions in disturbed areas that are not active and which are not ready for final rehabilitation.</p> <p>Note: It is accepted that parts of the site that are progressively rehabilitated may be subject to further disturbance in future.</p>	<p>Landform rehabilitation designs are described in section 3.2.6 the 2015-2020 MOP.</p> <p>Post mining land use goals and designs are described in section 4 of the 2015-2020 MOP.</p> <p>Completed rehabilitation works are described in section 5 of each year’s AEMR. The specified requirements for environmental protection are being implemented.</p> <p>Rehabilitation of the former start-up water dam (Domain 3 Water Management Area) has continued with capping of the slimes and shaping of the landform completed in December 2018. Subsoil and topsoil were placed over the area and the final landform shaped during 2020, with the area scheduled for seeding during 2021.</p> <p>Rehabilitation of the Domain 4 Overburden Emplacement Area (Snapper OB1 dump) has been fully rehabilitated. The mine path backfill is being progressively rehabilitated. These follow the order of overburden placement and shaping, subsoil and topsoil placement, followed by a survey to confirm achievement of shape, air space and batter grade requirements. Timber trash salvaged during clearing of the land is placed on the shaped area and the land lightly ripped and seeded with native seed obtained from local provenance or land where native endemic seed is available. So far, approximately 300 ha of OB1 have been seeded.</p>	Compliance

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
	Rehabilitation Management Plan	—	—
19B.	<p>The Proponent shall prepare and implement a Rehabilitation Management Plan for the project, in consultation with the Department, Council and DPIE Crown Lands, in accordance with the conditions imposed on the mining lease(s) associated with the project under the Mining Act 1992. This plan must:</p> <ul style="list-style-type: none"> (a) be prepared in accordance with any relevant DRG guideline and be consistent with the rehabilitation objectives of the project and in Table 4; (b) describe how the performance of the rehabilitation would be monitored and assessed against the objectives in Table 4; (c) describe the process whereby additional measures would be identified and implemented to ensure the rehabilitation objectives are achieved; (d) provide for detailed mine closure planning, including measures to minimise socio-economic effects due to mine closure, to be conducted prior to the site being placed on care and maintenance; and (e) include a salinity monitoring program for the rehabilitated slurred overburden emplacement areas that describes: <ul style="list-style-type: none"> - soil salinity and vegetation health impact assessment criteria; - a program to monitor soil salinity and vegetation health; and - a contingency strategy for the investigation, notification and mitigation of identified exceedances of the impact assessment criteria; and (f) be integrated with the other management plans required under this approval. 	<p>Rehabilitation management is incorporated in the approved Snapper Mineral Sands Mine Mining Operation Plan 2015-2020 (MOP). The MOP has been amended to include the Snapper Mine northern extension, which is to be conducted within ML1809. The revised plan has been submitted to the NSW Resources Regulator for approval. The NSW Resources Regulator granted an extension to the 2015-2020 MOP until 31 January 2021.</p> <p>The MOP includes:</p> <ul style="list-style-type: none"> s 4.2 Post mining land use goal s 4.3 Rehabilitation objectives; s 5 Rehabilitation planning and management; s 6 Performance indicators and relinquishment criteria; s 7 Rehabilitation implementation s 8 Rehabilitation monitoring and research s 9.2 Trigger action response plan including topsoil salinity monitoring. 	Compliance

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
	HERITAGE		
	Aboriginal Cultural Heritage Management Plan		
20.	<p>The Proponent shall prepare and implement an Aboriginal Cultural Heritage Management Plan for the project to the satisfaction of the Secretary. This plan must:</p> <p>(a) be prepared in consultation with the BCD and the registered Aboriginal stakeholders involved in the preparation of the EA;</p> <p>(b) be submitted to the Secretary for approval prior to carrying out development on the site; and</p> <p>(c) include a:</p> <ul style="list-style-type: none"> - description of detailed management strategies outlined in statement of commitment 5 in Appendix 4; - description of the measures that would be implemented if any skeletal remains are discovered during the project; and - program to monitor the effectiveness of the proposed management strategies. 	<p>Murray Basin Mineral Sands Mines Cultural Heritage Management Plan, September 2015.</p> <p>(b) The DPE Secretary approved the plan in a letter dated 22 January 2016, noting that the plan had been prepared in consultation with the NSW Office of Environment and Heritage.</p> <p>(c)</p> <ul style="list-style-type: none"> • s 4: Environmental management program; Appendix E Implementation of management measures. • Management of previously unidentified Aboriginal objects is described in section 4 and Appendix G of the Plan. Opportunity for Improvement-2: the Plan does not describe management of skeletal remains. • s 4: Environmental management program, p 16 • s 42.7: Monitoring. 	Compliance OfI-4

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
	Non-Indigenous Heritage		
21.	The Proponent shall protect non-Indigenous cultural heritage site SNH1 (see Appendix 6), and at a minimum erect temporary protective barriers around the site.	<p>A protective barrier had not been installed around site SNH1 at the time of the audit site inspection (see Photo 10). Tronox reports that temporary fencing has been installed since then, meeting the requirement of this condition.</p> <p>Section 4.2.2 of the Murray Basin Mineral Sands Mines Cultural Heritage Management Plan, September 2015, notes that “Snapper location SNH1 (Kertne Nob outstation and stockyard run) has been located on land not currently under Tronox ownership and therefore fencing this site...has been outside the control of Tronox. Tronox must construct protective fencing around this site if this site comes under Tronox ownership/control in future”. Tronox now leases the land and the requirement to protect the heritage item now applies.</p>	Non-compliance NC-2
	TRANSPORT		
	Monitoring of Mineral Concentrate Transport		
21A.	<p>The Proponent shall:</p> <p>(a) keep accurate records of the amount of mineral concentrate transported from the site (on a monthly basis); and</p> <p>(b) make these records publicly available on its website at the end of each calendar year.</p>	<p>Monthly records of mineral concentrate production and transport are produced by the survey department.</p> <p>Records for total annual (August to August) production of heavy mineral concentrate are provided in the AEMR, which is published on the Tronox website.</p>	Compliance
	Road Works		
22.	Prior to carrying out any development on the site, the Proponent shall install appropriate truck warning signs at locations approximately 300 metres in advance of the haulage route intersection with the Silver City Highway and on both sides of the highway to the satisfaction of the TfNSW.	Vehicle warning signs have been installed on the highway. Section 6.3 of Cristal Mining – Ginkgo Haul Road, Road Safety audit report – Existing Road. WaySafe (September 2015) states that “Advance warning signs are installed at 300 m in advance of the intersection, truck warning signs are also installed on both Silver City Hwy approaches”.	Compliance

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
22A.	Prior to the closure of the section of Nob Road to be realigned under Modification 7, the Proponent must realign Nob Road and its intersection with Roo Roo Road to the satisfaction of the relevant roads authority.	Tronox no longer proposes to realign Nob Road.	N/A
23.	The Proponent shall: (a) minimise the amount of dust and debris being carried onto the Silver City Highway by haul trucks from the project; and (b) regularly remove this dust and debris from the highway, to the satisfaction of the TfNSW.	The haul road is maintained to minimise the carriage of dust debris onto the highway. Haul trucks are fitted with hydraulic covers. Tronox has not received complaints regarding dust and debris on the Silver City Highway due to its use by haul trucks.	Compliance
	Transport Management	—	—
24.	The Proponent shall prepare and implement a Transport Management Plan for the project to the satisfaction of the Secretary. This plan must: (a) be prepared in consultation with the EPA, Council and TfNSW; (b) be approved by the Secretary prior to commencing the road works outlined in condition 22A of this Schedule, unless otherwise agreed by the Secretary; and (c) include: - Transport of Hazardous Material Measures that would be implemented to address the relevant requirements in the Code of Practice for the Safe Transport of Radioactive Materials (ARPANSA, 2001 or its latest version); - Code of Conduct for all drivers transporting materials to and from the site including measures that would be implemented to prioritise the use of the haulage route and Nob Road; - details of the measures to be implemented to minimise traffic safety issues and disruption to local road users during road upgrade works; and - a description of the measures that would be implemented to comply with Condition 23.	(a), (b) Traffic Management Plan and Code of Conduct, November 2020 is a revision of the August 2015 plan (Approved by letter dated 20 January 2016). Tronox no longer proposes to conduct the Nob Road realignment works outlined in condition 22A. (c) <ul style="list-style-type: none"> • s 4.4: Transport of hazardous materials • s 4.3: Mitigation measures – code of conduct • s 4.3.1: Traffic and transport management – a turn out bay constructed at the western end of the Highway Access Road to allow trucks to remove dust and debris prior to entering the Silver City Highway. 	Compliance
24A.	The Proponent may transport mineral concentrate between the Snapper Mine and the Ginkgo Mine, limited to a maximum of 4 vehicle movements per hour.	Tronox operates one haul vehicle, with each round trip taking approximately 45 minutes (approximately 15 minutes each way plus 5 minutes loading time). This provides a logistical limit to trucking movements to well below the condition limit.	Compliance

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
	Road Maintenance		
24B.	The Proponent shall maintain the haulage route between the Silver City Highway and the site (including the intersection of the haulage route and the Silver City Highway) to the satisfaction of the relevant roads authority.	Tronox is continually maintaining the haulage route between the Silver City Highway and the site. Tronox has not received complaints regarding the condition of the haulage road between Silver City Highway and the site.	Compliance
	Independent Road Safety Audit		
24C.	Within 6 months of the date of approval for MOD 5, unless otherwise agreed with the Secretary, the Proponent shall commission an independent suitably qualified and experienced person endorsed by the Secretary to undertake a road safety audit of the haulage route between the Silver City Highway and the site (including the intersection of the haulage route and the Silver City Highway). This audit must: <ul style="list-style-type: none"> (a) be undertaken in consultation with Council and TfNSW; and (b) recommend any necessary measures to ensure that the road complies with any relevant road safety requirements. 	Cristal Mining (Tronox) engaged WaySafe to conduct a road safety audit of the Ginkgo haul road between the Silver City Highway and the site. The audit was commissioned on 20 March 2015 and completed in September 2015. The report identified 16 “Issues for Project Manager Consideration”. Cristal Mining (Tronox) prepared a Road Safety Audit Response report in which a response and risk rating was identified for each issue for consideration.	Compliance
24D.	Within 1 month of receiving the audit report, or as otherwise agreed with the Secretary, the Proponent shall submit a copy of the reports to the Secretary, with a detailed response to any of the recommendations contained in each of the reports, including a timetable for the implementation of any measures proposed to address the recommendations in each of the reports. Any road works recommended in the audit must be undertaken in accordance with this timetable to the satisfaction of the relevant road authority, unless otherwise agreed with the Secretary. Note: In the event that there is a dispute between the Proponent and the relevant roads authority about the implementation of these conditions, then either party may refer the matter to the Secretary for resolution.	A copy of the audit report and the Tronox response plan was sent by email to the Department of Planning on 13 October 2015.	Compliance

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
	GREENHOUSE GAS		
	Energy Savings Action Plan		
	<p>The Proponent shall prepare and implement an Energy Savings Action Plan for the project to the satisfaction of the Secretary. This plan must be:</p> <ul style="list-style-type: none"> (a) be prepared in accordance with the Guidelines for Energy Savings Action Plan (DEUS, 2005 or its latest version); (b) submitted to the Secretary for approval prior to carrying out any development on the site; and (c) include a program to monitor the effectiveness of the measures to reduce energy use on site. 	<p>The Mine Site Energy Savings Environmental Management Plan, November 2014 contains;</p> <ul style="list-style-type: none"> (c) s 4.4: Monitoring, analysis, review, and continual improvement. <p>Business improvement is raised at each monthly meeting, with improvement measures often leading to energy efficiency improvements. Contractors collect energy usage figures monthly and provide Tronox with these figures on an annual basis. NGER reports are completed and submitted annually.</p>	Compliance

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
	SCHEDULE 4	—	—
	ENVIRONMENTAL MANAGEMENT, MONITORING, REPORTING AND AUDITING	—	—
	ENVIRONMENTAL MANAGEMENT STRATEGY	—	—
1.	<p>The Proponent shall prepare and implement an Environmental Management Strategy for the project to the satisfaction of the Secretary. This strategy must be submitted to the Secretary for approval prior to carrying out any development on the site, and:</p> <p>(a) provide the strategic context for environmental management of the project;</p> <p>(b) identify the statutory requirements that apply to the project;</p> <p>(c) describe in general how the environmental performance of the project would be monitored and managed;</p> <p>(d) describe the procedures that would be implemented to:</p> <ul style="list-style-type: none"> • keep the local community and relevant agencies informed about the operation and environmental performance of the project; • receive, handle, respond to and record complaints; • resolve any disputes that may arise during the course of activities associated with the project; • respond to any non-compliance; • manage cumulative impacts; and • respond to emergencies; and <p>(e) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the project.</p>	<p>Murray Basin Operations Environmental Management Strategy, December 2016:</p> <p>(a) s 1.3.3: Context; s 1.5 Environmental documentation – Figure 3 Environmental management documentation for Tronox operations Murray Basin in NSW; s 2: Tronox environmental policy.</p> <p>(b) s 3.2: Legal and other requirements; Appendix D Environmental legal and planning register</p> <p>(c) s 5.2: Monitoring and measurement</p> <p>(d)</p> <ul style="list-style-type: none"> • s 4.4: Communication; 4.4.2 External community and stakeholders • s 5.6: Complaints and conflict resolution • s 5.6: Complaints and conflict resolution • s 5.5: Non-conformance and corrective and preventative action • s 4.6: Operational control • s 4.7: Emergency preparedness and response <p>(e) s 4.2: Roles and responsibilities</p> <p>Opportunity for improvement-4: Section 6.1 of the strategy states that review of the strategy is triggered by any modification of the regulatory consent conditions. As MOD7 of the project approval came into effect on 18 March 2020, the EMS is due for review.</p>	<p>Compliance</p> <p>Ofi-5</p>

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
	ENVIRONMENTAL MONITORING PROGRAM	—	—
2.	The Proponent shall prepare and implement an Environmental Monitoring Program for the project to the satisfaction of the Secretary. This program must consolidate the various monitoring requirements of this approval into a single document, and be submitted to the Secretary concurrently with the submission of the relevant monitoring programs.	Ginkgo, Snapper and MSP Field Monitoring Program Manual – Monitoring bores, dust, waters and radiation sites (2019). This manual provides detailed information on the location of environmental monitoring points and the required monitoring frequency for groundwater, dust, radiation, and surface waters. The scope of the manual could be extended to include monitoring requirements for the biodiversity offset areas, in particular the integrity of the perimeter fences and associated feral animal control devices.	Compliance See OfI-2
	COMPLIANCE		
	Incident Notification		
3.	The Proponent must immediately notify the Department and any other relevant agencies immediately after it becomes aware of an incident. The notification must be in writing and identify the project (including the development application number and name) and set out the location and nature of the incident.	Tronox notifies the Department of any non-compliances through the DPIE Major Projects Portal. This method of contact was used to report the fire at the Snapper Mine earthworks contractor laydown yard, which was classified as an incident.	Compliance
	Non-Compliance Notification		
3A.	Within seven days of becoming aware of a non-compliance, the Proponent must notify the Department of the non-compliance. The notification must be in writing and identify the project (including the development application number and name), set out the condition of this approval that the project is non-compliant with, why it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance. Note: A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.	Tronox notifies the Department of any non-compliances through the DPIE Major Projects Portal. Tronox would complete all required fields in the notification portal and provide any follow-up information requested by the department.	Compliance

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
	Compliance Reporting		
4.	The Proponent must provide regular compliance reporting to the Department on the project in accordance with the relevant Compliance Reporting requirements (DPE 2018).	Tronox provides the Department with an Annual Environmental Management Report, in environmental performance and compliance is reported for the period 1 September to 31 August each year. Each report is signed by a Tronox authorised reporting officer to certify that it is a true and accurate record of the compliance status of Snapper Mineral Sands Mine.	Compliance
	ANNUAL REVIEW		
5.	<p>By the end of December 2011, and annually thereafter, the Proponent shall review the environmental performance of the project to the satisfaction of the Secretary. This review must:</p> <ul style="list-style-type: none"> (a) describe the development (including any rehabilitation) that was carried out in the past year, and the development that is proposed to be carried out over the next year; (b) include a comprehensive review of the monitoring results and complaints records of the project over the past year, which includes a comparison of these results against the: <ul style="list-style-type: none"> • relevant statutory requirements, limits or performance measures/criteria; • monitoring results of previous years; and • relevant predictions in the EA; (c) identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance; (d) identify any trends in the monitoring data over the life of the project; (e) identify any discrepancies between the predicted and actual impacts of the project, and analyse the potential cause of any significant discrepancies; and (f) describe what measures will be implemented over the next year to improve the environmental performance of the project. 	<p>Annual environmental reviews are prepared each year and provided to the relevant stakeholders, with a copy being posted on the company web site. The 2020 AEMR includes the following:</p> <ul style="list-style-type: none"> (a) s 3: Describes operations during the reporting period, including exploration land development, mining, mineral processing, tailings, overburden and back-loaded waste; s 5: Describes completed and proposed rehabilitation works; s 6: Activities proposed in next AEMR period. (b) s 4: Management, performance, incidents and improvements for dust, erosion and sediment control, water, flora and fauna, noise, indigenous and European heritage, bushfire and radiation. (c) s 4: Environmental incidents are reported in each performance section. (d) s 4: Trends evident from monitoring data are reported in each performance section. (e) s 4: The performance is reviewed in each section. (f) s 4: Included at the end of each section. 	Compliance

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
	INDEPENDENT ENVIRONMENTAL AUDIT		
6.	<p>By the end of December 2011, and every 3 years thereafter, unless the Secretary directs otherwise, the Proponent shall commission and pay the full cost of an Independent Environmental Audit of the project. This audit must:</p> <ul style="list-style-type: none"> (a) be prepared in accordance with the relevant Independent Audit Post Approval requirements (DPE 2018); (b) be led and conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary; (c) be carried out in consultation with the relevant agencies; (d) assess whether the project complies with the relevant requirements in this approval, and any strategy, plan or program required under this approval; and (e) recommend appropriate measures or actions to improve the environmental performance of the project and any strategy, plan or program required under this approval. 	<ul style="list-style-type: none"> (a) The audit has been prepared in accordance with the relevant Independent Audit Post Approval requirements. (b) The environmental audit was conducted by an auditor approved by the Secretary. (c) Prior to the audit, the auditor consulted with the relevant agencies. Responses made by the agencies are addressed in section 3.1 of this audit report. (d) The audit assessed compliance with the relevant requirements in this approval. (e) The audit report includes recommendations for appropriate measures or actions to improve the environmental performance. 	Compliance
7.	<p>Within 3 months of commencing an Independent Environmental Audit, or unless otherwise agreed by the Secretary, a copy of the audit report must be submitted to the Secretary, and any other NSW agency that requests it, together with a response to any recommendations contained in the audit report, and a timetable for the implementation of the recommendations.</p> <p>The recommendations of the Independent Environmental Audit must be implemented to the satisfaction of the Secretary.</p>	<p>A copy of the last three-yearly independent audit report for the audit commenced in November 2017 was sent by email to the Department on 11 December 2017.</p> <p>The Department of Planning & Environment acknowledged receipt of the audit report in a letter dated 22 December 2017.</p>	Compliance

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
	REVISION OF STRATEGIES, PLANS AND PROGRAMS		
8.	<p>Within 3 months of:</p> <ul style="list-style-type: none"> (a) submitting an annual review under condition 5 above; (b) submitting a non-compliance or incident notification under condition 3 or 3A above; (c) submitting an audit report under condition 6 above; or (d) any modification to the conditions of this approval; <p>the Proponent shall review, and if necessary revise, the strategies, plans, and programs required under this approval to the satisfaction of the Secretary.</p>	<p>Environmental management plans are revised three-yearly or as needed. Tronox uses the program Smartsolve compliance platform software to schedule environmental management document review dates.</p> <p>The Environmental Management System is due for revision, triggered by the change in project approval conditions.</p> <p>It is noted that review of management plans does not necessarily lead to a revision of the plan. For example, Tronox has reviewed the Ginkgo and Snapper Mines Cultural Heritage Management Plan (2015) and found that it did not require revision.</p>	Compliance
	ACCESS TO INFORMATION	—	
9.	<p>Within three months of the approval of any plan/strategy/program required under this approval (or any subsequent revision of these plans/strategies/programs), or the completion of the audits or annual reviews required under this approval, the Proponent shall:</p> <ul style="list-style-type: none"> (a) provide a copy of the relevant document/s to the relevant agencies, and provide a copy to members of the general public upon request; and (b) put a copy of the relevant document/s on the Proponent’s website; 	<p>Drafts of all management plans, AEMRs are forwarded to the EPA, Broken Hill City Council and local stakeholders for their information and comment. Once comments have been received the final plans are forwarded to Department of Planning and other regulatory authorities as necessary.</p> <p>Each AEMR is published on the Tronox website.</p>	Compliance
10.	<p>During the project, the Proponent shall:</p> <ul style="list-style-type: none"> (a) make a summary of monitoring results required under this approval publicly available on its website; and (b) update these results on a regular basis (at least every three months). 	<p>Monthly environmental summary reports prior to 2017 are published on the Tronox website. More recent monitoring summary reports are accessible through an Esdat public portal linked through the Environmental Monitoring Results page in the Tronox website.</p>	Compliance

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
	APPENDIX 4		
	STATEMENT OF COMMITMENTS		
SOC 1	<p>Emergency Response Plan (ERP)</p> <p>An ERP will be prepared for the construction and operation of the Snapper Mine to detail responsibilities in the event of emergencies in and around the Snapper Mine area. Snapper Mine fire response will be co-ordinated with the local bushfire brigade.</p>	<p>Tronox maintains the Tronox Mine Site Emergency Response Plan (Revision 8, July 2019). Copies of the chart are posted in strategic locations at the mine.</p> <p>Strategies to mitigate the risks of bushfires are set out in the Ginkgo and Snapper Bushfire Management Plan, October 2015.</p> <p>Liaison with the NSW Rural Fire Service is maintained through the onsite emergency response team.</p>	Compliance
SOC 2	<p>Community Consultation Plan (Ginkgo Mine CCP)</p> <p>The Ginkgo Mine CCP (BEMAX, 2004a) will be revised to include the Snapper Mine. The CCP will provide for on-going consultation with local residents.</p>	<p>Community Consultation Plan, October 2014. The plan was revised to include the Snapper Mine.</p> <p>s 4.3.1: Community consultation program/schedule, Table 3 Annual community consultation program.</p>	Compliance

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance
<p>SOC 3</p>	<p>Mining Operations Plan (MOP)</p> <p>A MOP will be prepared for operation of the Snapper Mine in accordance with the Mining, Rehabilitation and Environmental Management Process (MREMP) guidelines (DPI-MR, 2006 or its latest version) and in consultation with various regulatory and advisory agencies.</p> <p>The MOP will provide information in regard to mining, processing and rehabilitation operations, relevant lease and development conditions, licences and other approvals. The MOP will also describe:</p> <ul style="list-style-type: none"> (a) area(s) to be disturbed; (b) mining and rehabilitation method(s) to be used and their sequence; (c) existing surface infrastructure; (d) progressive rehabilitation schedules; (e) areas of particular environmental sensitivity; (f) land and water management systems; (g) resource recovery; (h) objectives and process to develop criteria for mine closure; (i) options for the future use of the site, including the HAR and ETL; (j) measures that would be implemented to manage closure-related environmental effects of the project (including any adverse impacts associated with the two final voids associated with the final dredge pond and water disposal dam); and (k) describe how the performance of these measures would be monitored over time. <p>Note: Rehabilitation aspects of the MOP will be progressively developed and implemented from the commencement of the life of the Snapper Mine. Further, the MOP will be revised periodically as well as prior to any significant alteration to mining and rehabilitation operations including cessation of mining.</p>	<p>Snapper Mineral Sands Mine Mining Operation Plan 2015-2020. Approved by Department of Industry – Division of Resources and Energy on 1 December 2015.</p> <p>In a letter dated 16 June 2020, the NSW Resources Regulator advised that the approval period for the MOP was extended from the date of the letter until 30 November 2020. In an undated letter (document properties indicate it was created on 17 November 2020), the NSW Resources Regulator advised that the approval period for the MOP was extended until 31 January 2021. This extension allows time for the regulator to review the amended MOP, which includes the northern extension of Snapper Mine.</p> <p>Relevant lease and development conditions, licences and other approvals are described in section 1.2: Current consents, authorisation and licences.</p> <ul style="list-style-type: none"> (a) s 2.2: Asset register; (b) s 2.3.3: Planning and mine path clearing (c) s 2.1 Project description; Table 2.2 Asset register (d) s 2.3.9: Progressive rehabilitation and completion (e) s 3.1: Environmental risk assessment (f) s 3.2: Environmental risk management (g) s 2.1: Project description; s 2.3.10: Material production schedule during MOP term (h) s 4.3: Rehabilitation objectives (i) s 4.2: Post mining land use goal; s 4.3: Rehabilitation objectives (j) s 7.2: Proposed rehabilitation activities during the MOP term (k) s 8.1: Rehabilitation monitoring; s 8.1.2: Transect monitoring; s 8.2 Research and rehabilitation trials and use of analogue sites 	<p>Compliance</p>

Ref.	Condition – Snapper Mine Project Approval	Comment	Compliance									
<p>SOC 4</p>	<p>Flora and Fauna Offset</p> <p>A flora and fauna offset will be implemented in the offset area (see Appendix 3). This offset area will</p> <p>(a) include an enhancement area (see table below); and</p> <table border="1"> <thead> <tr> <th>Area</th> <th>Description</th> <th>Size (ha)</th> </tr> </thead> <tbody> <tr> <td>Offset Areas in Appendix 3</td> <td>Enhancement of existing areas of native vegetation communities through natural regeneration and management for conservation.</td> <td>5,471</td> </tr> <tr> <td colspan="2">Total Minimum Area Conserved</td> <td>5,471</td> </tr> </tbody> </table> <p>(b) contain the following vegetation communities:</p> <ul style="list-style-type: none"> • Black Box Woodland; • Black Oak-Rosewood-Wilga Woodland; • Chenopod Mallee Woodland/Shrubland • Irregular Dune Mallee Shrubland; • Bluebush Shrubland; • Linear Dune Mallee Shrubland; and • Austrostipa Grassland. 	Area	Description	Size (ha)	Offset Areas in Appendix 3	Enhancement of existing areas of native vegetation communities through natural regeneration and management for conservation.	5,471	Total Minimum Area Conserved		5,471	<p>Murray Basin Mines Offset Management Plan, July 2019.</p> <p>Tronox obtained a change of lease purpose to conservation and holds Certificate of Titles for 9,065 hectares for grazing, cultivation and conservation issued on 21 January 2015, and for 7,284 hectares for grazing and conservation issued on 22 January 2015. The areas allotted for the offset areas are contained within the conservation purpose of the leases. Alteration of the purpose of the Western Lands Leases 913 and 4087 was published in the NSW Government Gazette No 103 on 14 November 2014. These leases are identified in section 2.2 of the Murray Basin Mines Offset Management Plan, July 2019.</p> <p>(a) s 1.1: Snapper biodiversity offset area set at 5,471 ha. s 2.1 Location and habitats of biodiversity offset areas.</p> <p>(b) s 2.2.1: Flora and fauna characteristics of offset Areas 1 and 2 contain more than 11 vegetation communities including those listed. The condition of the offset areas is monitored annually using a formal botanical survey.</p>	<p>Compliance</p>
Area	Description	Size (ha)										
Offset Areas in Appendix 3	Enhancement of existing areas of native vegetation communities through natural regeneration and management for conservation.	5,471										
Total Minimum Area Conserved		5,471										
<p>SOC 5</p>	<p>Site Specific Cultural Heritage Management Strategies</p> <p>The following site specific management strategies for the cultural heritage sites will be implemented...</p>	<p>All conservation and artefact management requirements have been met.</p>	<p>Compliance</p>									

Appendix B

Documents and correspondence viewed

Appendix B. Documents and correspondence viewed

Tronox management plans and manuals

- Ginkgo and Snapper Mines Bushfire Management Plan, October 2015.
- Ginkgo and Snapper Mines Cultural Heritage Environmental Management Plan, October 2016.
- Ginkgo and Snapper Mines Flora and Fauna Environmental Management Plan, August 2020.
- Ginkgo and Snapper Mines Water Environmental Management Plan, September 2015.
- Ginkgo and Snapper Mines Water Environmental Management Plan, October 2016.
- Ginkgo/Snapper and MSP Environmental Monitoring Field Monitoring Manual, September 2019.
- Mine Site Emergency Response Plan (undated).
- Mine Site Land Management Plan, October 2015.
- Murray Basin Community Consultation Plan, October 2014.
- Murray Basin Mineral Sands Mines Air Quality Management Plan, August 2020.
- Murray Basin Mineral Sands Radiation Management Plan, September 2020.
- Murray Basin Mines Noise Management Plan, August 2018.
- Murray Basin Mines Offset Management Plan, June 2017.
- Murray Basin Mines Offset Management Plan, July 2018.
- Murray Basin Mines Offset Management Plan, August 2019.
- Murray Basin Operations Environmental Management Strategy, December 2016.
- Murray Darling Basin Mine Landfill and Waste Environmental Management Plan, June 2019.
- Snapper Mineral Sands Mine Mining Operations Plan 2015-2020 (Amendment B), April 2020.
- Traffic Management Plan and Code of Conduct, November 2020.

Tronox reports

- Ginkgo Mineral Sands Mine & Crayfish Expansion Annual Environmental Management Report 2019.
- Snapper Mineral Sands Mine Annual Environmental Management Report September 2016 – August 2017.
- Snapper Mineral Sands Mine Annual Environmental Management Report September 2017 – August 2018.
- Snapper Mineral Sands Mine Annual Environmental Management Report 1st September 2018 – 31st August 2019.
- Snapper Mineral Sands Mine Annual Environmental Management Report 1st September 2019 – 31st August 2020.
- Snapper Mine Northern Extension Modification Submissions Report. Tronox, January 2020.

Consultants' reports

- Analysis of Aboriginal lithic assemblages and hearths. Landskape, May 2008.
- Cristal Mining – Ginkgo Haul Road, Road Safety Audit Report – Existing Road. WaySafe, September 2015.
- Cristal Mining – Ginkgo Haul Road, Road Safety Audit Response, October 2015.
- Fauna Survey for Offset One, Ginkgo Mine. Wildlife Profiles Pty Ltd, 2011.
- Fauna Survey for Offset Two, Snapper Mine. Wildlife Profiles Pty Ltd, 2011.
- Snapper Mine Noise Monitoring Acoustic Report. Renzo Tonin & Associated, September 2019.
- Vegetation Monitoring of the Cristal Mining Australia Ltd Conservation Offset 1 Site at Pooncarie West, Southwest New South Wales in September 2018.

- Vegetation Monitoring of the Cristal Mining Australia Ltd Conservation Offset 2 Site at Pooncarie West, Southwest New South Wales in September 2018.

Licences, permits leases, titles

- Alteration of Purpose/Conditions of a Western Land Lease. NSW Government Gazette, 14 November 2014.
- Certificate of Title – Trelega conservation area.
- Groundwater Certificate of Title, WAL27918.
- Mining Lease ML1621 Snapper Mine.
- Mining Lease ML1809 Snapper Mine.
- Statement of Approval, Water Supply Works, 60WA582837, January 2012.
- Water Access Licence 27915.

Correspondence (by date)

- Letter approving Mining Operations Plan 2015-2020. NSW Department of Planning Industry & Environment, December 2015.
- Letter approving the Traffic Management Plan and Code of Conduct (September 2015), Noise Management Plan (September 2015), and Air Quality Management Plan (September 2015). NSW Department of Planning & Environment, January 2016.
- Letter approving Flora and Fauna Management Plan (December 2015) and Aboriginal Cultural Heritage Management Plan (January 2016). NSW Department of Planning & Environment, January 2016.
- Letter approving cessation of noise monitoring at Manilla and Woodlands residences. NSW Department of Planning & Environment, October 2017.
- Letter approving Noise Management Plan. NSW Department of Planning & Environment, February 2019.
- Letter approving Waste Management Plan. NSW Department of Planning & Environment, October 2019.
- Letter approving Mine Operations Plan ML1621 from date of approval to 30 November 2020. NSW Resources Regulator, June 2020.
- Letter approving temporary changes to monitoring at Tronox mines and MSP. NSW Department of Planning Industry & Environment, August 2020.
- Letter approving Radiation Management Plan. NSW Department of Planning Industry & Environment, September 2020.
- Letter approving Flora and Fauna Management Plan. NSW Department of Planning Industry & Environment, September 2020.
- Letter approving Offset Management Plan. NSW Department of Planning Industry & Environment, September 2020.
- Letter extending approval of Mine Operations Plan ML1621 to 31 January 2021. NSW Resources Regulator, (undated).

Appendix C
Photographs



Photo 1 Snapper Mine rehabilitation works showing natural forest, OB1 (2013), OB1 (2016), Off Path Tails Dam (seeded May 2020), and Domain 3 water dam (decommissioned and graded). Photo taken on 30 November 2020.



Photo 2 Aerial view of BSL compound (Apple Maps downloaded 17 January 2021)



Photo 3 Waste tyre stockpile at BSL compound.



Photo 4 Area of stockpiled waste air filters, hydraulic hoses, IBCs, wrecked light vehicles (background left), timber (background centre), nitrogen and fuel oil tanks (white and red cylinders), tyres at BSL compound.



Photo 5 Waste oil stored in open-topped IBCs at BSL compound.



Photo 6 Mine truck chassis at BSL compound.



Photo 7 View of topsoil placement looking northwest along the mine path toward the active mine.



Photo 8 Fenced Belah (*Casuarina pauper*) trees in mine path rehabilitation area (2016).



Photo 9 Northern end of Snapper Mine Offset 2 area with signage and locked entry gate.



Photo 10 Damaged fence corner strainer post at south-eastern border of Offset 2 area.



Photo 11 Cultural heritage item SNH1 in the old Kertne Nob outstation and stockyard run. Tronox reported that a temporary protection fencing has been installed since the audit.