NSW GOVERNMENT

Atlas-Campaspe Mineral Sands
Mine Optimisation (MOD 1)

State Significant Development Modification Assessment

(SSD 5012 MOD 1)

December 2019

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Cover photo

Mineral sands mining at the nearby Snapper Mine (also operated by Tronox).

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1. Introduction

1.1 Background

Tronox Mining Australia Ltd (Tronox) is seeking to modify the State Significant Development (SSD) consent for the Atlas-Campaspe Mineral Sands Project (project) (SSD 5012), located in western NSW (see **Figure 1**). The approved project comprises:

- an open cut mineral sands mine with two mining domains – Atlas and Campaspe (the mine), which are located 80 kilometres (km) north of Balranald in the Balranald Shire local government area (LGA); and
- a rail load-out facility (the Ivanhoe Rail Facility), located 135 km north-east of the mine and 4.5 km south-west of Ivanhoe, in the Central Darling LGA.

The project has approval to extract mineral sand ore using open cut methods, process the ore at the mine to form a mineral concentrate and transport the mineral concentrate to the Broken Hill Mineral Separation Plant[1] (MSP). The mineral concentrate is to be transported by road trains from the mine to the Ivanhoe Rail Facility; and then railed to the MSP.

The mineral concentrate would then be further treated at the MSP to produce minerals such as ilmenite, leucoxene, rutile and zircon. The mineral sand processing waste (MSP waste) would be transported to Tronox's nearby Ginkgo Mine or Snapper Mine, where it would be backfilled into extracted areas, until rehabilitation of these mines is completed. Once these mines are rehabilitated, MSP waste would be transported back to the Atlas-Campaspe mine (by rail to Ivanhoe, then by truck to the mine) for use as infill for rehabilitation.

The project was granted development consent on 6 June 2014 by the Executive Director – Development Assessment Systems and Approvals at the then Department of Planning and Environment (under delegation of the then Minister for Planning), and currently allows for:

- extraction of up to 7.2 million tonnes per annum (Mtpa) of mineral sands ore until 2034;
- production of up to 546,000 tonnes per annum (tpa) of mineral concentrate;
- transportation by road train of up to 450,000 tpa of mineral concentrate to the Ivanhoe Rail Facility in up to 24 trucks (48 vehicle movements) in any 24-hour period;

[1] The MSP is regulated under a separate SSD consent (DA 345-11-01).

Figure 1 | Site Location

- transportation of mineral concentrate from the Ivanhoe Rail Facility to the MSP using up to one train in any 24-hour period and a maximum of three trains per week;
- receipt of up to 50,000 tpa of process waste from the MSP; and
- operation 24 hours per day, 7 days per week.

The discrepancy between the mineral concentrate production rate and the mineral concentrate transportation rate is due to processing limitations at the MSP while it continues to receive concentrate from Gingko Mine and Snapper Mine.

Tronox commenced initial site establishment and construction works in 2018, however construction has recently been suspended because the company wishes to focus on its other existing operations.

1.2 Strategic context

The project is located in Far West NSW in an area characterised by semi-arid woodlands and arid shrublands. The terrain is generally flat with no permanent surface water features. Groundwater in the area of the mine is around 20 m below the surface and is highly saline.

The area around the mine and Ivanhoe Rail Facility is dominated by low intensity grazing (primarily sheep).

There are a number of reserves and conservation areas located 5-10 km west of the mine, including the Willandra Lakes Region World Heritage Area, Mungo National Park, and the Mungo State Conservation Area.

The nearest privately-owned dwelling is 14 km to the east of the mine, and there are only six dwellings within 20 km of the mine. The closest town to the mine is Balranald, which is located approximately 80 km south of the mine and has a population of around 1,200.

The nearest privately-owned dwellings to the Ivanhoe Rail Facility are located 4.5 km north-east, in the village of Ivanhoe, which has a population of around 200.

2. Proposed Modification

Tronox has identified opportunities for it to expand its operations and increase the project's efficiency and economic viability. On 22 July 2019, Tronox lodged the modification application for Atlas-Campaspe MOD 1, which seeks approval to:

- increase mineral concentrate production;
- increase road and rail haulage;
- change the layout of and access to the Ivanhoe Rail Facility;
- add or change supporting infrastructure at the mine;
- extract groundwater for dust suppression at the Ivanhoe Rail Facility; and
- use local roads to access the mine.

All of the proposed changes are outlined in **Table 1** and the proposed site infrastructure changes are shown in **Figure 2** and **Figure 3**. There would be no changes to the project life, ore production rate, mining method or workforce size. There is no change to the disturbance area at the mine site, however there is a proposed variation to the disturbance area at the Ivanhoe Rail Facility, leading to a net reduction in vegetation clearance of 12 hectares (ha).

The increase in mineral concentrate production is being sought to account for greater concentrations of minerals in certain parts of the ore body, this is why no commensurate increase to the ore production rate is being sought.

2.1 Proposed changes to site access for light vehicles

The development consent includes a condition that project-related light vehicle traffic (including employees and contractors) only uses a designated road haulage route (predominantly sealed) to access the mine (unless there are special circumstances). This requirement significantly increases transport distances for light vehicles seeking to access the site from Mildura (by approximately 150 km) or Balranald (by 32 km). Tronox has therefore proposed the following alternative access routes for light vehicles that utilise predominantly unsealed local roads to access the mine site (refer to **Figure 4** and **Figure 5**):

- to and from Mildura via Arumpo Road, Marma Box Creek Road and Link Road; and
- to and from Balranald via Balranald-Ivanhoe Road, Boree Plains-Gol Gol Road and Link Road.

To ensure the roads are of a suitable condition, Tronox would pay Balranald Shire Council to upgrade Link Road (between Marma Box Creek Road and the mine access road) and seal the surface of Boree Plains-Gol Gol Road on its approach to the intersection with Balranald-Ivanhoe Road.

Table 1 | Proposed modifications to Atlas-Campaspe Mineral Sands Project

Project component	Approved project	Proposed modification
Atlas-Campaspe Mine		
Mineral concentrate production	• up to 546,000 tpa	• up to 665,000 tpa
Mineral concentrate road transport	• up to 450,000 tpa • up to 24 road train trips per day (48 movements)	• up to 665,000 tpa • up to 35 road train trips per day (70 movements)
Overburden management	• use of haul trucks to transfer overburden	• use of both haul trucks and an overland conveyor to transfer overburden
Mineral Separation Plant process waste	• receipt of up to 50,000 tpa of process waste	• receipt of up to 65,000 tpa of process waste
Electricity supply	• electricity supplied by diesel generator sets	• development of a 1 megawatt (MW) on-site solar generation infrastructure to supplement diesel power
Site access	• access to the mine only via the road haulage route	• allow light vehicles accessing the mine to use local roads on a proposed light vehicle access route
Site infrastructure	• supporting infrastructure within the approved surface development area	• construction of a telecommunications tower at the site • development of an emergency airstrip • relocation of the mine camp within the approved site disturbance area
Ivanhoe Rail Facility		
Site infrastructure	• approved site infrastructure includes an access road, rail siding, hardstand area, site office, parking, fencing, lighting and water management infrastructure	• extension of the hardstand area • extension of the rail siding and addition of a passing siding • revised alignment of the access road and intersection
Mineral concentrate rail transport	• up to 3 trains per week • up to 1 train trip in any 24-hour period • train length of up to 600 m	• up to 4 trains per week • no change to number of trains in a 24-hour period • train length of up to 920 m
Water supply	• onsite water collection (non-potable) and trucking of potable water from Ivanhoe or Atlas-Campaspe mine	• addition of a groundwater supply bore (non-potable)

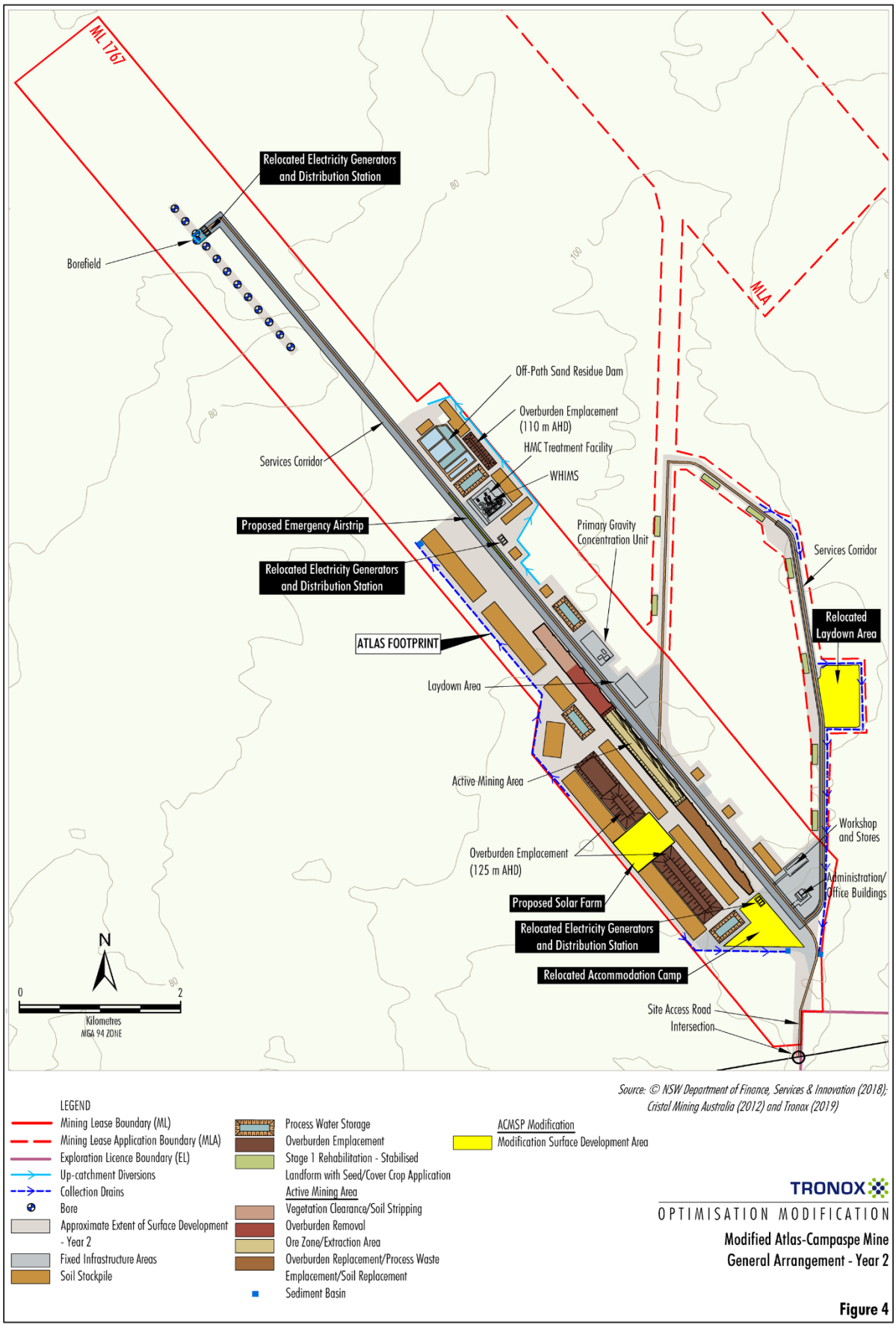

Figure 2 | Proposed modifications to the mine site

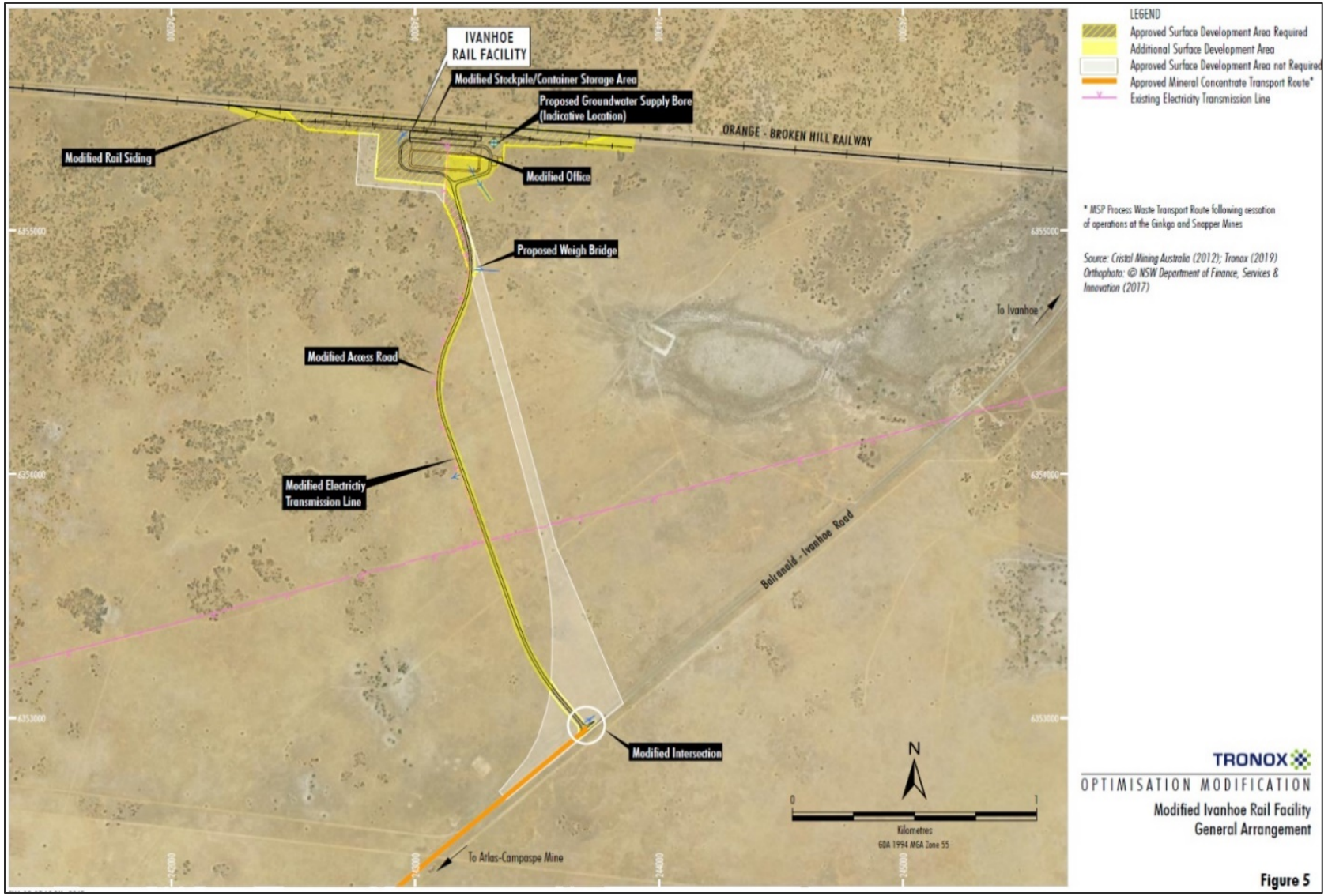

Figure 3 | Proposed modifications to the Ivanhoe Rail Facility

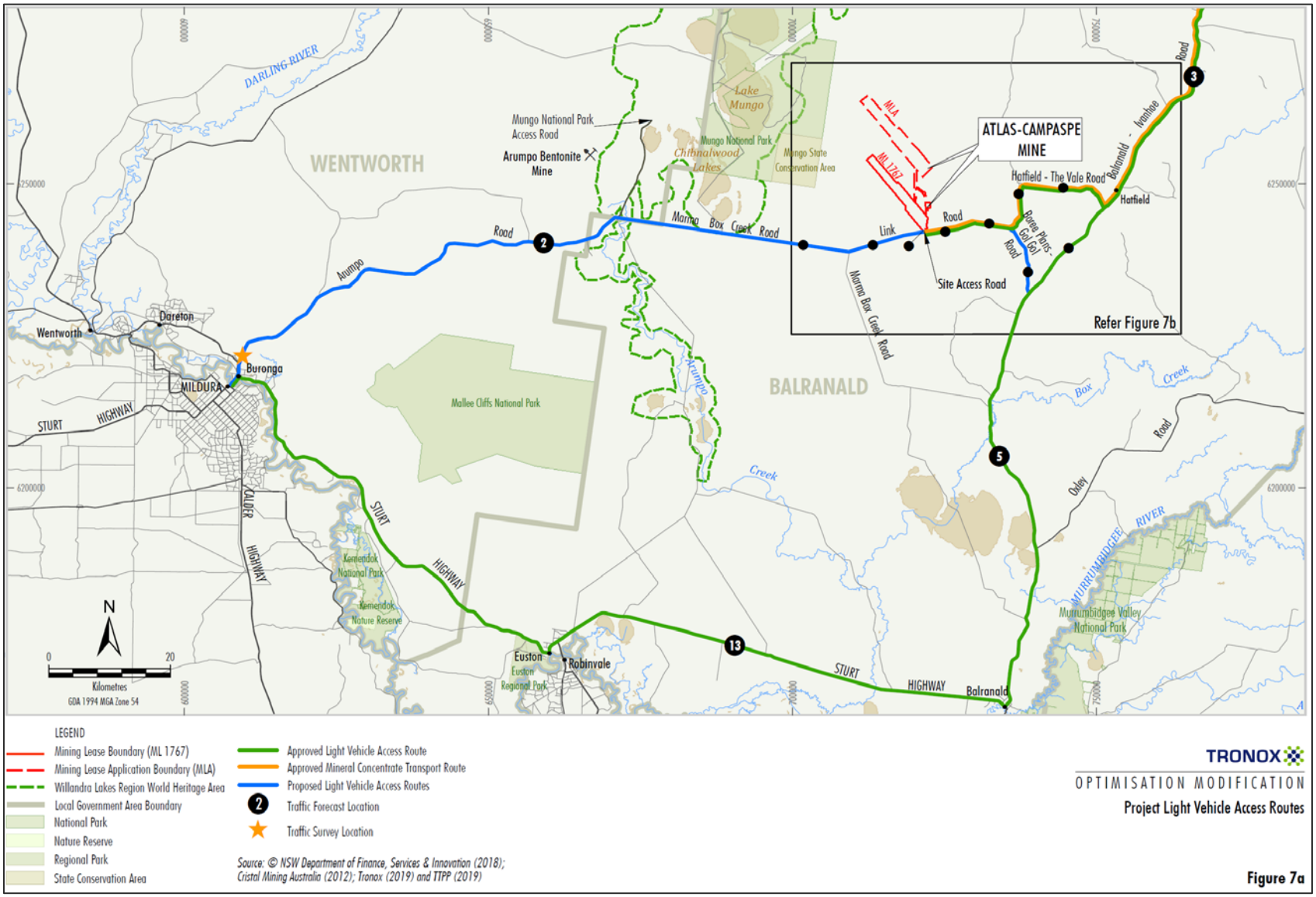

Figure 4 | Proposed light vehicle access route

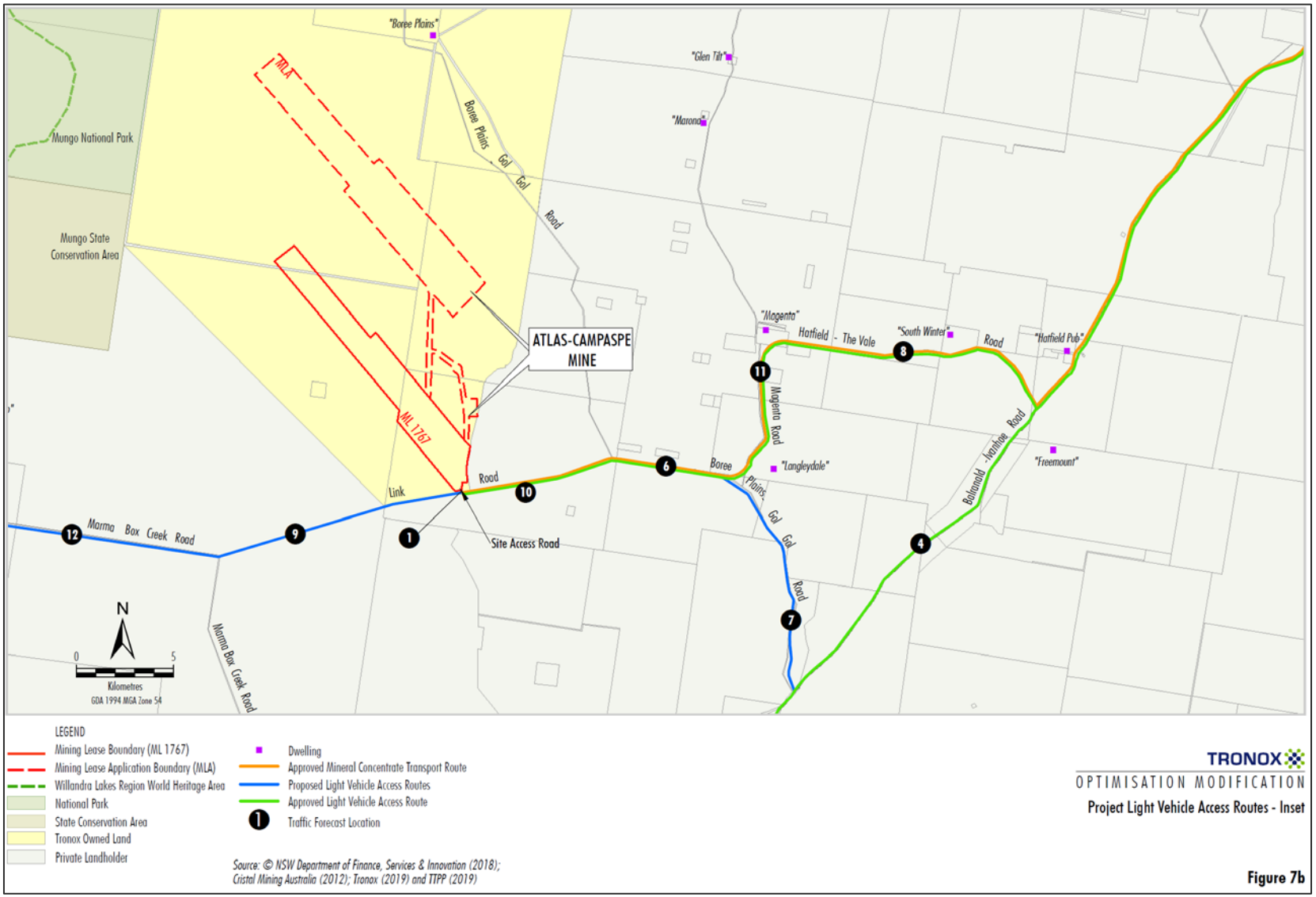

Figure 5 | Proposed light vehicle access route (inset from **Figure 4** above)

2.2 Amendment to modification application

Following exhibition, Tronox amended its modification application to remove the proposed emergency airstrip, as another nearby existing airstrip was available.

Tronox also proposed a new methodology for establishing the site development limits. The consent requires Tronox to engage a registered surveyor to mark boundaries of the development limits, for the life of the development, and submitting a survey plan of these boundaries. Tronox proposed to use a site-based 'Disturbance Permit' system to clear approved areas of vegetation in stages, without engaging a registered surveyor or submitting a survey plan.

3. Statutory Context

3.1 Scope of Modification

The project was originally approved by the Executive Director – Development Assessment Systems and Approvals at the then Department of Planning and Environment, as delegate of the then Minister for Planning, on 6 June 2014 under Section 89E (now Section 4.38) of the *Environmental Planning and Assessment Act* 1979 (EP&A Act). Therefore, any modification to this consent must be made under Section 4.55 of the EP&A Act.

The modification application and Modification Report were lodged under s4.55(2) of the EP&A Act. The Department has reviewed the scope of the modification and considers that it:

- would not significantly increase the environmental impacts of the project as approved (see Section 5);
- is substantially the same development as originally approved (see Section 3.2); and
- would create minimal disturbance outside of the already approved disturbance areas for the project (see Section 5).

Therefore, the Department is satisfied that the proposed modification can be assessed and determined under section 4.55(2) of the EP&A Act.

3.2 Substantially the Same Development

The Department is satisfied that the project as modified would be substantially the same development as approved, and that the proposal should be characterised as a modification to the development consent, as:

- the changes to site infrastructure are relatively minor;
- there is no change to the life of operations;
- ore extraction limits would remain unchanged;
- infrastructure upgrades at both the mine and Ivanhoe Rail Facility are similar in nature to existing infrastructure; and

- the impacts of the development as modified would be similar to the impacts of the approved project (see **Section 5**).

3.3 Consent Authority

The Minister for Planning and Public Spaces (Minister) is the consent authority for the modification application under Section 4.5(a) of the EP&A Act. However, under the Minister's delegation dated 11 October 2017, the Director - Resource Assessments, may determine the applications, as:

- neither Central Darling Shire nor Balranald Shire councils objected to the proposal;
- Tronox did not report any political donations; and
- no public submissions in objection were received.

3.4 Mandatory Matters for Consideration

In accordance with Section 4.15(1) and Section 4.55(3) of the EP&A Act, the following must be considered in granting the modification application as relevant to the application:

- environmental planning instruments or proposed instruments;
- any planning agreement;
- *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation);
- likely impacts of the modification application, including environmental impacts on both the natural and built environments, and social and economic impacts;
- suitability of the site;
- any submissions;
- the public interest; and
- the reasons for granting approval for the original application.

The Department has considered the relevance of these considerations for the modification application below.

Environmental planning instruments or proposed instruments

A number of environmental planning instruments apply to the modification, including:

- State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (the Mining SEPP);
- State Environmental Planning Policy No. 33 (Hazardous and Offensive Development);
- State Environmental Planning Policy No. 44 (Koala Habitat Protection);
- State Environmental Planning Policy (Infrastructure) 2007;
- State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP);
- State Environmental Planning Policy No. 55 (Remediation of Land);
- Central Darling Local Environment Plan 2012; and
- Balranald Local Environmental Plan 2010.

The Department has considered the proposed modification against the relevant provisions of these instruments. The Department has also considered Tronox's consideration of the relevant instruments

in its Modification Report. The Department considers that the proposed modification can be carried out in a manner that is generally consistent with the aims, objectives and provisions of these instruments.

Planning agreements

There are no planning agreements between Tronox or either Balranald Shire Council or Central Darling Shire Council. However, in assessing the light vehicle traffic impacts in **Section 5.2** of this report, the Department has considered the existing road maintenance contributions provided to both Balranald Shire Council and Central Darling Shire Council.

EP&A Regulation

There are no additional considerations relevant to the modification application in the EP&A Regulation.

Likely impacts of the modification application

The likely impacts of modification are considered in **Section 5** of this report.

Suitability of the site

The proposed changes to the approved site boundaries at the Ivanhoe Rail Facility do not affect the suitability of the site and therefore the Department considers that this modification application would not result in significant changes that would alter the conclusions made as part of the original assessment.

Submissions

The Department exhibited the application, and notified and sought comment from Balranald Shire Council, Central Darling Shire Council, Wentworth Shire Council and relevant agencies, as discussed further in **Section 4** of this report. No submissions on the modification were received from the general public or special interest groups.

Public Interest

The consideration of the public interest is provided in **Section 6** of this report.

The reasons for granting the consent for the original application

In determining the original Atlas-Campaspe application, the Department concluded that the benefits of the project outweighed the impacts, and imposed a range of strict conditions to appropriately manage the impacts. The Department has considered the proposed modification against the reasons the Department provided for determining the project. The use of local roads for light vehicle access was considered in assessing the original application, but rejected as there was no agreement between councils and the applicant regarding road maintenance contributions. As discussed in **Section 5.2**, this issue has been resolved and therefore the Department is satisfied that the proposed modification is consistent with the decision that was previously made. The proposed modification would allow similar benefits to be realised at local, regional and State levels.

3.5 Objects of the EP&A Act

The consent authority has assessed the proposed modification against the current objects of the EP&A Act. The objects of most relevance to the decision on whether or not to approve the proposed modification are found in section 1.3 of the EP&A Act; and are:

- *Object 1.3(a): to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources;*
- *Object 1.3(b): to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment;*
- *Object 1.3(c): to promote the orderly and economic use and development of land;*
- *Object 1.3(e): to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats;*
- *Object 1.3(f): to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage);*
- *Object 1.3(i): to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State; and*
- *Object 1.3(j): to provide increased opportunity for community participation in environmental planning and assessment.*

The Department is satisfied that the proposed modification encourages the proper management and development of resources (Object 1.3(a)) and the promotion of the orderly and economic use of land (Object 1.3(c)). The proposal would optimise resource recovery under the project approval (SSD5012), while utilising the mine's established infrastructure and workforce.

The Department has considered the principles of ecologically sustainable development (ESD, Object 1.3(b)) in its assessment of the proposed modification. The Department considers that the proposed modification may be carried out in a manner that is consistent with the principles of ESD. The Department's assessment has sought to integrate all significant environmental, social and economic considerations.

The Department has carefully considered the environmental impacts of the proposed modification, including potential impacts on the natural, cultural and built environments (Object 1.3(e) and (f)). The key findings of the Department's assessment are summarised in **Section 5**.

The Department publicly exhibited the modification application and consulted with Balranald Shire Council and Central Darling Shire Council (Object 1.3(i) and (j)). The outcomes of the consultation process are outlined in **Section 4**.

3.6 Impacts on biodiversity values

Under the relevant provisions of the *Biodiversity Conservation (Savings and Transitional) Regulation 2017*, the Department is satisfied that a Biodiversity Development Assessment Report is not required

to be submitted with the application as the modification would not increase impacts on biodiversity values.

4. Engagement

4.1 Department's Engagement

The Department exhibited the modification application from 2 to 15 August 2019:

- on its website;
- at its head office in Sydney;
- at the offices of Balranald Shire Council, Central Darling Shire Council and Broken Hill City Council; and
- at the office of the Nature Conservation Council.

The modification application was advertised in the Barrier Daily Truth and the Mildura Sunraysia Daily on 1 August 2019. Previous submitters were notified of the modification application and invited to make a submission. The modification application was also referred to relevant NSW Government agencies for advice.

The Department received 12 submissions on the proposal. Nine were received from government agencies, two from local councils and one from the Australian Rail Track Corporation (ARTC). No submissions were received from the public or special interest groups.

None of the submissions objected to the proposal. A full copy of the submissions is provided in **Appendix B**.

4.2 Summary of Agency Advice

A summary of the advice received from government agencies is provided below.

On 27 August 2019, the Department asked Tronox to respond to the advice received on the proposal. Tronox provided a Submissions Report, which was made available on the Department's website on 16 October 2019 (see **Appendix C**).

Biodiversity and Conservation Division

The Biodiversity and Conservation Division's (BCD's) advice acknowledged that the modification would reduce the area of native vegetation to be cleared by approximately 12 hectares and accepted that there would be no increase in impacts on biodiversity values. The BCD recommended that the Biodiversity Management Plan is revised to incorporate the changes resulting from the modification. the modification would reduce the area of native vegetation to be cleared by approximately 12 hectares and accepted that there would be no increase in impacts on biodiversity values. The BCD

recommended that the Biodiversity Management Plan is revised to incorporate the changes resulting from the modification.

BCD also advised that the proposed process for managing five new Aboriginal cultural heritage sites was appropriate and recommended that the Heritage Management Plan is updated to reflect the proposed management of these sites.

In its Submissions Report, Tronox committed to updating the site's biodiversity and heritage management plans.

Roads and Maritime Services

RMS advised that the revised light vehicle route from Mildura would reduce driving distance by approximately 150 km. For the project as a whole, the revised light vehicle access would save more than 1.7 million vehicle kilometres travelled (VKT).

RMS recommended that fatigue management measures within the existing Transport Management Plan be revised in accordance with the Fatigue Management Guide (NSW Government 2018).

RMS advised that upgrades to the following roads or intersections would be required:

- the intersection of Boree Plains-Gol Gol Road and Balranald-Ivanhoe Road;
- sealing of the Boree Plains-Gol Gol Road for at least 100 m from the carriageway of the Balranald-Ivanhoe Road; and
- sealing of the rail facility access road at least 100 m from the carriageway of the Balranald-Ivanhoe Road.

Tronox agreed with the required the road upgrades and committed to update its Transport Management Plan to include updated fatigue management measures.

Central Darling Shire Council

Central Darling Shire Council was satisfied that the existing road maintenance contributions calculation would address road maintenance needs associated with the increased road transport of mineral concentrate.

Balranald Shire Council

Balranald Shire Council advised that, in relation to project-related traffic, that Tronox:

- should pay Balranald Shire Council to bring the following toads to a standard suitable for regular project-related traffic:
  - the Link Road between the mine access road and Marma-Box Creek Road; and
  - the last 100m of Boree Plains-Gol Gol Road approaching the Balranald-Ivanhoe Road;
- should contribute to Balranald Shire Council's ongoing maintenance costs for light vehicle access roads, based on the proportion of traffic that is project-related (using a methodology agreed between the council and Tronox); and
- be responsible for closing the Link Road and Boree Plains-Gol Gol Road to all traffic in the event of wet weather.

Tronox committed to paying for the road upgrades and contributing to maintenance costs. Tronox also committed to closing the light vehicle access roads to all traffic during wet weather, when requested by Balranald Shire Council.

Resources Regulator

The Resources Regulator advised that the site's Mining Operations Plan (MOP) and Rehabilitation Cost Estimate (RCE) would need to be updated prior to construction.

Tronox advised that it would update the site's MOP and prepare a new Rehabilitation Cost Estimate prior to construction.

DPIE Water and Natural Resources Access Regulator

The Department's Water Division (DPIE Water) Natural Resources Access Regulator (NRAR) advised that Tronox should:

- prepare an erosion and sediment control plan to manage sediment;
- revise its groundwater monitoring plan to include the proposed water supply bore to include:
  - the bore's groundwater level and quality; and
  - groundwater level or quality monitoring at the nearest adjacent bores; and
- update the site's Groundwater Management Plan and Surface Water Management Plan.

Tronox advised that the site's Groundwater Management Plan would be updated to include quarterly water level and quality monitoring at groundwater bores associated with the Ivanhoe Rail Facility. The site's Surface Water Management Plan (which includes an erosion and sediment control plan) would also be updated.

Civil Aviation Safety Authority

CASA advised that there were a number of potential safety issues associated with a proposed emergency airstrip at the mine, which Tronox subsequently decided not to pursue (**Section 2.2**).

Australian Rail Track Corporation

The Australian Rail Track Corporation (ARTC) advised that it was working with Tronox on the proposed changes to the Ivanhoe Rail Facility and supported the proposed changes to the rail siding, rail volumes and train paths. ARTC advised that the rail works would be carried out under a negotiated works deed.

DPIE Crown Lands

DPIE Crown Lands Group advised that perpetual Western Lands Leases adjoining the site be consulted. The project was exhibited, which provided adjacent leaseholders an opportunity to provide a submission. No submissions were received. The proposed modification would have minimal amenity impacts to adjacent leaseholders.

Other Public Authority Advice

Responses were also received from Transport for NSW, EPA, Wentworth Shire Council, and the Department's Division of Resources and Geoscience, which did not raise any issues requiring further assessment.

4.3 Community submissions

No public submissions were received on the proposal.

5. Assessment

5.1 Introduction

The Department considers that the key issues for consideration in the assessment of the proposed modification relates to impacts associated with increased heavy vehicle traffic and the revised light vehicle routes. The Department has also considered the scale of impacts in comparison to previously approved impacts.

5.2 Traffic and transport

Road haulage of concentrate and processing waste

The modification proposes to increase haulage of mineral concentrate from 450,000 tpa to 665,000 tpa. This would result in an increase in the number of heavy vehicles (road trains) required per day (from 24 to 35 vehicles per day) using an existing approved road haulage route.

Under the conditions of consent, Tronox is required to provide annual financial contributions to Balranald Shire Council and Central Darling Shire Council for road maintenance along the road haulage route. The contributions are based on formulas that consider the amount of mineral concentrate and MSP process waste that is transported along the Balranald-Ivanhoe Road (ie Main Road 67) and council expenditure for road maintenance on this road (refer to **Figure 4**).

Approximately 75 percent of haulage on this road is within Balranald Shire Council's jurisdiction, with the remaining 25 per cent in Central Darling Shire Council. The formulas are also subject to annual indexation adjustments based on the consumer price index (CPI). The formulas are able to accommodate the increased quantity of mineral concentrate and MSP process waste that would be transported and therefore do not require any revisions.

Background traffic volumes along the haulage route are very low (up to an average of 35 vehicles per day in the vicinity of the Ivanhoe Rail Facility). The increased use of heavy vehicles would not affect the level of service experienced by drivers along the route.

Balranald Shire Council and Central Darling Shire Council are satisfied with the proposed increase to trucking.

Tronox would update its Transport Management Plan to reflect the modification prior to commencement of operations.

Rail haulage of concentrate and MSP waste

The modification proposes to increase the frequency of trains using an existing approved rail haulage route from a maximum of 3 trains per week to a maximum of 4 trains per week. The maximum length of trains is also proposed to increase from 600 m to 920 m. This would allow greater quantities of mineral concentrate (and MSP waste) to be delivered to (and from) the MSP.

Any impacts associated with this increased frequency and length would be negligible. Neither ARTC, Central Darling Shire Council nor Broken Hill City Council raised any concerns with the proposal.

Light vehicle access

During the assessment of the development application for the mine, concerns were raised by Balranald Shire Council and Central Darling Shire Council about the maintenance costs associated with the use of local roads (other than the haulage route) for light vehicles accessing the site. The consent therefore included a condition that light vehicles access the site using only the heavy vehicle road haulage route.

The modification proposes that project-related light vehicles would use local roads in addition to the road haulage route to access the mine site (refer to proposed light vehicle access routes in **Figure 4** and **Figure 5**). Local roads between Mildura and the mine (ie Arumpo Road, Marma Creek Box Creek Road and Link Road) would experience up to 110 light vehicle movements per day during construction; and up to 58 light vehicle movements per day during operation. For vehicles travelling to/from Balranald, Boree Plains-Gol Gol Road would experience up to 54 light vehicle movements per day during construction; and up to 56 light vehicle movements during operation.

Tronox has agreed to pay Balranald Shire Council to undertake road upgrades on the light vehicle access routes, including:

- upgrading and widening Link Road (between Marma Box Creek Road and the mine) to meet the width and formation requirements for a ‘Class 4B’ unsealed road; and
- sealing of Boree Plains-Gol Gol Road within 100 m of the intersection of Balranald-Ivanhoe Road.

Tronox has also made an arrangement to pay Balranald Shire Council to maintain local roads along the light vehicle access route, based on the proportion of total traffic that is project-related.

The increase in light vehicles along the light vehicle access route is offset by a reduction of light vehicles using the approved road haulage route. The proposed light vehicle access routes create substantial road safety benefits and greenhouse gas reductions by reducing the travel distance for light vehicles by approximately 150 km to/from Mildura and 32 km to/from Balranald – totalling more than 1.7 million vehicle kilometres per year.

Both Balranald Shire Council and Wentworth Shire Council now support the use of the proposed light vehicle access route.

Transport-related conditions of consent

The Department has recommended conditions to:

- increase the amount of mineral concentrate that may be transported in any calendar year from 450,000 tpa to 665,000 tpa;
- increase the number of mineral concentrate haulage vehicle trips from 24 to 35 vehicles per day;
- allow project-related light vehicles to use the proposed light vehicle access routes to access the site;
- ensure the necessary road upgrades are undertaken, and paid for by Tronox, prior to allowing light vehicles to use the light vehicle access route; and
- ensure Tronox pays Balranald Shire Council a proportion of road maintenance costs along the light vehicle access route, based on a protocol agreed by both parties.

Conclusion

The proposed increases to road haulage, rail haulage and light vehicle access would create negligible impacts and are supported by the Department, councils, RMS and ARTC. Necessary road upgrades would be undertaken to make the light vehicle routes suitable for regular light vehicle traffic, and would be paid for by Tronox. Tronox would also pay councils for road maintenance to account for the increased road haulage, using an existing formula. Tronox would also pay Balranald Shire Council to maintain the local roads along the light vehicle access routes, using an agreed protocol between these parties.

The Department considers that both the existing and recommended conditions of consent would ensure that any traffic impacts can be appropriately managed.

5.3 Other issues

The Department has considered other potential impacts of the proposed modification, which are summarised in **Table 2**.

Table 2 | Summary of other issues raised

Issue	Findings	Recommended Condition
Air quality	• Limited baseline air quality data (approximately 5 months) exceeds the annual average PM_{10} criterion of 30 µg/m^3 – with averages of 45.8 µg/m^3 during this period. This is likely due to wind-blown dust from the nearby ephemeral lakes and the typically dry and arid/semi-arid conditions. • Increased mineral concentrate production, transportation and handling would likely	• Update Air Quality Management Plan to ensure that the Ivanhoe Rail Facility access road is watered to reduce dust emissions. • Revise annual average PM_{10} criterion to 25 µg/m^3, to reflect the updated *Approved Methods for the*

Issue	Findings	Recommended Condition
	increase air quality (dust) emissions at both the mine and the Ivanhoe Rail Facility. • At the mine, total air emissions are expected to increase by approximately 4 percent compared to the approved mine. Given the large distances to private residences, this is not expected to contribute to any exceedances of air quality criteria at privately owned sensitive receptors. Tronox is also considering using conveyors to transport overburden (rather than trucks), which would reduce wheel-generated dust and lead to reductions in air quality emissions. • At the Ivanhoe Rail Facility, increased mineral concentrate haulage and handling would increase air quality emissions. Tronox has committed to watering the Ivanhoe Rail Facility access road using water from the groundwater bore, which would reduce emissions at that site by 15% overall, compared to the approved operations. • The EPA did not recommend any additional conditions of consent.	*Modelling and Assessment of Air Pollutants in New South Wales* (EPA 2017).
Noise	• Sensitive noise receivers are located significant distances from project components: o 14 km north-east of the mine; o 800 m from the road haulage route; and o 4.5 km north-east of the Ivanhoe Rail Facility. • Noise impacts from the mine would not increase during both construction and operation. • Additional operational equipment at the Ivanhoe Rail Facility would increase noise impacts by 3 dBA, however this would not materially impact noise levels at surrounding receivers. The *Industrial Noise Policy* noise criteria are expected to be met. • Increased road haulage would increase noise emissions over the daytime and night-time periods by 1.6 dBA, nevertheless the project is predicted to continue to comply with noise criteria under the *Road Noise Policy* at the nearest receiver. • The rail noise impacts assessed against the *Rail Infrastructure Noise Guideline* criteria	• No changes to existing conditions of consent required.

Issue	Findings	Recommended Condition
	would not change as a result of the modification. • The site's existing Noise Management Plan would continue to address noise impacts. • The EPA is satisfied that the existing conditions of consent were appropriate for managing potential noise impacts.	
Biodiversity	• There are no proposed changes to the disturbance area at the mine site • Proposed changes to the Ivanhoe Rail Facility would require 10 hectares (ha) of new surface development area at the Ivanhoe Rail Facility to be cleared, however overall there would be a net reduction in surface development area of 14 ha and a net reduction in native vegetation clearance of 12 ha (ie from 40 ha to 28 ha). • The vegetation communities affected by the new surface development are the same and are of the same condition as those assessed in the original project. • The Department, including the BCD considers that the proposed modification would not increase impacts to biodiversity values. • No changes to biodiversity offsets are required.	• Update the Biodiversity Management Plan to reflect the vegetation clearance areas resulting from the proposed modification.
Aboriginal heritage	• The proposal would disturb five newly identified Aboriginal cultural heritage sites (all stone artefacts) in the modified Ivanhoe Rail Facility surface development area, which have moderate cultural significance and low scientific significance. • Tronox consulted with 11 Registered Aboriginal Parties (RAPs) in accordance with the *Aboriginal cultural heritage consultation requirements for proponents* (2010). • The artefacts would be collected prior to disturbance, moved to an approved keeping place and ultimately reinstated in rehabilitation areas.	• Update the Heritage Management Plan, in consultation with relevant Aboriginal stakeholders.
Visual	• The proposed telecommunications tower at the mine would be up to 55 m high, with visual impacts considered to be negligible to sensitive receptors as: o the nearest privately-owned residence is 14 km from the mine; o Mungo National Park is more than 5 km from the mine; and o key viewpoints at the Willandra Lakes Region World Heritage Area are more than 10 km from the mine.	• No changes to existing conditions of consent required.

Issue	Findings	Recommended Condition
Groundwater and surface water	• Tronox proposes to extract approximately 60 megalitres (ML) per year from a new groundwater supply bore at the Ivanhoe Rail Facility. • There are 10 existing groundwater bores within 10 km of the Ivanhoe Rail Facility. Six of these a used for stock watering and one for monitoring. The closest bore is 2 km south-east of the Ivanhoe Rail Facility. • The quality of the groundwater in the area is poor, with a very high salinity of approximately 10,000 milligrams per litre (mg/L). • Tronox has sufficient water entitlements for the proposed bore from the *Lower Lachlan Alluvium Groundwater Source 2003* and meets the relevant requirements and rules of this Water Sharing Plan, as it is licensed to extract 100 units (or ML). • The maximum predicted drawdown is 2 cm at 100 m from the bore. The impacts at the nearest private bore would therefore be negligible. • Surface water disturbances can be managed in accordance with existing procedures identified in the Surface Water Management Plan.	• Update the site's Groundwater Management Plan to include quarterly water level and quality monitoring and the groundwater supply bore and nearby bores (subject to land access agreements being finalised). • Update the site's Surface Water Management Plan to incorporate the modified Ivanhoe Rail Facility surface development area.
Rehabilitation	• The proposed modification would not increase or change rehabilitation requirements at the site. • The increase in MSP waste required for disposal can be managed within existing rehabilitation requirements. • Tronox would be required to update the Rehabilitation Cost Estimate to reflect the proposed changes at the mine site.	• Update the site's Rehabilitation Management Plan (or Mining Operations Plan) to reflect the proposed infrastructure changes to the Atlas-Campaspe mine.
Climate change	• Increased mineral concentrate trucking is expected to increase annual greenhouse gas emissions associated with the project. • However, as the total mineral concentrates produced during the life of the mine would not significantly change, the greenhouse gas emissions over the life of the mine are not expected to change substantially.	• No changes to existing conditions of consent required.
Waste	• Process waste from the MSP would be transported in sealed storage containers by rail to the Ivanhoe Rail Facility and by road from the Ivanhoe Rail Facility to the Atlas-Campaspe Mine for unloading, stockpiling and placement behind the advancing or extraction areas.	• No changes to existing conditions of consent required

Issue	Findings	Recommended Condition
	• There are no significant incremental impacts associated with increasing the rate of process waste receival from 50,000 tonnes per annum to 65,000 tonnes per annum.	
Social and economic	• The modified project is expected to result in similar economic benefits to those approved in the original assessment. • The proposed light vehicle access route would reduce driving distances for workers and is therefore expected to create road safety benefits. • The communications tower would improve mobile coverage for the community surrounding the mine site.	• No changes to existing conditions of consent required
Boundary marking methodology	• The proposed "site-based 'Disturbance Permit' system" may be an appropriate means for Tronox to ensure it only clears vegetation that is approved to be cleared. • However, it does not provide the Department with sufficient information to undertake its compliance functions with respect to regulating the development limits of the site. • As the site is very large, the Department can provide some flexibility to stage the survey plan and marking of extraction boundaries, in line with the progress of the mine path. • The Department can provide flexibility in using unregistered surveyors to prepare a survey plan of the site, as this is consistent with the Department's standard conditions of consent. This is also considered reasonable given the remoteness of the site and the relative simplicity of the task.	• Remove the requirement for the survey plan to be prepared by a registered surveyor. • Allow the survey plan and boundary marking to be undertaken in stages commensurate with the progress of the mine path.

6. Evaluation

The Department has assessed the modification application and supporting information in accordance with the relevant requirement of the EP&A Act, and in consultation with local councils and relevant Government agencies.

The proposed modification would provide several benefits for Tronox and/or its workforce including:

- the efficiency and productivity of the mine would increase as a result of increasing mineral concentrate production, without increasing the ore extraction rate;
- light vehicle access to the site using local roads would reduce travel time and improve road safety for the workforce; and
- the telecommunications tower would provide mobile phone coverage for the workers and the surrounding community.

Potential environmental benefits of the modification include:

- the change to site infrastructure and the access road at the Ivanhoe Rail Facility would reduce biodiversity impacts;
- the groundwater bore would reduce air quality impacts at the Ivanhoe Rail Facility, and reduce water trucking and dependence on potable water;
- the option for a solar farm would reduce dependence on diesel use and resultant emissions; and
- the option to use an overland conveyor to transfer overburden would reduce haulage trucking and reduce associated air quality, noise and greenhouse gas impacts.

The Department considers the potential air quality, noise, Aboriginal heritage, visual, groundwater and climate change impacts associated with the proposed modification are negligible or reduced compared to the approved project, and able to be managed under existing or updated management plans. Tronox would review and update existing management plans to manage impacts from the proposed modification.

The Department has recommended conditions that include:

- increasing the amount of mineral concentrate that may be transported in any calendar year from 450,000 tpa to 665,000 tpa;
- increasing the number of mineral concentrate haulage vehicle trips from 24 to 35 vehicles per day;
- allowing light vehicles to use the proposed light vehicle access routes to access the site;
- ensuring that the necessary road upgrades are undertaken, and paid for by Tronox, prior to allowing light vehicles to use the light vehicle access route;
- ensuring that Tronox pays Balranald Shire Council a proportion of road maintenance costs along the light vehicle access route; and
- several administrative changes to the consent.

Based on its assessment, the Department considers that the proposed modification has merit, and is in the public interest and therefore should be approved, subject to the stringent conditions of consent outlined in the recommended Notice of Modification in **Appendix E** and the consolidated development consent in **Appendix D**.

7. Recommendation

It is recommended that the Director – Resource Assessments, as delegate of the Minister for Planning and Public Spaces:

- **considers** the findings and recommendations of this report;
- **determines** that the application SSD 5012 MOD 1 falls within the scope of section 4.55(2) of the EP&A Act;
- **accepts and adopts** all of the findings and recommendations in this report as the reasons for making the decision to grant consent to the application;
- **agrees** with the key reasons for approval listed in the draft notice of decision;
- **modifies** the consent SSD 5012; and
- **signs** the attached approval of the modification (Attachment E).

Recommended by:

17/12/2019

Andrew Rode
Senior Environmental Assessment Officer
Resource Assessments Branch

8. Determination

The recommendation is: **Adopted** / **Not adopted** by:

17/12/19

Steve O'Donoghue
Director – Resource Assessments
Energy and Resource Assessments Division
as delegate of the Minister for Planning and Public Spaces

9. Appendices

Appendix A – Modification Report

Appendix B – Submissions

Appendix C – Submissions Report

Appendix D – Consolidated Consent

Appendix E – Notice of Modification

Appendices A-E – refer to the Department's Major Project's website at:

https://www.planningportal.nsw.gov.au/major-projects/project/13586