



Murray-Darling Basin Operations Short-Term Ore Transport and Processing Modifications

Modification Report

April 2022

MURRAY-DARLING BASIN OPERATIONS
SHORT-TERM ORE TRANSPORT AND PROCESSING MODIFICATIONS

MODIFICATION REPORT



APRIL 2022
Project No. TNX-22-05
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EXECUTIVE SUMMARY

ES.1 INTRODUCTION

Tronox Mining Australia Limited (Tronox) is the proponent of the following mineral sands mining and processing operations located in the Murray-Darling Basin, in far west New South Wales (NSW):

- Broken Hill Mineral Separation Plant – approved under Part 4 of the NSW *Environmental Planning & Assessment Act 1979* (EP&A Act) in 2002 (Development Consent [DA 345-11-01]);
- Atlas-Campaspe Mineral Sands Project (Atlas-Campaspe Project) – approved under Part 4 of the EP&A Act in 2014 (Development Consent [SSD _5012]);
- Snapper Mineral Sands Mine (Snapper Mine) – approved under Part 3A of the EP&A Act in 2007 (Project Approval [06_0168]); and
- Ginkgo Mineral Sands Mine – approved under Part 4 of the EP&A Act in 2002 (Development Consent [DA 251-09-01]).

These mineral sands mining and processing operations are referred to as the Murray-Darling Basin Operations (MDBO).

This Modification Report has been prepared to support applications to modify all four of the MDBO approvals under section 4.55(1A) of the EP&A Act.

ES.2 OVERVIEW OF THE MODIFICATION

Construction of the Atlas-Campaspe Project commenced in 2018 and operations were planned to commence in April 2022 to coincide with the winding down of production at the Snapper Mine.

The commencement of production at the Atlas-Campaspe Project is however expected to be delayed by approximately six months due to a delay in the delivery of key components of the approved mineral processing infrastructure due to COVID-19 related supply chain issues.

Tronox is seeking approval for changes to the MDBO to allow for the short-term transport of ore (rather than mineral concentrate) from the Atlas-Campaspe Project to the other MDBO sites for processing (the Modifications) to avoid delay to the commencement of Atlas-Campaspe Project production and therefore minimise production shortfalls for Tronox in 2022.

The MDBO (as modified) would continue to comply with existing production and transport limits described in MDBO approvals.

Tronox considers that the MDBO incorporating the Modifications would be substantially the same MDBO.

ES.3 ENGAGEMENT

Tronox has consulted with relevant NSW Government agencies, the Balranald Shire Council, Central Darling Shire Council, Broken Hill City Council and Wentworth Shire Council during the preparation of this Modification Report.

ES.4 ASSESSMENT OF IMPACTS

Tronox would operate the MDBO incorporating the Modifications in accordance with the current environmental management plans and environmental monitoring programs, incorporating any necessary revisions.

Tronox has undertaken a review of the potential environmental impacts of the Modifications to identify key potential environmental issues requiring assessment.

Based on the outcomes of the environmental review, the Modifications would result in no or negligible change to previously assessed and approved impacts and, therefore, would involve minimal environmental impact.

ES.5 JUSTIFICATION FOR THE MODIFICATIONS

The proposed Modifications would have the following benefits:

- allow Atlas-Campaspe Project production to commence before the delivery of the approved mineral processing infrastructure and therefore minimise subsequent production shortfalls for Tronox in 2022 and bring forward benefits to the local and NSW economies in the form of employment;
- utilise existing/approved infrastructure at the MDBO without the need for additional infrastructure; and
- remain within existing production and transport limits described in MDBO approvals.

As such, the approval of the Modifications is considered to be justified.

In weighing up the main environmental impacts (costs and benefits) associated with the proposal as assessed and described in this Modification Report, the Modifications are, on balance, considered to be in the public interest of the State of NSW.

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1 INTRODUCTION

Tronox Mining Australia Limited (Tronox) is the proponent of the following mineral sands mining and processing operations located in the Murray-Darling Basin, in far west New South Wales (NSW) (Figure 1):

- Broken Hill Mineral Separation Plant (MSP) – approved under Part 4 of the NSW *Environmental Planning & Assessment Act 1979* (EP&A Act) in 2002 (Development Consent [DA 345-11-01]);
- Atlas-Campaspe Mineral Sands Project (Atlas-Campaspe Project) – approved under Part 4 of the EP&A Act in 2014 (Development Consent [SSD _5012]);
- Snapper Mineral Sands Mine (Snapper Mine) – approved under Part 3A of the EP&A Act in 2007 (Project Approval [06_0168]); and
- Ginkgo Mineral Sands Mine (Ginkgo Mine) – approved under Part 4 of the EP&A Act in 2002 (Development Consent [DA 251-09-01]).

These mineral sands mining and processing operations are referred to as the Murray-Darling Basin Operations (MDBO).

This Modification Report has been prepared to support applications to modify all four of the MDBO approvals.

1.1 APPLICANT'S DETAILS

The Applicant for the Modifications is:

Tronox Mining Australia Limited
Lot 962 Koombana Drive
BUNBURY WA 6230

1.2 APPROVED MURRAY-DARLING BASIN OPERATIONS

1.2.1 Broken Hill Mineral Separation Plant

The MSP is approved to process up to approximately 1,200,000 tonnes per annum (tpa) of mineral concentrate from the Atlas-Campaspe Project and the Snapper and Ginkgo Mines, including:

- up to 665,000 tpa from the Atlas-Campaspe Project (transported to the MSP by rail); and
- up to 975,000 tpa from the Ginkgo and Snapper Mines (transported to the MSP by road).

The existing/approved MSP uses gravity, electrostatic and magnetic separation methods to produce mineral and construction sand products.

MSP process waste is approved to be transported via the haulage routes to the Snapper Mine, Ginkgo Mine and Atlas-Campaspe Project (Figure 1) for disposal.

1.2.2 Atlas-Campaspe Mineral Sands Project

The Atlas-Campaspe Project includes the development of a mineral sands mining operation (herein referred to as the Atlas-Campaspe Mine), together with the construction and operation of a rail loadout facility located near the township of Ivanhoe (herein referred to as the Ivanhoe Rail Facility).

The Atlas-Campaspe Mine is approved to use dry mining methods to extract up to 7.2 million tonnes per annum (Mtpa) of mineral sands ore from the Atlas and Campaspe deposits. The ore is then processed on-site to produce up to 546,000 tpa of mineral concentrate.

Up to 665,000 tpa of mineral concentrate generated at the Atlas-Campaspe Mine is approved to be transported via road to the Ivanhoe Rail Facility for unloading, stockpiling and subsequent loading to trains for rail transportation to the MSP.

MSP process wastes generated as a result of processing Atlas-Campaspe Project mineral concentrate at the MSP will be backloaded to the Snapper and/or Ginkgo Mines until operations at these existing mines cease. At that time, the MSP process waste will be railed to the Ivanhoe Rail Facility for subsequent road transport to the Atlas-Campaspe Mine for placement behind the advancing ore extraction areas.

1.2.3 Snapper and Ginkgo Mineral Sands Mines

The Snapper and Ginkgo Mines are approved to use a combination of dredge and dry mining techniques to extract up to 14 Mtpa and 19.9 Mtpa of minerals sands ore, respectively.

Up to 975,000 tpa of mineral concentrate generated as a result of mining and initial processing operations at the Snapper and Ginkgo Mines is approved to be transported via the haulage route to the MSP for processing (Figure 1).

Both mines are also approved to receive MSP process waste for placement behind the advancing ore extraction areas.



* MSP Process Waste Transport Route following cessation of operations at the Ginkgo and Snapper Mines.

Figure 1

1.3 OVERVIEW OF THE MODIFICATIONS

1.3.1 Background

Tronox has been operating the Ginkgo Mine and MSP since 2005 and the Snapper Mine since 2009. Production at the Snapper and Ginkgo Mines is planned to cease in 2022 and 2025, respectively.

Construction of the Atlas-Campaspe Project commenced in 2018 and operations (including the transport of mineral concentrate to the MSP) were planned to commence in April 2022 to coincide with the winding down of production at the Snapper Mine.

The commencement of production at the Atlas-Campaspe Project is however expected to be delayed by approximately six months due to a delay in the delivery of key components of the approved mineral processing infrastructure due to COVID-19 related supply chain issues. This production commencement delay would result in production shortfalls for Tronox in 2022.

1.3.2 Requirement for the Modifications

Tronox is seeking approval for changes to the MDBO to allow for the short-term transport of ore (rather than mineral concentrate) from the Atlas-Campaspe Project to the other MDBO sites for processing.

The Modifications would avoid delay to the commencement of production at the Atlas-Campaspe Project and therefore minimise subsequent production shortfalls for Tronox in 2022.

1.3.3 Consideration of Alternative Options

The only alternative to the Modifications would be to delay the commencement of production at the Atlas-Campaspe Project by approximately six months.

The Modifications were selected as the preferred option on the basis that they would:

- allow Atlas-Campaspe Project production to commence before the delivery of the approved mineral processing infrastructure and therefore minimise subsequent production shortfalls for Tronox in 2022;
- allow Atlas-Campaspe Project production to commence earlier which would bring forward benefits to the local and NSW economies in the form of employment opportunities;

- utilise existing/approved infrastructure at the MDBO without the need for additional infrastructure; and
- remain within existing production and transport limits described in MDBO approvals.

1.4 STRUCTURE OF THE DOCUMENT

This Modification Report has been prepared in consideration of the *State Significant Development Guidelines* (NSW Department of Planning, Industry and Environment [DPIE], 2021a), in particular Appendix E – *Preparing a Modification Report* (DPIE, 2021b), and is structured as follows:

Section 1	Provides an overview of the existing/approved MDBO and an overview of the Modifications.
Section 2	Provides an overview of the strategic context for the Modifications.
Section 3	Provides a description of the Modifications.
Section 4	Describes the statutory context of the Modifications.
Section 5	Provides a summary of the engagement undertaken for the Modifications and key issues raised.
Section 6	Provides an assessment of the potential environmental impacts of the Modifications.
Section 7	Evaluates the merits of the Modifications, and provides justification for approval of the Modifications.
Section 8	Lists the references cited in Sections 1 to 7.
Attachment 1	Statutory Compliance Reconciliation Tables

2 STRATEGIC CONTEXT

2.1 REGIONAL CONTEXT

The MDBO are located in the far west region of NSW, which comprises the local government areas (LGAs) of Balranald, Brewarrina, Bourke, Broken Hill, Central Darling, Cobar, Walgett, Wentworth and the Unincorporated Area (NSW Government, 2017).

The far west regional economy is centred around mining and agriculture which contribute approximately 40 percent (%) of the region's gross regional product (NSW Government, 2017).

Broken Hill is a "strategic centre" that services other parts of the far west region (NSW Government, 2017).

The MSP is located on the south-western outskirts of Broken Hill (Figure 1) in an industrial area. Surrounding land uses include industrial facilities (generally mining support-related), mining, solar power generation and rail infrastructure.

The Atlas-Campaspe Mine is located 80 kilometres (km) north of Balranald and approximately 270 km to the south-east from Broken Hill (Figure 1).

The Snapper and Gingko Mines are located approximately 85 km north-east of Wentworth and approximately 170 km south-east of Broken Hill (Figure 1).

Land use in the vicinity of the mine sites reflects the dominant industries of the far west region and comprises pastoral leasehold lands that are used for light intensity grazing and mineral sands mining. The areas around the mine sites are sparsely populated, with the closest sensitive receivers located significant distances from the mine sites.

Tronox is a significant employer and engages a range of local contractors at its operations in the far west region.

2.2 PROJECT CONTEXT

The Atlas-Campaspe Project was approved under Part 4 of the EP&A Act in 2014 (Development Consent [SSD_5012]).

Construction of the Atlas-Campaspe Project commenced in 2018 and operations (including the transport of mineral concentrate to the MSP) were planned to commence in April 2022 to coincide with the winding down of production at the Snapper Mine.

The commencement of production at the Atlas-Campaspe Project is however expected to be delayed by approximately six months due to a delay in the delivery of key components of the approved mineral processing infrastructure due to COVID-19 related supply chain issues. This production commencement delay would result in production shortfalls for Tronox in 2022.

To avoid delay to the commencement of production at the Atlas-Campaspe Project and therefore minimise subsequent production shortfalls for Tronox in 2022, Tronox is seeking approval for changes to the MDBO to allow for the short-term transport of ore (rather than mineral concentrate) from the Atlas-Campaspe Project to the other MDBO sites for processing.

The Modifications would utilise existing/approved infrastructure at the MDBO without the need for additional infrastructure and remain within existing production and transport limits described in MDBO approvals.

2.3 RELEVANT STRATEGIC PLANNING DOCUMENTS

The *Far West Regional Plan 2036* (NSW Government, 2017) (the Regional Plan) applies to the Balranald, Broken Hill, Central Darling and Wentworth LGAs and is therefore relevant to the Modifications.

The Regional Plan recognises the significance of mineral resource development and includes the sustainable management of mineral resource development in the overall vision for the region.

The modified MDBO would be consistent with the overall vision in the Regional Plan to provide for the continuation of mineral resource development that incorporates a range of strategies to manage and minimise potential impacts on the surrounding environment (Section 6).

3 DESCRIPTION OF THE MODIFICATIONS

3.1 OVERVIEW

The Modifications would not require a significant alteration to the existing/approved MDBO (Table 1). A description of the Modifications is provided below.

The Modifications would involve the following short-term changes to the existing/approved MDBO:

- Ore would bypass mineral processing at the Atlas-Campaspe Mine and the ore (rather than mineral concentrate) would be transported from the Atlas-Campaspe Project to the MSP via the approved haulage route at the approved transport rate (i.e. no additional haulage vehicle movements on the approved haulage route would be required).
- At the MSP, the Atlas-Campaspe Mine ore would be unloaded from the trains using the approved methods onto existing stockpile areas before being loaded onto empty mineral concentrate haulage vehicles for transport via the approved haulage route to the Snapper and/or Ginkgo Mines (i.e. no additional haulage vehicle movements on the approved haulage route would be required).
- At the Snapper and/or Ginkgo Mines, the Atlas-Campaspe Project ore would be unloaded for processing in the primary concentrator to produce mineral concentrate and the waste (coarse reject and sand residues) would be disposed of in the mine path at the Snapper and/or Ginkgo Mines.
- The Atlas-Campaspe Project mineral concentrate would be transported to the MSP via the approved haulage route at the approved transport rate (i.e. no additional haulage vehicle movements on the approved haulage route would be required).
- At the MSP, the Atlas-Campaspe Project mineral concentrate would be processed consistent with the existing/approved MSP operations.

The MDBO (as modified) would remain within existing production and transport limits described in MDBO approvals.

Once the approved mineral processing infrastructure at the Atlas-Campaspe Mine has been commissioned (i.e. mineral concentrate is being produced), the MDBO would revert back to the currently approved operations.

In the event that the mineral processing infrastructure at the Atlas-Campaspe Mine is not available for a sustained period (e.g. significant breakdown), Tronox may however adopt the operations proposed in the Modifications on a short-term basis in the future, subject to consultation with the NSW Department of Planning and Environment (DPE).

A comparative summary of the existing/approved MDBO operations and proposed Modifications for the MDBO is provided in Table 1.

Based on a review of the proposed changes, Tronox considers that the MDBO incorporating the Modifications would be substantially the same MDBO (Section 4.1.1).

The following sub-sections provide a detailed description of the Modifications.

3.2 ATLAS-CAMPASPE PROJECT

3.2.1 Atlas-Campaspe Mine

Mineral Processing

Processing of ore is approved to occur at the Atlas-Campaspe Mine up to 24 hours per day, seven days per week.

Primary separation is approved to occur in the primary gravity concentration unit before further processing at the heavy mineral concentrate (HMC) treatment facility (Figure 2).

The mineral concentrate from the HMC treatment facility circuit is approved to be stockpiled in the mineral concentrate stockpile areas by product stackers before they are loaded onto haulage vehicles for transport to the Ivanhoe Rail Facility.

The Modifications would involve the ore bypassing mineral processing and the ore (rather than mineral concentrate) would be transported via the approved haulage route to the Ivanhoe Rail Facility (Figure 2) on a short-term basis until the approved mineral processing infrastructure is available for use.

Approximately 1.2 Mtpa of ore is expected to be mined in the first year of mining operations at the Atlas-Campaspe Mine (Cristal Mining Australia, 2013) or approximately 600,000 tpa over the six months when mineral processing would be bypassed.

Once the approved mineral processing infrastructure is available for use, the ore would be processed consistent with approved mineral processing activities.

Table 1
Summary of Key Potential Environmental Issues/Impacts
Comparison of the Previously Approved, Existing/Approved and Modified MDBO

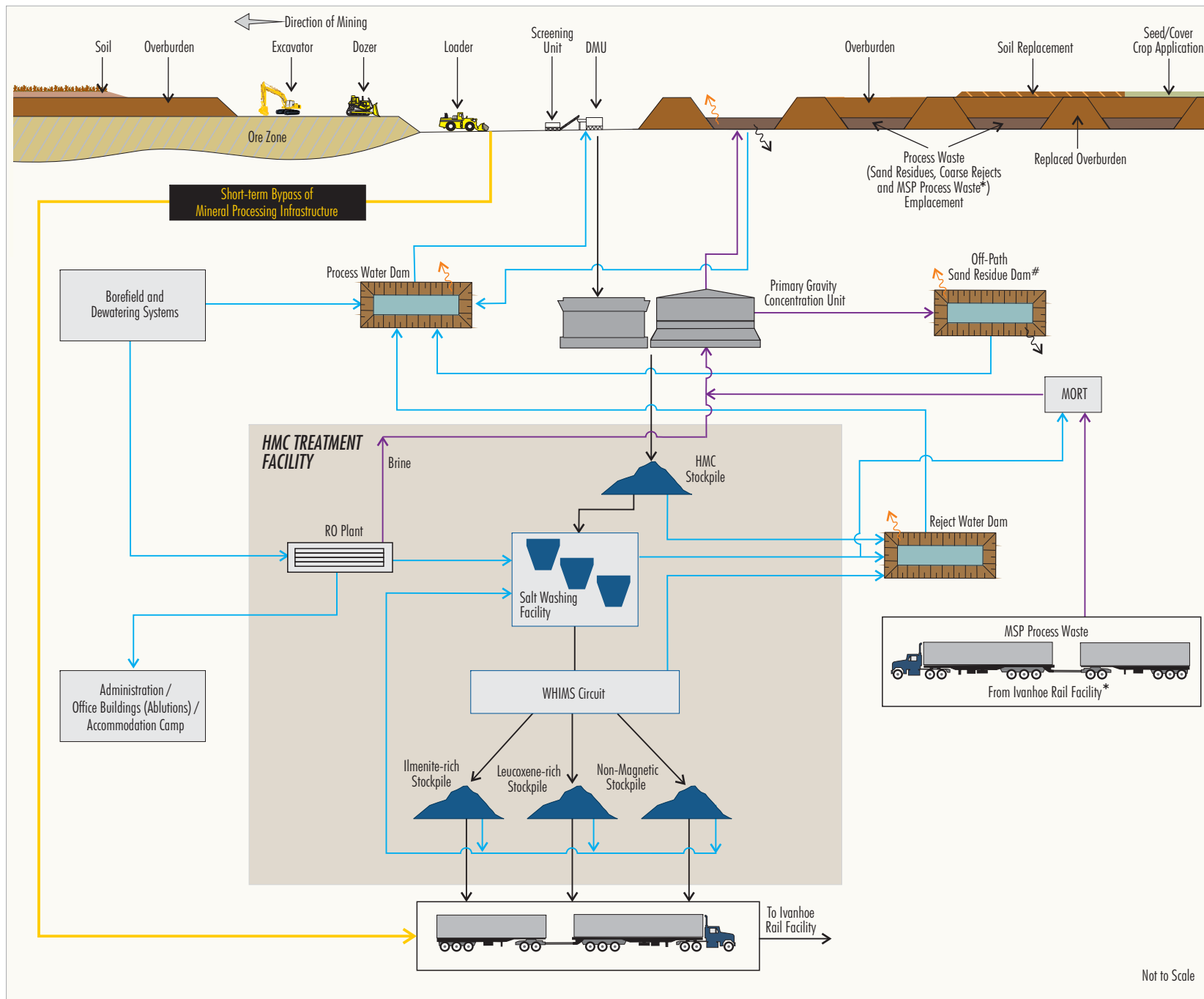
Project Component	Existing/Approved MDBO ^{1, 2, 3, 4}	Modified MDBO
Atlas-Campaspe Project		
Mineral Concentration	<ul style="list-style-type: none"> Mineral concentrate production up to 546,000 tpa of mineral concentrate. 	<ul style="list-style-type: none"> Mineral processing would be bypassed on a short-term basis.
Product Transport	<ul style="list-style-type: none"> Mineral concentrate transport up to 665,000 tpa. Up to 35 haulage vehicle trips per day. 	<ul style="list-style-type: none"> Ore (instead of mineral concentrate) would be transported at the approved transport rate using the approved vehicles and haulage route on a short-term basis.
Other Project Components	<ul style="list-style-type: none"> As described in documents listed in the Definitions section of Development Consent (SSD_5012). 	<ul style="list-style-type: none"> No Change.
Broken Hill Mineral Separation Plant		
Mineral Concentrate and Ore Transport	<ul style="list-style-type: none"> Receipt of up to 665,000 tpa of mineral concentrate from the Atlas-Campaspe Project. Receipt of up to 975,000 tpa of mineral concentrate from the Ginkgo and Snapper Mines. 	<ul style="list-style-type: none"> Receipt of ore (instead of mineral concentrate) from the Atlas-Campaspe Project at the approved transport rate using the approved transport route on a short-term basis. Road transport of up to 665,000 tpa of Atlas-Campaspe Project ore in empty mineral concentrate haulage vehicles to the Snapper and/or Ginkgo Mines on a short-term basis. No change to mineral concentrate transport from the Snapper and Ginkgo Mines.
Other Project Components	<ul style="list-style-type: none"> As described in documents listed in Schedule 2 of Development Consent (DA 345-11-01). 	<ul style="list-style-type: none"> No Change.
Snapper Mineral Sands Mine		
Mineral Concentration	<ul style="list-style-type: none"> Mineral concentrate production up to 621,000 tpa. 	<ul style="list-style-type: none"> Atlas-Campaspe Project ore would be processed on a short-term basis. No change to the mineral concentration method or rate.
Other Project Components	<ul style="list-style-type: none"> As described in documents listed in the Definitions section of Project Approval (06_0168). 	<ul style="list-style-type: none"> No Change.
Ginkgo Mineral Sands Mine		
Mineral Concentration	<ul style="list-style-type: none"> Mineral concentrate production up to 576,000 tpa. 	<ul style="list-style-type: none"> Atlas-Campaspe Project ore would be processed on a short-term basis. No change to the mineral concentration method or rate.
Other Project Components	<ul style="list-style-type: none"> As described in documents listed in the Definitions section of Development Consent (SSD_5012). 	<ul style="list-style-type: none"> No Change.

¹ Development Consent (SSD_5012) (as modified).

² Development Consent (DA 345-11-01) (as modified).

³ Project Approval (06_0168) (as modified).

⁴ Development Consent (DA 251-09-01) (as modified).



- LEGEND**
- Approved Atlas-Campaspe Project
- Modified Atlas-Campaspe Project
- Short-term Bypass of Mineral Processing Infrastructure
- Infiltration
- Entrained Water Flow
- Water Flow
- Process Waste
- Evaporation
- * Following cessation of operations at the Ginkgo and Snapper Mines (approximately Year 12 of the Project).
- # Only used for deposition of sand residues at the commencement of mining at the Atlas and Campaspe Deposits (i.e. Years 2 & 5). No deposition of MSP Process Waste.
- DMU Dry Mining Unit
- HMC Heavy Mineral Concentrate
- RO Reverse Osmosis
- WHIMS Wet High Intensity Magnetic Separation
- MORT Monazite Return Tailings

Source: Cristal Mining (2012)

TRONOX

ORE TRANSPORTATION MODIFICATION

Approved and Modified
Atlas-Campaspe Project Process Flowsheet
and Water Management Schematic

Not to Scale

Rehabilitation and Final Landform

Sand residues and coarse rejects generated from the processing of ore at the Atlas-Campaspe Mine are approved to be placed in either off-path sand residue dams (during the initial development of the Atlas and Campaspe deposits) or in the active mining area or at the Atlas-Campaspe Mine (Figure 2).

As the Modifications would include the short-term bypassing of mineral processing, the amount of sand residues and coarse rejects generated at the Atlas-Campaspe Mine would reduce by up to approximately 280,000 tonnes (t) (or approximately 0.3% of the total amount of sand residues approved to be disposed of at the Atlas-Campaspe Mine).

As the short-term bypassing of mineral processing would occur during the initial development of the Atlas deposit, the sand residues and coarse rejects that would have been generated during this period would have been placed in an off-path sand residue dam. The Modification would therefore reduce the amount of sand residues and coarse rejects disposed of in an off-path sand residue dam by up to approximately 200,000 t.

3.2.2 Ore Road Transport

Haulage Route and Frequency

Mineral concentrate generated at the Atlas-Campaspe Mine is approved to be transported via the haulage route to the Ivanhoe Rail Facility (Figure 1) for unloading, stockpiling and subsequent loading to trains for rail transportation to the MSP.

Up to 665,000 tpa of mineral concentrate is approved to be transported from the Atlas-Campaspe Mine to the Ivanhoe Rail Facility.

Transport for NSW (TfNSW)-approved vehicles will be used to transport the mineral concentrate. Up to 35 haulage vehicle trips in any 24-hour period are approved.

The Modifications would not change the approved haulage route, haulage vehicle type or haulage vehicle frequency. The haulage vehicles would however transport ore rather than mineral concentrate on a short-term basis as a result of the Modifications.

Road Upgrades and Maintenance

Condition 1, Schedule 3 of Development Consent (SSD_5012) requires Tronox to implement haulage route upgrades to an acceptable standard for Type 1 road trains and to the satisfaction of the TfNSW, Balranald Shire Council (BSC) and Central Darling Shire Council (CDSC) prior to the haulage of mineral concentrate.

In addition, Tronox will make financial contributions to the BSC and CDSC to rectify the “high risk” road safety deficiencies along the Balranald-Ivanhoe Road component of the haulage route in accordance with Condition 5, Schedule 3 of Development Consent (SSD_5012).

Tronox will also make financial contributions to the BSC and CDSC for the maintenance of the haulage route in accordance with Conditions 4 and 5, Schedule 3 of Development Consent (SSD_5012).

The Modifications would not change the approved haulage route upgrades or the approved methodology for determining haulage route maintenance contributions.

3.2.3 Ivanhoe Rail Facility

Operations at the Ivanhoe Rail Facility are approved to be undertaken up to 24 hours per day, seven days per week.

A turn-around loop at Ivanhoe Rail Facility will enable the haulage vehicles to turn-around, unload and exit using the access road. Mineral concentrate emptied from the haulage vehicles will be stockpiled within the hardstand area.

A front-end loader will be used to reclaim mineral concentrate from the stockpile and load containers on the hardstand area. A forklift will be used to remove and replace container covers and to load the containers onto the train wagons.

A maximum of four trains per week (one in any 24-hour period) is approved.

The Modifications would not change the approved operations at the Ivanhoe Rail Facility except for ore rather mineral concentrate would be handled on a short-term basis.

3.3 BROKEN HILL MINERAL SEPARATION PLANT

3.3.1 Ore Handling

Mineral concentrate from the Atlas-Campaspe Project is approved to be transported to the MSP via rail (Figure 1).

Upon arrival of the train at the MSP rail spur (Figure 3), the mineral concentrate is approved to be transported to the mineral concentrate stockpiles by either mobile equipment (integrated tool carrier/reach stacker/trucks) or a conveyor transfer system.

The Modifications would not change the approved train unloading operations at the MSP except for ore rather mineral concentrate would be unloaded on a short-term basis.

The ore would be stockpiled separately to the mineral concentrate stockpiles within the approved stockpile areas at the MSP (Figure 3). Up to 20,000 t of ore can be stored in the existing stockpile area.

An existing front-end loader would be used to reclaim the ore from the stockpiles for loading onto the haulage vehicles for transport to the Snapper and/or Ginkgo Mines (Section 3.3.2).

3.3.2 Ore Road Transport

Mineral concentrate is currently transported from the Snapper and Ginkgo Mines via the haulage route to the MSP (Figure 1) (Section 3.4.2).

MSP process waste generated at the MSP is approved to be loaded onto the empty mineral concentrate haulage vehicles at the MSP for transport to the Snapper and/or Ginkgo Mines for disposal.

The Modifications would include loading the stockpiled Atlas-Campaspe Project ore onto empty mineral concentrate haulage vehicles for transport to the Snapper and/or Ginkgo Mines for initial processing on a short-term basis (Section 3.4.1).

No additional haulage vehicle movements would be required as the Atlas-Campaspe Project ore would be transported in empty mineral concentrate haulage vehicles returning to the Snapper and/or Ginkgo Mines (similar to the approved MSP process waste transport).

The Modifications would therefore not change the approved haulage route, haulage vehicle type or haulage vehicle frequency.

3.3.3 Mineral Concentrate Processing

The MSP is approved to process up to approximately 1,200,000 tpa of mineral concentrate from the Atlas-Campaspe Project and Snapper and Ginkgo Mines.

Atlas-Campaspe Project mineral concentrate generated at the Snapper and/or Ginkgo Mines (Section 3.4.1) would be processed consistent with the approved MSP operations.

3.4 SNAPPER AND GINKGO MINES

3.4.1 Processing of Atlas-Campaspe Project Ore

Atlas-Campaspe Project ore would be transported from the MSP to the Snapper and/or Ginkgo Mines for initial processing on a short-term basis (Section 3.3.2).

At the Snapper and/or Ginkgo Mines, the Atlas-Campaspe Project ore would be unloaded from the haulage vehicles for initial processing in the primary concentrator to produce mineral concentrate.

The Modifications would not change the existing/approved processing methods or rates.

The Atlas-Campaspe Project mineral concentrate would be stored in existing mineral concentrate stockpiles before being loaded onto haulage vehicles for transport to the MSP (Section 3.4.2) for further processing (Section 3.3.3).

3.4.2 Mineral Concentrate Road Transport

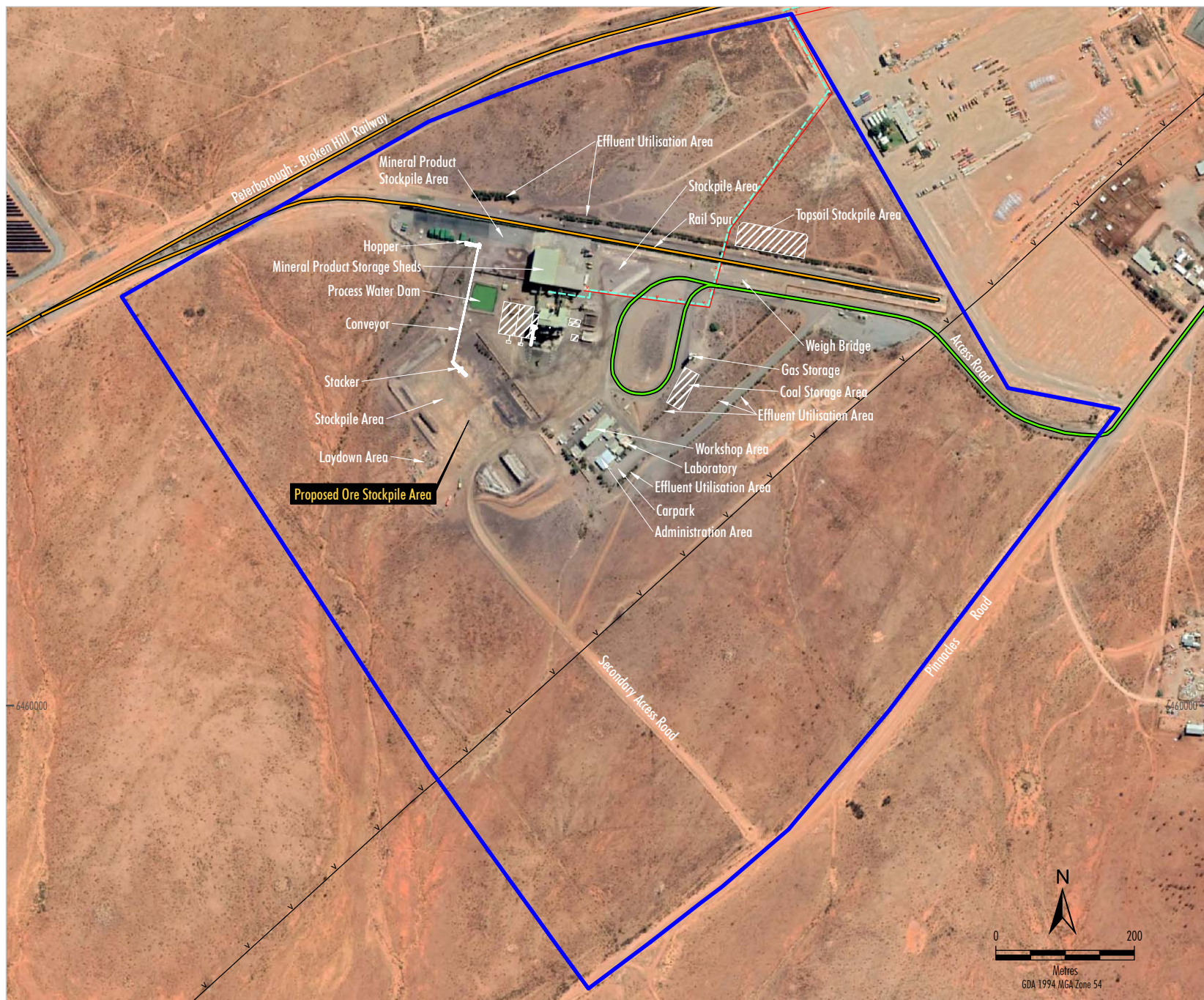
Haulage Route and Frequency

Up to 975,000 tpa of mineral concentrate is approved to be transported from the Snapper and Ginkgo Mines via the haulage route to the MSP for processing (Figure 1).

TfNSW-approved vehicles are approved to transport the mineral concentrate. Up to 37 haulage vehicle trips in any 24-hour period are approved.

The Atlas-Campaspe Project mineral concentrate would be transported from the Snapper and/or Ginkgo Mines to the MSP via the approved haulage route on a short-term basis.

The combined Atlas-Campaspe Project, Snapper Mine and Ginkgo Mine mineral concentrate production would remain within the approved transport limit (i.e. 975,000 tpa).



- LEGEND**
- MSP Property Boundary
 - MSP Component (Not Constructed)
 - Water Supply Pipeline
 - Electricity Transmission Line
 - High Voltage Powerline
 - Snapper and Ginkgo Mines Haulage Route
 - Atlas-Campaspe Project Haulage Route*

* MSP Process Waste Transport Route following cessation of operations at the Ginkgo and Snapper Mines.

Source: NSW Spatial Services (2020)
Orthophoto: Google Earth (2020)


TRONOX 
ORE TRANSPORT MODIFICATION
Existing/Approved MSP
General Arrangement

Figure 3

The Modifications would therefore not change the approved haulage route, haulage vehicle type or haulage vehicle frequency.

Road Maintenance

Condition 4, Schedule 3 of Development Consent (DA 251-09-01) requires Tronox to maintain the sections of the haulage route on public roads between the Silver City Highway and the Snapper and Ginkgo Mines (including for the intersection of the haulage route and the Silver City Highway) to the satisfaction of the relevant road authority.

The Modifications would not change the approved haulage route maintenance contributions.

3.4.3 Rehabilitation and Final Landform

The waste (coarse reject and sand residues) generated from the processing of the Atlas-Campaspe Project ore at the Snapper and/or Ginkgo Mines would be disposed of at the Snapper and/or Ginkgo Mines on a short-term basis.

Sand residues and coarse rejects are approved to be placed in either the active mining area (behind the advancing ore extraction area) or in sand residue dams at the Snapper and Ginkgo Mines. Sand residues and coarse rejects are currently placed in the active mining areas at the Snapper and Ginkgo Mines.

As the Modifications would include the short-term processing of Atlas-Campaspe Project ore at the Snapper and/or Ginkgo Mines, the amount of sand residues and coarse rejects disposed of at the Snapper and/or Ginkgo Mines would increase by up to approximately 280,000 t (or approximately 0.1% of the total amount of sand residues approved to be disposed of at the Snapper and Ginkgo Mines). This increase in sand residues and coarse reject production would result in a minor reduction in the size of the approved final depressions at the Snapper and/or Ginkgo Mines.

3.5 APPROVAL CONDITIONS TO BE MODIFIED

It is not anticipated that any specific conditions of the MDBO approvals would require modification as a result of the Modifications.

3.6 MODIFICATION CATEGORY

Section 4.1.1 includes a discussion of the proposed approval pathway for the Modifications including consideration of “substantially the same” and “minimal environmental impact”.

4 STATUTORY CONTEXT

This section outlines the statutory requirements relevant to the assessment of the Modifications.

In accordance with the guideline *Preparing a Modification Report* (DPIE, 2021b), Attachment 1 provides statutory compliance tables for the MDBO incorporating the Modifications that identifies all the relevant statutory requirements and the relevant sections in this Modification Report that address these requirements.

4.1 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

The EP&A Act and *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation) set the framework for planning and environmental assessment in NSW.

4.1.1 Applicability of section 4.55(1A) of the Environmental Planning and Assessment Act 1979

Tronox holds the following EP&A Act approvals for the MDBO:

- MSP – approved under Part 4 of the EP&A Act in 2002 (Development Consent [DA 345-11-01]);
- Atlas-Campaspe Project – approved under Part 4 of the EP&A Act in 2014 (Development Consent [SSD _5012]);
- Snapper Mine – approved under Part 3A of the EP&A Act in 2007 (Project Approval [06_0168]); and
- Ginkgo Mine – approved under Part 4 of the EP&A Act in 2002 (Development Consent [DA 251-09-01]).

Section 4.55(1A) of the EP&A Act relevantly states:

4.55 Modifications of consents-generally

...

(1A) Modifications involving minimal environmental impact A consent authority may, on application being made by the applicant or any other person entitled to act on a consent granted by the consent authority and subject to and in accordance with the regulations, modify the consent if:

- (a) *it is satisfied that the proposed modification is of minimal environmental impact, and*

- (b) *it is satisfied that the development to which the consent as modified relates is substantially the same development as the development for which the consent was originally granted and before that consent as originally granted was modified (if at all), and*
- (c) *it has notified the application in accordance with—*
 - (i) *the regulations, if the regulations so require, or*
 - (ii) *a development control plan, if the consent authority is a council that has made a development control plan that requires the notification or advertising of applications for modification of a development consent, and*
- (d) *it has considered any submissions made concerning the proposed modification within any period prescribed by the regulations or provided by the development control plan, as the case may be.*

Subsections (1), (2) and (5) do not apply to such a modification.

Clause 3BA(6) of Schedule 2 of the *Environmental Planning and Assessment (Savings, Transitional and Other Provisions) Regulation 2017* relevantly states:

3BA Winding-up of transitional Part 3A modification provisions on cut-off date of 1 March 2018 and other provisions relating to modifications

...

- (6) *In the application of section 4.55 (1A) or (2) or 4.56 (1) of the Act to the following development, the consent authority need only be satisfied that the development to which the consent as modified relates is substantially the same development as the development authorised by the consent (as last modified under section 75W):*
 - (a) *development that was previously a transitional Part 3A project and whose approval was modified under section 75W, ...*

Substantially the Same Development

In accordance with clause 3BA(6) of Schedule 2 of the *Environmental Planning and Assessment (Savings, Transitional and Other Provisions) Regulation 2017*, the consent authority is required to satisfy itself that any consent as modified would remain substantially the same development as was last modified under section 75W of the EP&A Act, inclusive of consideration of the changes arising from previously approved modifications, rather than the originally approved project.

The most recent MDBO modifications approved under section 75W of the EP&A Act are as follows:

- MSP – Development Consent (DA 345-11-01) (Modification 5);
- Snapper Mine – Project Approval (06_0168) (Modification 6); and
- Ginkgo Mine – Development Consent (DA 251-09-01) (Modification 13).

As the Atlas-Campaspe Project was never modified under section 75W of the EP&A Act, the relevant basis of comparison is the originally approved Atlas-Campaspe Project.

The Atlas-Campaspe Project and the Snapper and Ginkgo Mines incorporating the Modifications would demonstrably remain large mineral sand mining projects that incorporate the key elements approved under Development Consent (SSD_5012), Project Approval (06_0168) (Modification 6) and Development Consent (DA 251-09-01) (Modification 13).

In addition, the MSP incorporating the Modifications would demonstrably remain a large mineral separation plant that incorporates the key elements approved under Development Consent (DA 345-11-01) (Modification 5).

Minimal Environmental Impact

A review of the potential environmental impacts associated with the Modifications has been undertaken and is outlined in Section 6.

Based on the outcomes of the environmental review, the Modifications would result in no or negligible change to previously assessed and approved impacts and, therefore, would involve minimal environmental impact.

4.1.2 Environmental Planning and Assessment Act 1979 Objects

Section 1.3 of the EP&A Act describes the objects of the EP&A Act. The Modifications are considered to be generally consistent with the objects of the EP&A Act, because they are Modifications that:

- incorporates operation of the MDBO in a manner that minimises environmental impacts through the continued implementation of environmental management measures (Section 6);
- incorporates benefits to the local and NSW economies in the form of employment opportunities (Section 6);

- involves the orderly and economic use of land as the Modifications would not require additional surface development areas; and
- is an application under section 4.55(1A) of the EP&A Act that would be determined by the NSW Government.

4.1.3 Evaluation under section 4.15(1) of the Environmental Planning and Assessment Act 1979

In evaluating the Modifications under section 4.15(1) of the EP&A Act, the consent authority is required to take into consideration a range of matters as they are of relevance to the subject of the application.

While this is a requirement of the consent authority, this Modification Report has been prepared to generally address the requirements of section 4.15(1) of the EP&A Act to assist the consent authority, as follows:

- Consideration of the requirements of relevant environmental planning instruments is provided in Section 4.3.
- Clause 2.10 of the *State Environmental Planning Policy (Planning Systems) 2021* states that development control plans do not apply to State Significant Developments.
- While no planning agreement or draft planning agreement has been developed for the MDBO to date, Tronox is required to make contributions to the BSC, CDSC, BHCC and WSC in accordance with the requirements of the relevant MDBO approvals.
- This Modification Report has been prepared in consideration of the prescribed matters in the EP&A Regulation.
- The predicted impacts of the Modifications, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality are provided in Section 6.
- The suitability of the proposed sites for the Modifications has been considered (i.e. the Modifications are wholly located within current MDBO Development Application Areas and the MDBO, as modified, would remain substantially the same MDBO).
- Consideration of whether, on evaluation, the Modifications is considered to be in the public interest is provided in Section 7.

4.2 OTHER NSW LEGISLATION

Other NSW legislation that may be applicable to the MDBO were described in the relevant MDBO environmental approval documentation (i.e. relevant Environmental Impact Statements and subsequent modifications).

Tronox would continue to obtain relevant licences or approvals required under this NSW legislation for the MDBO incorporating the Modifications.

4.2.1 Biodiversity Conservation Act 2016

The *Biodiversity Conservation Act 2016* (BC Act) provides the approach to be followed for conducting an assessment of a development's impacts on threatened species and ecological communities.

Under the *Biodiversity Conservation (Savings and Transitional) Regulation 2017*, a Biodiversity Development Assessment Report is not required to be submitted with a modification if the authority or person determining the application for modification (or determining the environmental assessment requirements for the application) is satisfied that the modification would not increase the impact on biodiversity values.

The Modifications would not increase the impact on biodiversity values, including threatened species and ecological communities, as they do not require additional surface development areas.

Nonetheless, biodiversity values requiring consideration in accordance with section 7.17(2)(c) of the BC Act and clause 1.4 of the *Biodiversity Conservation (Savings and Transitional) Regulation 2017* are addressed in Table 2.

Accordingly, with reference to section 7.17(2)(c) of the BC Act and the *Threatened Species Test of Significance Guidelines* (State of NSW and Office of Environment and Heritage, 2018), no Biodiversity Development Assessment Report is required for the Modifications as the Modifications would not increase impacts on biodiversity values.

4.3 ENVIRONMENTAL PLANNING INSTRUMENTS

Environmental planning instruments of relevance to the Modifications were described in relevant MDBO environmental approval documentation (i.e. relevant Environmental Impact Statements and subsequent modification documents).

Table 2
Biodiversity Values Consideration

Biodiversity Value	Modifications Consideration
(a) <i>threatened species abundance—being the occurrence and abundance of threatened species or threatened ecological communities, or their habitat, at a particular site,</i>	The Modifications would not change the approved surface disturbance footprint at the MDBO. Therefore, no additional impact on threatened species abundance would occur.
(b) <i>vegetation abundance—being the occurrence and abundance of vegetation at a particular site,</i>	The Modifications would not change the approved surface disturbance footprint at the MDBO. Therefore, no additional impact on vegetation abundance would occur.
(c) <i>habitat connectivity—being the degree to which a particular site connects different areas of habitat of threatened species to facilitate the movement of those species across their range,</i>	The Modifications would not change the approved surface disturbance footprint at the MDBO. Therefore, no additional impact on habitat connectivity would occur.
(d) <i>threatened species movement—being the degree to which a particular site contributes to the movement of threatened species to maintain their lifecycle,</i>	The Modifications would not change the approved surface disturbance footprint at the MDBO. Therefore, no additional impact on threatened species movement would occur.
(e) <i>flight path integrity—being the degree to which the flight paths of protected animals over a particular site are free from interference,</i>	The Modifications do not propose the construction of any new infrastructure at the MDBO beyond those already approved. Therefore, no additional impact on flight path integrity would occur.
(f) <i>water sustainability—being the degree to which water quality, water bodies and hydrological processes sustain threatened species and threatened ecological communities at a particular site.</i>	The Modifications would not result in any new or additional impacts to surface water or groundwater resources compared to the approved MDBO. Therefore, no additional impact on water sustainability would occur.

Detail on potential Modifications requirements under the key environmental planning instruments is included in the statutory compliance table provided in Attachment 1.

4.4 COMMONWEALTH LEGISLATION

4.4.1 Environment Protection and Biodiversity Conservation Act 1999

The objective of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is to provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance (MNES).

Proposals that are likely to have a significant impact on a MNES are defined as a controlled action under the EPBC Act. A proposal that is, or may be, a controlled action is required to be referred to the Commonwealth Department of Agriculture, Water and the Environment to determine whether the action is a controlled action.

Based on the minor nature of the Modifications, it was concluded that the Modifications would not have a significant impact on MNES for the following reasons:

- The Modifications would not have a significant impact on listed threatened species and ecological communities and/or migratory species.
- The Modifications would not have a significant impact on wetlands of international importance.
- The Modifications would not have a significant impact on world heritage properties or national heritage places (i.e. Willandra Lakes Regional World Heritage Area).
- The Modifications would not impact the Great Barrier Reef Marine Park and/or Commonwealth marine areas.
- The Modifications are not nuclear actions.
- The Modifications are not a coal mining or coal seam gas projects that could have an impact on a water resource.

4.4.2 National Greenhouse and Energy Reporting Act 2007

The Commonwealth *National Greenhouse and Energy Reporting Act 2007* introduced a single national reporting framework for the reporting and dissemination of corporations' greenhouse gas emissions and energy use.

The Modifications would not significantly change greenhouse gas emissions compared to the approved MDBO.

Tronox would account for the greenhouse gas emissions associated with the Modifications in its annual Commonwealth *National Greenhouse and Energy Reporting Act 2007* report.

5 ENGAGEMENT

Tronox has consulted with relevant NSW Government agencies and local councils during the preparation of this Modification Report in consideration of the *Undertaking Engagement Guidelines for State Significant Projects* (DPIE, 2021c). A summary of this consultation is provided below.

It is anticipated that consultation with relevant NSW Government agencies and local councils will continue during the assessment of the proposal by the NSW Government.

5.1 NSW GOVERNMENT AGENCIES

NSW Department of Planning and Environment

Tronox consulted with the DPE on 24 February 2022 to provide an overview of the Modifications, proposed approval pathways and the proposed scope of the environmental assessment.

Following the meeting, Tronox submitted a Scoping Letter to the DPE regarding the Modifications on 9 March 2022.

Other NSW Government Agencies

Tronox provided a briefing package that provided an overview of the Modifications, proposed approval pathways and the proposed scope of the environmental assessment to the following NSW Government agencies on 11 April 2022:

- TfNSW;
- NSW Environment Protection Authority;
- NSW Division of Mining, Exploration and Geoscience (MEG) within the Department of Regional NSW; and
- NSW Resources Regulator.

At the time of writing, none of these NSW Government agencies had requested any further information regarding the Modifications.

5.2 LOCAL COUNCILS

The MDBO are located across the Balranald LGA, Central Darling LGA, Broken Hill LGA and Wentworth LGA. (Figure 1).

Tronox provided a briefing package to the BSC, CDSC, BHCC and WSC on 11 April 2022 to provide an overview of the Modifications, and to outline the approach to assessing potential environmental impacts associated with the Modifications.

At the time of writing, none of these local councils had requested any further information regarding the Modifications.

6 ASSESSMENT OF IMPACTS

6.1 IDENTIFICATION OF KEY ASSESSMENT ISSUES

This section presents the assessment of the potential impacts associated with the modified MDBO.

The Modifications would not require a significant alteration to the approved MDBO (Section 3).

The following approved components of the Atlas-Campaspe Project and the Snapper and Gingko Mines would not be changed as a result of the Modifications:

- tenements;
- general arrangement and surface development area;
- mining method and rate;
- mobile fleet;
- mineral processing and rate (once available for use);
- overburden management;
- MSP process waste management;
- haulage route, haulage vehicle type or haulage vehicle frequency;
- road upgrades and maintenance contributions;
- water supply and demand;
- electricity supply and demand;
- supporting infrastructure;
- site access;
- workforce; and
- environmental management and monitoring.

Furthermore, the following approved MSP components would not be changed as a result of the Modifications:

- general arrangement;
- surface development area;
- mineral separation methods and processing rate;
- stack design and emissions;
- mobile fleet;
- supporting infrastructure (administration/workshop/laboratory buildings, access road, rail spur, water management infrastructure);
- MSP process waste management;

- haulage route, haulage vehicle type or haulage vehicle frequency;
- fuel storage and management;
- water supply and demand;
- electricity supply and demand;
- operational life and hours;
- site access;
- workforce; and
- environmental management and monitoring.

Therefore, there would be no material alteration to the approved impacts of the MDBO on the following environmental aspects:

- road and rail transport;
- surface disturbance related environmental aspects (land resources, surface water resources, Aboriginal cultural heritage, historic heritage, biodiversity);
- water resources;
- amenity (air quality and noise impacts);
- rehabilitation and final landform; and
- social.

Further detail on each of these aspects is provided in the below subsections.

6.2 ROAD AND RAIL TRANSPORT

Atlas-Campaspe Project

Ore (rather than mineral concentrate) would be transported from the Atlas-Campaspe Project to the MSP on a short-term basis as a result of the Modifications.

The Modifications would not however change the approved road and rail haulage route, haulage vehicle type or haulage vehicle frequency. The only change would be that the haulage vehicles would transport ore rather than mineral concentrate.

In addition, the Modifications would not change the approved haulage route upgrades or the approved methodology for determining haulage route maintenance contributions.

The Modifications would also not change the approved rail operations at the Ivanhoe Rail Facility.

No additional road or rail transport impacts are therefore expected at the Atlas-Campaspe Project as a result of the Modifications.

Broken Hill Mineral Separation Plant

The Modifications would involve the short-term transport of Atlas-Campaspe Project ore from the MSP to Snapper and/or Ginkgo Mines on empty mineral concentrate haulage vehicles via the haulage route.

No additional haulage vehicle movements on the approved haulage route would be required as the Atlas-Campaspe Project ore would be transported in empty mineral concentrate haulage vehicles returning to the Snapper and/or Ginkgo Mines (similar to the approved MSP process waste transport).

The Modifications would also not change the approved rail operations at the MSP.

No additional road and rail transport impacts are therefore expected at the MSP as a result of the Modifications.

Snapper and Ginkgo Mines

The Atlas-Campaspe Project mineral concentrate would be transported from the Snapper and/or Ginkgo Mines to the MSP via the approved haulage route on a short-term basis.

The combined Atlas-Campaspe Project, Snapper Mine and Ginkgo Mine mineral concentrate transport rate would however remain within the approved limit (i.e. no additional haulage vehicle movements would be required).

In addition, the Modifications would not change the approved haulage route maintenance contributions.

No additional road transport impacts are therefore expected at the Snapper and Ginkgo Mines as a result of the Modifications.

6.3 SURFACE DISTURBANCE RELATED ENVIRONMENTAL ASPECTS

As the Modifications would not require additional surface development areas at the MDBO, there would be no additional impacts to surface disturbance related environmental aspects (e.g. land resources, surface water resources, Aboriginal cultural heritage, historic heritage, biodiversity) at the MDBO as a result of the Modifications.

Detailed consideration of potential impacts to biodiversity values is provided in Table 2.

6.4 WATER RESOURCES**Atlas-Campaspe Project**

The Modifications would not increase the approved water demand as the mining method and rate and mineral processing method and rate would not change. The Modifications would actually result in a short-term reduction in water demand while mineral processing is bypassed.

Potential impacts on groundwater resources associated with the mining operations would also not change as the mine path extent and the mining method and rate would remain unchanged as a result of the Modifications.

As described in Section 6.3, as no additional surface development areas at the Atlas-Campaspe Project would be required, there would be no additional impacts to surface water resources.

Broken Hill Mineral Separation Plant

The Modifications would not change the approved MSP water demand as the mineral separation methods and processing rate would not change.

As described in Section 6.3, as no additional surface development areas at the MSP would be required, there would be no additional impacts to surface water resources.

Snapper and Ginkgo Mines

The Modifications would not change the approved water demand at the Snapper or Ginkgo Mines as the mining method and rate, and mineral processing method and rate would not change.

Potential impacts on groundwater resources associated with the mining operations would also not change as the mine path extent and the mining method and rate would remain unchanged as a result of the Modifications.

As described in Section 6.3, as no additional surface development areas at the Snapper and Ginkgo Mines would be required, there would be no additional impacts to surface water resources.

6.5 AMENITY**Atlas-Campaspe Project**

As the Modifications would not change the mobile fleet, mining method and rate, and mineral processing method and rate, there would be no additional amenity impacts at the Atlas-Campaspe Mine as a result of the Modifications.

The Modifications would also not change the approved Ivanhoe Rail Facility operations except for ore rather than mineral concentrate would be handled on a short-term basis. No additional amenity impacts are therefore expected at the Ivanhoe Rail Facility as a result of the Modifications.

Broken Hill Mineral Separation Plant

The Modifications would not change the approved train unloading operations at the MSP except for ore rather than mineral concentrate would be unloaded on a short-term basis. No additional amenity impacts are therefore expected as a result of the unloading ore from trains at the MSP.

The Modifications would also include the short-term loading of ore onto haulage vehicles using an existing front-end loader that is approved to load mineral concentrate onto the MSP feed conveyors. This activity is not expected to significantly change noise or dust emissions, as without the Modifications, the front-end loader would be loading Atlas-Campaspe Project mineral concentrate onto the MSP feed conveyors (i.e. no significant change to noise and dust generating activities).

In addition, the Modifications would not change the MSP mineral separation methods and processing rate and therefore there would be no change in noise or dust emissions from the MSP.

Given the above, there would be no additional amenity impacts at the MSP as a result of the Modifications.

Snapper and Ginkgo Mines

As the Modifications would not change the mobile fleet, mining method and rate, and mineral processing method and rate, there would be no additional amenity impacts at the Snapper and Ginkgo Mines as a result of the Modifications.

6.6 REHABILITATION AND FINAL LANDFORM

Atlas-Campaspe Project

As the Modifications would include the short-term bypassing of mineral processing, the amount of sand residues and coarse rejects generated at the Atlas-Campaspe Mine would reduce by up to approximately 280,000 t (or approximately 0.3% of the total amount of sand residues approved to be disposed of at the Atlas-Campaspe Mine).

As the short-term bypassing of mineral processing would occur during the initial development of the Atlas deposit, the sand residues and coarse rejects that would have been generated during this period would have been placed in an off-path sand residue dam. The Modification would therefore reduce the amount of sand residues and coarse rejects disposed of in an off-path sand residue dam by up to approximately 200,000 t.

No significant change to the Atlas-Campaspe final landform would therefore be required as a result of the Modifications.

Snapper and Ginkgo Mines

Sand residues and coarse rejects are approved to be placed in either the active mining area or in sand residue dams at the Snapper and Ginkgo Mines. Sand residues and coarse rejects are currently placed in the active mining areas at the Snapper and Ginkgo Mines.

As the Modifications would include the short-term processing of Atlas-Campaspe Project ore at the Snapper and/or Ginkgo Mines, the amount of sand residues and coarse rejects disposed of at the Snapper and Ginkgo Mines would increase by up to approximately 280,000 t (or approximately 0.1% of the total amount of sand residues approved to be disposed of at the Snapper and Ginkgo Mines). This increase in sand residues and coarse reject production would result in a minor reduction in the size of the approved final depressions at the Snapper and/or Ginkgo Mines.

6.7 SOCIAL

The Modifications would allow for the commencement of production at the Atlas-Campaspe Project earlier which would provide benefits to the local and NSW economies in the form of employment opportunities.

The Modifications would not require additional workforce at the MDBO. Therefore, there are expected to be no additional impacts on the local population, access to community infrastructure and services.

7 JUSTIFICATION OF THE MODIFIED MURRAY DARLING BASIN OPERATIONS

This section provides a justification for the Modifications and conclusion for this Modification Report.

As part of the justification for the Modifications, consideration has been given to:

- the engagement undertaken for the Modifications (Section 7.1);
- key environmental assessment outcomes including the potential impacts of the Modifications (Section 7.2);
- the relevant planning and policy objectives (Section 7.3); and
- the benefits of the Modifications and the MDBO (Section 7.4).

7.1 STAKEHOLDER ENGAGEMENT OVERVIEW

Tronox has consulted with the following stakeholders during the development of this Modification Report:

- DPE;
- TfNSW;
- NSW Environment Protection Authority;
- MEG;
- NSW Resources Regulator; and
- local councils.

The outcomes of engagement with these stakeholders have informed the development of the scope of the Modifications and the preparation of this Modification Report.

7.2 CONSOLIDATED SUMMARY OF ASSESSMENT OF IMPACTS

Tronox would operate the MDBO incorporating the Modifications in accordance with the current environmental management plans and environmental monitoring programs, incorporating any necessary revisions.

Tronox has undertaken a review of the potential environmental impacts of the Modifications to identify key potential environmental issues requiring assessment. The key environmental issues identified are summarised in Table 3.

In consideration of the assessment of impacts in Section 6, the Modifications would involve minimal environmental impact as defined under section 4.55(1A) of the EP&A Act.

7.3 COMPLIANCE WITH RELEVANT STATUTORY AND POLICY REQUIREMENTS

An outline of the statutory requirements relevant to the assessment of the Modifications is provided in Section 4.

The Modifications are considered to be generally consistent with the objects of the EP&A Act (Section 4.1.2).

A detailed statutory compliance table for the MDBO incorporating the Modifications that identifies all the relevant statutory requirements and the relevant sections in this Modification Report that address these requirements is provided in Attachment 1.

Table 3
Key Outcomes of Environmental Review for the Modified MDBO

Environmental Aspect	Summary of Key Environmental Review Conclusions
Road Transport	No additional road transport impacts are expected at the MDBO as a result of the Modifications.
Rehabilitation and Final Landform	No significant change to the Atlas-Campaspe Mine, Snapper Mine and Ginkgo Mine final landforms would be required as a result of the Modifications.
Other Environmental Aspects	The Modifications would result in negligible or no change in potential impacts on other environmental, social and economic considerations.

In evaluating the Modifications under section 4.15(1) of the EP&A Act, the consent authority is required to take into consideration a range of matters as they are of relevance to the subject of the application. While this is a requirement of the consent authority, this Modification Report has been prepared to generally address the requirements of section 4.15(1) of the EP&A Act to assist the consent authority (Section 4.1.3).

7.4 JUSTIFICATION FOR THE MODIFICATIONS

Tronox is seeking approval for changes to the MDBO to allow for the short-term transport of ore (rather than mineral concentrate) from the Atlas-Campaspe Project to the other MDBO sites for processing to avoid delaying the commencement of production at the Atlas-Campaspe Project and therefore minimising subsequent production shortfalls for Tronox in 2022.

The Modifications would not require a significant alteration to the existing/approved MDBO.

The proposed Modifications would have the following benefits:

- allow Atlas-Campaspe Project production to commence before the delivery of the approved mineral processing infrastructure and therefore minimise subsequent production shortfalls for Tronox in 2022;
- allow Atlas-Campaspe Project production to commence earlier which would bring forward benefits to the local and NSW economies in the form of employment opportunities;
- utilise existing/approved infrastructure at the MDBO without the need for additional infrastructure; and
- the MDBO (as modified) would remain within existing production and transport limits described in MDBO approvals.

As such, the approval of the Modifications is considered to be justified.

7.5 CONCLUSION

The modified MDBO would be substantially the same MDBO.

The MDBO would remain within existing production and transport limits described in MDBO approvals.

Tronox would also continue to operate the MDBO (as modified) in accordance with the current approved management plans.

In consideration of the assessment of impacts in Section 6, the Modifications would involve minimal environmental impact as defined under section 4.55(1A) of the EP&A Act.

In weighing up the main environmental impacts (costs and benefits) assessed and described in this Modification Report, the Modifications are, on balance, considered to be in the public interest of the State of NSW.

8 REFERENCES

Cristal Mining Australia (2013) *Atlas-Campaspe Mineral Sands Project Environmental Impact Statement*.

Department of Planning, Industry and Environment (2021a) *State Significant Development Guidelines*.

Department of Planning, Industry and Environment (2021b) *State Significant Development Guidelines – Preparing a Modification Report*.

Department of Planning, Industry and Environment (2021c) *Undertaking Engagement Guidelines for State Significant Projects*.

NSW Government (2017) *Far West Regional Plan 2036*.

NSW Government (2018) *Voluntary Land Acquisition and Mitigation Policy*.

State of NSW and Office of Environment and Heritage (2018) *Threatened Species Test of Significance Guidelines*.

ATTACHMENT 1
STATUTORY COMPLIANCE RECONCILIATION TABLES

Table A1-1
Summary Statutory Compliance for State Legislation

Relevant Legislation or Instrument	Mandatory Consideration	Relevant Section in Modification Report	Modified MDBO Compliance Status
<i>Environmental Planning and Assessment Act 1979 (EP&A Act)</i>			
section 1.3	<p>Relevant objects of the EP&A Act:</p> <ul style="list-style-type: none"> 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. Facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment. Promote the orderly and economic use and development of land. Protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats. Promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage). Promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State. Provide increased opportunity for community participation in environmental planning and assessment. 	Section 4.1.2	✓
section 4.15	<p>Relevant environmental planning instruments:</p> <ul style="list-style-type: none"> <i>State Environmental Planning Policy (Planning Systems) 2021.</i> <i>State Environmental Planning Policy (Resources and Energy) 2021.</i> <i>State Environmental Planning Policy (Resilience and Hazards) 2021.</i> <i>State Environmental Planning Policy (Biodiversity and Conservation) 2021.</i> <i>Balranald Local Environmental Plan 2010.</i> <i>Central Darling Local Environmental Plan 2012.</i> <i>Broken Hill Local Environmental Plan 2013.</i> <i>Wentworth Local Environmental Plan 2011.</i> Any planning agreement or draft planning agreement that a developer has entered into under section 7.4 of the EP&A Act. The <i>Environmental Planning and Assessment Regulation 2000</i> (EP&A Regulation). <p>The likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality; the suitability of the site for the development; any submissions made in accordance with the EP&A Act or the EP&A Regulation; the public interest.</p>	Section 4.3 and Table A1-2	✓

Table A1-1 (continued)
Atlas-Campaspe Mineral Sands Project – Summary Statutory Compliance for State Legislation

Relevant Legislation or Instrument	Mandatory Consideration	Relevant Section in Modification Report	Modified MDBO Compliance Status
EP&A Regulation			
clause 99	<p>A modification application must—</p> <ol style="list-style-type: none"> 1) be in the approved form, and 2) contain all the information and documents required by— <ol style="list-style-type: none"> i. the approved form, and ii. the Act or this Regulation, and 3) be submitted on the NSW planning portal. <p>If the modification application is for State significant development—</p> <ol style="list-style-type: none"> a) the application must also include particulars of the nature of the modification, and b) the applicant must consider the State Significant Development Guidelines in preparing the application. 	Sections 1 to 7	✓
Biodiversity Conservation Act 2016			
section 7.14(2)	The consent authority is to take into consideration the likely impact of the proposed development on biodiversity values as assessed in the Biodiversity Development Assessment Report.	Sections 4.2.1 and 6.3	✓
section 7.16(3)	<p>If the consent authority is of the opinion that the Modifications are likely to have serious and irreversible impacts on biodiversity values, the consent authority is required to:</p> <ul style="list-style-type: none"> • take those impacts into consideration; and • determine whether there are any additional and appropriate measures that will minimise those impacts if consent or approval is to be granted. 	Sections 4.2.1 and 6.3	✓
Protection of the Environment Operations Act 1997 (PoEO Act)			
section 43	<p>Operations at the MDBO are currently undertaken in accordance with existing Environment Protection Licences (EPL) 21007, 12314, 12799 and 12264 issued under the PoEO Act. The MDBO EPLs contains conditions that relate to emission and discharge limits, environmental monitoring and reporting.</p> <p>It is not anticipated that any changes to the MDBO EPLs would be required as a result of the Modifications.</p>	No Change	✓
Water Management Act 2000			
sections 89, 90 and 91	<p>The Modifications would not change peak water licensing, supply sources and storage requirements for the MDBO.</p> <p>Tronox would continue to obtain and hold licences required under the <i>Water Management Act 2000</i> for licensable take.</p>	No Change	✓

Table A1-1 (continued)
Atlas-Campaspe Mineral Sands Project – Summary Statutory Compliance for State Legislation

Relevant Legislation or Instrument	Mandatory Consideration	Relevant Section in Modification Report	Modified MDBO Compliance Status
<i>National Parks and Wildlife Act 1974</i>			
section 90	<p>Tronox holds a section 87 Permit and a section 90 Consent issued under the NPW Act for the MSP and Ginkgo Mine. The section 87 Permit and the section 90 Consent together permit the destruction and collection of relevant Aboriginal cultural heritage sites at the MSP and Ginkgo Mine. As the Modifications would not require additional surface development areas, no additional approvals under the NPW Act would be required for the Modifications</p> <p>An Aboriginal cultural heritage impact permit under section 90 of the National Parks and Wildlife Act 1974 is not required for the Atlas-Campaspe Project and Snapper Mine, including for the Modifications.</p>	No Change	✓

Table A1-2
Summary Statutory Compliance for Environmental Planning Instruments

Relevant Legislation or Instrument	Mandatory Consideration	Relevant Section in Modification Report	Modified MDBO Compliance Status
<i>State Environmental Planning Policy (Resources and Energy) 2021</i>			
clause 2.17	Before determining an application for consent for the purposes of mining the consent authority must: (a) consider – (i) the existing uses and approved uses of land in the vicinity of the development, and (ii) whether or not the development is likely to have a significant impact on the uses that, in the opinion of the consent authority having regard to land use trends, are likely to be the preferred uses of land in the vicinity of the development, and (iii) any ways in which the development may be incompatible with any of those existing, approved or likely preferred uses, and (b) evaluate and compare the respective public benefits of the development and the land uses referred to in paragraph (a)(i) and (ii), and (c) evaluate any measures proposed by the applicant to avoid or minimise any incompatibility, as referred to in paragraph (a)(iii).	No Change	✓
clause 2.18	Before determining an application for consent for the purposes of mining the consent authority must consider relevant provisions of the Voluntary Land Acquisition and Mitigation Policy (NSW Government, 2018).	No Change	✓
clause 2.19	Before determining an application for development in the vicinity of mining, petroleum or extractive industry, the consent authority must (among other things) consider whether or not the development is likely to have a significant impact on current or future extraction or recovery of minerals, petroleum or extractive materials (including by limiting access to, or impeding assessment of, those resources), and any ways in which the development may be incompatible with any of those existing or approved uses or that current or future extraction or recovery.	No Change	✓
clause 2.20	Before determining an application for consent for the purposes of mining the consent authority must consider whether or not the consent should be issued subject to conditions aimed at ensuring that the development is undertaken in an environmentally responsible manner (including conditions to ensure that impacts on significant water resources, including surface and groundwater resources, are avoided, or are minimised to the greatest extent practicable, that impacts on threatened species and biodiversity, are avoided, or are minimised to the greatest extent practicable, and that greenhouse gas emissions are minimised to the greatest extent practicable). This includes considering an assessment of greenhouse gas emissions (including downstream emissions) having regard to any applicable State or National policies, programs of guidelines concerning greenhouse gas emissions.	Sections 4.4.2 and 6	✓
clause 2.21	Before determining an application for consent for the purposes of mining the consent authority must consider the efficiency of the development in terms of resource recovery and whether or not the consent should be issued subject to conditions aimed at optimising the efficiency of resources recovery and the reuse or recycling of material.	No Change	✓

Table A1-2 (continued)
Summary Statutory Compliance for Environmental Planning Instruments

Relevant Legislation or Instrument	Mandatory Consideration	Relevant Section in Modification Report	Modified MDBO Compliance Status
<i>State Environmental Planning Policy (Resources and Energy) 2021 (continued)</i>			
clause 2.22	Before determining an application for consent for the purposes of mining the consent authority must consider whether or not the consent should be issued subject to conditions regarding transport of materials.	Section 6.2	✓
clause 23	Before determining an application for consent for the purposes of mining the consent authority must consider whether or not the consent should be issued subject to conditions regarding rehabilitation, including the particular considerations set out in clause 17(2).	No Change	✓
<i>State Environmental Planning Policy (Resilience and Hazards) 2021</i>			
clause 3.12	A consent authority must consider current circulars or guidelines published by the DPIE relating to hazardous or offensive development, whether to consult with relevant public authorities regarding any environmental or land use safety requirements, a preliminary hazard analysis prepared by the applicant, feasible alternatives to the development and likely future use of surrounding land.	No change to potentially hazardous or offensive activities.	✓
clause 4.6	A consent authority must consider whether the land is contaminated and be satisfied that, if the land is contaminated, the land is suitable in its contaminated state (or will be suitable after remediation) for the purpose of the Project.	No Change	✓
<i>Balranald Local Environmental Plan 2010</i>			
clause 2.3	A consent authority must have regard to the objectives for development in a zone when determining a development application in respect of land within that zone.	No Change	✓
<i>Central Darling Local Environmental Plan 2012</i>			
clause 2.3	A consent authority must have regard to the objectives for development in a zone when determining a development application in respect of land within that zone.	No Change	✓
<i>Broken Hill Local Environmental Plan 2013</i>			
clause 2	The consent authority must have regard to the objectives for development in a zone when determining a development application in respect of land within the zone.	No Change	✓
<i>Wentworth Local Environmental Plan 2011</i>			
Clause 2.3	The consent authority must have regard to the objectives for development in a zone when determining a development application in respect of land within the zone.	No Change	✓