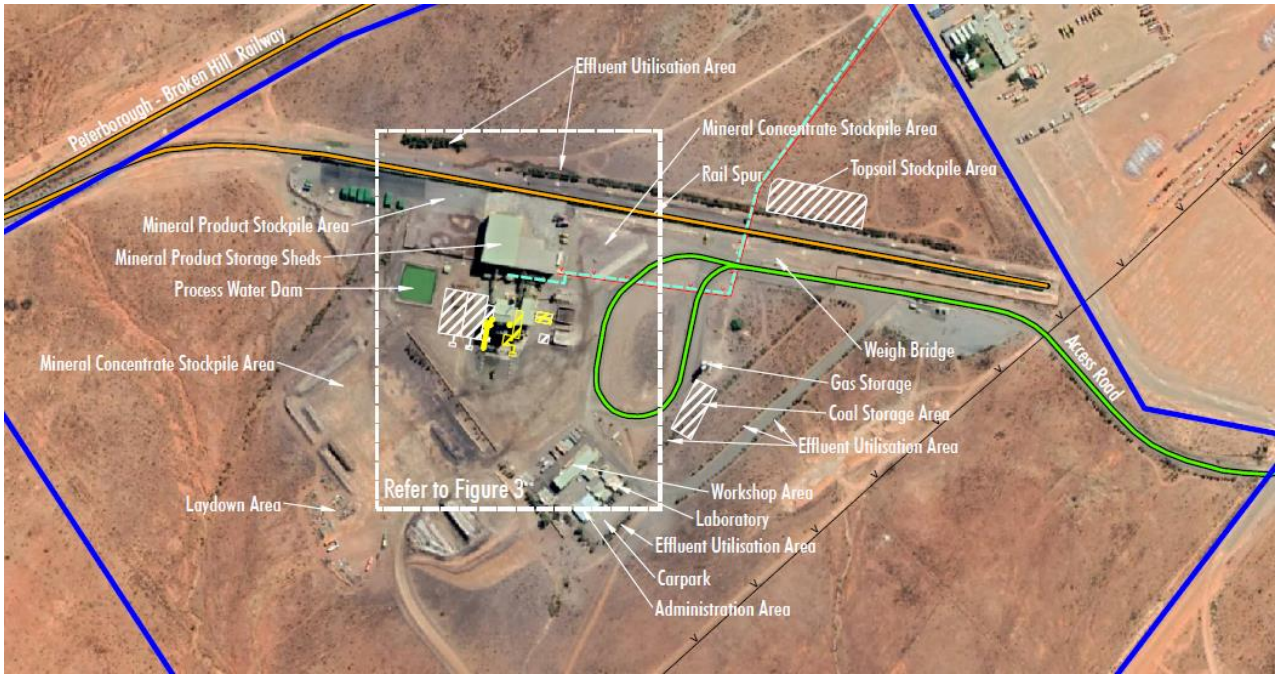
Broken Hill Mineral Separation Plant Modification 6

Infrastructure Efficiency Upgrades

State Significant Development Modification Assessment (DA 345-11-01 MOD 6)

May 2021



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Title: Broken Hill Mineral Separation Plant Modification 6

Subtitle: Infrastructure Efficiency Upgrades

Cover image: *Broken Hill Mineral Separation Plant; Source: Broken Hill Mineral Separation Plant Modification Report (MOD 6)*

1 Introduction

Tronox Mining Australia Limited (Tronox) owns and operates the Broken Hill Mineral Separation Plant (the MSP) located approximately 5 kilometres (km) south-west of Broken Hill (see **Figure 1**).

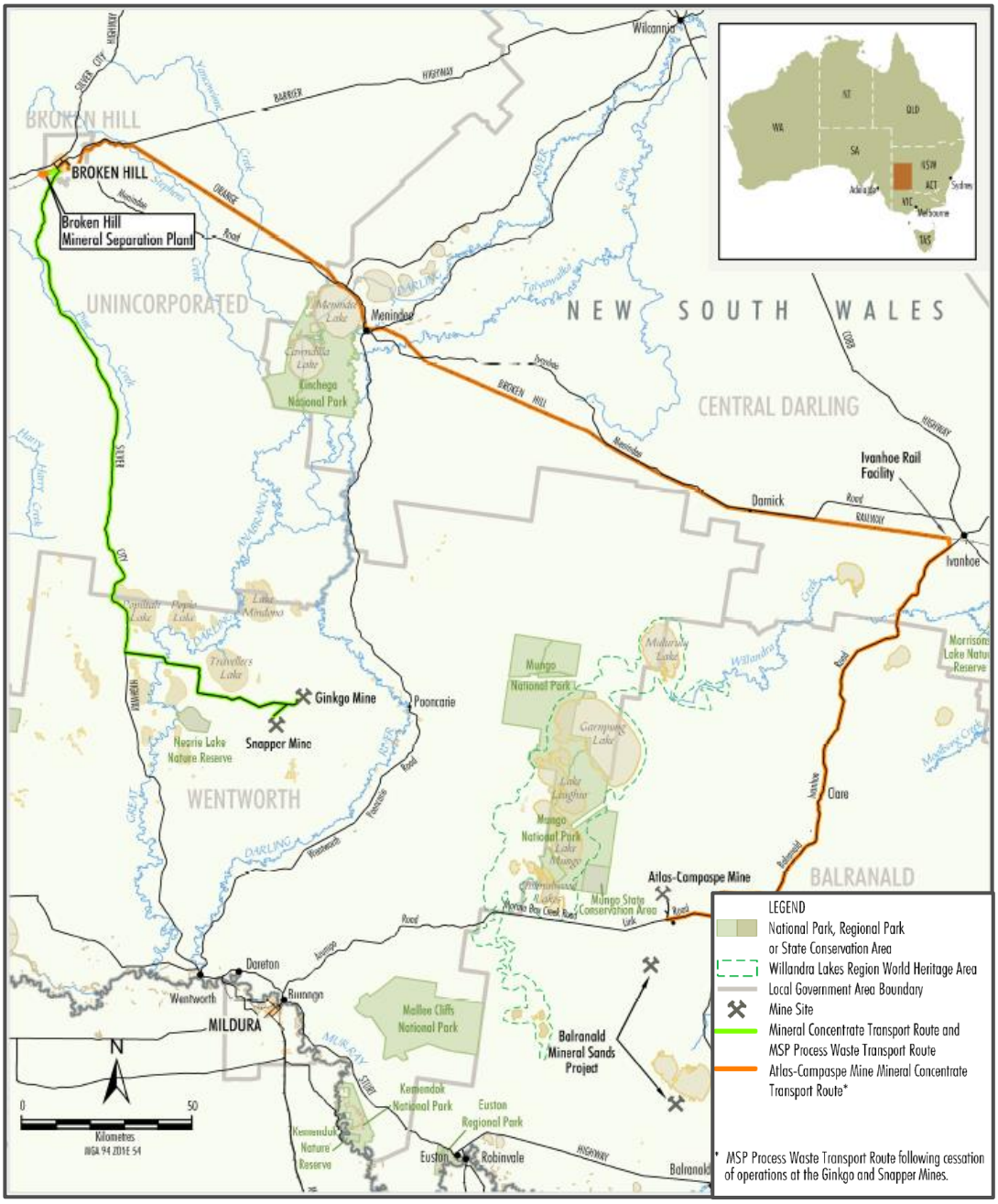

Figure 1 | Broken Hill MSP Regional Location (Source: Modification Report (MOD 6), Tronox)

The MSP was approved by the then Minister for Planning on 27 May 2002. The development consent for the MSP has been modified on five occasions and allows Tronox to process up to 1.2 million tonnes per annum (tpa) of mineral sands concentrate and heavy mineral concentrate (HMC) until 31 December 2032.

The MSP receives up to 735,000 tpa of mineral concentrate and HMC from Tronox's Ginkgo and Snapper Mines by road (located approximately 170 km south-east of the MSP) and is approved to

receive up to 450,000 tpa mineral concentrate and HMC from the Atlas-Campaspe Mine by rail. Mineral products are then transported from the MSP to South Australia by rail.

To date, only mineral concentrate from the Gingko and Snapper Mines has been processed at the MSP, with processing of mineral concentrate from the Atlas-Campaspe Mine anticipated to commence following construction of the mine which has been delayed until 2022.

The approved operations have an operational workforce of up to 85 personnel, with an additional 40 personnel associated with the haulage vehicle contractor. Under the development consent, the MSP can operate continuously.

2 Proposed Modification

Tronox is seeking to modify the development consent to allow for internal processing changes to improve mineral recovery (see **Figure 2**) including:

- a bypass of the wet high intensity magnetic separator (WHIMS);
- reconfiguration of the existing ilmenite circuit;
- reconfiguration of the existing leucoxene circuit building and equipment to support the modified ilmenite circuit; and
- changes to reflect road and rail transport changes assessed and approved under the Gingko Mine, Snapper Mine and Atlas Campaspe Mine development consents.

Tronox propose to bypass the WHIMS system as this preliminary treatment stage (separating HMC into ilmenite-rich, leucoxene-rich and non-magnetic mineral concentrates for processing) can be completed at the Gingko, Snapper or Atlas-Campaspe mines prior to transportation to the MSP. The bypass would allow HMC to be processed directly at the MSP without pre-treatment.

Tronox also propose to modify the ilmenite circuit to allow for processing of HMC without pre-conditioning which would include:

- adding two ilmenite mineral reheaters (with associated stacks), magnetic separators and trash screens;
- duplicating the circuit feed conveyor;
- a minor extension of the ilmenite circuit building; and
- additional minor reconfigurations to processing infrastructure.

The stacks would be designed and constructed in accordance with the approved stack design parameters in the development consent and designed to comply with the criteria specified in the *Protection of the Environment Operations (Clean Air) Regulation 2010*.

The proposed modification would be located entirely within the approved disturbance area. Construction is anticipated to take approximately 3 months, during which operations at the MSP would cease. To reduce downtime, Tronox propose to be able to construct 24 hours a day, 7 days a week.

Additionally, as a result of the March 2015 modifications of the Snapper Mine and Gingko Mine development consents, and the December 2019 modification of the Atlas Campaspe development consent (Modification 1), transportation of mineral concentrate to the MSP has increased to 975,000 tpa by road and 650,000 tpa by rail, respectively.

The modification application therefore seeks to align the project description for the MSP to reflect the approved mineral concentrate/HMC road transport and rail transport limits specified in the approved Snapper Mine, Gingko Mine and Atlas Campaspe development consents. This included an increase in the rate of MSP process waste transported to the Ivanhoe Rail Facility from 50,000 tpa to 65,000 tpa. However, as there are no mineral concentrate/HMC transport limits specified in the development consent for the MSP, no condition changes have been proposed in this regard for the modification.

Comprehensive details of the modification components are provided in the Modification Report (see **Appendix A**).

Figure 2 | Existing Project and Proposed Modification (Source: Modification Report (MOD 6), Tronox)

3 Statutory Context

3.1 Scope of Modification

The modification application and Modification Report was lodged under Section 4.55(1A) of the EP&A Act. The Department has reviewed the scope of the modification and considers that:

- there would be minimal environmental impacts;
- the impacts of the project as modified would be similar to those of the approved project (see section 5); and
- the development would remain substantially the same development as originally approved.

Therefore, the Department is satisfied the proposed modification is within the scope of section 4.55(1A) of the EP&A Act and does not constitute a new development application. Accordingly, the Department considers that the application should be assessed and determined under section 4.55(1A) of the Act.

3.2 Consent Authority

The Minister for Planning and Public Spaces (the Minister) is the consent authority for the modification application. However, under the Minister's delegation of 26 April 2021, the Director, Resource Assessments, may determine the application. This is because Tronox has not made any reportable political donations, Broken Hill City Council (Council) did not object to the proposed modification, and there were no objections from the community.

3.2 Impacts on Biodiversity Values

Under Clause 30A(2)(c) 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 modification application as the proposed changes would not result in an increase in impacts on biodiversity values.

4 Engagement

In accordance with the requirements for a 4.55(1A) modification involving minimal impact, the modification application was not formally exhibited. Nevertheless, the Department made the modification application and accompanying information publicly available on its website from 13 April 2021.

The Department referred the modification application to the **Environment Protection Authority** (EPA) and **Broken Hill City Council** (Council) for comment. The EPA advised that the additional gas fired stacks would require a variation to the Environment Protection Licence (EPL). Council provided comments relating to road transport on Council roads, water use and potential amenity impacts as a result of the proposed modification. Tronox provided a response to Council's comments (see **Appendix B**). The Department's consideration of these issues is discussed in **section 5**.

5 Assessment

The Department has assessed the modification application and supporting information in accordance with the relevant requirements of the EP&A Act, including the matters for consideration, as set out in section 4.15(1) of the EP&A Act.

The modification would not involve any additional disturbance to the surface area and would not increase processing rates when compared to the approved project.

The Department considers the key assessment issues for the proposed modification relate to potential amenity impacts (namely air quality, noise and visual impacts) associated with the two additional ilmenite mineral reheaters and ventilation stacks, as discussed further below. The Department has considered other issues relevant to the proposed modification in **section 5.2**.

5.1 Amenity

Air Quality

The modification application included an Air Quality Impact Assessment (AQIA) which was undertaken in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (EPA 2017) (Approved Methods).

The AQIA assessed the potential impact of the modified MSP including total suspended particulates (TSP), particulate matter (PM_{10} and $PM_{2.5}$), dust deposition, nitrous oxides (NO_x) and sulfur dioxide (SO_2) of the MSP operating at full capacity and at the maximum processing rate.

The AQIA found the proposed modification would comply with the EPA impact assessment particulates criteria at all residential receivers, including the closest residential receiver known as 'Finlayson' located approximately 1km south-west of the MSP (see **Table 1**). No predicted exceedances of NO_2 (assuming a conversion rate of 100% NO_x to NO_2) and no changes to SO_2 emissions would occur as a result of the proposed modification, as there would be no change to the ilmenite kiln/roaster circuit.

Table 1 EPA Approved Methods Impact Assessment Criteria and Predicted Project Emissions

Pollutant	Averaging Period	Units	EPA Concentration Criteria	Maximum Predicted Cumulative Air Quality Levels
TSP	Annual	$\mu g/m^3$	90	36.2
PM_{10}	Annual	$\mu g/m^3$	25	10.5
	24-hour	$\mu g/m^3$	50	39.4
$PM_{2.5}$	Annual	$\mu g/m^3$	8	3.6
	24-hour	$\mu g/m^3$	25	21.1
Deposited dust	Annual	g/m^2/month	4	1.4
NO_2	Annual	$\mu g/m^3$	62	11.2
	1-hour	$\mu g/m^3$	246	157.7

The modification application was referred to the EPA and Council for comment, with the EPA noting that the adjustments to the MSP, including the additional gas fired stacks, would require a variation to the Environment Protection Licence (EPL).

Council commented that all stacks would need to be designed to comply with the criteria in the *Protection of the Environment Operations (Clean Air) Regulation 2010*, and Tronox confirmed all stacks would be designed in accordance with this regulation. Tronox also noted in the Modification Report that the design parameters of the stacks would be consistent with the design parameters prescribed in the conditions for the existing stacks.

In regard to the additional stacks, the Department has recommended a condition requiring that any new or modified stacks be designed to meet the parameters specified in the EPL.

The Department notes that Tronox operates the MSP under an Air Quality Management Plan which includes monitoring of stack emissions, procedures for minimising gaseous and particulate emissions and plans for environmental incidents.

The Department has recommended updating the standard conditions relating to revision of strategies, plans and programs and notes that the Air Quality Management Plan would require review and revision to reflect the modified MSP. As such, the Department considers that potential air quality impacts can be appropriately managed through the conditions of consent.

Noise

The modification application included an assessment of potential construction and operational noise impacts on surrounding residential receivers.

Construction for the proposed modification is anticipated to take approximately three months, during which operational activities at the MSP would cease. Tronox provided an assessment of potential construction impacts by modelling a conservative construction scenario (assuming all construction plant and equipment running concurrently), which estimated that the total sound power level of the proposed modification construction phase would be lower than the existing MSP operational noise (113.88 A-weighted decibels (dBA)), being 113.13 dBA.

Tronox also requested that construction be permitted continuously rather than the conditioned hours of construction (between 7 am and 6 pm Monday to Friday and 8 am to 1 pm Saturdays) given:

- noise levels were expected to be below operating levels;
- operation of the MSP would cease during construction, removing operational noise impacts; and
- extended hours would minimise the duration of MSP operations being suspended.

The Department considers that as the construction noise impacts are anticipated to be lower than the existing operational noise impacts, and that Tronox would continue to be required to comply with the operation noise criteria at all times, it is reasonable to allow for continuous construction hours for the works associated with the MOD 6 application. As the construction hours specified in the consent were intended for the original construction of the MSP (now complete), the Department has recommended removing the construction hour limits in the consent.

Tronox also modelled potential operational impacts from the additional infrastructure which predicted that operational sound power levels would not change from the current level of 114 dBA, that is there would be no change to overall noise emissions from the MSP.

The Department and the EPA were satisfied that the proposed modification is unlikely to result in any material changes to the existing noise impacts and notes that the MSP operates under a number of noise related conditions including:

- implementation of a Noise Management Plan, which requires that the proposed reconfigured ilmenite circuit, fan and conveyors would need to be enclosed;
- implementation of a Noise Monitoring Program and regular attended noise monitoring; and
- notification to the nearest residential receiver of their rights to request further noise mitigation.

The Department notes that ownership of the nearest receiver R3 has changed since the development consent was granted, and that the existing conditions allow the owner of R3 to request additional noise mitigation on request. The Department understands that this condition has not been enacted to date and Tronox has advised that the new owners of R3 have been notified of the noise mitigation conditions relevant to the property.

The Department has also recommended the following administrative updates to the noise conditions, including:

- revising the noise assessment guidelines to reference the *Noise Policy for Industry* (NSW EPA, 2017); and
- updating the ownership of the nearest residential premises to 'R3 - Finlayson' and including the revised receiver locations figure.

Visual

The proposed modification includes two additional ilmenite circuit reheaters and associated gas stacks which would be approximately 40 m high, consistent with the eight existing/approved stacks. The two additional stacks would be consistent with the existing visual character of the MSP, which is in an industrial area. Consistent with the existing/approved MSP, the minor extension to the ilmenite circuit building and the two additional stacks would be coloured to minimise visual impacts.

Council identified that lighting from the proposed modification could be a potential impact and requested that the proposed modification take into account relevant Australian Standards for obtrusive light. In response, Tronox confirmed that all external lighting associated with the modified MSP components would comply with Australian Standard AS 4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting.

Overall, the Department considers the visual impacts as a result of the proposed modification to be minimal due to the similarities with the existing MSP. The Department notes the existing night-time character of the MSP site includes a variety of local light sources associated with the industrial, mining and rail operations located in Broken Hill and therefore has not recommended any specific conditions to manage lighting impacts at the site. However, the Department acknowledges Tronox's commitment to comply with the relevant Australian Standards for any new lighting installed for the modified MSP components.

5.2 Other Issues

Table 2 summarises the Department's consideration of other issues related to the proposed modification.

Table 2 Assessment of Other Issues

Issue	Considerations	Recommendations
Transportation of minerals and HMC	• The proposed modification includes increasing the approved mineral concentrate/HMC road transportation rates from 735,000 tpa to 975,000 tpa, which has previously been assessed in the Snapper Mine and Gingko Mine modification applications and describes no significant impact to the existing road network. • Council requested that any further changes in concentration transportation limits be assessed in consultation with Council. • The Department notes that potential impacts to the existing road network have been previously assessed and approved, and that any future changes would be subject to a separate approval process. • However, the Department has recommended that the Transport Code of Conduct be updated to reflect the approved transport rates.	• Revise the Transport Code of Conduct to reflect the approved increased transportation rates between Tronox's mining operations and the MSP.
Water Resources	• Tronox described that the proposed modification would not result in any change to existing or approved site water management or supply; however, Council requested verification that no change to water supply would occur as a result of the proposed modification. • Tronox described that the approved water demand for the MSP is approximately 175 million litres (ML) per year at full development, with the WHIMS system the largest consumer of water within the site. • Actual water demand at the MSP in 2020 was significantly lower than the approved amount, being 58 ML, which Tronox describe is due to the WHIMS not being developed. • The Department considers that water supply is unlikely to be impacted by the proposed modification and that no changes to the existing conditions are required.	• Comply with existing conditions.
Greenhouse Gas Emissions	• The proposed modification would not change the processing rates at the MSP; however, additional consumption of gas would be required to operate the two additional stacks.	• Comply with existing conditions.

Issue	Considerations	Recommendations
	• Tronox assessed that the proposed modification would result in an additional 1.52 kt CO2-e of Scope 1 emissions and 0.41 kt CO2-e of Scope 3 emissions, which are proposed to be managed through the existing Energy Management Plan. • The Department considers the additional greenhouse gasses can be appropriately managed through the existing conditions which require the Energy Management Plan to be revised following approval of any modifications.	
Waste	• Consistent with the previously approved increased transportation rates, the modified project would allow for increased process waste transport to the Ivanhoe Rail Facility from 50,000 tpa to 65,000 tpa. • No changes to the MSP waste process management are anticipated and Tronox would continue to transport process waste in accordance with the Traffic Management Plan and Transport Code of Conduct. • The Department has recommended the Traffic Code of Conduct be updated to reflect the changes in the approved transport arrangements. Tronox would also be required to review and if necessary revise the Transport Management Plan following approval of the modification.	• Revise the Transport Code of Conduct to reflect the approved increased transportation rates between Tronox's mining operations and the MSP.
Hazards	• The proposed modification would not materially alter operational activities, with the overall consequence or likelihood of hazardous events occurring unlikely to change as a result of the modification. • Potential hazardous risks can be appropriately managed through the implementation of existing management strategies including the MSP Emergency Response Plan and Safety Management System.	• Comply with existing conditions.

6 Evaluation

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

The proposed modification would allow Tronox to operate with greater efficiency, whilst resulting in minimal incremental environmental impacts compared to the approved project.

The Department consulted with key agencies including the EPA and Council who raised no significant concerns for the potential impacts of the proposed modification.

The Department considers that any potential air quality impacts as a result of the proposed two additional ilmenite reheaters can be managed via the existing conditions of consent and conditions that would be imposed by the EPA under the EPL including setting air emission point discharge limits and monitoring requirements. The Department notes that Tronox would need to apply separately to the EPA for a variation to the EPL.

Tronox would also be required to review and revise strategies, plans and programs within three months of any modification to the consent, in consultation with the relevant government authorities and to the satisfaction of the Planning Secretary. These plans would include:

- revision of the Air Quality Management Plan, Energy Management Plan and Noise Management Plan to reflect potential impacts associated with the additional stacks and construction activities; and
- inclusion of the revised transport limits in the Transport Code of Conduct.

In addition, the Department has recommended the following changes to the development consent:

- removal of construction hours;
- requiring new or modified stacks to be designed to meet design parameters specified in the EPL;
- revision of the landowner details for the closest residential receiver ‘R3 - Finlayson’;
- revision of noise and water impact assessment guideline references;
- revision of independent audit, revision of strategies, plans and programs and environmental reporting requirements;
- inclusion of written incident notification requirements; and
- updates to reflect the changes to government agency names.

The environmental assessment indicates that the proposed modification would not significantly increase the environmental impacts compared to the approved MSP operations, and that all environmental aspects can be adequately managed to an acceptable level of environmental performance.

The proposed modification would improve mineral recovery at the MSP and maximise the productivity of Tronox’s existing mining operations and the associated social and economic benefits to the region.

Based on this assessment, the Department considers that the proposed modification is in the public interest and should be approved, subject to the revised conditions.

7 Determination

The Department has drafted an Instrument of Modification (see **Appendix C**) for the proposed modification, as well as a consolidated version of the development consent as modified (see **Appendix D**).

The Department recommends 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 (DA 345-11-01 MOD 6) falls within the scope of section 4.55(1A) of the EP&A Act;
- **accepts and adopts** all of the findings and recommendations in this report as the reasons for making the decision to grant approval to the application;
- **modifies** the development consent (DA 345-11-01); and
- **signs** the attached Instrument of Modification (**Appendix C**).

Recommended by:

21/5/2021

Emily Murray
Environmental Assessment Officer
Resource Assessments

Recommended by:

21/5/2021

Phillipa Duncan
Team Leader
Resource Assessments

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

24/5/2021

Steve O'Donoghue
Director
Resource Assessments

as delegate of the Minister for Planning and Public Spaces

Appendices

Appendix A – Modification Report

Appendix B – Additional Information

Broken Hill MSP Modification Submissions Letter - Dated 29 April 2021

Appendix C – Instrument of Modification

Appendix D – Consolidated Development Consent

Documents available at

https://www.planningportal.nsw.gov.au/major-projects/project/41371