

ASSESSMENT REPORT

Ginkgo Mineral Sands Mine

Extension Modification (DA 251-09-01 MOD 13)

EXECUTIVE SUMMARY

Cristal Mining Australia Limited (Cristal) owns and operates the Ginkgo Mineral Sands Mine (Ginkgo Mine), located near Pooncarie in far western NSW (see **Figure 1**). Cristal is seeking to modify the Ginkgo Mine development consent to allow a 114 hectare extension to the surface development area and an associated 759 hectare increase to the existing biodiversity offset areas. The proposed modification would facilitate ongoing safe and efficient mining along the currently approved Ginkgo deposit mine path.

The Department did not receive any public submissions during the public exhibition period and none of the key government agencies (including Wentworth Shire Council) objected to the proposal. The Office of Environment and Heritage and the Department are satisfied that Cristal's additional biodiversity offset strategy would effectively compensate for the additional vegetation disturbance. On balance, the Department considers that the proposed modification has merit, and is in the public interest.

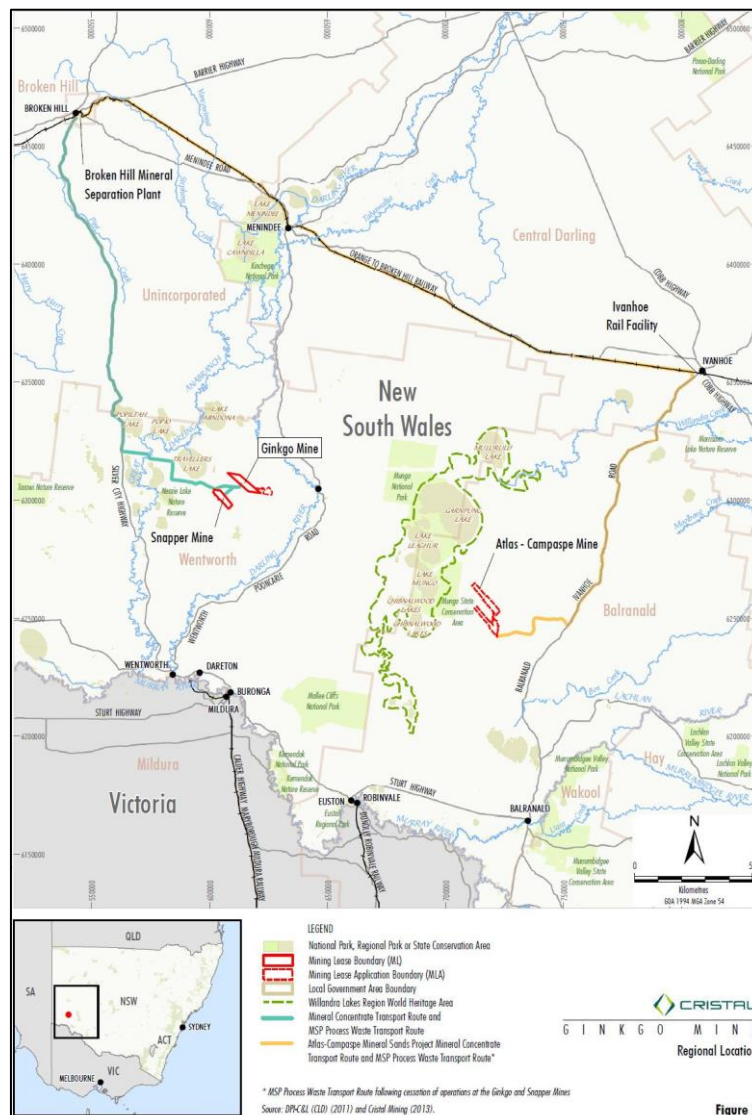


Figure 1: Location of the Ginkgo Mine

1 BACKGROUND

Cristal owns and operates the Ginkgo Mine, located approximately 40 km west of Pooncarie and 170 km south of Broken Hill in far western NSW.

Cristal also operates the nearby Snapper Mineral Sands Mine located 10 km southwest of Ginkgo, and the Broken Hill Mineral Separation Plant (MSP) which processes the mineral sands concentrate from both the Ginkgo and Snapper mines.

Cristal also owns the Atlas-Campaspe Mine located 80 km to the north of Balranald. Construction of the mine is expected to commence in early 2018.

The Ginkgo Mine was approved by the Minister for Planning on 30 January 2002 under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), and was commissioned in 2005.

Since then the development consent has been modified on 12 occasions. Under its consent (DA 251-09-01), Cristal is permitted to undertake the following activities until March 2023:

- extract approximately 19.9 million tonnes per annum (Mtpa) of mineral sands ore from the:
 - Ginkgo deposit (13 Mtpa) via a dredge mining operation; and
 - Crayfish deposit (6.9 Mtpa) via a dry mining (dozers/excavator) operation;
- produce a maximum of 576,000 tonnes per annum (tpa) of mineral sands concentrate;
- transport mineral concentrate from the site (up to 975,000 tpa from Ginkgo Mine and Snapper Mine combined);
- receive processed waste material from the Broken Hill MSP (up to 300,000 tpa to Ginkgo Mine and Snapper Mine); and
- construct and operate an on-site putrescible and non-putrescible waste landfill (up to 350 tpa).

Following further review of the future mine plan and footprint for the remaining mine life, Cristal has identified that a larger disturbance footprint is required than originally contemplated.

The proposed modification is seeking approval for this extension, along with further increases to the biodiversity offset area to compensate for the extension area.

2 PROPOSED MODIFICATION

Cristal is proposing to modify the development consent for the Ginkgo Mine (DA 251-09-01 MOD 13). The proposed modification involves:

- a 114 hectare extension to the approved surface development area to accommodate additional surface infrastructure (including a new overburden emplacement area, water storage dam and topsoil stockpiles);
- minor changes to the extent of the approved Ginkgo deposit mine path (resulting in a net 6 ha decrease in area); and
- a 759 hectare increase to the existing biodiversity offset areas for the mine.

The proposed changes to the surface development area and biodiversity offset areas are shown on **Figure 2**. A comparison between the proposed modification and the approved development is provided in **Table 1**.

The proposal is described in detail in Cristal's Environmental Assessment (EA), which is attached in **Appendix C**.

Cristal's justification for the proposal is that the original conceptual mine plans were based on limited operational experience and did not contemplate the full extent of the peripheral surface development areas required along the mine path to allow for efficient mining operations.

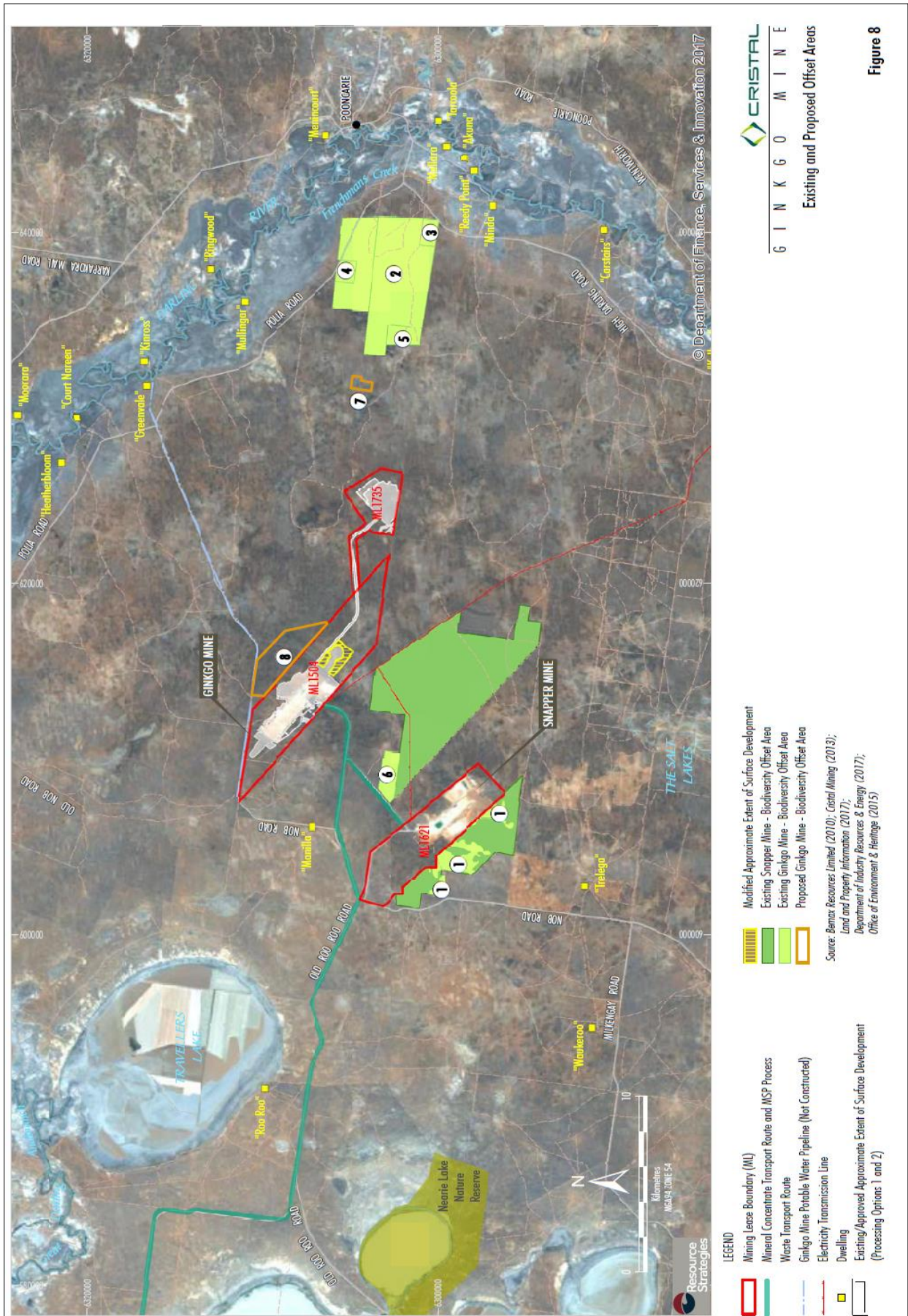


Figure 2: Proposed Extension Area and Biodiversity Offset Areas

Table 1: Comparison of Approved and Modified Operations

Aspect	Existing/Approved Operations	Proposed Operations
Project Life	<ul style="list-style-type: none"> Mining approved until March 2023. 	<ul style="list-style-type: none"> No change.
Tenement	<ul style="list-style-type: none"> Mining operations conducted within Mining Lease 1504 and the Crayfish deposit Mining Lease Application area. 	<ul style="list-style-type: none"> No change.
Surface Infrastructure	<ul style="list-style-type: none"> Approximately 1,570 ha (Processing Option 1) or 1,543 ha (Processing Option 2). 	<ul style="list-style-type: none"> Approximate 114 ha increase to the existing/approved surface infrastructure area.
Mining	<ul style="list-style-type: none"> Ginkgo deposit – double-pass dredge mining operation producing approximately 13 Mtpa of ore and moving up to approximately 24 Mtpa of overburden. Crayfish deposit – dry mining (i.e. dozers and/or loaders and excavators) operation producing approximately 6.9 Mtpa of ore and moving approximately 7.4 Mtpa of overburden. 	<ul style="list-style-type: none"> A minor change to the Ginkgo deposit mine path (approximate 6 ha decrease to the existing/approved mine path extent). No change to other mining components.
Overburden Management	<ul style="list-style-type: none"> Replacement of overburden is undertaken by an overland conveyor system or dry mine fleet. Overburden will be progressively backfilled in mine voids behind the advancing ore extraction area or in overburden emplacements. 	<ul style="list-style-type: none"> One additional overburden emplacement area/stockpile.
Rehabilitation Works	<ul style="list-style-type: none"> Progressive rehabilitation undertaken as mining advances. 	<ul style="list-style-type: none"> No change.
Biodiversity Offset Area	<ul style="list-style-type: none"> Approximately 4,274 ha will be established to offset native vegetation communities cleared at Ginkgo Mine. 	<ul style="list-style-type: none"> Approximately 759 ha of additional biodiversity offset area proposed.

3 STATUTORY CONTEXT

The project is classified as a transitional Part 3A project, and must therefore be assessed and determined under the former Section 75W of the EP&A Act.

The Minister for Planning is the approval authority for the modification request, however the request may be determined by the Director, Resource and Energy Assessments, under the Minister's delegation of 11 October 2017. This is because no public submissions were received on the proposed modification, no reportable political donations were made and Wentworth Shire Council raised no objections to the proposal.

No environmental planning instruments substantially govern, or contain provisions with specific relevance to, the assessment of the merits of the proposed modification.

4 CONSULTATION

The Department publicly exhibited the modification application and accompanying EA from 20 October 2017 until 4 November 2017 at the:

- Department's Information Centre;
- Wentworth Shire Council's office in Wentworth; and
- Nature Conservation Council's office in Newtown.

The Department also made the relevant documents available on its website, and wrote to the relevant government agencies, inviting them to comment on the proposal.

In response to the exhibition, the Department received advice from 4 agencies. None of the public agencies object to the proposed modification. Copies of the agency advice are provided in **Appendix D**. Cristal's response to these submissions is provided in **Appendix E**.

The **Office of Environment and Heritage** (OEH) confirmed that it accepts that the revised biodiversity offset strategy and mitigation measures would appropriately offset the additional biodiversity impacts associated with the proposed modification. OEH also provided broader comments in relation to the long-term security of the biodiversity offsets, which have been considered further in **Section 5.1** of this report.

The **Environment Protection Authority** advised it had no issues or comments on the proposal.

The **Division of Resources and Geoscience** (DRG) advised that it considered sustainable rehabilitation outcomes can be achieved for the project and had no objections to the proposed modification.

The **Department of Industry – Crown Lands & Water (CL&W)** provided minor comments relating to rehabilitation of the final landform and updating of the Water Management Plan for the mine, which have been considered in **Section 5.2**.

5 ASSESSMENT

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

- existing conditions of consent and previous Environmental Assessments for the mine;
- modification application and supporting information;
- applicable government policies and guidelines;
- advice from the relevant government agencies; and
- requirements of the EP&A Act.

A summary of the Department’s assessment is provided below.

5.1 Biodiversity

Background

Cristal has identified the need for an additional 114 hectares of surface disturbance adjacent to the approved mining path for the Ginkgo deposit. As part of this modification, Cristal is proposing to compensate the biodiversity impacts of the additional disturbance through additions to the mine’s existing biodiversity offset areas.

A biodiversity assessment (including calculation of offset liabilities) was undertaken for the proposed modification in accordance with the *NSW Biodiversity Offsets Policy for Major Projects and Framework for Biodiversity Assessment (FBA)*.

Biodiversity Impacts

The modification affects a total of 114 hectares of native vegetation, of which around 37% is poor condition grassland. Vegetation communities within the proposed extension area are shown on **Figure 3**.

No threatened flora species or endangered ecological communities (EECs) listed under the *NSW Threatened Species Conservation Act 1995 (TSC Act)* or the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* have been identified in the proposed extension area.



Figure 3: Vegetation Communities

The modification includes two new offset areas (Areas 7 and 8, shown on **Figure 2**) that would increase the total mine offset area by approximately 759 ha (ie. an increase from 4,014 ha to 4,473 ha).

A summary of the vegetation within the extension area and proposed additional offset areas, together with the credit requirement calculations, is provided in **Table 2**.

Table 2: Vegetation Communities and Offset Credit Calculations

Vegetation Community	Ginkgo Extension Modification		Proposed Offset Areas (Area 7 and 8)	
	Clearance Area (ha)	Credit Requirements	Offset Areas (ha)	Offset Credits
1. Black Box Woodland	6.5	175	16.7	127
2. <i>Eragrostis</i> Depression Grassland	1.5	35	17.3	115
3. Black Oak – Western Rosewood Woodland	57	1,700	337.5	2,169
4. Black Oak – Pearl Bluebush Woodland	0.5	14	277	3,185
5. Chenopod Sandplain Mallee Woodland /Shrubland	6	210	83	889
6. <i>Austrostipa</i> – <i>Sida</i> Grassland/Low Shrubland	42.5	0	27.5	246
Totals	114	2,134	759	6,731

As outlined in **Table 2**, the proposed offset strategy would more than compensate for (and exceed) the ecosystem credit requirements of the modification.

A total of 14 threatened fauna species listed under the TSC Act have been identified on the Ginkgo mine site, one of which has been recorded in the proposed extension area footprint (the Bolam's Mouse). Two other species (the Interior Blind Snake and Grey Falcon) have conservatively been assumed to potentially use habitat within the proposed extension area. As these species are species-credit species, all were given further consideration in the assessment.

The EA includes tests of significance for each of these species, along with other threatened flora and fauna species that may potentially be located on the site. The assessments conclude that the proposed modification is unlikely to result in a significant impact on any threatened species known or predicted to occur on the site.

Cristal has developed an additional biodiversity offset strategy in accordance with the FBA to compensate for the vegetation clearance and habitat loss associated with the proposed extension area.

The proposed offset strategy would also provide species credits for the Bolam's Mouse, Interior Blind Snake and Grey Falcon which would also meet (and exceed) the credit requirements of the modification (a total credit liability of 6,150 would be offset by 10,612 offset credits generated by the additional offset areas).

Recommended Conditions

The Department has recommended conditions requiring Cristal to implement and manage the offset areas in a manner that is consistent with the existing biodiversity offset areas for the mine, which include requirements on Cristal to:

- provide for the long-term conservation of the offset areas;
- lodge a substantial bond to ensure that the offset strategy is implemented; and
- prepare and implement a detailed Flora and Fauna Management Plan and Offset Management Plan (noting Cristal has consolidated the offset management plan requirements for its Murray Basin operations into one plan [the *Murray Basin Mines Offset Management Plan*], which would be required to be updated for the modification).

Regarding the performance of the existing offset areas, Cristal has successfully achieved the completion criteria established for the first year's implementation of the offset strategy for the mine. The ongoing progress of the offset areas (including the findings of various ecological monitoring programs) would continue to be reported in the Annual Reviews.

With these biodiversity offsetting and mitigation measures, along with the implementation of the existing flora and fauna management measures in the development consent, the Department is satisfied that the proposed modification would improve, or at least maintain, the biodiversity values of the region over the medium to long-term.

Western Lands Leases – Crown Land Amendments

The Department acknowledges OEH's comments that changes proposed under the draft Crown Land Management Regulation may affect the long-term security of the offset lands located on Western Lands Leases, in that the proposed amendments will allow applications for lessees to convert leases back to freehold. The proposed Regulation is expected to commence in early 2018, which would give force to the *Crown Land Management Act 2016* (CLM Act).

However, the Department notes that the CLM Act explicitly requires environmental, social, cultural heritage and economic considerations be taken into account in decision-making about Crown land. In this regard, the Department notes the conservation status of the existing mine offset areas located on Western Lands Leases has been secured via a change in lease purpose from grazing to conservation. As such, the Department has been advised by CL&W that it would be difficult for this status to be changed should a future application be made by the lessee to convert the land back to freehold and potentially change the conservation status.

The Department therefore has retained the existing conditions of consent and accepts Cristal's proposal to secure the additional offset areas using the established security mechanism.

5.2 Other Issues

A summary of the Department's assessment of other relevant issues is provided in **Table 3**.

Table 3: Assessment of Other Issues

Issue	Consideration	Recommendation
<i>Aboriginal Heritage</i>	<ul style="list-style-type: none"> A number of archaeological assessments have been undertaken for the development of the Ginkgo mine, which have identified some 36 Aboriginal sites within the Ginkgo mining lease area. Cristal has obtained a Section 87 permit and a Section 90 consent under the <i>National Parks and Wildlife Act 1974</i> (NPW Act), which provide approval for the destruction of Aboriginal sites within ML 1504, subject to consultation, salvage and management of the sites in accordance with the mine's Aboriginal Cultural Heritage Management Plan. To date, 25 Aboriginal sites have been salvaged from the areas subject to existing disturbance. Cristal has maintained consultation with the local Aboriginal community including the Dareton Local Aboriginal Land Council, the Barkandji Native Title Group Aboriginal Corporation (on behalf of the Barkandji traditional owners) and Native Title claimants associated with the Barkandji Native Title Claim. No known Aboriginal cultural heritage sites remain within the proposed extension area. Cristal would continue to implement the Aboriginal Cultural Heritage Management Plan and adhere to the requirements of the existing permits/consents and requirements under the NPW Act, including pre-clearance surveys and stop work protocols in the event of unexpected finds. With the implementation of the above, the Department and OEH are satisfied the proposed modification would be unlikely to adversely affect Aboriginal cultural heritage values in the region. 	<ul style="list-style-type: none"> Comply with existing conditions.
<i>Historic Heritage</i>	<ul style="list-style-type: none"> No historic heritage sites are within, or in proximity, to the proposed extension area. Two historic heritage items within the Ginkgo mine site – Bluebush Tank and Quamby Tank – would not be affected by the proposal. 	<ul style="list-style-type: none"> No recommendations required.
<i>Water Resources</i>	<ul style="list-style-type: none"> The proposed modification, particularly the minor 6 hectare decrease to the Ginkgo mine path, is expected to have a negligible impact on groundwater inflows, regional groundwater aquifers, privately-owned bores, groundwater quality or groundwater dependent ecosystems. The Department is satisfied that the proposed modification would comply with the minimal impact considerations of the <i>NSW Aquifer Interference Policy</i>. The proposed additional disturbance areas would increase the area of land subject to surface water management, however the Department is satisfied that this can be appropriately managed through the mine's existing water management plans. The Water Management Plan for the mine would be required to be updated in consultation with CL&W. 	<ul style="list-style-type: none"> Comply with existing conditions.

Issue	Consideration	Recommendation
<i>Noise, Air Quality and Greenhouse Gas (GHG) Emissions</i>	<ul style="list-style-type: none"> The nearest sensitive receiver to the Ginkgo mine is the 'Manilla' homestead, located about 5 kilometres to the west of the mine (see Figure 4). The next nearest receiver is the 'Trelega' homestead, located about 20 kilometres to the south-west of the mine. The proposed modification is not likely to result in any material increase to existing noise and dust levels at these or other receiver locations, given the distance to the receivers. The proposal would not result in any significant increase to GHG emissions associated with the mine. 	<ul style="list-style-type: none"> Comply with existing conditions.
<i>Visual Amenity</i>	<ul style="list-style-type: none"> The proposed modification is not likely to result in any material change to existing visual amenity and lighting impacts at sensitive receiver locations, given the nature of the operations and the distance to the receivers. 	<ul style="list-style-type: none"> Comply with existing conditions.
<i>Traffic</i>	<ul style="list-style-type: none"> The proposed modification would not result in any material changes to traffic and access arrangements and volumes for the mine. 	<ul style="list-style-type: none"> Comply with existing conditions.
<i>Agriculture and Land Use</i>	<ul style="list-style-type: none"> The proposed modification would not result in any significant impact on agriculture and other land uses in the region, which generally supports only low intensity grazing. 	<ul style="list-style-type: none"> Comply with existing conditions.
<i>Rehabilitation</i>	<ul style="list-style-type: none"> The proposed modification would not significantly alter the established and approved rehabilitation strategies, although the Rehabilitation Management Plan would need to be revised to reflect the revised disturbance areas. The Department notes DRG supports the project and considers that sustainable rehabilitation outcomes can be achieved. CL&W commented that the final landform should minimise the ongoing run-off from clean areas into the void and include stabilised diversions back into the natural surface water system where applicable. The Rehabilitation Management Plan for the mine would be required to be updated in consultation with the Department, CL&W, Wentworth Shire Council and DRG. 	<ul style="list-style-type: none"> Comply with existing conditions.
<i>Socio-economics</i>	<ul style="list-style-type: none"> The proposed modification would not have any significant adverse socio-economic impacts. The proposed extension would allow continued access to the mineral deposit that would otherwise likely be sterilised. 	<ul style="list-style-type: none"> Comply with existing conditions.

6 RECOMMENDED CONDITIONS

The Department has drafted a recommended Notice of Modification (see **Appendix A**), as well as a consolidated version of the development consent as modified (see **Appendix B**).

Cristal has reviewed the recommended conditions and raised no objections to the proposed amendments.

7 CONCLUSION

The Department has assessed the proposed modification application, EA, advice received from agencies, and response provided by Cristal, in accordance with the relevant requirements of the EP&A Act.

Based on this assessment, the Department is satisfied that the impacts of the proposed modification would remain similar to those as approved for the existing mine.

The modification affects a total of 114 hectares of native vegetation (of which around 37% is poor condition grassland), but this additional disturbance is not expected to result in any significant impact to threatened species or endangered ecological communities.

Both OEH and the Department are satisfied that Cristal's additional biodiversity offset strategy, comprising some additional 759 hectares of native vegetation and habitat for threatened species (including Bolam's Mouse), would effectively compensate for the additional vegetation disturbance. The proposed increase would bring the total mine's offset area to 4,473 ha of land, which Cristal would be required to manage and secure in the long-term.

The assessment indicates that the proposed modification is unlikely to result in any other significant impacts beyond those associated with the approved mine, and that the existing conditions of consent would be adequate to manage the modified project. The Department notes that these conditions require Cristal to review and if necessary revise its various environmental management plans to accommodate the proposed modification.

The Department also acknowledges that the proposal would facilitate ongoing safe and efficient mining along the currently approved Ginkgo deposit mine path.

On balance, the Department considers that the proposed modification has merit, and is in the public interest. Consequently, the Department recommends that the proposed modification is approved, subject to conditions.

8 RECOMMENDATION

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

- **consider** the findings and recommendations of this report;
- **determine** that the request (DA 251-09-01 MOD 13) falls within the scope of section 75W of the EP&A Act;
- **modify** the consent (DA 251-09-01); and
- **sign** the attached modification of approval (**Appendix A**).

Recommended by:

 12/12/17

Rose-Anne Hawkeswood
Senior Planner
Resource and Energy Assessments

Recommended by:

 12/12/17

Phillipa Duncan
Team Leader
Resource and Energy Assessments

9 DECISION

The recommendation is Approved / ~~Not approved by-~~

 14/12/17

Clay Preshaw
Director
Resource and Energy Assessments
 as delegate of the Minister for Planning

**APPENDIX A:
NOTICE OF MODIFICATION**

APPENDIX B:
CONSOLIDATED CONSENT

**APPENDIX C:
ENVIRONMENTAL ASSESSMENT**

See the Department's website at:

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=8813

**APPENDIX D:
SUBMISSIONS**

See the Department's website at:

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=8813

APPENDIX E:
RESPONSE TO SUBMISSIONS

See the Department's website at:

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=8813