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Our reference: EF13/4124; DOC14/167520-02  
Contact: Jason Price 02 6969 0700

The Senior Planner  
Mining Projects  
Department of Planning and Environment  
GPO Box 39  
SYDNEY NSW 2001

Dear Ms Elliot

**Re Cristal Mining – proposed modifications to Snapper mineral sands mine**

Thank you for your electronic mail dated 13 August 2014 to the Environment Protection Authority (EPA) seeking written submissions on the Environmental Assessment (EA) that supports Cristal Mining's proposed modifications to their Snapper mineral sands mine in the Wentworth Shire.

We have reviewed the information provided and determined that we can support the proposed modifications subject to the Department of Planning and Environment (DPE) incorporating the recommended conditions provided in Attachment 'A' into the development consent. We expect that all other existing development consent conditions relating to environmental issues will be retained in any modified approval.

Attachment 'B' contains our assessment of the EA, including justification for our recommended conditions of consent.

Please note that inclusion of our recommended conditions in any modified development consent granted by the DPE is important for our ongoing support of the proposal. It is expected that the EPA will be given an opportunity to review and comment on the DPE's draft conditions of consent for this proposal.

Where modified development consent for the Snapper mineral sands mine is granted an application for a variation to Environment Protection Licence No 12799 held by Cristal mining will be required to be submitted to the EPA prior to any construction work or activities associated with the proposal.

If you have any further enquiries about this matter please contact Jason Price by telephoning 02 6969 0700.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Darren Wallett', followed by the date '29/8/14'.

**DARREN WALLETT**  
Head, Griffith Unit  
Environment Protection Authority

## ATTACHMENT 'A'

We recommend that the following conditions are included in any modified development consent for the Snapper mineral sand mine.

### Limits on Approval

- The proponent must not process more than 14,000,000 tonnes of mineral sand in any calendar year.

### Noise and Air

- Transport of heavy mineral concentrate to Broken Hill is restricted to 37 loads per day.

### Waste

- The Applicant shall ensure that areas subject to slurried overburden emplacement are covered with a minimum of:
  - 1 metre of non-slurried overburden on the initial slurried sand storage dam; and
  - 3 metres of non-slurried overburden for all other areas,

in addition to a covering of the overburden with at least 0.2 metres of topsoil and at least 0.2 metres of subsoil.

- Waste permitted to be disposed;
  1. Waste generated outside the premises from the processing of heavy mineral concentrates produced at the **Snapper Mine**, the **Ginkgo Mine** or the **Atlas-Campaspe Mine**, AND
  2. Waste that is assessed as General Solid Waste (non-putrescible), following the technical procedure outlined in Waste Classification Guidelines, Part 1:Classifying Waste or that is specified as General Solid Waste (non-putrescible), in Schedule 1 of the Protection of the Environment Operations Act 1997; OR
  3. Waste that is assessed as hazardous waste on the basis it contains radioactive substances and except for this radioactive component would be classified as General Solid Waste (non-putrescible), following the technical assessment procedure outlined in Waste Classification Guidelines, Part 1: Classifying waste.

Note: Waste permitted to be disposed at the premises must comply with item 1 and at least one other item in this list at either item 2 or 3.

## ATTACHMENT 'B'

### Air Quality

The primary concern for this development in terms of air quality is the potential for impacts from particulate matter becoming airborne through removal and handling of topsoil and overburden and vehicle movements. The nearest sensitive receptor is the Manilla homestead 4 kilometres to the Northeast of the Snapper mineral sands mine (Snapper).

The methodology used in the Pacific Environment Limited Air Quality Review dated 4 July 2014 has been completed generally in accordance with the EPA guidelines "Approved Methods for the Modelling and Assessment of Air Pollutants in NSW".

The review of existing monitoring at Snapper and previous dispersion modelling results in combination with the modified proposal indicate predicted emissions at surrounding sensitive receptors from the proposed modified operations at Snapper are minor and comply with all relevant annual and 24 hour criteria for particulate matter with a diameter less than 10 micrometres and total suspended particulates. Any exceedence of the criteria would be due to short term significant background events.

Particulate matter and deposited dust monitoring is already included in the Snapper Environment Protection Licence and no additional monitoring is proposed based on the air quality modelling outcomes.

Based on the advice provided in the Environmental Assessment and the Highway Access Road criteria identified in the Air Quality Review, the EPA recommends that heavy mineral concentrate transport is restricted to 37 loads per day.

### Noise Impact Assessment

The Noise Review undertaken by Pacific Environment Limited and dated 7 July 2014 was completed generally in accordance with the New South Wales Industrial Noise Policy (INP).

The operational noise impact assessment criterion for the Snapper mineral sands mine is assessed at 35dB(A) Leq (15 minute) based on previous noise assessments. The traffic noise criterion for the Highway Access Road is 50dB(A) Leq (1 hour) during the day and 45dB(A) Leq (1 hour) at night.

The quantitative assessment of existing noise monitoring and previous assessments at Snapper in combination with the modified operations proposal, indicate predicted cumulative noise emissions from the Snapper and Ginkgo mines at surrounding sensitive receptors remain in compliance with the relevant criteria.

Based on the advice provided in the Environmental Assessment and to meet the criteria identified in the Noise Review, the EPA recommends that heavy mineral concentrate transport is restricted to 37 loads per day.

### Ground and Surface Water

There are no modifications in this proposal that affect current ground and surface water protection measures for the Snapper mineral sands project.

Groundwater and surface water impacts from potential mining activities at Snapper is monitored through extensive water quality monitoring programmes. The EPA does not propose any additional monitoring.

## Waste

Cristal's Mineral Separation Plant (MSP) at Broken Hill produces a waste stream which is currently approved for disposal at the Ginkgo and Snapper mines (and waste from the Atlas Campaspe mine is expected to be also approved), in the mine void behind the advancing ore extraction areas. The MSP waste is blended with sand residues and coarse rejects and deposited in the mine void behind the advancing ore extraction areas, above the current groundwater table and covered with a minimum of 10 metres of overburden.

The mineral sands from the Snapper and Ginkgo mines are from the same Loxton Parilla sand deposits and have similar radioactive and geochemical properties, making this disposal option acceptable. Mineral sands are extremely insoluble in saline water and leachable only under the most extreme chemical or thermal conditions and are intrinsically not a risk to groundwater by leaching.

This modification proposes to add saline overburden to the mine void in a mixture of clean overburden and MSP waste. Due to potential capillary rise this saline overburden presents a risk to successful rehabilitation outcomes on the mine pathway.

A review of additional information provided by Cristal, which includes saline monitoring reports on existing saline overburden deposits at the Ginkgo mine void, demonstrates that by ensuring saline overburden is placed to a minimum depth of 3 metres no adverse impacts on vegetation are observed.

The EPA has recommended that this minimum depth is required as a condition of approval similar to condition 5.1.1 "overburden management" in the Ginkgo consent.