



Report and recommendations of the Environmental Protection Authority



**Sino Iron Mine Continuation
– inquiry under section 46 of the
Environmental Protection Act 1986
to amend Ministerial Statement 822**

Sino Iron Pty Ltd and Korean Steel Pty Ltd

Report 1698

January 2021


Inquiry under section 46 of the *Environmental Protection Act 1986*

The Minister for Environment has requested that the Environmental Protection Authority (EPA) inquire into and report on the matter of changing implementation condition 8 of Ministerial Statement 822 relating to the Sino Iron Mine Continuation proposal.

Section 46(6) of the *Environmental Protection Act 1986* requires the EPA to prepare a report that includes:

- (a) a recommendation on whether or not the implementation conditions to which the inquiry relates, or any of them, should be changed
- (b) any other recommendations that it thinks appropriate.

The following is the EPA's report to the Minister pursuant to s. 46(6) of the *Environmental Protection Act 1986*.



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Chair

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1. The Proposal

The Sino Iron Mine Continuation proposal is to expand the existing iron ore mine, processing and export facility at Cape Preston. The proponents for the proposal are Sino Iron Pty Ltd and Korean Steel Pty Ltd.

The Sino Iron Mine Continuation proposal is a revision of the Iron Ore Mine, Downstream Processing (Direct-Reduced and Hot-briquetted Iron) and Port Construction proposal assessed by the Environmental Protection Authority (EPA) as detailed in Report 1056 (July 2002), and approved for implementation by the then Minister for Environment with the issue of Ministerial Statement (MS) 635 (20 October 2003). The conditions of MS 635 were subsequently amended with the publication of MS 822 (23 December 2009) following an EPA inquiry under s. 46 of the *Environmental Protection Act 1986* (EP Act) (Report 1343, November 2009).

The EPA assessed the Sino Iron Mine Continuation proposal at the level of Assessment on Referral Information (ARI), and published Report 1602 in August 2017. In this report, the EPA considered the following key environmental factors were relevant to the proposal:

- Hydrological Processes
- Inland Waters Environmental Quality
- Marine Environmental Quality
- Flora and Vegetation
- Terrestrial Fauna
- Air Quality
- Terrestrial Environmental Quality.

In applying the *Statement of Environmental Principles, Factors and Objectives* (EPA 2020b) these factors are now represented by:

- Inland Waters
- Marine Environmental Quality
- Flora and Vegetation
- Terrestrial Fauna
- Air Quality
- Greenhouse Gas Emissions
- Terrestrial Environmental Quality.

The EPA concluded in Report 1602 that the proposal may be implemented, provided the implementation of the proposal is carried out in accordance with the conditions and procedures in MS 635 as amended by MS 822, and the recommended conditions in Report 1602.

The Minister for Environment approved the Sino Iron Mine Continuation proposal for implementation subject to the implementation conditions of MS 1066 (20 October 2017).

Previously approved changes to the proposal

A change to the proposal was approved under s. 45C of the EP Act on 18 July 2018. The change is detailed in Attachment 1 to MS 1066 and allows for additional abstraction of groundwater (pit dewatering) of up to 4 gegalitres per annum (GL/a), increasing the total authorised extent to 12 GL/a.

Previously approved changes to the conditions

Conditions 7 (Marine Management Plan) and 8 (Marine Wastewater Outfall) of MS 635 were changed with the publication of MS 822 (23 December 2009), following an EPA inquiry under s. 46 of the EPA Act (Report 1343).

MS 822 deleted condition 7-1 (5) of MS 635 (Marine Management Plan), as the modelling it required had been completed, and amended condition 8 of MS 635 (Marine Wastewater Outfall) to reflect State and Commonwealth policy relevant to regulatory requirements for wastewater outfalls in Western Australia that had been published since the EPA's original assessment.

The amended condition 8 specified a Low Ecological Protection Area (LEPA) within 70 metres of the wastewater outfall diffuser (to be located in the port area), a Moderate Level of Ecological Protection Area (MEPA) within 250 metres of the port infrastructure, and a High Level of Ecological Protection (HEPA) to apply beyond the MEPA.

There have been no changes to the conditions of MS 1066.

2. Requested Changes to the Conditions

In June 2020, CITIC Pacific Mining Management Pty Ltd (CPM) on behalf of the proponents requested the following changes to the implementation condition 8 of MS 822:

- delete condition 8-4, which specifies the criteria for salinity, toxicants, toxicity, dissolved oxygen and temperature to be met at the boundary between the LEPA and the MEPA
- delete condition 8-5, which requires the proponent to verify diffuser performance in terms of the conditions to be met at the LEPA/MEPA boundary
- delete condition 8-6, which specifies the monitoring and management procedures to be used in verifying diffuser performance
- delete condition 8-7, which requires the proponent to submit a report containing the results of monitoring required by conditions 8-2 to 8-5 within 18 months of commissioning
- amend condition 8-8 to remove reference to conditions 8-4 and 8-5.

In July 2020, the Minister for Environment requested that the EPA inquire into and report on the matter of changing the implementation conditions of MS 822 relating to the Sino Iron Mine Continuation proposal. This report satisfies the requirements of the EPA's inquiry.

3. Inquiry into Changing the Conditions

The EPA has discretion as to how it conducts this inquiry. In determining the extent and nature of this inquiry, the EPA had regard to information such as:

- the currency of its original assessment (Report 1056)
- subsequent s. 46 inquiry (Report 1343)
- assessment of the revised proposal (Report 1602)
- Ministerial Statements 635, 822 and 1066
- information provided by CPM on behalf of the proponents
- advice from relevant decision-making authorities and technical experts
- any new information regarding the potential impacts of the proposal on the environment.

EPA Procedures

In conducting this inquiry, the EPA has considered and given due regard to relevant current and former policy documents. The EPA followed the procedures in the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures 2016* (State of Western Australia 2016) and the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual* (EPA 2020a).

4. Inquiry Findings

The EPA considered that Marine Environmental Quality is the key environmental factor relevant to the change to the conditions.

The other key environmental factors relevant to the proposal (Inland Waters, Flora and Vegetation, Terrestrial Fauna, Air Quality, Greenhouse Gas Emissions, and Terrestrial Environmental Quality) will not be affected by the requested changes to the conditions.

4.1 Marine Environmental Quality

The EPA's environmental objective for Marine Environmental Quality is *to maintain the quality of water, sediment and biota so that environmental values are maintained.*

Conclusions from EPA Report 1056

At the time of the EPA's assessment of the Iron Ore Mine, Downstream Processing (Direct-Reduced and Hot-briquetted Iron) and Port Construction proposal, the final location of the desalination plant wastewater outfall had not been determined. The proposal included options for either a shoreline disposal point on the western beach, or a deeper water disposal point off the jetty to the northwest of Preston Island. The configuration of the diffuser, chemical mixture of the wastewater and likely plume shape were also unknown, although some initial modelling for the two discharge points had been carried out.

Having particular regard to the:

- a) results of the modelling of the mixing zone of wastewaters from each site option
- b) as-yet unknown effects of chemicals and thermal impacts superimposed on the elevated salinity of the waste brine and the need for further work to assess this
- c) proximity of sensitive coral communities to the offshore site
- d) potential for a shore dispersal site to affect the activities of nesting turtles,

it was the EPA's opinion that the saline wastewater discharge component of the proposal could be managed to meet the EPA's environmental objective for this factor provided that:

- modelling to determine the likely size of the mixing zone for elevated temperatures, biocides, anti-scalants, anti-corrosion agents and other chemicals at the anticipated concentrations was carried out for the offshore wastewater disposal site option
- the effluent temperature does not exceed two degrees above ambient at the end of the outfall and its salinity does not exceed 65 parts per thousand
- the results are submitted to relevant government agencies and are used to determine an environmentally acceptable offshore location for the outfall
- any proposed changes to the volume and characteristics of the effluent discharge, including discharge of industrial waste, are referred to the EPA for assessment.

To manage the potential impacts of the wastewater outfall the EPA recommended the following conditions;

- condition 7-1 (5) requiring the Marine Management Plan to address detailed modelling of the areas of influence associated with the wastewater outfall location options, with regard to temperature, salinity and discharged additives; and associated environmental effects
- condition 8 requiring the proponent to prepare a Wastewater Management Plan to ensure a Moderate Protection Mixing Zone of no more than four hectares was maintained around the wastewater outfall diffuser.

Conclusions from EPA Report 1343

In 2009 the then proponent of the proposal requested condition 8 of MS 635 be amended to reflect State environmental policy that had been developed since MS 635 was issued. The proponent provided marine dispersion modelling, which was also required by condition 7-1 5, in support of its request to amend condition 8.

The EPA concluded that it was appropriate to amend condition 8 of MS 635 to reflect EPA Report 20 *Environmental Quality Criteria Reference Document for Cockburn Sound (2003 – 2004)* and *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC/ARMCANZ 2000), as at the time the two documents represented current State and Commonwealth policy relevant to regulatory requirements for wastewater outfalls in Western Australia. The EPA concluded that condition 7-1 5 could be deleted as the modelling it required had been completed.

MS 822 amended conditions 8-1 to 8-3 to establish a LEPA within 70 metres of the diffuser, a MEPA beyond the LEPA to within 250 metres of all points of the port structures, and a HEPA beyond the MEPA.

MS 822 amended conditions 8-4 to 8-7 to specify the conditions to be met at the boundary between the LEPA and the MEPA, and require the proponent to verify the diffuser performance in terms of achieving the required number of dilutions to meet those conditions.

Conclusions from EPA Report 1602

The changes to the Iron Ore Mine, Downstream Processing (Direct-Reduced and Hot-briquetted Iron) and Port Construction proposal assessed in Report 1602 did not alter the throughput of the desalination plant. The EPA considered the existing conditions of MS 635 as amended by MS 822 continued to be appropriate for managing the potential impacts of the marine wastewater outfall for the Sino Iron Mine Continuation proposal.

Assessment of the requested change to conditions

The EPA considers that the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- *Environmental Factor Guideline – Marine Environmental Quality* (EPA 2016a)

- *Technical Guidance – Protecting the Quality of Western Australia’s Marine Environment* (EPA 2016b).

To meet the requirements of condition 8, four monitoring stations have been established for the location of continuously deployed telemetered loggers (measuring temperature, salinity and dissolved oxygen); two at the boundary of the LEPA, one at the boundary of the MEPA, and one reference site east of the port facility. Whole Effluent Toxicity (WET) testing of the brine discharge has also been conducted as required by condition 8-4 (3), the results of which suggest that if 12x dilutions are achieved at the LEPA/MEPA boundary and 84x dilutions at the MEPA/HEPA boundary then the respective levels of ecological protection are likely to be met.

Monitoring has been carried out through early commissioning to post-commissioning over eight years. Full commissioning of the desalination plant has been completed, with three trains now typically operating to meet site water demand. As required by condition 8-7, CPM has submitted a report (CPM 2020) containing the results of at least 12 months post-commissioning monitoring. The report documents daily salinity and temperature at the two loggers on the LEPA/MEPA boundary and the one logger at the MEPA/HEPA boundary every month for the period of 2019.

CPM calculated the average monthly dilutions for the LEPA/MEPA and MEPA/HEPA logger sites in 2019 based on the difference in the average salinity measurements for the discharge and each of the loggers. The estimated dilutions were similar for both LEPA/MEPA sites and demonstrate that the estimated dilutions were above the targets for all months in 2019.

The EPA requested CPM provide additional monitoring data from previous years to provide greater confidence that the required level of environmental protection is being consistently achieved at the LEPA/MEPA boundary.

In response, CPM provided data for the 2018 calendar year as it was more representative of ongoing stable operations than earlier years when the proposal was still in a commissioning phase.

The 2018 data provided indicates that the requirements of condition 8-4 were met and the diffuser achieved at least 12 dilutions at the LEPA/MEPA boundary for each of the 12 months.

The operation of the desalination plant, including the marine outfall, is also regulated through a licence under Part V of the EP Act (Licence L8758/2013/1). The licence conditions require monitoring of the brine discharge and set limits for key water quality parameters and toxicants. The proponent considers the licence is sufficient to manage ongoing operation of the desalination plant ocean outfall, and has requested the monitoring requirements are removed from the Ministerial conditions.

From this analysis, the EPA is considers that the monitoring data for 2018 and 2019 demonstrates that the diffuser is consistently achieving sufficient dilutions to meet the required levels of environmental protection within the LEPA and MEPA, and considers that the ongoing regulation of the outfall may be managed through the conditions of a Part V licence.

The EPA notes advice from the Department of Water and Environmental Regulation that the current licence limits were derived from initial modelling results prior to verification of diffuser performance, and require amending to ensure the intent of condition 8-4 continues to be met.

To ensure continuity of regulation, the EPA recommends that conditions 8-4, 8-5, 8-6 and 8-7 only cease to have effect once the Part V licence has been amended appropriately. The EPA recommends they continue to have no effect for the time the Part V licence continues to include limits for water quality parameters derived to ensure the requirements of conditions 8-2 and 8-3 are met, as confirmed by the CEO in writing.

Amendments to condition 8-8 are then recommended to specifically include reference to monitoring required by the conditions of a Part V licence. Condition 8-8 retains the requirement that if monitoring indicates that the LEPA and MEPA outcomes are not being (or are not likely to be) met, the proponent shall immediately report this, and describe the actions to be taken to meet the outcomes.

In addition, the EPA recommends amendments to condition 8-3 to refer to the most recent version of the Australian and New Zealand Water Quality Guidelines. It also recommends condition 8-3 be amended to refer to levels of salinity, temperature, pH, turbidity and dissolved oxygen because these parameters are important primary indicators of marine water quality.

The EPA considers conditions 8-1, 8-2 and amended conditions 8-3 and 8-8, in addition to the provisions of Part V of the EP Act, will ensure the EPA's objectives for the key environmental factor of Marine Environmental quality will continue to be met.

5. Conclusions and Recommendations

Change to conditions 8-4, 8-5, 8-6, and 8-7 (insertion of condition 8-9)

CPM on behalf of the proponents has requested the deletion of conditions 8-4, 8-5, 8-6 and 8-7. The EPA considers it is appropriate for these conditions to cease to have effect once, and for the time that a licence issued under Part V of the EP Act includes limits for water quality parameters and toxicants calculated to ensure the requirements of condition 8-3 are met. The EPA recommends condition 8-9 is inserted to this effect.

Change to condition 8-8

CPM on behalf of the proponents has requested the amendment of condition 8-8 to remove references to conditions 8-4 to 8-5. The EPA considers it appropriate to amend this condition to remove references to conditions 8-4 to 8-5 and to include reference to monitoring carried out as a condition of a licence issued under Part V of the EP Act.

Change to condition 8-3

The EPA recommends condition 8-3 is amended to refer to the most recent version of the Australian and New Zealand Water Quality Guidelines.

The EPA also recommends it is appropriate to refer to levels of salinity, temperature, pH, turbidity and dissolved oxygen because these parameters are important primary indicators of marine water quality.

Conclusions

In relation to the environmental factors, and considering the information provided by CPM and relevant EPA policies and guidelines, the EPA concludes that:

- there are no changes to the proposal associated with the request to change the conditions
- impacts to the key environmental factors are considered manageable, based on the requirements of the original conditions retained in Ministerial Statement 635, 822 and 1066, and the imposition of the attached recommended conditions (Appendix 2).

Recommendations

Having inquired into this matter, the EPA submits the following recommendations to the Minister for Environment under s. 46 of the EP Act:

1. While retaining the environmental requirements of the original conditions of Ministerial Statements 635, 822 and 1066, it is appropriate to amend implementation conditions 8-3 and 8-8 of Ministerial Statement 822 and insert condition 8-9.

2. After complying with s. 46(8) of the EP Act, the Minister may issue a statement of decision to change condition 8 of statement 822 in the manner provided for in the attached recommended statement (Appendix 2).

References

CPM 2020, *Sino Iron Mine Continuation Proposed change to conditions (Section 46)*, CITIC Pacific Mining Pty Ltd, unpublished report 2 June 2020.

EPA 2016a, *Environmental Factor Guideline – Marine Environmental Quality*, Environmental Protection Authority, Perth, WA.

EPA 2016b, *Technical Guidance – Protecting the Quality of Western Australia’s Marine Environment*, Environmental Protection Authority, Perth, WA.

EPA 2020a, *Environmental Impact Assessment (Part IV Division 1 and 2) Procedures Manual*, Environmental Protection Authority, Perth, WA.

EPA 2020b, *Statement of Environmental Principles, Factors and Objectives*, Environmental Protection Authority, Perth, WA.

State of Western Australia 2016, *Western Australian Government Gazette*, No. 223, 13 December 2016.

Appendix 1: Identified Decision-Making Authorities and Recommended Environmental Conditions

Identified Decision-Making Authorities

The decision-making authorities (DMAs) in the table below have been identified for the purposes of s. 45 as applied by s. 46(8) of the *Environmental Protection Act 1986*.

Decision-Making Authority	Legislation (and Approval)
1. Minister for Environment	<i>Biodiversity Conservation Act 2016</i> (Taking of threatened fauna)
2. Minister for Water	<i>Rights in Water and Irrigation Act 1914</i> (Water abstraction licence)
3. Minister for State Development	<i>Iron Ore Processing (Mineralogy Pty Ltd) Agreement Act 2002</i> as amended
4. Minister for Aboriginal Affairs	<i>Aboriginal Heritage Act 1972</i> (Section 18 clearances)
5. CEO, Department of Water and Environmental Regulation	<i>Environmental Protection Act 1986</i> (Works Approval and Licence)
6. Executive Director, Resource and Environmental Compliance Division, Department of Mines, Industry Regulation and Safety	<i>Mining Act 1978</i> (Mining proposal)
7. State Mining Engineer Department of Mines, Industry Regulation and Safety	<i>Mines Safety and Inspection Act 1994</i> (Mine safety)
8. Chief Dangerous Goods Officer, Department of Mines, Industry Regulation and Safety	<i>Dangerous Goods Safety Act 2004</i> (Storage and handling of dangerous goods)

Note: In this instance, agreement is only required with DMA 1 - 4 since these DMAs are Ministers.

Recommended Environmental Conditions

STATEMENT TO CHANGE THE IMPLEMENTATION CONDITIONS APPLYING TO A PROPOSAL

(Section 46 of the *Environmental Protection Act 1986*)

SINO IRON MINE CONTINUATION

Proposal: To expand the existing iron ore mine, processing and export facility at Cape Preston.

Proponent: Sino Iron Pty Ltd and Korean Steel Pty Ltd
Australian Company Number: 058 429 708 and 058 429 600

Proponent Address: CITIC Pacific Mining Management Pty Ltd
45 St Georges Terrace, PERTH WA 6000

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Preceding Statement/s Relating to this Proposal: 635, 822, 1066

Pursuant to section 45 of the *Environmental Protection Act 1986*, as applied by section 46(8), it has been agreed that the implementation conditions set out in Ministerial Statement No. 822, be changed as specified in this Statement.

Condition 8-3 is deleted and replaced with:

8-3 The proponent shall ensure that within the Low Ecological Protection Area the 95th percentile of bioaccumulating toxicant concentrations meets *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* 80% species protection guideline levels, and within the Moderate Ecological Protection Area the 95th percentile concentration of toxicants meets *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* 90% species protection levels and the median salinity, temperature, pH and turbidity levels meet the seasonal 80th percentile of natural background levels and dissolved oxygen levels exceed 80% saturation.

Condition 8-8 is deleted, and replaced with:

8-8 In the event that monitoring, including monitoring required as a condition of a licence issued under Part V of the *Environmental Protection Act 1986*, indicates that the requirements of conditions 8-2 and 8-3 are not being met or are not likely to be met, the proponent shall immediately report such findings to the CEO along with a description of the management actions to be taken to meet the requirements of 8-2 and 8-3.

Condition 8-9 is inserted:

8-9 Conditions 8-4 to 8-7 of Ministerial Statement 822 cease to have effect for the time a licence issued under Part V of the *Environmental Protection Act 1986* includes limits for water quality parameters derived to ensure the requirements of conditions 8-2 and 8-3 are met, as confirmed by the CEO in writing.

Acronym, Abbreviation or Term	Definition or Reference
CEO	The Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the <i>Environmental Protection Act 1986</i> , or his delegate.
<i>Australian and New Zealand Guidelines for Fresh and Marine Water Quality</i>	www.waterquality.gov.au/anz-guidelines