



Report and recommendations of the Environmental Protection Authority



Barrambie Vanadium Project - inquiry under section 46 of the *Environmental Protection Act 1986* to amend Ministerial Statement 911

Australian Titanium Pty Ltd

Report 1647

September 2019

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 the implementation conditions relating to the Barrambie Vanadium Project (Ministerial Statement 911).

Section 46(6) of the *Environmental Protection Act 1986* requires the EPA Report to include:

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

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



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Chairman

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1. The proposal

The Barrambie Vanadium Project is to develop an open-cut vanadium mine and process plant at Barrambie, 75 kilometres (km) north-west of the Sandstone town site and 116 km south-east of Meekatharra. The proposal is within the Shire of Meekatharra and the Shire of Sandstone. The nominated proponent for the proposal is Australian Titanium Pty Ltd .

The EPA assessed the proposal at the level of Public Environmental Review, releasing its Report and Recommendations (Report 1446) in August 2012.

In Report 1446 the EPA identified the following key environmental factors relevant to the proposal:

- Vegetation and Flora
- Fauna
- Surface and Groundwater
- Rehabilitation and Closure.

Applying the *Statement of Environmental Principles, Factors and Objectives* (EPA 2018b) these factors are now described as:

- Flora and Vegetation
- Subterranean Fauna
- Inland Waters.

The EPA concluded in Report 1446 it was likely the EPA's objectives would be achieved, provided there was satisfactory implementation by the proponent of the EPA's recommended conditions.

The then Minister for Environment approved the proposal for implementation, subject to the implementation conditions of Ministerial Statement 911 (4 October 2012).

2. Requested changes to conditions

Condition 3-1 of Ministerial Statement 911 states that the proponent shall not commence implementation of the proposal after the expiration of five years from the date of the Statement (being 4 October 2012), and any commencement, within this five-year period, must be substantial.

The proposal has not yet substantially commenced. In September 2018 the proponent requested a change to condition 3-1 of Ministerial Statement 911 in order to extend the authorised timeframe for substantial commencement of the proposal by five years. The proponent has not proposed any changes to the proposal, or to the other conditions of Ministerial Statement 911.

In response to the proponent's request, on 19 November 2018 the Minister for Environment requested the EPA to inquire into and report on the matter of changing the implementation conditions relating to the proposal. This report satisfies the requirements of the EPA's inquiry.

3. Inquiry into changing conditions

The EPA typically recommends the Minister sets conditions on significant proposals that require them to be substantially commenced within a specified timeframe. Extending this timeframe requires the Minister to change the relevant conditions under s.46 of the *Environmental Protection Act 1986*, and provides for the EPA to review and consider the appropriateness of the implementation conditions relating to the proposal.

The EPA has discretion as to how it conducts an inquiry under s.46. The currency of the initial assessment and issue of the Ministerial Statement (that is, when it was published) is also instructive in determining the extent and nature of the inquiry.

In conducting this inquiry, the EPA reviewed the information provided by the proponent and considered the original EPA assessment of the proposal detailed in Report 1446. In considering whether it should recommend an extension of the authorised timeframe for substantial commencement of the proposal, the EPA considered whether there was any change to, or new information relating to, the key environmental factors relevant to the proposal. The EPA also considered if any new key environmental factors had arisen since its original assessment of the proposal.

EPA policy and procedures

In inquiring into the requested change to conditions, the EPA has given due consideration to relevant published EPA policies and guidelines, noting that a number of published policies and guidelines pertaining to this proposal were considered, but not determined to be relevant. The EPA followed the procedures in the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures 2016*, and the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual (EPA 2018a)*.

4. Inquiry findings

The EPA considered that the following are the key environmental factors relevant to the change to conditions:

- Flora and Vegetation
- Subterranean Fauna
- Inland Waters.

4.1 Flora and Vegetation

The EPA's environmental objective for this factor is *to protect flora and vegetation so that biological diversity and ecological integrity are maintained.*

The proposal requires the clearing of 1774 hectares of native vegetation. No Threatened Species, Priority Species, Threatened Ecological Communities (TECs) or Priority Ecological Communities (PECs) have been identified within the proposal area. The vegetation around the mine site is predominantly *Acacia aneura* (Mulga) woodlands, while the borefield is predominantly *Hakea* and *Eremophila* open shrublands.

Flora and vegetation surveys and groundwater modelling indicated that seven vegetation communities would be within the modelled drawdown footprint of the borefield. These communities contain some tree and tall shrub species on the waterways and floodplains, including *Eucalyptus vitrix*, that may be dependent on groundwater. Four of these communities are not well replicated within the survey area and may be considered locally significant. These communities contain species such as *Acacia aneura*, *Melaleuca stereophloia*, *Melaleuca xerophila* and *Eucalyptus vitrix*.

EPA Report 1446

EPA Report 1446 stated that, having particular regard to:

- the relatively common vegetation and flora over the project site that are typical of the broader region;
- no threatened flora species being identified in flora surveys; and
- the surveys that were carried out in accordance with EPA guidelines,

it was the EPA's opinion that it would be likely the EPA's objectives for the factor would be achieved.

Current situation

Desktop reviews conducted in 2018 (Mattiske, 2018) indicate one threatened species (*Ricinocarpos brevis*) and twelve priority species have the potential to occur within the greater Barrambie area. Previous flora and vegetation surveys have not recorded *Ricinocarpos brevis* within the proposal area despite intense sampling over a two year period. Four of the twelve Priority (P) species (*Pityrodia canaliculata* P1,

Tecticornia fimbriata P3, *Labichea eremaea* P3, and *Baeckea sp.* P3) have been recorded in previous flora and vegetation surveys, however the records are approximately 25 km from the site and will not be impacted by the proposal.

The proponent is not proposing any changes to the proposal that would change the extent or location of clearing of native vegetation.

The EPA is satisfied that its objectives for this factor can be met, and the potential impacts of the proposal can be managed through existing implementation condition 1 (proposal implementation), which limits the amount and location of vegetation clearing.

4.2 Subterranean Fauna

The EPA's objective for this factor is *to protect subterranean fauna so that biological diversity and ecological integrity are maintained.*

The proposed water supply source for the proposal is an unconfined calcrete aquifer on Yarrabubba Station, known as the Cogla Downs drainage system. It lies 35 km north-west of the proposed mine site and is part of an extensive paleodrainage system with arms trending north-west, eastwards and southwards. The aquifer is inhabited by the 'Cogla Downs calcrete groundwater assemblage type on Murchison paleodrainage on Yarrabubba Station', listed by the Department of Biodiversity, Conservation and Attractions as a Priority 1 PEC. Six potentially new stygofauna species have been collected only from bores within the impact zone.

EPA Report 1446

Stygofauna surveys were carried out in 2008 and 2009, sampling bores and pastoral wells at 15 sites with 41 samples collected overall. Relevant points arising from the surveys were:

- the groundwater quality, as measured over the four sampling surveys and between sampled bores was similar, implying a degree of connectivity through the aquifer
- the distribution pattern of several stygofauna groups, as indicated by the sampling, also supports a high level of connectivity in the calcrete aquifer. This may enable stygofauna populations to move within the calcrete body away from areas where the expected drawdown from operating bores would expose their habitat to a drier regime
- the proposed bore field would create an area of drawdown occupying about 15 per cent of the total area of the wider calcrete aquifer
- movement of stygofauna may also occur between the calcrete unit and the surrounding alluvial sediments.

The EPA requested a peer review of the proposed borefield and water supply to address uncertainties regarding the extent to which the aquifer would be impacted by abstraction. The peer review found that the estimates of the potential impacts to the aquifer were conservative, as the previous work had not taken into account recharge

from rainfall, the input from the eastern arm of the Cogla Downs drainage system, and inflows from the surrounding alluvial sediments.

The EPA noted that groundwater abstraction is licenced under the provisions of the *Rights in Water and Irrigation Act 1914* and would be managed by the Department of Water (now the Department of Water and Environmental Regulation) to ensure abstraction occurs consistent with a sustainable yield.

The EPA also noted the apparent connectivity of habitat across and within the profile of the aquifer. In view of this, the EPA recommended a condition (condition 7 Groundwater drawdown – Cogla Downs Calcrete Aquifer and management of stygofauna) to ensure that the saturated thickness of the aquifer is maintained at 75 per cent for the first five years of operation of the borefield, and that this shall not fall below 50 per cent over the life of the project.

The EPA considered that its objective for the factor could be achieved provided the recommended condition was imposed requiring the proponent to manage groundwater abstraction to ensure that stygofauna habitat is retained in the aquifer.

Current situation

No further subterranean fauna studies have been completed since the publication of Ministerial Statement 911, however the proponent is not proposing any changes to the proposal that would change the potential impacts to subterranean fauna, nor any changes to the Ministerial Conditions of 911 relating to the management of subterranean fauna.

The EPA is satisfied that its objectives for this factor can be met, and the potential impacts of the proposal can be managed through existing implementation condition 7 (Groundwater drawdown – Cogla Downs Calcrete Aquifer and management of stygofauna).

4.3 Inland Waters

The EPA's objective for this factor is *to maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected.*

There are no significant drainage systems in the immediate vicinity, however natural surface flows around the mine pits, waste dumps, tailings ponds and plant site will be disrupted. The primary tailings pond will be unlined, with flocculant the only additive to that stream. A separate, lined storage pond will be built for the calcine tails which will contain traces of aluminium and sodium salts, plus vanadium, ferric and titanium compounds. A lined evaporation pond will also be required for the barren solution comprising low concentrations of sodium and ammonium sulfates and chlorides. The proponent proposes to encapsulate the evaporites in clay to prevent leaching post-closure.

Dewatering will be required as the pits are expected to extend 25-30 metres below the water table. Water recovered from the pits will be used in the process plant, however basement rocks in the vicinity of the mine are relatively impermeable clays

and significant yields are not expected. The proponent proposes to source a further 2.5 gegalitres of water a year from the Cogla Downs drainage system. The predicted drawdown from the borefield has the potential to impact phreatophytic vegetation communities and pastoralists' bores.

EPA Report 1446

The EPA was satisfied that significant impacts to surface water drainage systems were not expected, and potential impacts to surface and groundwater quality could be managed under other legislation including Part V of the *Environmental Protection Act 1986*.

Noting that the peer review of the groundwater supply found the original drawdown predictions had been overestimated, the EPA considered the proponent's strategy to spread abstraction over an additional number of bores appropriate for managing potential impacts to the aquifer, and the provisions of the *Rights in Water and Irrigation Act 1914* capable of ensuring abstraction occurs consistent with a sustainable yield.

The EPA considered the key environmental factor had been adequately addressed, and its objectives for the factor could be achieved, noting that groundwater abstraction will be managed subject to licence requirements under the *Rights in Water and Irrigation Act 1914*.

Current situation

No additional studies have been completed since the publication of Ministerial Statement 911, however the proponent is not proposing any changes to the proposal that would change the potential impacts to Inland Waters, nor any changes to the Ministerial Conditions of 911 relating to the management of Inland Waters.

The EPA is satisfied that its objectives for this factor can be met, and the potential impacts of the proposal can be managed through the existing implementation conditions of Ministerial Statement 911.

4.4 Other factors addressed in EPA Report 1446

Terrestrial Fauna

EPA Report 1446 considered Terrestrial Fauna together with Subterranean Fauna under the key environmental factor of Fauna. EPA Report 1446 noted that the proposal area was not particularly important to the survival of endangered fauna, and there were no habitats favoured by short-range endemics within the proposal area. Field surveys conducted for the original assessment only identified one species of conservation significance, the Priority 4 Australian Bustard *Ardeotis australis*. Its range is extensive, and its preferred habitat of lightly wooded grasslands and drainage areas is widely represented in inland Australia.

EPA Report 1446 discussed the general risk to fauna that trenching for the water pipeline posed, and the EPA recommended a condition (condition 6 - Fauna) to ensure acceptable management practices to minimise impacts to fauna that might

otherwise be unable to escape from the open trench. The proponent has not proposed any changes to this condition, and the EPA does not consider the key environmental factor of Terrestrial Fauna needs to be further addressed in this inquiry.

Rehabilitation and Closure

EPA Report 1446 considered Rehabilitation and Closure as a separate key environmental factor. The EPA noted that the proposal is subject to the *Mining Act 1978* and considered the issues of rehabilitation and mine closure could be adequately addressed by the Department of Mines and Petroleum (now the Department of Mines, Industry Regulation and Safety) and meet the EPA's objectives. The EPA considers this still to be the case, and that closure and rehabilitation do not need to be further addressed in this inquiry.

5. Conclusions and recommendations

Conclusions

In relation to the environmental factors, and in consideration of the information provided by the proponent and relevant EPA policies and guidelines, the EPA concludes that:

- The proposal has not changed since the EPA's original assessment.
- There have been no significant changes to the key environmental factors relevant to the proposal, being Flora and Vegetation, Subterranean Fauna, and Inland Waters, since the EPA's original assessment.
- No new key environmental factors relevant to the proposal have arisen since the EPA's original assessment.
- The potential impacts to the key environmental factors can be adequately managed by the existing implementation conditions of Ministerial Statement 911.
- The authorised timeframe for substantial commencement of the proposal may be extended by five years as requested.

Recommendations

Having inquired into the matter of changing the implementation conditions relating to the Barrambie Vanadium Project, the EPA submits the following recommendations to the Minister for Environment under s.46 of the *Environmental Protection Act 1986*:

- That, while retaining the environmental requirements of the original conditions of Ministerial Statement 911, it is appropriate to delete condition 3 and replace it with a new implementation condition extending the authorised timeframe for substantial commencement of the proposal by five years, to 4 October 2022.
- That, after complying with s.46(8) of the *Environmental Protection Act 1986*, the Minister issues a statement of decision to change the conditions of Statement 911 in the manner provided for in the attached recommended Statement.

References

Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures 2016 Western Australia, *Western Australian Government Gazette* No 223, 13 December 2016.

Environmental Protection Authority (2012) *Barrambie Vanadium Project, Report 1446* Environmental Protection Authority, Perth, WA.

Environmental Protection Authority (2018a) *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual*, Environmental Protection Authority, Perth, WA.

Environmental Protection Authority (2018b) *Statement of Environmental Principles, Factors and Objectives*, Environmental Protection Authority, Perth, WA.

Mattiske Consulting Pty Ltd (2008) *Flora and Fauna Assessment, Barrambie Survey Area – Report Prepared for Neometals Ltd.*

Definitions

Threatened Species	Listed by order of the Minister for Environment as Threatened in the category of critically endangered, endangered or vulnerable under s.19(1) of the <i>Biodiversity Conservation Act 2016</i> .
Threatened Ecological Community (TEC)	Communities declared under s.27 of the <i>Biodiversity Conservation Act 2016</i> .
Priority Species	Species listed by the Department of Biodiversity, Conservation and Attractions as: Priority 1, 2, or 3: Possibly threatened species that do not meet survey criteria, or are otherwise data deficient. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened flora; or Priority 4: species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species list.
Priority Ecological Community (PEC)	Communities listed by the Department of Biodiversity, Conservation and Attractions as: Priority 1, 2, or 3: Possibly threatened ecological communities that do not meet survey criteria or that are not adequately defined. The three categories are ranked in order of priority for survey and/or definition of the community. Priority 4: Ecological communities that are adequately known, and are rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. Priority 5: Conservation Dependent ecological communities.

Appendix 1: Identified Decision-Making Authorities and recommended environmental conditions

Identified Decision-Making Authorities

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

1. Minister for Water
2. Minister for Aboriginal Affairs
3. Minister for Lands
4. Director General, Department of Water and Environmental Regulation
5. Director General, Department of Mines, Industry Regulation and Safety
6. Shire of Meekatharra
7. Shire of Sandstone

RECOMMENDED ENVIRONMENTAL CONDITIONS
**STATEMENT TO CHANGE THE IMPLEMENTATION CONDITIONS APPLYING TO
A PROPOSAL**
(Section 46 of the *Environmental Protection Act 1986*)

BARRAMBIE VANADIUM PROJECT
SHIRES OF MEEKATHARRA AND SANDSTONE

Proposal: To develop an open-cut mine and process plant at Barrambie, 75 kilometres north-west of the Sandstone townsite and 116 kilometres south-east of Meekatharra.

Proponent: Australian Titanium Pty Ltd
Australian Company Number 133653960

Proponent Address: Level 3 1292 Hay Street
WEST PERTH WA 6005

Report of the Environmental Protection Authority: 1647

Previous Report Relating to this Proposal: 1446

Preceding Statement/s Relating to this Proposal: 911

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. 911, be changed as specified in this Statement.

1. Condition 3 of Ministerial Statement 911 is deleted and replaced with:

3 Time Limit for Proposal Implementation

3-1 The proponent shall not commence implementation of the proposal after 4 October 2022, and any commencement, prior to this date, must be substantial.

3-2 Any commencement of implementation of the proposal, on or before 4 October 2022, must be demonstrated as substantial by providing the CEO with written evidence, on or before 4 October 2022.