



# Report and recommendations of the Environmental Protection Authority



## West Angelas Iron Ore Project Deposits C, D and G - Revised Proposal

Robe River Mining Co Pty Ltd

Report 1636

May 2019

## Environmental impact assessment process timelines

Date	Progress stages	Time (weeks)
23/08/2017	EPA decides to assess – level of assessment set	
16/11/2017	EPA approved Environmental Scoping Document	12
20/07/2018	EPA accepted Environmental Review Document	35
30/07/2018	Environmental Review Document released for public review	10 days
25/09/2018	Public review period for Environmental Review Document closed	8
20/02/2019	EPA accepted Proponent Response to Submissions	21
21/03/2019	EPA considered its assessment	4
3/05/2019	Proponent provided further information	6
8/05/2019	EPA completed its assessment and provided report to the Minister for Environment	4 days
13/05/2019	EPA report published	6 days
27/05/2019	Close of appeals period	2

Timelines for an assessment may vary according to the complexity of the proposal and are usually agreed with the proponent soon after the Environmental Protection Authority (EPA) decides to assess the proposal and records the level of assessment.

In this case, the EPA met its timeline objective to complete its assessment and provide a report to the Minister.



Robert Harvey  
Deputy Chairman

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## Executive summary

The West Angelas Iron Ore Project Deposits C, D and G – Revised Proposal (the proposal) was referred to the Environmental Protection Authority (EPA) by Robe River Mining Co Pty Ltd (the proponent) in July 2017. The proposal is to undertake expansion activities at the West Angelas mine site, 130 kilometres (km) north-west of Newman in Western Australia’s Pilbara region, to sustain current production levels.

The EPA assessed the proposal at the level of Public Environmental Review, including an eight-week public review period, and has concluded that the proposal is environmentally acceptable and can be implemented subject to certain conditions.

All components of the existing approved West Angelas Iron Ore Project are currently authorised under Ministerial Statements (MS 970 and MS 1015). The EPA recommends that a contemporary Ministerial Statement referencing updated EPA guidance, and incorporating all elements of the approved proposal as well as elements in this revised proposal, replace MS 970 and MS 1015.

In the course of the assessment, the EPA examined potential impacts on the key environmental factors of Flora and Vegetation, Inland Waters (Hydrological Processes and Inland Waters Environmental Quality), Subterranean Fauna, and Terrestrial Fauna.

The proposal extends the development envelope to within 2 km of Karijini National Park. The EPA notes that the proponent’s site selection and mine design process has resulted in the development avoiding and minimising impact on key environmental factors where possible.

The EPA has recommended conditions including management and mine closure plans, a requirement to ensure there is no drawdown of groundwater associated with the proposal at the boundary of, or within, Karijini National Park, and offsets to counterbalance residual impacts to vegetation in ‘Good to Excellent’ condition, the West Angelas Cracking Clay Priority Ecological Community, riparian vegetation, and Ghost Bat habitat.



# 1. Introduction

This report provides the advice and recommendations of the Environmental Protection Authority (EPA) to the Minister for Environment on the outcomes of the EPA's environmental impact assessment of the proposal by Robe River Mining Co Pty Ltd (the proponent). The proposal is to develop the West Angelas Iron Ore Project Deposits C, D and G to sustain production levels at the existing West Angelas operations.

The EPA has prepared this report in accordance with section 44 of the *Environmental Protection Act 1986* (EP Act). This section of the EP Act requires the EPA to prepare a report on the outcome of its assessment of a proposal and provide this assessment report to the Minister for Environment. The report must set out:

- what the EPA considers to be the key environmental factors identified during the assessment
- the EPA's recommendations as to whether or not the proposal may be implemented and, if the EPA recommends that implementation be allowed, the conditions and procedures to which implementation should be subject.

The EPA may also include any other information, advice and recommendations in the assessment report as it thinks fit.

The proponent referred the proposal to the EPA on 11 July 2017. On 23 August 2017, the EPA decided to assess the proposal and set the level of assessment at level of Public Environmental Review. The EPA approved the Environmental Scoping Document (ESD) for the proposal on 16 November 2017. The Environmental Review Document (ERD) was released for public review from 30 July 2018 to 25 September 2018.

## 1.1 EPA procedures

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 2016*.

## 1.2 Assessment by the Commonwealth Government

On 3 December 2018, the proposal was determined to be a controlled action by a delegate of the Commonwealth Minister for the Environment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as it will, or is likely to, have a significant impact on the following Matters of National Environmental Significance (MNES):

- listed threatened species and communities (section 18 and 18A).

The proposal is being assessed by a separate process under the EPBC Act.

## 2. The revised proposal

### 2.1 Proposal summary

The proposal expands the currently approved and operating West Angelas Iron Ore Project, located approximately 130 kilometres (km) north-west of Newman (Figure 1). The existing approved operations comprise an open-cut iron ore mine and associated infrastructure. The West Angelas Iron Ore Project is located on Mineral Lease (ML) 248SA, granted in 1976 under the *Iron Ore (Robe River) Agreement Act 1964*.

The proponent obtained approval to implement the West Angelas Iron Ore Project under the EP Act in June 1999. Ministerial Statement (MS) 514 was issued on 28 June 1999 and approved the development of deposits A, B and E, including waste dumps, ore processing operations and associated infrastructure. At the request of the proponent, the EPA commenced a comprehensive inquiry under s46 (1) of the EP Act to contemporise and rationalise the implementation conditions set out in MS 514. As a result of this process, MS 970 was issued in June 2014, replacing MS 514.

To support the continuation of mining at the site and sustain production, MS 1015 was issued on 21 August 2015, and provided a revision to the operating mine and allowed for the development of deposits A West and F at the site. Noting this, all components of the approved West Angelas Iron Ore Project are currently authorised under MS 970 and 1015.

Further expansion activities are proposed at the West Angelas Iron Ore Project mine site to sustain current production levels. The proposed expansion is to develop the deposits C, D and G, located west of the existing West Angelas project (Figure 2).

The proposed change comprises the following additional activities and/or elements:

- **Extension of the existing development envelope:** an extension of the existing development envelope by 4,100 hectares (ha) to 26,700 ha.
- **Additional clearing:** up to 4,315 ha of additional clearing of vegetation.
- **Dewatering:** abstraction of up to 14 gigalitres per annum (GL/a) of groundwater for dewatering purposes excluding potable supply. Discharge of up to 12 GL/a of surplus dewatering water to a local ephemeral tributary of Turee Creek East.
- **Associated infrastructure:** including pits, waste dumps, stockpiles, and supporting infrastructure. Infrastructure includes, but is not limited to, dewatering and surplus water management infrastructure; surface water management and Managed Aquifer Recharge (MAR) infrastructure; linear infrastructure (which includes heavy and light vehicle roads, conveyor, power and telecommunications); and support facilities.

The EPA recommends that a contemporary Ministerial Statement replace MS 970 and MS 1015 for the proposal. The contemporary Ministerial Statement will reflect the EPA's current policy documents, including Environmental Assessment Guideline

No. 1 (EAG1) (EPA, 2012) and the *WA Environmental Offsets Guidelines* (Government of Western Australia, 2014).

The revised proposal's development envelope is delineated in Figure 2. The development envelope includes all elements currently authorised under MS 970 and MS 1015, as well as the above changes sought in this revision of the proposal.

The key characteristics of the revised proposal (i.e. the amalgamation of the existing approved project and the proposed change) are summarised in Tables 1 and 2 below. A detailed description of the proposed change in relation to the existing approved project is provided in section 2 of the ERD (Robe River Mining Co Pty Ltd, 2018).

**Table 1: Summary of the proposal**

<b>Proposal title</b>	West Angelas Iron Ore Project Deposits C, D and G – Revised Proposal
<b>Short description</b>	This proposal is a revision of the existing West Angelas Iron Ore Project and includes the above and below watertable open-cut iron ore mining from additional deposits a Managed Aquifer Recharge (MAR) scheme, and the construction and operation of associated infrastructure including (but not limited to) the following: dewatering and surplus water management infrastructure; surface water management infrastructure; linear infrastructure; processing, and support facilities.

**Table 2: Location and proposed extent of physical and operational elements**

<b>Element</b>	<b>Location</b>	<b>Existing approval/s (Ministerial Statement/s and other regulatory approvals)</b>	<b>Proposed change (this proposal)</b>	<b>Proposed extent (revised proposal) total of existing approval + proposed change</b>
<b><i>Physical elements</i></b>				
Mine and associated infrastructure	Figure 2	Clearing of no more than 7,890 ha within the 22,600 ha West Angelas Mine Development Envelope	Additional clearing of no more than 4,315 ha within an extended West Angelas Mine Development Envelope (extended by 4,100 ha)	Clearing of no more than 12,205 ha within the 26,700 ha West Angelas Mine Development Envelope.

Element	Location	Existing approval/s (Ministerial Statement/s and other regulatory approvals)	Proposed change (this proposal)	Proposed extent (revised proposal) total of existing approval + proposed change
Linear infrastructure	Figure 2	Not specified	No change proposed	Clearing of up to 1,500 ha within the 19,400 ha Linear Infrastructure Development Envelope
<b><i>Operational elements</i></b>				
Dewatering	-	Not specified under Part IV of the EP Act. Abstraction of up to 5.4 GL/a of groundwater for dewatering purposes (excluding potable supply) approved under a groundwater licence issued under the <i>Rights in Water and Irrigation Act 1914</i> .	Additional abstraction of up to 8 GL/a of groundwater for dewatering purposes (excluding potable supply).	Abstraction of up to 14 GL/a of groundwater for dewatering purposes (excluding potable supply).

<b>Element</b>	<b>Location</b>	<b>Existing approval/s (Ministerial Statement/s and other regulatory approvals)</b>	<b>Proposed change (this proposal)</b>	<b>Proposed extent (revised proposal) total of existing approval + proposed change</b>
Surplus water management	Figure 4	Not specified under Part IV of the EP Act. Discharge of up to 6 GL/a of surplus dewatering water to a local ephemeral tributary of Turee Creek East approved under a licence issued under Part V of the EP Act.	Additional discharge of up to 6 GL/a of surplus dewatering water to a local ephemeral tributary of Turee Creek East.	Discharge of surplus dewatering water to a local ephemeral tributary of Turee Creek East extending no more than 22 km from point of discharge.
Backfilling	Figure 2	Not specified under Part IV of the EP Act. The Mine Closure Plan required that below water table pits will be backfilled to above recovered groundwater levels to prevent post-closure exposure of the groundwater table or the formation of permanent pit lakes.	Below water table pits will be backfilled to a level which will not allow the formation of permanent pit lakes.	Below water table pits will be backfilled to a level which will not allow the formation of permanent pit lakes

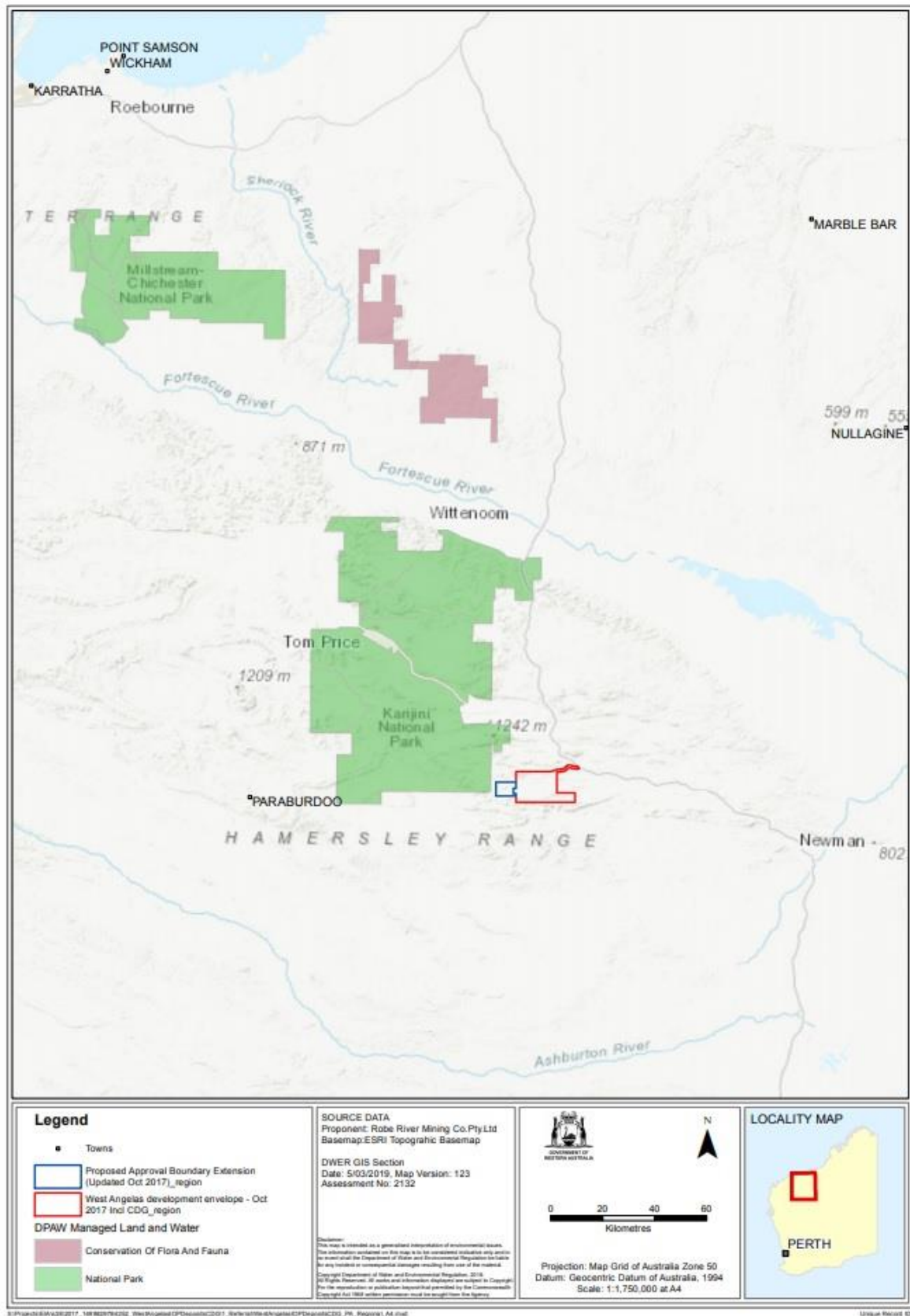


Figure 1: Regional location

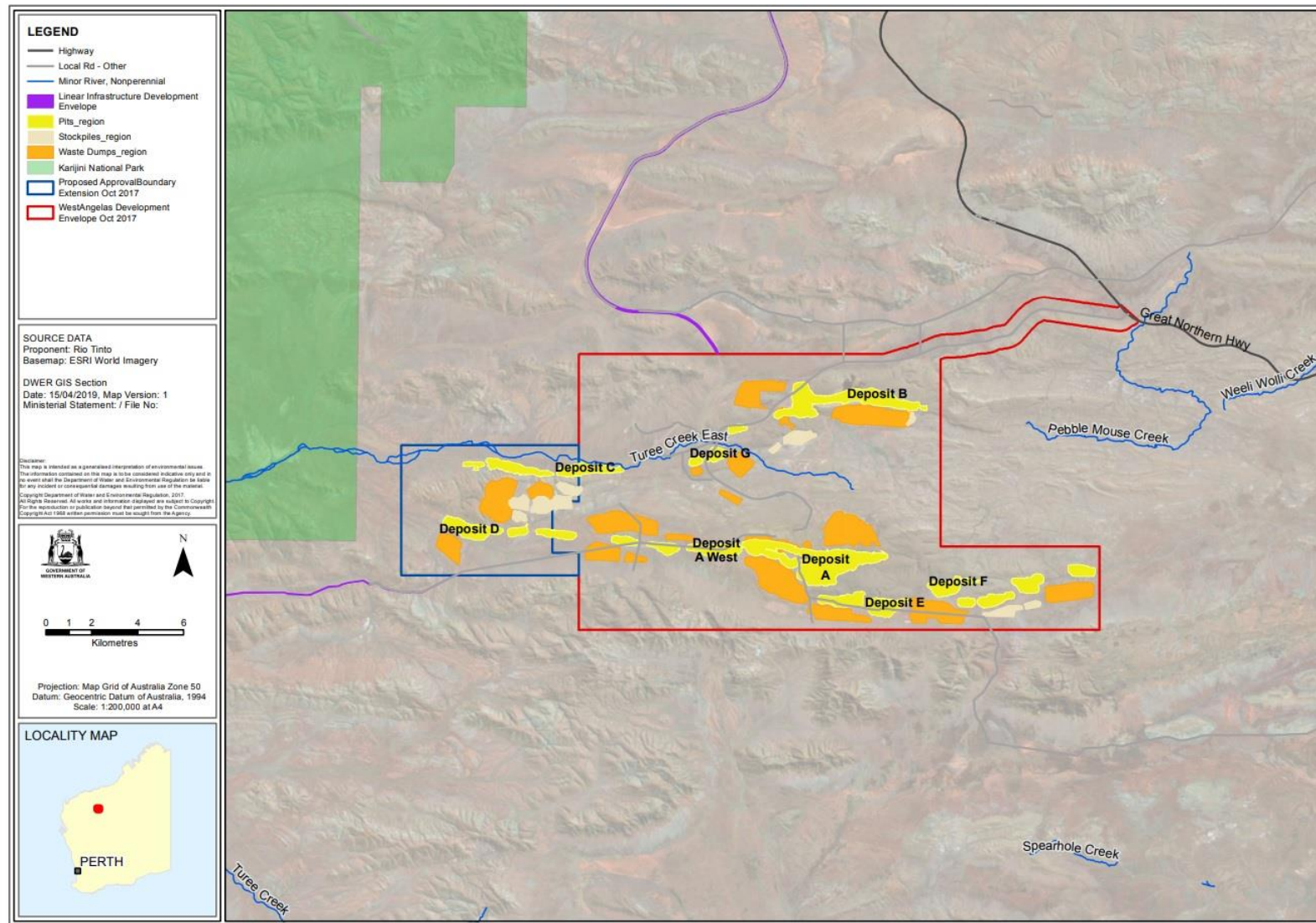


Figure 2: Mine layout and linear infrastructure development envelope

## 2.2 Changes to the proposal during assessment

Since release of the ERD for public review and responding to submissions received, the proponent has consulted further with the EPA, Department of Water and Environmental Regulation (DWER) and Department of Biodiversity, Conservation and Attractions (DBCA) regarding management of groundwater drawdown beneath Karijini National Park (KNP). As a result of these discussions in February 2019, the proponent has modified its approach to the management of groundwater drawdown and committed to maintaining groundwater levels under KNP through an adaptive MAR program.

The proponent requested the EPA to consider a change to the proposal during assessment. The change was to amend the development envelope representing a 300 ha (~7%) increase in area, and the addition of two small pits associated with Deposit D to the west of the main Deposit D pits. No additional clearing was proposed. The Deputy Chairman, as a delegate of the EPA, concluded that the changes were unlikely to significantly increase any impact that the proposal may have on the environment and gave consent under section 43A of the EP Act.

## 2.3 Context

### ***Surrounding Land Use***

Located approximately 12 km west of the existing West Angelas project is KNP, a Class A Reserve vested in the management of DBCA. KNP is Western Australia's second largest National Park, covering more than 627,000 ha, and is representative of the many values of the Pilbara region, including natural geological formations, ecological processes and wilderness areas, archaeological and ethnographic sites, as well as associated Traditional Owner ties with the land (as identified in the *Karijini National Park Management Plan 1999-2009* (CALM, 1999)). The development envelope of the revised proposal is approximately 2 km from the boundary of KNP (Figure 1). Other existing land uses in proximity to the revised proposal are mining and pastoral activities; and the nearest town, Newman, is located approximately 130 km east of the West Angelas project area. Nearby mining operations include Mining Area C and Yandi (Marillana Creek) operated by BHP Billiton Iron Ore, as well as Hope Downs 1 and Yandicoogina operated by Rio Tinto Iron Ore. Nearby pastoral stations include Juna Downs Station (20 km north of West Angelas) and Rocklea Station (75 km west of West Angelas).

### ***Tenure and State Agreement***

The West Angelas project is located on ML 248SA, granted in 1976 under the *Iron Ore (Robe River) Agreement Act 1964 (WA)*. The revised proposal is located within the same Mineral Lease and therefore is subject to the same State Agreement legislation as the existing West Angelas project.

### 3. Consultation

The EPA advertised the referral information for the revised proposal for public comment in August 2017 and received four submissions. One submission requested 'Assess – Referral Information', and three submissions requested 'Assess – Public Environmental Review'. The EPA has assessed the proposal at a Public Environmental Review level of assessment.

The proponent consulted with government agencies and key stakeholders during the preparation of the ERD. The agencies and stakeholders consulted, the issues raised and the proponent's response are detailed in Table 3-1 of the proponent's ERD (Robe River Mining Company Pty Ltd, 30 July 2018).

The ERD was released for public review for a period of eight weeks between 30 July 2018 and 25 September 2018. Three agency submissions and three public submissions were received during the public review period. The key issues raised relate to:

- drawdown of groundwater and potential impact to groundwater-dependent ecosystem in KNP and subterranean fauna
- the application of trigger and threshold criteria
- backfilling of mine pits
- flora and vegetation data.

Formal discussions were held with the proponent, EPA, DBCA, and DWER in February 2019 to develop a position on the acceptability of the potential impacts to KNP. The proponent's Response to Submission's document (Revision 2, dated 20 February 2019) addresses the issues raised and details a MAR approach that proposes to avoid drawdown below KNP (discussed further in section 4.2 Inland Waters).

The EPA considers that the consultation process has been appropriate and that reasonable steps have been taken to inform the community and stakeholders about the revised proposal. Relevant significant environmental issues identified from this process were taken into account by the EPA during its assessment of the revised proposal.

## 4. Key environmental factors

In undertaking its assessment of this revised proposal and preparing this report, the EPA had regard for the object and principles contained in section 4A of the EP Act to the extent relevant to the particular matters that were considered.

The EPA considered the following information during its assessment:

- the proponent's referral information and ERD
- public comments received on the referral, stakeholder comments received during the preparation of the proponent's documentation and public and agency comments received on the ERD
- the proponent's response to submissions raised during the public review of the ERD
- the EPA's own inquiries
- the EPA's *Statement of environmental principles, factors and objectives*
- the relevant principles, policy and guidance referred to in the assessment of each key environmental factor in sections 4.1 to 4.4 of this report.

Having regard to the above information, the EPA identified the following key environmental factors during the course of its assessment of the revised proposal:

- **Flora and Vegetation** – direct and indirect impacts to vegetation (including vegetation communities of elevated conservation significance) as a result of clearing, altered hydrological regimes, surface water discharge and groundwater drawdown.
- **Inland Waters** – Hydrological Processes and Inland Waters Environmental Quality were identified as preliminary key environmental factors during the earlier stages of the assessment. These factors are now considered under 'Inland Waters' in the EPA policy framework:
  - **Hydrological Processes** - changes to the hydrological regime of Turee Creek East as a result of mining and discharge of surplus dewatering water, and alteration of groundwater as a result of dewatering.
  - **Inland Waters Environmental Quality** – potential impacts to surface and groundwater quality through mining operations, including the potential for post-mining pit lake formation.
- **Subterranean Fauna** – direct and indirect impacts to subterranean fauna as a result of mining, dewatering/groundwater abstraction, blasting activities and contamination.
- **Terrestrial Fauna** – Loss of potential fauna habitat and fauna individuals as a result of clearing and groundwater drawdown impacts to habitat.

The EPA considered other environmental factors during the course of its assessment of the revised proposal. These factors, which were not identified as key

environmental factors, are discussed in the proponent's ERD (Robe River Mining Company Pty. Ltd., 30 July 2018). Appendix 3 contains an evaluation of why these other environmental factors were not identified as key environmental factors.

Having regard to the EP Act principles, the EPA considered that the following principles were particularly relevant to its assessment of the revised proposal:

1. **The precautionary principle** – the proponent's investigations into the biological and physical environment have provided sufficient certainty to assess risk and identify measures to avoid or minimise impacts.
2. **The principle of intergenerational equity** – the EPA had regard to potential impacts to the nearby Karijini National Park in the factor Inland Waters. The proponent has committed to ensure no impacts to the park associated with groundwater drawdown and surface water discharge will occur from the proposal. The EPA notes that the proponent has committed to implement a Mine Closure Plan to ensure that West Angelas is closed in a manner to ensure that the environment is maintained for the benefit of future generations.
3. **The principle of the conservation of biological diversity and ecological integrity** – the proponent has undertaken comprehensive baseline studies to understand and assess potential threats to biological diversity and ecological integrity. The proponent has committed to ensure no groundwater drawdown at the major sensitive receptor of KNP, and applied the mitigation hierarchy to avoid, minimise and offset the significant residual impact to Ghost Bats.

Appendix 2 provides a summary of the principles and how the EPA considered these principles in its assessment.

The EPA's assessment of the revised proposal's impacts on the key environmental factors is provided in sections 4.1 – 4.4. These sections outline whether or not the EPA considers that the impacts on each factor are manageable. Section 7 provides the EPA's conclusion as to whether or not the revised proposal as a whole is environmentally acceptable.

## **Assessment by the Commonwealth Government**

The revised proposal was referred to the Department of the Environment and Energy under the EPBC Act on 8 October 2018. The revised proposal was determined to be a controlled action by a delegate of the Commonwealth Minister for the Environment under the EPBC Act on 3 December 2018, however due to the advanced stage of the State assessment process, the revised proposal will not be assessed via the accredited assessment approach. The EPA notes, however, that there has been consultation between the State and the Commonwealth departments regarding MNES and most of the MNES are considered in this report.

## 4.1 Flora and Vegetation

### EPA objective

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

### Relevant policy and guidance

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

- *Environmental Factor Guideline – Flora and Vegetation* (EPA 2016a)
- *Technical Guidance – flora and vegetation surveys for environmental impact assessment* (EPA 2016d)
- *WA Environmental Offsets Policy* (Government of Western Australia 2011)
- *WA Environmental Offsets Guidelines* (Government of Western Australia 2014).

The considerations for environmental impact assessment (EIA) for this factor are outlined in *Environmental Factor Guideline – Flora and Vegetation* (EPA 2016a).

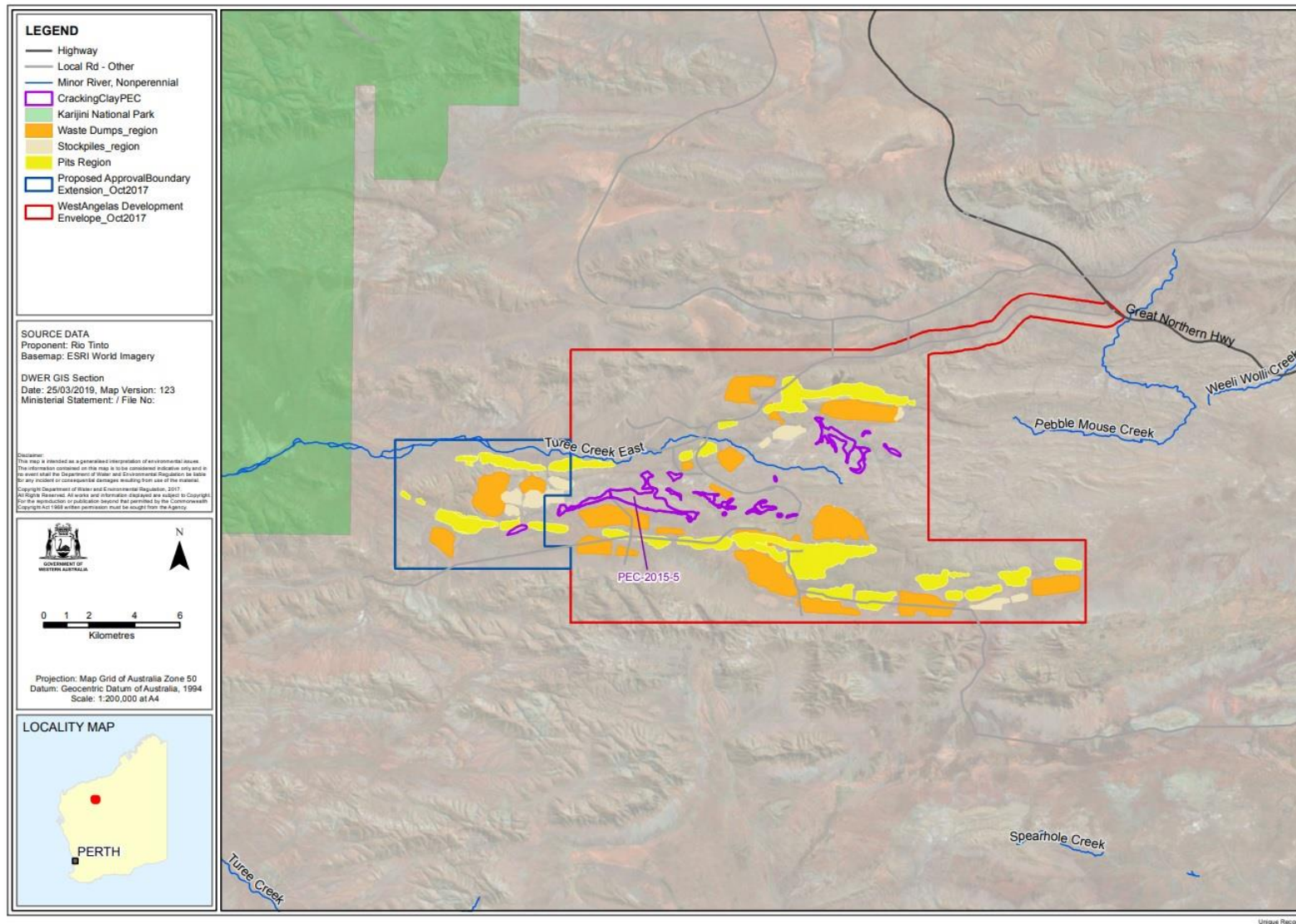
### EPA assessment

#### *Existing Environment*

Flora and vegetation surveys have been undertaken within the West Angelas region since 1979, providing a detailed understanding of locality and surrounding environment. The proponent's environmental consultants conducted a two-phase flora and vegetation assessment in 2012, covering an area of approximately 17,600 ha. The environmental surveys identified:

- No Threatened Ecological Communities (TECs)
- 303 ha of the West Angelas Cracking Clay Priority Ecological Community (PEC) (Priority 1, P1) (Figure 3)
- no flora listed under the EPBC Act or gazetted as Threatened (formerly Declared Rare Flora (DRF)) under the Western Australian *Wildlife Conservation Act 1950* (WC Act)
- two Priority 2 (P2) flora species, seven Priority 3 (P3) flora species and one Priority 4 (P4) flora species.

The vegetation within the revised proposal area was assessed to be in 'Good to Excellent' condition as previous grazing associated with pastoral activities has not occurred at the site.



**Figure 3: West Angelas Cracking Clay PEC in the development envelope**

## **Impacts**

Flora and vegetation could be potentially impacted, either directly and/or indirectly, through:

- additional clearing of up to 4,270 ha of native vegetation assessed as ‘Good to Excellent’ condition
- additional clearing/disturbance of up to 3.5 per cent (%) (25 ha) of riparian vegetation
- additional clearing/disturbance of up to 6.6% (20 ha) of the West Angelas Cracking Clay PEC
- the introduction and spread of weeds and fire.

The EPA notes that potential changes in riparian vegetation community structure and health may occur to the Turee Creek East tributary due to surplus water discharge associated with the revised proposal. Based on the proponent’s modelling the surface discharge is expected to extend up to 22 km along Turee Creek East, and will be managed to ensure the wetting front does not extend within 2 km of KNP (discussed further in section 4.2).

## **Mitigation and management**

The EPA notes, that in designing the revised proposal’s site selection and mine layout, the proponent has considered the application of the mitigation hierarchy, in accordance with the *Environmental Factor guideline – Flora and Vegetation* (EPA 2016a).

The revised proposal expansion was designed so that mining infrastructure avoided, where possible, the Turee Creek East floodplain and the West Angelas Cracking Clay PEC. The proponent has committed to implement an Environmental Management Plan (EMP) to ensure that there is no irreversible impact to the health of riparian vegetation of Turee Creek East and its tributaries as a result of the discharge of surplus water. The proponent proposes to monitor the structure, cover and health of riparian vegetation along the surface discharge extent. The EPA notes the EMP includes trigger/threshold criteria for vegetation health and diversity.

The proponent’s EMP also incorporates environmental outcomes for the West Angelas Cracking Clay PEC. Within the West Angelas region, 303 ha of West Angelas Cracking Clay PEC were mapped in the latest surveys in a few locations within the development envelope. Of this, the proponent has designed their proposal and committed through the EMP to minimise impacts to 6.6% of the PEC. The EPA notes, one representation of the community located within the existing West Angelas project’s development envelope is considered to be of particularly high value and one of the largest representations in the West Angelas region (approximately 230 ha – labelled as PEC-2015-5 Figure 3). Based on this, the proponent has committed, through actions within an EMP, to avoid disturbance at this location.

The proponent has committed to update and implement the Mine Closure Plan (condition 7) in accordance with the Department of Mines, Industry Regulation and

Safety (DMIRS) / EPA Guidelines for Preparing Mine Closure Plans. The updated Mine Closure Plan will include updated closure objectives to ensure that vegetation on rehabilitated land is self-sustaining and compatible with the final land use. As West Angelas is underlain by vacant Crown Land and located in close proximity to KNP, the return of a native ecosystem is considered to be the most appropriate final land use. The EPA notes that rehabilitation at several of the West Angelas borrow pits and rail loop sites was undertaken between 2000 and 2003, as well as rehabilitation at two waste dump areas at Deposit A South and North in 2012. The vegetation is well established and compared favourably with reference sites in terms of species richness, diversity, and plant density. Additionally, all rehabilitated sites appeared stable.

The EPA considers that through the application of the mitigation hierarchy and implementation of the proponent's EMP, the proponent has appropriately avoided and minimised impacts to the West Angelas Cracking Clay PEC, priority flora species, and riparian vegetation of Turee Creek. The EPA considers that a significant residual impact to flora and vegetation remains, and notes that the proponent has committed to an offsets strategy that adequately addresses these impacts (further discussed within section 5).

## Summary

The EPA has paid particular attention to the:

- *Environmental factor guideline – Flora and Vegetation* (EPA 2016a)
- proponent's application of mitigation hierarchy to avoid and minimise clearing of the West Angelas Cracking Clay PEC (noting avoidance of PEC-2015-5 – approximately 230 ha)
- proposed clearing/disturbance of 6.6% (20 ha) of the West Angelas Cracking Clay PEC
- proposed additional clearing of 4,270 ha of vegetation in 'Good to Excellent' condition
- proposed clearing/disturbance of 3.5% (25 ha) of riparian vegetation
- the development of an EMP that outlines the avoidance, management and minimisation actions.

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Flora and Vegetation, that the impacts to this factor are manageable and would no longer be significant provided there is:

- a limit on the clearing of native vegetation through the authorised extent in schedule 1 of the Recommended Environmental Conditions (Appendix 5)
- implementation of measures to ensure objectives of condition 5-1 are met through the preparation and implementation of an Environmental Management Plan (condition 5-2)
- an offsets strategy (see section 5, condition 8) is implemented to counterbalance the significant residual impact of additional clearing of

4,270 ha of vegetation in ‘Good to Excellent’ condition, 3.5% (25 ha) of riparian vegetation and 6.6% (20 ha) of the West Angelas Cracking Clay PEC.

## 4.2 Inland Waters

### EPA objective

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

### Relevant policy and guidance

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

- *Environmental Factor Guideline – Inland Waters* (EPA 2018)
- *WA Environmental Offsets Policy* (Government of Western Australia 2011)
- *WA Environmental Offsets Guidelines* (Government of Western Australia 2014).

The considerations for EIA for this factor are outlined in *Environmental Factor Guideline – Inland Waters* (EPA 2018).

### EPA assessment

#### *Existing Environment*

##### **Surface Water**

The revised proposal and the majority of the existing operations are located in the upper reaches of the Turee Creek Catchment (within the greater Ashburton River catchment). The east branch of Turee Creek, Turee Creek East, is an ephemeral watercourse and the most significant watercourse associated within the revised proposal area. Turee Creek East flows westwards across the revised proposal area towards KNP (Figure 4).

##### **Groundwater**

The hydrogeology of the study area is complex and influenced by the presence of an impervious dolerite dyke formation present at deposit C (Figure 2). Groundwater elevation differences of up to 13 metres (m) exist between opposing sides of this geological formation and as such, groundwater west of the dyke flows towards KNP, while groundwater east of the dyke flows towards the existing West Angelas Iron Ore Project area.

### *Impacts*

The EPA understands that in order for the proponent to safely mine below the water table, mine site dewatering will be required. It is proposed that approximately 8 GL/a

of groundwater will be abstracted for dewatering purposes, resulting in the total groundwater abstraction for the revised proposal increasing up to 14 GL/a. Mine site dewater will be integrated into the West Angelas Iron Ore Project's operational water supply, however water surplus to operational needs (up to 12 GL/a), will be managed through controlled discharge into the Turee Creek East tributary.

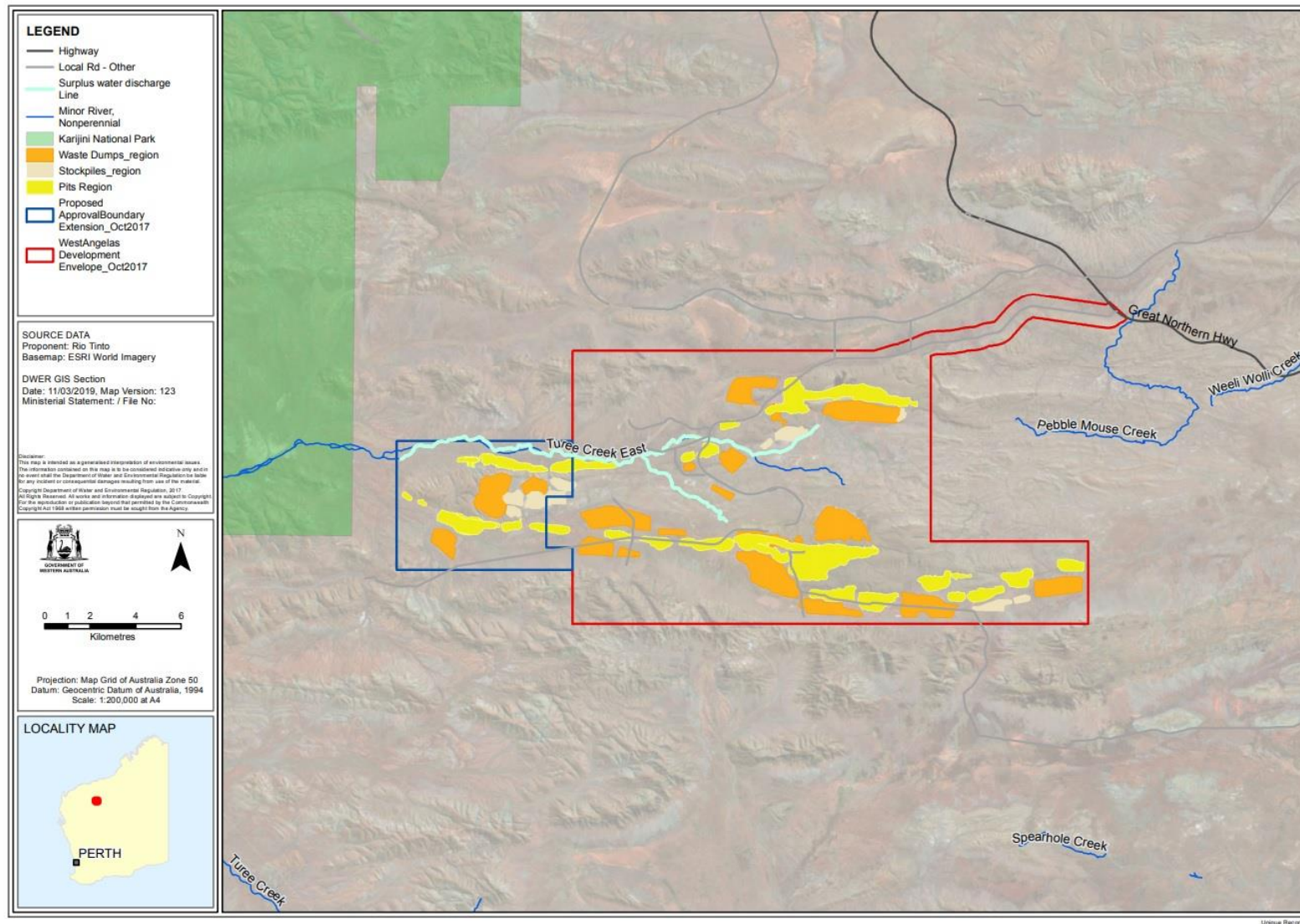
Hydrological modelling undertaken by the proponent indicates that a wetting front of up to 22 km will be created and finish 2 km before the boundary of KNP (Figure 4). The discharge of surplus mine dewater will change the hydrological regime of Turee Creek East from an ephemeral watercourse to a perennial watercourse.

Noting the above, inland waters have the potential to be directly impacted by the proposal through:

- altered hydrological regime of Turee Creek East tributary as a result of surplus water management
- diversion of surface water flows as a result of mining operations intercepting creek tributaries and realignment through diversion channels
- groundwater drawdown as a result of groundwater abstraction for dewatering purposes.

Inland waters have the potential to be indirectly impacted through:

- post closure formation of pit lakes.



**Figure 4: Surplus water discharge to Turee Creek East**

## ***Mitigation and management***

The proponent has committed to a number of key management strategies to avoid and minimise, where possible, the impacts to Inland Waters associated with the implementation of the proposal.

The proponent has committed to implement an EMP to ensure no irreversible impact, as a result of the discharge of surplus water, occurs to the health of riparian vegetation of Turee Creek East. Noting this, mine site dewater will in the first instance, be used onsite for operational purposes to minimise the volume of water discharged into Turee Creek East. Water surplus to operational needs will be managed to ensure the wetting front does not extend beyond 22 km along Turee Creek East and will not reach KNP under natural no-flow conditions. The EMP has incorporated a rigorous monitoring program that informs trigger and threshold criteria, and management actions to ensure these objectives are met, specifically that vegetation health is monitored and surface water discharge does not come within 2 km of the boundary of KNP under natural no-flow conditions.

Since the release of the ERD for public review, the proponent has consulted further with the EPA, DWER and DBCA regarding the potential for groundwater drawdown to occur beneath KNP. The consultation highlighted the importance of protecting KNP's cultural and environmental values. As a result, the proponent has proposed an adaptive management approach using a Managed Aquifer Recharge (MAR) scheme to ensure groundwater levels below KNP remained unchanged. The proponent notes DBCA's role in managing KNP, and therefore will continue to consult with DBCA in relation to the development of the MAR scheme.

The proponent has committed to update and implement the Mine Closure Plan in accordance with the DMIRS / EPA Guidelines for Preparing Mine Closure Plans. The Mine Closure Plan proposes that below water table pits will be backfilled to above recovered groundwater levels to prevent the formation of permanent pit lakes.

## **Summary**

The EPA has paid particular attention to the:

- proposed MAR scheme to ensure there is no groundwater drawdown under KNP as a result of the project
- proponent's EMP (Revision 8, dated 20 February 2019) for discharge of surplus water, including trigger and threshold criteria for riparian vegetation health.

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Inland Waters, that the impacts to this factor are manageable and would no longer be significant, provided there is:

- control through authorised extent in schedule 1 of the Recommended Environmental Conditions (Appendix 5)
- implementation of condition 6 ensuring groundwater levels at the border of KNP are not impacted by the proposal

- implementation of measures to ensure the objectives of condition 5-1 are met through the preparation and implementation of an Environmental Management Plan (condition 5-2).

The EPA notes that there is a requirement for:

- licensing of water abstraction by the DWER under the *Rights in Water and Irrigation Act 1914*
- licensing of emissions and discharges by the DWER under Part V of the EP Act.

## 4.3 Subterranean Fauna

### EPA objective

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

### Relevant policy and guidance

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

- *Environmental Factor Guideline – Subterranean Fauna* (EPA 2016b)
- *Technical Guidance – Subterranean fauna survey* (EPA 2013)
- *Technical Guidance – Sampling methods for subterranean fauna* (EPA 2007)
- *WA Environmental Offsets Policy* (Government of Western Australia 2011)
- *WA Environmental Offsets Guidelines* (Government of Western Australia 2014).

The considerations for EIA for this factor are outlined in *Environmental Factor Guideline – Subterranean Fauna* (EPA 2016b).

### EPA assessment

#### Existing Environment

##### Hydrogeology

The regional hydrogeology around West Angelas has a number of different formations forming aquifers of various permeability and depth. The primary aquifer identified at West Angelas comprises the mineralised Mount Newman Member of the Marra Mamba Formation and West Angelas Member of the Wittenoom Formation. The mineralised Marra Mamba and Wittenoom Formations are overlain by a widespread regolith of 'hydrated' material (produced by secondary weathering processes) and detritals (alluvium and colluvium).

Mineralisation in Deposit C is predominately contained in the Marra Mamba Iron Formation, with minor mineralisation observed in the overlying Wittenoom Formation.

Hydrated material and detritals cover the deposit, with the detrital layer being up to 60 m thick. The mineralised Marra Mamba Iron Formation and the Wittenoom Formation are considered to be in hydraulic connection with each other. A dyke (as discussed in section 4.2) acts as a hydraulic barrier, separating groundwater flow between the eastern and western sections of Deposit C. Groundwater west of the dyke flows towards KNP and is in hydraulic connection with the region west of the proposal area.

Mineralisation in Deposit D is predominately contained in the Marra Mamba Iron Formation with minor mineralisation observed in the overlying Wittenoom Formation. Hydrated material and detritals cover the deposit with the detrital layer being up to 84 m thick. The groundwater gradient is relatively flat across the area (approximately 58 m below ground level (bgl) in the east to approximately 53 m bgl in the west). Groundwater flow to the north and south is constrained by the presence of hydraulic barriers, however hydraulic connection exists between Deposit D and the west with groundwater flow direction following this trend.

Recharge rates across the West Angelas region are not uniform, with recharge rates deemed low at the deposits themselves owing to the depth to groundwater. However, higher rates of recharge are thought to occur along creeklines (e.g. Turee Creek East).

The primary habitats for troglofauna identified by the proponent, which exist throughout the locality, were the mineralised orebodies of the Mount Newman Member of the Marra Mamba Iron Formation, surficial detritals (alluvium and colluvium) and hydrated materials. The primary habitat for stygofauna identified by the proponent, was the Marra Mamba Iron Formation and calcrete deposits located below the water table within and in proximity to Deposit C and Deposit D.

### **Troglofauna**

Troglofauna have been surveyed in the West Angelas region since 2010, with a total of three surveys conducted. All three surveys successfully recorded troglofauna, two of which sampled bores within the current deposits. From the current deposits, historical sampling had detected taxa from coleoptera, thysanura and hemiptera. The most recent survey in 2016 (and subsequent DNA analysis in 2017) recorded 14 troglofauna species and no currently listed threatened species, TECs or PECs. Of these, no troglofauna taxa were regarded by the proponent's consultant as being at 'High' risk of impact from the implementation of the proposal.

### **Stygofauna**

Stygofauna surveys have been undertaken across the West Angelas region since 1998. A total of eight surveys have been undertaken targeting stygofauna, of which six have successfully recorded stygofauna. However, only one of these sampled bores within the current deposits. Historical stygofauna surveys at West Angelas detected amphipods, bathynellaceans, copepods, oligochaetes and ostracods, however these taxa were not identified to species level.

The most recent survey in 2016 (and subsequent DNA analysis in 2017) recorded 14 stygofauna species and no currently listed threatened species, TECs or PECs. Of

these, several taxa were deemed at ‘High’ risk of impact from the implementation of the proposal; with only a few of these taxa found at higher abundances.

The risk ratings were designated by the proponent’s consultant based upon the magnitude and extent of groundwater drawdown which at the time had not been modelled in detail. In addition, no mitigation actions or assessment of the available habitat had taken place.

## ***Impacts***

Mining will result in the direct removal of some of the above and below water table habitat for troglotauna and stygofauna. Based on current geological information however, the primary habitats for troglotauna and stygofauna are not limited to the deposits to be developed by this revised proposal.

Subterranean fauna will be directly impacted through:

- loss of habitat as a result of mining
- loss of habitat as a result of groundwater drawdown from dewatering/groundwater abstraction.

Subterranean fauna will potentially be indirectly impacted through:

- vibration effects from blasting activities
- degradation of habitat as a result of contamination

## ***Mitigation and management***

The proponent will minimise impacts to subterranean fauna through mitigation actions that include managing dewatering volumes, avoiding unnecessary clearing and excavation activities and backfilling pits in accordance with the West Angelas Mine Closure Plan.

As discussed in section 4.2, and provided for in condition 6, the proposed MAR scheme will be implemented ensuring groundwater drawdown does not extend beyond the boundary of KNP, which will help to minimise potential impacts to stygofauna habitat by managing and controlling groundwater levels adjacent to mine voids.

The proponent has undertaken additional detailed 3-D subterranean fauna habitat modelling to validate their habitat mapping conclusions and impact predictions (Attachment 4 in Response to Submissions (RtS) document dated 20 February 2019). The modelling supports the assumption that subterranean fauna habitat is not restricted and is well represented in the local and wider region. The modelling has also indicated that geological barriers (i.e. the dolerite dyke as discussed in section 4.2) that influence the hydrogeological regime within the revised proposal area do not significantly restrict the movement of subterranean fauna within the project area.

The proponent engaged an independent peer reviewer to analyse their impact predictions, mitigation approach and conclusions (Stantec 2019). The peer reviewer supported the proponent’s 3-D habitat modelling accuracy and confirmed that it

provided confidence that their conclusions, that subterranean fauna species likely extend beyond the proposed development envelope (including post-mining), were valid.

The peer reviewer considers the most prospective habitat for stygofauna in the region is likely to be the Turee Creek East calcrete system in KNP, and members of this community are likely to have distributions that extend eastwards along the Turee Creek East drainage system into the proposal area. Furthermore, the peer reviewer highlighted that most stygofauna records were in or near incised channels of the Turee Creek East drainage system (north of Deposit C). The EPA notes that the surplus water discharged into Turee Creek East, as discussed in section 4.2, may minimise drawdown impacts on the Turee Creek East calcrete systems through facilitating recharge.

The peer reviewer further noted that, due to the thickness of the saturated calcrete near Deposit C, modelling of groundwater contours during dewatering activities, indicates that at least 14 to 15 m (66 to 71%) of saturated calcrete habitat near Deposit C would remain in addition to colluvial habitat beneath the calcrete. Additionally, the implementation of the MAR scheme, will ensure the most prospective stygofauna habitat will be preserved and impacts to subterranean fauna associated with the proposal are minimised.

The EPA considers that the peer reviewer's conclusions are reasonable and that the revised proposal can be managed to minimise impacts to stygofauna. The EPA notes that impacts to troglifauna are not significant. The EPA has given further consideration to this factor through the recommendation of condition 6, which ensures that groundwater levels at the border of KNP are not impacted by the proposal, and may in turn minimise impacts to subterranean fauna as much as possible.

## Summary

The EPA has paid particular attention to the:

- *Environmental Factor Guideline – Subterranean Fauna* (EPA 2016b)
- proponent's application of mitigation hierarchy to avoid and minimise disturbance to subterranean fauna habitat
- the implementation of the MAR through the adaptive management program
- extent and connectivity of subterranean fauna habitat within and outside of the revised proposal area
- peer review of the proponent's subterranean fauna sampling and conclusions.

The EPA considers, having regard to the relevant EP Act principles and the environmental objective for Subterranean Fauna, that the impacts to this factor are manageable and would no longer be significant, provided there is:

- control through authorised extent in schedule 1 of the Recommended Environmental Conditions (Appendix 5)
- implementation of condition 6 ensuring groundwater levels at the border of KNP are not impacted by the proposal.

The EPA notes that there is a requirement for:

- licensing of water abstraction by the DWER under the *Rights in Water and Irrigation Act 1914*
- licensing of emissions and discharges by the DWER under Part V of the EP Act.

## 4.4 Terrestrial Fauna

### EPA objective

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

### Relevant policy and guidance

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

- *Environmental Factor Guideline – Terrestrial Fauna* (EPA 2016c)
- *Technical Guidance – Sampling methods for terrestrial vertebrate fauna* (EPA 2010)
- *Technical Guidance – Terrestrial fauna surveys* (EPA 2004)
- *Technical Guidance – Sampling of short range endemic invertebrate fauna* (EPA 2009)
- *WA Environmental Offsets Policy* (Government of Western Australia 2011)
- *WA Environmental Offsets Guidelines* (Government of Western Australia 2014).

The considerations for EIA for this factor are outlined in *Environmental Factor Guideline – Terrestrial Fauna* (EPA 2016c).

### EPA assessment

#### *Existing environment*

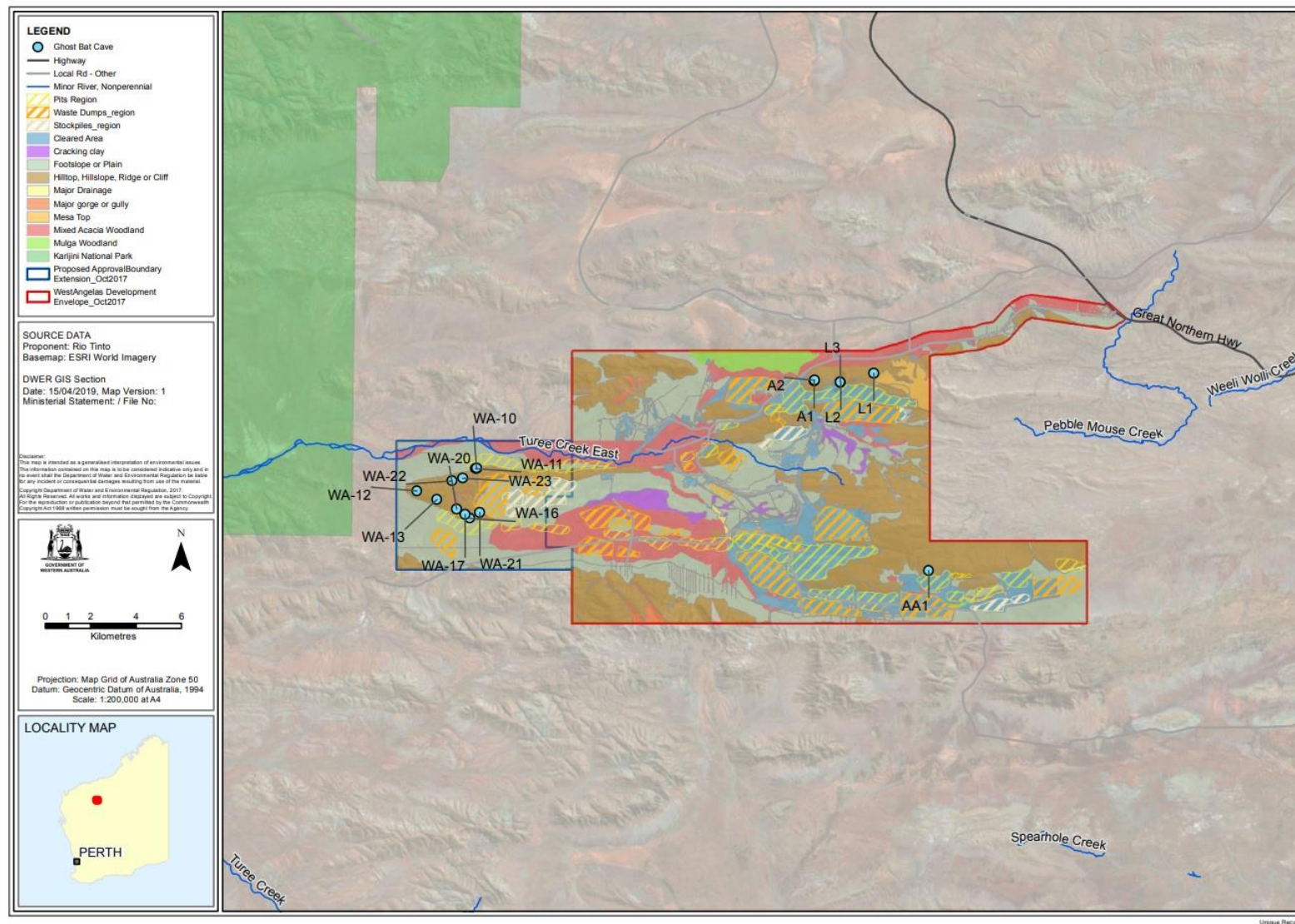
Terrestrial fauna surveys have been undertaken across the West Angelas region since 1979, covering an area in excess of 61,600 ha. The combined coverage of these surveys has enabled a detailed understanding of the existing terrestrial fauna in the West Angelas region. Recent survey work was undertaken in 2012 and 2013 by the proponent's consultant and was considerably broader in scope than the revised proposal's development envelope.

The proponent's survey work has identified the following aspects within the proposal area:

- four conservation-significant fauna species listed under the WC Act, including:
  - Pilbara Leaf-nosed Bat (*Rhynonictoris aurantia*) (Vulnerable, Schedule 3)

- Fork-tailed Swift (*Apus pacificus*) (Migratory, Schedule 5)
- Western Pebble-mound Mouse (*Pseudomys chapmani*) (P4)
- Ghost Bat (*Macroderma gigas*) (Vulnerable)
- six conservation significant fauna species were assessed as having a moderate to high likelihood of occurrence, including:
  - Northern Quoll (*Dasyurus hallucatus*) (Endangered, Schedule 2)
  - Pilbara Olive Python (*Liasis olivaceus barroni*) (Vulnerable, Schedule 3)
  - Grey Falcon (*Falco hypoleucos*) (Vulnerable, Schedule 3)
  - Peregrine Falcon (*Falco peregrinus*) (Schedule 7, “Other Specially Protected Fauna”)
  - Blind Snake (*Ramphotyphlops ganei*) (P1)
  - Short-tailed Mouse (*Leggadina lakedownensis*) (P4)
- eight potential short-range endemic (SRE) species.

The EPA notes that a number of caves identified as habitat for the Ghost Bat (*Macroderma gigas*) have been monitored annually since 2012 within the existing West Angelas Iron Ore Project area, including one potential maternity roost (AA1). In addition to these caves, recent survey work undertaken in October 2018, identified an additional 11 caves in proximity to Deposits C and D, including an additional three potential maternity roosts (WA-13, WA-21, WA-23 – Figure 5).



**Figure 5: Ghost Bat caves and fauna habitat within the development envelope**

## **Impacts**

Terrestrial fauna could potentially be impacted through the additional direct clearing of up to:

- 4,315 ha of native vegetation including:
  - up to 507 ha of Ghost Bat, Northern Quoll and Pilbara Olive Python habitat (comprising major gorge and gully; hilltop, hillside, ridge or cliff; and major drainage habitat)
  - up to 3,200 ha of Pilbara Leaf-nosed Bat habitat (comprising major gorge and gully; hilltop, hillside, ridge or cliff; major drainage; mixed Acacia woodland; and footslope or plain habitat)

The proponent has identified that most of the caves utilised by Ghost Bats will not be removed and have disturbance minimised through the proposed Environmental Management Plan, with only one night roost (WA-16, Figure 5) directly impacted by the revised proposal. Foraging habitat for Ghost Bats may be impacted from clearing.

The proponent has noted that no known Pilbara Leaf-nosed Bat roosts, Northern Quoll dens or Pilbara Olive Python dens were identified within the proposed development envelope. Additionally, although a small number of Pilbara Leaf-nosed Bat calls were recorded in 2013, a targeted survey in 2018 recorded no evidence of Pilbara Leaf-nosed Bats. Furthermore, the nearest known roost for the Pilbara Leaf-nosed Bat was located more than 16.5 km west of the nearest proposed mine pit (Deposit D). The proponent has committed to implement avoidance and management measures, including ongoing monitoring in consultation with relevant agencies, if any roosts/dens are identified within the revised proposal area in the future.

## **Mitigation and management**

The proponent has designed the revised proposal to avoid key fauna habitat where possible. The revised proposal is however, expected to result in the loss of potential fauna habitat, including habitats for conservation significant fauna species, as a result of clearing. The EPA notes that none of the habitats recorded are restricted to the revised proposal area and that annual land clearing reconciliation will be conducted by the proponent to ensure clearing remains within the approved disturbance limits.

The Mine Closure Plan previously implemented at the West Angelas project will be updated to include updated closure objectives to ensure that vegetation on rehabilitated land is self-sustaining and compatible with the final land use. The EPA notes that re-introduction of fauna is not considered as part of the existing Mine Closure Plan. Instead, natural migration of fauna species into rehabilitated land is encouraged by creating habitats with similar composition to pre-mining communities.

The proponent commits to ongoing management of the Ghost Bat through the revised proposal's EMP, consistent with the existing management measures implemented at the operating West Angelas Iron Ore Project, but expanded to incorporate newly identified Ghost Bat habitat. This includes (but is not limited to):

- maintaining a buffer around Cave AA1 (maternal cave)
- implementing a 100 m exclusion zone and an additional 50 m buffer zone around maternity roosts including AA1, WA-13, WA-21 and WA-23
- minimising disturbance to other known Ghost Bat roosts
- blast management measures for blasts undertaken within 300 m of Ghost Bat roosts
- monitoring disturbance (direct – clearing, and indirect – blast vibration) to ensure roosts are protected
- avoiding use of barbwire, except where there is a statutory requirement to do so.

The EPA considers that, through the application of the mitigation hierarchy and implementation of the proponent's EMP, the proponent has appropriately avoided and minimised impacts to several conservation significant fauna species. The EPA, however, notes that clearing of conservation significant habitat will occur as a result of implementing the revised proposal, resulting in a significant residual impact. The proponent has committed to an offset strategy for this significant residual impact which largely coincides with the offset for Flora and Vegetation, with an additional offset proposed for MNES, specifically Ghost Bat habitat (see section 5).

## Summary

The EPA has paid particular attention to the:

- *Environmental factor guideline – Terrestrial Fauna* (2016c)
- application of mitigation hierarchy to avoid and minimise clearing of fauna habitat including avoiding 230 ha of West Angelas Cracking Clay PEC
- proposed clearing/disturbance of up to 20 ha of West Angelas Cracking Clay PEC
- likelihood of disturbance from the development to the foraging habitat (including one night roost) of Ghost Bats.

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Terrestrial Fauna, that the impacts to this factor are manageable and would no longer be significant, provided:

- there is a limit on the clearing of native vegetation through the authorised extent in schedule 1 of the Recommended Environmental Conditions (Appendix 5)
- implementation of measures to ensure the objectives of condition 5-1 are met through the preparation and implementation of an Environmental Management Plan (condition 5-2)
- implementation of offsets (see section 5, condition 8) to counterbalance the significant residual impact of the loss of fauna habitat, including habitat for Ghost Bats (potential roosting, foraging habitat and one night roost (WA-16)).

## 5. Offsets

### Relevant policy and guidance

The EPA considers that the following policy and guidance is relevant to its assessment of offsets for the revised proposal:

- *WA Environmental Offsets Policy* (Government of Western Australia 2011)
- *WA Environmental Offset Guidelines* (Government of Western Australia 2014)
- *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual 2016* (EPA 2016).

The EPA has also considered its strategic advice on *Cumulative environmental impacts of development in the Pilbara Region – Advice of the Environmental Protection Authority to the Minister for Environment under Section 16 (e) of the Environmental Protection Act 1986* (EPA 2014), for the assessment of offsets.

### EPA Assessment

Environmental offsets are actions that provide environmental benefits which counterbalance the significant residual impacts of a proposal. The EPA may apply environmental offsets where it determines that the residual impacts of a proposal are significant after avoidance, minimisation, and rehabilitation have been pursued.

Mitigation measures are assessed under the relevant environmental factor (see sections 4.1 – 4.4). In applying the residual impact significance model (Government of Western Australia 2014), the EPA considers that the revised proposal would have a significant residual impact from the following:

- additional clearing of 4,270 ha vegetation in ‘Good to Excellent’ condition
  - including habitat suitable for Ghost Bats and other conservation significant species (Northern Quoll, Pilbara Olive Python and Pilbara Leaf-nosed Bat)
- additional clearing of 25 ha of riparian vegetation
- additional clearing/disturbance of 20 ha West Angelas Cracking Clay PEC.

In its advice on the cumulative impacts in the Pilbara (EPA 2014), the EPA considered that without intervention, the increasing cumulative impacts of development and land use in the Pilbara region will significantly impact on biodiversity and environmental values.

The EPA considers that the clearing of native vegetation and impacts on other associated environmental values in the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) bioregion is significant where the cumulative impact may reach critical levels if not managed.

The revised proposal is located within the Hamersley IBRA subregion. Only 13 per cent of the Hamersley subregion is currently reserved for conservation.

Consistent with the Residual Impact Significance Model in the *WA Environmental Offsets Guidelines*, where the cumulative impact may reach critical levels if not managed, the clearing of native vegetation in 'Good to Excellent' condition within the Hamersley IBRA subregion, and impacts to Matters of National Environmental Significance including conservation significant fauna requires an offset to counterbalance the significant residual impact of the clearing. The *WA Environmental Offsets Guidelines* also identifies that clearing of native vegetation that is watercourse or wetland dependent may be a significant residual impact that requires an offset. Consistent with this, the additional clearing of 4,270 ha of 'Good to Excellent' condition native vegetation, 20 ha of West Angelas Cracking Clay PEC and 25 ha of riparian vegetation associated with creek lines and the pools, which also provides habitat for conservation significant fauna, constitutes a significant residual impact that requires an offset. Additionally, the EPA notes the above-mentioned vegetation incorporates 507 ha of Ghost Bat habitat and as such, represents a significant residual impact to this species and is offset accordingly.

Conservation areas in the Pilbara bioregion total approximately eight per cent of the area, with the remainder mostly Crown Land overlain with mining tenements and pastoral leases. The EPA recognises that the opportunity for proponents to undertake individual offsets in the Pilbara Region is constrained by overlapping land tenure arrangements and limited land access to undertake on-ground offset actions. As such, traditional approaches to offsets, namely land acquisition and management offsets, are therefore limited.

In its advice on cumulative impacts in the Pilbara (EPA 2014), the EPA proposed the establishment of a strategic conservation initiative for the Pilbara as a mechanism to pool offset funds to achieve biodiversity conservation outcomes. Such an approach would provide a mechanism to overcome some of the offset implementation constraints. A pooled offset approach is consistent with the *WA Environmental Offsets Policy*, which states that environmental offsets will be focused on longer term strategic outcomes (Principle 6). Strategic approaches, such as the use of a fund, can provide a coordinating mechanism to implement offsets across a range of land tenures (Government of Western Australia 2014).

A contribution to a strategic conservation initiative focused on these or similar types of actions would allow for an outcome that counterbalances the significant residual impacts from this proposal. The EPA considers that there should be a clear target outcome for each offset project supported by the offset funds. A clear link must be drawn between the outcomes and the significant residual impacts of the individual proposal. Funds should be used for landscape scale on-ground actions in the Pilbara IBRA region and indirect actions (such as research) that will directly counterbalance the significant residual impacts and contribute to biodiversity conservation outcomes in the region.

The EPA has stated that the type of environmental offsets in the Pilbara that contribute to a strategic conservation initiative will ensure a consistent and transparent approach and contribute to longer term strategic outcomes, with contributions based on an assessment of the significance of environmental impacts.

The EPA's view is that project funding for offsets should not be used to provide substitute funding for existing government programs or proponent obligations.

Commensurate with other decisions within the Hamersley IBRA subregions, the EPA recommends that the following offset rates should apply in the form of a contribution to a Pilbara strategic conservation initiative for landscape-scale actions to protect biodiversity in the Pilbara:

- \$821 per hectare for clearing of 'Good to Excellent' condition native vegetation in the Hamersley IBRA subregion.
- \$1,642 per hectare for the clearing of native vegetation in 'Good to Excellent' condition within the Hamersley IBRA subregion which also has additional significant environmental values.

## Summary

The EPA recommends that an offset condition (condition 8) is imposed to counterbalance the significant residual impacts of the revised proposal. The EPA recommends that an offset contribution rate of \$821 per hectare in the Hamersley subregion be applied for the additional clearing of 4,270 ha of 'Good to Excellent' condition native vegetation and the higher offset contribution rate (\$1642 per hectare) be applied for the clearing of 45 ha (20 ha West Angelas Cracking Clay PEC; 25 ha riparian vegetation) of the state asset/s which has significant environmental values. Additionally, the EPA recommends an offset contribution rate (\$1642 per hectare) be applied for the clearing of Ghost Bat habitat.

As stated in the Procedures Manual, if a proposal relates to a change to, or an expansion of an approved proposal, current offsets practice applies to these changes. Consistent with this, the EPA is only assessing whether offsets are appropriate for the additional impacts arising from this proposal. Ministerial Statement 1015 contains an offset condition relating to clearing of native vegetation in 'Good to Excellent' condition. The EPA considers that the intent of the condition should be retained and has incorporated the relevant condition into recommended condition 8. Further detail is provided in Appendix 4.

## 6. Matters of National Environmental Significance

The proposal was determined to be a controlled action by a delegate of the Commonwealth Minister for the Environment under the EPBC Act on 3 December 2018. The controlling provision is 'Listed threatened species and communities' with the following Threatened species requiring consideration:

- *Macroderma gigas* (Ghost Bat)
- *Rhinonicteris aurantia* (Pilbara Leaf-nosed Bat)
- *Dasyurus hallucatus* (Northern Quoll)
- *Liasis olivaceus barroni* (Pilbara Olive Python).

The proposal is not being assessed via the accredited assessment approach due to the advanced stage of the State assessment process, and the proposal is being assessed by a separate process under the EPBC Act. The EPA notes, however, that there has been consultation between the State and the Commonwealth departments regarding MNES.

## 7. Conclusion

The EPA has considered the proponent's proposal to expand the West Angelas Iron Ore project, located approximately 130 km north west of Newman. The expansion extends the development envelope to within 2 km of KNP. The EPA notes that the site selection and mine design process of the proponent has resulted in the development avoiding and minimising impact on key environmental factors where possible.

### Application of mitigation hierarchy

Consistent with relevant policies and guidance, the proponent has addressed the mitigation hierarchy by identifying measures to avoid, minimise and rehabilitate environmental impacts including, but not limited to:

- avoiding groundwater drawdown at the boundary of or within KNP
- the surface extent of surplus dewatering water discharge will not extend as far as KNP
- avoiding clearing/disturbance of Ghost Bat roosts where possible
- avoiding a 230 ha representation of West Angelas Cracking Clay PEC
- minimising clearing of other representations of the West Angelas Cracking Clay PEC
- maintaining natural surface water flows in Turee Creek East through surface water management structures
- implementing an Environmental Management Plan with trigger/threshold criteria for key environmental factors
- annual land clearing reconciliation reporting.

### Offsets

The EPA considers the proposal would have a significant residual impact from the following:

- additional clearing of 4,270 ha of 'Good to Excellent' condition native vegetation
- additional clearing of 25 ha of riparian vegetation
- additional clearing of 20 ha of West Angelas Cracking Clay PEC
- additional disturbance to conservation significant fauna listed under the WC Act – specifically the Ghost Bat

The proponent is proposing to acquit all offset requirements through a financial contribution to the Pilbara Environmental Offset Fund (the Fund), established and administered by the Western Australian government. The EPA has also recommended a condition for an offset strategy.

## **Conclusion**

The EPA has taken the following into account in its assessment of the proposal as a whole, including the:

- impacts to all the key environmental factors
- EPA's confidence in the proponent's proposed mitigation measures
- relevant EP Act principles and the EPA's objectives for the key environmental factors
- EPA's view that the impacts to the key environmental factors are manageable, provided the recommended conditions are imposed.

Given the above, the EPA has concluded that the proposal is environmentally acceptable and therefore recommends that the proposal may be implemented subject to the conditions recommended in Appendix 5.

## 8. Recommendations

That the Minister for Environment notes:

1. That the proposal assessed is for expansion activities at the West Angelas Iron Ore Project mine site to sustain current production levels. The proponent proposes to develop the deposits C, D and G.
2. The key environmental factors identified by the EPA in the course of its assessment are Flora and Vegetation, Inland Waters, Subterranean Fauna, and Terrestrial Fauna set out in section 4.
3. The EPA has concluded that the proposal may be implemented, provided the implementation of the proposal is carried out in accordance with the recommended conditions and procedures set out in Appendix 5. Matters addressed in the conditions include the following:
  - a) environmental management plan to minimise impacts to Flora and Vegetation, Inland Waters and Terrestrial Fauna (condition 5)
  - b) ensuring there is no drawdown of groundwater associated with the proposal at the boundary of, or within, KNP (condition 6)
  - c) mine closure plan to address rehabilitation of mine (condition 7)
  - d) offset to counterbalance impact to vegetation in 'Good' to 'Excellent' condition, the West Angelas Cracking Clay PEC, riparian vegetation, and conservation significant fauna including Ghost Bat habitat (foraging and one night roost) (condition 8).

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EPA 2018, *Environmental Factor Guideline – Inland Waters*, Environmental Protection Authority, Perth, WA.

Government of Western Australia 2011, *WA Environmental offsets policy*, September 2011, Perth, WA.

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Stantec 2019, *Stantec Peer Review of the West Angelas Deposit C, D, and G Subterranean Fauna Environmental Assessment*, Stantec, Jolimont, WA.

## Appendix 1: List of submitters

### Organisations:

Department of Biodiversity, Conservation and Attractions  
Department of Water and Environmental Regulation  
Department of Mines, Industry Regulation and Safety

### Individuals:

Confidential 1  
Confidential 2  
Confidential 3

## Appendix 2: Consideration of principles

EP Act Principle	Consideration
<p><b>1. The precautionary principle</b></p> <p><i>Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In application of this precautionary principle, decisions should be guided by –</i></p> <p><i>a) careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and</i></p> <p><i>b) an assessment of the risk-weighted consequences of various options.</i></p>	<p>In considering this principle, the EPA notes that vegetation in ‘Good’ to ‘Excellent’ condition, the West Angelas Cracking Clay PEC, riparian vegetation and Ghost Bat habitat could be significantly impacted by the proposal. The assessment of these impacts is provided in this report.</p> <p>The proponent has undertaken monitoring of Ghost Bat caves within the existing development, and has committed through an Environmental Management Plan to long-term monitoring of Ghost Bat caves within the revised proposal area to ensure disturbance is minimised.</p> <p>The EPA has recommended conditions to ensure that environmental protection outcomes are achieved, the Management Plans are finalised (in consultation with relevant agencies) to the satisfaction of the CEO of DWER and effective long-term monitoring is undertaken for the West Angelas Cracking Clay PEC and Ghost Bats.</p> <p>The EPA has also recommended an offsets strategy be prepared by the proponent to counterbalance the significant residual impact to vegetation in ‘Good’ to ‘Excellent’ condition, the West Angelas Cracking Clay PEC, riparian vegetation and Ghost Bat habitat.</p> <p>From its assessment of this proposal the EPA has concluded that there is no threat of serious or irreversible harm.</p>
<p><b>2. The principle of intergenerational equity</b></p> <p><i>The present generation should ensure that the health, diversity and productivity of the environment is maintained and enhanced for the benefit of future generations.</i></p>	<p>In considering this principle, the EPA notes that Flora and Vegetation, and Terrestrial Fauna could be significantly impacted by the proposal. The assessment of these impacts is provided in this report.</p> <p>In assessing this proposal, the EPA has recommended conditions to manage impacts to Flora and Vegetation, and to Terrestrial Fauna, in particular the West Angelas Cracking Clay PEC and Ghost Bat habitat.</p>

EP Act Principle	Consideration
	<p>The EPA had regard to potential impacts to the nearby Karijini National Park in the factor Inland Waters. The proponent has committed to ensure no impacts to the park associated with groundwater drawdown and surface water discharge will occur from the proposal. The EPA has also recommended a condition to ensure this outcome is met. This will provide confidence that the park will be protected for future generations.</p> <p>The EPA notes that the proponent has committed to implement a Mine Closure Plan to ensure that West Angelas is closed in a manner to ensure that the environment is maintained for the benefit of future generations.</p> <p>From its assessment of this proposal the EPA has concluded that the environmental values will be protected and that the health, diversity and productivity of the environment will be maintained for the benefit of future generations.</p>
<p><b>3. The principle of the conservation of biological diversity and ecological integrity</b></p> <p><i>Conservation of biological diversity and ecological integrity should be a fundamental consideration.</i></p>	<p>This principle is a fundamental and relevant consideration for the EPA when assessing and considering the impacts of the proposal on the environmental factors of Flora and Vegetation, and Terrestrial Fauna. This principle is also relevant to the EPA consideration of the proposed offset strategy.</p> <p>The proponent has undertaken comprehensive baseline studies to understand and assess potential threats to biological diversity and ecological integrity. The EPA notes that the proponent has identified measures to avoid or minimise impacts to these factors. The EPA has considered these measures during its assessment (provided in this report), and has recommended an offset strategy for the significant residual impact to Flora and Vegetation, and Terrestrial Fauna. Furthermore, the EPA has recommended conditions relating to these factors.</p> <p>From its assessment of this proposal the EPA has concluded that the proposal would not compromise the biological diversity and ecological integrity of the affected areas.</p>

EP Act Principle	Consideration
<p><b>4. Principles relating to improved valuation, pricing and incentive mechanisms</b></p> <p><i>(1) Environmental factors should be included in the valuation of assets and services.</i></p> <p><i>(2) The polluter pays principles – those who generate pollution and waste should bear the cost of containment, avoidance and abatement.</i></p> <p><i>(3) The users of goods and services should pay prices based on the full life-cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste.</i></p> <p><i>(4) Environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structure, including market mechanisms, which enable those best placed to maximise benefits and/or minimize costs to develop their own solution and responses to environmental problems.</i></p>	<p>In considering this principle, the EPA notes that the proponent has, and will continue to operate under an Operating Licence, issued under Part V of the EP Act, that will ensure that pollution (when or if generated) is paid for in line with legislation.</p> <p>The EPA has had regard to this principle during the assessment of the proposal.</p>
<p><b>5. The principle of waste minimisation</b></p> <p><i>All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.</i></p>	<p>In considering this principle, the EPA notes that the proponent has committed to implement all reasonable and practicable measures to minimise the generation of waste at its Pilbara operations. The proponent also has, and will continue to operate under an Operating Licence, issued under Part V of the EP Act, that will manage wastes.</p> <p>The EPA has had regard to this principle during the assessment of the proposal.</p>

## Appendix 3: Evaluation of other environmental factors

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
<b>PEOPLE</b>			
Social Surroundings	<p>Potential impacts to social surroundings include the following:</p> <ul style="list-style-type: none"> <li>• Permanent changes to local landforms could result in visual impacts that are prominent within the regional landscape; and</li> <li>• Sites of ethnographic and / or archaeological significance to the Yinhawangka Traditional Owners could potentially be impacted by proposed activities including clearing, alteration of the natural hydrological regime and groundwater drawdown.</li> </ul>	<p><b>Agency comments</b></p> <ul style="list-style-type: none"> <li>• The current West Angelas mine site is visible from Mt Meharry and an expansion to the mine is likely to have additional effects on the viewshed from this site. Impacts on visual amenity should be considered and addressed if possible so that negative visitor perceptions of the impacts of mining are minimised as far as practicable.</li> <li>• That the proponent and regulatory conditions applied to any approval for this proposal, ensure that any areas disturbed by the proponent within Karijini National Park are decommissioned and rehabilitated within a suitable timeframe. Rehabilitation that is required must be undertaken in a manner that ensures that the post mining environment is consistent with the natural and cultural values of Karijini National Park and avoids significant long-term detrimental impacts on the surrounding land.</li> </ul>	<p><b>Visual Amenity</b></p> <p>The proponent undertook a Visual Impact Assessment (VIA) for the proposed West Angelas Deposit C &amp; D mine development. The VIA was conducted in three phases:</p> <ul style="list-style-type: none"> <li>• Desktop Assessment (Analysis)</li> <li>• Field Assessment (Photo Locations)</li> <li>• Visual Impact (Photo Montage)</li> </ul> <p>Furthermore, the proponent has proposed the following strategies to further manage impacts to visual amenity, including:</p> <ul style="list-style-type: none"> <li>• The design of waste dumps will consider: minimisation of dump height to blend with the surrounding natural topography whenever possible; construction to meet the requirements of the final rehabilitation design; and drainage and erosion management features;</li> <li>• Backfilling will be implemented wherever possible; and</li> <li>• Rehabilitation with local native vegetation will continue to be undertaken wherever possible.</li> </ul>

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
			<p>The EPA agrees with the proponent's conclusions that visual impacts are not expected to be particularly prominent in the already altered regional landscape given the proximity of the proposal to the existing West Angelas operations and other mining projects in the region, and other surrounding land uses, including the Hamersley Agricultural Project's irrigation cells.</p> <p><b>Heritage</b>  The Yinhawangka People are the Native Title Claimants and traditional custodians of the majority of the land within the West Angelas Mine Development Envelope (Figure 1). The Rio Tinto - Yinhawangka Claim Wide Participation Agreement was executed on 31 January 2013 and the subsequent Indigenous Land Use Agreement (ILUA) was registered with the National Native Title Tribunal on 5 July 2013.</p> <p>It is also noted that whilst this proposal is situated within the Yinhawangka claim area, the Ngarlawangga People are the native title holders for a portion of the West Angelas Mine Development</p>

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
			<p>Envelope. The Rio Tinto – Ngarlawangga Northern Claim Area Participation Agreement was fully executed on 22 March 2011. The Ngarlawangga People Rio Tinto ILUA was registered on 6 March 2013.</p> <p>The proponent is committed to avoiding sites of high ethnographic and / or archaeological significance to Traditional Owners wherever possible at its Pilbara operations. However, the revised proposal is also expected to result in limited disturbance to some sites of ethnographic and / or archaeological significance to the Yinhawangka Traditional Owners. The proponent will continue to consult with the Yinhawangka Traditional Owners and the Department of Planning, Lands and Heritage in relation to required approvals that may be required under the <i>Aboriginal Heritage Act 1972</i>.</p> <p>Having regard to:</p> <ul style="list-style-type: none"> <li>• The proponent's Visual Impact Assessment and conclusions that the project will not be prominent in the landscape</li> </ul>

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
			<ul style="list-style-type: none"> <li>• Consideration of existing operations in the area that are visible and currently impact on the amenity of KNP</li> <li>• The proponent commitment to mitigating impact in accordance with the approval conditions set by the Minister of Aboriginal Affairs and in consultation with the Yinhawangka Traditional Owners where cultural material contained within those sites cannot be avoided</li> <li>• approvals that may be required under section 18 of the <i>Aboriginal Heritage Act 1972</i> where disturbance to sites cannot be avoided,</li> <li>• the significance considerations in the <i>Statement of Environmental Principles, Factors and Objectives</i>,</li> </ul> <p>the EPA considers it is unlikely that the proposal would have a significant impact on Social Surroundings and that the impacts to this factor are manageable.</p> <p>Accordingly, the <b>EPA did not consider the factor Social Surroundings to be a key environmental factor</b> at the conclusion of its assessment.</p>
<b>AIR</b>			

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
Air Quality	<p>Air quality has the potential to be directly impacted through:</p> <ul style="list-style-type: none"> <li>• particulate (dust) emissions from mining operations including but not limited to: vehicle movement; construction activities; blasting activities; stockpiling material; and transport; and</li> <li>• wind-erosion in cleared areas.</li> <li>• additional Scope 1 emissions of up to approximately 78,600 tpa CO<sub>2</sub>-e</li> </ul>	<b>There were no agency comments on this factor.</b>	<p>Dust emissions will be managed through established strategies, including applying water (or dust suppressants) to roads, working surfaces and stockpiles as required, minimising exposed surfaces by minimising clearing, and rehabilitating disturbed areas no longer in use.</p> <p>The proponent has committed to monitoring of dust emissions to enable dust management performance to be continually assessed and strategies to manage dust emissions refined where necessary. Dust emissions have been, and will continue to be, managed in accordance with the existing Operating Licence L7774/2000.</p> <p>The proponent has committed to the management of greenhouse gas emissions in accordance with relevant legislation and national and state strategies relating to greenhouse gas emissions. Greenhouse gas emissions have been, and will continue to be managed under the <i>Clean Energy Act 2011</i> (Cwth) and reported under the <i>National Greenhouse and Energy Reporting Act 2007</i> (Cwth).</p> <p>Having regard to:</p>

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
			<ul style="list-style-type: none"> <li>• the proponent's management strategies, including dust suppression activities and rehabilitation actions</li> <li>• regulatory requirements of the existing Operating Licence L7774/2000</li> <li>• the significance considerations in the <i>Statement of Environmental Principles, Factors and Objectives</i>, and</li> <li>• the additional Scope 1 emissions do not exceed 100,000 tpa CO<sub>2</sub>-e.,</li> </ul> <p>the EPA considers it is unlikely that the proposal would have a significant impact on Air Quality and that the impacts to this factor are manageable.</p> <p>Accordingly, the <b>EPA did not consider the factor Air Quality to be a key environmental factor</b> at the conclusion of its assessment.</p>

## **Appendix 4: Proposed changes to conditions for revised proposal**

### **Proposed Implementation Agreement (Ministerial Statement)**

The EPA recommends that the proposal may be implemented and further recommends that the implementation of the proposal be subject to the Implementation Agreement (Ministerial Statement) set out in Appendix 5.

The recommended Ministerial Statement has been developed in accordance with the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual 2016* and includes a review of the following implementation conditions:

- Ministerial Statement 970: West Angelas Iron Ore Project MS 970, issued on 12 June 2014
- Ministerial Statement 1015: West Angelas – Deposit A West and Deposit F – Revised Proposal MS 1015, issued on 21 August 2015.

### ***Proposed changes***

The main changes between the proposed new Ministerial Statement (Appendix 5) and the existing Ministerial Statement/s relate to:

- removal of redundant conditions
- removal of conditions that are managed under other processes (i.e. Dust Management and Waste Management) and as such, do not require regulation under Part IV of the EP Act
- updating conditions to refer to approved environment management plans and objectives
- updating conditions to reflect contemporary conditions
- including a Greenhouse Gas Reporting condition to ensure consistency with current EPA guidance (condition 9).

### ***Recommended proposal details (Schedule 1)***

The revised proposal details contained in Schedule 1 (Appendix 5) have been amended to include an updated description which reflects the EPA's contemporary approach to project descriptions described in the EPA's Procedures Manual.

Changes include the following:

- clearing values updated to reflect the cumulative area in the revised proposal
- linear infrastructure included in the authorised extent
- surplus water management included in the authorised extent.

## Appendix 5: Identified Decision-Making Authorities and Recommended Environmental Conditions

Section 44(2) of the EP Act specifies that the EPA's report must set out (if it recommends that implementation be allowed) the conditions and procedures, if any, to which implementation should be subject. This Appendix contains the EPA's recommended conditions and procedures.

Section 45(1) requires the Minister for Environment to consult with decision-making authorities (DMAs) and, if possible, agree on whether or not the proposal may be implemented and, if so, to what conditions and procedures, if any, that implementation should be subject.

The following decision-making authorities have been identified:

Decision-making Authority	Legislation (and Approval)
1. Minister for Environment	<i>Biodiversity Conservation Act 2016</i> (Taking or disturbing threatened species)
2. Minister for State Development	<i>Iron Ore (Robe River) Agreement Act 1964</i>
3. Minister for Water	<i>Rights in Water and Irrigation Act 1914</i> (Amendments to water extraction licences, Permit to obstruct or interfere with beds or banks, Licence to construct bores)
4. Minister for Aboriginal Affairs	<i>Aboriginal Heritage Act 1972</i> (Section 18 approval)
5. Minister for Mines and Petroleum	<i>Mining Act 1978</i> (Miscellaneous License) <i>Petroleum Pipelines Act 1969</i>
6. Chief Executive Officer, Department of Water and Environmental Regulation	<i>Environmental Protection Act 1986</i> (Part V Works Approval and Licence). Environmental Protection (Clearing of Native Vegetation) Regulations 2014 (Clearing Permit)
7. Executive Director; Resource and Environmental Compliance Division Department of Mines, Industry Regulation and Safety.	<i>Mining Act 1978 – Mining Proposal</i>
8. Chief Dangerous Goods Officer, Department of Mines, Industry Regulation and Safety.	<i>Dangerous Goods Safety Act 2004</i>
9. State Mining Engineer, Department of Mines, Industry Regulation and Safety	<i>Mines Safety and Inspection Act 1994</i> (Mine Safety) Mines Safety and Inspection Regulations 1995 (Approval to commence mining operations)
10. Chief Executive Officer, Shire of East Pilbara	<i>Health Act 1911</i> and Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulation 1974 <i>Building Act 2011</i> (Building permit for worker accommodation)

RECOMMENDED ENVIRONMENTAL CONDITIONS

**STATEMENT THAT A REVISED PROPOSAL MAY BE IMPLEMENTED**  
**(*Environmental Protection Act 1986*)**

WEST ANGELAS IRON ORE PROJECT– REVISED  
PROPOSAL

**Proposal:** The development of iron ore deposits, waste dumps, ore processing operation and associated infrastructure at West Angelas, 130 kilometres west of Newman, and rail infrastructure, as documented in Schedule 1 of this Ministerial Statement.

**Proponent:** Robe River Mining Co. Pty. Ltd.  
Australian Company Number 008 694 246

**Proponent Address:** Robe River Mining Co. Pty. Ltd.

**Assessment Number:** 2132

**Report of the Environmental Protection Authority:** 1635

**Previous Assessment Numbers:** 2046, 1914

**Previous Reports of the Environmental Protection Authority:** 1551, 1508

**Previous Statement Numbers:** 1015, 970

Pursuant to section 45, read with section 45B of the *Environmental Protection Act 1986*, it has been agreed that:

1. the proposal described and documented in Table 2 of Schedule 1 may be implemented; and
2. the implementation of the revised proposal to which the above reports of the Environmental Protection Authority relate is subject to the following conditions and procedures, which replace and supersede all previous conditions and procedures of Statement 970 and 1015.

**1 Proposal Implementation**

- 1-1 When implementing the revised proposal, the proponent shall not exceed the authorised extent of the revised proposal as defined in Table 2 in Schedule 1, unless amendments to the revised proposal and the authorised extent of the Revised Proposal have been approved under the EP Act.

**2 Contact Details**

- 2-1 The proponent shall notify the CEO of any change of its name, physical address or postal address for the serving of notices or other correspondence within twenty-eight (28) days of such change. Where the proponent is a corporation or an association of persons, whether incorporated or not, the postal address is that of the principal place of business or of the principal office in the State.

### **3 Compliance Reporting**

- 3-1 The proponent shall prepare, and maintain a Compliance Assessment Plan which is submitted to the CEO at least six (6) months prior to the first Compliance Assessment Report required by condition 3-6, or within six (6) months of this statement being issued, whichever is sooner.
- 3-2 The Compliance Assessment Plan shall indicate:
- (1) the frequency of compliance reporting;
  - (2) the approach and timing of compliance assessments;
  - (3) the retention of compliance assessments;
  - (4) the method of reporting of potential non-compliances and corrective actions taken;
  - (5) the table of contents of Compliance Assessment Reports; and
  - (6) public availability of Compliance Assessment Reports.
- 3-3 After receiving notice in writing from the CEO that the Compliance Assessment Plan satisfies the requirements of condition 3-2 the proponent shall assess compliance with conditions in accordance with the Compliance Assessment Plan required by condition 3-1.
- 3-4 The proponent shall retain reports of all compliance assessments described in the Compliance Assessment Plan required by condition 3-1 and shall make those reports available when requested by the CEO.
- 3-5 The proponent shall advise the CEO of any potential non-compliance within seven (7) days of that non-compliance being known.
- 3-6 The proponent shall submit to the CEO the first Compliance Assessment Report by 30 April 2020 addressing the previous twelve (12) month period and then annually from the date of submission of the first Compliance Assessment Report, or as otherwise agreed in writing by the CEO.

The Compliance Assessment Report shall:

- (1) be endorsed by the proponent's CEO or a person delegated to sign on the CEO's behalf;

- (2) include a statement as to whether the proponent has complied with the conditions;
- (3) identify all potential non-compliances and describe corrective and preventative actions taken;
- (4) be made publicly available in accordance with the approved Compliance Assessment Plan; and
- (5) indicate any proposed changes to the Compliance Assessment Plan required by condition 3-1.

#### **4 Public Availability of Data**

4-1 Subject to condition 4-2, within a reasonable time period approved by the CEO of the issue of this Statement and for the remainder of the life of the proposal the proponent shall make publicly available, in a manner approved by the CEO, all validated environmental data (including sampling design, sampling methodologies, empirical data and derived information products (e.g. maps)), management plans and reports relevant to the assessment of this proposal and implementation of this Statement.

4-2 If any data referred to in condition 4-1 contains particulars of:

- (1) a secret formula or process; or
- (2) confidential commercially sensitive information;

the proponent may submit a request for approval from the CEO to not make these data publicly available. In making such a request the proponent shall provide the CEO with an explanation and reasons why the data should not be made publicly available.

#### **5 Environmental Management Plan**

5-1 The proponent shall implement the proposal to meet the following environmental objectives:

- (1) The proponent shall ensure there is no irreversible impact, as a result of the discharge of surplus water from the proposal, to the health of riparian vegetation of Turee Creek East (Figure 3 in Schedule 1)
- (2) The proponent shall ensure that there is no direct or indirect disturbance to the West Angelas Cracking Clay Priority Ecological Community (PEC-2015-5, Figure 3 in Schedule 1), due to the proposal that results in an irreversible impact
- (3) The proponent shall ensure no more than 20 ha of direct or indirect disturbance due to the proposal to other representations of the West

Angelas Cracking Clay Priority Ecological Community (Figure 3 in Schedule 1)

- (4) The proponent shall ensure that there is no disturbance due to the proposal to the potential maternity Ghost Bat roosts (Caves AA1, WA13, WA-21 and WA-23) (Figure 4 in Schedule 1)
- (5) The proponent shall minimise disturbance due to the proposal to other Ghost Bat roosts (Caves A1, A2, L2, L3, WA-9, WA-10, WA-11, WA-12, WA-17, WA-20 and WA-22) (Figure 4 in Schedule 1)
- (6) The proponent shall avoid where possible, or otherwise minimise the introduction to and spread of weeds due to the proposal within the West Angelas rail corridor (Figure 5 in Schedule 1).

5-2 In order to meet the objectives of condition 5-1, the proponent shall prepare and submit the Environmental Management Plan within three (3) months of this statement.

5-3 The Environmental Management Plan shall:

- (1) specify trigger criteria that must provide an early warning that the threshold criteria identified in condition 5-3 may not be met;
- (2) specify threshold criteria to demonstrate compliance with the environmental objectives specified in condition 5-1. Exceedance of the threshold criteria represents non-compliance with these conditions;
- (3) specify monitoring to determine if trigger criteria and threshold criteria are exceeded;
- (4) specify trigger level actions to be implemented in the event that trigger criteria have been exceeded;
- (5) specify threshold contingency actions to be implemented in the event that threshold criteria are exceeded; and
- (6) provide the format and timing for the reporting of monitoring results against trigger criteria and threshold criteria to demonstrate that condition 5-1 has been met over the reporting period in the Compliance Assessment Report required by condition 3-1.

5-4 After receiving notice in writing from the CEO in consultation with the Department of Biodiversity, Conservation and Attractions that the Environmental Management Plan satisfies the requirements of condition 5-3 the proponent shall:

- (1) implement the provisions of the Environmental Management Plan; and

- (2) continue to implement the Environmental Management Plan until the CEO has confirmed by notice in writing that the proponent has demonstrated the objectives specified in conditions 5-1 have been met.

5-5 In the event that monitoring, tests, surveys or investigations indicates exceedance of threshold criteria specified in the Environmental Management Plan, the proponent shall:

- (1) report the exceedance in writing to the CEO within seven (7) days of the exceedance being identified;
- (2) implement the threshold contingency actions specified in the Environmental Management Plan within 24 hours and continue implementation of those actions until the CEO has confirmed by notice in writing that it has been demonstrated that the threshold criteria are being met and the implementation of the threshold contingency actions is no longer required;
- (3) investigate to determine the cause of the threshold criteria being exceeded;
- (4) investigate to provide information for the CEO to determine potential environmental harm or alteration of the environment that occurred due to threshold criteria being exceeded; and
- (5) provide a report to the CEO within twenty-one (21) days of the exceedance being reported as required by condition 5-5(1). The report shall include:
  - (a) details of threshold contingency actions implemented;
  - (b) the effectiveness of the threshold contingency actions implemented, against the threshold criteria;
  - (c) the findings of the investigations required by conditions 5-5(3) and 5-5(4);
  - (d) measures to prevent the threshold criteria being exceeded in the future;
  - (e) measures to prevent, control or abate the environmental harm which may have occurred; and
  - (f) justification of the threshold remaining, or being adjusted based on better understanding, demonstrating that objectives will continue to be met.

5-6 The proponent:

- (1) may review and revise the Environmental Management Plan, or
  - (2) shall review and revise the Environmental Management Plan as and when directed by the CEO.
- 5-7 The proponent shall implement the latest revision of the Environmental Management Plan, which the CEO has confirmed by notice in writing, satisfies the requirements of condition 5-3.
- 5-8 The proponent shall implement the *West Angelas Operations Environmental Management Program* (RTIO-HSE-0210871) dated November 2013 until the CEO has confirmed by notice in writing the Environmental Management Plan required by condition 5-2 satisfies the requirements of condition 5-3.

## **6 Groundwater Management**

- 6-1 Prior to dewatering of Deposit C or D, the proponent shall prepare and submit a Condition Environmental Management Plan to meet the following outcome:
  - (1) ensure that there is no drawdown of groundwater associated with the proposal at the boundary of, or within, Karijini National Park
- 6-2 The Condition Environmental Management Plan shall:
  - (1) specify trigger criteria that must provide an early warning that the threshold criteria identified in condition 6-2 may not be met;
  - (2) specify threshold criteria to demonstrate compliance with the environmental outcomes specified in condition 6-1. Exceedance of the threshold criteria represents non-compliance with these conditions;
  - (3) specify monitoring to determine if trigger criteria and threshold criteria are exceeded;
  - (4) specify trigger level actions to be implemented in the event that trigger criteria have been exceeded;
  - (5) specify threshold contingency actions to be implemented in the event that threshold criteria are exceeded; and
  - (6) provide the format and timing for the reporting of monitoring results against trigger criteria and threshold criteria to demonstrate that condition 6-1 has been met over the reporting period in the Compliance Assessment Report required by condition 3-1.
- 6-3 After receiving notice in writing from the CEO in consultation with the Department of Biodiversity, Conservation and Attractions that the Condition Environmental Management Plan satisfies the requirements of condition 6-2 the proponent shall:

- (1) implement the provisions of the Condition Environmental Management Plan; and
- (2) continue to implement the Condition Environmental Management Plan until the CEO has confirmed by notice in writing that the proponent has demonstrated the outcome specified in conditions 6-1 have been met.

6-4 In the event that monitoring, tests, surveys or investigations indicates exceedance of threshold criteria specified in the Condition Environmental Management Plan, the proponent shall:

- (1) report the exceedance in writing to the CEO within seven (7) days of the exceedance being identified;
- (2) implement the threshold contingency actions specified in the Condition Environmental Management Plan within 24 hours and continue implementation of those actions until the CEO has confirmed by notice in writing that it has been demonstrated that the threshold criteria are being met and the implementation of the threshold contingency actions is no longer required;
- (3) investigate to determine the cause of the threshold criteria being exceeded;
- (4) investigate to provide information for the CEO to determine potential environmental harm or alteration of the environment that occurred due to threshold criteria being exceeded; and
- (5) provide a report to the CEO within twenty-one (21) days of the exceedance being reported as required by condition 6-4(1). The report shall include:
  - (a) details of threshold contingency actions implemented;
  - (b) the effectiveness of the threshold contingency actions implemented, against the threshold criteria;
  - (c) the findings of the investigations required by conditions 6-4(3) and 6-4(4);
  - (d) measures to prevent the threshold criteria being exceeded in the future;
  - (e) measures to prevent, control or abate the environmental harm which may have occurred; and
  - (f) justification of the threshold remaining, or being adjusted based on better understanding, demonstrating that outcomes will continue to be met.

6-5 The proponent:

- (1) may review and revise the Condition Environmental Management Plan, or
- (2) shall review and revise the Condition Environmental Management Plan as and when directed by the CEO.

6-6 The proponent shall implement the latest revision of the Condition Environmental Management Plan, which the CEO has confirmed by notice in writing, satisfies the requirements of condition 6-2.

6-7 The proponent shall implement the *Groundwater Management Plan* component of the *West Angelas Operations Environmental Management Program* (RTIO-HSE-0210871) dated November 2013 until the CEO has confirmed by notice in writing the Condition Environmental Management Plan required by condition 6-1 satisfies the requirements of condition 6-2.

## **7 Rehabilitation and Decommissioning**

7-1 The proponent shall manage the implementation of the proposal to meet the following environmental objectives:

- (1) The proponent shall ensure that the proposal is rehabilitated and decommissioned in an ecologically sustainable manner.
- (2) Ensure that closure planning and rehabilitation are undertaken in a progressive manner.

7-2 Within twelve (12) months of the issue of this Statement the proponent shall prepare and submit a Mine Closure Plan in accordance with the *Guidelines for Preparing Mine Closure Plans*, May 2015, (or any subsequent revisions of the guidelines), to the requirements of the CEO, on advice of the Department of Mines, Industry Regulation and Safety, and the Department of Water and Environmental Regulation.

7-3 The proponent shall review and revise the Mine Closure Plan required by condition 7-2 at intervals not exceeding three (3) years, or as otherwise specified by the CEO, and submit the plan to the CEO at the agreed interval.

7-4 The proponent shall implement the latest revision of the Mine Closure Plan, which the CEO has confirmed by notice in writing, satisfies the requirements of condition 7-2.

7-5 The proponent shall implement the *West Angelas Closure Plan* (RTIO-HSE-0228290) dated April 2018 until the CEO has confirmed by notice in writing the Mine Closure Plan required by condition 7-2 satisfies the requirements of the

CEO on advice of the Department of Mines, Industry Regulation and Safety, and the Department of Water and Environmental Regulation.

## **8 Offsets**

- 8-1 In view of the significant residual impacts and risks as a result of the implementation of the proposal, the proponent shall contribute funds to the Pilbara Environmental Offset Fund calculated pursuant to condition 8-2, subject to any reduction approved by the CEO under condition 8-10.
- 8-2 The proponent's contribution to the Pilbara Environmental Offset Fund shall be paid biennially, with the amount to be contributed calculated based on the clearing undertaken in each year of the biennial reporting period in accordance with the rates in condition 8-3. The first biennial reporting period shall commence from vegetation clearing activities for the environmental values identified in condition 8-3.
- 8-3 Calculated on the 2018 calendar year, the contribution rates are:
- (1) \$821 AUD (excluding GST) per hectare of 'Good' to 'Excellent' condition native vegetation cleared within the development envelope (delineated in Figure 2 and defined by the geographic coordinates in Schedule 2) within the Hamersley IBRA subregion.
  - (2) \$1,642 AUD (excluding GST) per hectare of the West Angelas Cracking Clay Priority Ecological Community cleared within the development envelope (delineated in Figure 3 and defined by the geographic coordinates in Schedule 2) within the Hamersley IBRA subregion.
  - (3) \$1,642 AUD (excluding GST) per hectare of riparian vegetation communities within Turee Creek East affected by discharge within the development envelope (delineated in Figure 3 and defined by the geographic coordinates in Schedule 2) within the Hamersley IBRA subregion.
  - (4) \$1,642 AUD (excluding GST) per hectare of foraging and roosting habitat for the Ghost Bat ('major gorge or gully'; 'hilltop, hillside, ridge or cliff'; and 'major drainage' habitat), including removal of one night roost, cleared within the development envelope (delineated in Figure 4 and defined by the geographic coordinates in Schedule 2) within the Hamersley IBRA subregion.
- 8-4 From the commencement of the 2019 calendar year, the rates in condition 8-3 will be adjusted annually each subsequent calendar year in accordance with the percentage change in the CPI applicable to that calendar year.

- 8-5 Within three (3) months of the issue of this statement, the proponent shall prepare and submit an Impact Reconciliation Procedure to the CEO, for the CEO to provide written confirmation that the Impact Reconciliation Procedure satisfies the requirements of condition 8-6.
- 8-6 The Impact Reconciliation Procedure required pursuant to condition 8-5 shall:
- (1) state that clearing calculations for the first biennial reporting period will commence from the date this statement is issued in accordance with condition 8-2 and end on the second 31 December following this date;
  - (2) state that clearing calculations for each subsequent biennial reporting period will commence on 1 January of the required reporting period, unless otherwise agreed by the CEO;
  - (3) include a methodology to calculate the amount of clearing undertaken during each year of the biennial reporting period for each of the environmental values identified in condition 8-3;
  - (4) indicate the timing and content of the Impact Reconciliation Reports; and
  - (5) include the clearing previously approved and undertaken under Ministerial Statement 1015 subject to the rate of \$750 AUD (excluding GST) per hectare of 'good to excellent' condition native vegetation, adjusted in accordance with the percentage change in the CPI applicable to that calendar year.
- 8-7 The proponent shall submit an Impact Reconciliation Report in accordance with the Impact Reconciliation Procedure approved in condition 8-5.
- 8-8 The Impact Reconciliation Report required pursuant to condition 8-7 shall provide the location and spatial extent of the clearing undertaken within the development envelope during each biennial reporting period.
- 8-9 The proponent may apply in writing and seek the written approval of the CEO to reduce all or part of the contribution payable under condition 8-2 where:
- (1) a payment has been made to satisfy a condition of an approval under the *Environment Protection and Biodiversity Conservation Act 1999* in relation to the proposal;
  - (2) the payment counterbalances impacts of the proposal on matters of national environmental significance; and
  - (3) the payment counterbalances the significant residual impacts to the environmental value identified in condition 8-3(4).

8-10 The 4,667 ha of clearing of native vegetation previously approved under Ministerial Statement 970 is exempt from the requirement to offset under condition 8-1.

8-11 Where clearing coincides with more than one category of habitat under conditions 8-3(1) to 8-3(4) the higher contribution rate applies.

## **9 Greenhouse Gas Reporting**

9-1 The proponent shall manage the implementation of the proposal to meet the following environmental objective:

- (1) avoid, where possible, and minimise greenhouse gas emissions as far as practicable.

9-2 Within three (3) months of the issue of this statement, the proponent shall prepare and submit a Greenhouse Gas Management Plan to meet the objective required by condition 9-1.

9-3 The Greenhouse Gas Management Plan shall address the following matters:

- (1) benchmarking against applicable standards for iron ore processing;
- (2) design of the proposal to minimise greenhouse gas emission as far as practicable;
- (3) monitoring and public reporting; and
- (4) opportunities for continuous improvement and minimising net emissions in the future within the existing design of the proposal.

9-4 After receiving notice in writing from the CEO that the Greenhouse Gas Management Plan satisfies the requirements of conditions 9-2 and 9-3 the proponent must implement the Greenhouse Gas Management Plan.

9-5 The proponent may review and revise the Greenhouse Gas Management Plan.

9-6 The proponent shall review and revise the Greenhouse Gas Management Plan as and when directed by the CEO.

9-7 The proponent shall continue to implement the version of the Greenhouse Gas Management Plan most recently approved by the CEO until the CEO has confirmed by notice in writing that the plan meets the objective specified in condition 9-1.

Table 1: Summary of the Proposal

<b>Proposal title</b>	West Angelas Iron Ore Project – Revised Proposal
<b>Short description</b>	<p>This proposal is a revision of the existing West Angelas Iron Ore Project and includes the above and below water table, open-cut iron ore mining from additional deposits and the construction and operation of associated infrastructure including but not limited to the following: dewatering and surplus water management infrastructure, Managed Aquifer Recharge scheme, surface water management infrastructure, linear infrastructure, processing and support facilities. Mine dewatering, which dewateres the ore bodies to allow below water table mining, supplies water for local operational purposes. Surplus dewatering water, exceeding the local operational water requirement, is transferred to the existing operations to supply operational water demand, the Managed Aquifer Recharge Scheme and / or discharged to the Turee Creek East tributary. This proposal will be contained within the revised West Angelas Mine Development Envelope.</p>

Table 2: Location and authorised extent of physical and operational elements

<b>Element</b>	<b>Location</b>	<b>Authorised Extent</b>
Mine and associated infrastructure	Figure 1, Figure 2, Figure 3, Figure 4	<p>Clearing of no more than 12,205 hectares (ha) within a 26,700 ha Mine Development Envelope, including:</p> <ul style="list-style-type: none"> <li>• No clearing within the Ghost Bat Cave AA1, WA-13, WA-21 and WA-23 Exclusion Zones.</li> <li>• No clearing within the West Angelas Cracking Clay Priority Ecological Community, PEC-2015-5.</li> <li>• No more than 20 ha of clearing of other representations of the West Angelas Cracking Clay Priority Ecological Community.</li> <li>• No more than 25 ha of clearing of riparian vegetation.</li> </ul> <p>Below water table pits are to be backfilled to a level to prevent the formation of permanent pit lakes.</p>
Linear infrastructure	Figure 5	<p>A 413 km rail network transports processed ore from West Angelas to port facilities located at Cape Lambert. Clearing no more than 1,500 ha within a 19,400 ha Linear Infrastructure Development Envelope, including:</p> <ul style="list-style-type: none"> <li>• Five existing sidings; Spoonbill, Bellbird, Rosella, Brockman Refuge and Emu and potential additional sidings to support the rail network.</li> <li>• Turee Creek B Borefield, pipeline, powerline, access roads and other associated infrastructure</li> </ul>

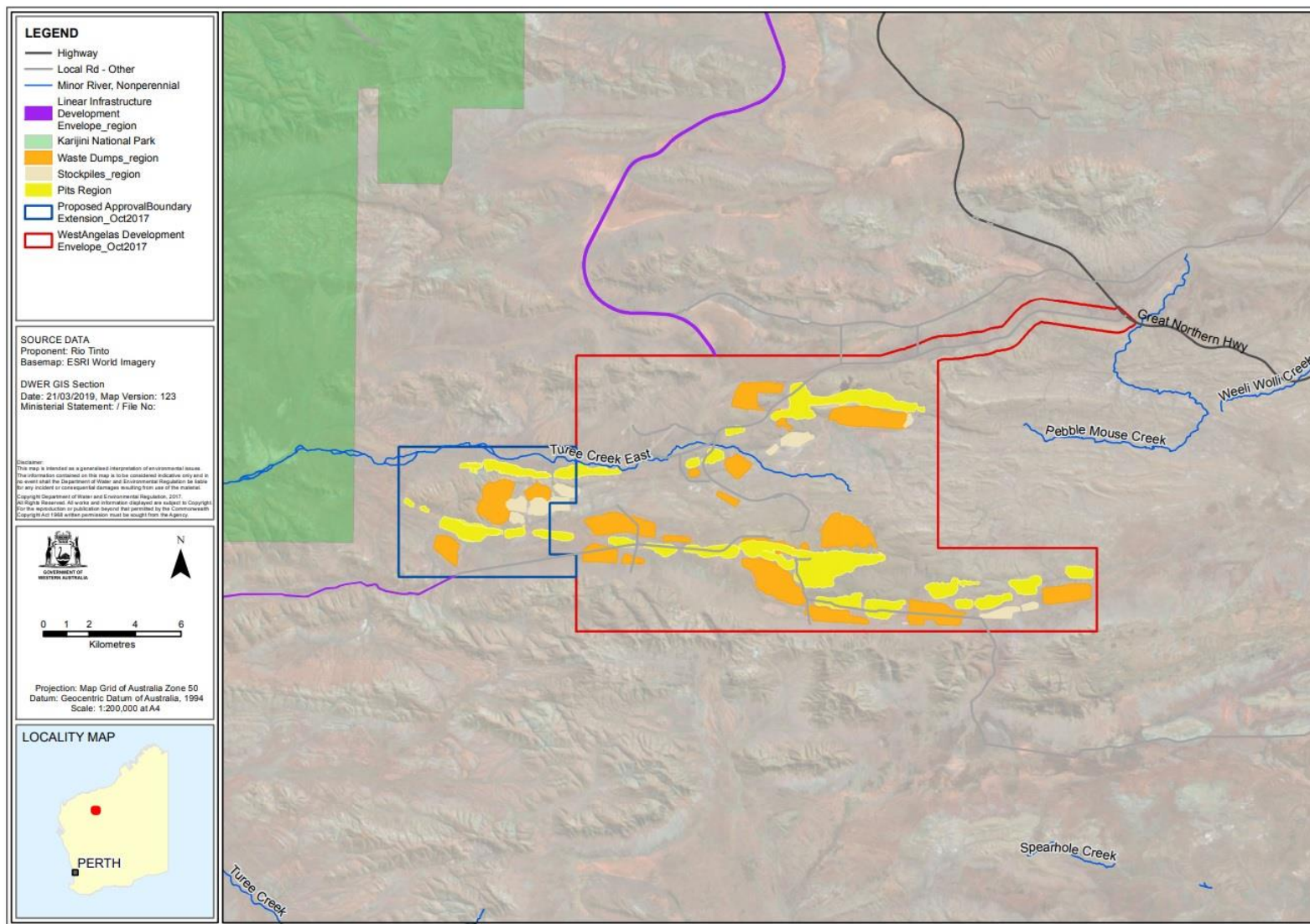
Surplus water management	Figure 3	Dewatering water will be used onsite in the first instance to supply water for operational purposes. Surplus dewatering water, exceeding the operational requirement is discharged to a local ephemeral tributary of Turee Creek East. The surface discharge extent will not extend within the boundary of Karijini National Park under natural no-flow conditions.
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**Table 3: Abbreviations and Definitions**

Acronym or Abbreviation	Definition or Term
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.
CPI	The All Groups Consumer Price Index numbers for Perth compiled and published by the Australian Bureau of Statistics.
EP Act	<i>Environmental Protection Act 1986</i>
ha	hectare
IBRA	Interim Biogeographic Regionalisation for Australia
Pilbara Environmental Offset Fund	The special purpose account called the Pilbara Environmental Offsets Fund Account that has been created pursuant to section 16(1)(d) of the <i>Financial Management Act 2006</i> by the Department of Water and Environmental Regulation.

### Figures (attached)

- Figure 1 Mine layout and revised development envelope
- Figure 2 Native vegetation condition mapping within the revised development envelope
- Figure 3 West Angelas Cracking Clay PECs and riparian vegetation with surplus water discharge in Turee Creek East
- Figure 4 Ghost Bat cave locations and fauna habitat within the West Angelas project area
- Figure 5 Linear infrastructure development envelope



Unique Record ID:

Figure 1. Mine layout and revised development envelope

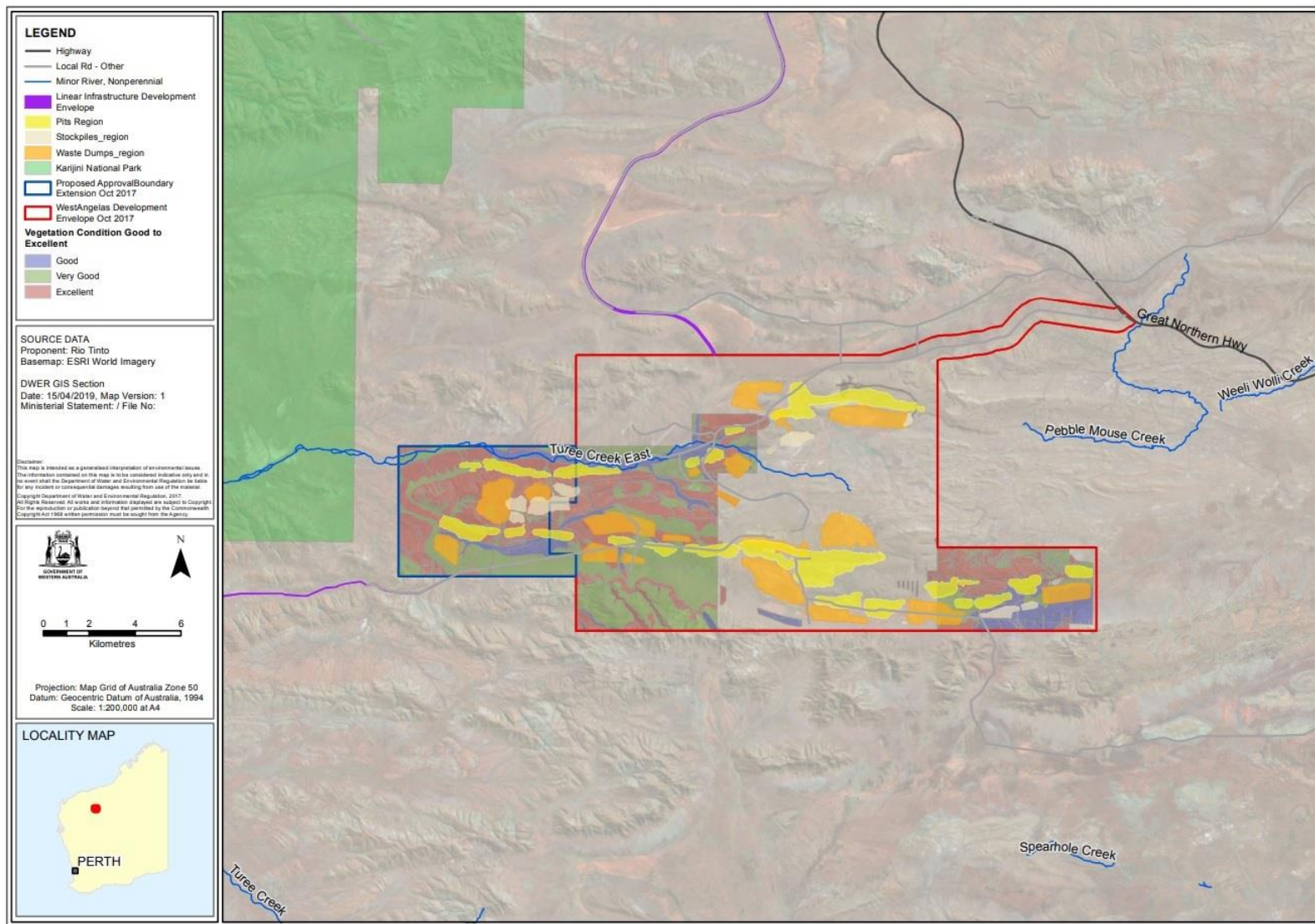


Figure 2. Native vegetation condition mapping within the revised development envelope

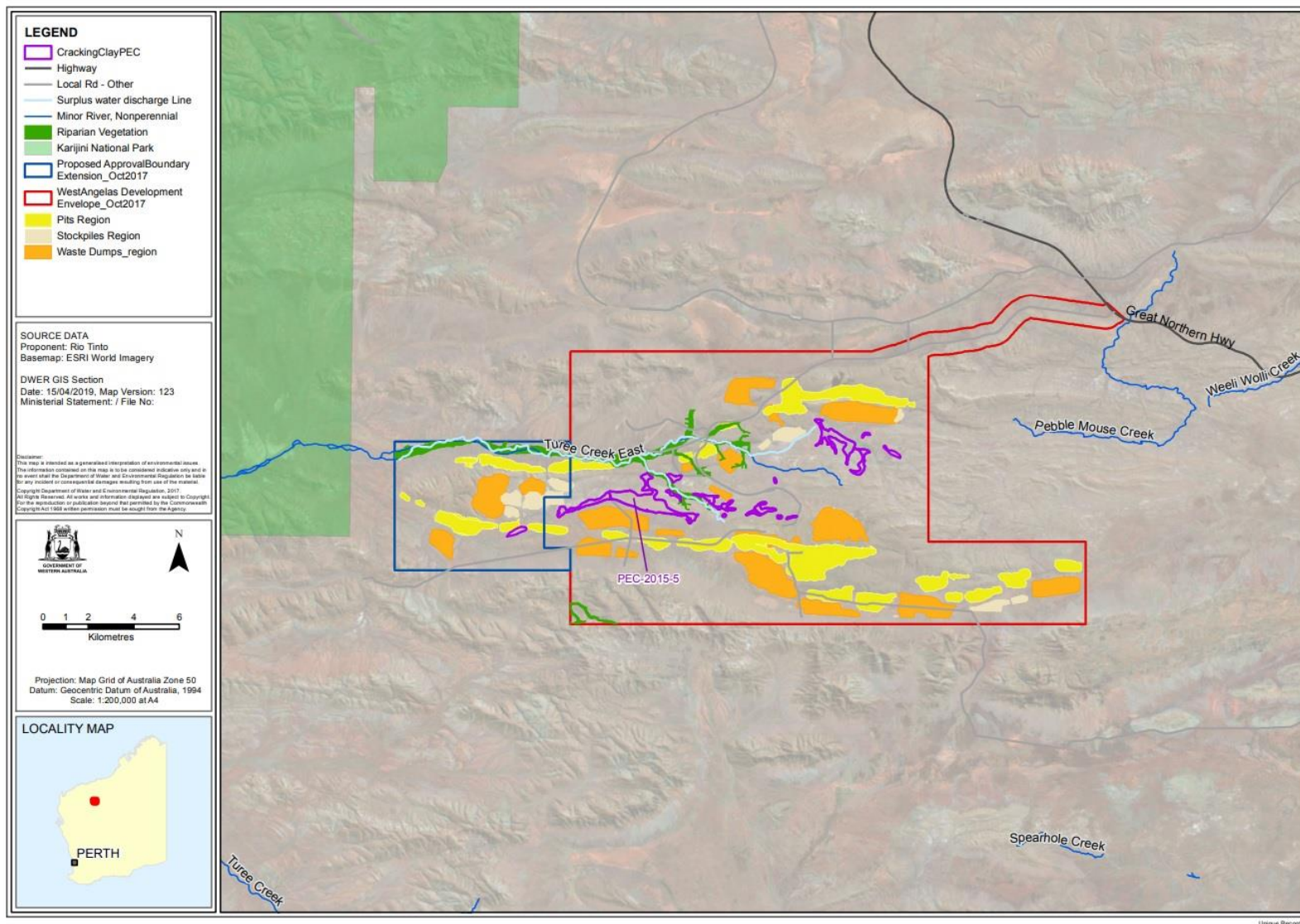


Figure 3. West Angelas Cracking Clay PECs and riparian vegetation with surplus water discharge in Turee Creek East

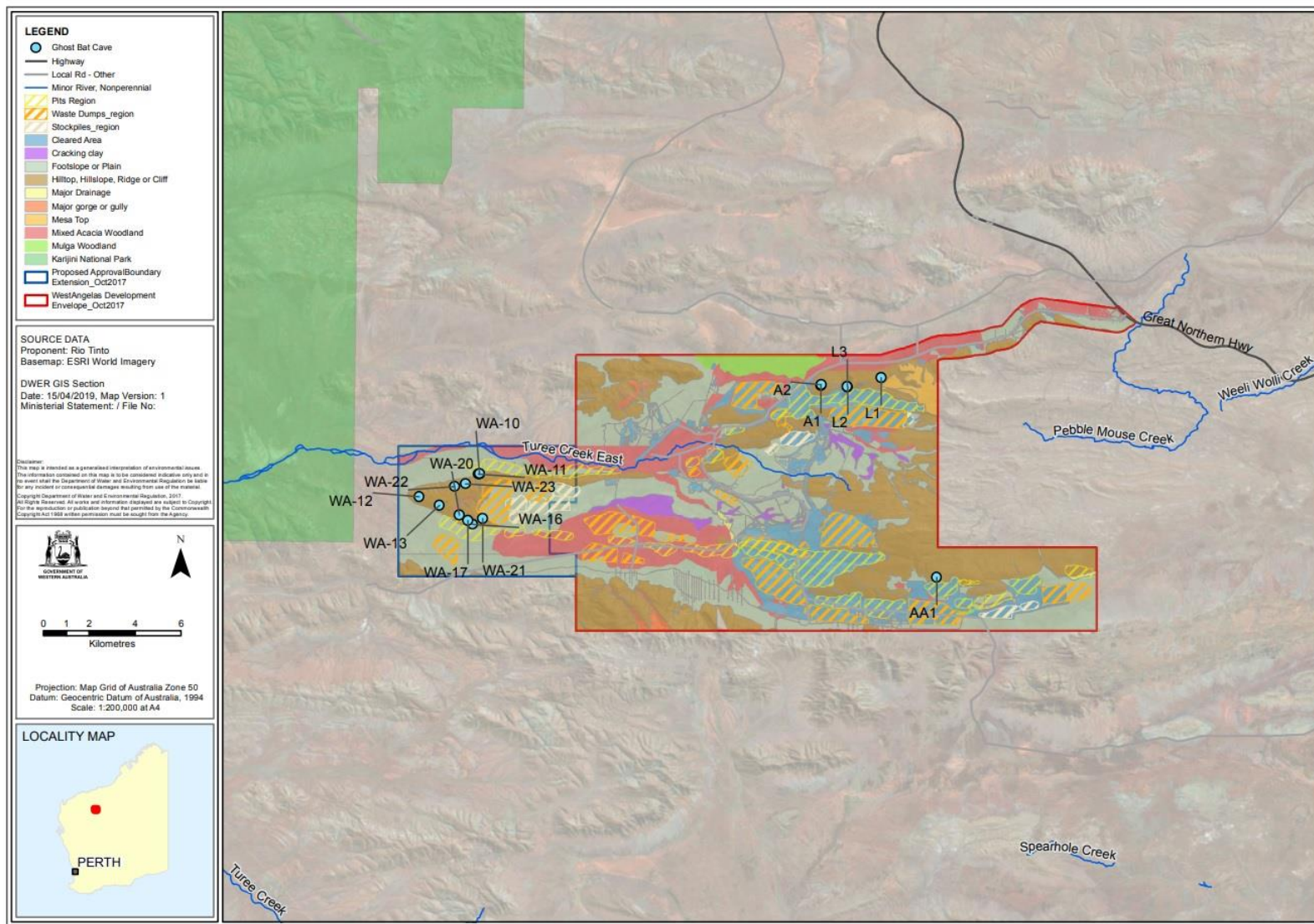
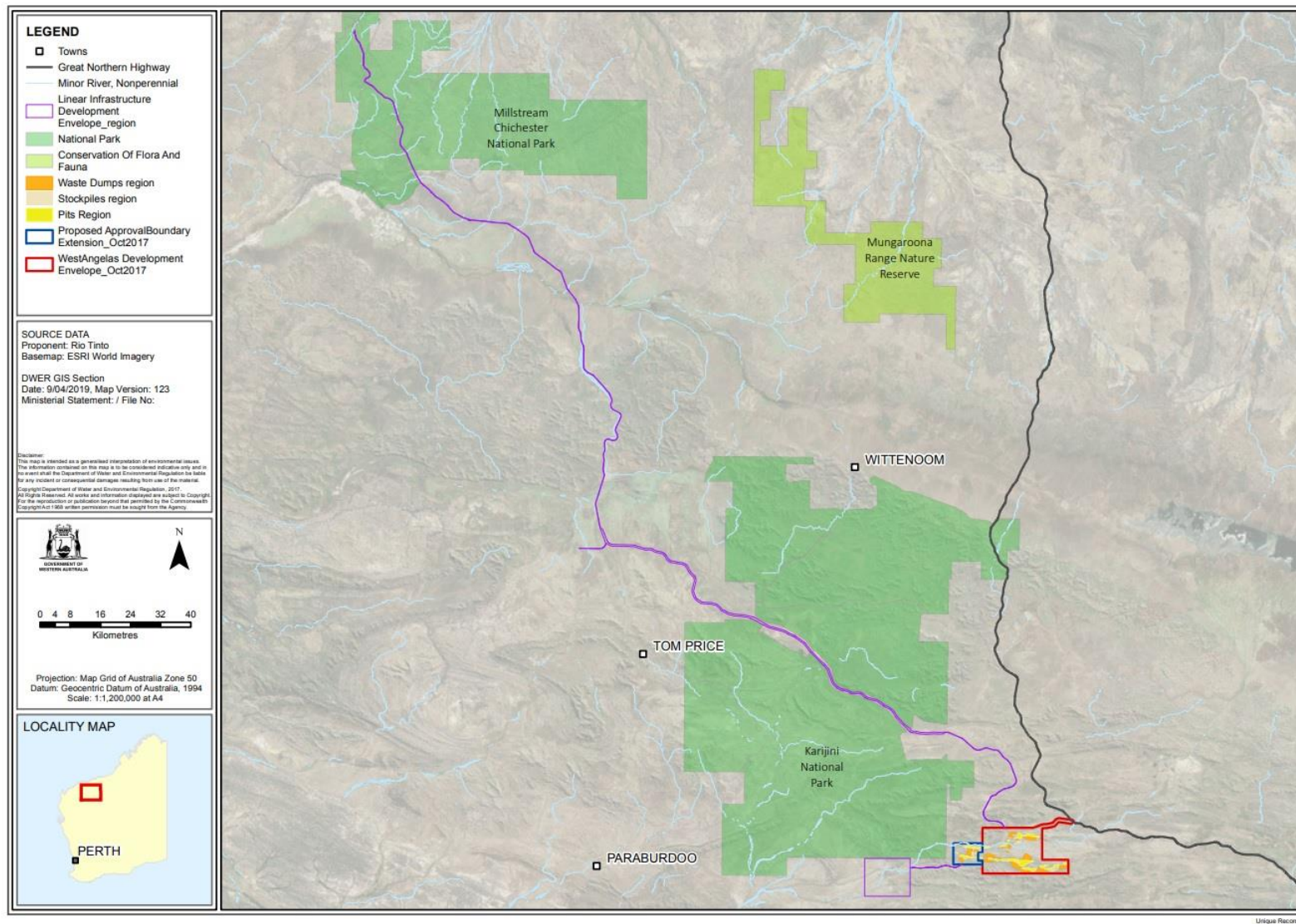


Figure 4. Ghost Bat cave locations and fauna habitat within the West Angelas project area



Unique Record ID:

Figure 5. Linear infrastructure development envelope

## **Schedule 2**

Co-ordinates defining the areas shown in Figures 1 – 5 are held by the Department of Water and Environmental Regulation (DWER) under the following reference numbers:

- West Angelas Revised Development Envelope – 2019-1554965602236
- West Angelas Cracking Clay PEC – 2019-1554965601463
- Ghost Bat cave locations – 2019-1555313120739
- Riparian vegetation – 2019-1555313123266
- Surface water discharge – 2019-1555313124263
- Linear infrastructure development envelope – 2019-1554965598647.

All co-ordinates are in metres, listed in Map Grid of Australia Zone 50 (MGA Zone 50), datum of Geocentric Datum of Australia 1994 (GDA94).