



# Report and recommendations of the Environmental Protection Authority



## Eliwana Railway Project

Fortescue Metals Group Limited

Report 1633

April 2019

## Environmental impact assessment process timelines

Date	Progress stages	Time (weeks)
21/08/17	EPA decides to assess – level of assessment set	
21/12/17	EPA approved Environmental Scoping Document	18
08/08/18	EPA accepted Environmental Review Document	33
27/08/18	Environmental Review Document released for public review	3
25/09/18	Public review period for Environmental Review Document closed	4
05/11/18	Supplementary public review period for Native Title Holders closed	6
15/02/19	EPA accepted Proponent Response to Submissions	15
18/02/19	EPA received final information for assessment	1
21/03/19	EPA completed its assessment	5
24/04/19	EPA provided report to the Minister for Environment	5
29/04/19	EPA report published	3 days
13/05/19	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 EPA decides to assess the proposal and records the level of assessment.

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



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Chairman

16 April 2019

ISSN 1836-0483 (Print)  
ISSN 1836-0491 (Online)  
Assessment No. 2129

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## Executive Summary

The Eliwana Railway Project (the proposal) was referred to the Environmental Protection Authority (EPA) by the proponent, Fortescue Metals Group Limited (Fortescue) on 07 July 2017.

The proposal includes a 120 kilometre (km) railway line and associated embankment, maintenance and access tracks, power and communications corridor, bridges or overpasses to cross existing Rio Tinto railway and conveyor infrastructure, gas and water pipelines, and temporary construction infrastructure including construction camps, borrow areas, ballast quarries, and laydown areas. The proposal would include clearing of up to 3690 hectares (ha) of native vegetation within a defined Rail Development Envelope (RDE) of 38,199 ha.

The EPA conducted an Environmental Impact Assessment on the proposal, which included a 4-week public review period, with additional review time granted to key stakeholders following a request by Native Title holders.

The EPA has concluded that the proposal is environmentally acceptable, and can be implemented subject to certain conditions.

The EPA examined potential impacts on four key environmental factors: Flora and Vegetation, Terrestrial Fauna, Inland Waters, and Social Surroundings. The EPA has assessed the impacts of the Eliwana Railway Project in the context of the environmental and social values of the project area, with particular regard to Aboriginal heritage sites identified in the proposed development envelope.

The EPA has recommended conditions (listed in Appendix 4) which include requirements to avoid places of recognised Aboriginal cultural heritage, requirements to provide further details on the final rail design to confirm that current impact predictions will be met, requirements to monitor and manage impacts to flora and vegetation and to terrestrial fauna, and requirements to monitor and manage impacts to Aboriginal heritage.

To mitigate the residual loss associated with clearing of up to 3,690 hectares (ha) of native vegetation, including up to 40 ha of clearing within the *Themeda Grasslands on Cracking Clays* Threatened Ecological Community (TEC), The EPA has recommended a condition that requires the proponent to provide an offset through contributions to an approved fund.

# 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 Fortescue Metals Group Limited (Fortescue). The proposal is to construct and operate the Eliwana Railway Project in the Pilbara region of Western Australia.

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, and
- 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 07 July 2017. On 21 August 2017, the EPA decided to assess the proposal and set the level of assessment at Public Environmental Review, with a four-week public review period. The EPA approved the ESD for the proposal on 21 December 2017. The ERD was released for public review from 27 August 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 on behalf of Commonwealth

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) on 07 November 2017, as it would, 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 was assessed as an accredited assessment between the Commonwealth and Western Australian governments.

## 2. The proposal

### 2.1 Proposal summary

The proponent, Fortescue, proposes to construct and operate the Eliwana Railway Project in the Pilbara region of Western Australia. The project would link the proposed Eliwana Iron Ore Mine Project (located 90 km west-north-west of Tom Price) to the existing Fortescue rail network at the Solomon Iron Ore Mine (Figure 1).

The proposal includes a 120 km railway line and associated embankment, maintenance and access tracks, power and communications corridor, bridges or overpasses to cross existing Rio Tinto railway and conveyor infrastructure, gas and water pipelines, and temporary construction infrastructure including construction camps, borrow areas, ballast quarries, and laydown areas.

The proposal would include clearing of up to 3,690 hectares (ha) of native vegetation within a defined Rail Development Envelope (RDE) of 38,199 ha (Figure 2). The Railway would support a maximum throughput of 50 million tonnes per annum (Mtpa) resulting in approximately 5 train movements per 24 hour period.

The key characteristics of the proposal are summarised in Tables 1 and 2 below. A detailed description of the proposal is provided in section 2 of the ERD (FMG, August 2018).

**Table 1: Summary of the proposal**

<b>Proposal title</b>	Eliwana Railway Project
<b>Short description</b>	The proposal is for the construction and operation of the Eliwana Railway Project, connecting the Eliwana Iron Ore Mine Project located 90 km west-north-west of Tom Price to the existing Fortescue rail network at the Solomon Iron Ore Mine. The proposal includes the construction of a 120 km railway and associated embankments, maintenance tracks and associated infrastructure.

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

<b>Element</b>	<b>Location</b>	<b>Proposed extent</b>
<b><i>Physical elements</i></b>		
Railway line and associated infrastructure	Figure 2	Clearing of up to 3,690 ha of native vegetation within a 38,199 ha development envelope
<i>Themeda Grasslands on Cracking Clays</i> TEC	Figure 3	Within the 3,690 ha of total clearing, Clearing of no more than 40 ha within the

Element	Location	Proposed extent
		<i>Themeda Grasslands on Cracking Clays.</i>
<b><i>Operational elements</i></b>		
Construction Water supply	N/A	Up to 4 Gigalitres (GL), supplied from multiple bores situated along the railway.
Operational Water Supply	N/A	Up to 200,000 kilolitres per annum (kL/a), supplied from local water supply borefields.



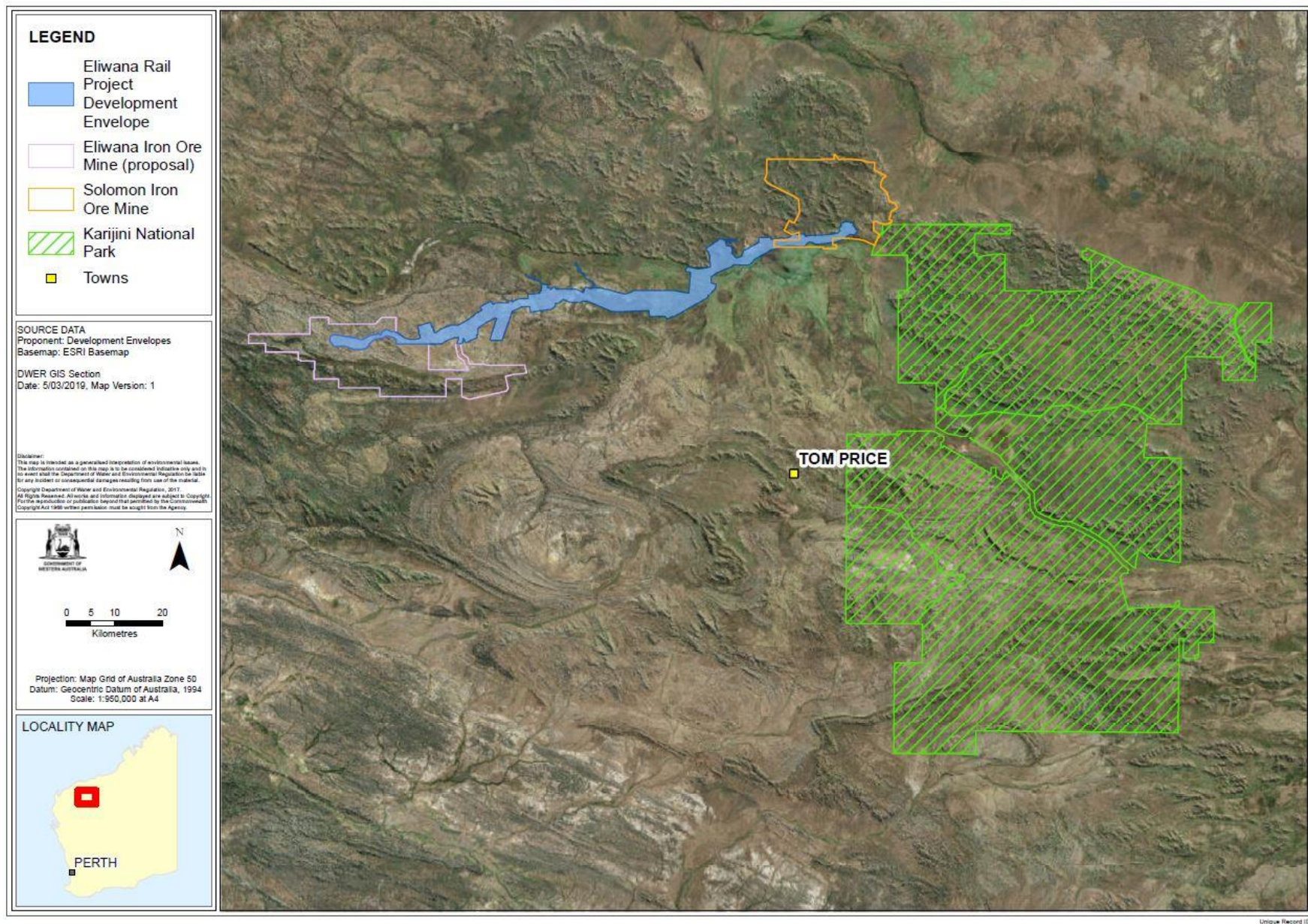
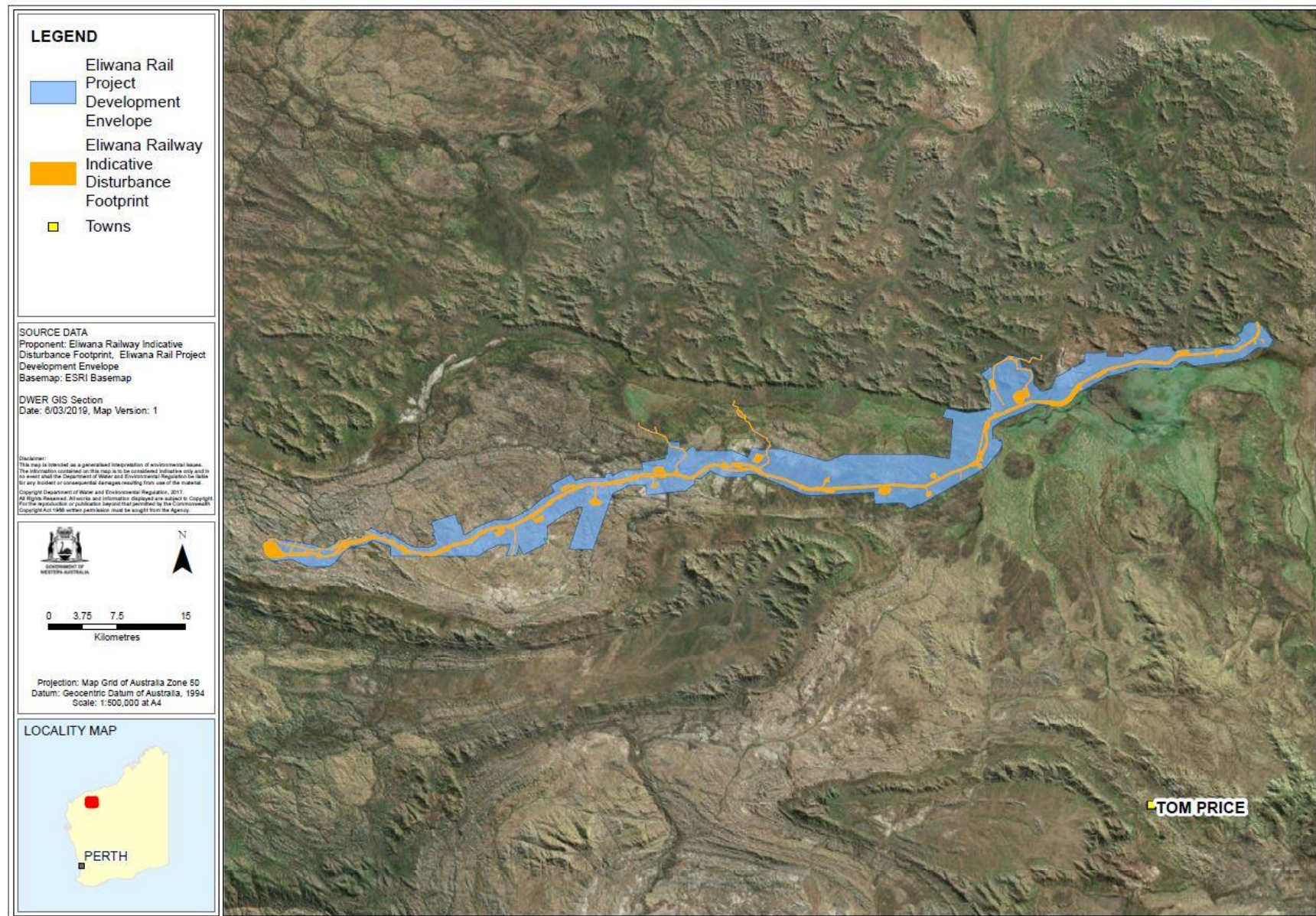


Figure 1 – Regional Location

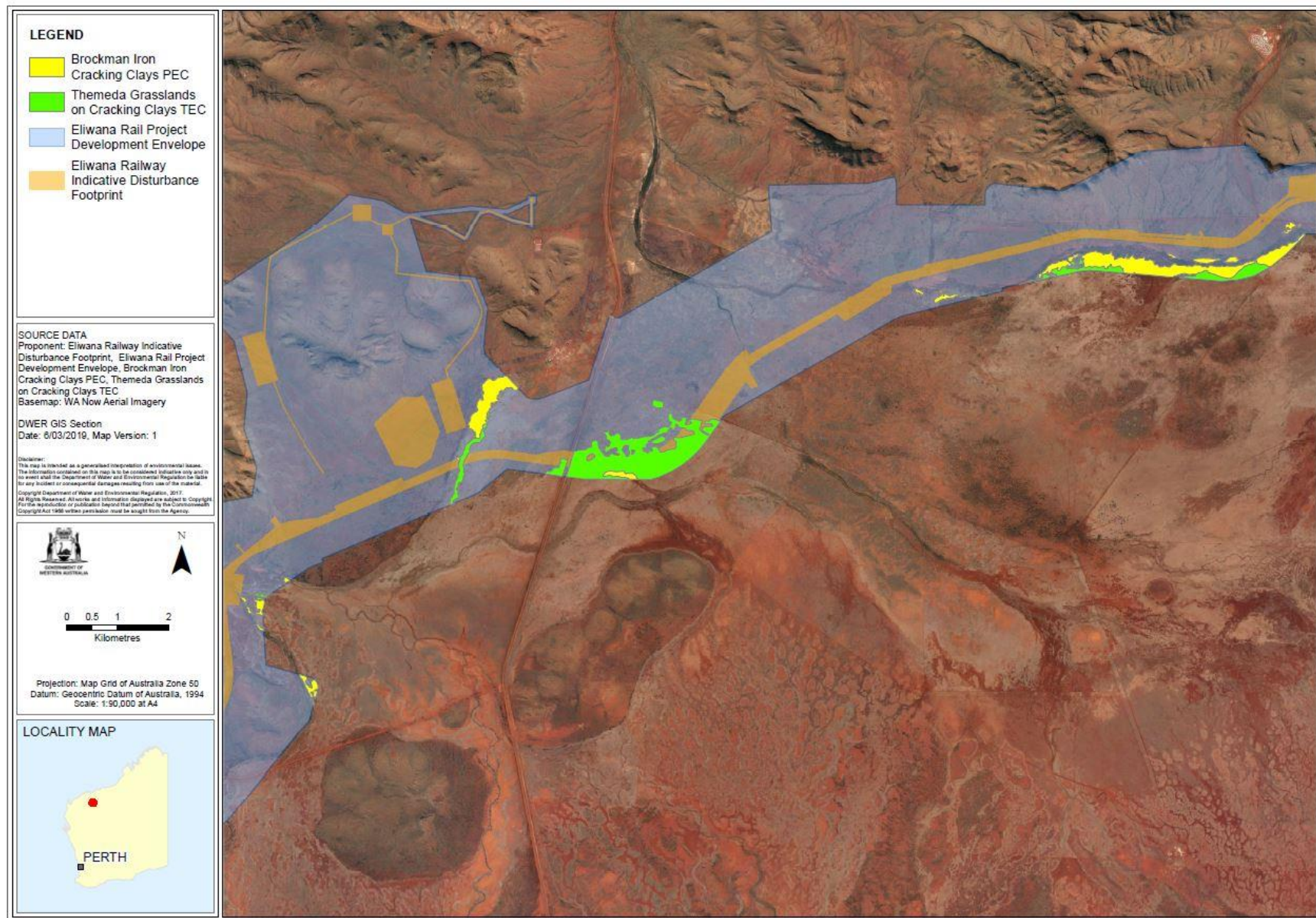




Unique Record ID:

**Figure 2 – Rail development envelope and indicative disturbance footprint**





**Figure 3 – Threatened and Priority Ecological Communities**

## 2.2 Changes to the proposal during assessment

Fortescue requested that the EPA consent to two changes to the proposal during the course of the assessment:

- The first change was requested on 27 March 2018. The change was to reduce the RDE from 57,000 ha to 38,029 ha, remove a borrow pit located on Hamersley road and widen the development envelope near the Nammuldi Agricultural Project. The 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 to the change on 11 April 2018.
- The second change was requested on 21 January 2019, and included an enlargement of the RDE from 38,029 ha to 38,199 ha, and changes to the indicative disturbance footprint near to three key social and cultural heritage sites. The 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 to the change on 11 February 2019.

The above changes have been included in the proposal summary in section 2.1 of this report.

## 2.3 Context

The proposal is located entirely within the Hamersley Interim Biogeographic Regionalisation of Australia (IBRA) subregion in the Pilbara. The land use activities surrounding the proposal area include cattle farming, irrigated agriculture, and mining. The proposal is located within the Hamersley Pastoral Lease, an active cattle station that has been operating for more than 100 years. The RDE is located 5 km from the north-west corner of Karijini National Park (Figure 1). No impacts to the park are anticipated as a result of this proposal.

The rail alignment is spatially constrained in many areas by mining tenure, including Rio Tinto's Silvergrass, Brockman 2 - Nammuldi and Brockman 4 operations. Other constraints include irrigated agriculture areas, existing rail and transport infrastructure, and cultural constraints.

The proposal is intended to provide a link between the existing rail network through the Solomon Iron Ore Mine, to the proposed Eliwana Iron Ore Mine (Figure 2). There is potential for cumulative impacts to Flora and Vegetation as a result of the high concentration of iron ore mines and associated rail infrastructure in this area. In addition to this, some vegetation in this area is subject to degradation caused by cattle farming throughout the region.

### 3. Consultation

The EPA advertised the referral information for the proposal for public comment in July 2017 and received two (2) submissions. Both submissions requested 'Assess – Public Environmental review', due to the significant footprint of the proposal.

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 7 of the proponent's ERD (FMG, 2018a).

Five (5) agency submissions and four (4) public submissions were received during the public review period. The key issues raised relate to:

- changes to surface water flows and potential impacts to significant vegetation
- impacts to significant heritage sites, and
- impacts to cultural heritage values.

The proponent addressed the issues raised in the Response to Submissions document (FMG, 2019).

Additional consultation was undertaken by the proponent and the EPA with regard to impacts to significant heritage sites subsequent to the public review period.

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 proposed development. Relevant significant environmental issues identified from this process were taken into account by the EPA during its assessment of the proposal.

## 4. Key environmental factors

In undertaking its assessment of this proposal and preparing this report, the EPA had regard for the object and principles contained in s4A 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 (FMG 2017) and ERD (FMG 2018a).
- 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 (FMG 2019).
- The EPA's own inquiries.
- The EPA's *Statement of environmental principles, factors and objectives* (EPA, 2019a).
- The relevant principles, policy and guidance referred to in the assessment of each key environmental factor in sections 4.1 to 4.4.

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

- **Flora and Vegetation** – Direct impacts associated with clearing of native vegetation, with particular regard to the clearing of priority flora and vegetation associated with a Threatened Ecological Community (TEC). Indirect impacts associated with changes to surface water and groundwater flows, fragmentation, and increases in weed diversity and extent.
- **Terrestrial Fauna** – Direct impacts associated with loss of habitat, and mortality during construction, with particular regard to MNES. Indirect impacts associated with increase in feral animal occurrence and vehicle strike.
- **Inland Waters** – Direct impacts associated with the diversion of surface water flows through the railway embankments, and drawdown of groundwater for use during construction and operation of the railway. Potential impacts from increased sedimentation of surface water during construction.
- **Social Surroundings** – Direct impacts to significant cultural sites from ground disturbing activities, indirect impacts to cultural and social sites including changes to surface water and groundwater flows at culturally significant sites. Visual and noise impacts with the potential to disturb cultural activities. Loss of access to areas required to perform cultural activities, impacts to culturally significant flora, vegetation and fauna

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

stage of the assessment. 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 proposal:

1. **The precautionary principle** – the EPA has considered whether the proponent's investigations into the biological and physical environment provide the means to assess risk and identify measures to avoid or minimise impacts. Where greater certainty that the risks are well understood is required, the EPA has recommended conditions to ensure that certainty is provided.
2. **The principle of intergenerational equality** – the EPA has considered whether the health, diversity and productivity of the environment would be maintained or enhanced during the implementation of this proposal, with particular regard to the diversity and productivity of the social and cultural environment. The EPA has recommended conditions to ensure that cultural sites and practices are maintained for the benefit of future generations.
3. **The principle of the conservation of biological diversity and ecological integrity** – the EPA has considered the impacts on Flora and Vegetation with particular regard to TECs. The EPA has recommended conditions to manage impacts to conservation significant flora and fauna so that biological diversity is maintained. It has also recommended an offset condition to counterbalance the significant residual impacts associated with this proposal.
4. **The principle of waste minimisation** – the EPA notes that the proponent proposes to apply the waste management hierarchy to this proposal, with particular regard to the generation of waste and waste water at temporary accommodation camps during construction of the proposal.

Appendix 3 provides a summary of the principles and how the EPA considered these principles in its assessment.

The EPA's assessment of the 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 proposal as a whole is environmentally acceptable.

## **Assessment on behalf of Commonwealth**

The EPA assessed the proposal on behalf of the Commonwealth Minister for Environment as an accredited assessment. The EPA has addressed MNES under each relevant factor and has summarised its assessment of MNES in section 6.

## 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 proposal for this factor:

- *Environmental Factor Guideline – Flora and Vegetation* (EPA 2016b)
- *Technical Guidance – flora and vegetation surveys for environmental impact assessment* (EPA 2016f)
- *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 2016b).

In addition to the current relevant policy and guidance above, the EPA gave regard to the Guidelines for Preparing Mine Closure Plans (DMP & EPA 2015), to ensure the proposal is decommissioned and rehabilitated in an appropriate manner.

### EPA assessment

#### ***Existing Environment***

The proponent has undertaken flora and vegetation surveys relevant to the development envelope. These surveys were generally in accordance with the EPA's *Technical Guidance – Flora and vegetation surveys for environmental impact assessment* (EPA 2016f). There is some uncertainty associated with the targeted survey methodology used, however the EPA considers that the surveys conducted are adequate to allow the EPA to assess the impacts to Flora and Vegetation associated with the proposal, given the linear nature of the proposal and the proponent's ability to vary alignments to avoid impacts on significant environmental receptors.

The Flora and Vegetation surveys indicated that vegetation within the RDE is almost entirely in good to excellent condition. Some areas such as drainage lines are subject to degradation from grazing and weeds. The surveys also indicated that:

- No Threatened flora species listed under the *Biodiversity Conservation Act 2016* (the BC Act) or the EPBC Act were recorded within the Eliwana study area. A total of 24 Priority Flora species were recorded within the RDE, including four Priority 1 species, and three Priority 2 species.



- One TEC, the *Themeda Grasslands on Cracking Clays*, occurs in the eastern end of the RDE (Figure 3).
- One Priority 1 Ecological Community (PEC), the Brockman Iron Cracking Clay community, also occurs in the eastern end of the project area. (Figure 3).
- The potentially regionally significant vegetation community, GsTAK, occurs within the RDE to the north of the indicative disturbance footprint, but is unlikely to be impacted by the proposal, and will not be further discussed in this report.
- Sheetflow Dependent Banded Mulga Woodland vegetation, which plays an important functional role in arid areas, occurs within the RDE.
- Several groundwater dependent and potentially groundwater dependent vegetation types have been recorded in the drainage networks within the RDE.
- No weeds of national significance have been identified in the RDE, however several of the 23 species of introduced flora identified have been listed as environmental weeds.

## **Impacts**

### *Clearing of Native Vegetation*

Flora and vegetation in the RDE would be impacted by the direct clearing of up to 3,690 ha of native vegetation. Surveys indicate that vegetation in the RDE is almost entirely in good to excellent condition. In accordance with the WA Government Offsets Policy and Guidelines, the EPA considers that clearing of native vegetation in good to excellent condition represents a significant residual impact and has therefore recommended an offset condition (condition 16) to counterbalance this clearing.

Indirect impacts to flora and vegetation as a result of the proposal may also occur through changes to surface water flows, groundwater drawdown, fragmentation, and increased weed diversity and extent.

The EPA notes that there is potential for impacts to flora and vegetation to be prolonged or increased if closure and rehabilitation of the rail infrastructure is not conducted in an effective and timely manner. The EPA has therefore recommended condition 15 requiring the proponent to prepare and implement a closure and rehabilitation plan, including closure objectives and completion criteria.

### *Themeda Grasslands on Cracking Clays TEC*

The EPA notes advice received from the Department of Biodiversity, Conservation and Attractions (DBCA), that the impacts to the *Themeda Grasslands on Cracking Clays* TEC from clearing of up to 40 ha, in conjunction with increased fragmentation leading to negative impacts, is significant and should be avoided or minimised where possible in consultation with DBCA.

Direct disturbance of up to 40 hectares of the TEC would represent a loss of 0.84% of the known extent of this vegetation community. The EPA considers that this clearing is unlikely to change the conservation status of the vegetation community, but does represent a significant residual impact.

There is also potential for changes to surface water to impact this vegetation community. This impact is addressed in section 4.3 (Inland Waters) of this report.

The location of the proposal in relation the existing Rio Tinto rail infrastructure has the potential to result in fragmentation of up to 85 ha of the TEC, resulting in edge effects and increased weed occurrence within this area of the vegetation community. The EPA notes that the TEC is currently subject to degradation from grazing activities, and that the location of the proposal also has the potential to reduce this impact by restricting access by cattle to a section of the TEC.

The EPA considers that borrow pits, which have the potential to change surface water flows, increase the risk of weeds, and may increase the risk of unmet closure and rehabilitation objectives, should not be located within the TEC. The EPA has recommended condition 7 to ensure that no borrow pits are located within the TEC or the adjoining PEC.

Given the linear nature of rail development, the EPA notes that there is potential for impacts to the TEC from increases in weed species and diversity, in particular within the fragmented area. The EPA considers that it is likely that impacts associated with weeds can be managed to meet its objectives for this factor, however it recommends that weed management be included in the Flora and Vegetation Monitoring and Management Plan required by recommended condition 9.

Given the significant residual impact associated with direct and indirect impacts to the TEC, the EPA has recommended a number of implementation conditions to ensure that these impacts are minimised, including:

- condition 7, which prohibits borrow pits within the TEC
- condition 12, which requires management of surface water flows in order to minimise indirect impacts to flora and vegetation
- condition 9, which requires the preparation and implementation of a Flora and Vegetation Monitoring and Management Plan
- Condition 15, which requires the preparation and implementation of a Closure and Rehabilitation Plan, and
- Condition 16, which requires the provision of an offset to counterbalance the significant residual impact associated with clearing of up to 40 ha of the TEC.

#### *Brockman Iron Cracking Clay.*

The proposal would result in direct impacts to up to 1.37 ha of *Brockman Iron Cracking Clays* PEC, representing 0.011% of the known extent of this vegetation community. The EPA considers that this magnitude of direct disturbance is unlikely to result in a change to the conservation status of the PEC.

Indirect impacts to this vegetation community would include a reduction in surface water (addressed in section 4.3 of this report), and potential increases in the diversity or extent of weed species.

The EPA considers that borrow pits, which have the potential to change surface water flows, increase the risk of weeds, and may increase the risk of unmet closure and rehabilitation objectives, should not be located within the PEC. The EPA has recommended condition 7 to prohibit borrow pits in this area.

The proposal is considered unlikely to result in significant impacts to the PEC, beyond the significant residual impact associated with clearing of vegetation in good to excellent condition.

The EPA has recommended that impacts to the PEC be minimised for this proposal through inclusion in the Flora and Vegetation Monitoring and Management Plan required by recommended condition 9.

*Sheetflow dependent, groundwater dependent and potentially groundwater dependent vegetation.*

The proposal would result in direct disturbance of up to 116 ha of Mulga woodland vegetation. This vegetation plays an important functional role in arid ecosystems, and has the potential to be sheetflow dependent. However, this vegetation type is extensive and relatively common, and therefore this level of clearing is unlikely to result in significant impacts.

The proposal would result in direct disturbance of up to 60.23 ha of groundwater-dependent or potentially groundwater-dependent vegetation. Within this disturbance, there would be no more than 6% loss of the surveyed extent of any vegetation type, with the exception of vegetation type EvAcVfDICf (20% impact). However, this vegetation type is equivalent to the vegetation type EvVfEb identified in other regional studies carried out for Fortescue (Ecoscape 2012), which has been identified extensively outside the rail development envelope. The loss of the combined vegetation unit would be less than 4% of the surveyed extent.

Potentially significant indirect impacts to sheetflow dependent vegetation, groundwater dependent and potentially groundwater dependent vegetation include changes to surface water flows, and groundwater drawdown. These impacts are addressed in section 4.3 (Inland Waters) of this report.

The EPA does not consider that direct impacts to sheetflow and groundwater dependent vegetation for this proposal would be significant, beyond the significant residual impact associated with clearing of vegetation in good to excellent condition.

### *Priority Flora Species*

A total of 24 Priority species (as listed under the BC Act or the EPBC Act) have been identified within the RDE, comprising four Priority 1 species, three Priority 2 species, fifteen Priority 3 species, and two Priority 4 species. Eleven of these species would be directly impacted by the proposal, based on the current indicative disturbance footprint. None of the species likely to be impacted by the proposal would be impacted by more than 6% of the known individuals. The EPA considers that this level of direct disturbance is unlikely to represent a significant regional impact to any species.

As noted above, there is some uncertainty associated with the targeted survey methodology used to assess the potential impacts to Priority Flora. However, the Survey Report (Biota 2017) and ERD (FMG 2018a) provide confidence that significant flora recorded within the Rail development envelope are adequately represented outside of the proposal footprint.

In order to address the uncertainty associated with the current level of targeted survey, the EPA has recommended condition 8 requiring the proponent to conduct staged, targeted surveys for Priority 1 and Priority 2 flora as construction for the rail line progresses, and to take action to protect priority flora from direct and indirect impacts where practicable, noting that there is scope within the approved corridor to vary the rail alignment and location of infrastructure to avoid impacts.

The EPA has also recommended that impacts to Priority 1 and Priority 2 flora be minimised for this proposal through the Flora and Vegetation Monitoring and Management Plan required by recommended condition 9.

#### *Cumulative impacts - Triodia basitricha*

There is potential for cumulative impacts to flora and vegetation as a result of the implementation of this proposal, in conjunction with the proposed Eliwana Iron Ore Mine, the existing Solomon Iron Ore Mine, and the surrounding Rio Tinto Iron Ore mines, including Silvergrass and Brockman 2 - Nammuldi. For the purposes of this assessment, Fortescue has used available data to provide information regarding the potential cumulative impacts associated with the three Fortescue projects.

This cumulative impact assessment has not identified significant cumulative impacts to any significant species or vegetation type, with the exception of the Priority 3 species, *Triodia basitricha*. The cumulative impact assessment has highlighted that, while *T. basitricha* would be reduced by only 1.7% of known individuals by this proposal, cumulative impacts of the three Fortescue projects to this species could be up to 70% of known individuals.

The EPA considers that, while the impacts to *T. basitricha* from this proposal are unlikely to be significant, the cumulative impacts represented by the three Fortescue projects is likely to be significant. The EPA has recommended that impacts to *T. basitricha* be minimised for this proposal through inclusion in the Flora and vegetation Monitoring and Management Plan required by recommended condition 9.

Further, the EPA considers that the cumulative impact to *T. basitricha* should be a key consideration in the assessment of the proposed Eliwana Iron Ore Mine, which is currently being assessed by the EPA under section 38 of the EP Act.

### **Mitigation and Management**

The proponent has proposed mitigation and management actions to minimise the residual impacts to flora and vegetation as a result of this proposal, including:

- Avoidance and minimisation of clearing of significant flora and vegetation through the design process.

- Training of staff and contractors to mark and be aware of the locations of significant flora and vegetation on site and their responsibilities to protect significant flora and vegetation.
- Avoidance and minimisation of indirect impacts from altered surface water flow through the rail design process.
- Management of weeds.
- Progressive rehabilitation of disturbed areas at the end of their operational life.
- Provision of offsets to counterbalance the significant residual impact associated with clearing of 3,690 ha of native vegetation in good-to-excellent condition within the Pilbara IBRA region.

## Summary

The EPA has paid particular attention to the:

- EPA's Statement of Environmental Principles, Factors and Objectives
- Environmental Factor Guideline: *Flora and Vegetation*
- WA Environmental Offsets Policy and Guidelines
- significant residual impact associated with clearing of up to 40 ha of *Themeda Grasslands on Cracking Clays* TEC
- linear nature of the proposal, and
- proposed management of indirect impacts through rail design.

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:

- limitation of impacts to the TEC through authorised extent in schedule 1 of the Recommended Environmental Conditions (Appendix 4)
- implementation of condition 8 requiring staged targeted surveys and subsequent actions to protect Priority Flora species during construction of the railway
- implementation of measures to avoid and minimise impacts to flora and vegetation through the preparation and/or implementation of a Flora and Vegetation Monitoring and Management Plan (condition 9)
- preparation and implementation of a Closure and Rehabilitation Plan (condition 15), and
- implementation of offsets (see section 5, condition 16) to counterbalance the significant residual impact of clearing of 3,690 ha of native vegetation in good to excellent condition within the Pilbara IBRA Region, including up to 40 ha of clearing within the *Themeda Grasslands on Cracking Clays* TEC.

## 4.2 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 proposal for this factor:

- *Environmental Factor Guideline – Terrestrial Fauna* (EPA 2016c)
- *Technical Guidance – Sampling methods for terrestrial vertebrate fauna* (EPA 2016h)
- *Technical Guidance – Terrestrial Fauna Surveys* (EPA 2016g), and
- *Technical Guidance – Sampling of short range endemic invertebrate fauna* (EPA 2016i).

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

### EPA assessment

#### *Existing Environment*

The proponent has conducted surveys and studies to assess the impacts of the proposal to Terrestrial Fauna, including vertebrate fauna (Ecoscape 2017) and Short Range Endemic (SRE) invertebrate fauna (Phoenix 2018). The EPA considers that the studies and surveys provided in the ERD and in the relevant appendices meet the requirements of EPA guidance for this factor.

The consolidated SRE report (Phoenix 2018) concluded that all potential SRE taxa recorded in the RDE have also been recorded outside of the study area, and are therefore unlikely to be significantly impacted by the proposal.

Terrestrial Vertebrate fauna studies have identified seven significant species listed as occurring within the RDE, and a further six significant species were assessed as having a high likelihood of occurring in the RDE. Of these, four species that are listed as vulnerable or endangered under both the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act), and the *Biodiversity Conservation Act 2016* (the BC Act) have been identified within the RDE, or have been identified near the RDE and have habitat types which are present within the RDE. These are the:

- Pilbara Leaf-nosed Bat (EPBC Act: Vulnerable; BC Act: Vulnerable)
- Ghost Bat (EPBC Act: Vulnerable; BC Act: Vulnerable)
- Pilbara Olive Python (EPBC Act: Vulnerable; BC Act: Vulnerable)

- Northern Quoll (EPBC Act: Endangered; BC Act: Endangered).

The Night Parrot is also discussed in this report, as it has been included as a controlling provision for assessment under the *Environment Protection and Biodiversity Act 1999* (the EPBC Act).

## **Impacts**

The proposal has the potential to impact Terrestrial Fauna through:

- clearing of up to 3,690 ha of habitat
- clearing of critical habitat for significant species
- increased risk of vehicle strike and mortality, and
- indirect impacts associated with fragmentation of habitat, increased feral animals, fire risk, and exotic weeds.

### *Pilbara leaf-nose bat (Rhinonictoris aurantia) and Ghost bat (Macrodermis gigas)*

The Pilbara Leaf-nosed bat and the Ghost bat were recorded from seven locations and one location within the RDE respectively. These occurrences are considered likely to be related to foraging activities, as none of the calls were recorded near to sunrise or sunset, suggesting that no diurnal roosts are likely to be present within the RDE.

Gorges and gullies within the RDE represent potential roosting habitat for both the Pilbara Leaf-nosed bat and the Ghost bat, gorges and gullies are therefore considered to be critical habitat for these species.

Hills, ranges and plateaux represent potential foraging and nocturnal roosting habitats for the Pilbara Leaf-nosed bat and the Ghost bat, and drainage line, river or creek habitats represent possible foraging habitat for the Pilbara Leaf-nosed bat. The Ghost bat has a wider foraging habitat with the entirety of the RDE representing foraging habitat for this species.

Five hectares of gorges and gullies habitat has been identified on the northern boundary of the RDE, of which only 0.3 ha is anticipated to be disturbed for this proposal (Figure 4).

While the gorges and gullies are considered to be critical habitat, foraging habitat within the RDE for both the Pilbara Leaf-nosed bat and the Ghost bat is unlikely to be critical habitat, given the absence of any demonstrated diurnal roosting sites. Impacts to any of the foraging habitats within the RDE are unlikely to be significant, noting that disturbance for the rail represents less than 14% of the total RDE.

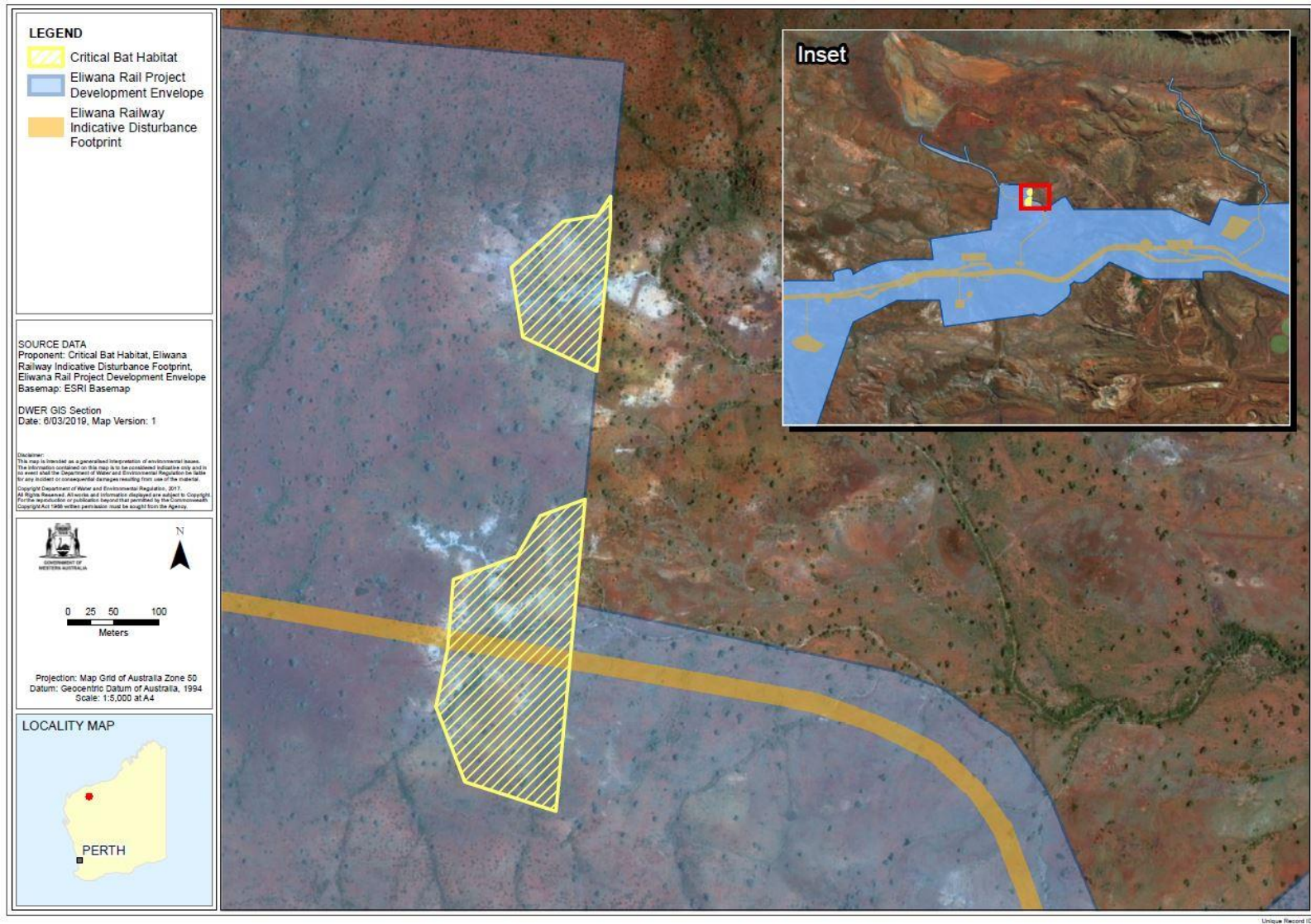
The EPA considers that impacts to habitat for these two bat species is unlikely to be significant, beyond the significant residual impact inherent in clearing of habitat, and particularly critical habitat (gorges and gullies), for significant species.

There is potential that individual bats may be subject to vehicle strike by trains running at night. Given that an average of only 2.5 trains per night is anticipated, Fortescue considers that this risk is unlikely to represent a significant impact to bat species. The

EPA considers that this conclusion is reasonable, and has recommended condition 10 to ensure that indirect impacts, including vehicle strike, are monitored and managed.

The Ghost bat may share some prey species with feral carnivores. Given the temporary nature of the construction camps within the RDE, increases in feral animal populations are unlikely to represent a significant impact to the Ghost bat.





**Figure 4 – Critical Bat Habitat**

Based on the lack of demonstrated diurnal roosting sites, and the low magnitude of impact to critical gorges and gullies habitat and potential foraging habitat, the EPA considers that impacts to Pilbara Leaf-nosed bats and Ghost bats can be managed to meet the EPA's objectives for this factor.

The EPA has recommended condition 10 to ensure that the proposal is implemented to avoid and minimise impacts to the Pilbara Leaf-nosed bat and Ghost bat where possible, including indirect impacts such as feral animals, vehicle strike, light, and noise, and has recommended an offset condition (condition 16) to counterbalance the significant residual impact of disturbance to critical habitat (gorges and gullies habitat) and foraging or dispersal habitat associated with these species.

*Pilbara Olive Python (Liasis olivaceus barroni)*

No Pilbara Olive Pythons have been recorded within the RDE, however a number have been recorded near the RDE within the Solomon Iron Ore Mine area, and suitable habitat for the species occurs throughout the RDE. The Pilbara Olive Python inhabits water courses and areas of permanent water in rocky gorges and gullies in the Pilbara. It may also be found within permanent or semi-permanent pools in drainage lines, rivers and creeks.

Approximately 94% of the mapped habitat for this species within the RDE would not be disturbed. Indirect impacts to semi-permanent and permanent pools associated with this proposal are addressed in section 4.3 (Inland waters), and are unlikely to be significant. The EPA therefore considers that impacts to habitat associated with this proposal are unlikely to be significant for the Pilbara Olive Python, beyond the significant residual impact inherent in clearing of habitat for significant species.

There is potential for increases in feral animals to result in increased predation of the Pilbara Olive Python, however, given the temporary nature of the construction camps within the RDE, increases in feral animal populations are unlikely to represent a significant impact to the species.

The Pilbara Olive Python is susceptible to vehicle strike at night. Fortescue has proposed management measures to prevent road kill including speed limit restrictions, right of way for fauna, and the prohibition of off-road driving.

Based on lack of identified individuals within the RDE, the low magnitude of the predicted impacts to potential habitat, and the proponent's proposed management actions for indirect impacts including increased feral animals and vehicle strike, the EPA considers that impacts to the Pilbara Olive Python can be managed to meet the EPA's objective for this factor. The EPA has recommended condition 10 to ensure that the proposal is implemented to avoid and minimise impacts to the Pilbara Olive Python where possible.

The EPA has also has proposed an offset condition (condition 16) to counterbalance the significant residual impact of disturbance to habitat associated with the Pilbara Olive Python.

### *Northern Quoll (Dasyurus hallucatus)*

No Northern Quoll were recorded within the RDE, despite extensive survey effort, however a number of individuals have been recorded within the Solomon area to the north east of the RDE.

Suitable denning and foraging habitat of up to 360 ha have been identified within the RDE, including 5 ha of gorges and gullies denning habitat. This indicates that the species is unlikely to be present in the area on a long-term basis, although it may potentially make use of the area following good seasonal conditions. No area of potential habitat for this species would be impacted by more than 6% of its extent within the RDE. The EPA considers that impacts to Northern Quoll habitat from this proposal are unlikely to be significant, beyond the significant residual impact inherent in clearing of habitat for significant species.

Indirect impacts including increased feral animals, vehicle movements, blasting noise and vibrations and increased risk of fire may impact any Northern Quoll populations that do occur within the RDE, however the EPA considers that these impacts can be managed to meet the EPA's objective for this factor. The EPA has recommended condition 10 to ensure that the proposal is implemented to avoid and minimise impacts to the Northern Quoll where possible.

### *Night Parrot (Pezoporus occidentalis)*

Terrestrial fauna surveys undertaken by the proponent did not locate any suitable habitat (dense, long unburnt spinifex grasslands or chenopod shrub land) for the Night Parrot within the RDE. Based on this lack of suitable habitat the EPA considers that impacts to the Night Parrot are unlikely to occur as a result of this proposal.

## **Mitigation and Management**

The proponent has proposed mitigation and management actions to minimise the residual impacts to Terrestrial Fauna as a result of this proposal, including:

- ensure staff and contractors are provided with appropriate training to ensure significant fauna and associated habitat are protected
- minimise clearing and vegetation disturbance to ensure fauna habitat is minimally impacted
- where construction or operation activities generate noise that may result in impacts to significant species, incorporate mitigation measures into activities
- direct lighting onto active construction areas to minimise the potential for light overspill resulting in fauna disturbances, and
- implement appropriate mitigation measures for vehicle strike including speed limit restrictions, right of way for fauna, and the prohibition of off-road driving.

## **Summary**

The EPA has paid particular attention to the:

- EPA's Statement of Environmental Principles, Factors and Objectives

- Environmental Factor Guideline for Terrestrial Fauna and associated Technical Guidance documents
- WA Environmental Offsets Policy and Guidelines, and
- disturbance of areas that are habitat for Pilbara Leaf-nosed bat, Ghost bat, Pilbara Olive Python and Northern Quoll.

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:

- implementation of measures to avoid and minimise impacts to significant fauna and their habitat through the preparation and implementation of a Significant Fauna Environmental Management Plan (condition 10)
- implementation of offsets (see section 5, condition 16) to counterbalance the significant residual impact of disturbance to habitat for the Pilbara Leaf-nosed bat, Ghost bat, and Pilbara Olive Python, with particular regard to the disturbance of up to 0.3 ha of critical gorges and gullies roosting habitat for the Pilbara Leaf-nosed bat and the Ghost bat.

### **4.3 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 proposal for this factor:

- *Environmental Factor Guideline – Inland Waters* (EPA 2018).

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

#### **EPA assessment**

##### ***Existing Environment***

The proposed rail line would cross the Lower Fortescue River and Ashburton River basins. The western area of the indicative rail alignment runs through areas with clearly defined dendritic drainage channels, while the eastern extent intersects the Weelumurra plain, an area of low relief terrain subject to flooding during rainfall events.

Groundwater in the project area is represented by three main aquifer types: unconsolidated sedimentary and paleochannel aquifers (alluvial aquifers), chemically deposited calcrete, and fractured rock aquifers. Groundwater levels vary depending on topography, drainage features, underlying geology and structure.

## **Impacts**

Impacts to water quality as a result of the proposal would be limited to an increase in sedimentation downstream of the rail during the construction phase, and are likely to be minor and temporary. This assessment will therefore focus on changes to the hydrological regime as a result of the proposal.

Changes to the surface water regime as a result of the proposal would include changes to the volume and direction of surface water flows through the rail embankment, which would be managed by the use of culverts along the railway.

The proponent has undertaken modelling to determine the changes to surface water flows in the low relief terrain eastern areas of the rail alignment which are subject to flooding. No modelling has been undertaken in the western area of the rail alignment, as Fortescue considers that the dendritic nature of surface water flows in this area is easily managed through the placement of culverts. The EPA considers that this approach is appropriate.

Impacts to groundwater as a result of the proposal would include groundwater drawdown for the purposes of water supply during construction (4 GL total) and operation (200,000 kL/a) of the rail. The locations of bores to be installed along the length of the railway have not yet been determined, however each bore would be located within the Groundwater Impact Assessment Areas (GIAA) identified by the proponent (FMG 2018b) (Figure 5).

The EPA considers that the significant environmental receptors identified by Fortescue with the potential to be impacted by alteration of the hydrological regime are:

- groundwater dependent and potentially groundwater dependent vegetation, and groundwater fed pools within the GIAA, including Donkey Hole and Donkey Pool
- the *Themeda Grasslands on Cracking Clays* TEC and the Brockman Iron Cracking Clays PEC
- riparian vegetation, semi-permanent pools, and permanent pools downstream of the rail alignment, and
- sheetflow dependent Mulga;

*Groundwater dependent and potentially groundwater dependent vegetation, and Groundwater fed pools within the GIAA, including Donkey Hole and Donkey Pool.*

The proponent considers that groundwater drawdown as a result of construction is likely to be temporary, with impacts less than six months in duration given that depletion of groundwater is likely to be replenished by annual recharge events. Based on advice from the DWER, the EPA considers that this assumption is reasonable. The DWER has also indicated, based on past projects, that ongoing rail projects are likely to be sustainable due to the rate of aquifer recharge, and given that the abstraction points are widespread.

The EPA notes that groundwater dependent trees tend to respond slowly (over a period of years) to changes in hydrological regimes (Water 2010). Given the short term (less than six months at any location) nature of the drawdown associated with the construction of the proposal, the EPA therefore considers that any impacts to groundwater dependent vegetation are not likely to be significant, with any stress to vegetation being of a temporary nature and mitigated by rainfall events during construction.

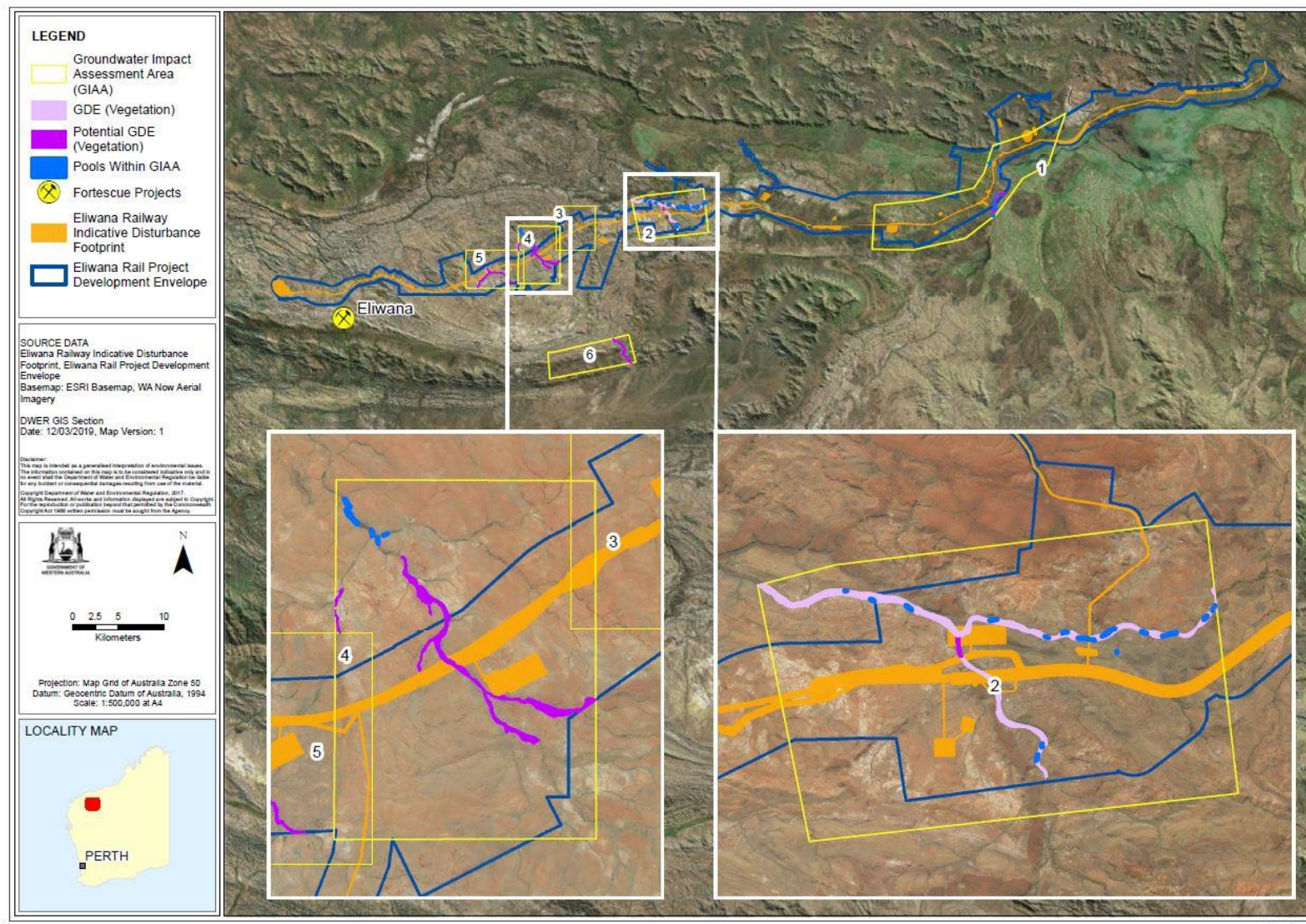
The culturally significant Donkey Hole, located within the Nharraminju Wuntu Rock Art Precinct is located within GIAA 2 (Figure 5). Donkey Pool, located in GIAA 4 is also considered to have cultural significance.

Groundwater drawdown in GIAA 2 and GIAA 4 is expected to be approximately 40 m at each bore, with a 1 m drawdown radius of up to 600 m. Fortescue considers that any pools within 600m of a water supply bore in GIAA 2 or GIAA 4 may therefore be subject to a temporary decline in water levels. However, this decline would be of short duration (up to 6 months) and would be mitigated during the following annual recharge event. There is a risk that pools located at a greater distance from bores may be impacted if preferential pathways towards the site exist.

The EPA considers that groundwater abstraction should be managed to avoid drawdown in the vicinity of these pools, and in the event that preferential pathways result in unanticipated impacts, any decline should be monitored and managed appropriately.

The EPA considers that Fortescue has sufficient expertise with the management of groundwater drawdown to ensure that impacts to groundwater dependent vegetation and pools are minimised and to prevent drawdown in the vicinity of key sensitive receptors, subject to the existence of preferential pathways. The EPA has recommended condition 11 to ensure that no groundwater drawdown associated with the proposal extends beneath Donkey Hole or Donkey Pool, and to allow early detection and management of any preferential pathways that may result in impacts to these sites.





**Figure 5 – Groundwater Impact Assessment Areas (GIAAs)**

*The Themeda Grasslands on Cracking Clays TEC and the Brockman Iron Cracking Clays PEC.*

Direct impacts to these vegetation communities are addressed in section 4.1 of this report (Flora and Vegetation).

There is potential for changes to surface water to impact the *Themeda Grasslands on Cracking Clays* TEC and the *Brockman Iron Cracking Clays* PEC. Surface water modelling conducted by the proponent suggests that, based on the current rail design, no more than 11 ha, (0.2%) of the TEC and 0.5 ha (0.004%) of the PEC would be subject to a reduction in surface water flows following construction of the railway.

No area of the TEC or the PEC would experience a complete loss of surface water flows during a 1 in 50 Annual Exceedance Probability (AEP) rainfall event.

The EPA considers that, given the known extent of these vegetation communities the reduction of surface water flows to 11 ha and 0.5 ha respectively is unlikely to be significant, but has recommended condition 12 to ensure that changes to surface water flows do not exceed that predicted for this assessment.

*Sheetflow dependent Mulga*

Direct impacts to Mulga woodlands are addressed in section 4.1 of this report (Flora and Vegetation).

There is likely to be indirect impacts to Mulga as a result of changes to surface water flows. Of the 1,242 ha of Mulga woodland which occurs downstream of the proposed rail alignment, 420 ha is considered to be banded Mulga, and therefore likely to be sheetflow dependent. Only 3 ha (0.7%) of this banded Mulga is likely to be subject to reduced surface water flows as a result of the proposal.

The EPA considers that the impacts to Mulga woodlands resulting from reduction in surface water flows to 3 ha of this vegetation is unlikely to be significant. The EPA has recommended condition 12 to ensure that changes to surface water flows do not exceed that predicted for this assessment.

*Riparian vegetation, semi-permanent pools, and permanent pools downstream of the rail alignment.*

A network of major and minor drainage lines intersect the RDE. None of the riparian vegetation associated with these drainage lines is considered to be regionally or locally significant, with the exception of the groundwater dependent and potentially groundwater dependent vegetation communities addressed in section 4.1 (Flora and Vegetation).

Fortescue has stated that surface flows along major drainage lines would continue through appropriately sized culverts, ensuring full conveyance of flows to riparian vegetation in these drainage lines. Some surface water from minor drainage lines may be diverted to culverts, resulting in a minor loss of flows and minor impacts to riparian vegetation in these drainage lines.



The EPA considers that impacts to the health of riparian vegetation as a result of diversion of minor drainage lines is unlikely to be significant. The EPA has recommended condition 12 to ensure that there is no reduction in flows to significant streams or drainage lines.

It is likely that semi-permanent and permanent pools exist in major drainage lines and creeks downstream of the rail alignment. These pools are likely to have environmental values given that pools in this region often provide valuable habitat or refuge for fauna, and support a variety of vegetation types.

Fortescue has not conducted investigations into the potential locations or environmental values of pools downstream of the railway, given that their intent is to provide full conveyance of surface water flows through the rail using appropriately sized culverts. Fortescue has indicated that, where pools are identified, they would be considered for monitoring to verify that no impacts have occurred as a result of the proposal.

The EPA considers that the proponent's approach to assessing this impact is appropriate given the defined nature of flows in the sections of the RDE likely to contain pools, and the proponent's experience in managing its existing rail network.

The EPA considers that the risk of impacts to pools from this proposal as a result of changes to surface water flows can be managed to meet the EPA's objectives for the factor of Inland Waters. However, the EPA has recommended condition 12 to ensure that there is no reduction in flows to any permanent or semi-permanent pools.

### ***Mitigation and Management***

The proponent has proposed mitigation and management actions to minimise impacts to Inland Waters as a result of this proposal, including:

- design of the rail to avoid interaction with significant surface water features
- design of crossings and culverts to minimise impacts to surface water flows, providing full conveyance of flows under the rail embankment, and
- management of groundwater abstraction in accordance with the *Rights in Water and Irrigation Act 1914*.

### **Summary**

The EPA has paid particular attention to the:

- EPA's Statement of Environmental Principles, Factors and Objectives
- Environmental Factor Guideline: *Inland Waters*
- predicted low magnitude of impacts to significant flora and vegetation from changes to surface water flows as a result of the proposal
- expected low extent and short duration of ground water drawdown associated with the proposal, and
- proponent's experience in the management of inland waters associated with its existing rail network.

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:

- limitation of groundwater abstraction through the authorised extent in schedule 1 of the Recommended Environmental Conditions (Appendix 4)
- implementation of condition 12 requiring the proponent to ensure that the final rail design minimises impacts to significant environmental receptors to that predicted by the proponent for this assessment; and
- implementation of measures to prevent groundwater drawdown beneath Donkey Hole and Donkey Pool, and to minimise impacts to groundwater dependent pools and vegetation through the preparation and implementation of a Groundwater Management Plan (condition 11).

## 4.4 Social Surroundings

### EPA objective

The EPA's environmental objective for this factor is *to protect social surroundings from significant harm*.

### Relevant policy and guidance

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

- the EPA's *Statement of Environmental Principles, Factors and Objectives* (EPA, 2016), with particular regard to *the Principle of Intergenerational Equity*
- *Environmental Factor Guideline – Social Surroundings* (EPA 2016e)

The considerations for environmental impact assessment (EIA) for this factor are outlined in *Environmental Factor Guideline – Social Surroundings* (EPA 2016e).

### EPA assessment

The project area is subject to two Native Title determinations, with the western end of the rail line being within the Puutu Kunti Kurrama and Pinikura (PKKP) lands, and the eastern area of the rail being within the Eastern Guruma lands. (Figure 6) The PKKP people are represented by the PKKP Aboriginal Corporation, while the Eastern Guruma are represented by the Wintawari Guruma Aboriginal Corporation.

The EPA's Social Surroundings Guideline considers that *“the EP Act can complement the Aboriginal Heritage Act 1972, (the AH Act) in cases where actual physical protection is required to protect sites of heritage significance.”*

The Social Surroundings Guideline also considers that *“matters of Aboriginal cultural associations, including traditional Aboriginal customs, directly linked to the physical or*

*biological aspects of the environment*” may be considered significant for the purposes of the EPA’s assessment.

Impacts to Social Surroundings, including Aboriginal sites, significant cultural associations and cultural activities, may occur through activities that disturb the ground, developments that generate noise or vibration, and activities that may impact aesthetic values.

As stated in its *Environmental factor guideline – Social Surroundings*, the EPA expects proponents to undertake surveys and consultation with the Traditional Owners to identify the presence of sites that have important and significant Aboriginal heritage values, and to identify the significant cultural associations within the proposal area.

The EPA has considered the results of the proponent’s Ethnographic, Archaeological, Ethnobotanical and Ethnozoological surveys in assessing this factor.

In addition to this, the EPA has considered the extensive submissions and information provided by the Traditional Owners during the course of this assessment.

Based on the information provided, the EPA considers that the following aspects of the proposal’s Social Surroundings comprise the significant receptors likely to be physically impacted by the proposal, (including impacts related to noise, dust, vibration, and visual impacts) and thereby requiring assessment under the EPA Act:

- direct and Indirect impacts to the three significant sites:
  - Nharraminju Wuntu Rock Art Precinct
  - Kumpanha Dancing Grounds, and
  - Hamersley Station Homestead
- access to lands in order to undertake traditional activities
- surface and groundwater flows to water resources known to have Aboriginal heritage values, and
- culturally significant flora and fauna.

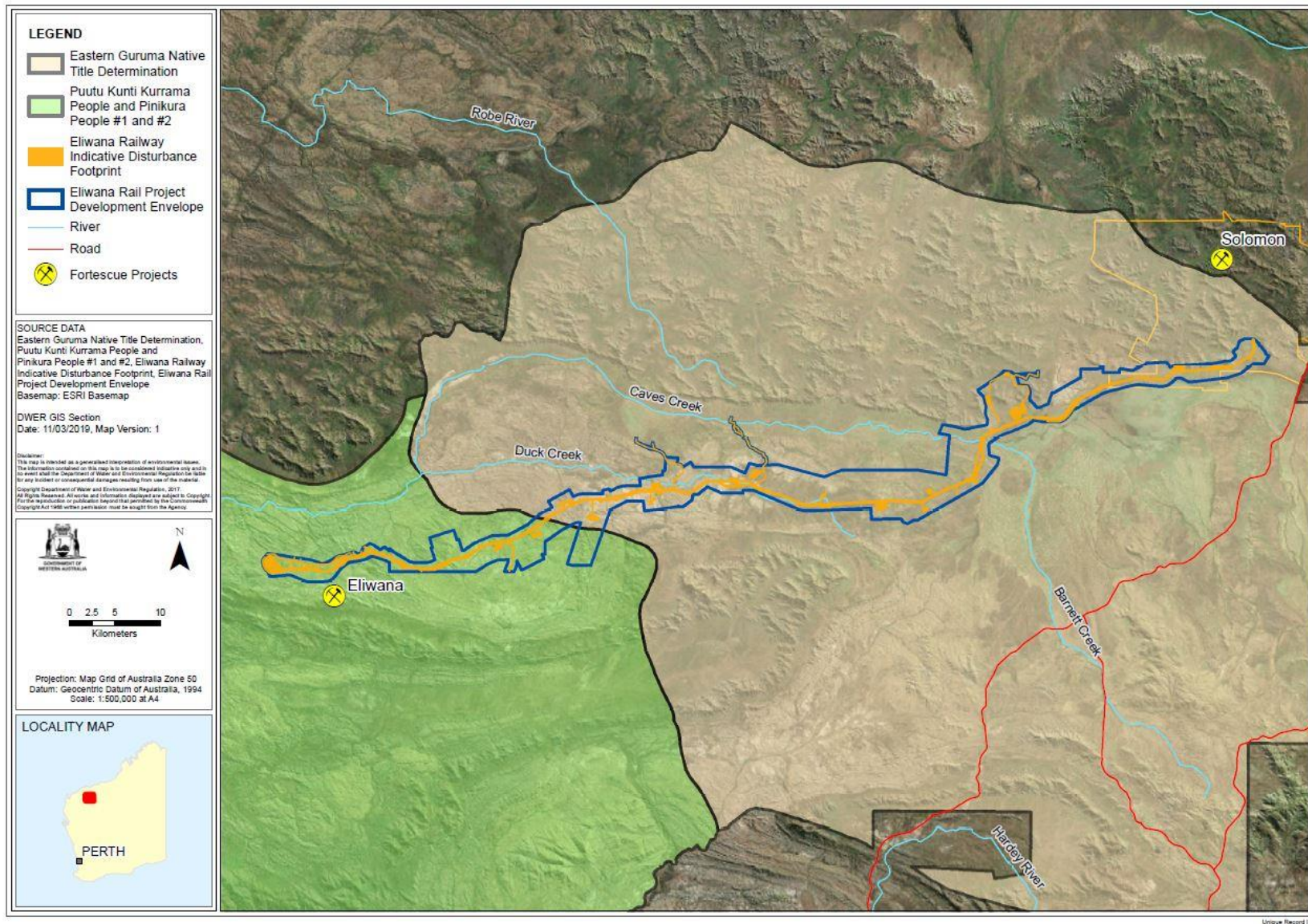


Figure 6 – Native Title Determination areas

## ***Direct and Indirect impacts to the three significant sites***

### ***Nharraminju Wuntu Rock Art Precinct.***

The Nharraminju Wuntu Rock Art Precinct, also known as the Duck Creek Rock Art Precinct, is a significant site within the Eastern Guruma Native Title area. The site is centred around Donkey Hole, a permanent pool within Duck Creek (Figure 7). The rock art precinct contains an unusually large and diverse range of engravings, representing stylistic and technological changes over many thousands of years (WGAC 2018a). The area has been used for thousands of years and is still in use for traditional activities, thereby demonstrating the site's important ethnographic, archaeological and cultural values.

The proposal has the potential to impact the rock art precinct directly, as well as indirectly through noise and visual impacts. There is also potential for vibrations from the construction of the rail to impact the rock art.

There is potential for Donkey Hole, a significant pool within the Rock Art Precinct, to be impacted by groundwater drawdown associated with the proposal. This impact is addressed in section 4.3 of this report (Inland waters).

### ***Kumpanha Dancing Grounds***

The Kumpanha Dancing Grounds (Figure 8) is a place where generations of Eastern Guruma people have gathered, and still gather, to perform ceremonies, songs and dances. It continues to be a ceremonial site of great importance to Eastern Guruma people. The site includes performance areas and surrounding associated camping grounds. The associated camping areas hold intrinsic value as a demonstration of the cultural logic that joins together the cultural narratives of the site as a whole (WGAC 2018b)

The proposal has the potential to directly impact the associated camping grounds, and to indirectly impact the site and the cultural activities carried out there through noise and visual impacts.

The originally referred proposal, based on surveys conducted by Fortescue, avoided the performance areas of the dancing grounds, but directly impacted the associated camping grounds.

Based on Visual and Noise studies carried out by the proponent (360 Environmental 2018) (Talis 2018), it is uncertain what the indirect impacts to the Dancing Grounds or associated camping grounds from the construction or operation of the rail line as it was originally referred would be, however, given the proximity of the rail to the site, the EPA has taken a precautionary approach in its assessment.



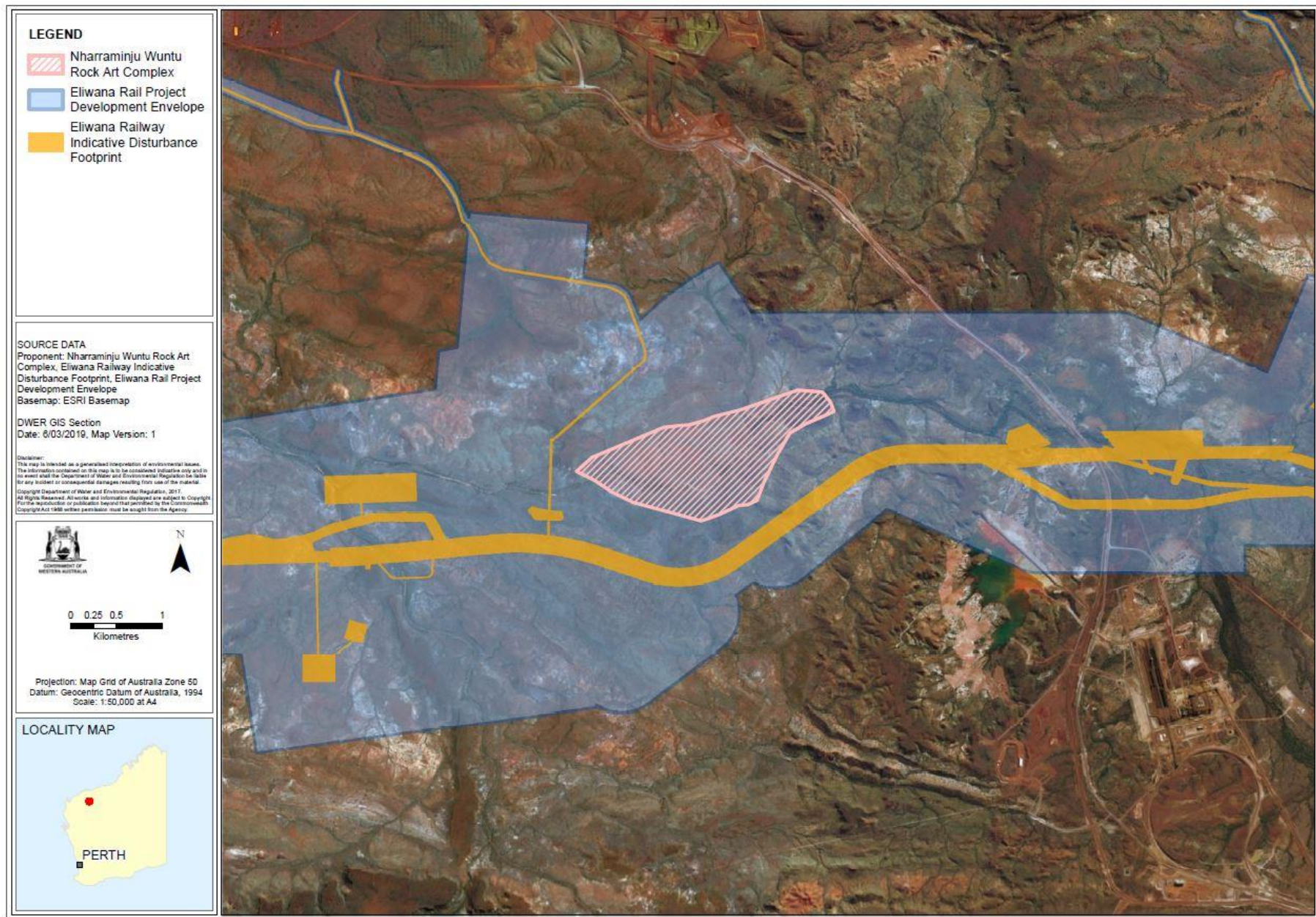
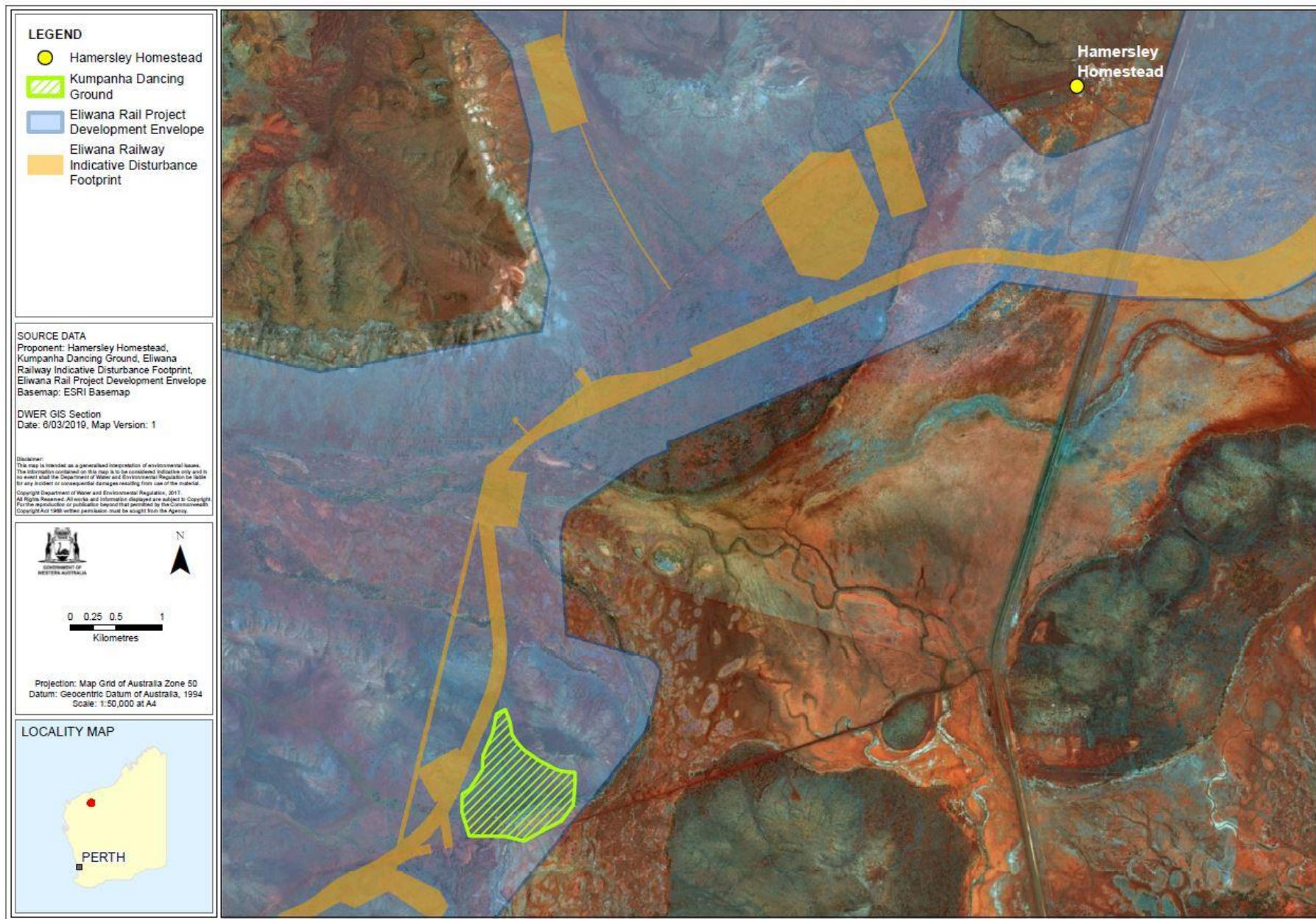


Figure 7 – Nharraminju Wuntu Rock Art Precinct





**Figure 8 – Kumpanha Dancing Ground and Hamersley Homestead**

### *Hamersley Station Homestead*

The Hamersley Station Homestead (Figure 8) is a highly valued place of historical and contemporary significance to the Eastern Guruma people. The Eastern Guruma people have an exclusive use arrangement for the homestead and immediate surrounds. It is used as a cultural base for teaching, healing, meeting and planning land care activities, and is surrounded by burial places and other cultural sites.

There is potential for the proposal to impact the amenity of the Homestead through noise and visual impacts. The originally referred proposal included a bridge crossing the existing Rio Tinto Rail approximately 1 km from the homestead, resulting in perceived significant noise and visual impacts to the amenity of those people using the Homestead.

### *Changes to the proposal in relation to the three significant sites.*

Following consultation with the Eastern Guruma people, represented by WGAC, Fortescue has amended the proposal to:

- move the rail line 375 m to the south of Nharraminju Wuntu Rock Art Complex
- move the rail line 100m from the boundary of the Kumpanha Dancing Grounds, and
- move the rail line and associated bridge 2.1 km from the Hamersley Station Homestead.

These changes are documented in the EPA's *Eliwana Railway S43A change to proposal – Notice of Decision (EPA 2019)*.

The new rail alignment would eliminate direct impacts to Nharraminju Wuntu Rock Art Precinct and Kumpanha Dancing Grounds. It is anticipated that visual impacts at both sites would be also significantly decreased through realignment of the rail behind a hill to the south of the Rock Art Precinct, and behind shielding vegetation at the Dancing Grounds. It is anticipated that average noise levels from passing trains would be under 55 dB (A) at the boundary of each of the sites, decreasing towards the creek and the Performance grounds respectively.

Visual impact and noise impacts to users of the homestead would also be decreased. It is anticipated that the revised crossing would result in average passing train noise levels of 33.3 dB (A) at the homestead.

The EPA considers that the revised proposal can be managed to meet the EPA's objectives for Social Surroundings at the three significant sites, provided that there is continuing consultation with the Eastern Guruma people in regard to minimising indirect impacts to the sites, and that the rail alignment is constructed in accordance with the revised proposal as described above.

The EPA has recommended condition 13 requiring:

- the rail line to be constructed at least 100m from the boundaries of Kumpanha Dancing Grounds



- the rail line to be constructed at least 375 m from the boundaries of Nharraminju Wuntu Rock Art Complex, and
- the rail bridge to be constructed at least 2.1 km from the Hamersley Station Homestead.

The EPA has also recommended condition 14 requiring the proponent to continue to consult with the Eastern Guruma people with regard to indirect impacts to these three sites.

*Access to lands in order to undertake traditional activities.*

There is potential for the proposal to impact cultural activities and associations by creating a physical barrier to accessing areas of cultural significance, or areas where traditional activities such as hunting or gathering bush tucker are carried out.

The EPA considers that impacts to access as a result of this proposal can be managed to meet the EPA's objectives for Social Surroundings, provided that on-going consultation with Traditional Owners is conducted throughout the final design and construction phase to determine how these impacts can be minimised.

The EPA has recommended condition 14, requiring the proponent to manage impacts to cultural values, including potential loss of access, through on-going consultation and co-operation with Traditional Owners.

*Surface and groundwater flows to water resources known to have Aboriginal heritage values, including Duck Creek.*

The proposal has the potential to impact places of cultural significance, cultural activities and cultural associations with the land by changing the flows of surface water and groundwater to resources known to have Aboriginal Heritage values.

Maintaining the living landscape, including maintaining water quality and flow, is of importance to the Traditional Owners as custodians of the country. Changes to surface water flows or quality as a result of the proposal have the potential to change the cultural associations of the land and the traditional uses of the land (PKKP 2018).

Changes to Surface Water and Groundwater are addressed in section 4.3 (Inland Waters). Impacts to the significant environmental values associated with this factor have been determined in this section to be manageable to meet the EPA's objectives for the relevant factor, and these environmental values are managed under the recommended condition 11 and recommended condition 12.

The EPA considers that management of cultural values associated with surface water and groundwater flows would require on-going consultation with the Traditional Owners through the final design and construction phases of the proposal to determine the cultural values to be protected.

The EPA notes the Traditional Owners desire to participate in co-operative monitoring and management initiatives (FMG 2019), and that these initiatives could play a role in the management and mitigation of impacts to cultural values and associations

associated with water flows, by enabling the Traditional Owners' roles as custodians of the land.

The EPA has recommended condition 14, requiring the proponent to manage impacts to cultural values, including changes to water regimes, through on-going consultation with Traditional Owners.

### *Culturally significant flora and fauna*

Culturally significant flora and fauna may be utilised by Traditional Owners for food, medicine and ceremonial activities. Impacts to these species may impact the ability to carry out traditional activities including hunting, gathering bush tucker, and ceremonies.

Fortescue has conducted ethnobotanical and ethnozoological investigations within the RDE to determine the range of culturally significant flora and fauna in the project area. Information received during the course of the assessment from the PKKP and Eastern Guruma peoples indicate that some further studies may be required to fully understand the range of culturally significant flora and fauna within the RDE.

Impacts to flora and fauna are addressed in sections 4.1 (Flora and Vegetation) and 4.2 (Terrestrial fauna).

The EPA acknowledges that the environmental values and cultural values of flora and fauna may place emphasis on different species. However, as the EPA has concluded that the proposal is unlikely to significantly impact any species, the EPA considers that the values associated with culturally significant flora and fauna can also be managed to meet the EPA's objectives for Social Surroundings.

The EPA considers that management of cultural values associated with flora and fauna would require on-going consultation with the Traditional Owners through the final design and construction phases of the proposal to determine the cultural values to be protected.

The EPA has recommended condition 14, requiring the proponent to manage impacts to cultural values, including impacts to culturally significant flora and fauna, through on-going consultation and co-operation with Traditional Owners.

### ***Mitigation and Management***

The proponent, through ongoing consultation conducted during and in conjunction with the EPA's assessment process, has significantly altered the originally referred rail alignment to reduce impacts to Social Surroundings. This change is documented in the EPA's *Eliwana Railway S43A change to proposal – Notice of Decision (EPA 2019)*.

In addition to these significant changes, the proponent has proposed mitigation and management actions to minimise impacts to Social Surroundings as a result of this proposal, including:

- avoidance of known places of significance where practicable
- on-going consultation with Traditional Owners

- compliance with the *Aboriginal Heritage Act 1972* where avoidance of registered sites is not practicable
- removal and relocation of cultural heritage material in partnership with Traditional Owners where appropriate
- maintenance of access to culturally significant places where practical through installation of level crossings along the railway, and
- development of final land use outcomes for closure and rehabilitation of the project in consultation with Traditional Owners.

## Summary

The EPA has paid particular attention to the:

- EPA's Statement of Environmental Principles, Factors and Objectives
- Environmental Factor Guideline: *Social Surroundings*
- proponent's significant changes to the proposal, determined in consultation with the Traditional Owners, and designed to reduce impacts to Social Surroundings
- information provided by Traditional Owners during this assessment, and to information provided directly to the EPA during meetings and personal communications, and
- EPA's assessment of the impacts to physical and environmental values associated with the proposal as they may relate to cultural and heritage values.

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

- implementation of condition 13 requiring the proponent to construct the railway at the prescribed distance from the identified significant sites, and
- implementation of measures to minimise direct and indirect impacts to Aboriginal Social, Cultural and Heritage values through the preparation and implementation of an Aboriginal Social, Cultural and Heritage Management Plan (condition 14).

## 5. Offsets

### Relevant policy and guidance

The EPA considers that the following policy and guidance is relevant to its assessment of offsets for the 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 2016a).

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.

Principle 1 of the WA Government's Offset Policy (Government of WA 2011) states "environmental offsets will only be considered after avoidance and mitigation options have been pursued". Consistent with this policy, the proponent has applied the mitigation hierarchy by identifying measures to avoid, minimise and rehabilitate.

Mitigation measures are assessed under the relevant environmental factor (see 4.1 – 4.4). Following the implementation of all mitigation measures, the EPA considers that the proposal would have a significant residual impact from:

- The clearing of up to 40 ha of *Themeda Grasslands on Cracking Clays* TEC.
- The disturbance of 0.3 ha of critical habitat for the Pilbara Leaf-nosed bat and the Ghost bat.
- The Clearing of up to 3690 ha of native vegetation in 'good to excellent condition within the Hamersley IBRA sub-region, including habitat for Pilbara Olive Python, Northern Quoll, and foraging or dispersal habitat for the Pilbara Leaf-nosed bat and the Ghost bat.

In noting the above significant residual impacts, the EPA has considered Principle 2 (Environmental offsets are not appropriate for all projects) of the WA Government's Offsets Policy (Government of WA, 2011), and has determined that offsets are appropriate and applicable for this proposal.

The proponent proposed the following offsets package as part of the ERD:

- Offsetting the clearing of 3,690 ha of native vegetation that is in 'good to excellent' condition through a monetary contribution to the Pilbara Environmental Offsets Fund (the Fund).
- Offsetting of clearing within the *Themeda Grasslands on Cracking Clays* TEC through a monetary contribution to the Fund.

The Residual Impact Significance Model in the WA Environmental Offsets Guidelines (p11) identifies that an offset is required where there are significant impacts to areas recognised as having high biological value, where the cumulative impact may reach critical levels if not managed, and for impacts to habitat necessary to maintain threatened species.

In its strategic advice to the Minister for Environment under s16(e) of the EP Act, *Cumulative Environmental Impacts of Development in the Pilbara Region (date)*, the EPA acknowledged that the Pilbara region is a national biodiversity hotspot and is characterised as an area of very high biodiversity with high species richness and many endemic flora and fauna species. The EPA also recognises that the Pilbara is an area of importance for the mining industry and has been experiencing significant growth over the past 10 years. The region is likely to remain the principal area for iron ore mining for the next 50 years given the size of the iron ore reserves.

The rate, scale and nature of current and future development, combined with the impacts of other threatening processes is of concern to the EPA. The EPA considers that without intervention, the increasing cumulative impacts of development and land use in the Pilbara region will significantly impact on biodiversity and environmental values (EPA, 2014).

In assessing this proposal, and considering the cumulative impacts to environmental values already experienced within the Pilbara, the EPA considers that further clearing of native vegetation within the Hamersley subregion, including the loss of habitat for the Pilbara Olive Python and the Northern Quoll, and foraging or dispersal habitat for the Pilbara Leaf-nosed bat and the Ghost bat, constitutes a significant residual impact and requires an offset.

The EPA also considers that the clearing within the *Themeda Grasslands on Cracking Clays* TEC, and disturbance of critical roosting habitat for the Pilbara Leaf-nosed bat and the Ghost bat constitutes significant residual impacts and requires offsetting.

The approach to offsets that is usually implemented in other areas of WA is the acquisition of land with similar environmental values and/or undertaking on ground management actions, usually within conservation areas. Conservation areas in the Pilbara total approximately 8 per cent of the area, with the remainder mostly Crown Land overlain with mining tenements and pastoral leases. The opportunity for proponents to implement traditional approaches to offsets of land acquisition and management is therefore limited.

The EPA also recognises that the scale and nature of the clearing within the Pilbara has additional consequences. These include loss and fragmentation of fauna habitat, interruption of and changes in overland surface water flows, and reduced vegetation

condition and fauna population resilience through mechanisms such as changes in fire regimes and increased feral pests and weeds. There is also limited evidence of successful rehabilitation of mined areas (EPA, 2014).

The EPA's 2014 strategic advice recognises these challenges faced in the Pilbara. This advice identified a number of environmental risks and impacts resulting from the nature and scale of development and recommended the establishment of a strategic conservation initiative to address these impacts through a coordinated approach at the landscape scale. This strategic conservation initiative is the Pilbara Environmental Offset Fund, which was established by the WA Government in April 2018, and is administered by the DWER.

The EPA recognises that the establishment of the Fund is consistent with the principles in the WA Offsets Policy which states that environmental offsets will be focused on longer term strategic outcomes (Principle 6). Strategic approaches, such as the use of the Fund, will provide a coordination mechanism to implement offsets across a range of land tenures (Government of Western Australia, 2014).

The EPA notes that in establishing and implementing the Fund, the WA Government has committed to ensuring that the offsets implemented via the Fund will:

- be relevant and proportionate to the values being impacted (Principle 3)
- use sound knowledge and ensure the offsets counterbalance the significant residual impacts and deliver long term environmental benefits (Principle 4), and
- be adaptive and be evaluated to ensure that they achieve the outcomes required (Principle 5).

The EPA is therefore of the view that the proposed offset requiring a contribution to the Fund will counterbalance the significant residual impacts resulting from the proposal.

As discussed in section 4.1, impacts to the *Themeda Grasslands on Cracking Clays* TEC are considered to represent a significant residual impact, due to the threatened nature of this vegetation community.

As discussed in section 4.2, impacts to critical habitat for the Pilbara Leaf-nosed bat and the Ghost bat are also considered to be significant residual impacts, based on the Vulnerable status of these species.

While the EPA has recommended conditions to avoid and minimise direct and indirect impacts to the above-mentioned community and habitat types, the EPA considers that direct impacts to these areas are additional to the loss of native vegetation. The EPA therefore considers that a higher rate should be applied to offset these additional impacts. This is consistent with the EPA's approach to offset rates in the Pilbara IBRA region, where a higher rate per hectare is applied for areas cleared with additional important environmental values.

Commensurate with other decisions within the Hamersley IBRA subregion, the EPA recommends that the following rates per hectare should be contributed to the Fund:

- \$805 per hectare for the clearing of native vegetation in 'Good' to 'Excellent' condition in the Hamersley IBRA subregion, including habitat for Pilbara olive python, and Northern Quoll, and foraging or dispersal habitat for the Pilbara Leaf-nosed bat and the Ghost bat.
- \$1,611 per hectare for the clearing of native vegetation within the *Themeda Grasslands on Cracking Clays* TEC, or disturbance within the gorges and gullies habitat which is critical habitat for the Pilbara Leaf-nosed bat or the Ghost bat.

The EPA is of the view that offsets delivered via the Fund should address all significant residual impacts from proposals. 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 significant residual impacts and contribute to biodiversity conservation outcomes in the region. The EPA's view is that project funding for offsets should not be used to provide substitute funding for existing government programs or company obligations.

## Summary

The EPA recommends that an offset condition (condition 16) is imposed to counterbalance the significant residual impacts of the proposal. The EPA recommends that offset contribution rate of \$805 per hectare in the Hamersley IBRA subregion be applied for the clearing of 3,690 ha of 'Good to Excellent' condition native vegetation and the higher offset contribution rate of \$1,611 per hectare be applied for the clearing of native vegetation within the *Themeda Grasslands on Cracking Clays* TEC, or disturbance within the gorges and gullies habitat which is critical habitat for the Pilbara Leaf-nosed bat or the Ghost bat.

## 6. Matters of National Environmental Significance

The Commonwealth Minister for the Environment has determined that the proposal is a controlled action under the EPBC Act as it is likely to have a significant impact on one or more MNES. It was determined that the proposed action is likely to have a significant impact on the following matters protected by the EPBC Act:

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

Further information received from the Department of Environment and Energy (DoEE) on 7 November 2017 indicated that the following species are relevant to the Commonwealth's assessment of the proposal:

- Pilbara Leaf-nosed bat (*Rhinonictoris aurantia*)
- Ghost bat (*Macroderma gigas*)
- Pilbara Olive Python (*Liasis olivaceus barroni*)
- Northern Quoll (*Dasyurus hallucatus*)
- Night Parrot (*Pezoporus occidentalis*)

The EPA has assessed the controlled action on behalf of the Commonwealth as an accredited assessment under the EPBC Act.

This assessment report is provided to the Commonwealth Minister for Environment who will decide whether or not to approve the proposal under the EPBC Act. This is separate from any Western Australian approval that may be required.

### Commonwealth policy and guidance

The EPA had regard to the following relevant Commonwealth guidelines, policies and plans during its assessment:

- Commonwealth EPBC Act Environmental Offsets Policy (Commonwealth 2012)
- Approved Conservation Advice for *Liasis olivaceus barroni* (Olive Python – Pilbara subspecies) (DoEE 2008)
- Commonwealth Listing Advice on Northern Quoll (*Dasyurus hallucatus*). (Commonwealth 2005)
- Conservation advice *Macroderma gigas* Ghost bat (DoEE 2008)
- Conservation Advice *Pezoporus occidentalis* Night Parrot (DoEE 2016b)
- EPBC Act referral guideline for the endangered Northern Quoll (*Dasyurus hallucatus*) (DoEE 2016c)
- National Recovery Plan for the Northern Quoll *Dasyurus hallucatus*. (Hill & Ward, 2010)
- Research priorities for the Northern Quoll (*Dasyurus hallucatus*) in the Pilbara region of Western Australia (Cramer, et al., 2016b)



- Research Priorities for the Pilbara Leaf-nosed bat (*Rhinonicteris aurantia* Pilbara Form (Cramer, et al., 2016a)
- Survey Guidelines for Australia's Threatened Bats, EPBC Act survey guidelines 6.1 (DSEWPAC, 2010)
- Survey Guidelines for Australia's Threatened Birds 6.2 (DEWHA 2010)
- Survey Guidelines for Australia's Threatened Mammals (DSEWPAC, 2011a)
- Survey guidelines for Australia's threatened reptiles, EPBC Act survey guidelines 6.6 (DSEWPAC, 2011b)
- Threat abatement plan for predation by feral cats (Commonwealth 2015)
- Threat abatement plan for predation by the European red fox (DEWHA 2008)
- Threat abatement plan for the biological effects, including lethal toxic ingestion, caused by Cane Toads (Commonwealth 2011)
- Threat abatement plan to reduce the impacts on northern Australia's biodiversity by the five listed grasses (DSEWPAC 2012)

## **EPA assessment**

Impacts to the environment are covered under the key environmental factors of Flora and Vegetation, Terrestrial Fauna, and Inland Waters where relevant.

### ***Pilbara Leaf-nosed bat and Ghost bat***

The proposal would include disturbance of up to 0.3 ha of critical gorges and gullies habitat for the Pilbara Leaf-nosed bat and the Ghost bat. There would also be impacts to foraging and dispersal habitat for these species, however, given the absence of identified diurnal roosts within the RDE, impacts to habitat for these species are unlikely to change the conservation status of this species. The EPA has assessed indirect impacts to both the Pilbara Leaf-nosed bat and the Ghost bat from feral animals, vehicle strike and fencing.

The EPA has recommended a condition to minimise and manage impacts to these species (condition 10), and an offset condition (condition 16) to counterbalance the significant residual impact associated with clearing of foraging and dispersal habitat, and disturbance to critical habitat for these species.

### ***Pilbara Olive Python***

No Pilbara Olive Pythons have been recorded within the RDE. Areas of suitable habitat for this species exist within the RDE, but are also found to greater extent outside the RDE. The EPA has assessed indirect impacts to the Pilbara Olive Python as a result of vehicle strike, and increase in feral animals. Changes to surface water flows, which may indirectly impact this species, has been addressed in section 4.3 (Inland Waters)

The EPA has recommended a condition to minimise and manage impacts to this species (condition 10), and an offset condition (condition 16) to counterbalance the significant residual impact associated with clearing of habitat for this species.

### ***Northern Quoll***

No Northern Quoll have been recorded within the RDE. Areas of suitable denning and foraging habitat for this species exist within the RDE, but are unlikely to be used by the species on a long-term basis. The EPA considers that indirect impacts to the Northern Quoll as a result of vehicle strike, and increase in feral animals as a result of this proposal are unlikely, given the small area of available habitat and lack of observations of this species within the RDE.

The EPA has recommended a condition to minimise and manage impacts to this species (condition 10), and an offset condition (condition 16) to counterbalance the significant residual impact associated with clearing of habitat for this species.

### ***Night Parrot***

No Night Parrots have been recorded within the RDE, and no areas of suitable habitat for this species has been identified within the RDE. The EPA considers that the occurrence of this species within the RDE is unlikely, and therefore impacts to this species as a result of the proposal are unlikely.

### **Summary**

The EPA has recommended the following environmental conditions to minimise impacts on MNES:

- condition 1 requiring the proposal to be implemented within a defined authorised extent, including a limit on the clearing of native vegetation to that described in Schedule 1.
- condition 10 requiring the preparation and implementation of a Significant Fauna Management Plan.

The EPA considers that there will be a significant residual impact from the clearing of habitat, including critical habitat, for significant fauna species. The EPA has recommended an offset in condition 16 (see section 5) which takes into account the significant residual impact to habitat for listed fauna species.

The EPA's view is that the impacts from the proposal on the above-listed MNES are therefore not expected to result in an unacceptable or unsustainable impact on the conservation status of the listed MNES species.

## 7. Conclusion

The EPA has considered the proponent's proposal to develop the Eliwana Railway Project, a 120 km rail line linking the proposed Eliwana Iron Ore Mine to the existing Fortescue railway network at the Solomon Iron Ore Mine.

The EPA notes that the proposal has been changed twice since the original referral. The changes to the proposal, while including a small increase in impact to environmental factors, have resulted in a significantly decreased impact to Social Surroundings.

The EPA notes that the proponent has considered the cumulative impacts associated with its three major projects in the vicinity, and will further consider these impacts in the assessment of the Eliwana Iron Ore Mine, which is currently under assessment by the EPA.

### 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:

- avoidance and minimisation of clearing of significant flora, vegetation and habitats during the design phase of the proposal
- avoidance of known places of cultural significance during the design of the proposal
- minimisation of impacts to surface water flows through design of the railway to provide full conveyance of surface water flows through the rail embankment where practicable
- minimisation of impacts to significant fauna through training and education of staff and contractors to protect fauna and fauna habitats
- minimisation of risks to fauna from vehicle strike by implementation of appropriate mitigation measures including speed limit restrictions, right of way for fauna, and the prohibition of off-road driving
- minimisation of loss of access to culturally significant lands through installation of level crossings along the railway
- management of groundwater abstraction in accordance with the *Rights in Water and Irrigation Act 1914*
- management of lighting to minimise the potential for light overspill resulting in fauna disturbances
- management of weeds where increases in diversity or extent are identified as a result of the proposal
- management of feral animal attraction through waste minimisation and management
- progressive rehabilitation of disturbed areas at the end of their operational life

## Offsets

The EPA considers there would be a significant residual impact from the following:

- Clearing of up to 3,690 ha of native vegetation in 'good to excellent' condition, including habitat for the Pilbara Olive Python, the Northern Quoll, and foraging and dispersal habitat for the Pilbara Leaf-nosed bat and the Ghost bat.
- Clearing of up to 40 ha within the *Themeda Grasslands on Cracking Clays* TEC.
- Disturbance of up to 0.3 ha of the gorges and gullies critical roosting habitat for the Pilbara Leaf-nosed bat and the Ghost bat.

The EPA has recommended a condition (condition 16) to offset this significant residual impact through contribution to the Pilbara Environmental Offsets Fund in accordance with the WA Offsets policy.

## Conclusion

In considering the assessment of the proposal as a whole, the EPA has taken into account the:

- linear nature of the proposal
- design of the rail alignment that seeks to minimise impacts to significant flora, vegetation, fauna habitat, and cultural sites
- proponent's previous experience in designing and managing its existing rail network to minimise impacts to surface water flows
- relevant EP Act principles, including the Precautionary Principle, the Principle of Intergenerational Equality, the Principles of the Conservation of Biological Diversity and Ecological Integrity, and the Principle of Waste Minimisation, and the EPA's objectives for each of the key environmental factors
- EPA's view that the impacts to Flora and Vegetation, Terrestrial Fauna, Inland Waters and Social Surroundings are manageable, provided the recommended conditions in Appendix 4 are implemented.

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 4.

## 8. Other advice

The EPA notes that there is the potential for the Priority 3 species *T. basitricha* to be affected by cumulative impacts associated with the three Fortescue projects in the area, these being the Solomon Iron Ore Project, the Eliwana Railway Project, and the Eliwana Iron Ore Mine Project (currently under assessment).

The cumulative impact assessment has highlighted that, while *T. basitricha* would be reduced by only 1.7% of known individuals by this proposal, cumulative impacts of the three Fortescue projects to this species could be up to 70% of known individuals.

The EPA considers that, while the impacts to *T. basitricha* from this proposal are unlikely to be significant, the cumulative impacts represented by the three Fortescue projects is likely to be significant. The EPA therefore considers that the cumulative impact to *T. basitricha* should be a key consideration in the assessment of the proposed Eliwana Iron Ore Mine.

## 9. Recommendations

That the Minister for Environment notes:

1. That the proposal assessed is for the construction and operation of a 120 km railway line linking the proposed Eliwana Iron Ore Mine with Fortescue's existing rail network, and associated infrastructure.
2. The key environmental factors identified by the EPA in the course of its assessment are Flora and Vegetation, Terrestrial Fauna, Inland waters, and Social Surroundings, 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 4. Matters addressed in the conditions include the following:
  - a) environmental management plans to minimise impacts to flora and vegetation, significant fauna, and groundwater
  - b) completion of the final rail design to minimise impacts to surface water flows and subsequent impacts to significant flora, vegetation and pools
  - c) exclusion areas to protect areas of outstanding cultural significance
  - d) social, cultural and heritage management plan to protect cultural values
  - e) closure and rehabilitation plan to address rehabilitation of infrastructure
  - f) offsets to counterbalance the significant residual impact of clearing of 3690 ha of native vegetation in good to excellent condition, including up to 40 ha of *Themeda Grasslands on Cracking Clays* TEC.
4. Other information, advice and recommendations provided by the EPA, set out in section 8.

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## **Appendix 1: List of submitters**

### **Government Agencies:**

Department of Water and Environmental Regulation  
Department of Planning, Lands and Heritage  
Department of Energy and Environment (Commonwealth)  
Department of Mines, Industry Regulation and Safety  
Department of Biodiversity, Conservation and Attractions

### **Organisations:**

The Wilderness Society of Western Australia  
Wintawari Guruma Aboriginal Corporation  
PKKP Aboriginal Corporation  
Centre for Rock Art Research and Management, University of Western Australia

## 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> <ul style="list-style-type: none"> <li><i>a) careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and</i></li> <li><i>b) an assessment of the risk-weighted consequences of various options.</i></li> </ul>	<p>In considering this principle, the EPA notes that Flora and Vegetation, Terrestrial Fauna, Inland waters and Social Surroundings could be significantly impacted by the proposal. The assessment of these impacts is provided in this report.</p> <p>Investigations into the biological and physical environment have been undertaken by the proponent, and have provided sufficient certainty to assess risks and identify measures to avoid or minimise impacts. Consultation with regard to Social Surroundings has been undertaken to provide certainty that risks to cultural heritage and significant sites are understood.</p> <p>The EPA has recommended conditions to ensure that risks are minimised or avoided where possible, and that relevant measures are undertaken by the proponent to manage residual impacts.</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, Terrestrial Fauna, Inland waters and Social Surroundings could be significantly impacted by the proposal. The assessment of these impacts is provided in this report.</p> <p>The EPA notes that the proponent has identified measures to avoid and minimise impacts to these factors. The EPA has considered these measures during its assessment, and has recommended conditions to ensure that appropriate measures, including avoidance of impacts, are implemented.</p>

EP Act Principle	Consideration
	<p>In particular, the EPA has recommended conditions to avoid impacts to significant heritage sites, to ensure that cultural practices continue to benefit future generations.</p> <p>From its assessment of this proposal the EPA has concluded that 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>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>The EPA notes that the proponent has conducted adequate surveys and provided analysis of the flora, vegetation and fauna of the proposal area, and proposed measures to avoid or minimise impacts to biological diversity, including avoidance and management of significant species. The EPA also notes the linear nature of the proposal, which does not concentrate impacts in any vegetation or habitat type.</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>
<p><b>4. Principles relating to improved valuation, pricing and incentive mechanisms</b></p> <p>(1) <i>Environmental factors should be included in the valuation of assets and services.</i></p> <p>(2) <i>The polluter pays principles – those who generate pollution and waste should bear the cost of containment, avoidance and abatement.</i></p> <p>(3) <i>The users of goods and services should pay prices based on the full life-cycle costs of providing goods and services,</i></p>	<p>In considering this principle, the EPA notes that the proponent would bear the cost relating to waste and pollution, including avoidance, containment and rehabilitation.</p> <p>The EPA has had regard to this principle during the assessment of the proposal.</p>

EP Act Principle	Consideration
<p><i>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><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 proposes to apply the waste minimisation hierarchy to all waste products, including waste water and landfill generated at accommodation camps.</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
Air Quality	<p>Construction of the Eliwana Railway would result in Greenhouse Gas Emissions through the use of fuel for earthworks, signals and communications, track laying, work trains, and for power generation at accommodation camps.</p> <p>The total greenhouse gas emissions for construction would be approximately <b>66,098 tonnes of CO<sup>2</sup></b> in total, spread across the three financial year reporting periods anticipated for the construction phase.</p> <p>Operation of the rail would result in emission of greenhouse gasses from the running of trains, and maintenance of the track. The proponent has calculated greenhouse gas emissions based on three scenarios,</p> <ul style="list-style-type: none"> <li>• Transport of product all the way to Port Hedland (438 km), resulting in Greenhouse Gas Emissions of <b>51,772 tonnes of CO<sup>2</sup> per annum.</b></li> <li>• transport of product from the Eliwana Mine to the Solomon Iron Ore Mine (140 km), resulting in Greenhouse Gas Emissions of <b>16,548 tonnes of CO<sup>2</sup> per annum.</b></li> <li>• transport of product only along the 120 km of rail considered in this assessment, resulting in Greenhouse Gas Emissions of <b>14,184 tonnes of CO<sup>2</sup> per annum.</b></li> </ul> <p>In designing the rail to minimise length and optimise train performance by reducing the gradient of the rail where practicable, the proponent has had consideration for avoiding emissions through best practice design.</p>	No Government agency or public comments were received in relation to this factor.	<p>Air Quality was not identified as a preliminary key environmental factor when the EPA decided to assess the proposal or in the ESD.</p> <p>Having regard to:</p> <ul style="list-style-type: none"> <li>• The proponent's consideration in the design of the proposal for reducing the gradient and length of the rail where practicable, and</li> <li>• Scope 1 emissions for the construction and operation of the rail not exceeding 100,000 tpa CO<sup>2</sup>-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 Air Quality to be a key environmental factor</b> at the conclusion of its assessment.</p>



## Appendix 4: Identified Decision-Making Authorities and Recommended Environmental Conditions

### Identified Decision-making Authorities

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:

<b>Decision-making Authority</b>	<b>Legislation (and Approval)</b>
1. Minister for Environment	<i>Biodiversity Conservation Act 2016</i> (Taking of flora and fauna)
2. Minister for Water	<i>Rights in Water and Irrigation act 1914</i> (Water abstraction licence)
3. Minister for Aboriginal Affairs	<i>Aboriginal Heritage Act 1972</i> (Section 18 clearances)
4. Minister for Lands	<i>Land Administration Act 1997</i> - access and surveying of rail corridor
5. Minister for State Development	<i>Railway and Port (The Pilbara Infrastructure) Agreement Act 2004 – Ministerial Approval</i>
6. CEO, Department of Water and Environmental Regulation	<i>Environmental Protection Act 1986</i> Clearing permit, Works Approval and Licence
7. CEO, Shire of Ashburton	<i>Health Act 1911 and Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste Regulations 1974 -</i> (Sewage treatment permit)

Note: In this instance, agreement is only required with DMAs 1 to 5, since these DMAs are Ministers.

RECOMMENDED ENVIRONMENTAL CONDITIONS  
**STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED**  
***(Environmental Protection Act 1986)***

ELIWANA RAILWAY PROJECT

**Proposal:** The proposal is for the construction and operation of a 120 km rail line and associated infrastructure, connecting the Eliwana Iron Ore Mine Project located 90 km west-north-west of Tom Price to the existing Fortescue railway network at the Solomon Iron Ore Mine.

**Proponent:** Fortescue Metals Group Limited  
Australian Company Number 002 594 872

**Proponent Address:** Level 2, 87 Adelaide Terrace  
**EAST PERTH WA 6004**

**Assessment Number:** 2129

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

Pursuant to section 45 of the EP Act, it has been agreed that the proposal described and documented in Schedule 1 may be implemented and that the implementation of the proposal is subject to the following implementation conditions and procedures:

**1 Proposal Implementation**

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

**2 Contact Details**

- 2-1 The proponent must 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 Time Limit for Proposal Implementation**

- 3-1 The proposal must be substantially commenced within five (5) years from the date of this statement.
- 3-2 The proponent must provide to the CEO documentary evidence demonstrating that they have complied with condition 3-1 no later than 14 days after the expiration of five (5) years from the date of this statement.

### **4 Compliance Reporting**

- 4-1 The proponent must prepare, and maintain a Compliance Assessment Plan which is submitted to the CEO at least two (2) months prior to the first Compliance Assessment Report required by condition 4-6, or prior to implementation of the proposal, whichever is sooner.
- 4-2 The Compliance Assessment Plan must 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.
- 4-3 After receiving notice in writing from the CEO that the Compliance Assessment Plan satisfies the requirements of condition 4-2 the proponent must assess compliance with conditions in accordance with the Compliance Assessment Plan required by condition 4-1.
- 4-4 The proponent must retain reports of all compliance assessments described in the Compliance Assessment Plan required by condition 4-1 and must make those reports available when requested by the CEO.
- 4-5 The proponent must advise the CEO of any potential non-compliance with the conditions set out in this Statement, including non-achievement of threshold criteria and / or failure to implement management actions in an Environmental Management Plan within seven (7) days of that potential non-compliance being known.
- 4-6 The proponent must submit to the CEO the first Compliance Assessment Report on the 1 March in the calendar following the date of issue of this Statement, addressing the remainder of the calendar year in which this statement is issued,

and then on the 1 March following the submission of the first report, and annually thereafter, or as otherwise agreed in writing by the CEO.

4-7 The Compliance Assessment Report must:

- (1) be endorsed by the proponent's Chief Executive Officer or a person delegated to sign on the Chief Executive Officer'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 condition 5; and
- (5) indicate any proposed changes to the Compliance Assessment Plan required by condition 4-1.

4-8 The proponent:

- (1) may review and revise the Compliance Assessment Plan; or
- (2) must review and revise the Compliance Assessment Plan as and when directed by the CEO.

4-9 The proponent must implement the latest version of the Compliance Assessment Plan, which the CEO has confirmed by notice in writing, satisfies the requirements of condition 4-2.

## **5 Public Availability of Data**

5-1 Subject to condition 5-2, 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 must 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.

5-2 If any data referred to in condition 5-1 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 must

provide the CEO with an explanation and reasons why the data should not be made publicly available.

## **6 Condition Environmental Management Plans**

6-1 The proponent must prepare and submit Condition Environmental Management Plans:

- (1) Prior to the commencement of ground disturbing activities, or as otherwise agreed in writing by the CEO, the proponent must prepare and submit Condition Environmental Management Plans to demonstrate that the environmental objectives in conditions 8-1, 9-1, 10-1, 11-1, 14-1 and 15-1 will be met.

6-2 The Condition Environmental Management Plan(s) must:

- (1) specify the **environmental objectives** to be achieved, as specified in conditions 8-1, 9-1, 10-1, 11-1, 14-1, and 15-1;
- (2) specify risk-based **management actions** that will be implemented to achieve compliance with the environmental objectives specified in 8-1, 9-1, 10-1, 11-1, 14-1 and 15-1;
- (3) specify measurable **management target(s)** to determine the effectiveness of the risk-based management actions;
- (4) specify **monitoring** to measure the effectiveness of management actions against management targets, including but not limited to, parameters to be measured, baseline data, monitoring locations, and frequency and timing of monitoring;
- (5) specify a process for **revision** of management actions and changes to proposal activities, in the event that the management targets are not achieved. The process must include an investigation to determine the cause of the management target(s) no being achieved.
- (6) provide the format and timing to demonstrate that 8-1, 9-1, 10-1, 11-1, 14-1 and 15-1 have been met for the reporting period in the Compliance Assessment Report required by condition 4-6 including, but not limited to:
  - (a) verification of the implementation of management actions; and
  - (b) reporting on the effectiveness of management actions against management target(s).

- 6-3 After receiving notice in writing from the CEO that the Condition Environmental Management Plan(s) satisfies the requirements of condition 6-2 for conditions 8-1, 9-1, 10-1, 11-1, 14-1 and 15-1, the proponent must:
- (1) implement the Condition Environmental Management Plan(s); and
  - (2) continue to implement the Condition Environmental Management Plan(s) until the CEO has confirmed by notice in writing that the proponent has demonstrated the objectives specified in conditions 8-1, 9-1, 10-1, 11-1, 14-1 and 15-1 have been met.
- 6-4 Failure to implement one or more of the management actions required by condition 6-2 (2) represents non-compliance with these conditions.
- 6-5 In the event that monitoring, tests, surveys or investigations indicate non-achievement of management target(s) specified in the Condition Environmental Management Plan(s), the proponent must:
- (1) report the non-achievement in writing to the CEO within 7 days of the non-achievement being identified;
  - (2) investigate to determine the cause of the management targets not being achieved;
  - (3) provide a report to the CEO within 90 days of the non-achievement being reported as required by condition 6-5 (1). The report must include:
    - (a) cause of non-achievement of management targets;
    - (b) the findings of the investigation required by conditions 6-5 (2);
    - (c) details of revised and/or additional management actions to be implemented to prevent non-achievement of the management target(s); and
    - (d) relevant changes to proposal activities.
- 6-6 In the event that monitoring, tests, surveys or investigations indicate that one or more management actions specified in the Condition Environmental Management Plan(s) have not been implemented, the proponent must:
- (1) investigate to determine the cause of the management action(s) not being implemented;
  - (2) investigate to provide information for the CEO to determine potential environmental harm or alteration of the environment that occurred due to the failure to implement management actions;

- (3) provide a report to the CEO within seven (7) days of the non-compliance being identified. The report must include:
  - (a) cause for failure to implement management actions;
  - (b) the findings of the investigation required by conditions 6-6 (1) and 6-6 (2);
  - (c) relevant changes to proposal activities; and
  - (d) measures to prevent, control or abate the environmental harm which may have occurred.

6-7 The proponent:

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

6-8 The proponent must implement the latest revision of the Condition Environmental Management Plan(s) required by condition 6-1, which the CEO has confirmed by notice in writing, satisfies the requirements of condition 6-2.

## **7 Threatened and Priority Ecological Communities**

7-1 The proponent must ensure that no borrow pits are constructed within the *Themeda Grasslands on Cracking Clays* Threatened Ecological Community, or within the *Brockman Iron Cracking Clay* Priority Ecological Community as identified in figure 2 of schedule 1, and described in the spatial co-ordinates in schedule 2.

## **8 Priority Flora species**

8-1 The proponent must manage the implementation of the proposal to meet the following **environmental objectives**:

- (1) Avoid where possible, and minimise direct impacts to the following Priority Flora species:
  - (a) *Euphorbia inappendiculata* var. *queenslandica*.
  - (b) *Helichrysum oligochaetum*.
  - (c) *Triodia* aff. Sp. Karijini.
  - (d) *Vittadinia* sp. Coondewanna Flats.
  - (e) *Euphorbia australis* var. *glabra*.



- (f) *Ipomoea racemigera*
- (g) *Pentalepis trichodesmoides* subsp. *Hispidula*
- (h) *Triodia Basitricha*

8-2 The proponent must prepare and submit a Priority Flora Supplementary Targeted Survey and Action Plan required by condition 6-1 that satisfies the requirements of condition 6-2 to meet the objectives specified in condition 8-1.

8-3 The plan required by condition 6-1 must:

- (1) Provide details of the timing and methodology of additional, staged, targeted surveys to be undertaken during the construction phase of the proposal, to ensure that the extent of the species listed in condition 8-1 that occur within the disturbance footprint are identified.
- (2) Specify management actions to be undertaken to minimise direct impacts to individuals and populations of the species listed in condition 8-1 (1) identified during the supplementary targeted surveys, and
- (3) Provide the format and timing for post-construction reporting to demonstrate that the objective of condition 8-1 has been met.

## **9 Flora and Vegetation Monitoring and Management Plan**

9-1 The proponent must manage the implementation of the proposal during all phases of the proposal to meet the following **environmental objectives**:

- (1) Avoid where possible, and minimise direct and indirect impacts to
  - (a) Themeda Grasslands on Cracking Clays TEC;
  - (b) Brockman Iron Cracking Clays PEC;
- (2) Prevent the introduction and spread of weed species as a result of the proposal.

9-2 The proponent must prepare and submit a Flora and Vegetation Monitoring and Management Plan required by condition 6-1, that satisfies the requirements of condition 6-2, to meet the objective required by condition 9-1 to the requirements of the CEO, in consultation with the agency responsible for the administration of the *Biodiversity Conservation Act 2016* (being at the time of this Statement the Department of Biodiversity Conservation and Attractions).

9-3 The plan required by condition 6-1 must include provisions required by condition 6-2 to address impacts to vegetation including, but not limited to: changes to surface water and groundwater flows; fragmentation, and weeds.

## **10 Significant Fauna Monitoring and Management Plan**

- 10-1 The proponent must manage the implementation of the proposal during all phases of the proposal to meet the following **environmental objectives**:
- (1) Avoid where possible, and minimise direct and indirect impacts to significant fauna and their habitat, including, but not limited to:
    - (a) Pilbara Leaf-nosed bat;
    - (b) Ghost Bat;
    - (c) Pilbara Olive Python; and
    - (d) Northern Quoll.
- 10-2 The proponent must prepare and submit a Significant Fauna Monitoring and Management Plan required by condition 6-1, that satisfies the requirements of condition 6-2, to meet the objective specified in condition 10-1 to the CEO.
- 10-3 The plan required by condition 6-1 must include provisions required by condition 6-2 to address impacts to significant fauna and their habitat including, but not limited to: clearing of habitat, fragmentation of habitat, vehicle strike, collision with fencing, increased feral animals, light and noise.

## **11 Groundwater Management Plan**

- 11-1 The proponent must manage the implementation of the proposal during all phases of the proposal to meet the following **environmental objectives**:
- (1) Ensure that no groundwater drawdown associated with the proposal extends beneath Donkey Hole or Donkey Pool.
  - (2) Minimise drawdown beneath groundwater fed or potentially groundwater fed pools located within the Groundwater Impact Assessment Areas identified in Figure 3 of Schedule 1, and described in the spatial data in Schedule 2.
  - (3) Minimise groundwater drawdown beneath groundwater dependent and potentially groundwater dependent vegetation.
- 11-2 The proponent must prepare and submit a Groundwater Monitoring and Management Plan required by condition 6-1 that satisfies the requirements of condition 6-2, to meet the objectives specified in condition 11-1.
- 11-3 The plan required by condition 6-1 must include provisions required by condition 6-2 to address the following:
- (1) the results of additional investigations to verify the predicted drawdown associated with each aquifer unit to be impacted by the abstraction program.

- (2) details on the final number and locations of groundwater bores, existing and proposed, to be utilised for the construction phase of the proposal.
- (3) demonstration that the locations of bores to be utilised for the construction phase of the proposal have been selected to meet the requirements of condition 11-1.
- (4) details of monitoring to be conducted within and outside the predicted drawdown extent of any bores in the vicinity of Donkey Hole and Donkey Pool, to allow early detection of any preferential pathways that may result in drawdown impacts to those sites.
- (5) monitoring to verify predictions of groundwater recovery following the completion of the construction stage of the proposal, including shallow bores monitoring the surficial groundwater levels associated with pools and groundwater dependent or potentially groundwater dependent vegetation.

## **12 Final Railway Design and surface water management structures.**

12-1 The proponent must design the rail line and infrastructure to meet the following environmental outcomes:

- (1) No more than twelve (12) hectares of the Themeda Grasslands on Cracking Clays TEC is subject to a reduction in surface water flows.
- (2) No more than two (2) hectares of the Brockman Iron Cracking Clay PEC is subject to a reduction in surface water flows.
- (3) No more than three (3) hectares of sheet flow dependent Mulga vegetation is subject to a reduction in surface water flows.
- (4) No reduction in surface water flow to significant streams or drainage lines.
- (5) No reduction in flow to any permanent or semi-permanent pools downstream of the rail line alignment.

12-2 To demonstrate that the environmental outcomes set out in condition 12-1 will be achieved, the proponent must, prior to ground-disturbing activities, to prepare and submit a Railway Design Plan to the requirements of the CEO, in consultation with the agency responsible for the administration of *the Biodiversity Conservation Act 2016* (being at the time of this Statement the Department of Biodiversity Conservation and Attractions). The Plan must:

- (1) Identify the location of significant vegetation (including vegetation referred to in condition 12-1) subject to changes to surface water flows as a result of the implementation of the proposal.

- (2) Identify significant streams, drainage lines and permanent or semi-permanent pools downstream of the rail line alignment.
  - (3) Present evidence, including surface water modelling where appropriate, to demonstrate that the proposed design can achieve the requirements of condition 12-1.
  - (4) Detail the proposed frequency, timing, locations, and methodology of monitoring to be implemented during the construction and operation of the rail line to verify that the requirements of condition 12-1 have been met.
  - (5) Provide details of contingency actions that will be implemented in the event that monitoring required by condition 12-2 (4) indicates that the requirements of condition 12-1 have not been achieved.
  - (6) Provides the format and timing to demonstrate that the environmental outcomes required by condition 12-1 have been achieved following the completion of the construction phase.
- 12-3 After receiving notice in writing from the CEO that the Railway Design Plan satisfies the requirements of condition 12-1, the proponent must:
- (1) implement the provisions of the Railway Design Plan; and
  - (2) continue to implement the Railway Design Plan until the CEO has confirmed by notice in writing that the proponent has demonstrated that the objectives specified in condition 12-1 have been met.

### **13 Avoidance of Significant Heritage Sites**

- 13-1 The proponent must design and implement the proposal to meet the following outcomes:
- (1) The centre line of the rail line must be located at least 375 metres from the boundary of the Nharraminju Wuntu Rock Art Complex, as shown in Figure 4 of Schedule 1, and described in the spatial data in Schedule 2.
  - (2) The centre line of the rail line must be located at least 100 metres from the boundary of the Kumpanha Dancing Grounds, as shown in Figure 5 of Schedule 1, and described in the spatial data in Schedule 2.
  - (3) The centre line of the rail line bridge crossing the Rio Tinto owned railway must be located at least 2100 metres from the Hamersley Station Homestead, as shown in Figure 5 of Schedule 1, and described in the spatial data in schedule 2.

## **14 Social, Cultural and Heritage Management Plan**

14-1 The proponent must implement the proposal to meet the following **environmental objectives**:

- (1) Minimise direct and indirect impacts to social, cultural and heritage values within and surrounding the Rail Development Envelope, including from, but not limited to:
  - (a) disturbance of the ground that may impact cultural associations and heritage;
  - (b) potential loss of access to areas to undertake traditional activities;
  - (c) indirect impacts, including visual, noise, dust and vibration impacts to social and cultural places and activities, including the three sites specified in condition 13-1;
  - (d) impacts to culturally significant flora and fauna; and
  - (e) changes to water regimes of water resources known to have Aboriginal heritage values.

14-2 The proponent must consult with relevant Native Title Holders and prepare a Social, Cultural and Heritage Management Plan required by condition 6-1 that satisfies the requirements of condition 6-2, to meet the objectives specified in condition 14-1.

14-3 The Social, Cultural and Heritage Management Plan required by condition 14 - 2 must:

- (1) Provide evidence of consultation required by condition 14-2 and the outcomes of this consultation.
- (2) Provide a framework for future consultation with Native Title holders to be undertaken in relation the proposal, including the timing of consultation relative to the stages of the project, the form of consultation for each stage identified, information to be provided before and during consultation, including spatial data, and actions to be implemented in the event that consultation cannot be conducted due to inability to schedule consultation events. In the event that all attempts to schedule consultation are unsuccessful, the proponent must continue to implement the plan.
- (3) Provide details of proponent commitments to providing opportunities for Native Title holders to participate in monitoring and management initiatives.

## **15 Closure and Rehabilitation**

15-1 The proponent must manage the implementation of the proposal to meet the following **environmental objective**:

- (1) Ensure that the rail line and associated infrastructure within the rail development envelope is decommissioned and rehabilitated in an ecologically sustainable manner.

15-2 Within twelve (12) months of the issue of this statement, or as otherwise agreed in writing by the CEO, the proponent must prepare and submit a Railway Closure Plan required by condition 6-1, that satisfies the requirements of condition 6-2, to meet the objective required by condition 15-1.

15-3 The Railway Closure Plan must:

- (1) demonstrate that areas of disturbance associated with the construction of the proposal and not required for the ongoing operation for the proposal will be rehabilitated and decommissioned in an ecologically sustainable manner;
- (2) provide closure objectives and completion criteria to demonstrate that the rail line and associated infrastructure required for the ongoing operation of the proposal will be rehabilitated and decommissioned in an ecologically sustainable manner in the event that the Minister responsible for administering the *Railway and Port (The Pilbara Infrastructure Pty Ltd) Agreement Act 2004* gives notice that the railway is to be closed and rehabilitated.
- (3) Provide a framework for the review and revision of the Railway Closure Plan at intervals determined to the satisfaction of the CEO.

## **16 Offsets**

16-1 In view of the significant residual impacts and risks as a result of the implementation of the proposal identified in condition 16-3, the proponent must contribute funds to the Pilbara Environmental Offset Fund calculated in accordance with conditions 16-2 to 16-4, subject to any reduction approved by the CEO under condition 16-10.

16-2 The proponent's contribution to the Pilbara Environmental Offset Fund must 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 16-3. The first biennial reporting period must commence from ground disturbing activities of the environmental values identified in condition 16-3.

16-3 Calculated on the 2017-2018 financial year, the contribution rates are:

- (1) \$805 (excluding GST) per hectare of 'Good' to 'Excellent' condition native vegetation, including nesting and foraging habitat for the Pilbara Olive Python, denning and foraging habitat for the Northern Quoll, and foraging or dispersal habitat for the Pilbara Leaf-nosed bat and foraging or dispersal habitat for the Ghost bat, cleared within Area A of the Rail Development Envelope within the Hamersley IBRA subregion, as described in the spatial data in Schedule 2.
  - (2) \$1611 (excluding GST) per hectare of *Themeda Grasslands on Cracking Clays*, and critical habitat (gorges and gullies) for the Pilbara leaf-nose bat and the Ghost bat, cleared within Area B of the Development Envelope within the Hamersley IBRA subregion, as shown in Figure 7 of Schedule 1 and described in the spatial data in Schedule 2.
- 16-4 From the commencement of the 2018-2019 financial year, the rates in condition 16-3 will be adjusted annually each subsequent financial year in accordance with the percentage change in the CPI applicable to that financial year.
- 16-5 Prior to ground disturbing activities within the Rail Development Envelope as shown in Figure 1 of Schedule 1 and described in Spatial data in Schedule 2, the proponent must prepare and submit an Impact Reconciliation Procedure to the CEO.
- 16-6 The Impact Reconciliation Procedure required pursuant to condition 16-5 must:
  - (1) state that clearing calculation for the first biennial reporting period will commence from ground disturbing activities in accordance with condition 16-2 and end on the second 30 June following commencement of ground disturbing activities;
  - (2) state that clearing calculations for each subsequent biennial reporting period will commence on 1 July 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 16-3; and
- 16-7 The proponent must not commence ground disturbing activities within the Rail Development Envelope, unless otherwise agreed by the CEO, until the CEO has confirmed in writing that the Impact Reconciliation Procedure satisfies the requirements of condition 16-6.
- 16-8 The proponent must submit an Impact Reconciliation Report in accordance with the Impact Reconciliation Procedure approved pursuant to condition 16-7.



- 16-9 The Impact Reconciliation Report required pursuant to condition 16-8 must provide the location and spatial extent of the clearing undertaken within Areas A or B during each year of each biennial reporting period.
- 16-10 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 16-2 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 values identified in condition 16-3.

**Table 1: Summary of the Proposal**

<b>Proposal Title</b>	Eliwana Railway Project
<b>Short Description</b>	The proposal is for the construction and operation of a 120 km rail line and associated infrastructure, connecting the Eliwana Iron Ore Mine Project located 90 km west-north-west of Tom Price to the existing Fortescue railway network at the Solomon Iron Ore Mine

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

<b>Column 1</b>	<b>Column 2</b>	<b>Column 3</b>
<b>Element</b>	<b>Location</b>	<b>Authorised Extent</b>
Railway line and associated infrastructure	Figure 1	Clearing of up to 3,690 hectares of native vegetation within a 38,198 hectare Rail Development Envelope.
<i>Themeda Grasslands on Cracking Clays</i> TEC	Figure 2	Within the 3,690 hectares of total clearing, clearing of no more than 40 hectares within the <i>Themeda Grasslands on Cracking Clays</i> TEC.
Construction Water supply	N/A	Up to 4 GL, supplied from multiple bores situated along the rail line.
Operational Water Supply	N/A	Up to 200,000 kL/a, supplied from local water supply borefields.

**Table 3: Abbreviations and Definitions**

<b>Acronym or Abbreviation</b>	<b>Definition or Term</b>
CEO	The Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the EP Act, or their delegate.
EP Act	<i>Environmental Protection Act 1986</i>
CPI	The All Groups Consumer Price Index numbers for Perth compiled and published by the Australian Bureau of Statistics.
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.
Ground Disturbing Activities	Activities that are associated with the substantial implementation of a proposal including but not limited to, digging (with mechanised equipment), blasting, earthmoving, vegetation clearance, grading, gravel extraction, construction of new or widening of existing roads and tracks
km	Kilometres

kL/a	Kilolitres per annum
GL	Gigalitres
TEC	Threatened Ecological Community
ha	Hectare

## Figures

- Figure 1 Rail Development Envelope and Indicative Disturbance Footprint
- Figure 2 *Themeda Grasslands on Cracking Clays* (Threatened Ecological Community) within the Development Envelope.
- Figure 3 Groundwater Impact Assessment Areas
- Figure 4 Location of Nharraminju Wuntu Rock Art Complex
- Figure 5 Location of Kumpanha Dancing Grounds and Hamersley Station
- Figure 6 Critical Habitat for Ghost Bat and Pilbara leaf-nosed bat (gorges and gullies)
- Figure 7 Area B (for Offsets condition)

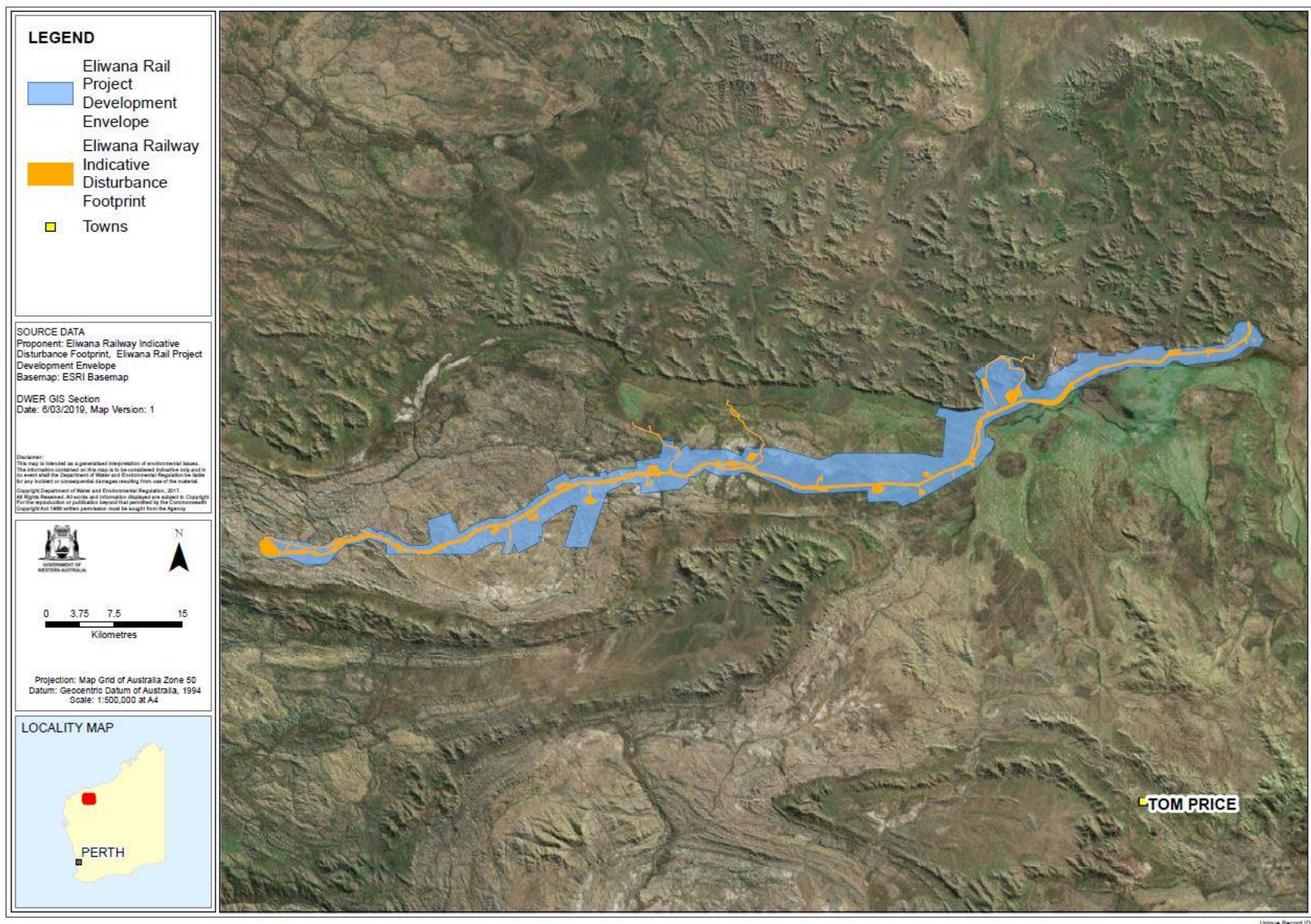


Figure 1 Rail Development Envelope and Indicative Disturbance Footprint



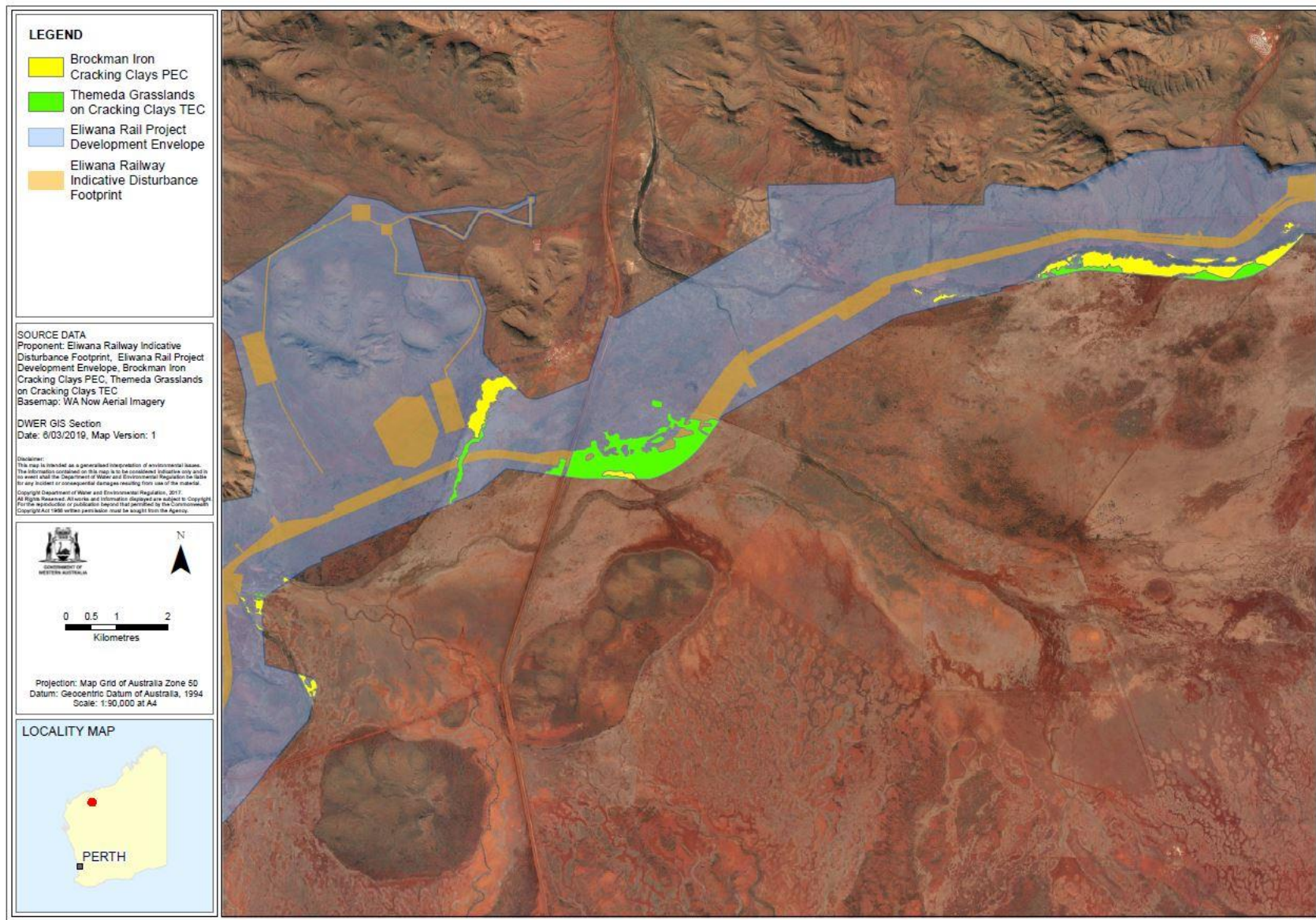


Figure 2 Themeda Grasslands on Cracking Clays (Threatened Ecological Community) within the Development Envelope.



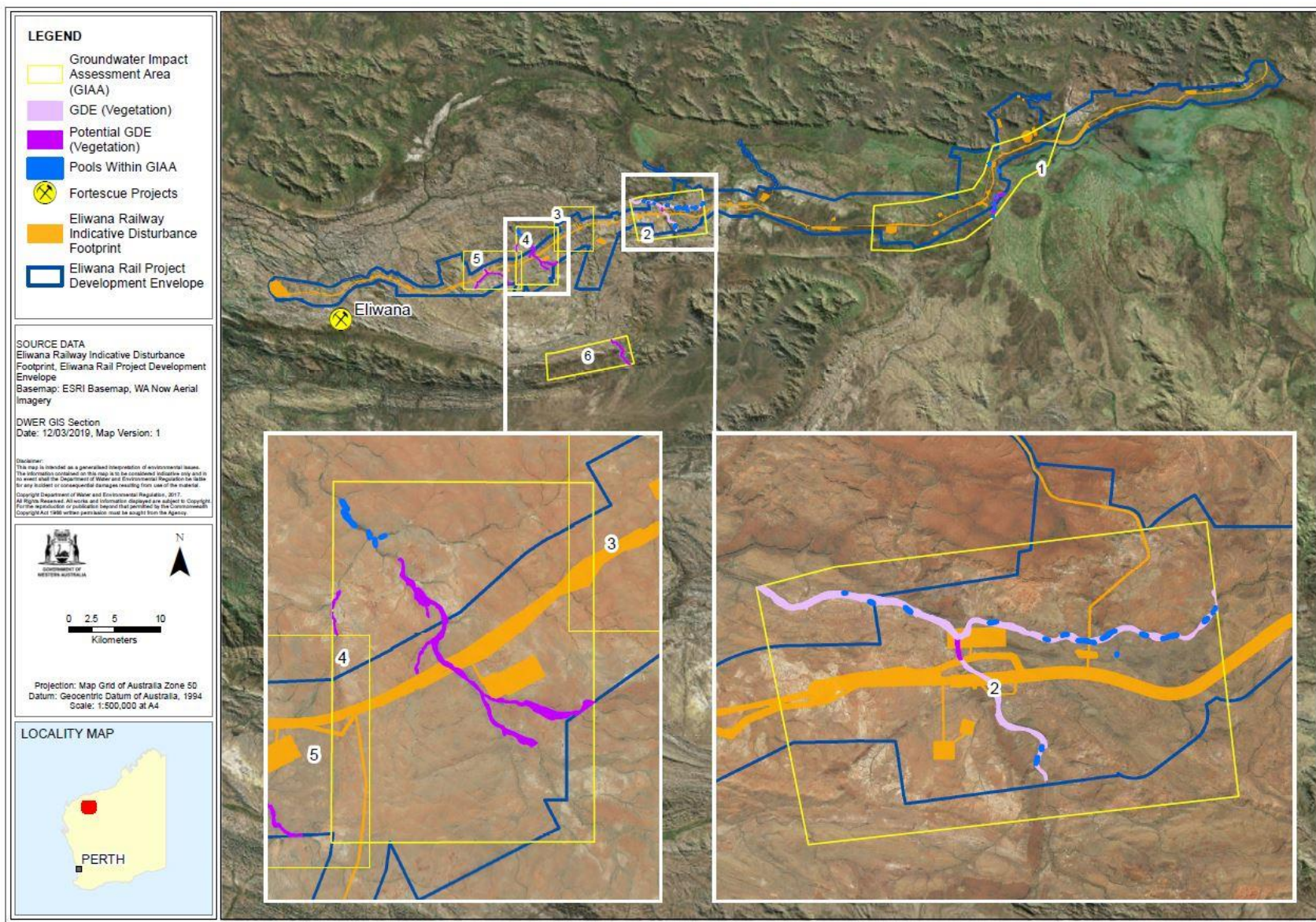


Figure 3 Groundwater Impact Assessment Areas (GIAAs)



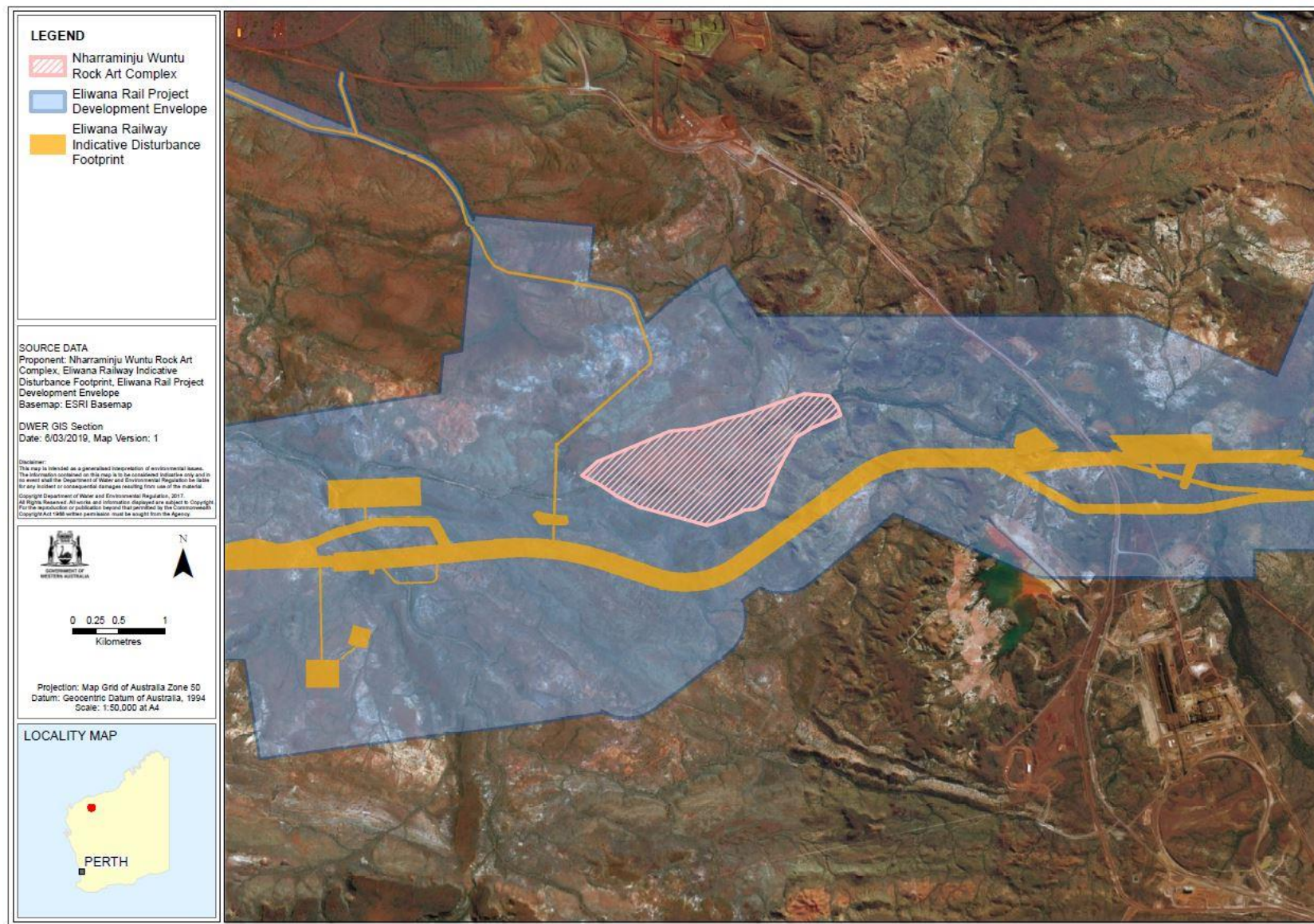
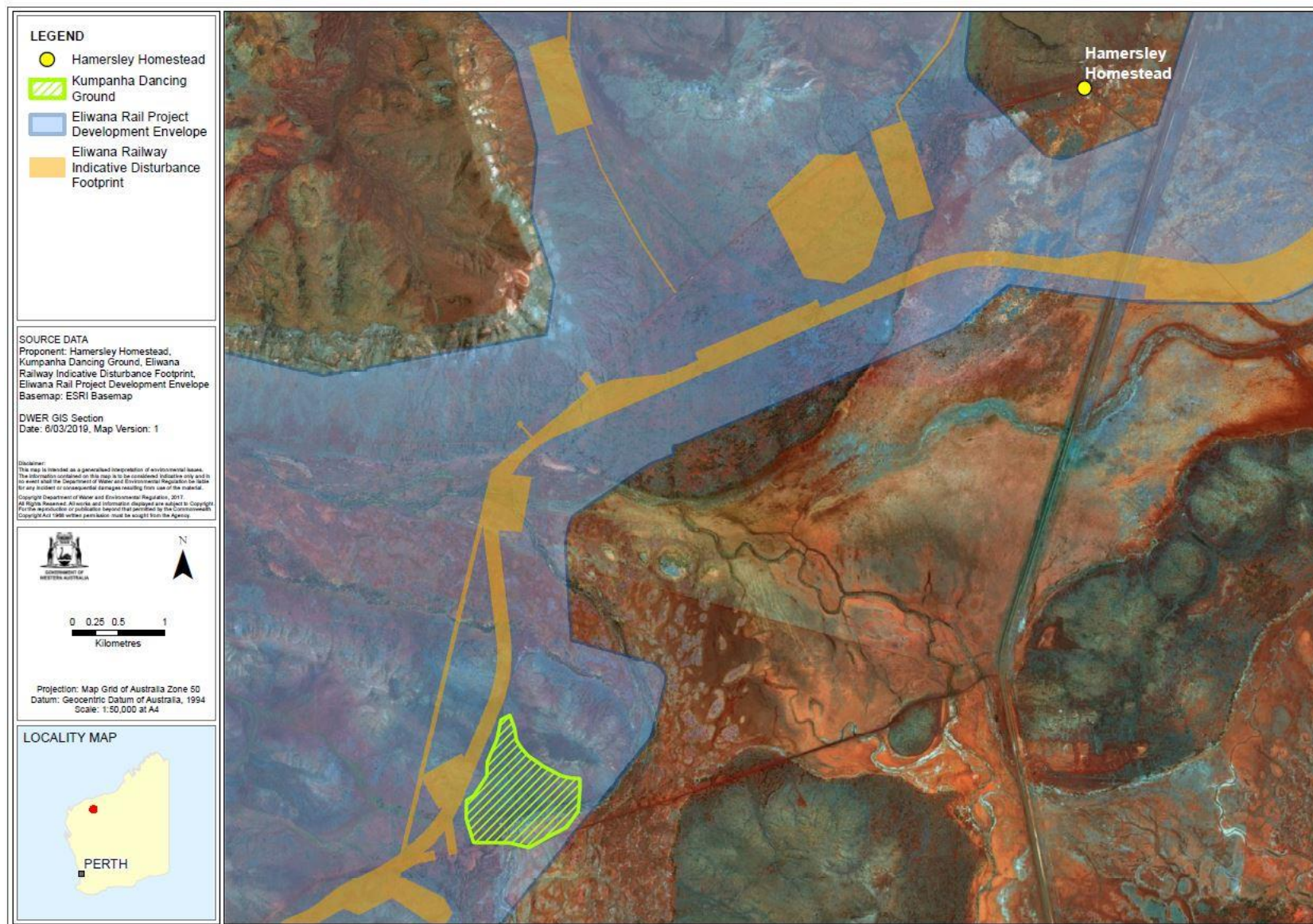


Figure 4 Location of Nharraminju Wuntu Rock Art Complex





Unique Record ID:

Figure 5 Location of Kumpanha Dancing Grounds and Hamersley Station Homestead



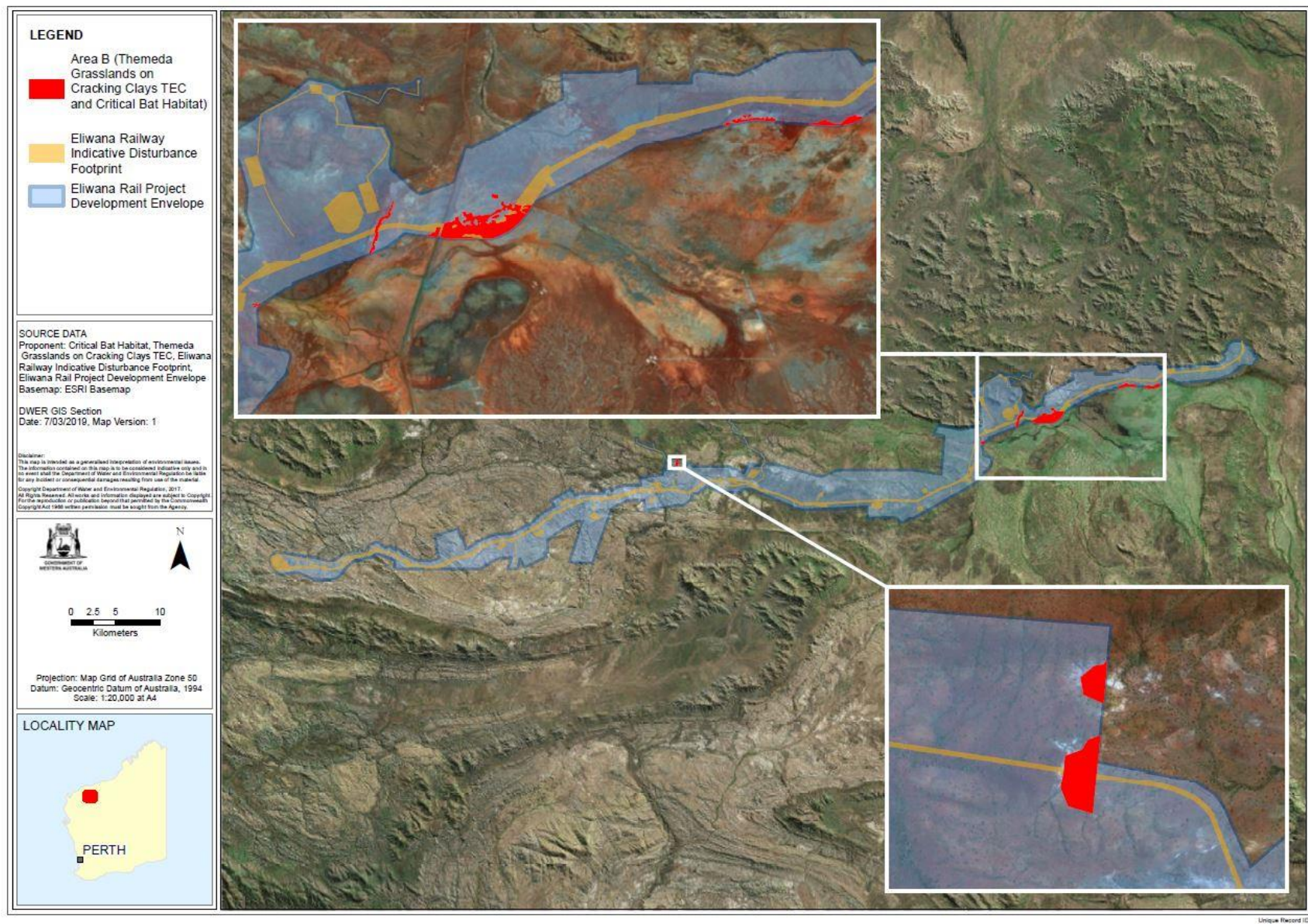


Figure 6 Critical Ghost Bat and Pilbara Leaf-nosed Bat habitat (Gorges and Gullies)



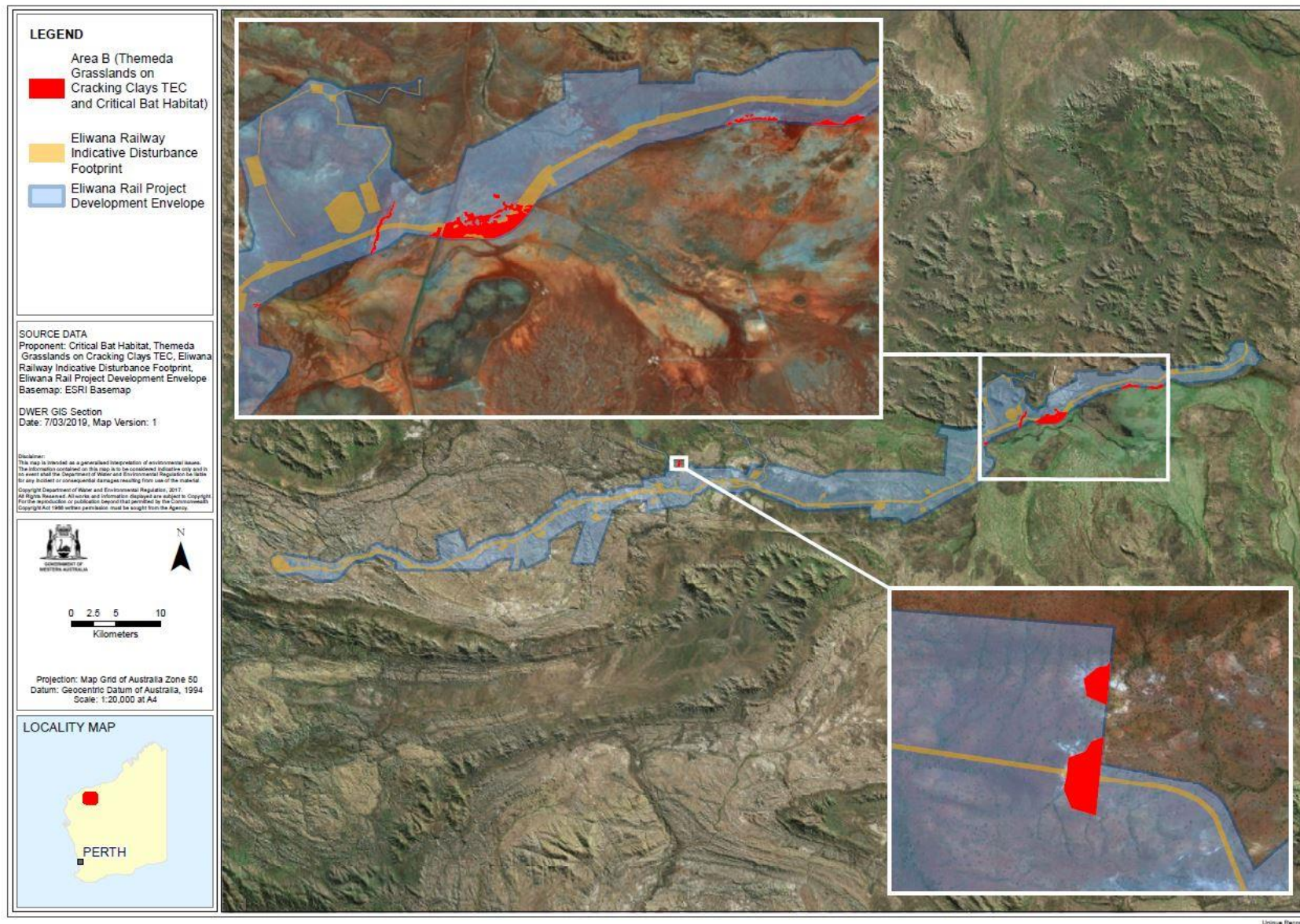


Figure 7 Area B: Themeda Grasslands on Cracking Clays TEC and Gorges and Gullies Habitat.



## **Schedule 2**

Co-ordinates defining the areas shown in Figures 1 – 6 are held by the Department of Water and Environmental Regulation (DWER) under the following reference numbers:

- Eliwana Railway Project Rail Development Envelope – 2019-1548228686856
- Eliwana Rail Project Indicative Disturbance Footprint – 2019-1549439977046
- Themeda Grasslands on Cracking Clays TEC – 2019-1551230692515
- Brockman Iron Cracking Clays PEC – 2019-1551403610862
- Groundwater Impact Assessment Areas (GIAAs) – 2019-1554687853090
- Boundaries of the Nharraminju Wuntu Rock Art Precinct – 2019-1551230491418.
- Boundaries of the Kumpanha Dancing Ground – 2019-1551230490730.
- Location of Hamersley Homestead – 2019-1551405963294
- Gorges and Gullies Critical Bat Habitat – 2019-1551403610452
- Area A (Rail development Envelope excluding Area B) and Area B (Themeda Grasslands on Cracking Clays, plus Gorges and Gullies habitat) - 2019-1552274795348