



Application for Works Approval

Division 3, Part V *Environmental Protection Act 1986*

Licence Number	W6221/2019/1
Applicant	Pilbara Iron Company (Services) Pty Ltd
ACN	107 210 248
File Number	DER2019/000003
Premises	Koodaideri Iron Ore Mine AML70/252 (Mineral Lease S.A. 70/252); L47/701; Miscellaneous Licence 7SA (Special Rail Licence)
Date of Report	13 June 2019
Status of Report	Final

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1. Definitions of terms and acronyms

In this Decision Report, the terms in Table 1 have the meanings defined.

Table 1: Definitions

Term	Definition
AACR	Annual Audit Compliance Report
ACN	Australian Company Number
AER	Annual Environment Report
Category/ Categories/ Cat.	Categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
CS Act	<i>Contaminated Sites Act 2003 (WA)</i>
Decision Report	refers to this document.
Delegated Officer	an officer under section 20 of the EP Act.
Department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> and designated as responsible for the administration of Part V, Division 3 of the EP Act.
DIWA	Directory of Important Wetlands in Australia
DWER	Department of Water and Environmental Regulation As of 1 July 2017, the Department of Environment Regulation (DER), the Office of the Environmental Protection Authority (OEPA) and the Department of Water (DoW) amalgamated to form the Department of Water and Environmental Regulation (DWER). DWER was established under section 35 of the <i>Public Sector Management Act 1994</i> and is responsible for the administration of the <i>Environmental Protection Act 1986</i> along with other legislation.
EPA	Environmental Protection Authority
EP Act	<i>Environmental Protection Act 1986 (WA)</i>
EP Regulations	<i>Environmental Protection Regulations 1987 (WA)</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i>
Minister	the Minister responsible for the EP Act and associated regulations
MS	Ministerial Statement
mtpa	million tonnes per annum
Noise Regulations	<i>Environmental Protection (Noise) Regulations 1997 (WA)</i>

Occupier	has the same meaning given to that term under the EP Act.
Prescribed Premises	has the same meaning given to that term under the EP Act.
Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report
Ramsar Convention	The Covention on Wetlands of International Importance
Risk Event	As described in <i>Guidance Statement: Risk Assessment</i>
UDR	<i>Environmental Protection (Unauthorised Discharges) Regulations 2004 (WA)</i>

2. Purpose and scope of assessment

Pilbara Iron Company (Services) has applied for a new works approval under Part V, Division 3 of the *Environmental Protection Act 1986* for the Koodaideri Iron Ore Mine located in the Shire of Ashburton. The mine is to be located approximately 72kms south-east of the town of Wittenoom and 24kms east of the Karijini National Park boundary, within tenements AML70/252 and L47/701. The mine plant area is shown in Figure 1.

2.1 Application details

The works approval application is for the construction and commissioning of an iron ore processing facility comprising a primary crusher, screenhouse, secondary crusher, stockyard, train loadout and related conveyor and ancillary systems at the site. The works approval application also includes installation of two mobile crushing and two mobile screening plants to be used during construction works. Application documents submitted during the assessment process are noted in Table 3.

The processing plant, stockyard and mobile plants will be located within tenements AML70/252 and L47/701, along with a portion of the Miscellaneous Licence 7SA (Special Rail Licence) area. Figure 1 and Figure 2 illustrate the project location and premises boundary.

A works approval is required in relation to the prescribed premises categories and production/design capacities detailed in Table 2.

Table 2: Prescribed premises categories and production/design capacities

Prescribed premises category	Production or design capacity
Category 5: Processing or beneficiation of metallic or non-metallic ore.	43 million tonnes per annum
Category 12: Screening etc. of material: premises on which material extracted from the ground is screened, washed, crushed, ground, milled, sized or separated.	10 million tonnes per annum.

Construction of the processing plant is scheduled to commence in 2019, with commissioning of the processing facility scheduled for quarter 4 2021. The estimated operating period for the project is 30+ years.

The mobile crushing and screening plants will initially be on site for up to 2 years to support project construction activities. The mobile plants may also be required for other purposes following the construction phase.

Table 3: Documents and information submitted during the assessment process

Document/information description	Date received
Works approval application form - dated 21 December 2018	21/12/2018
Works approval application supporting documentation report - dated 20 December 2018	21/12/2018
Works approval application supplementary information (email correspondence) – dated 21 February 2019	21/2/2019
Works approval application supplementary information – copy of miscellaneous licence for railway and other purposes (miscellaneous licence 7SA), dated 7 March 2019	20/3/2019

Works approval application supplementary information – copy of tenement endorsement and conditions for tenement L47/701, dated 4 April 2019	4/4/2019
Works approval application supplementary information (email correspondence) – dated 12 April 2019	12/4/2019

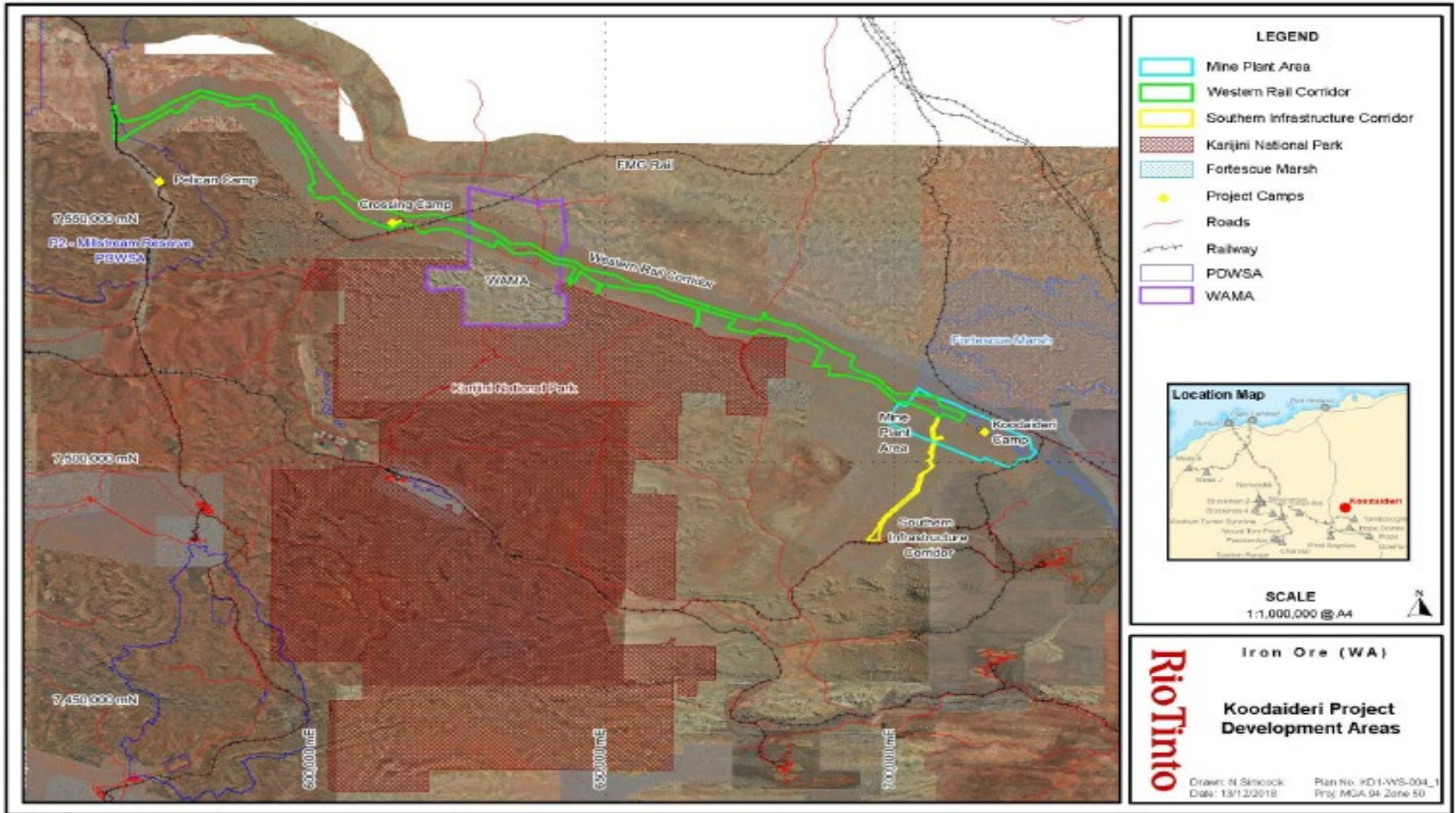


Figure 1 Project location

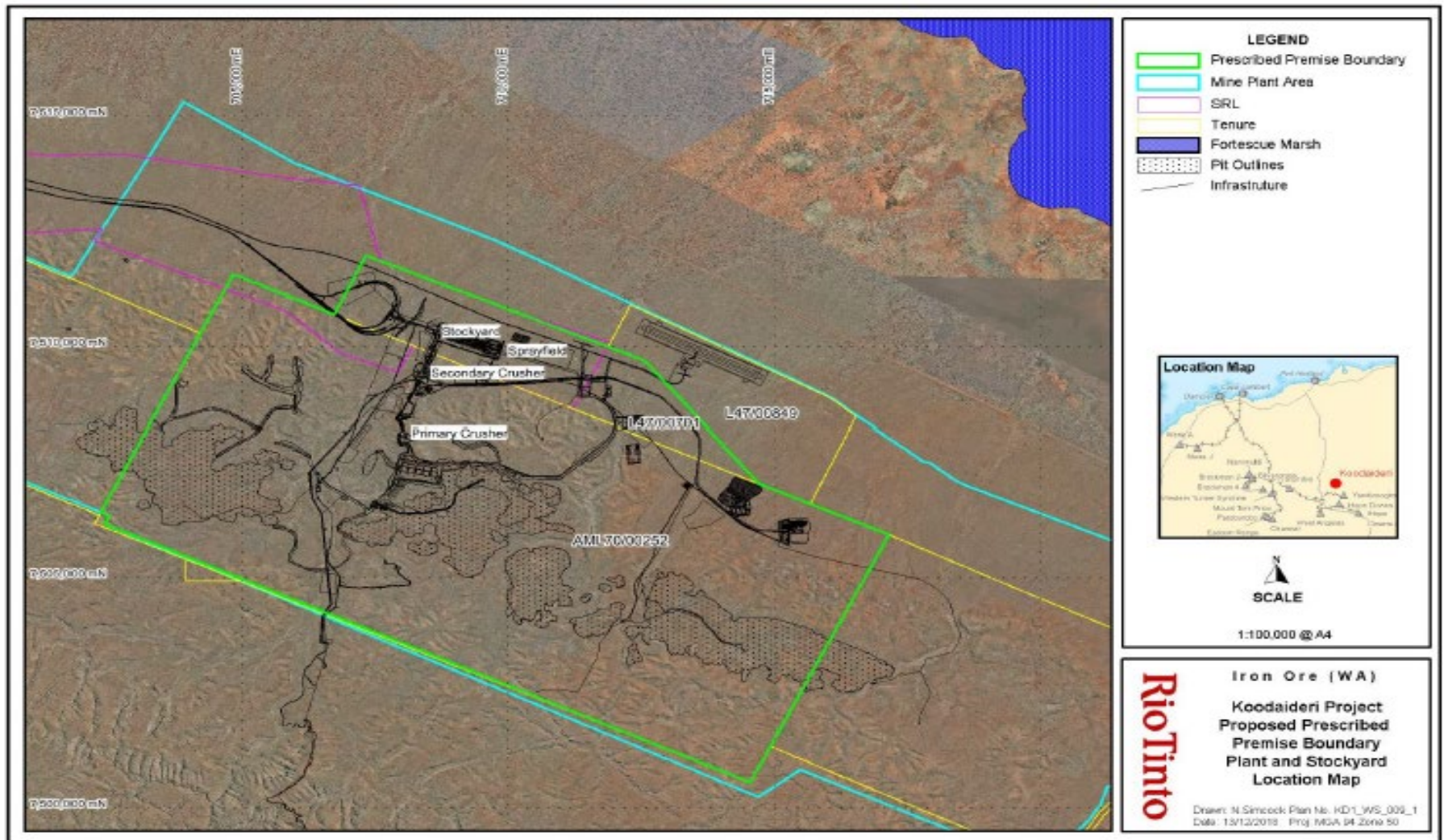


Figure 2 Premises boundary

3. Overview of Premises

3.1 Operational aspects

3.1.1 Overview

The Koodaideri Iron Ore Mine once operational will produce 43 million tonnes per annum of Saleable Ore Product (SOP) as lump and fines from coarse ore feed.

In order to process coarse ore feed into saleable product, the Koodaideri processing plant will include facilities for crushing, screening, stockpiling and loading onto rail transport (to Port).

When constructed, the processing plant will operate 24 hours per day, 7 days per week. The Life of Mine is expected to be more than 30 years.

Mobile crushing and screening units will be required to support mine earthworks.

This approval assesses emissions and discharges from the mine and does not cover the Port associated operations.

The processing plant flowsheet is shown schematically in Figure 3.

Run of Mine (ROM) ore will be delivered by haul truck to a primary gyratory crusher. The high grade primary crushed ore will be processed through a dry crushing and screening plant to produce high grade lump and high grade fine product.

Seven double-deck banana screens will provide the required production throughput and achieve the required product specifications, which will divide the ore into three streams: lump product, fines product and oversize material.

Oversize material will be conveyed to the secondary crusher surge bin. The secondary crusher surge bin will incorporate two outlet hoppers, isolation gates and belt feeders, each providing feed to a cone secondary crusher.

The fines and lump products from the process plant will be conveyed to their respective fines and lump stockpiles. Representative samples of each ore stream are taken at six minute increments and sub-sampled prior to conveying directly to a fully automated laboratory cell. The laboratory cell will provide the metallurgical and analytical / chemical assays for the process. The laboratory will also manually process the mine and exploration samples with laboratory rejects conveyed back to the lump stockyard feed conveyor.

Final product will be conveyed and stacked separately onto lump and fine product stockpiles for later reclaiming by a bucket wheel reclaimer to a train load facility.

The processing plant is serviced by air, water, and dust suppression and collection systems.

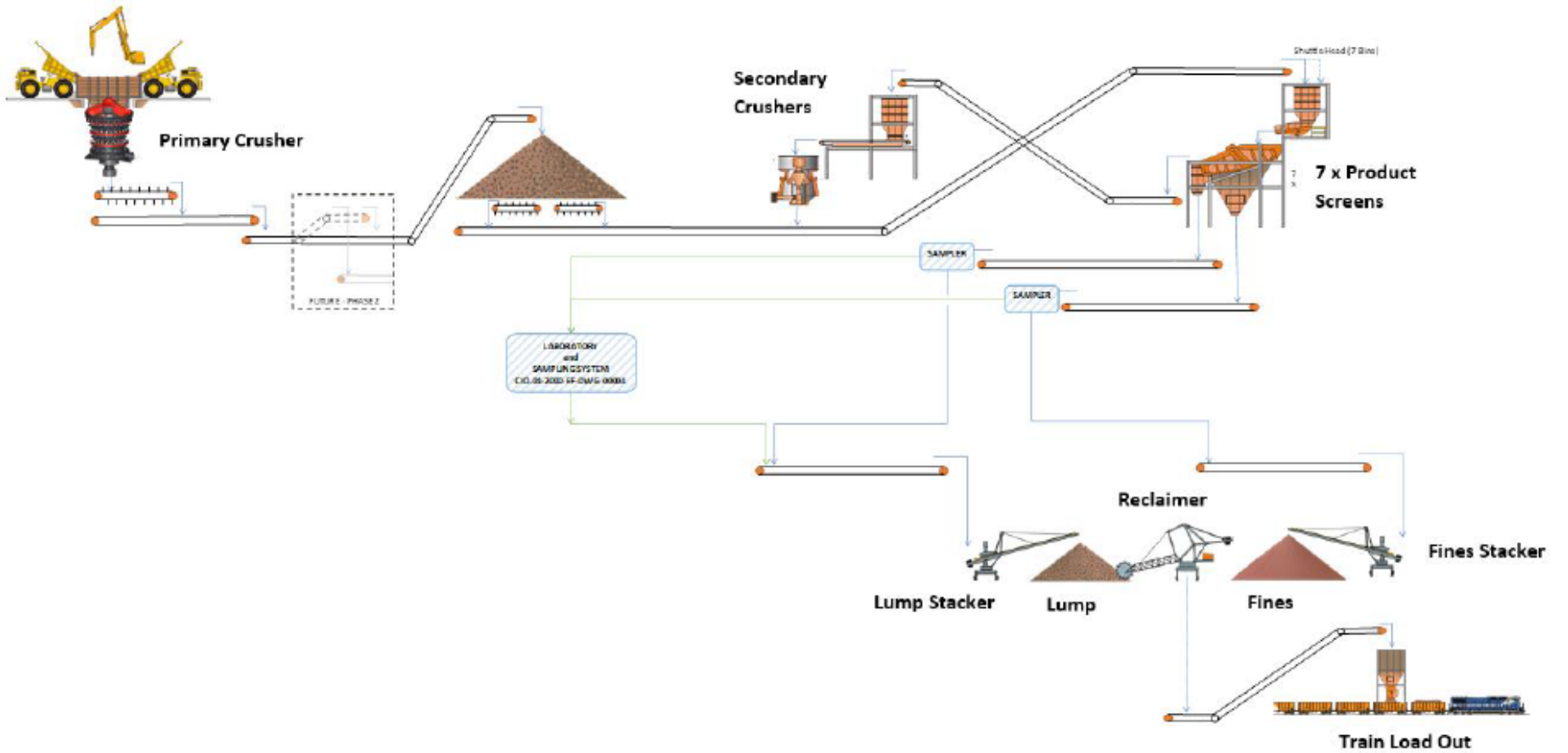


Figure 3 Koodaideri processing plant flow sheet

3.1.2 Mobile crushing and screening plant

The processing plant construction earthworks requires crushing/screening of material sourced from borrow pits. Borrow areas have been identified within the project tenements (AML70252 & L47/701) to provide suitable quantities of material for construction earthworks.

The borrow material will be processed through a mobile crushing and/or a mobile screening plant located within the premises boundary. Once borrow material put through the mobile plant is exhausted, the plant will be transported to the next cleared borrow pit area within the premises. This process will continue as required throughout the duration of construction.

The mobile crushing plant works by placing material into the feed hopper via an excavator or front end loader. Product material is stockpiled for transport to the relevant construction site.

3.2 Infrastructure

The Koodaideri Project new infrastructure and plant, relevant to prescribed premises categories 5 and 12 activities, are detailed in Table 4.

Table 4: Koodaideri Project Category 5 and 12 infrastructure

	Infrastructure	Site Plan Reference (in attached Works Approval)
	Prescribed Activity Category 5	
Processing of ore by new facilities constructed within the premises boundary.		
1	Primary crusher apron, sized for up to 300 tonne class haul trucks	Schedule 1: Maps: Infrastructure layout
2	Dual truck tipping points and ROM dump hopper of 600 tonne live capacity and discharge surge bin of 600 tonne	Schedule 1: Maps: Infrastructure layout
3	Direct feed crushing facility complete with dump hopper, gyratory crusher, service crane, rock breaker and discharge apron feeder onto the overland conveyor	Schedule 1: Maps: Infrastructure layout
4	Conveyors feeding a coarse ore fixed stacker	Schedule 1: Maps: Infrastructure layout
5	Primary crushed ore stockpile with 25,000 tonne live storage and reclaim with two apron feeders	Schedule 1: Maps: Infrastructure layout
6	7-bay screening plant with shuttle fed, bins, feeders and screens	Schedule 1: Maps: Infrastructure layout
7	Two bay secondary crusher facility with bins, belt feeders and MP1250 type secondary crushers	Schedule 1: Maps: Infrastructure layout
8	Concrete hardstand constructed beneath the primary and secondary crushing plant and conveyor	Schedule 1: Maps: Infrastructure layout
9	Sample plants – cutters, conveyors and equipment for sampling lump and fines	Schedule 1: Maps: Infrastructure layout Site layout

	Infrastructure	Site Plan Reference (in attached Works Approval)
10	Dry screen feed conveyor, lump stacking conveyor and fines stacking conveyor	Schedule 1: Maps: Infrastructure layout
11	Stockyard with two slewing and luffing stackers and a rotary reclaimer	Schedule 1: Maps: Infrastructure layout
12	Volumetric train load out	Schedule 1: Maps: Infrastructure layout
	Prescribed Activity Category 12	
Crushing/screening of material sourced from borrow pits to support construction earthworks for the processing plant		
1	Terex Finlay J1480 Jaw Crusher	Schedule 1: Maps: Premises boundary map
2	Terex Finlay – Heavy Duty Screen 883	Schedule 1: Maps: Premises boundary map

3.3 Commissioning

3.3.1 Processing plant

The construction of the processing plant is expected to be completed by Quarter 4 2021. Once construction activities are completed commissioning activities will commence and are expected to be completed by Quarter 2 2023.

Commissioning of the processing plant will include the following six stages:

Stage 1: Construction verification – verify construction completion to design intent

Stage 2: Pre-commissioning – functional testing of energized equipment

Stage 3: No-load commissioning – dynamic testing of operating systems without process materials

Stage 4: Load commissioning – running the facilities with feedstock and incremental load tuning.

Stage 5: Care custody and control – operations and maintenance teams will seek to rectify any operating issues and aim to achieve stable performance from the new plant.

Stage 6: Performance verification – ramp up production rate and confirm achievement of designed through-put.

Stages 1 to 3 are expected to take up to 6 months and will occur under the works approval while a licence application from the applicant is being processed. Stages 4 to 6 are expected to take up to 12 months and will occur under the operational licence.

3.3.2 Mobile crushing and screening plant

Following mobilisation to site, commissioning of the mobile crushing and screening plants will involve plant set up to produce materials of the required size. Additionally, dust suppression sprays will be tested to ensure functionality. Commissioning of the mobile crushing and screening plants will be completed within 3 months.

3.4 Exclusions to the Premises

3.4.1 Fuel and chemical storage

The applicant will store hydrocarbons and chemicals at the premises. During construction, hydrocarbons stored will predominantly be diesel fuel, lubricants (new and used oil) and hydraulic fluids.

A total of four 110kL and six 55kL diesel storage tanks will be located at the premises during construction. An additional 110kL fuel tank and a 55kL back up tank will be located at the planned project airport within tenement L47/849. The total fuel storage at the site will be approximately 935kL

Minor chemical storage facilities containing a range of packaged chemicals in 50 litre containers and 220 litre drums will also be located at the premises.

As fuel and chemical storage at the site is not expected to meet or exceed the Category 73 bulk storage of chemicals threshold, this activity is excluded from the scope of this assessment.

The Applicant is referred to the requirements under the *Dangerous Goods Safety Act 2004* and associated regulations, along with the general provisions of the *Environmental Protection Act 1986* and *Environmental Protection (Unauthorised Discharges) Regulations 2004*.

4. Legislative context

Table 5 summarises approvals relevant to the assessment.

Table 5: Relevant approvals and tenure

Legislation	Number	Subsidiary	Approval
Part IV of the <i>Environmental Protection Act 1986</i> (WA)	Statement number: 999 Koodaideri Iron Ore Mine and Infrastructure Project	Mount Bruce Mining Pty Limited	Statement that a proposal may be implemented pursuant to section 45 of the <i>Environmental Protection Act 1986</i>
<i>Environment Protection and Biodiversity Conservation Act 1999</i>	Koodaideri Iron Ore Mine and Infrastructure Project, WA (EPBC 2012/6422)	Mount Bruce Mining Pty Limited	Approval of action under the <i>Environment Protection and Biodiversity Conservation Act 1999</i>

4.1 Part IV of the EP Act

4.1.1 Background

In May 2012 Hamersley Iron Pty Limited (subsidiary of the Rio Tinto Iron Ore Group) referred the proposal to construct and operate the Koodaideri open cut iron ore mine to the Environmental Protection Authority. The proposal included development and operation of associated infrastructure for the extraction, processing and transport of iron ore.

The Environmental Protection Authority (EPA) assessed the Public Environmental Review for the proposal, resulting in the EPA's report 1533, dated November 2014.

On 10 March 2015, the WA Minister for Environment approved the implementation of the proposal subject to implementation conditions and procedures as detailed in the Statement No: 999.

4.1.2 Ministerial Statement 999 and EPA report 1533

Section 44 of the *Environmental Protection Act 1986* requires the EPA to report to the Minister

for Environment on the outcome of its assessment of a proposal.

The EPA's report (no. 1533) identified the following key environmental factors relevant to the proposal required detailed evaluation in the report:

- a) Terrestrial fauna;
- b) Subterranean Fauna;
- c) Flora and vegetation;
- d) Hydrological processes and Inland Waters Environmental Quality;
- e) Human Health;
- f) Rehabilitation and Closure, and
- g) Offsets.

The EPA concluded that the proposal can be managed to meet the EPA's objectives provided there is satisfactory implementation by the proponent of the recommended conditions.

Ministerial Statement 999 details the implementation conditions and procedures. The EPA's report (no. 1533) details that matters addressed in the conditions include the following:

- (a) Ensuring that the proposal is implemented in a manner that maintains the Pilbara Leaf-nosed Bat colony which resides within the K75W adit/cave system (conditions 6 and 7);
- (b) Ensuring that troglofauna are protected by excluding mining and infrastructure placement within a portion of troglofauna habitat (condition 6);
- (c) Ensuring that mine construction and operational activities are carried out in a manner that minimises impacts to the Northern Quoll (condition 8);
- (d) Ensuring that mining and infrastructure is sited in a manner that avoids the Declared Rare Flora, *Hamersley Lepidium* (condition 9);
- (e) Ensuring that the proposal is implemented so that it does not affect the viability of the Priority 1, *Sauropus sp.* Koodaideri detritals (condition 10);
- (f) Ensuring that mining activities do not impact the hydrological regime or water quality of the Koodaideri Spring Gorge (condition 11);
- (g) Ensuring the proposal does not increase the spread of asbestos in the environment, resulting in adverse effects on public health (condition 12). *Note – this matter is outside the scope of this works approval assessment as it does not relate to activities within the premises boundary;*
- (h) Requiring the proponent close, decommission and rehabilitate the mine in an ecologically sustainable manner through the development and implementation of a Mine Closure Plan (condition 13); and
- (i) Requiring the proponent to contribute funds to a government established conservation offset fund to mitigate for significant residual impacts on vegetation in 'good to excellent' condition which contains habitat for the Northern Quoll and foraging habitat for the Pilbara Leaf-nosed Bat (condition 14).

4.2 Other relevant approvals

4.2.1 Federal Legislation

Environment Protection and Biodiversity Conservation Act 1999 (Cth)

The construction and operation of the Koodaideri Iron Ore Mine and Infrastructure Project was determined to be a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 9 July 2012, and was assessed under the bilateral agreement between the Commonwealth and Western Australian governments.

The proposed action was approved under the EPBC Act, subject to conditions, on 9 May 2015 (referral 2012/6422).

4.3 Contaminated sites

DWER's records indicate a portion of the eastern end of the premises (within AML70/252) is awaiting classification under the *Contaminated Sites Act 2003*.

4.4 Part V of the EP Act

4.4.1 Applicable regulations, standards and guidelines

The overarching legislative framework of this assessment is the EP Act and EP Regulations.

The guidance statements which inform this assessment are:

- *Guidance Statement: Regulatory Principles (July 2015)*
- *Guidance Statement: Setting Conditions (October 2015)*
- *Guidance Statement: Land Use Planning (February 2017)*
- *Guidance Statement: Licence Duration (August 2016)*
- *Guidance Statement: Decision Making (February 2017)*
- *Guidance Statement: Risk Assessments (February 2017)*
- *Guidance Statement: Environmental Siting (November 2016)*

4.4.2 Associated Licence history

Table 6 provides a summary of current instruments associated with the Koodaideri Project under Part V of the *Environmental Protection Act 1986*

Table 6: Associated licence history

Instrument	Issued	Nature and extent of licence or amendment
L8562/2011/1	15/3/2012	<p>Licence amendment</p> <p><u>Premises name and location:</u> Koodaideri Exploration Camp – AML70/252 (Mineral Lease S.A. 70/252).</p> <p><u>Prescribed Premises details:</u> Category 64 Class II putrescible landfill site – premises production/design capacity of 50 tonnes per year Category 85 sewage facility - premises production/design capacity of 46.5 cubic metres per day</p>
L8562/2011/1 - Amendment Notice 1	29/11/2018	<p>Licence amendment</p> <p><u>Premises name and location:</u> Koodaideri Exploration Camp – AML70/252 (Mineral Lease S.A. 70/252).</p> <p><u>Prescribed Premises details:</u> Amendment to Category 64 production/design capacity – increased to 2,000 tonnes per year Addition of Category 54 sewage facility – premises production/design capacity of 418.5 cubic metres per day Omission of Category 85.</p>

4.4.3 Clearing

Clearing for the Koodaideri Iron Ore Mine and Infrastructure Project is regulated under Ministerial Statement 999. In regard to the mine and associated infrastructure, Ministerial Statement 999 authorises the clearing of no more than 7,911 ha within a 19,188 ha Mine/Plant

Area Development Envelope.

5. Location and siting

5.1 Siting context

The premises are located in the Pilbara region, with the nearest towns being Wittenoom (~72kms to the north-west) and Newman (~106kms to the south-east).

The premises are located on the northern margins of the Hamersley Range, including the plains immediately north of the range.

Karijini National Park is located ~24kms west of the premises boundary.

The Fortescue Marsh ecosystem is located in the region – the nearest mapped boundary of the Fortescue Marsh is located ~7.6kms north-east of the premises boundary.

5.2 Residential and sensitive Premises

The distances to residential and sensitive receptors are detailed in Table 7.

Table 7: Receptors and distance from activity boundary

Sensitive Land Uses	Approximate distance from premises boundary
Town of Wittenoom	72kms north-west of the premises boundary
Aboriginal community - Youngaleena	51kms north-west of the premises boundary
Marillana station homestead	33kms from the eastern edge of the premises boundary
Karijini National Park boundary (recreational activities)	24kms west of the premises boundary

5.3 Specified ecosystems

Specified ecosystems are areas of high conservation value and special significance that may be impacted as a result of activities at, or Emissions and Discharges from the Premises. The distances to specified ecosystems are shown in Table 8.

Table 8 also identifies the distances to other relevant ecosystem values which do not fit the definition of a specified ecosystem.

The table has also been modified to align with the *Guidance Statement: Environmental Siting*.

Table 8: Environmental values

Specified ecosystems	Approximate location or distance from the Premises
RAMSAR sites – Fortescue Marshes site (draft proposed RAMSAR addition)	7kms north-east of the premises boundary
DIWA wetlands – Fortescue Marshes	7.6kms north-east of the premises boundary
DBCA Managed Lands & Waters – Unallocated Crown Land – Dept Interest, former leasehold (ex	Intersects with approximately 46% of the premises area

Marillana Station) proposed for conservation	
Priority Ecological Community (buffer area) – Fortescue Marsh Land System	2.8kms north-east of the premises boundary
Biological component	Approximate location or distance from the Premises
Threatened/priority fauna	
Pilbara leaf-nosed bat (<i>Rhinionictoris aurantia</i>) – Vulnerable	Established colony within the premises boundary
Northern Quoll (<i>Dasyurus hallucatus</i>) – Endangered	Within the premises boundary
Western pebble-mound mouse (<i>Pseudomys chapmani</i>) – Priority 4	Within the premises boundary
Ghost bat (<i>Macroderma gigas</i>) – Vulnerable	Within the premises boundary
Grey falcon (<i>Falco hypoleucos</i>) – Vulnerable	Within the premises boundary
Peregrine falcon (<i>Falco peregrinus</i>)	Within the premises boundary
Threatened/priority flora	
Priority flora - <i>Lepidium catapycnon</i>	Located in the north-western portion of the premises area
Other relevant ecosystem values	Approximate location or distance from the Premises
Native vegetation and fauna	Within the premises boundary
Unnamed ephemeral creeks	Within the premises boundary and downgradient of the premises boundary
Koodaideri spring	Located within the premises, 3kms south-east of the processing plant area

5.4 Climate

The regional climate is described as semi-arid: hot steppe (persistently dry) under the modified Köppen classification system (Stern et al. 2000). It is characterised by hot humid summers and relatively cooler, drier winters.

Summary climate data recorded at the Bureau of Meteorology Newman Weather Station (Number 7176), is provided in Figure 4.

The long-term mean annual rainfall is 322 mm, but is highly variable between years and over longer timescales (5th percentile 154.3 mm; 95th percentile 526 mm). The high variability in annual rainfall is largely a consequence of sporadic cyclone and thunderstorm activity. In most years, over 50 per cent of annual rainfall is received in the December to March period. Cyclonic rainfall can cause transient high volume runoff events.

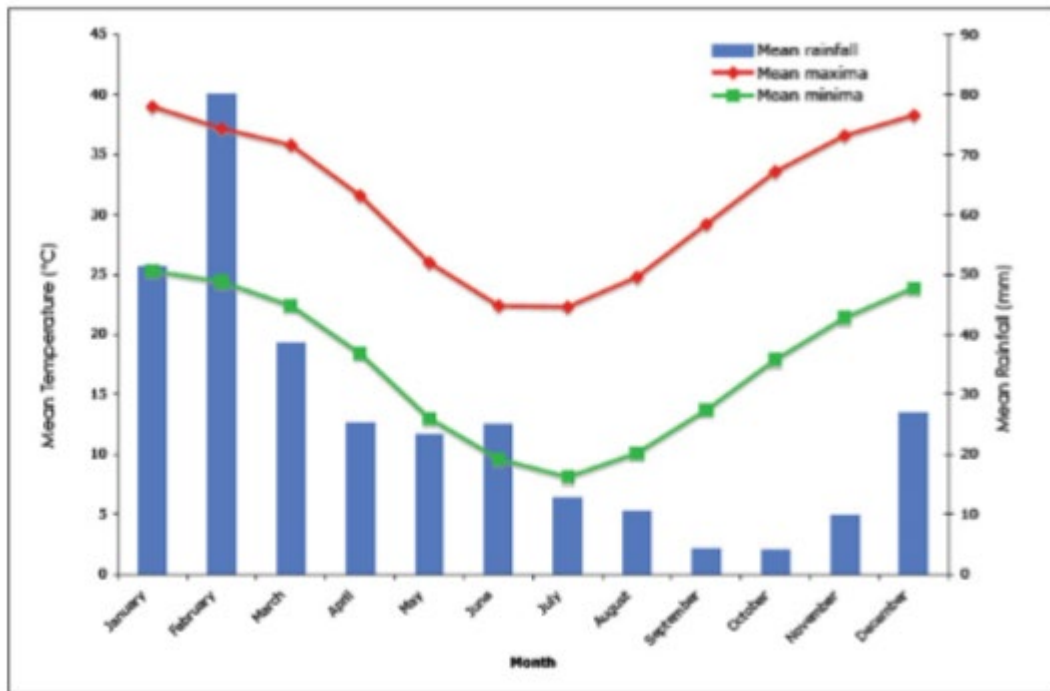


Figure 4: Mean monthly rainfall and maximum and minimum temperatures recorded at the Newman Weather Station; source: Bureau of Meteorology (2012). Rainfall records 1971-2012; temperature records 1996-2012

Climate information sourced from Koodaideri Iron Ore Mine and Infrastructure Project, Public Environmental Review - Rio Tinto, July 2013.

5.5 Topography

The premises are located on the northern margins of the Hamersley Range, including the plains immediately north of the range. The Hamersley Range escarpment is aligned in a west-north-west to east-south-east direction and rises to approximately 120m above the plain in the vicinity of the premises site. The ground level falls towards the Fortescue River basin to the north east. The portion of the premises on the Hamersley Range is rugged and rocky and is characterised by gullies that drain into ephemeral creeks on the plains below.

5.6 Surface water

The premises are located within the Upper Fortescue River catchment, which typically consists of ephemeral creek systems.

The Koodaideri deposits are intercepted by deeply incised gullies that are characteristic of the Hamersley Ranges. Surface water runoff in the mine processing area commences via weakly defined tributaries in shallow bedrock/gravelly soils that then drain into the thicker alluvium/colluvium sequences in the incised valley systems. Creek drainage systems gradually multiply and become shallower due to the flat relief as they continue northwards towards the Fortescue Marsh.

Surface water drainage occurs within such defined water courses during, and immediately following, large extended duration or high intensity rainfall events. Such events generally occur between December and July (primarily between December and March).

High surface water infiltration is expected to occur within the alluvial creek beds on the lower slopes of the Hamersley Range and adjacent plains.

DWER's GIS indicates there are no permanent pools within ephemeral creeks downgradient of the processing facility.

Fortescue Marsh is located approximately 7.6kms north-east of the premises boundary. Fortescue Marsh is a regionally large ephemeral wetland, and is a nominated DIWA wetland. The Fortescue Marsh site is a proposed Ramsar Convention addition.

Koodaideri Spring Gorge is located approximately 3kms south-east of the processing facility area. The EPA report (no.1533) indicates Koodaideri Spring Gorge consists of near permanent free flowing fresh water, supporting high aquatic invertebrate species richness relative to most Pilbara creeks. Koodaideri Spring Gorge's environmental value extends to its association with vegetation and terrestrial fauna. The largest contributor of water to the unnamed creek (at Koodaideri Spring Gorge) is groundwater fed pools. Secondary contributors to the creek include the groundwater fed Koodaideri Spring and surface water flow which occurs following high and extended rainfall events that are infrequent in the region. Surface water at the processing facility area (following rain events) is expected to flow northwards and therefore away from Koodaideri Spring Gorge.

5.7 Groundwater and water sources

Depth to groundwater across the processing facility area is around 60 metres below ground level as indicated in Figure 5. Groundwater at the premises is fresh with electrical conductivity around 400 $\mu\text{S}/\text{cm}$. Groundwater at the premises is generally expected to flow northwards.

The applicant has advised that there are no operational stock water supply bores within a 5km radius of the processing facility area. In addition, DWER notes there are no pastoral property boundaries that transect with the premises. The nearest pastoral properties possibly down-hydraulic gradient of the premises are Marillana Station ~4.5km to the east of the premises boundary and Mulga Downs station ~11km north of the premises boundary.

Potential public water supply bores are expected to be significant distances away from the premises, considering Karijini National Park, Youngaleena community and Marillana Station Homestead are located 24kms or more away from the premises. In addition, the nearest Public Drinking Water Source Area (PDWSA) is located approximately 79 kms south-west of the premises.

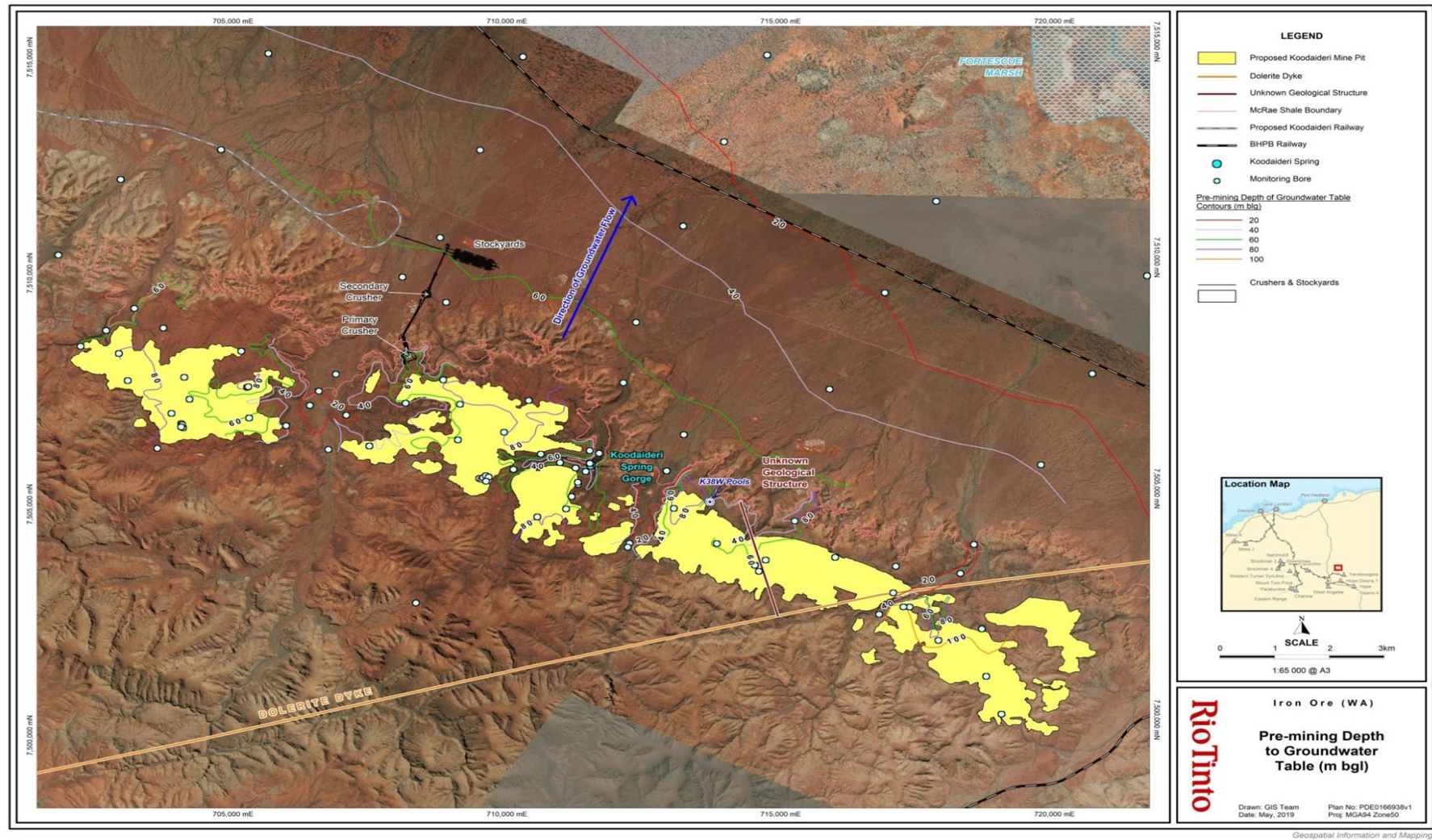


Figure 5: Pre-mining depth to groundwater in metres below ground level

6. Consultation

Advertising of the application was completed on the DWER website and the West Australian on 18 March 2019 for a period of 21 days. No submissions were received.

Comment on the application was sought from the following state government departments:

- Department of Jobs, Tourism, Science and Innovation (DJTSI)
- Department of Mines, Industry Regulation and Safety (DMIRS)
- Department of Biodiversity, Conservation and Attractions (DBCA)

A submission was received from the DBCA, advising – *“DBCA has no comments to provide on the works approval. However, if the Department of Water and Environmental Regulation identifies matters affecting threatened species or DBCA managed lands that requires further discussion please do not hesitate to get in contact”*.

7. Risk assessment

7.1 Determination of emission, pathway and receptor

In undertaking its risk assessment, DWER will identify all potential emissions pathways and potential receptors to establish whether there is a Risk Event which requires detailed risk assessment.

To establish a Risk Event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission. Where there is no actual or likely pathway and/or no receptor, the emission will be screened out and will not be considered as a Risk Event. In addition, where an emission has an actual or likely pathway and a receptor which may be adversely impacted, but that emission is regulated through other mechanisms such as Part IV of the EP Act, that emission will not be risk assessed further and will be screened out through Table 9 and Table 10 below.

The identification of the sources, pathways and receptors to determine Risk Events are set out in Table 9 and Table 10 below.

Table 9. Identification of emissions, pathway and receptors during construction

Risk Events					Continue to detailed risk assessment	Reasoning	
Sources/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts			
Construction, mobilisation and positioning of infrastructure	Category 5: Construction of Iron Ore Processing facility	Noise	Town of Wittenoom Aboriginal community - Youngaleena Marillana station homestead	Air/wind dispersion	Amenity impacts	No	It is considered that noise from construction activities will not impact the identified receptors given the separation distances (33kms or greater).
	Category 12: Installation of mobile crushing & screening plants	Dust	Town of Wittenoom Aboriginal community - Youngaleena Marillana station homestead Karijini National Park boundary (recreational users)	Air/wind dispersion	Amenity impacts	No	It is considered that dust from construction activities will not impact the identified receptors given the separation distances (24kms or greater).

Risk Events					Continue to detailed risk assessment	Reasoning
Sources/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
	Noise Dust Light	Pilbara leaf-nosed bat	Air/wind dispersion	Adverse impact on habitat conditions; Noise/dust could affect ultrasonic echolocation and vision capabilities.	No	Impacts to Pilbara leaf-nosed bat assessed and regulated under Part IV of the EP Act – i.e. Ministerial Statement 999 conditions 6 and 7.
	Noise Light	Northern Quoll	Air/wind dispersion	Adverse impact on habitat conditions	No	Impacts to Northern Quoll assessed and regulated under Part IV of the EP Act – i.e. Ministerial Statement 999, condition 8.
	Noise Dust Light	Ghost bat Western Pebble mound mouse Grey & Peregrine falcon Other fauna	Air/wind dispersion	Adverse impact on habitat conditions.	No	Impacts to fauna assessed and regulated under Part IV of the EP Act – i.e. Ministerial Statement 999 and EPA Report 1533.
	Dust	Declared Rare Flora - <i>Lepidium catapycnon</i> ; Other native vegetation within the premises	Air/wind dispersion	Potential suppression of photosynthetic and respiratory function	No	Impacts to <i>Lepidium catapycnon</i> assessed and regulated under Part IV of the EP Act – Ministerial Statement 999 Condition 9. In addition, dust emissions from construction of the processing facility and installation of the mobile crusher/screen are unlikely to have an adverse impact on native vegetation on site and off site.
	Sediments and hydrocarbons in stormwater	Koodaideri Spring Gorge	Via overland flow following storm events	Sedimentation; Contamination of surface water /sediments	No	Impacts to Koodaideri Spring Gorge assessed and regulated under Part IV of the EPA Act – Ministerial Statement 999, Condition 11.

Risk Events					Continue to detailed risk assessment	Reasoning
Sources/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
	Soil/sediment in stormwater run off	Ephemeral creeks; DIWA wetland – Fortescue Marsh	Via overland flow following storm events Via creeks (to Fortescue Marsh) following storm events	Increase in sediment loads discharged from the catchment may impact the morphology and hydrology of the creeks and downstream wetland.	No	<p>Earthworks for construction of the processing facility may generate landscape conditions that are relatively more conducive to erosion (compared to pre-construction conditions). In turn, high/sustained rainfall events in the region can cause surface water runoff events which may carry gravels, soil and sediment to downstream creeks.</p> <p>However, as such events are infrequent in the region and construction will occur over a 2 year period, a significant long-term increase in material flow from the works area is not expected. In addition, as the morphology and hydrology of ephemeral creeks in the region is expected to be dynamic, no significant impact to downstream creek systems is expected.</p> <p>This potential risk event has also been screened out from further assessment as DWER's GIS indicates there are no permanent creek pools in the vicinity or downstream of the processing facility.</p> <p>Significant sedimentation impacts are also not expected at Fortescue Marsh which is located approximately 9kms downstream of the processing facility.</p>
	Hydrocarbon (fuel and oil) spills from construction machinery	Soils	Direct discharge	Soil contamination	Yes	Refer to Section 9.4
		Groundwater	Infiltration from soil to groundwater	Groundwater contamination	Yes	Refer to Section 9.4

Risk Events					Continue to detailed risk assessment	Reasoning
Sources/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
		Stock water supply bores	Migration from soil, groundwater and through to stock bores	Contamination of stock water supply	No	<p>Hydrocarbons from potential fuel/oil spills (during the construction of the processing facility) are not expected to migrate at significant levels through to stock bores.</p> <p>Depth to groundwater at the processing facility is approximately 60m below ground level and there are no known stock water supply bores within 5kms of the processing facility. In addition, the nearest pastoral property down-hydraulic gradient of the processing facility is located 11km to the north (Mulga Downs Station).</p>
	Hydrocarbons in stormwater run off	Ephemeral creeks DIWA wetland – Fortescue Marsh	Via overland flow from the processing facility construction area following high rainfall events	Contamination of sediments within ephemeral creeks & Fortescue Marsh.	No	<p>Fuel and oil spills from machinery used in the construction of the processing facility are generally expected to be minor, with major spills in this context considered to be rare. Heavy oils are expected to be absorbed by soils.</p> <p>High rainfall events which may generate flushing of some fuels/oils at the surface are infrequent. Additionally, the timeframe for construction, during which such flush events may occur, is relatively shorter term (compared to the operational phase).</p> <p>In consideration of the above context and factors the discharge of hydrocarbons to ephemeral creeks during the construction phase is not considered to require further assessment.</p>

Table 10: Identification of emissions, pathway and receptors during commissioning and operation

Sources/Activities		Risk Events				Continue to detailed risk assessment	Reasoning
		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
Commissioning and operation	<p>Category 5: Crushing and screening of ore; Movement of ore through conveyors, and at stockyards and train load outs</p> <p>Category 12: Crushing and screening of material from borrow pits for earthworks</p>	Noise	Town of Wittenoom Aboriginal community - Youngaleena Marillana station homestead	Air/wind dispersion	Amenity impacts	No	It is considered that noise from commissioning and operation activities will not impact the identified receptors given the separation distances (33kms of greater).
		Dust	Town of Wittenoom Aboriginal community - Youngaleena Marillana station homestead Karijini National Park boundary (recreational users)	Air/wind dispersion	Amenity impacts	No	It is considered that dust emitted through commissioning/operation of the processing facility will not impact the identified receptors given the separation distances (24kms or greater).
		Noise Dust Light	Pilbara leaf-nosed bat	Air/wind dispersion	Adverse impact on habitat conditions; Noise/dust could affect ultrasonic echolocation and vision capabilities.	No	Impacts to Pilbara leaf-nosed bat assessed and regulated under Part IV of the EP Act – i.e. Ministerial Statement 999 conditions 6 and 7.
		Noise Light	Northern Quoll	Air/wind dispersion	Adverse impact on habitat conditions	No	Impacts to Northern Quoll assessed and regulated under Part IV of the EP Act – i.e. Ministerial Statement 999 condition 8.
		Noise Dust Light	Ghost bat Western Pebble mound mouse Grey & Peregrine falcon Other fauna	Air/wind dispersion	Adverse impact on habitat conditions.	No	Impacts to fauna assessed and regulated under Part IV of the EP Act – i.e. Ministerial Statement 999 and EPA Report 1533.

Risk Events					Continue to detailed risk assessment	Reasoning
Sources/Activities		Potential emissions	Potential receptors	Potential pathway		
		Dust	Declared Rare Flora - <i>Lepidium catapycnon</i> ; Other native vegetation within the premises	Air/wind dispersion	Potential suppression of photosynthetic and respiratory function	No Impacts to <i>Lepidium catapycnon</i> assessed and regulated under Part IV of the EP Act – Ministerial Statement 999 Condition 9. In addition, dust emissions from the processing facility and mobile crusher and screen are unlikely to have an adverse impact on native vegetation on site and off site.
		Sediments and hydrocarbons in stormwater	Koodaideri Spring Gorge	Via overland flow following storm events	Sedimentation; Contamination of surface water /sediments	No Impacts to Koodaideri Spring Gorge assessed and regulated under Part IV of the EPA Act – Ministerial Statement 999, Condition 11.

Risk Events					Continue to detailed risk assessment	Reasoning	
Sources/Activities		Potential emissions	Potential receptors	Potential pathway			Potential adverse impacts
		Soil/sediment in stormwater	Ephemeral creeks DIWA wetland – Fortescue Marsh	Via overland flow following storm events Via creeks (to Fortescue Marsh) following storm events	Increase in sediment loads discharged from the catchment may impact the morphology and hydrology of the creeks and downstream wetland.	No	<p>During ongoing operation of the processing facility, high/sustained rainfall events and subsequent surface water flow may mobilise materials (gravel/soil/sediment) from the processing facility area, in particular the stockyard area. However, such material discharge from the processing facility area (and mobile crushing/screening operations) is not expected to be significant compared to natural pre-development events. Additionally, ephemeral creeks in the plain, downgradient of the Hamersley Range and the premises, are naturally expected to convey and capture gravels and sediments from high rainfall events.</p> <p>Therefore, no adverse impact to downstream ephemeral creeks and Fortescue Marsh is expected.</p> <p>This potential risk event has also been screened out from further assessment as DWER's GIS indicates there are no permanent creek pools in the vicinity or downstream of the processing facility. Additionally, Fortescue Marsh is located approximately 9kms downstream of the processing facility.</p>
		Hydrocarbon (fuel and oil) spills from machinery	Soils	Direct discharge	Soil contamination	Yes	Refer to Section 9.4

Risk Events					Continue to detailed risk assessment	Reasoning	
Sources/Activities		Potential emissions	Potential receptors	Potential pathway			Potential adverse impacts
			Groundwater	Infiltration from soil to groundwater	Groundwater contamination	Yes	Refer to Section 9.4
			Stock water supply bores	Migration from soil, groundwater and through to stock bores	Contamination of stock water supply	No	<p>Hydrocarbons from potential fuel/oil spills (during operation of the mobile crusher/screen and processing facility) are not expected to migrate at significant levels through to stock bores. Factors considered in this assessment are summarised below:</p> <ul style="list-style-type: none"> - Fuel/oil spills from mobile crushing/screening operations are expected to be minor incidents; - Depth to groundwater at the processing facility is approximately 60m below ground level; - There are no known stock water supply bores within 5kms of the processing facility. - The considerable distance to pastoral property boundaries – i.e. Marillana, Juna Downs and Mulga Downs stations are located ~4.5km, 7km and 11km away from the premises respectively.

Risk Events					Continue to detailed risk assessment	Reasoning	
Sources/Activities		Potential emissions	Potential receptors	Potential pathway			Potential adverse impacts
		Hydrocarbons in stormwater	Ephemeral creeks DIWA wetland – Fortescue Marsh	Via overland flow from the processing facility area following high rainfall events	Contamination of sediments within ephemeral creeks & Fortescue Marsh.	Yes	Refer to section 9.5

7.2 Consequence and likelihood of risk events

A risk rating will be determined for risk events in accordance with the risk rating matrix set out in Table 11 below.

Table 11: Risk rating matrix

Likelihood	Consequence				
	Slight	Minor	Moderate	Major	Severe
Almost certain	Medium	High	High	Extreme	Extreme
Likely	Medium	Medium	High	High	Extreme
Possible	Low	Medium	Medium	High	Extreme
Unlikely	Low	Medium	Medium	Medium	High
Rare	Low	Low	Medium	Medium	High

DWER will undertake an assessment of the consequence and likelihood of the Risk Event in accordance with Table 12 below.

Table 12: Risk criteria table

Likelihood		Consequence		
The following criteria has been used to determine the likelihood of the Risk Event occurring.		The following criteria has been used to determine the consequences of a Risk Event occurring:		
		Environment	Public health* and amenity (such as air and water quality, noise, and odour)	
Almost Certain	The risk event is expected to occur in most circumstances	Severe	<ul style="list-style-type: none"> onsite impacts: catastrophic offsite impacts local scale: high level or above offsite impacts wider scale: mid-level or above Mid to long-term or permanent impact to an area of high conservation value or special significance[^] Specific Consequence Criteria (for environment) are significantly exceeded 	<ul style="list-style-type: none"> Loss of life Adverse health effects: high level or ongoing medical treatment Specific Consequence Criteria (for public health) are significantly exceeded Local scale impacts: permanent loss of amenity
Likely	The risk event will probably occur in most circumstances	Major	<ul style="list-style-type: none"> onsite impacts: high level offsite impacts local scale: mid-level offsite impacts wider scale: low level Short-term impact to an area of high conservation value or special significance[^] Specific Consequence Criteria (for environment) are exceeded 	<ul style="list-style-type: none"> Adverse health effects: mid-level or frequent medical treatment Specific Consequence Criteria (for public health) are exceeded Local scale impacts: high level impact to amenity
Possible	The risk event could occur at some time	Moderate	<ul style="list-style-type: none"> onsite impacts: mid-level offsite impacts local scale: low level offsite impacts wider scale: minimal Specific Consequence Criteria (for environment) are at risk of not being met 	<ul style="list-style-type: none"> Adverse health effects: low level or occasional medical treatment Specific Consequence Criteria (for public health) are at risk of not being met Local scale impacts: mid-level impact to amenity
Unlikely	The risk event will probably not occur in most circumstances	Minor	<ul style="list-style-type: none"> onsite impacts: low level offsite impacts local scale: minimal offsite impacts wider scale: not detectable Specific Consequence Criteria (for environment) likely to be met 	<ul style="list-style-type: none"> Specific Consequence Criteria (for public health) are likely to be met Local scale impacts: low level impact to amenity
Rare	The risk event may only occur in exceptional circumstances	Slight	<ul style="list-style-type: none"> onsite impact: minimal Specific Consequence Criteria (for environment) met 	<ul style="list-style-type: none"> Local scale: minimal to amenity Specific Consequence Criteria (for public health) met

[^] Determination of areas of high conservation value or special significance should be informed by the *Guidance Statement: Environmental Siting*.

* In applying public health criteria, DWER may have regard to the Department of Health's *Health Risk Assessment (Scoping) Guidelines*.

“onsite” means within the Prescribed Premises boundary.

7.3 Acceptability and treatment of Risk Event

DWER will determine the acceptability and treatment of Risk Events in accordance with the Risk treatment Table 13 below:

Table 13: Risk treatment table

Rating of Risk Event	Acceptability	Treatment
Extreme	Unacceptable.	Risk Event will not be tolerated. DWER may refuse application.
High	May be acceptable. Subject to multiple regulatory controls.	Risk Event may be tolerated and may be subject to multiple regulatory controls. This may include both outcome-based and management conditions.
Medium	Acceptable, generally subject to regulatory controls.	Risk Event is tolerable and is likely to be subject to some regulatory controls. A preference for outcome-based conditions where practical and appropriate will be applied.
Low	Acceptable, generally not controlled.	Risk Event is acceptable and will generally not be subject to regulatory controls.

7.4 Risk Assessment – fuel/oil spills during construction works and operations

7.4.1 Description of risk event

Minor fuel/oil emissions and spills from heavy machinery are expected during the course of construction works. Fuel and oil products may also be emitted/spilled during operation of mobile crushing/screening plant and through the course of long term operation of the processing facility. Major spills from these activities may also occur, however they are expected to be rare.

Such fuel and oil emissions may cause the build-up of hydrocarbons in soils at the premises and subsequent soil contamination.

Hydrocarbons may also migrate to groundwater at the premises.

7.4.2 Description of potential adverse impact from the emission

Hydrocarbon emissions and spills from the abovementioned activities may contaminate soils at, and below, the surface within the premises.

Hydrocarbons may also migrate through to groundwater, in particular following a major spill event. However, this is unlikely at the processing facility where depth to groundwater is 60 metres below ground level.

7.4.3 Applicant controls

This assessment has reviewed the controls set out in Table 14 below.

Table 14: Applicant’s proposed controls for fuel/oil spills during construction works and operations

Site infrastructure	Description
Bunded concrete hardstand (or bunded lined earthen pad) at vehicle refuelling points.	Vehicle refuelling will occur at the specified refuelling locations. Refuelling points will drain to a collection point or sump.
Oily water collection pumps and separators	At the vehicle refuelling points, pumps with floating suction will automatically transfer the sump contents to an oily water collection tank. Oily water will then be treated by the oily water separation facility. Waste oil collected by the oily water separator will be stored in a holding tank for collection by a service truck. Treated water will be directed to an evaporation pond or holding tank.
Concrete hardstand	Beneath primary and secondary crushing plant and conveyor transfer points
Concrete sumps	Installed to collect wash down water from conveyors

7.4.4 Consequence

Fuel/oil spills during construction works and operations have the potential to contaminate soils within the premises. Additionally, hydrocarbons may migrate to groundwater at the premises and off site at a local scale. The Delegated Officer therefore considers the overall consequence of the risk event to be **Moderate**.

7.4.5 Likelihood of Risk Event

It is considered that the risk event could occur at some time over the course of construction and operations. The Delegated Officer therefore considers the likelihood of the risk event occurring to be **Possible**.

7.4.6 Overall rating

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 14) and determined that the overall rating for the risk of the risk event is **Medium risk**.

7.5 Risk Assessment – long term discharge of hydrocarbons from the processing facility area (following high rainfall events)

7.5.1 Description of risk event

Fuel/oil emissions from mobile and fixed plant in the processing facility and stockyard area could lead to a buildup of hydrocarbons in surface soils across the 30+ year operational phase. Surface water runoff at the site is expected to occur following high or sustained rainfall events which, although infrequent, may occur during December to March. These events could potentially mobilise and discharge hydrocarbons to ephemeral creeks within the premises and off-site. Continued mobilisation and discharge events over the timeframe of operations may result in elevated levels of hydrocarbons in the sediments of downstream ephemeral creeks.

7.5.2 Description of potential adverse impact from the emission

Elevated levels of hydrocarbons in ephemeral creek sediments may have an adverse impact on the health of native riparian vegetation. Fauna within the creek sediments and flows may also be subjected to potentially harmful levels of hydrocarbons.

7.5.3 Applicant Holder controls

This assessment has reviewed the controls set out in Table 15 below.

Table 15: Applicant's proposed controls related to long term discharge of hydrocarbons from the processing facility area (following high rainfall events)

Site infrastructure	Description	Operation details	Reference to issued works approval plan
Site stormwater diversion levees and drains	Constructed to prevent ingress of stormwater runoff into the processing facility areas.	N/A	Site plans – general arrangement
Concrete sumps	Installed to collect wash down water from conveyors	N/A	N/A
Drive in sumps and silt traps	Installed across the crusher/conveyor circuit to collect wash down water and sediment from the processing plant	Accumulated sediment will be removed as required.	Site plans – general arrangement

Site infrastructure	Description	Operation details	Reference to issued works approval plan
Stormwater drain system and sedimentation ponds	Stormwater at the processing facility will be collected by a system of open drains that will convey stormwater to earthen sedimentation ponds. The sedimentation ponds are designed to treat a peak 1:10 year rainfall event.	Accumulated sediment will be removed as required to maintain capacity	Site plans – general arrangement

7.5.4 Consequence

Stormwater discharge from the processing facility areas, over the long term, has the potential to generate elevated levels of hydrocarbons in downstream ephemeral creeks. It is estimated this may result in low to mid-level impacts at a local scale on and off-site. The Delegated Officer therefore considers the overall consequence of the risk event to be **Moderate**.

7.5.5 Likelihood of Risk Event

It is considered that the risk event will probably not occur in most circumstances over the term of operations. The Delegated Officer therefore considers the likelihood of the risk event occurring to be **Unlikely**.

7.5.6 Overall rating

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 14) and determined that the overall rating for the risk of the risk event is **Medium risk**.

7.6 Summary of acceptability and treatment of Risk Events

A summary of the risk assessment and the acceptability or unacceptability of the risk events set out above, with the appropriate treatment and control, are set out in Table 16 below. Controls are described further in section 11.

Table 16: Risk assessment summary

	Description of Risk Event			Applicant controls	Risk rating	Acceptability with controls (conditions on instrument)
	Emission	Source	Pathway/ Receptor (Impact)			
1	Hydrocarbons (fuel and oil products)	Emitted/ spilled through operation of heavy machinery and the processing plant	Direct discharge to soils within the premises Infiltration from soils to groundwater	<ol style="list-style-type: none"> 1. Bunded concrete hardstand (or bunded lined earthen pad) at vehicle refuelling points. 2. Oily water collection pumps and separators 3. Concrete hardstand beneath processing facility (crushing plant and conveyor transfer points) 4. Concrete sumps to collect wash down water from conveyors 	<p>Moderate consequence</p> <p>Possible likelihood</p> <p>Medium risk</p>	Acceptable subject to regulatory controls
2	Hydrocarbons (fuel and oil products)	Surface soils at the processing facility and stockyard area.	Mobilised following high rainfall events and discharged to ephemeral creeks on and off site.	<ol style="list-style-type: none"> 1. Stormwater diversion levees and drains 2. Concrete sumps to collect wash down water from conveyors 3. Drive in sumps and silt traps 4. Stormwater drain system and sedimentation 	<p>Moderate consequence</p> <p>Unlikely likelihood</p> <p>Medium risk</p>	Acceptable subject to regulatory controls

	Description of Risk Event			Applicant controls	Risk rating	Acceptability with controls (conditions on instrument)
	Emission	Source	Pathway/ Receptor (Impact)			
				ponds		

8. Regulatory controls

The regulatory controls are outlined in this section. DWER will determine controls having regard to the adequacy of controls proposed by the Applicant. The conditions of the Works Approval and Licence will be set to give effect to the determined regulatory controls.

8.1 Works Approval controls

8.1.1 Processing infrastructure

The processing facility components are required to be constructed in accordance with the application documents, particularly in regard to:

- Siting
- Nameplate capacity
- Concrete slabs and sumps to receive/collect wash down water
- Drive in sumps and silt traps
- Dust emission controls

The provision of multiple dust emission control measures at the processing facility is noted under the Works Approval to complement the management of potential impacts related to dust emissions, required under *Part IV of the Environmental Protection Act 1986* - Ministerial Statement number 999.

Commissioning of the processing facility is permitted under the Works Approval for a limited period, and subject to conditions, whilst an application for the associated licence is being assessed.

8.1.2 Stormwater infrastructure

Infrastructure to mitigate the risk of hydrocarbon discharges from the processing facility areas (following high rainfall events) are required to be constructed in accordance with the application documents. Infrastructure will include:

- Stormwater diversion levees and drains
- Processing facility stormwater drainage system and sedimentation ponds

8.1.3 Spill infrastructure

Vehicle refueling points are required to be bunded lined pads or concrete hardstand points, and incorporate oily water collection pumps and separators.

8.1.4 Mobile crushing and screening plants

A mobile crusher and mobile screen plant as specified in the application documents is authorised to be installed at the premises. Operation of the mobile crusher and mobile screen is permitted under the Works Approval for a limited period, and subject to conditions, whilst an application for the associated licence is being assessed.

8.1.5 Reporting

A report detailing compliance with the construction requirements for the processing facility, stormwater and spill infrastructure, and installation requirements for the mobile crusher and screen, must be submitted prior to commissioning and operation.

8.2 Licence controls (by amendment to existing licence L8562/2011/1)

It is intended that the operation of the Koodaideri iron ore processing facility and mobile crusher and screen will be licensed through amendment/s to Licence L8562/2011/1. Subject to compliance with the conditions of the works approval, it is intended that the Licence will be updated to include the following controls/conditions.

8.2.1 Location of premises and prescribed premises categories

The prescribed premises boundary is to be updated.

The prescribed premises category descriptions are to be updated to include Category 12 and Category 5, along with a description of approved production/design capacities for the respective categories.

8.2.2 Reporting

Condition 18 requiring the submission of an Annual Environmental Report is to be updated to require the reporting of any major fuel/oil spill incidents.

9. Determination of Works Approval conditions

The conditions in the issued Works Approval in Attachment 1 have been determined in accordance with the *Guidance Statement: Setting Conditions*.

The *Guidance Statement: Licence Duration* has been applied and the issued works approval expires in 3 years from date of issue.

Table 17 provides a summary of the conditions to be applied to this works approval.

Table 17: Summary of conditions to be applied

Condition Ref	Grounds
Infrastructure and Equipment - Conditions 1 to 4	These conditions are valid, risk-based and contain appropriate controls.
Time limited operational phase - Conditions 5 and 6.	These conditions are valid, risk-based and contain appropriate controls.
Emissions – Condition 7	This condition is valid, risk-based and consistent with the EP Act.
Record keeping – Condition 8 and 9	These conditions are valid and are necessary administration and reporting requirements to ensure compliance

DWER notes that it may review the appropriateness and adequacy of controls at any time and that, following a review, DWER may initiate amendments to the works approval under the EP Act.

10. Applicant's comments

The Applicant was provided with the draft Decision Report and draft Works Approval on 17 May 2019. The applicant provided comments on 29 May 2019 which are summarised, along with DWER's response, in Appendix 2.

11. Conclusion

This assessment of the risks of activities on the Premises has been undertaken with due consideration of a number of factors, including the documents and policies specified in this Decision Report (summarised in Appendix 1).

Based on this assessment, it has been determined that the Issued Works Approval will be granted subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

Alana Kidd

Manager Resource Industries

Delegated Officer

under section 20 of the *Environmental Protection Act 1986*

Appendix 1: Key documents

	Document title	In text ref	Availability
1.	Application for works approval including: <ul style="list-style-type: none"> - Application form, signed 21 December 2018 - Supplementary document, dated 20 December 2018 	Application	DWER records number – A1752411
2.	Application for works approval – supplementary information: Email correspondence, dated 21 February 2019	Application	DWER records number – A1767585
3.	Application for works approval – supplementary information: Copy of Miscellaneous Licence for railway and other purposes (Miscellaneous Licence 7SA), dated 7 March 2019	Application	DWER records number – A1774040
4.	Application for works approval – supplementary information: Email correspondence, dated 12 April 2019	Application	DWER records number - A1782158
5.	Ministerial statement number 999 - Statement that a proposal may be implemented (<i>Environmental Protection Act 1986</i>) – Koodaideri Iron Ore and Infrastructure Project, dated 10 March 2015	Ministerial statement	http://www.epa.wa.gov.au/proposals/koodaideri-iron-ore-mine-and-infrastructure-project
6.	Report and recommendations of the Environmental Protection Authority – Koodaideri Iron Ore and Infrastructure Project – Report 1533, dated November 2014	EPA assessment	http://www.epa.wa.gov.au/proposals/koodaideri-iron-ore-mine-and-infrastructure-project
7.	Applicant comments on draft works approval and decision report – received 29 May 2019	Application	DWER records number – DWERDT163418

Appendix 2: Summary of applicant's comments on risk assessment and draft conditions

Decision Report Section or Works Approval Condition	Summary of Applicant comment	DWER summary response
Section 3 Overview of premises	As per email to DWER on 21/2/2019, it is noted that construction activities will also be conducted at night on an ad hoc basis.	Night time construction activity and associated light emissions considered as detailed in the risk assessment.
Section 3.3.1 Commissioning of Processing Plant	The applicant has confirmed that quarter 4 2021 is the estimated completion time for construction of the processing facility. In addition, the applicant has confirmed/clarified that commissioning of the processing facility is scheduled over an 18 month period (completion scheduled for quarter 2 2023).	The scheduled completion time for commissioning of the processing facility (quarter 2 2023) has been noted in section 3.3.1 of this Decision Report. No additional updates to the Decision Report and Works Approval are required.
Section 5.7 Groundwater and water resources	<p>The depth to groundwater across the processing infrastructure is between 60 – 70m below ground level (as shown on Map 3 provided below). The large depth to groundwater would mean that it is highly unlikely any potential contaminants containing hydrocarbons would reach the groundwater table.</p> <p>Groundwater flow is towards the north of the processing infrastructure and would be extremely slow given the groundwater level gradient in the vicinity of the processing facilities. Abstraction from the mining area for water supply purposes would also create a slight gradient that would further reduce any potential hydrocarbon contamination risk on sensitive receptors as if it were to reach the groundwater table, it would remain within the vicinity of the processing infrastructure area. The likelihood of flow to off-site areas is therefore very low.</p>	Additional information considered and risk assessment updated as detailed in this report.

Decision Report Section or Works Approval Condition	Summary of Applicant comment	DWER summary response
<p>Section 5.7</p> <p>Groundwater and water resources</p>	<p>A review of the DWER WIN and Rio Tinto internal databases identified four third party bores within a 5 km radius of the Koodaideri Mine processing infrastructure, however none of these are used for stock water supply purposes (based on current understanding). The closest bore (“Juna Downs – RB112”) is located 2.1 km west on the southern edge of the Fortescue Valley, north of the Koodaideri Mine site. Following further investigation of this bore, it was found to be abandoned with all track access remediated. The next closest bore is ‘Cowra Camp Marble Bar Rb103A’ located approximately 3.4 km north-west. The operational status of this bore is unknown, however there is potential it is used occasionally for rail maintenance purposes by another operator.</p> <p>In summary, the risk of contamination to third party water users is low.</p>	<p>Additional information considered and risk assessment updated as detailed in this report.</p>
<p>Section 7.4</p> <p>Risk Assessment – fuel/oil spills during construction works and operations</p>	<p>Hydrocarbon transfer at refueling points will take place on bunded concrete hardstand areas that drain to a collection point or sump designed for routine cleanout using equipment available on site. The bunded hardstand areas include the bowsers and pipes associated with refueling. Pumps with floating suction will automatically transfer the sump contents to the oily water collection tank via common above ground fully welded pipework. Oily water will then be treated via an oily water separation facility. The waste oil collected from the oily water separator will be stored in a holding tank for collection by a service truck.</p> <p>Any potential large volume hydrocarbon spills on hardstand areas will not enter the oily water separator but will be retained in sump</p>	<p>Applicant control details updated/noted.</p>

Decision Report Section or Works Approval Condition	Summary of Applicant comment	DWER summary response
	<p>collection points for collection and removal from site in accordance with the Controlled Waste Regulations.</p> <p>For any potential large hydrocarbon spills outside the controlled refuelling / hydrocarbon transfer points the site emergency spill response procedure will be activated. This involves applying controls to ensure the spill is isolated at the source preventing further hydrocarbon release. Spill kits are located at all on hydrocarbon transport vehicles and service trucks for immediate spill response. Booms are available to prevent hydrocarbon spills entering drains or waterways. Where spills exceed volumes serviceable by spill kits earthmoving machinery is readily available at all sites to ensure spills are contained in situ and do not spread beyond the immediate area. Contaminated soil will be removed for treatment at an appropriately licensed facility.</p>	
<p>Section 7.4 Risk Assessment – fuel/oil spills during construction works and operations</p>	<p>Oily water separators will be located at the fixed plant facilities workshop area and the central facilities workshop area (servicing the bulk fuel storage and lubrication storage). Surface runoff in these areas will be collected in sumps. Pumps with floating suction will automatically transfer the sump contents to the oily water collection tank via common above ground fully welded pipework. Oily water will then be treated via the oily water separation facility. The waste oil collected from the oily water separator will be stored in a holding tank for collection by a service truck. The oily water separation system is a multistage, hydro cyclone type, designed to achieve a maximum hydrocarbon concentration of 15mg/L in the treated water which</p>	<p>Applicant control details updated/noted.</p>

Decision Report Section or Works Approval Condition	Summary of Applicant comment	DWER summary response
	<p>is then directed to either an evaporation pond or holding tank. Treated water would then potentially be used for dust suppression onsite given the low risk to any environmental receptor this presents, as per standard practice across other site managed by the licensee.</p>	
<p>Section 7.5 Risk Assessment – long term discharge of hydrocarbons from the processing facility area (following high rainfall events)</p>	<p>Sedimentation ponds are located in numerous locations around the processing infrastructure (map provided to clarify locations).</p>	<p>Applicant control details updated.</p>
<p>Condition 5 – <i>The Works Approval Holder may undertake prescribed premises category 12 (mobile crushing and screening) operations within the premises boundary for a period not exceeding 180 days, following submission of the report required by Condition 3.</i></p>	<p>The licensee requests a change to draft Condition 5 so that the 180 day time limited operational phase for the mobile crushing and screening activity be extended to match the expiry date of the works approval. As per the application, the mobile plant is required to be used intermittently throughout the whole construction period (i.e. over 2 years), not just a 180 day period as currently outlined in draft condition 5.</p> <p>The alternative to allowing operation of the mobile plant for the life of the works approval would be an additional amendment to the operational licence, which given the low environmental risk involved (from emissions associated with the mobile plant) is seen as administratively inefficient for both the licensee and the Department. The licensee sees no regulatory obstacle in allowing operation of the mobile plant for the life of the works approval, or until the licence amendment to authorise Category 5 activities</p>	<p>Section 56 of the EP Act states that the occupier of any prescribed premises who causes or increases, or permits to be caused or increased, an emission, or alters or permits to be altered the nature and volume of waste, noise, odour or electromagnetic radiation emitted, without holding a licence in respect of those premises commits an offence. A granted prescribed premises licence is therefore required to operate the proposed mobile crusher and screen.</p> <p>In order to facilitate the transition to licensed operation of the mobile crusher and screen DWER is able to authorise time limited operations under the issued Works Approval for a maximum period of 180 days. This provides 6 months for the Works Approval Holder to obtain a Licence for mobile crusher and screen operations, following submission of the report required</p>

Decision Report Section or Works Approval Condition	Summary of Applicant comment	DWER summary response
	(following fixed plant construction) is required.	by Condition 3. In this regard the Works Approval Holder will be required to apply to amend Licence L8562/2011/1 to incorporate Category 12 operations on the Licence, enabling Category 12 operations beyond the abovementioned 180 day period.

Attachment 1: Issued Works Approval
