Government of Western Australia
Department of Water and Environmental Regulation

Decision Report

Application for Works Approval

Division 3, Part V *Environmental Protection Act 1986*

Licence Number	W6294/2019/1
Applicant	Fortescue Metals Group Ltd
ACN	002 594 872
File Number	DER2019/000436
Premises	Eliwana Mine Project Tenement M47/1524 As defined by the coordinates in Schedule 2 of the Works Approval
Date of Report	19 December 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
Category/ Categories/ Cat.	Categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
CO	Carbon monoxide
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 *Public Sector Management Act 1994* and designated as responsible for the administration of Part V, Division 3 of the EP Act.
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 *Public Sector Management Act 1994* and is responsible for the administration of the *Environmental Protection Act 1986* along with other legislation.
EPA	Environmental Protection Authority
EP Act	*Environmental Protection Act 1986* (WA)
EP Regulations	*Environmental Protection Regulations 1987* (WA)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
HC	Hydrocarbons
Minister	the Minister responsible for the EP Act and associated regulations
MS	Ministerial Statement
mtpa	million tonnes per annum
MW	Megawatt
NOx	Oxides of nitrogen
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
Risk Event	As described in *Guidance Statement: Risk Assessment*

2. Purpose and scope of assessment

On 8 August 2019 Fortescue Metals Group Ltd (FMG) applied for a new works approval under Part V, Division 3 of the *Environmental Protection Act 1986* for the Eliwana Iron Ore Project located in the Shire of Ashburton, in the Pilbara region of Western Australia. The works approval application relates to prescribed premises to be located within tenement M47/1524. The nearest town is Tom Price located approximately 95kms south-east of tenement M47/1524.

2.1 Application details

The works approval application is for the following activities:

- Construction and commissioning of an iron ore processing facility (OPF).
- Construction and commissioning of a power station.
- Construction and commissioning of a fuel storage facility.

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

Table 2: Prescribed Premises Categories

Prescribed premises category	Proposed design capacity
Category 5 Processing or beneficiation of metallic or non-metallic ore: premises on which – a) Metallic or non-metallic ore is crushed, ground, milled or otherwise processed;	30 million tonnes per year
Category 52 Electric power generation: premises (other than premises within category 53 or an emergency or standy power generating plant) on which electrical power is generated using a fuel.	24 MW
Category 73 Bulk storage of chemicals etc: premises on which acids, akalis or chemicals that – a) Contain at least one carbon to carbon bond; and b) Are liquid at standard temperature and pressure, are stored.	1,710m^3

Figures 1 and 2 illustrate the project location and premises boundary.

Construction of the OPF, power plant and bulk fuel facility is scheduled to commence in January 2020 and is expected to be completed by August 2020. The estimated operating period for the premises is 20 years.

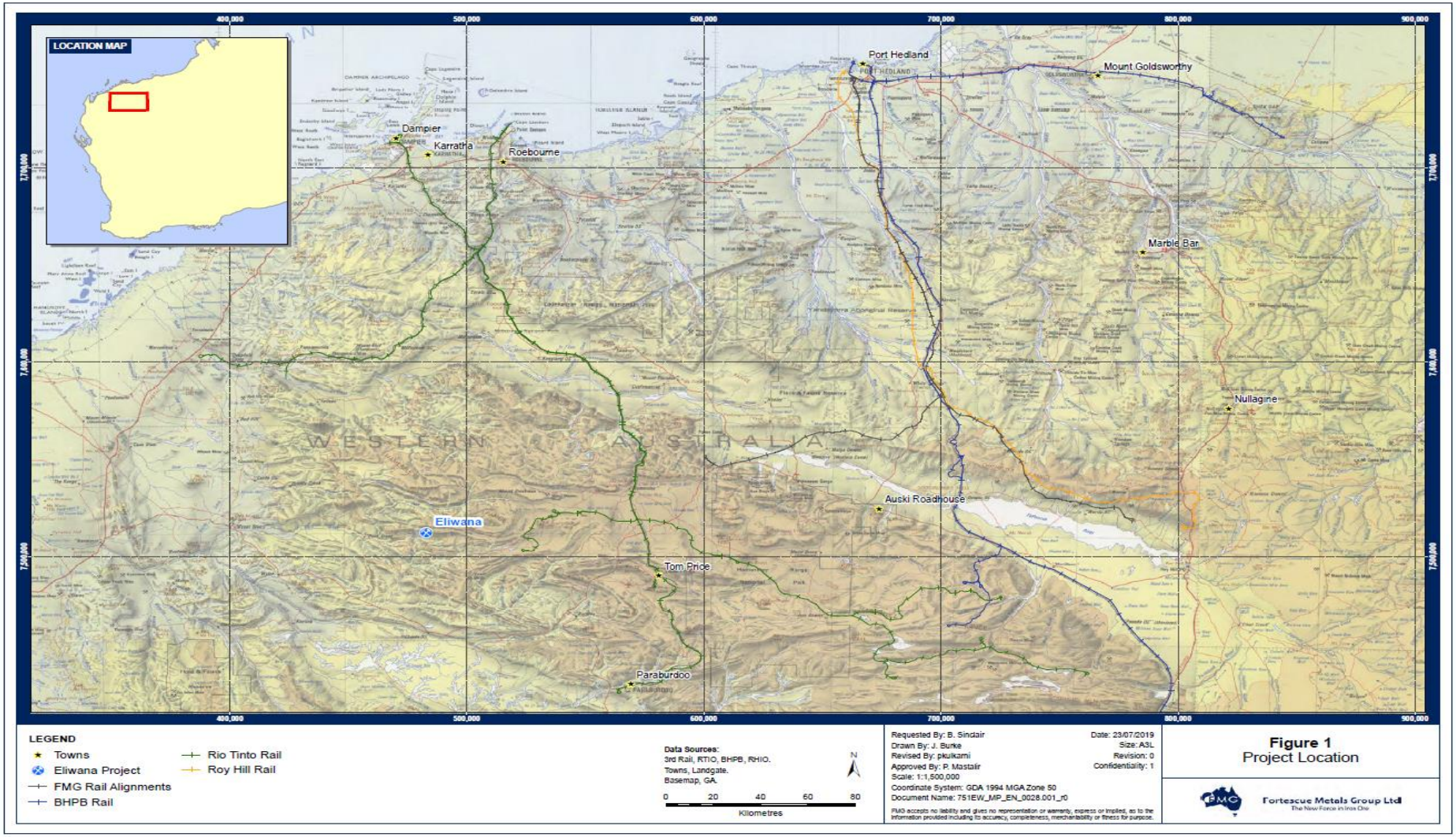


Figure 1: Project location

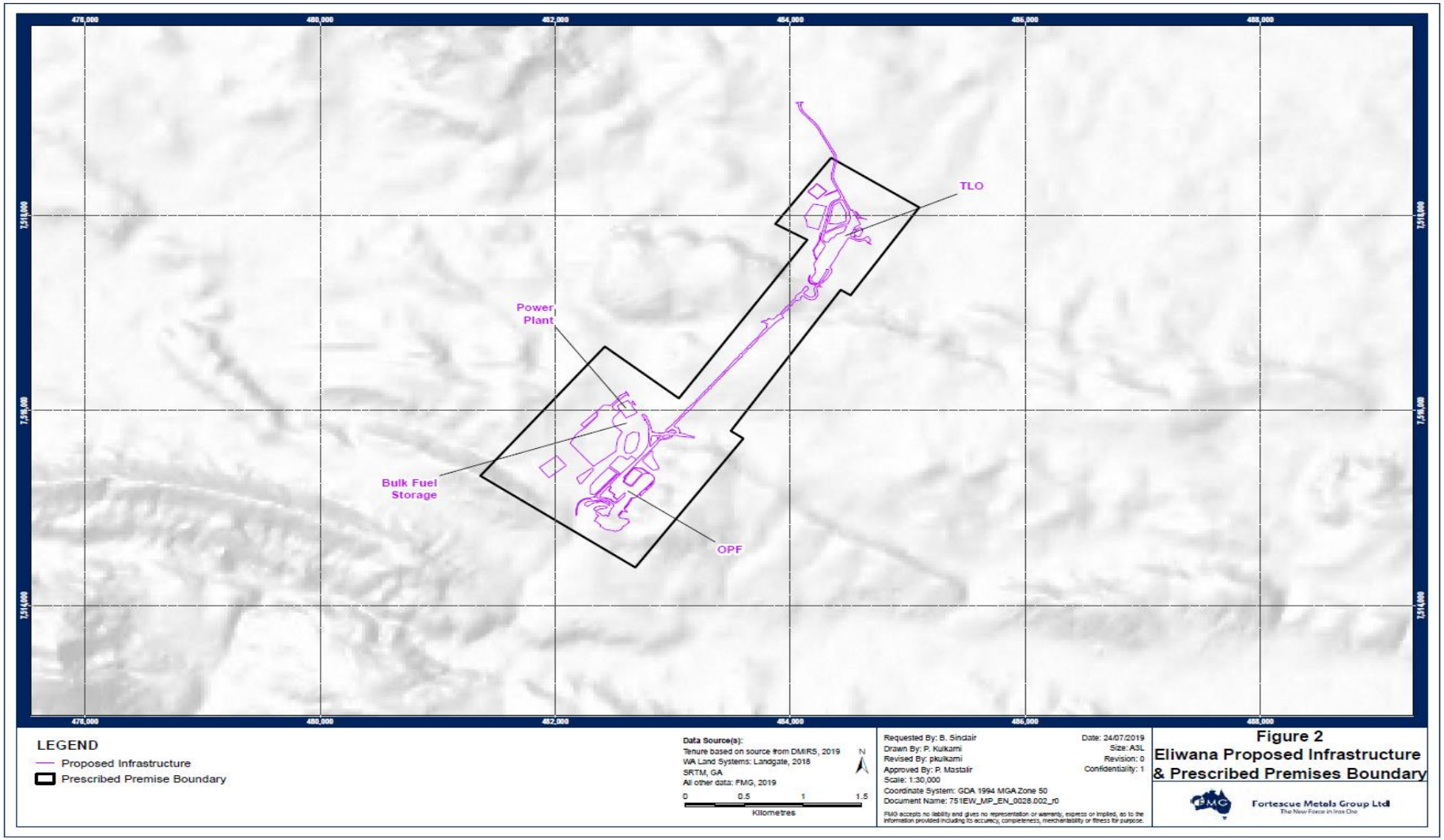


Figure 2: Premises boundary

3. Overview of Premises

3.1 Operational aspects

Iron ore mined from the Eliwana and Flying Fish ore deposits will be processed at the OPF.

29.5 million tonnes per annum will be processed, producing 30 million tonnes of iron ore product per annum.

Processing of ore will include crushing and screening to meet product specifications (<10mm; 5.5-7% moisture). Water supplied from project borefields will be added to the ore during crushing and screening to minimise production of dust.

An overland conveyor, ore stockpile and train load out (TLO) will allow management of the iron ore product and loading of trains for transport to the Herb Elliot Port Facility in Port Hedland.

Power for the project will be supplied by the constructed power plant. The bulk fuel facility will supply diesel fuel to the power plant as well as mobile equipment.

The OPF, power plant and fuel storage facility components are listed in Table 5.

Construction is planned to commence in January 2020 and continue through to August 2020 for the OPF. The premises will be operational for approximately 20 years.

When constructed, the OPF will operate 24 hours per day, 7 days per week.

3.1.1 Ore processing facility and train load out

The OPF is a dry processing plant which takes product from the feed size down to the product size via a three stage crushing and screening process. A process flow diagram for the OPF is provided in Figure 3: Process flow diagram for ore processing facility and train load out

Product is transferred to the overland conveyor and taken either straight to the train load out or stockpiled (three stockpiles proposed) via the stock piling conveyor where it can be reclaimed for loading through the stacker/reclaimer when required.

The OPF will not initially remove any impurities/waste.

It is understood the OPF may include a wet process in the future as a result of product requirements or the commencement of below water table mining and this will produce a wet tailings stream. However, the production/discharge of tailings is not within the scope of this works approval assessment.

3.1.2 Power station

The power plant will be located in the vicinity of the OPF and will consist of 16 x 2MVA Prime rated generators. The generators are capable of producing a maximum output of approximately 24 MW Prime or 21 MW continuous.

Nominally the power plant will operate approximately 10 generators running at a total output of 12MW with 2 on standby and up to 3 generators allocated to be “out of service”. The maximum output if all generators are run at once is 24MW. The power plant will be supplied with diesel from the bulk fuel facility.

The predicted power plant emissions as determined by the manufacturer are detailed in Table 3 and Table 4 below.

Table 3: Predicted power plant emissions – steady state (75% load) values

Emission	Expected rate
Total NOx	18,261 g/hr
Total CO	1,567 g/hr
Total HC	333 g/hr
Total particulates	103 g/hr

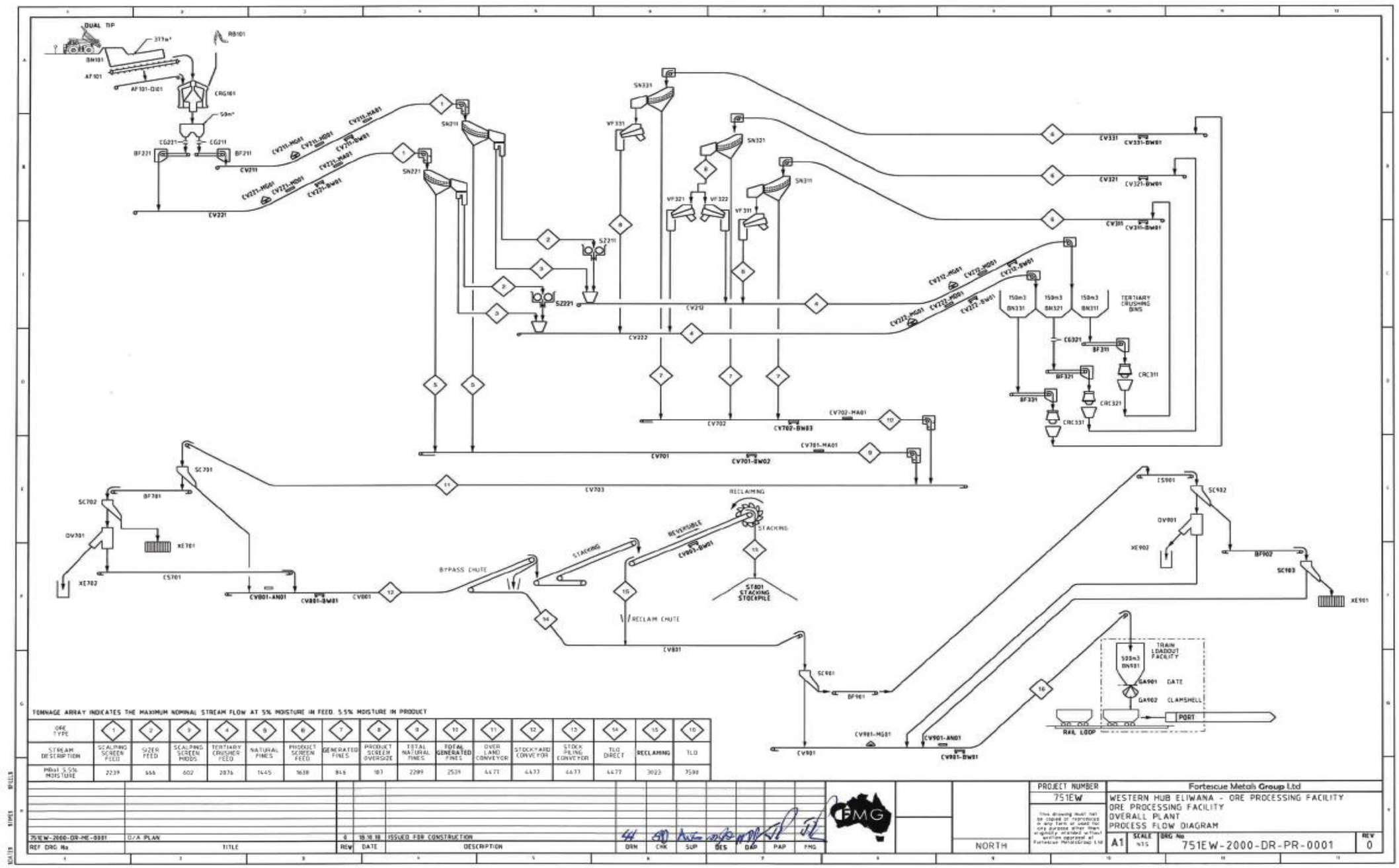
Table 4: Predicted power plant emissions – worst case (100% load) values

Emission	Expected rate
Total NOx	24,868 g/hr
Total CO	2,136 g/hr
Total HC	301 g/hr
Total particulates	110.7 g/hr

Note 1: The total hydrocarbons (HC) rate is lower at 100% load compared to the 75% load rate – the fuel burn efficiency is better at 100% (than at 75% load), therefore less unburnt HC is released.

3.1.3 Fuel storage facility

The bulk fuel storage facility will be located in the vicinity of the power station and will consist of diesel storage and refueling facilities. Up to 1,710 KL diesel fuel will be stored during operations to provide a minimum 7 day supply. The bulk fuel facility will supply diesel fuel to the power plant as well as mobile equipment.



TONNAGE ARRAY INDICATES THE MAXIMUM NOMINAL STREAM FLOW AT 5% MOISTURE IN FEED. 5.5% MOISTURE IN PRODUCT

ORE TYPE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
STREAM DESCRIPTION	SCALPING SCREEN FEED	SIZER FEED	SCALPING SCREEN MIDDS	TERTIARY CRUSHER FEED	NATURAL FINES	PRODUCT SCREEN FEED	GENERATED FINES	PRODUCT SCREEN OVERSIZE	TOTAL NATURAL FINES	TOTAL GENERATED FINES	OVER LAND CONVEYOR	STOCKYARD CONVEYOR	STOCK PILING CONVEYOR	TLO DIRECT	RECLAIMING	TLO
Mtpa 5.5% MOISTURE	2239	666	602	2076	1445	1638	846	193	2289	2539	4477	4477	4477	4477	3023	3598

REF DRG No	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	SUP	DES	DAP	PAP	PMG
751EW-2000-DR-ME-0001	O/A PLAN	0	15.10.19	ISSUED FOR CONSTRUCTION							

PMG

NORTH

PROJECT NUMBER 751EW

This drawing must not be copied or reproduced in any form or used for any purpose other than originally intended without written approval of Fortescue Metals Group Ltd

Fortescue Metals Group Ltd

WESTERN HUB ELIWANA - ORE PROCESSING FACILITY
ORE PROCESSING FACILITY
OVERALL PLANT
PROCESS FLOW DIAGRAM

A1 | SCALE NTS | DRG No 751EW-2000-DR-PR-0001 | REV 0

Figure 3: Process flow diagram for ore processing facility and train load out

3.2 Infrastructure

The infrastructure relevant to prescribed premises categories 5, 52 and 73 are detailed in Table 5.

Table 5: Eliwana project category 5, 52 and 73 infrastructure

	Infrastructure	**Site Plan Reference (in attached works approval)**
	Prescribed Activity Category 5	
ORE PROCESSING FACILITY		
1	ROM bin	Schedule 2: Maps Premises map; Infrastructure layout
2	Apron feeder	
3	Primary crusher (gyratory crusher)	
4	Hybrid feeders (low profile feeders)	
5	Scalping screens	
6	Secondary crushers	
7	Belt feeders	
8	Tertiary crushers	
9	Product screens	
10	Vibrating pan feeders	
11	Plant conveyors	
12	Overland conveyor	
13	Sampling stations	
14	Stockpiling conveyor	
15	Stacker/reclaimer	
	Prescribed Activity Category 52	
POWER STATION AND ASSOCIATED FUEL STORAGE		
1	16 x self-bunded diesel generator sets	Schedule 2: Maps Premises map; Infrastructure layout
2	3 x self-bunded 200 KL diesel storage tanks	
3	Pumps and piping for fuel transfer - above ground piping with underground piping for road crossings. - pumps and transfer points will be bunded	
4	Fully automated control system to fill power station tanks from the bulk fuel storage tanks	

	Infrastructure	Site Plan Reference (in attached works approval)
5	Fully automated decant facilities for single point connection	
	Prescribed Activity Category 73	
FUEL STORAGE AND REFUELLING FACILITY		
1	5 x 200KL self bunded diesel storage tanks	Schedule 2: Maps Premises map; Infrastructure layout
2	Fully automated decant facilities for unloading triple road train tankers, including: - pumps, piping, concrete pads and adjacent concrete lined sump pits at each decant point	
3	Light vehicle refuelling station with standard bowser. Constructed on concrete pads, incorporating concrete lined sump pits at each decant point to contain spills	
4	Heavy vehicle refuelling station with minimum rate 800L/minute. Constructed on concrete pads, incorporating concrete lined sump pits at each decant point to contain spills	
5	1 x 110KL self bunded diesel storage tanks at heavy vehicle refuelling station *to enable refuelling if rate of 800L/minute cannot be achieved with direct pipeline from main storage tanks*	
6	Pumps and above ground piping and underground piping (at road crossings) *for fuel transfer from the main storage tanks to the heavy vehicle and light vehicle refuelling locations and the power station storage tanks.*	
7	Safety showers and eye wash stations at storage and refuelling locations	
	Directly related activities – train load out	
1	Train load out shut and conveyors	Schedule 2: Maps Premises map; Infrastructure layout
2	Train load out	

3.3 Commissioning

Commissioning of the fuel storage facility, power plant and OPF is scheduled to be completed over a period of 6 to 12 months as components become available.

3.3.1 Commissioning of the fuel storage facility and power plant

Commissioning of the fuel storage facility and power plant will be undertaken. Commissioning of the power plant will include verification of the predicted air emissions detailed in Table 3 and Table 4.

3.3.2 Commissioning of the ore processing facility

Commissioning of the OPF will be completed across 5 phases including:

Phase 1 - Construction Verification:

Verification and testing (De-energised) of fabrication, construction and installation works. The completion of Phase 1 would ensure that equipment is safe to be energised.

Phase 2 – Function Testing (Pre-Commissioning):

Energisation, direction and uncoupled testing of specific items of equipment to ensure tolerances and testing procedures comply with vendor manuals and recommendations. Safety devices and instrumentations are fully tested and operational in remote and local operations.

Phase 3 – No load commissioning:

The process control system is tested as far is practical, to ensure correct operation and interaction between plant areas using benign fluids, usually water and air.

Phase 4 – Load Commissioning:

Covers the introduction of ore and process streams to the plant and build up to nominal operating conditions and steady state operation.

Phase 5 - Performance testing:

Ore is gradually increased into plant and the performance of the plant optimised building to full operations.

4. Legislative context

Table 6 summarises approvals relevant to the assessment.

Table 6: Relevant approvals and tenure

Legislation	Number	Proponent	Approval
Part IV of the *Environmental Protection Act 1986* (WA)	Statement number: 1109 Eliwana Iron Ore Mine Project	Fortescue Metals Group	Statement that a proposal may be implemented pursuant to section 45 of the *Environmental Protection Act 1986*
Environment Protection and Biodiversity Conservation Act 1999 (Cth EPBC Act)	EPBC 2017/8024	Fortescue Metals Group	Approval of action under the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* – Eliwana Iron Ore Mine Project. Dated 25 September 2019.
Rights in Water and Irrigation Act 1914	*GWL202596(1)*	Fortescue Metals Group	Licence to take water - 1,600,000 kL per annum from sources within tenement M47/1524 for earthworks/construction, dust suppression and camp purposes. Licence issued 22 March 2019 for a 2 year term.

4.1 Part IV of the EP Act

4.1.1 Background

On 7 July 2017 FMG referred the proposal for the development and operation of the Eliwana Iron Ore Mine and associated infrastructure to the Environmental Protection Authority (EPA). The proposal covers a 43,804 hectare mine development envelope and includes processing facilities, water management infrastructure for groundwater abstraction and surplus water disposal, temporary and permanent waste landforms and tailings storage facilities.

The EPA conducted an Environmental Impact Assessment on the proposal resulting in the EPA's report 1641, dated June 2019.

On 14 August 2019 the WA Minister for Environment approved the implementation of the proposal subject to implementation conditions and procedures as detailed in Statement No: 1109.

4.1.2 Ministerial Statement 1109 and EPA report 1641

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.

EPA report 1641 notes that the EPA examined potential impacts on six key environmental factors:

- Inland waters;
- Flora and vegetation;
- Terrestrial fauna;
- Subterranean fauna;
- Social surroundings; and
- Air quality.

The EPA concluded that the proposal is environmentally acceptable and can be implemented, subject to certain conditions. The EPA recommended conditions which include requirements to:

- Investigate risks associated with Acid and Metalliferous Drainage (AMD);
- Monitor and manage hydrogeological regimes and water quality;
- Avoid places of recognised Aboriginal cultural heritage;
- Monitor and manage impacts to flora and vegetation, terrestrial fauna and subterranean fauna;
- Monitor and manage impacts to Aboriginal heritage; and
- Minimise greenhouse gas emissions.

Ministerial Statement 1109 details the implementation conditions and procedures.

4.2 Other relevant approvals

4.2.1 Federal Legislation

Environment Protection and Biodiversity Conservation Act 1999 (Cth)

The development and operation of the Eliwana Iron Ore Mine and associated infrastructure was determined to be a controlled action under the *Environment Protection and Biodiversity*

Conservation Act 1999 (EPBC Act) on 7 November 2017. The Western Australian Environmental Protection Authority assessed the proposal on behalf of the Commonwealth Minister for Environment as an accredited assessment.

The proposed action was approved under the EPBC Act, subject to conditions on 25 September 2019 (ref 2017/8024).

4.3 Part V of the EP Act

4.3.1 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)*
- *Guideline: Decision Making (June 2019)*
- *Guidance Statement: Risk Assessments (February 2017)*
- *Guidance Statement: Environmental Siting (November 2016)*

4.3.2 Clearing

Clearing for the Eliwana Iron Ore Mine Project is regulated under Ministerial Statement 1109. In regard to the mine and associated infrastructure, Ministerial Statement 1109 authorises the clearing of up to 7,900 hectares of native vegetation within the 43,804 hectare development envelope.

5. Consultation

The application was advertised in the West Australian and on DWER's website on 30 September 2019 for a period of 23 days. No submissions were received.

The application was referred to DMIRS on 1st October 2019. No submissions were received.

6. Location and siting

6.1 Siting context

The premises are located in the Pilbara region. The nearest town is Tom Price located approximately 99kms south-east of the premises boundary. Karijini National Park is located approximately 111kms east of the premises boundary.

6.2 Residential and sensitive Premises

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

Table 7: Distances to residential and sensitive premises

Sensitive Land Uses	Distance from Prescribed Activity
Pastoral station homesteads	FMGs Eliwana Iron Ore Mine Environmental Review report, section 4.9.4.3 (October 2018) provides a review of the location of homesteads in the vicinity of the mine development envelope. The nearest homesteads are Duck Creek and Mount Brockman homesteads located 10km and 12kms away from the mine development envelope. The homesteads are therefore at least 10kms away from the premises boundary.
Town of Tom Price	99kms south-east of the premises boundary
Aboriginal community - Wakathuni	110 kms south-east of the premises boundary

6.3 Specified ecosystems and environmental receptors

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 8Table 8. Table 8Table 8 also identifies the distances to other potential environmental receptors 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: Specified ecosystems and other environmental receptors

Specified ecosystems/biota	Approximate location or distance from the premises
Threatened/priority fauna	
Northern Quoll (*Dasyurus hallucatus*) – Endangered	Habitat identified within premises boundary Recorded in vicinity (within 5km) of premises boundary
Ghost bat (*Macrodermia gigas*) – Vulnerable	
Pilbara Leaf-Nosed Bat (*Rhinonicteris aurantia*) – Vulnerable	
Pilbara Olive Python (*Liasis olivaceus barroni*) – Vulnerable	
Western Pebble-Mound Mouse (*Pseudomys chapmani*) – Priority 4	
Lined soil crevice skink (*Notoscincus butleri*)	Recorded in vicinity (within 5km) of premises boundary
Nankeen kestrel (*Falco cenchroides*)	Recorded in vicinity (within 5km) of premises boundary

Grey falcon (*Falco hypoleucos*) - Vulnerable	Habitat identified within premises boundary
Peregrine falcon (*Falco peregrinus*)	Habitat identified within premises boundary
Priority flora	
Indigofera sp.Bungaroo Creek – Priority 3	Recorded in vicinity (within 5km) of premises boundary
Goodenia nuda – Priority 4	
Rhynchosia bungarensis – Priority 4	
Other environmental receptors	**Approximate location or distance from the premises**
Soils	Within premises boundary
Other native vegetation	Within premises boundary
Other fauna	Within or in the vicinity of premises boundary
Unnamed ephemeral creeks	Within and in the vicinity of premises boundary
Pinarra creek	Approximately 750m south of the premises boundary
Duck creek	Approximately 5.5kms north of the premises boundary
Duck creek pools	DWER's GIS indicates the nearest pools are approximately 5.5kms north of the premises boundary.
Groundwater	Depth to groundwater within the premises is expected to vary from shallow groundwater beneath ephemeral creek systems to deep groundwater within fractured rock aquifers.

6.4 Climate

The regional climate consists of hot summers and mild winters. Annual rainfall in the Pilbara has a substantial yearly variation. Tropical cyclones and local thunderstorms produce much of the summer and early autumn rainfall.

Monthly rainfall and temperature averages for Tom Price and Paraburdoo (located 100 to 110km south-east of the premises) are detailed in Figure 4 below.

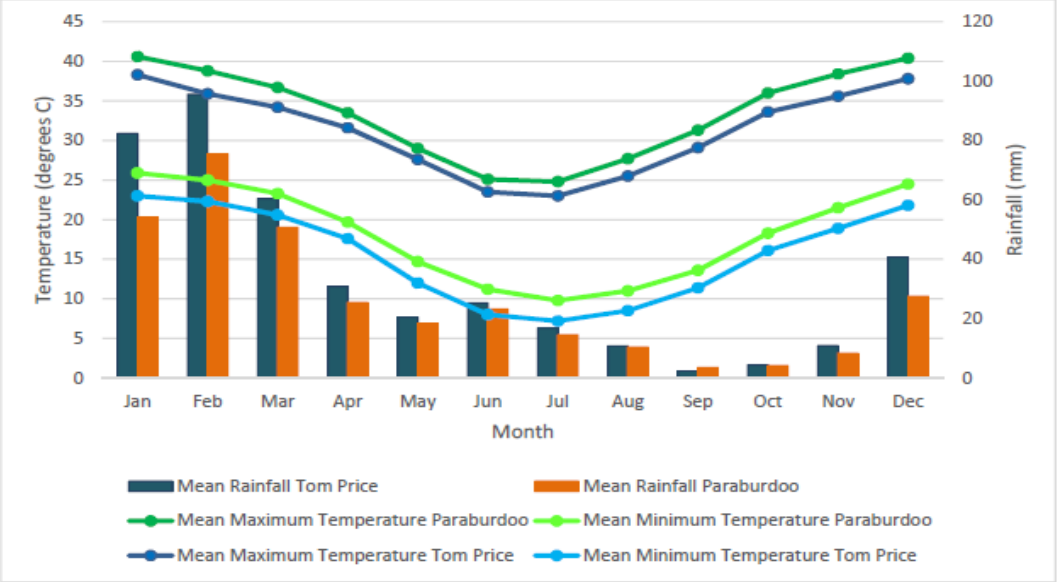


Figure 4: Mean monthly rainfall and maximum/minimum temperatures recorded at Tom Price and Paraburdoo Weather Stations; source Bureau of Meteorology (2017).

6.5 Land systems

Land systems that occur within the premises boundary include:

- Rocklea – basalt hills, plateaux, lower slopes and minor stony plains supporting spinifex grasslands
- Newman – rugged jaspilite plateau, ridges and mountains supporting spinifex grasslands
- Robe – low limonite mesas and buttes supporting spinifex grasslands

6.6 Hydrology

The premises footprint falls within the Duck Creek catchment area which drains to the regional Ashburton River basin. The Duck Creek catchment area is approximately 6,800km^2 at the confluence with the Ashburton River.

The premises footprint occurs within two sub-catchments of Duck Creek and a sub-catchment of Pinarra Creek. The OPF, power station and bulk fuel storage facility footprint is located within the Pinarra Creek sub-catchment. The overland conveyor and TLO are located within sub-catchments of Duck Creek.

There are approximately 4 unnamed ephemeral creeks within or in the vicinity of the premises boundary which, when flowing, are expected to drain water towards Pinarra and Duck Creeks.

Pinarra Creek is located approximately 750m south of the premises boundary. Duck Creek is located approximately 5.5kms north of the premises boundary. Pinarra and Duck Creeks are classified as ephemeral creeks. DWER's geographic information system indicates Duck Creek contains permanent river pools.

6.7 Groundwater and water sources

Aquifers within the premises boundary are likely to be fractured rock aquifers or minor alluvial aquifers beneath creeks.

As there are no residential premises and town sites in the vicinity of the premises boundary (the nearest residence is at least 10km away) it is unlikely that there are potable water supply bores in the vicinity of the premises. Additionally, DWER's records indicate the nearest third party licensed production bore/s are located approximately 24kms to the north-west of the premises boundary.

Operational stock water supply bores may be located in the broader region, however they are not expected to be located within the Mine Development Envelope.

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 10 below.

The identification of the sources, pathways and receptors to determine Risk Events are set out in Tables 9 and 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 of infrastructure	**Category 5:** Construction of Iron Ore Processing facility **Category 52:** Construction of power station **Category 73:** Construction of	Noise	Duck Creek homestead Mount Brockman homestead	Air/wind dispersion	Amenity impacts	No	Duck Creek and Mount Brockman homesteads are located approximately 10kms (or more) away from the premises boundary. It is considered that noise and dust from construction activities will not impact the identified receptors given the separation distances.
		Dust	Duck Creek homestead Mount Brockman homestead	Air/wind dispersion	Amenity impacts		

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
	bulk fuel facility	Noise Dust Light	Threatened and priority fauna	Air/wind dispersion	Adverse impact on habitat conditions	No	Impacts to conservation significant fauna assessed and regulated under Part IV of the EP Act – i.e. Ministerial Statement 1109 condition 10.
		Dust	Priority flora Other native vegetation in the vicinity of the premises	Air/wind dispersion	Potential suppression of photosynthetic and respiratory function.	No	Impacts to priority flora and vegetation are considered to be assessed and regulated under Part IV of the EP Act – i.e. Ministerial Statement 1109 condition 7.
		Soil/sediment in stormwater run off	Unnamed ephemeral creeks Pinarra Creek Duck Creek	Via overland flow following storm events	Increase in sediment loads discharged from the catchment may impact the morphology and hydrology of the creeks.	No	Impacts from discharges of stormwater are regulated under Part IV of the EP Act – i.e. Ministerial Statement 1109 conditions 9 and 6.
		Hydrocarbons in stormwater run off	Unnamed ephemeral creeks Pinarra Creek Duck Creek	Via overland flow from the construction areas following high rainfall events	Contamination of sediments and surface water within ephemeral creeks.	No	Impacts from discharges of stormwater are regulated under Part IV of the EP Act – i.e. Ministerial Statement 1109 conditions 9 and 6.
		Hydrocarbon (fuel and oil)	Soils	Direct discharge	Soil contamination	Yes	Refer to section 7.2

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
		spills during construction works	Sediments in ephemeral creeks	Overland flow following major spill event	Contamination of sediments	Yes	Refer to section 7.2
			Groundwater	Infiltration from soil to groundwater	Groundwater contamination	Yes	Refer to section 7.2

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

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
Commissioning and operation	**Category 5:** Crushing and screening of ore; Movement of ore through conveyors, and at stockyards (including dust lift off) and train load outs	Noise	Duck Creek homestead Mount Brockman homestead	Air/wind dispersion	Amenity impacts	No	Duck Creek and Mount Brockman homesteads are located approximately 10kms (or more) away from the premises boundary. It is considered that noise and dust from ore processing will not impact the identified receptors given the separation distances.
		Dust	Duck Creek homestead Mount Brockman homestead	Air/wind dispersion	Amenity impacts		
		Noise Dust Light	Threatened and priority fauna	Air/wind dispersion	Adverse impact on habitat conditions	No	Impacts to conservation significant fauna assessed and regulated under Part IV of the EP Act – i.e. Ministerial Statement 1109 condition 10.

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
		Dust	Priority flora Other native vegetation in the vicinity of the premises	Air/wind dispersion	Potential suppression of photosynthetic and respiratory function.	No	Impacts to priority flora and vegetation are considered to be assessed and regulated under Part IV of the EP Act – i.e. Ministerial Statement 1109 condition 7.
		Hydrocarbon emissions from operation of OPF infrastructure	Soils	Direct discharge	Soil contamination	Yes	Refer to section 7.2
		Soil/sediment in stormwater	Ephemeral creeks	Via overland flow following storm events	Increase in sediment loads discharged from the catchment may impact the morphology and hydrology of the creeks.	No	Impacts on surface water quality assessed and regulated under Part IV of the EP Act – i.e. Ministerial Statement 1109 conditions 9 and 6.
		Hydrocarbons in stormwater	Ephemeral creeks	Via overland flow from the processing facility area following high rainfall events	Contamination of sediments within ephemeral creeks	No	Impacts on surface water quality assessed and regulated under Part IV of the EP Act – i.e. Ministerial Statement 1109 conditions 9 and 6.

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
	Category 73 and 52: Operation of bulk fuel facility; Commissioning and operation of power station	Hydrocarbon spills	Soils	Direct discharge	Soil contamination	Yes	Refer to section 7.2
			Sediments in ephemeral creeks	Overland flow following major spill event	Contamination of sediments	Yes	Refer to section 7.2
			Groundwater	Infiltration from soil to groundwater following major spill	Groundwater contamination	Yes	Refer to section 7.2
	Category 52: Commissioning and operation of power station	Air emissions – including nitrogen oxides, carbon monoxide, hydrocarbons, particulates	Duck Creek homestead Mount Brockman homestead	Air/wind dispersion	Health and amenity	No	Duck Creek and Mount Brockman homesteads are located approximately 10kms (or more) away from the premises boundary. It is considered that air emissions from the power plant will not impact the identified receptors given the separation distances.

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
		Noise	Duck Creek homestead Mount Brockman homestead	Air-wind dispersion	Amenity	No	Duck Creek and Mount Brockman homesteads are located approximately 10kms (or more) away from the premises boundary. It is considered that noise from operation of the power plant will not impact the identified receptors given the separation distances.

7.2 Risk assessment – fuel/oil (hydrocarbon) spills during construction works and operations

7.2.1 Description of risk event

Considering the planned fuel storage and use at the premises (up to 1,710 kL of diesel will be stored) there is potential for significant accidental spill events during the construction and operational phase of the project.

Operation of the OPF may also result in hydrocarbon discharges from operation and maintenance of infrastructure.

7.2.2 Description of potential adverse impact from the emission

A major hydrocarbon spill at the fuel storage facility or power station could contaminate soils within the premises. Any remnant ephemeral creeks downgradient and in the vicinity of the fuel storage facility may also be impacted by a major spill, including contamination of creek sediments.

For major spills, spilled fuel may also migrate from the surface through to groundwater in fractured rock aquifers. This may be mitigated where depth to groundwater is significant.

Over the term of the project a build-up of hydrocarbons may also occur in soils in the vicinity of the OPF and fuel storage facility.

7.2.3 Applicant controls

This assessment has reviewed the controls set out in Table 11 below.

Table 11: Applicant's proposed controls to manage fuel spills at the fuel storage facility and power station.

Site infrastructure	Description
Diesel storage tanks	Diesel storage tanks at the fuel storage facility and power station will be self-bunded.
Diesel generator sets	Diesel generator sets will be self-bunded.
Pumps and fuel transfer points	Provision of bunding for above ground pipelines to contain an accidental spill.
Decant facilities for unloading road train fuel tankers	Fully automated decant facilities Constructed on concrete pads, incorporating concrete lined sump pits at each decant point to contain spills
Light and heavy vehicle refuelling stations	Refuelling stations will be constructed on concrete pads, incorporating concrete lined sumps to contain spills.
Automated system to fill power station tanks.	Fully automated control system to fill power station tanks from the bulk fuel storage tanks. Fully automated decant facilities for single point connection

7.2.4 Consequence

The overall consequence of the risk event is assessed as **Moderate**. Potential hydrocarbon spills and discharges are largely expected to impact soils within the premises. Groundwater may also be impacted, particularly in the event of a major accidental spill. However, impacts are not expected to be off-site and wide scale.

7.2.5 Likelihood of risk event

The overall likelihood of the risk event occurring is assessed as **Possible**. The likelihood of a major spill at the fuel storage facility or power station is considered to be reduced through the Applicant's controls outlined in Table 11.

7.2.6 Overall risk rating - fuel/oil (hydrocarbon) spills during construction works and operations

An overall risk rating of **Medium** has been determined.

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.

The Works Approval that accompanies this report authorises the specified construction and time limited operation activities only. Following completion of works and compliance with the Works Approval a prescribed premises Licence will be required to authorise emissions associated with the operation of the premises.

8.1 Works Approval controls

8.1.1 Ore processing facility

The OPF and TLO is required to be constructed in accordance with the application documents, particularly in regard to:

- Siting
- Nameplate capacity
- Dust emission controls

The provision of multiple dust management components at the OPF and TLO is noted under the Works Approval in support of any required dust management measures determined under Part IV of the *Environmental Protection Act 1986* – Ministerial Statement number 1109.

8.1.2 Stormwater infrastructure

Sediment basins to be constructed for stormwater and sediment management at the OPF and TLO are noted in the Works Approval in support of any required stormwater management measures determined under Part IV of the *Environmental Protection Act 1986* – Ministerial Statement number 1109.

8.1.3 Fuel storage facility and power plant

The fuel storage facility and power plant are required to be constructed in accordance with the application documents, particularly in regard to:

- Siting

- Diesel spill prevention and containment measures.

8.1.4 Environmental Compliance Report

Following completion of works authorised under the Works Approval the Works Approval Holder is required to submit an Environmental Compliance Report to DWER. The Environmental Compliance Report is required for DWER to verify all infrastructure has been constructed in accordance with the Works Approval conditions.

8.1.5 Commissioning and time limited operations

Commissioning and time limited operation of the fuel storage facility, power plant and OPF is permitted under the Works Approval for a period of 180 days subject to conditions.

8.2 Licence controls

The following controls will be imposed as conditions on the future Licence to manage the risk of emissions during operation of the Premises. The below mentioned Licence controls are not final. Finalisation of Licence controls/conditions is subject to the Applicant's compliance with the conditions of the Works Approval; assessment of the Licence application; and, any additional information that becomes available to further inform the risk assessment.

8.2.1 Prescribed premises details

The Licence will detail the approved prescribed premises boundary and the prescribed premises categories, including approved production/design capacities.

8.2.2 Surface water monitoring and management

The Licence may require monitoring of surface water discharged from the premises to the environment, coupled with management responses. Monitoring and management of surface water under the prescribed premises Licence will complement any required measures determined under Part IV of the *Environmental Protection Act 1986* – Ministerial Statement number 1109.

8.2.3 Reporting

The Licence will require the submission of an Annual Audit Compliance Report and Annual Environmental Report.

9. Applicant's comments

A draft decision report and draft works approval were issued to the Applicant on 12 December 2019. Comments were received from the Applicant on 18 December 2019 which are summarised in Appendix 2, along with DWER's response.

10. 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.

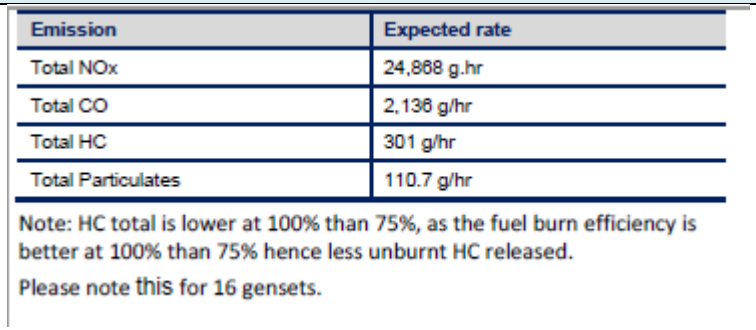
Alana Kidd
Manager, Resource Industries
Delegated Officer
under section 20 of the *Environmental Protection Act 1986*

Appendix 1: Key documents

	Document title	In text ref	Availability
1.	Licence application including: - Application form, dated August 2019 - Works approval application supporting document, dated August 2019	Application	DWERDT187608
2.	Email correspondence from applicant, dated 18 September 2019	Application	A1824700
3.	Further information from applicant received on 10 October 2019 including: - Table of responses to request for further information - Works approval application supporting document (amended), dated August 2019 - Eliwana Surface Water Management Plan, dated June 2018 - Fortescue Metals Group Standard Engineering Specification for Drainage and Flood Protection, dated May 2012 - Surface water management technical drawings	Application	DWERDT210720, DWERDT210732
4.	Email correspondence from applicant, dated 26 November 2019	Application	A1845548
	Submission from applicant in relation to draft works approval and draft decision report	Application	A1852987

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

Condition	Summary of Licence Holder comment	DWER response
Condition 1 Table 2 Infrastructure and equipment requirements – *fuel storage facility*	Sump pits at the fuel facility will be constructed of concrete to prevent migration of spilled fuel or oily water The sumps will be pumped out and the contents removed from site by a licence contractor	The risk assessment has considered that sump pits used to collect spilled fuel or oily water at the fuel storage facility will be concrete lined. This (along with other specified infrastructure requirements) is expected to mitigate the risk of hydrocarbons migrating to soils and potentially groundwater at the fuel facility location. Condition 1 of the works approval includes the requirement to construct concrete lined sump pits at the fuel storage facility as specified. Conditions in the future licence for the fuel storage facility will include (but not be limited to) the requirement to extract and transport the contents of sump pits to an authorised waste facility.
Condition 1 Table 2 Infrastructure and equipment requirements – *power station*	There will be 16 gensets installed as per the Attachment 3	The risk assessment has considered that the power station will consist of 16 generator sets to generate a maximum of 24 MW.
Schedule 2 maps – infrastructure layout	Applicant submitted additional plan *"General arrangement of power station and bulk fuel facility"* as Attachment 3 of submission.	Infrastructure maps updated.
Section 3.1.2 of draft decision report (power station)	Predicted power plant emissions rates in the works approval application are steady state (75% load) values. At worst case 100% loading the emissions are:	The risk assessment has considered the predicted power plant emission rates including steady state and worst case emission rates.

Condition	Summary of Licence Holder comment	DWER response
	 Emission / Expected rate Total NOx: 24,868 g.hr Total CO: 2,136 g/hr Total HC: 301 g/hr Total Particulates: 110.7 g/hr Note: HC total is lower at 100% than 75%, as the fuel burn efficiency is better at 100% than 75% hence less unburnt HC released. Please note this for 16 gensets.	
Table 2, Column 2 – Fuel Storage Facility and Power Station Provision of bunding for above ground pipelines to contain an accidental spill.	FMG has advised that above ground pipelines are typically 2.5mm above ground level on engineered structures, are constructed to AS4041 (Pressure Piping) and are pressure tested prior to commissioning. Bunding is therefore not considered necessary for leaks, as there is a low/ negligible risk of rupture and it is prohibitively expensive to install.	DWER acknowledges FMG's comments. The provision of bunding for above ground pipelines at the fuel facility and Power Station has been removed. DWER notes additional ore stockpile is required and risk to receptors is low with controls in place (including Part IV requirements). Drainage was also updated to accommodate the additional ore storage required onsite.
Infrastructure layout: Fortescue advises of change to the stockyard at the TLO.	An additional stockpile has been added to increase the amount of ore that can be stored prior to shipment. The changes to the design have been incorporated into the stormwater design and drainage design criteria remains unchanged. The surface water management infrastructure is typically designed for a 1 in 20 AEP or 1 in 100 AEP flood events for critical facilities such as the OF and the TLO.	DWER notes surface water management for the OPF and TLO will be diverted away via diversion drains or conveyed across the structure via culverts. FMG has provided updated flood modelling demonstrating that the risk remains low.

Condition	Summary of Licence Holder comment	DWER response
	Sediment basins have also been included in the surface water management design to manage sediment runoff from these facilities and designed for a 1 in 2 AEP with 1 hour critical duration flood event.	DWER has considered the changes and deemed no additional risk as a result.

Attachment 1: Issued Works Approval W6294/2019/1