Government of Western Australia
Department of Environment Regulation

Licence

Environmental Protection Act 1986, Part V

Licensee: FMG Solomon Pty Ltd

Licence: L8464/2010/2

Registered office: 87 Adelaide Terrace
EAST PERTH WA 6004

ACN: 128 959 179

Premises address: Solomon Mine
M47/1409, M47/1413, M47/1431, L47/293, L47/294, L47/360, L47/363, L47/392 and portion of L47/296, L47/361, and L47/381
MT SHEILA WA 6751
As depicted in Schedule 1

Issue date: Thursday, 15 October 2015

Commencement date: Sunday, 18 October 2015

Expiry date: Friday, 17 October 2025

Prescribed premises category
Schedule 1 of the *Environmental Protection Regulations 1987*

Category number	Category description	Category production or design capacity	Approved premises production or design capacity
5	Processing or beneficiation of metallic or non-metallic ore	50,000 tonnes or more per year	Not more than 95,300,000 tonnes per annual period
54	Sewage facility	100 cubic metres or more per day	Not more than 1,178 cubic metres per day
57	Used tyre storage (general)	100 tyres or more	2,500 tyres
61	Liquid waste facility	100 tonnes or more per year	110,000 tonnes per annual period
62	Solid waste depot	500 tonnes or more per year	6,000 tonnes per annual period
64	Class II putrescible landfill site	20 tonnes or more per year	14,000 tonnes per annual period
73	Bulk storage of chemicals	1,000 cubic metres in aggregate	Not more than 9,500 cubic metres in aggregate

Conditions
This Licence is subject to the conditions set out in the attached pages.

Date signed: 19 June 2017
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Alana Kidd
Manager Licensing – (Resource Industries)
Officer delegated under section 20
of the *Environmental Protection Act 1986*

Contents

Introduction

This Introduction is not part of the Licence conditions.

DER's industry licensing role
The Department of Environment Regulation (DER) is a government department for the state of Western Australia in the portfolio of the Minister for Environment. DER's purpose is to advise on and implement strategies for a healthy environment for the benefit of all current and future Western Australians.

DER has responsibilities under Part V of the *Environmental Protection Act 1986* (the Act) for the licensing of prescribed premises. Through this process DER regulates to prevent, control and abate pollution and environmental harm to conserve and protect the environment. DER also monitors and audits compliance with works approvals and licence conditions, takes enforcement action as appropriate and develops and implements licensing and industry regulation policy.

Licence requirements
This licence is issued under Part V of the Act. Conditions contained within the licence relate to the prevention, reduction or control of emissions and discharges to the environment and to the monitoring and reporting of them.

Where other statutory instruments impose obligations on the Premises/Licensee the intention is not to replicate them in the licence conditions. You should therefore ensure that you are aware of all your statutory obligations under the Act and any other statutory instrument. Legislation can be accessed through the State Law Publisher website using the following link:
http://www.slp.wa.gov.au/legislation/statutes.nsf/default.html

For your Premises relevant statutory instruments include but are not limited to obligations under the:

- *Environmental Protection (Unauthorised Discharges) Regulations 2004* – these Regulations make it an offence to discharge certain materials such as contaminated stormwater into the environment other than in the circumstances set out in the Regulations.

- *Environmental Protection (Controlled Waste) Regulations 2004* - these Regulations place obligations on you if you produce, accept, transport or dispose of controlled waste.

- *Environmental Protection (Noise) Regulations 1997* – these Regulations require noise emissions from the Premises to comply with the assigned noise levels set out in the Regulations.

You must comply with your licence. Non-compliance with your licence is an offence and strict penalties exist for those who do not comply.

Licence holders are also reminded of the requirements of section 53 of the Act which places restrictions on making certain changes to prescribed premises unless the changes are in accordance with a works approval, licence, closure notice or environmental protection notice.

Licence Fees
If you have a licence that is issued for more than one year, you are required to pay an annual licence fee prior to the anniversary date of issue of your licence. Non payment of annual licence fees will result in your licence ceasing to have effect meaning that it will no longer be valid and you will need to apply for a new licence for your Premises.

Ministerial conditions
If your Premises has been assessed under Part IV of the Act you may have had conditions imposed by the Minister for Environment. You are required to comply with any conditions imposed by the Minister.

Premises description and Licence summary
FMG Solomon Pty Ltd (FMG) operates the Solomon Project (the Project) located in the Pilbara region of Western Australia, approximately 54 km north of Tom Price and 12 km north west of Karijini National Park.

The Pilbara has an arid climate with two distinct seasons; a pronounced dry spell between August and October; and a wet season between December and March, continuing through until June and accounting for most of the average annual rainfall. The average yearly evaporation rate of 3,000mm exceeds the average yearly rainfall of 457.9mm. The region is characterised by low and variable rainfall, generally resulting from local thunderstorms and occasional high intensity cyclonic events.

The Project is located in the Pilbara bioregion, within the Hamersley subregion as defined by the Interim Biogeographic Regionalisation of Australia. The existing environment is further described in Appendix A.

The nearest sensitive receptors to the Solomon Mine are Hamersley Station, located approximately 33km south-west and Hamersley Gorge, located within Karijini National Park, approximately 13km south, south-east of the Solomon mine. Hamersley Gorge is a popular tourist precinct used for recreational activities.

The Project is located at the headwaters of the Millstream Catchment. The western portion of the Kings mining area is situated within the Millstream Water Reserve, which is a Priority 2 Public Drinking Water Source Area (PDWSA). Mining, including the operation of TSFs for tailings from physical separation processes, is considered compatible in P2 areas, as detailed in the Department of Water's Water Quality Protection Note 25 *Land compatibility tables for public drinking water source areas* (Department of Water, 2016). The TSF is not located within the PDWSA.

The Project currently consists of several iron ore mining areas including Firetail North and South, Valley of the Kings (Kings), Valley of the Queens (Queens), Trinity and Zion.

Mining is undertaken using standard open cut methods, with overburden and waste stored in external waste dumps and/or backfilled to the mined out pit. Ore processing is undertaken using permanent and/or mobile ore processing facilities (OPF). Tailings produced from the beneficiation of ore through the Kings OPF wet processing circuit are deposited into the Kings Valley Tailings Storage Facility (TSF). The mining operation is supported by ancillary infrastructure including accommodation village wastewater treatment plants (WWTP), inert and putrescible landfills, used tyre storage areas, a bioremediation facility, bulk and satellite fuel storage areas, workshops and administration buildings. The activities undertaken at the premises are described further in Appendix B.

FMG also accepts liquid waste from the Solomon Power Station, occupied by TEC Pipe Pty Ltd. This liquid waste comprises of treated wastewater from a reverse osmosis plant, oil water separator and cooling tower blowdown. FMG reuses this treated wastewater for dust suppression across the Solomon Project.

Oily water separators are operated at the Bulk Fuel Facility, Rail Fuel Siding, Castle Camp Washdown Bay, Trinity Fuel Farm, Kings Fuel Farm, Firetail Fuel Farm and Kings Ore Processing Facility for the treatment of potentially contaminated water prior to discharge to the environment.

The mine is currently operating under Ministerial Statement 862 under Part IV of the *Environmental Protection Act 1986* (the EP Act), which was approved 20 April 2016. Approval for the clearing of native vegetation has been sought, and is approved under Ministerial Statement 862.

Licence L8464/2010/2 was amended on 15 May 2017 to approve works to lift the embankment of the existing TSF, thereby increasing the storage capacity of the facility. At the time of this amendment, other minor amendments were also implemented, including:

- increase in the number of tyres permitted to be stored from 1,500 to 2,500 tyres;
- additional mine pits and waste dump made available for waste disposal;
- increase in the volume of satellite fuel storage across the site from 2,200 to 2,500 cubic metres; and
- removal of oily water separator discharge points and associated monitoring requirements from the Licence.

Updates were also implemented in line with recent administrative changes within DER, including the removal of conditions not considered valid, enforceable and/or risk based, changes to the definitions and the AACR reporting requirements specified in the Licence.

June 2017 – DER initiated amendment
When Licence L8464/2010/2 was amended on 15 May 2017, the Delegated Officer determined to remove the Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) and polycyclic aromatic hydrocarbons (PAC) monitoring requirements and BTEX limit from Tables 2.2.2, 3.2.1 and 3.4.1 (see Advertisement and Consultation Table 5 in Decision Document for details). However, the required updates were not actually implemented in Licence L8464/2010/2 to give effect to these changes.

This Licence is the result of a DER initiated amendment to remove the BTEX and PAC monitoring requirements from Tables 2.2.2, 3.2.1 and 3.4.1; and BTEX limit from Table 3.4.1, as previously determined by the Delegated Officer.

The licences and works approvals issued for the Premises are:

Instrument log		
Instrument	**Issued**	**Description**
W4645/2010/1	22 April 2010	Works approval for construction of Castle Camp WWTP
L8464/2010/1	14 October 2010	New licence for Castle Camp WWTP
W4846/2010/1	3 March 2011	Works approval for Castle Camp upgrade to category 54
W4881/2011/1	3 November 2011	Works approval for Dally Camp WWTP
W4900/2011/1	23 June 2011	Works approval for Direct Shipping Ore Processing Plant
W4930/2011/1	4 August 2011	Works approval for Mobile Crushing Plant
W4932/2011/1	4 August 2011	Works approval for Stockyard Mobile Crushing Plant
W4940/2011/1	4 August 2011	Works approval for Ellie Camp WWTP
W5088/2011/1	9 February 2012	Works approval for Kangi Camp WWTP and waste transfer station
L8464/2010/1	9 February 2012	Licence amendment increase capacity
W5110/2011/1	3 November 2011	Works approval for Processing plant and tailings facility
L8464/2010/1	14 June 2012	Licence amendment increase capacity
W5192/2012/1	19 July 2012	Works approval for Bulk fuel facility
W5246/2012/1	1 November 2012	Works approval for Central Facilities Infiltration trench
L8464/2010/1	21 February 2013	Licence amendment add category 5, 12 and 73
W5407/2013/1	7 July 2013	Works approval for an additional Ore Mobile Crushing Facility
W5429/2013/1	29 August 2013	Landfill and Waste Transfer Station
L8464/2010/1	5 December 2013	Licence amendment increase capacity category 5 and update the licence template

W5690/2014/1	25 September 2014	Works approval for construction of three OPFs (two at Kings and one at Firetail)
L8464/2010/1	12 February 2015	Licence amendment to increase capacity of categories 5 and 73, and add category 64
L8464/2010/1	23 April 2015	Licence amendment to include categories 57 and 61
L8464/2010/2	15 October 2015	Licence renewal and amendment to upgrade Dally Camp WWTP, include discharges from oily water separators as emissions to land, change the TSF monitoring requirements and update the prescribed premises boundary
L8464/2010/2	2 June 2016	Licence amendment for works approval to construct landfill and waste transfer station
L8464/2010/2	15 May 2017	Licence amendment to approve TSF embankment lift, remove OWS discharge and monitoring locations, increase category 57 and 73 approved design capacities and include additional inert waste disposal location.
L8464/2010/2	19 June 2017	Licence amendment to remove the BTEX and PAC monitoring requirements from Tables

Severance

It is the intent of these Licence conditions that they shall operate so that, if a condition or a part of a condition is beyond the power of this Licence to impose, or is otherwise *ultra vires* or invalid, that condition or part of a condition shall be severed and the remainder of these conditions shall nevertheless be valid to the extent that they are within the power of this Licence to impose and are not otherwise *ultra vires* or invalid.

END OF INTRODUCTION

Licence conditions

1 General

1.1 Interpretation

1.1.1 In the Licence, definitions from the *Environmental Protection Act 1986* apply unless the contrary intention appears.

1.1.2 For the purposes of this Licence, unless the contrary intention appears:

'Act' means the *Environmental Protection Act 1986;*

'Annual Audit Compliance Report' means a report in a format approved by the CEO as presented by the Licensee or as specified by the CEO from time to time and published on the Department's website;

'annual period' means the inclusive period from 1 January to 31 December in the same year;

'AS/NZS 2031' means the Australian Standard AS/NZS 2031 Selection of containers and preservation of water samples for microbiological analysis;

'AS/NZS 5667.1' means the Australian Standard AS/NZS 5667.1 *Water Quality – Sampling – Guidance of the Design of sampling programs, sampling techniques and the preservation and handling of samples;*

'AS/NZS 5667.10' means the Australian Standard AS/NZS 5667.10 *Water Quality – Sampling – Guidance on sampling of waste waters;*

'AS/NZS 5667.11' means the Australian Standard AS/NZS 5667.11 *Water Quality – Sampling – Guidance on sampling of groundwaters;*

'averaging period' means the time over which a limit or target is measured or a monitoring result is obtained;

'cfu/100mL' means colony forming units per 100 millilitres;

'CEO' means Chief Executive Officer of the Department of Environment Regulation*;*

'CEO' for the purpose of correspondence means;
Chief Executive Officer
Department Division 3 Part V of the *Environmental Protection Act 1986*
Locked Bag 33, Cloisters Square
PERTH WA 6850
Email: info@der.wa.gov.au;

'cleanfill' has the meaning listed in Landfill definitions;

'Department' means the department established under section 53 of the Public Sector Management Act and designated as responsible for the administration of Division 3 Part V of the *Environmental Protection Act 1986*;

'freeboard' means the distance between the maximum water surface elevations and the top of retaining banks or structures at their lowest point;

'HDPE' means high density polyethylene;

'Inert Waste Type 1' has the meaning defined in Landfill Definitions;

'Inert Waste Type 2' has the meaning defined in Landfill Definitions;

'Landfill Definitions' means the document titled "Landfill Waste Classification and Waste Definitions 1996" published by the Chief Executive Officer of the Department of Environment as amended from time to time;

'Licence' means this Licence numbered L8464/2010/2 and issued under the Act*;*

'Licensee' means the person or organisation named as Licensee on page 1 of the Licence;

'mbgl' means metres below ground level;

'NATA' means the National Association of Testing Authorities, Australia;

'NATA accredited' means in relation to the analysis of a sample that the laboratory is NATA accredited for the specified analysis at the time of the analysis;

'Premises' means the area defined in the Premises Map in Schedule 1 and listed as the Premises address on page 1 of the Licence;

'Putrescible Waste' has the meaning listed in Landfill Definitions;

'quarterly period' means the 4 inclusive periods from; 1 January to 31 March, 1 April to 30 June, 1 July to 30 September and 1 October to 31 December;

'Schedule 1' means Schedule 1 of this Licence unless otherwise stated;

'Schedule 2' means Schedule 2 of this Licence unless otherwise stated;

'six monthly' means the 2 inclusive periods from 1 January to 30 June and 1 July to 31 December in the same year;

'spot sample' means a discrete sample representative at the time and place at which the sample is taken;

'TSF' means tailings storage facility;

'usual working day' means 0800 – 1700 hours, Monday to Friday excluding public holidays in Western Australia; and

'WWTP' means wastewater treatment plants.

1.1.3 Any reference to an Australian or other standard in the Licence means the relevant parts of the standard in force from time to time during the term of this Licence.

1.1.4 Any reference to a guideline or code of practice in the Licence means the version of that guideline or code of practice in force from time to time, and shall include any amendments or replacements to that guideline or code of practice made during the term of this Licence.

1.2 Premises operation

1.2.1 The Licensee shall ensure that all pipelines (or sections of pipelines) containing tailings are either:

(a) equipped with telemetry; or
(b) equipped with automatic cut-outs in the event of a pipe failure; and/or
(c) provided with secondary containment sufficient to contain any spill for a period equal to the time between routine inspections.

1.2.2 The Licensee shall ensure that the waste material specified in Table 1.2.1 is only stored and/or treated within the vessels or compounds provided with the infrastructure detailed in Table 1.2.1.

Table 1.2.1: Containment infrastructure

Containment cell or dam number(s)	Material	Infrastructure requirements
TSF1	Tailings	• Maintain a minimum freeboard of 500mm as measured from the operational pond surface to lowest elevation of perimeter embankment • Provide additional sufficient freeboard to minimise the likelihood of erosion of the embankments by wave action • Install and maintain a seepage collection and recovery system
TSF1 Gravity Decant Water Storage Pond	Tailings supernatant liquor/ decant liquor/ tailings leachate/seepage	• HDPE Liner • Maintain vertical freeboard of 300mm

1.2.3 The Licensee shall ensure that where wastes produced on the Premises are not taken off-site for lawful use or disposal, they are managed in accordance with the requirements in Table 1.2.2.

Table 1.2.2: Management of waste

Waste type	Management strategy	Requirements[1,2]
Sewage	Biological and physical	Not to exceed 1,178 m^3/ day
Treated wastewater	Chemical treatment (disinfection) prior to onsite irrigation	Not applicable
Sewage sludge	Storage (enclosed tanks) and sludge press	Not applicable
Used tyres	Storage	• Not more than 2,500 used tyres shall be stored at the premises at any one time • Used tyres shall not be stored closer than 6m from any other tyre stack

Cleanfill	Receipt, handling and disposal by landfilling	• No more than 14,000 tonnes per year (combined with Inert Waste Type 2) shall be disposed of by landfilling • Disposal of waste by landfilling shall only take place within the prescribed premises in the locations as shown in the Map of disposal points in Schedule 1 • Waste shall be placed in a defined trench or within an area enclosed by earthen bunds • All disposal locations are to be surveyed and the latitude and longitude recorded • The separation distance between the base of the landfill and the highest groundwater level shall not be less than 2m <u>Untreated wood</u> • Disposal of Untreated Wood is to be to the Solomon Landfill, Firetail North Waste Dump, Firetail Waste Wood Disposal Area and Kings Waste Dump (as depicted in the map of disposal points in Schedule 1)
Inert Waste Type 1		
Putrescible waste		
Inert Waste Type 2		Burial of waste shall only take place within the prescribed premises in the Solomon Landfill, Kings Pit, Kings Waste Dump, Firetail South Waste Dump, Firetail South Pit, Firetail North Pit, Trinity Waste Dump and Trinity Mine Pit as shown in the Map of disposal points in Schedule 1 Cell locations where tyres and other waste rubber are to be buried will be surveyed and the latitude and longitude recorded

Note 1: Requirements for landfilling tyres are set out in Part 6 of the *Environmental Protection Regulations 1987*.
Note 2: Additional requirements for the acceptance and landfilling of controlled waste (including asbestos and tyres) are set out in the *Environmental Protection (Controlled Waste) Regulations 2004*.

1.2.4 The Licensee shall ensure that the irrigation of treated wastewater meets the following:
(a) no irrigation generated run-off, spray drift or discharge occurs beyond the boundary of the designated irrigation areas, as identified in the map of emissions points (L1 and L2) depicted in Schedule 1;
(b) wastewater is evenly distributed over the irrigation area;
(c) no soil erosion occurs;
(d) irrigation does not occur on land that is waterlogged; and
(e) a healthy vegetation cover is maintained over the wastewater irrigation areas.

1.2.5 The Licensee shall ensure that cover is applied and maintained on landfilled wastes in accordance with Table 1.2.3 and that sufficient stockpiles of cover are maintained on site at all times.

Table 1.2.3: Cover requirements [1]			
Waste Type	**Material**	**Depth**	**Timescales**
Clean fill Inert Waste Type 1	No cover required		
Inert Waste Type 2	Inert and incombustible material	Sufficient to ensure waste is totally covered and no waste is left exposed	At least weekly
Putrescible waste			
		1000 mm	Within 3 months of achieving final waste contours

Note 1: Additional requirements for the covering of tyres are set out in Part 6 of the *Environmental Protection Regulations 1987.*

1.2.6 The Licensee shall:
- (a) undertake inspections as detailed in Table 1.2.4;
- (b) where any inspection identifies that an appropriate level of environmental protection is not being maintained, take corrective action to mitigate adverse environmental consequences as soon as practicable; and
- (c) maintain a record of all inspections undertaken.

Table 1.2.4 Inspection of infrastructure		
Scope of inspection	**Type of inspection**	**Frequency of inspection**
Tailings pipelines	Visual integrity	Daily
Tailings return water lines	Visual integrity	Daily
TSF 1 embankment freeboard	Visual to confirm required freeboard capacity is available	Daily

1.2.7 The Licensee shall undertake an annual water balance for the TSF. The water balance shall as a minimum consider the following:
- (a) site rainfall;
- (b) evaporation;
- (c) tailings return water recovery volumes;
- (d) seepage recovery volumes; and
- (e) volumes of tailings deposited.

1.2.8 The Licensee shall construct the tailings storage facility embankment lift in accordance with the requirements specified in the infrastructure requirements detailed in Table 1.2.5. The Licensee must not depart from the design and construction requirements specified in Table 1.2.5 except:
- (a) where such departure is minor in nature and does not materially change or affect the infrastructure; or
- (b) where such departure improves the functionality of the infrastructure and does not increase risks to public health, public amenity or the environment;

and all other conditions in this Licence are still satisfied.

Table 1.2.5: Infrastructure requirements	
Infrastructure	**Requirements (Design and construction)**
Tailings Storage Facility embankment lift	- Designed to contain rainfall associated with a 1 in 100 year, 72 hours storm event and maintain a 500 millimetre freeboard - Staged embankment lift up to Relative Level 605 m Australian Height Datum, and length of 1,100 metres
Tailings delivery	- Steel or high density polyethylene pipeline from the Kings Ore Processing facility - Spigots located along TSF embankment
Decant facility	- Use of existing gravity decant tower - Two additional decant towers and/or skid mounted pumps with floating intakes

Note 1: Where the details and commitments of the documents listed in condition 1.2.9 are inconsistent with any other condition of this Licence, the conditions of this Licence shall prevail.

1.2.9 The Licensee shall operate the tailings storage facility, following the embankment lift, in accordance with the conditions of this Licence, following submission of the compliance documents required under condition 4.3.1.

1.2.10 The Licensee shall ensure the limits specified in Table 1.2.6 are not exceeded.

Table 1.2.6 Production or design capacity limits		
Category[1]	**Category description[1]**	**Premises production or design capacity limit**
5	Processing or beneficiation of metallic or non-metallic ore	95,300,000 tonnes of ore per annual period
61	Liquid waste facility	110,000 tonnes per annual period
62	Solid waste depot	6,000 tonnes per annual period
73	Bulk storage of chemicals	9,500 m^3 in aggregate

Note 1: *Environmental Protection Regulations 1987,* Schedule 1.

1.2.11 The Licensee shall maintain the following infrastructure to ensure that stormwater from operational areas is diverted for treatment prior to disposal or discharge:

(a) sediment basins at the Sizing Hubs, Kings and Firetail Ore Processing Facilities, Direct Shipping Ore Processing Plant, Rail Stockyard and Mobile Crushing Facilities;
(b) diversion drain to the north-east of the stockyard; and
(c) drains and sealed collection sumps around satellite fuel facilities and maintenance workshops, excluding roofed and bunded facilities.

2 Emissions

2.1 General

2.1.1 The Licensee shall record and investigate the exceedance of the limit specified in condition 2.2.2 of this licence.

2.2 Emissions to land

2.2.1 The Licensee shall ensure that where waste is emitted to land from the emission points in Table 2.2.1 (and identified on the map of emission points in Schedule 1) it is done so in accordance with the conditions of this licence.

Table 2.2.1: Emissions to land

Emission point reference and location on Map of emission points	Description	Source including abatement
L1	Discharge of treated wastewater to irrigation field	Effluent from Castle/Dally Camp WWTP
L2	Discharge of treated wastewater to irrigation field, onsite dust suppression and landscape irrigation	Effluent from Kangi Camp WWTP
L3	Discharge of treated wastewater	Bulk Fuel Facility oily water separator

2.2.2 The Licensee shall not cause or allow emissions to land greater than the limits listed in Table 2.2.2.

Table 2.2.2: Emission limits to land

Emission point reference	Parameter	Limit (including units)	Averaging period
L3 (Oily water separator emission to land)	Total Recoverable Hydrocarbons	15 mg/L	Spot sample (when flowing)

3 Monitoring

3.1 General monitoring

3.1.1 The Licensee shall ensure that:
(a) all water samples are collected and preserved in accordance with AS/NZS 5667.1 unless otherwise indicated;
(b) all wastewater sampling is conducted in accordance with AS/NZS 5667.10;
(c) all groundwater sampling is conducted in accordance with AS/NZS 5667.11;
(d) all microbiological samples are collected and preserved in accordance with AS/NZS 2031; and
(e) all laboratory samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured unless indicated otherwise in the relevant table.

3.1.2 The Licensee shall ensure that:
(a) monthly monitoring is undertaken at least 15 days apart;
(b) six monthly monitoring is undertaken at least 5 months apart;
(c) quarterly monitoring is undertaken at least 45 days apart; and
(d) annual monitoring is undertaken at least 9 months apart.

3.1.3 The Licensee shall ensure that all monitoring equipment used on the Premises to comply with the conditions of this Licence is calibrated in accordance with the manufacturer's specifications.

3.1.4 The Licensee shall, where the requirements for calibration cannot be practicably met, or a discrepancy exists in the interpretation of the requirements, bring these issues to the attention of the CEO accompanied with a report comprising details of any modifications to the methods.

3.2 Monitoring of emissions to land

3.2.1 The Licensee shall undertake the monitoring in Table 3.2.1 according to the specifications in that table.

Table 3.2.1: Monitoring of emissions to land

Monitoring point reference	Parameter	Units	Averaging period	Frequency
L1 - L2	Cumulative volume of treated wastewater discharged from each WWTP	m^3	Cumulative monthly	Continuous
	pH[1]	-	Spot sample	Quarterly
	5-Day Biochemical Oxygen Demand	mg/L		
	Total Suspended Solids			
	Total Nitrogen			
	Total Phosphorus			
	E.coli	cfu/100ml		
L3	Total recoverable hydrocarbons	mg/L	Spot sample (when flowing)	Quarterly

Note 1: In-field non-NATA accredited analysis permitted.

3.3 Monitoring of inputs and outputs

3.3.1 The Licensee shall undertake the monitoring in Table 3.3.1 according to the specifications in that table.

Table 3.3.1: Monitoring of inputs and outputs

Input/Output	Parameter	Units	Averaging Period	Frequency
Waste Inputs	Volume of Inert Waste Type 1 Inert Waste Type 2 (tyres/rubber waste and conveyor belts) and Putrescible Waste	tonnes	Each load	Cumulative monthly total

3.4 Process monitoring

3.4.1 The Licensee shall undertake the monitoring in Table 3.4.1 according to the specifications in that table.

Table 3.4.1: Process monitoring

Monitoring point reference	Process description	Parameter	Units	Limit	Frequency	Method
TSF1	Tailings delivery to TSF	Volume and mass of tailings deposited into the TSF	m^3 and Tonnes	N/A	Continuous	None specified
	TSF return line	Volumes of water recovered from the TSF	m^3 and kL			
	Stormwater discharge line to Kangeenarina Creek	Volume of water discharged to creek	m^3 and kL			
		Total dissolved solids Major cations and anions - Na, K, Ca, Mg, Cl, SO_4 Dissolved metals – As, Cd, Co, Cr, Cu, Hg, Ni, Pb, Se, Zn	mg/L		At commencement of discharge event and weekly thereafter while discharge is occurring	
L3 (Treated wastewater holding tanks)	Treated wastewater from oily water separators used for dust suppression	pH[1]	pH units	N/A	Quarterly	None specified
		Total Dissolved Solids	mg/L	N/A		
		Total Recoverable Hydrocarbons	mg/L	15		
L4 (Stockyard TK901 Storage Tank)	Treated wastewater accepted on site from the Solomon Power Station and used for dust suppression	Flow rate	m^3	N/A	Quarterly	None specified
		pH[1]	pH units	N/A		
		Total Dissolved Solids	mg/L	<5,000		
		Total Recoverable Hydrocarbons	mg/L	<15		

Note 1: In-field non-NATA accredited analysis permitted.

3.5 Ambient environmental quality monitoring

3.5.1 The Licensee shall undertake the monitoring in Table 3.5.1 according to the specifications in that table.

Table 3.5.1: Monitoring of ambient groundwater quality

Monitoring point reference	Parameter	Units	Averaging period	Frequency
GQ1 and GQ2 (Bulk Fuel Facility groundwater monitoring bores)	Standing water level	m(AHD) mbgl	Spot sample	Six monthly
	Total Recoverable Hydrocarbons	mg/L		
GQ3 GQ4 GQ5 GQ6 GQ7 (TSF1 groundwater monitoring bores)	Standing water level	m(AHD)		Quarterly
	pH[1]	pH units		
	Electrical conductivity	µS/cm		
	Total Dissolved Solids	mg/L		
	Major cations and anions - Na, K, Ca, Mg, Cl, SO_4	mg/L		
	Dissolved metals – As, Cd, Co, Cr, Cu, Hg, Ni, Pb, Se, Zn	mg/L		
GQ8 (WF-MB001S) GQ9 (WF-MB001D) GQ10 (WF-MB002D) (Landfill monitoring bores)	Standing water level	mbgl		Quarterly
	pH[1]	pH units		
	Electrical Conductivity	µS/cm		
	Total Dissolved Solids	mg/L		
	Total Recoverable Hydrocarbons	mg/L		
	As, Cd, Cr, Cu, Hg, Pb, Ni, Zn	mg/L		
	Nitrate	mg/L		
	Total Phosphorus	mg/L		

Note 1: In-field non-NATA accredited analysis permitted.

4 Information

4.1 Records

4.1.1 All information and records required by the Licence shall:
- (a) be legible;
- (b) if amended, be amended in such a way that the original and subsequent amendments remain legible or are capable of retrieval;
- (c) except for records listed in 4.1.1(d) be retained for at least 6 years from the date the records were made or until the expiry of the Licence or any subsequent licence; and
- (d) for those following records, be retained until the expiry of the Licence and any subsequent licence:
  - (i) off-site environmental effects; or
  - (ii) matters which affect the condition of the land or waters.

4.1.2 The Licensee must submit to the CEO by the 31 March each year an Annual Audit Compliance Report indicating the extent to which the Licensee has complied with the conditions of the Licence for the Annual Period.

4.1.3 The Licensee shall implement a complaints management system that as a minimum records the number and details of complaints received concerning the environmental impact of the activities undertaken at the Premises and any action taken in response to the complaint.

4.1.4 The Licensee shall record and maintain a permanent record of all disposal sites authorised under condition 1.2.3.

4.2 Reporting

4.2.1 The Licensee shall submit to the CEO an Annual Environmental Report by the 31 March each year. The report shall contain the information listed in Table 4.2.1 in the format or form specified in that table.

Table 4.2.1: Annual Environmental Report

Condition or table (if relevant)	Parameter	Format or form[1]
-	Summary of any failure or malfunction of any pollution control equipment or any incidents that have occurred during the annual period and any action taken	None specified
Tables 2.2.2 and 3.4.1	Limit exceedances	None specified
Table 1.2.2	Untreated wood, used tyre and other waste rubber disposal locations	None specified
1.2.7	TSF annual water balance	None specified
Table 3.2.1	Monitoring of emissions to land, including an interpretation of results against plant design specifications for L1 and L2	None specified
Table 3.3.1	Monitoring of inputs and recording of quantities of waste disposed of at each site	None specified
Table 3.4.1	Mass of tailings deposited into TSF1, recovered water and recovered seepage water	None specified
	L3 monitoring results – treated wastewater used for dust suppression	
	L4 monitoring results – water accepted from Solomon Power Station used for dust suppression	

Table 3.5.1	Ambient groundwater monitoring results, and for GQ3 to GQ6 (TSF monitoring bores) a comparison of results against the site specific trigger values detailed in the document, *Life of Mine Geochemistry Programme – Site Specific Trigger Values* (45-SY-EN-0001). Details of investigations conducted, including outcomes, environmental impacts and remedial actions, in relation to trigger exceedances and a discussion of any trends identified.	None specified
4.1.2	Compliance	None specified
4.1.3	Complaints summary	None specified

Note 1: Forms are in Schedule 2

4.2.2 The Licensee shall ensure that the Annual Environmental Report also contains an assessment of the information contained within the report against previous monitoring results and Licence limits.

4.2.3 The Licensee shall submit the information in Table 4.2.2 to the CEO according to the specifications in that table.

Table 4.2.2: Non-annual reporting requirements

Condition or table (if relevant)	Parameter	Reporting period	Reporting date (after end of the reporting period)	Format or form
-	Copies of original monitoring reports submitted to the Licensee by third parties	Not Applicable	Within 14 days of the CEO's request	As received by the Licensee from third parties

4.3 Notification

4.3.1 The Licensee shall ensure that the parameters listed in Table 4.3.1 are notified to the CEO in accordance with the notification requirements of the table.

Table 4.3.1: Notification requirements

Condition or table (if relevant)	Parameter	Notification requirement[1]	Format or form[2]
-	Breach of any limit specified in the Licence	Part A: As soon as practicable but no later than 5pm of the next usual working day. Part B: As soon as practicable	N1
1.2.8	The Licensee shall submit a compliance document to the CEO, following the construction of the tailings storage facility embankment lift. The compliance document/s shall: (a) be certified by a suitably qualified engineer and certify that the works were constructed in accordance with the construction requirements specified in Table 1.2.5; and (b) provide a list of departures from the specified works certified by a suitably qualified engineer; and	Within one month of completion of construction	None specified

	(c) be signed by a person authorised to represent the Licensee and contain the printed name and position of that person within the company.		
3.1.4	Calibration report	As soon as practicable.	None specified

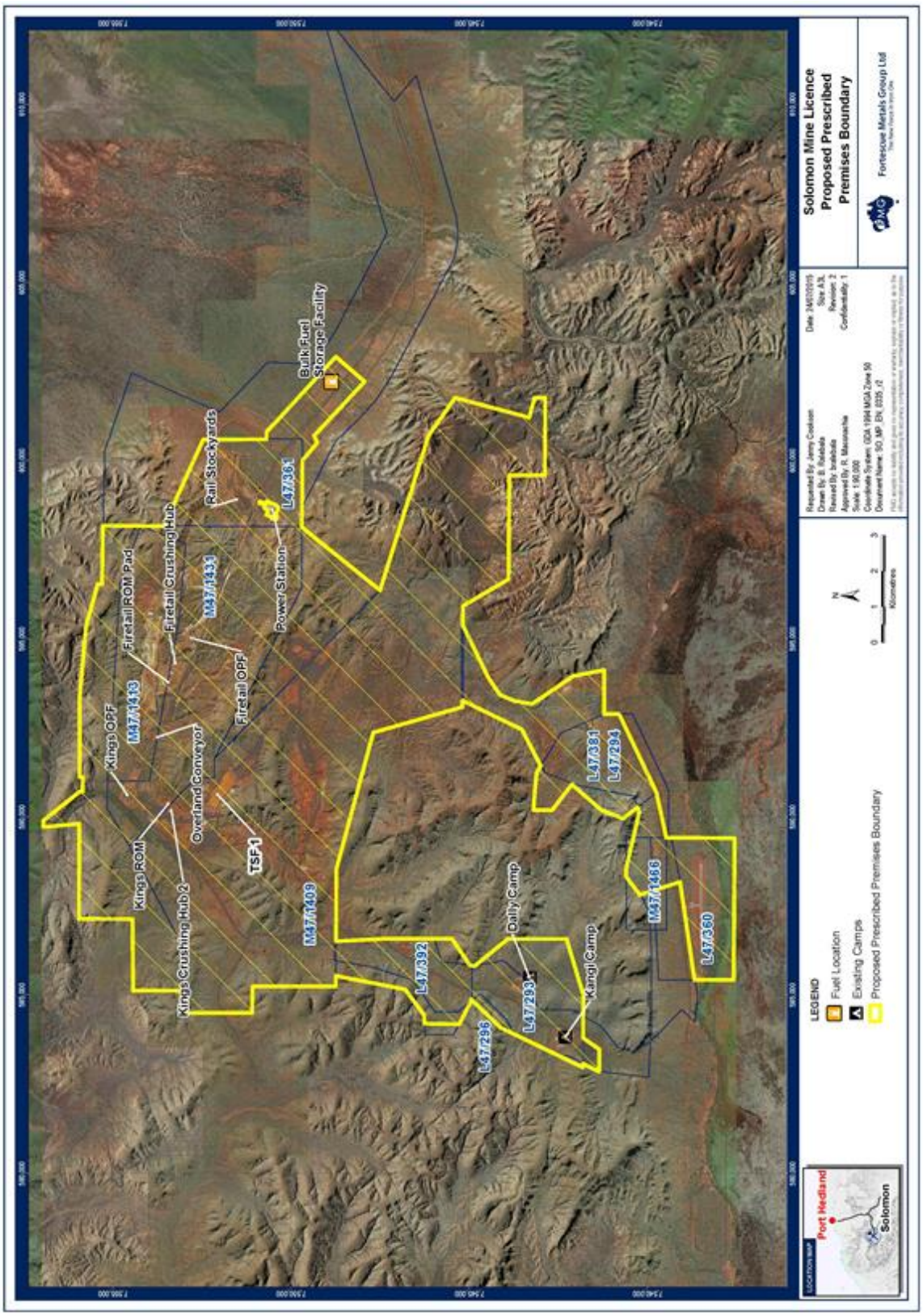
Note 1: Notification requirements in the licence shall not negate the requirement to comply with s72 of the Act

Note 2: Forms are in Schedule 2

Schedule 1: Maps

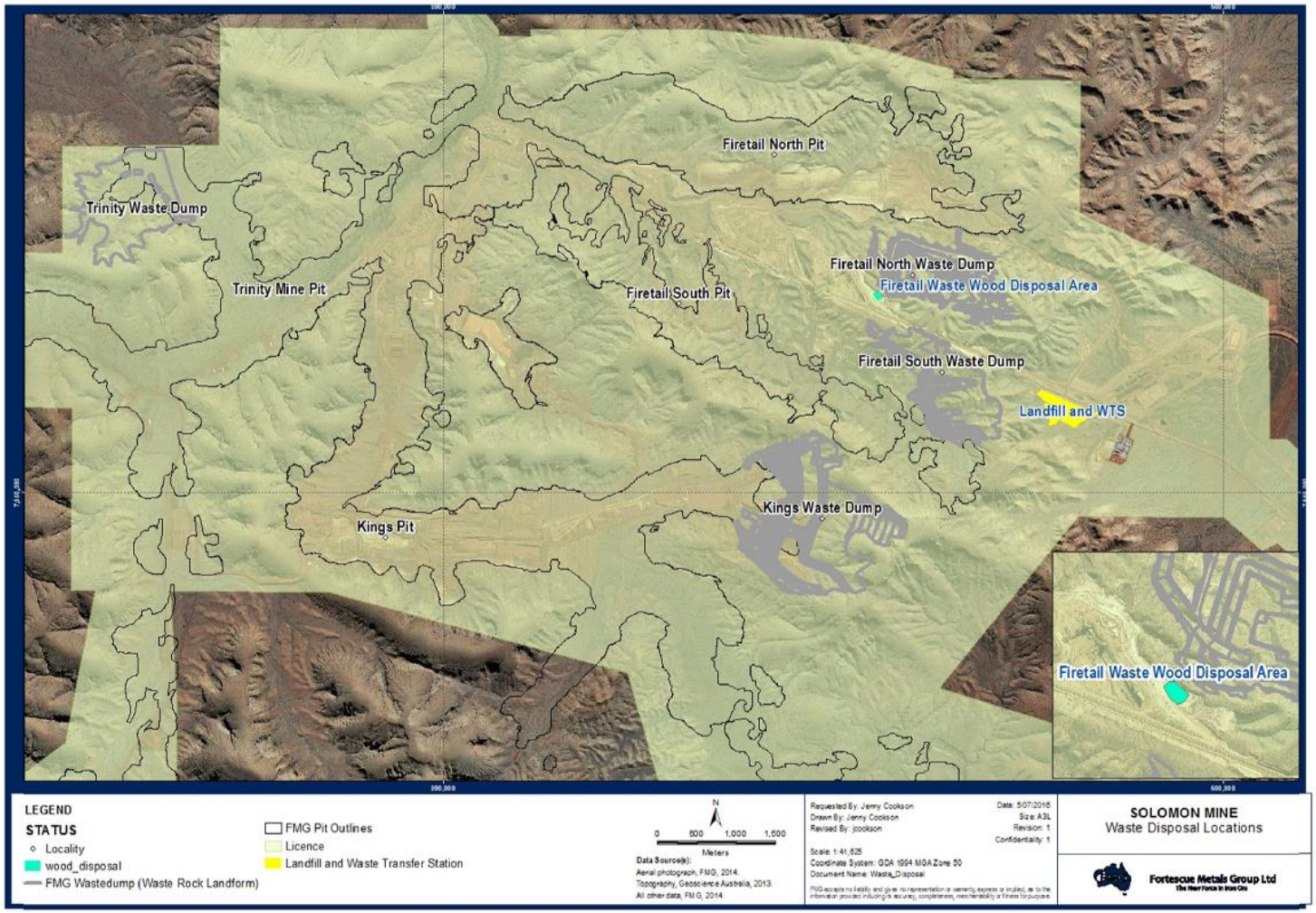
Premises map

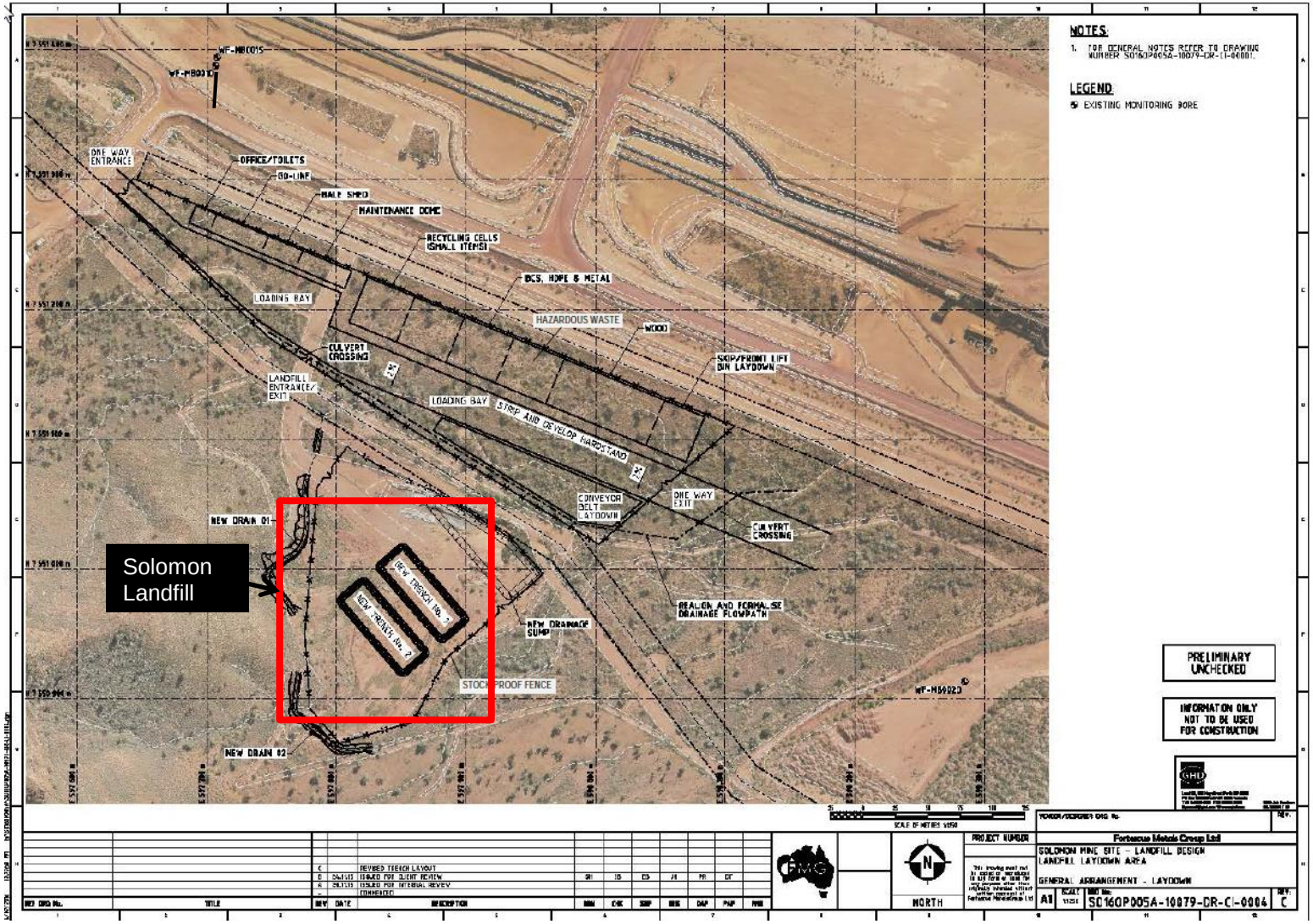
The Premises is shown in the map below. The yellow line depicts the Premises boundary



Map of Inert and Putrescible Waste Disposal Pits

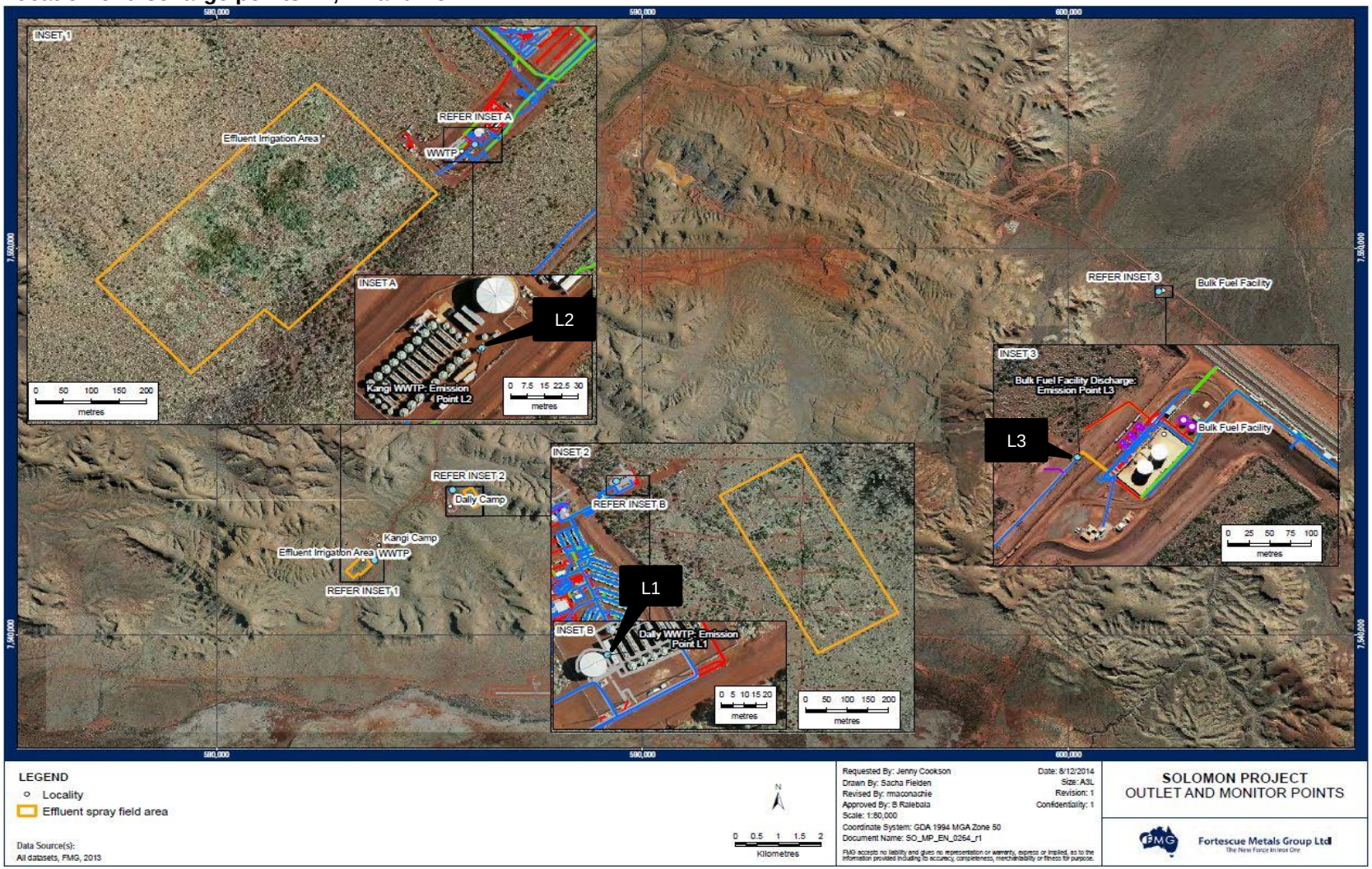
The used tyre and other waste rubber disposal sites as per Table 1.2.2 are shaded grey in the figure below. Firetail North Waste Dump and Firetail Waste Wood Disposal Area are for the disposal of untreated timber. The Solomon Putrescible Landfill and Waste Transfer Station is shaded yellow in the figure below.



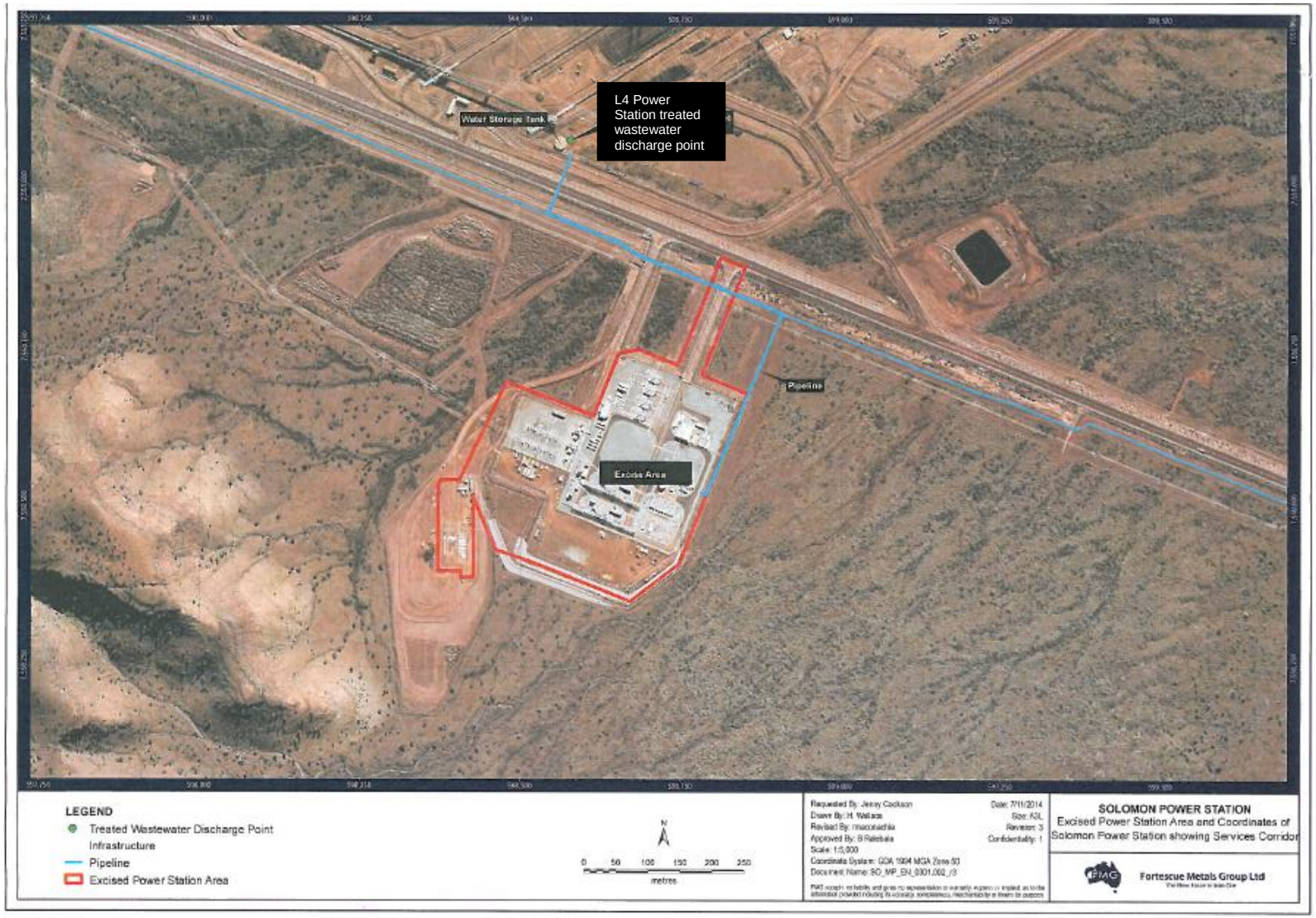

Solomon Landfill
NOTES:
1. FOR GENERAL NOTES REFER TO DRAWING NUMBER SC16OP005A-10079-GR-CI-0000.
LEGEND
EXISTING MONITORING BORE
ONE WAY ENTRANCE
OFFICE/TOILETS
MAINTENANCE DOME
RECYCLING CELLS (SMALL ITEMS)
BCS, HDPE & METAL
LOADING BAY
HAZARDOUS WASTE
WOOD
CULVERT CROSSING
LANDFILL ENTRANCE/ EXIT
SKIP/FRONT LIFT BIN LAYDOWN
STRIP AND DEVELOP HARDSTAND
CONVEYOR BELT LAYDOWN
ONE WAY EXIT
NEW DRAIN 01
NEW TRENCH No. 1
NEW TRENCH No. 2
REALIGN AND FORMALISE DRAINAGE FLOWPATH
NEW DRAINAGE SUMP
STOCK PROOF FENCE
NEW DRAIN 02
WF-MB0023
PRELIMINARY UNCHECKED
INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION
NORTH
Fortescue Metals Group Ltd
SOLOMON MINE SITE - LANDFILL DESIGN
LANDFILL LAYDOWN AREA
GENERAL ARRANGEMENT - LAYDOWN
A1
SC16OP005A-10079-DR-CI-0004
C

The location of the emission and monitoring points defined in Table 2.2.1 and 3.2.1 are shown in the figures below:

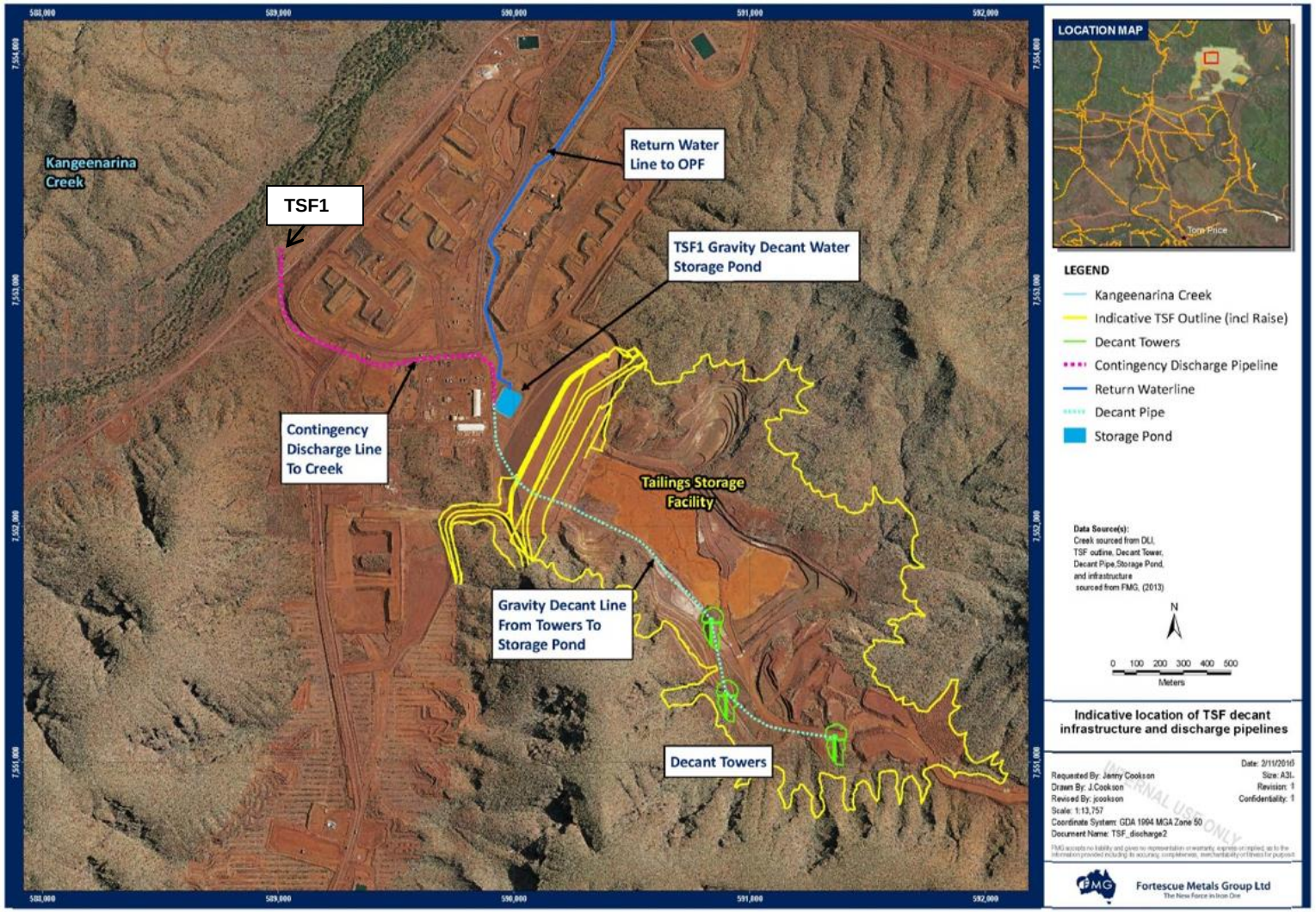
Location of discharge points L1, L2 and L3



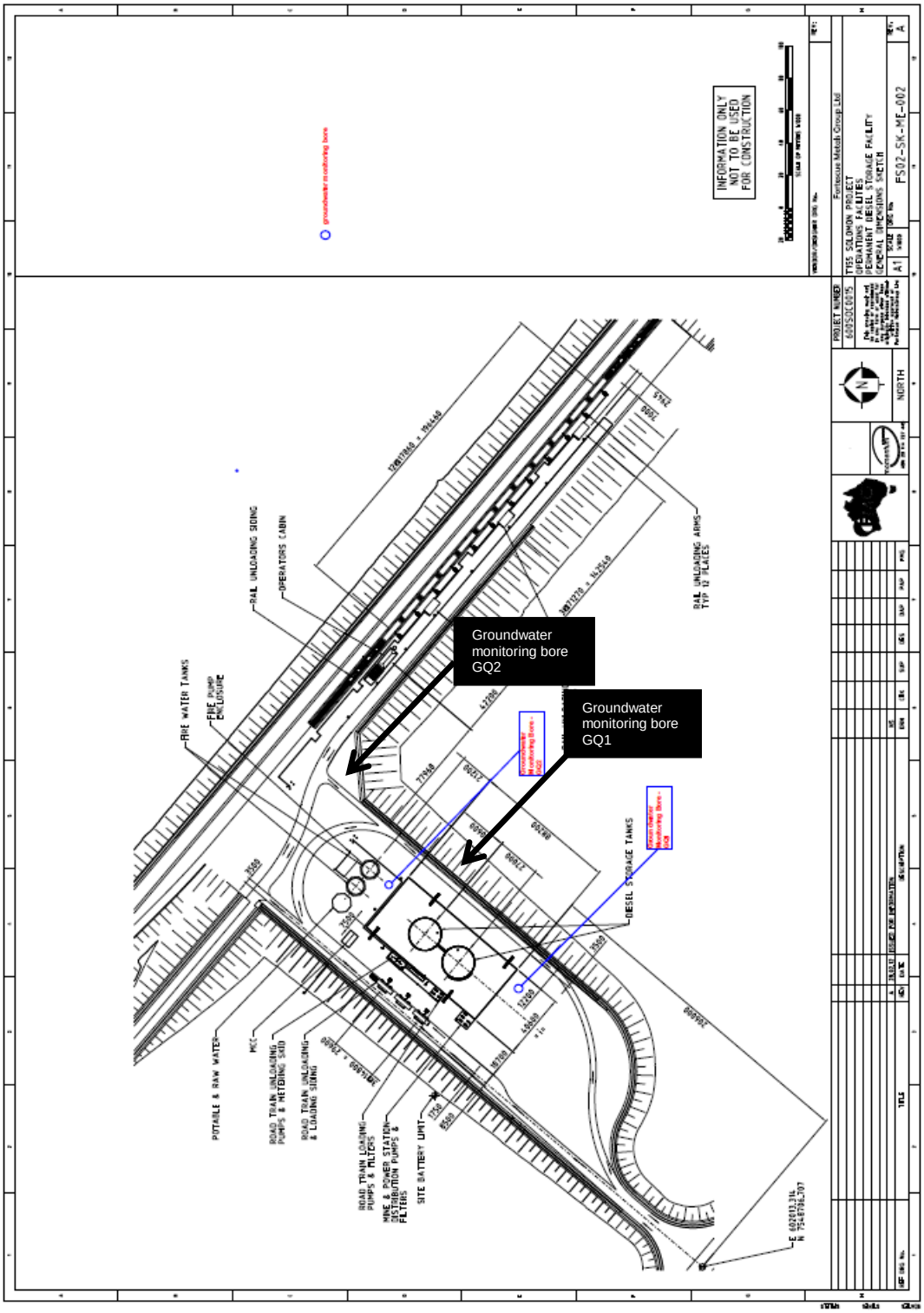
Location of monitoring point L4 described in Table 3.4.1

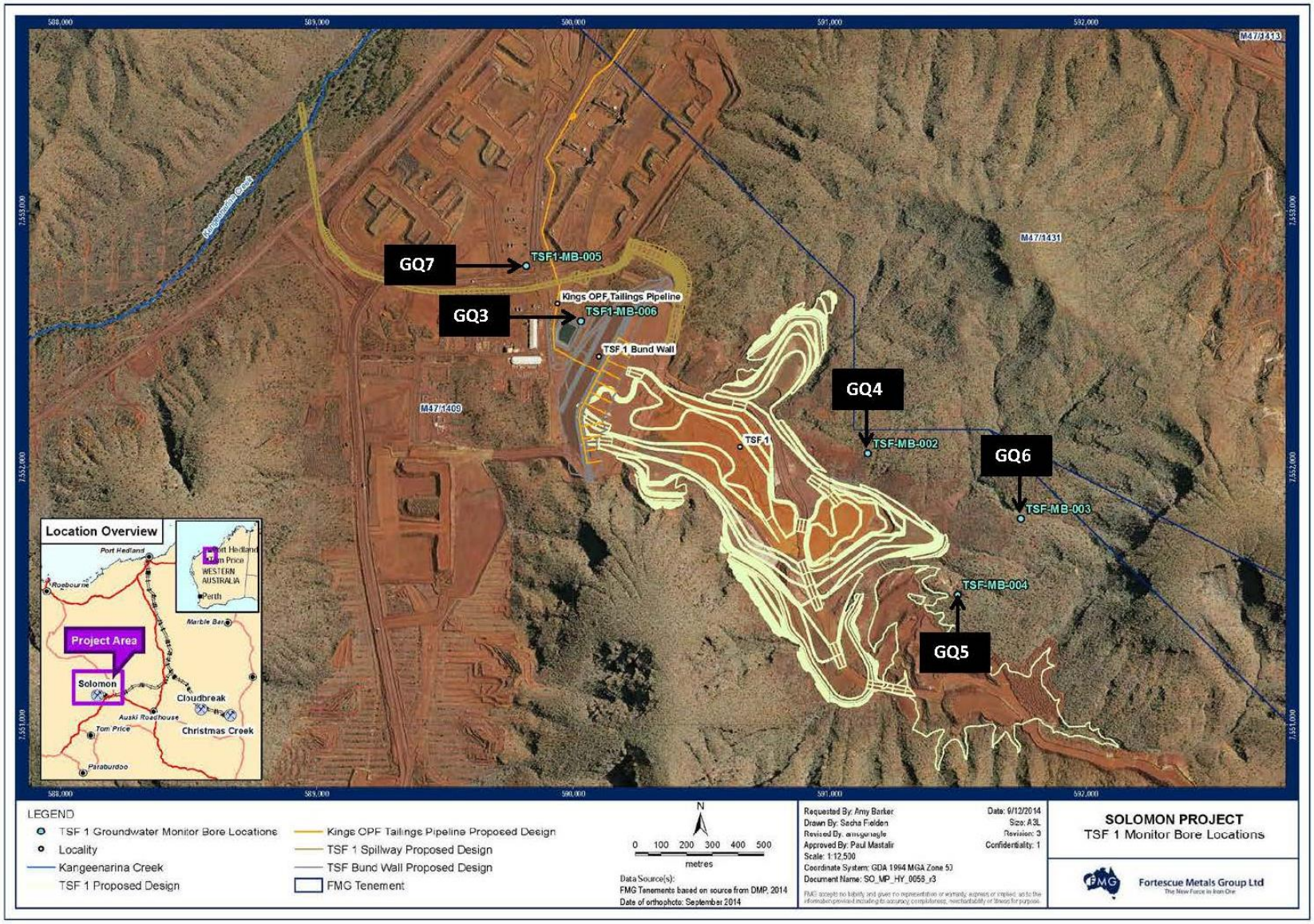


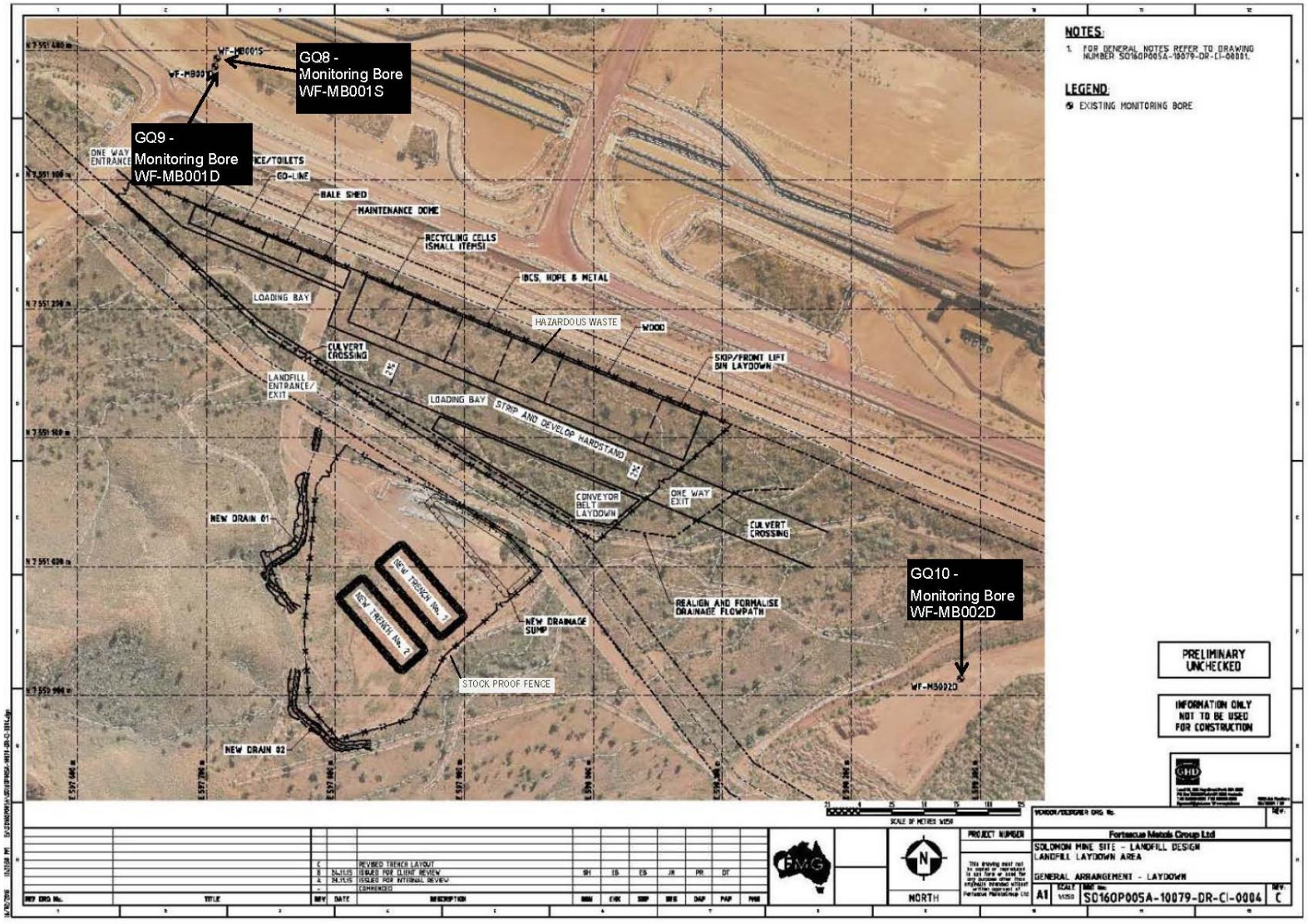
The tailings decant infrastructure as defined in Table 1.3.1 and the process monitoring location TSF1 as defined in Table 3.4.1 are shown below



The locations of the monitoring points defined in Table 3.5.1 are shown in the three following figures.




GQ7
TSF1-MB-005
GQ3
TSF1-MB-006
Kings OPF Tailings Pipeline
TSF 1 Bund Wall
GQ4
TSF-MB-002
GQ6
TSF-MB-003
TSF-MB-004
GQ5
TSF 1
M47/1409
M47/1431
M47/1413
Location Overview
Project Area
Solomon
Cloudbreak
Christmas Creek
Port Hedland
Roebourne
Marble Bar
Auski Roadhouse
Tom Price
Paraburdoo
Perth
WESTERN AUSTRALIA
LEGEND
TSF 1 Groundwater Monitor Bore Locations
Locality
Kangeenarina Creek
TSF 1 Proposed Design
Kings OPF Tailings Pipeline Proposed Design
TSF 1 Spillway Proposed Design
TSF Bund Wall Proposed Design
FMG Tenement
0 100 200 300 400 500
metres
Data Source(s):
FMG Tenements based on source from DMP, 2014
Date of orthophoto: September 2014
Requested By: Amy Barker
Drawn By: Sacha Fielden
Approved By: Paul Mastalir
Scale: 1:12,500
Coordinate System: GDA 1994 MGA Zone 50
Document Name: SO_MP_HY_0058_r3
Date: 6/12/2014
Size: A3L
Revision: 3
Confidentiality: 1
SOLOMON PROJECT
TSF 1 Monitor Bore Locations
Fortescue Metals Group Ltd


GQ8 - Monitoring Bore WF-MB001S
GQ9 - Monitoring Bore WF-MB001D
GQ10 - Monitoring Bore WF-MB002D
WF-MB001S
WF-MB001D
WF-MB002D
ONE WAY ENTRANCE
ICE/TOILETS
GO-LINE
BALE SHED
MAINTENANCE DOME
RECYCLING CELLS (SMALL ITEMS)
IBCS, HDPE & METAL
LOADING BAY
HAZARDOUS WASTE
WOOD
CULVERT CROSSING
LANDFILL ENTRANCE/ EXIT
SKIP/FRONT LIFT BIN LAYDOWN
LOADING BAY
STRIP AND DEVELOP HARDSTAND
CONVEYOR BELT LAYDOWN
ONE WAY EXIT
CULVERT CROSSING
NEW DRAIN 01
NEW TRENCH No. 1
NEW TRENCH No. 2
NEW DRAINAGE SUMP
REALIGN AND FORMALISE DRAINAGE FLOWPATH
STOCK PROOF FENCE
NEW DRAIN 02
NOTES:
1. FOR GENERAL NOTES REFER TO DRAWING NUMBER SD160P005A-10079-DR-CI-00001.
LEGEND
EXISTING MONITORING BORE
PRELIMINARY UNCHECKED
INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION
NORTH
Fortescue Metals Group Ltd
SOLOMON MINE SITE - LANDFILL DESIGN
LANDFILL LAYDOWN AREA
GENERAL ARRANGEMENT - LAYDOWN
A1
SD160P005A-10079-DR-CI-0004
C
REVISED TRENCH LAYOUT
B 24.11.15 ISSUED FOR CLIENT REVIEW
A 18.11.15 ISSUED FOR INTERNAL REVIEW
COMMENCED

Schedule 2: Reporting & notification forms

These forms are provided for the proponent to report monitoring and other data required by the Licence. They can be requested in an electronic format.

Licence: L8464/2010/2 Licensee: FMG Solomon Pty Ltd
Form: N1 Date of breach:

Notification of detection of the breach of a limit
These pages outline the information that the operator must provide.
Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

Part A

Licence Number	
Name of operator	
Location of Premises	
Time and date of the detection	

Notification requirements for the breach of a limit	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

Part B

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident.	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission.	
The dates of any previous N1 notifications for the Premises in the preceding 24 months.	

Name	
Post	
Signature on behalf of FMG Solomon Pty Ltd	
Date	

Government of Western Australia
Department of Environment Regulation

Decision Document

Environmental Protection Act 1986, Part V

Proponent: FMG Solomon Pty Ltd

Licence: L8464/2010/2

Registered office:	87 Adelaide Terrace EAST PERTH WA 6004
ACN:	128 959 179
Premises address:	Solomon Mine M47/1409, M47/1413, M47/1431, L47/293, L47/294, L47/360, L47/363, L46/392 and portion of L47/296, L47/361 and L47/381 MT SHEILA WA 6751
Issue date:	Thursday, 15 October 2015
Commencement date:	Sunday, 18 October 2015
Expiry date:	Friday, 17 October 2025

Decision

Based on the assessment detailed in this document the Department of Environment Regulation (DER) has decided to issue an amended licence. DER considers that in reaching this decision, it has taken into account all relevant considerations.

Decision Document prepared by:	Haley Brunel Licensing Officer
Decision Document authorised by:	Alana Kidd Manager Licensing (Resource Industries)

Contents

1 Purpose of this Document

This decision document explains how DER has assessed and determined the application and provides a record of DER's decision-making process and how relevant factors have been taken into account. Stakeholders should note that this document is limited to DER's assessment and decision making under Part V of the *Environmental Protection Act 1986.* Other approvals may be required for the proposal, and it is the proponent's responsibility to ensure they have all relevant approvals for their Premises.

2 Administrative summary

<table>
<tr><th colspan="3">Administrative details</th></tr>
<tr><td>Application type</td><td colspan="2">Works Approval ☐
New Licence ☐
Licence amendment ☒
Works Approval amendment ☐</td></tr>
<tr><td rowspan="7">Activities that cause the premises to become prescribed premises</td><td>Category number(s)</td><td>Assessed design capacity</td></tr>
<tr><td>5</td><td>Not more than 95,300,000 tonnes per annual period</td></tr>
<tr><td>54</td><td>Not more than 1,178 cubic metres per day</td></tr>
<tr><td>57</td><td>2,500 tyres in total</td></tr>
<tr><td>61</td><td>110,000 tonnes per annual period</td></tr>
<tr><td>62</td><td>6,000 tonnes per annual period</td></tr>
<tr><td>64</td><td>14,000 tonnes per annual period</td></tr>
<tr><td>73</td><td>Not more than 9,500 cubic metres in aggregate</td></tr>
<tr><td>Application verified
Application fee paid</td><td colspan="2">Date: N/A
Date: N/A</td></tr>
<tr><td>Works Approval has been complied with
Compliance Certificate received</td><td colspan="2">Yes☐ No☐ N/A☒
Yes☐ No☐ N/A☒</td></tr>
</table>

Commercial-in-confidence claim	Yes☐ No☒	
Commercial-in-confidence claim outcome	N/A	
Is the proposal a Major Resource Project?	Yes☒ No☐	
Was the proposal referred to the Environmental Protection Authority (EPA) under Part IV of the *Environmental Protection Act 1986*?	Yes☒ No☐	Referral decision No: Managed under Part V ☐ Assessed under Part IV ☒
Is the proposal subject to Ministerial Conditions?	Yes☒ No☐	Ministerial statement No: 862 EPA Report No: 1841
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the *Environmental Protection Act 1986*)?	Yes☐ No☒ Department of Water consulted Yes ☐ No ☒	
Is the Premises within an Environmental Protection Policy (EPP) Area Yes☐ No☒ If Yes include details of which EPP(s) here.		
Is the Premises subject to any EPP requirements? Yes☐ No☒ If Yes, include details here, eg Site is subject to SO_2 requirements of Kwinana EPP.		

3 Executive summary of proposal and assessment

FMG Solomon Pty Ltd (FMG) operates the Solomon Project (the Project) located in the Pilbara region of Western Australia, approximately 54 km north of Tom Price and 12 km north west of Karijini National Park.

The Project currently consists of several iron ore mining areas including Firetail North and South, Valley of the Kings (Kings), Valley of the Queens (Queens), Trinity and Zion.

Mining is undertaken using standard open cut methods, with overburden and waste stored in external waste dumps and/or backfilled to the mined out pit. Ore processing is undertaken using permanent and/or mobile ore processing facilities (OPF). Tailings produced from the beneficiation of ore through the Kings OPF wet processing circuit are deposited into the Kings Valley Tailings Storage Facility (TSF). The mining operation is supported by ancillary infrastructure including accommodation village wastewater treatment plants (WWTP), inert and putrescible landfills, used tyre storage areas, a bioremediation facility, bulk and satellite fuel storage areas, workshops and administration buildings.

FMG also accepts liquid waste from the Solomon Power Station, occupied by TEC Pipe Pty Ltd. This liquid waste comprises of treated wastewater from a reverse osmosis plant, oil water separator and cooling tower blowdown. FMG reuses this treated wastewater for dust suppression across the Solomon Project.

The full description of the premises is provided in Appendix A.

Location and siting

Sensitive land uses

The nearest sensitive receptors to the Solomon Mine are Hamersley Station, located approximately 33km south-west and Hamersley Gorge, located within Karijini National Park, approximately 13km south, south-east of the Solomon mine. Hamersley Gorge is a popular tourist precinct used for recreational activities.

Specified Ecosystems

The Project is located at the headwaters of the Millstream Catchment. The western portion of the Kings mining area is situated within the Millstream Water Reserve, which is a Priority 2 Public Drinking Water Source Area (PDWSA). Mining, including the operation of TSFs for which tailings from physical separation processes, is considered compatible in P2 areas, as detailed in the Department of Water's Water Quality Protection Note 25 *Land compatibility tables for public drinking water source areas* (Department of Water, 2016). The TSF is not located within the PDWSA.

The vegetation of the province is typically open and dominated by spinifex, wattles and occasional Eucalypts. There were six Western Australian Priority Flora species recorded within the project area during the 2010 surveys conducted by Ecoscape (Australia) Pty Ltd, ENV Australia Pty Ltd and Coffey Environments Pty Ltd:

- *Gompholobium karijini* (Priority 2);
- *Acacia effusa* (Priority 3);
- *Acacia deweana* (Priority 3);
- *Indigofera gilesil subsp. Gilesii* (Priority 2)
- *Eremophila magnifica subsp. Magnifica* (Priority 4); and
- *Goodenia nuda* (Priority 4).

The Licensee has indicated that a desktop assessment has been undertaken and identified one Threatened Ecological Community (TEC) (Themeda Grasslands on Cracking Clays) and one Priority Ecological Community (PEC) (Brockman Iron Cracking Clay Communities of the Hamersley Range) within the development envelope.

Conservation significant fauna species that have been found in the area include:

- Northern Quoll (Schedule 1, Endangered);
- Pilbara Olive Python (Schedule 1, Vulnerable);
- Fork Tailed Swift (Migratory);
- Rainbow Bee-eater (Priority 5);
- Pebble-mound Mouse (Priority 4);
- Ghost Bat (Schedule 4) and
- Blind snake (Priority 1).

Ministerial Statement 862 includes conditions relating to the management of priority species and significant vegetation, vertebrate fauna (Northern Quoll, Pilbara Leaf-nosed Bat and Mulgara species), including the development of a Fauna Management Plan; and troglofauna.

Geology and soils

The Project is located within the Hamersley Basin, which overlies the older Pilbara craton. The Hamersley Range extends across the central Pilbara from the north-west to the south-east. It is a large plateau approximately 400 km in length, ranging in width from 32 to 64 kilometres; and consists of mostly banded iron formation, pelite (metamorphosed siltstone), chert and dolomite. Stony soils with shallow red loams and some red-brown non-cracking clays and red loamy earths cover much of the area.

The Brockman Iron Formation is the dominant lithology of the hills, plateaux and outcrops in the Project area; with outcrops in the area consisting of the Dales Gorge, Whaleback Shale and Joffre members of the Banded Iron Formation (BID). The Mt McRae Shale overlies these members and outcrops at the surface within the valley floor of the Firetail anticline. The Mt McRae shale visible at surface is weathered and is geochemically dissimilar from potentially acid forming units found at depth. The Banded Iron Formation ore body is predominantly located within the Dales Gorge Member deposits.

Large paleochannels, one to two kilometres in width and tens of kilometres long, are incised into the bedrock. During the tertiary period weathering and erosion of the Banded Iron Formation deposited rich materials into these incised channels (Channel Iron Deposits (CID)) and this material has subsequently been buried and preserved. The younger Detrital Iron Deposits (DID) overlying the Channel Iron Deposits has been eroded from iron rich materials.

The Solomon iron ore deposits comprise all three of the deposits described above, being BID, CID and DID. The BID and DID are generally above the water table, with the CID being generally below the water table. Mine dewater abstracted to allow access to the CID deposit is used on site as process water and for dust suppression.

Regional hydrology

The primary aquifer in the Project area is associated with the Lower CID unit. Regional bedrock groundwater flow direction is south to north, with the water table an average of more than 50 m below the surface. Groundwater quality is fresh to marginal, with total dissolved solids ranging from 200 mg/L to 1,000 mg/L.

The Project is located within the Lower Fortescue River Watershed which has an intermittent flow pattern resulting in river and creeks being dry for most of the year. Following significant rainfall, channels in the region carry large volumes of water with peak flows usually occurring within 24 hours of the rainfall event.

Three streams traverse operational areas of the Project; Zalamea (South East flow), Kangeenarina (Central flow) and Queens (West flow). The western boundary of the operations is formed by the Weelumurra Creek.

Meteorology

The Pilbara has an arid climate with two distinct seasons; a pronounced dry spell between August and October; and a wet season between December and March, continuing through until June and accounting for most of the average annual rainfall. The average yearly evaporation rate of 3,000mm exceeds the average yearly rainfall of 457.9mm. The region is characterised by low and variable rainfall, generally resulting from local thunderstorms and occasional high intensity cyclonic events.

The Project is located in the Pilbara bioregion, within the Hamersley subregion as defined by the Interim Biogeographic Regionalisation of Australia.

Clearing

The mine is currently operating under Ministerial Statement 862 under Part IV of the *Environmental Protection Act 1986* (the EP Act), which was approved 19 April 2011. Approval for the clearing of native vegetation is approved under Ministerial Statement 862.

Part IV of the EP Act

The Solomon Project was approved by the EPA under Part IV of the EP Act. The EPA recommendations to the Minister for the Environment were reported in EPA Report 1386, which resulted in Ministerial Statement 862 being issued on 19 April 2011.

Other Approvals

Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act)

The Solomon Project was referred to the Commonwealth government for assessment in relation to Matters of National Environmental Significance. Approval for the Solomon Project was issued by the Federal Minister for the Environment on 28 April 2011 (EPBC 2010/5567).

The Solomon Iron Ore Project – Sustaining Production proposal was also referred to the Commonwealth Department of Environment (DoE). The proposal was determined to be a controlled

action under the EPBC Act on 18 August 2014 (EPBC 2014/7275) as it may impact on listed threatened species and communities.

Rights in Water and Irrigation Act 1914 (RIWI Act)
Groundwater abstraction is undertaken to enable the mining of ore below the water table and provide mine site water supply. Groundwater is abstracted in accordance with the 5C licences issued by the Department of Water, pursuant to the RIWI Act.

Mining Act 1978
The Licensee has advised that Mining Proposals under the *Mining Act 1978* has been submitted to the Department of Mines and Petroleum. The Mining Proposal for the TSF embankment lift was approved 3 April 2017.

Licence Amendment – May 2017

The Licensee is seeking to amend Licence L8464/2010/2 to lift the embankment of the existing TSF, thereby increasing the storage capacity of the facility. At the time of this amendment, other minor amendments are being sought by the Licensee, including:

- increase in the number of tyres permitted to be stored from 1,500 to 2,500 tyres;
- additional mine pits and waste dump made available for waste disposal;
- increase in the volume of satellite fuel storage across the site from 2,200 to 2,500 cubic metres; and
- removal of oily water separator discharge points and associated monitoring requirements from the Licence.

Updates have been implemented in line with recent administrative changes within DER, including the removal of conditions not considered valid, enforceable and/or risk based, changes to the definitions and the AACR reporting requirements specified in the Licence.

DER's assessment and decision making with respect to emissions and discharges associated with the operation of the Solomon Mine, and the amendments sought by the Licensee, are described in the Decision Table in Section 4.

Licence Amendment – June 2017

On 15 May 2017, Licence L8464/2010/2 was amended, as described above. At the time of that amendment, the Licensee requested that the monitoring requirements for Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) and polycyclic aromatic hydrocarbons (PAC) be removed from conditions 2.2.2, 3.2.1 and 3.4.1; and the BTEX limit be removed from Table 3.4.1. The Licensee advised that monitoring for total recoverable hydrocarbons (TRH) will sufficiently indicate whether discharged treated wastewater contains unacceptable concentrations of hydrocarbons. The Delegated Officer determined to implement the changes as requested by the Licensee, however the required updates were not implemented in the Licence to give effect to the changes.

DER has initiated this amendment to correct this error by updating Tables 2.2.2, 3.2.1 and 3.4.1 to remove the requirement to monitor BTEX and PAC; and the BTEX limit from Table 3.4.1, as previously determined by the Delegated Officer (refer to Table 5: Advertising and Consultation for details).

4 Decision table

All applications are assessed in line with the *Environmental Protection Act 1986*, the *Environmental Protection Regulations 1987* and DER's Operational Procedure on Assessing Emissions and Discharges from Prescribed Premises. Where other references have been used in making the decision they are detailed in the decision document.

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
General conditions	Definitions Condition 1.2.1 (removed)	In accordance with recent administrative changes implemented within the Department, the definition of 'CEO' has been updated; and definitions for 'Annual Audit Compliance Report' and 'Department' included in this section to reflect changes to the reporting requirements for annual compliance reports. Guidance Statement *Setting Conditions* (DER, October 2015) requires conditions to be valid, enforceable and risk based. Following consideration of the requirements of this guidance statement, condition 1.2.1 has been removed from the Licence. Previous condition 1.2.1 specified: *"The Licensee shall immediately recover, or remove and dispose of spills of environmentally hazardous materials outside an engineered containment system".* This condition is not valid as it inconsistently regulates activities below prescribed category thresholds. DER has assessed the risk associated with spills of environmentally hazardous materials to determine if specific regulatory controls are required on the Licence. <u>Emission description</u> *Emission:* Spills of environmentally hazardous materials (eg. chemicals, hydrocarbons, detergents and glues/paints etc.), outside of engineered containment systems.	Guidance statement *Setting conditions* (DER, October 2015) *Environmental Protection Act 1986* *Environmental Protection (Unauthorised Discharges) Regulations 2004*

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		Impact: Soil contamination, impacts to surface water ecosystems, groundwater dependant ecosystems and terrestrial ecosystems from addition of hydrocarbons and other chemicals. *Controls:* The Licensee has implemented a number of controls to prevent and manage spills of environmentally hazardous materials. The Licensee has advised that chemical and hydrocarbon management is included in the site's induction program; and relevant personnel and contractors involved in chemical and hydrocarbon handling and storage activities are provided with appropriate training and equipment. Appropriate types and quantities of spill response equipment are maintained on site proportionate to the volume of chemicals and hydrocarbons stored. The Licensee also implements the *Chemical and Hydrocarbon Spills Response Procedure* (45-PL-EN-0014). Groundwater at the Solomon Project is approximately 50 metres below the surface. Creek systems in the project area are ephemeral, flowing after rainfall events. It is the responsibility of the Licensee to ensure compliance with other legislative requirements, including Australian Standard 1940-2004 – The storage and handling of flammable and combustible liquids, which specifies that clean up action needs to be initiated immediately following a leak or spill. A compliance inspection of the premises was undertaken by DER officers on 26 and 27 April 2016; no issues were raised regarding the management of spills of environmentally hazardous materials. The site will also be subject to future DER compliance inspections, which will include an evaluation of onsite	

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		procedures to manage environmentally hazardous materials, and how spills are attended to. Risk Assessment *Consequence:* The Delegated Officer has considered the depth to groundwater (50 mbgl) and ephemeral nature of the creek systems, and determined that the impact from spills would result in minimal onsite impacts. Therefore, the Delegated Officer considers the consequence to be slight. *Likelihood:* The Delegated Officer has considered the operator controls (training, spill response equipment provided) and determined that an environmental impact from spills could occur at some time. Therefore, the Delegated Officer considers the likelihood to be possible. *Risk rating:* The Delegated Officer has compared the consequence and likelihood ratings described above through the Emissions Matrix (Table 1) and determined that the overall rating of risk for spills of environmentally hazardous materials outside of engineered compounds to be **low.** Regulatory Controls: The Delegated Officer considers that spills outside of engineered containment structures will have minimal onsite consequences to sensitive ecosystems. The likelihood of this consequence occurring is possible; although appropriate measures are in place to ensure spills are prevented or attended to appropriately to mitigate potential environmental impacts. The risk associated with spills outside of engineered containment systems is low; therefore no regulatory controls are being applied to the Licence at this time. The general provisions of the EP Act with respect to the causing of pollution and	

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		environmental harm apply. Spills of environmentally hazardous materials may also be subject to subsidiary legislation, including the *Environmental Protection (Unauthorised Discharges) Regulations 2004*. Residual Risk: *Consequence:* Slight *Likelihood:* Possible *Risk rating:* Low	
Premises operation	Conditions 1.2.1 – 1.2.7	Conditions 1.2.1 to 1.2.7 specify requirements relating to the operation of pipelines containing tailings, waste containment infrastructure, waste management, management of the treated wastewater irrigation area, landfill cover requirements, inspection requirements for the TSF and provision of a TSF annual water balance. These conditions relate to the operation of the TSF, landfills, WWTP; and management of wastes within the premises. The basis for DER's decision making with respect to the inclusion of these conditions on the Licence is detailed in Appendix C.	Application supporting documentation *Landfill Waste Classification and Waste Definitions 1996* General provisions of the *Environmental Protection Act 1986* *Environmental Protection (Unauthorised Discharges) Regulations 2004*
	Condition 1.2.2 (previously 1.3.2)	Condition 1.2.2 has been updated to increase the number of tyres permitted to be stored on site from 1,500 to 2,500 used tyres at any one time. Condition 1.2.2 has also been updated to allow for the disposal of waste tyres, conveyor belts, waste rubber and concrete in the Trinity mine pits and the Trinity Waste Dump; and add the Kings Waste Dump as an additional disposal location for untreated wood. DER's assessment of inert waste disposal locations is detailed in Appendix B (premises operation).	
	Condition 1.2.8 and 1.2.9	The Licensee is seeking approval to raise the embankment of the existing TSF at the Solomon Mine. DER's assessment and decision making with respect to	

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		the proposed works is detailed in Appendix C. At the time of this amendment, the construction requirements for the Solomon Mine landfill and waste transfer station have been removed from condition 1.2.8 and 1.2.9 as compliance documentation for construction of the works was received 7 November 2016. The landfill and waste transfer station will be operated in accordance with the conditions of the Licence.	
	Condition 1.2.10	Condition 1.2.10 specifies the production and/or design capacity limits for the prescribed activities.	
	Condition 1.2.11	Condition 1.2.11 has been included and specifies infrastructure management requirements for stormwater diversion and treatment prior to discharge. DER's decision making with respect to the inclusion of this condition is detailed in Appendix B.	
	Previous condition 1.3.8 (removed)	**Conditions removed** Previous condition 1.3.8 specified: *"The Licensee shall ensure that the construction and operation of the mobile crushing and screening facilities is undertaken in accordance with the provisions outlined in the document "Solomon Manage Environmental Impacts of Mobile Crushing" (Leighton Contractors, 2013).* Fugitive dust is the primary emission associated with operation of the mobile crushing and screening facilities. Stormwater management also needs to be considered, as there is potential for surface water and groundwater to be impacted by stormwater runoff contaminated with hydrocarbons and containing high loads of sediment. An assessment of the existing dust management measures implemented by the Licensee at the Solomon Mine (Appendix F); and the Delegated Officer is satisfied that the Licensee has sufficient controls in place to manage dust	

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
	Previous conditions 1.3.9 and 1.3.10 (removed)	emissions at this time. DER's assessment of stormwater management is detailed in Appendix C, and includes measures implemented at the mobile crushing facilities. Previous condition 1.3.9 specified: *"The Licensee shall construct the Dally Camp WWTP upgrade works in accordance with the document "Licence Amendment Application, Solomon Mine Site" (Fortescue Metals Group Limited, September 2015, SO-AP-EN-0063).* Conditions relating to the construction of the Dally Camp WWTP upgrade have been removed from the Licence at the time of this amendment. The Dally Camp WWTP upgrade was approved when Licence L8464/2010/2 was issued on 15 October 2015. Compliance documentation for the Dally Camp WWTP upgrade was submitted to DER on 14 July 2016, confirming that the upgrade works were completed in accordance with the scope of works approved under Licence L8464/2010/2. At the time of reissue, the Licensee was also given approval to construct a sludge press, to be installed at the Kangi Camp WWTP. Compliance documentation for the construction of the sludge press has not been received. Condition 4.3.1 has been updated to require compliance for the sludge press. Previous condition 1.3.10 specified: *"The Licensee shall commission the upgraded Dally Camp WWTP for a period not exceeding 3 months."* Previous condition 1.3.10 has been removed as the commissioning period for the upgraded Dally Camp WWTP finished on 13 October 2016. The plant will be subject to the existing relevant conditions of Licence L8464/2010/2.	

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
	Condition 1.2.10	DER's assessment of the ongoing discharge of treated wastewater from the WWTP's at the Solomon Project, including the upgraded Dally Camp WWTP, is detailed in Appendix C (Emissions to land including monitoring). Condition 1.2.10 has been updated to increase the category 73 design capacity from 9,200 m^3 in aggregate to 9,500 m^3, to include an additional 300 m^3 of storage for satellite fuel storage.	
Emissions to land including monitoring	Condition 2.2.1 (revised) and 3.2.1	Condition 2.2.1 specifies the emission points from which waste is discharged to land and condition 3.2.1 outlines the monitoring requirements for these emissions. The Licensee has requested that the oily water separator treated wastewater emission points to land be removed from the Licence, based on the low environmental risk associated with the emission of treated wastewater from the OWSs. An assessment of the discharge of treated wastewater from the OWSs located at the satellite fuel facilities has been undertaken, and the Delegated Officers assessment and decision making is detailed in Appendix C. The Licensee operates two WWTPs at the premises; Castle/Dally Camp WWTP and Kangi WWTP with a combined design capacity of 1,178 m^3/day. Treated wastewater from the WWTPs is irrigated to separate designated irrigation areas. The Delegated Officer's assessment and decision making with respect to the discharge of treated wastewater to the designated irrigation areas is also detailed in Appendix C.	Application supporting documentation *Surface Water Management Plan* (100-PL-EN-1015) General provisions of the *Environmental Protection Act 1986* *Environmental Protection (Unauthorised Discharges) Regulations 2004*
Noise	N/A	<u>Emission description</u> *Emission:* Noise and vibrations from operation of equipment and vehicles. *Impact:* Impacts to amenity of sensitive receptors.	*Environmental Protection (Noise) Regulations 1997* General provisions of the

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		Controls: The Solomon Project is located over 30 km from the nearest pastoral homestead (Hamersley Station) and approximately 10 km from the boundary of Karijini National Park. The Licensee uses low noise equipment where practical to minimise noise during operation; crushers, engines and screening operations are enclosed/screened for safety, which also reduce noise emissions from the equipment. A noise and vibration modelling study was undertaken to determine noise impacts associated with the entire Solomon Project (operation of rail lines, processing facilities, blasting activities, power station and other mining operations). The modelling indicated that the maximum noise impact from all mining activities at the Solomon Project will be 9dBLA_{10} at Hamersley Gorge (the nearest sensitive receptor), which comply with the requirements set out in the *Environmental Protection (Noise) Regulations 1997*. Accordingly, negligible impacts to the amenity of the nearest human receptors are anticipated to occur as a result of noise emissions from operation of equipment and vehicles on site. <u>Risk Assessment</u> *Consequence:* The Delegated Officer notes that the closest sensitive receptors are Hamersley Gorge and Hamersley Station located 13 km and 33 km from the premises respectively; which is considered a reasonable separation distance to minimise potential noise impacts. The Delegated Officer has determined that minimal impacts to amenity will occur at a local scale, therefore the consequence is slight. *Likelihood:* The Delegated Officer has determined that amenity impacts from	*Environmental Protection Act 1986*

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		noise emissions may occur in exceptional circumstances, therefore the likelihood of the consequence occurring is rare. *Risk Rating:* The Delegated Officer has compared the consequence and likelihood ratings described above through the Emissions Matrix (Table 1) and determined that the overall rating of risk for noise emissions to be **low.** Regulatory Controls: The risk associated with noise has been assessed as low, therefore the Delegated Officer has not specified conditions relating to noise emissions in the Licence. The provisions of the *Environmental Protection (Noise) Regulations 1997* apply. Residual Risk *Consequence:* Slight *Likelihood:* Rare *Risk Rating:* Low	
Fugitive emissions	N/A	**Operations – Fugitive dust emissions** Fugitive dust emissions are generated from the processing, transport and stockpiling of ore, vehicle movements and wind erosion of open, cleared areas. DER's assessment of fugitive dust emissions associated with the operation of the Solomon Mine is detailed in Appendix E.	General provisions of the *Environmental Protection Act 1986* *Mine and Rail Dust Management Plan* (45-PL-EN-0030)
Odour	N/A	Emission description *Emission:* Odour emissions as a result of decomposing putrescible material at the putrescible landfill and operation of the WWTPs.	General provisions of the *Environmental Protection Act 1986*

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		Impact: Impacts to amenity of sensitive receptors, vermin attracted *Controls:* The landfill and waste transfer station are located 34 km from the nearest pastoral homestead (Hamersley Station) and approximately 13 km from the Hamersley Gorge. Waste will be covered at least weekly. Process controls and maintenance procedures are in place for the WWTPs. Should odour complaints be received, they will be logged as an incident and investigated. Further actions to reduce odour emissions may be implemented, including increasing the frequency of waste removal from site and improving waste container handling. <u>Risk Assessment</u> *Consequence:* The Delegated Officer notes that the closest sensitive receptors are Hamersley Gorge and Hamersley Station located 13 km and 33 km from the premises respectively. The Delegated Officer considers the separation distance sufficient has determined that minimal impacts to amenity will occur, therefore the consequence is slight. *Likelihood:* The Delegated Officer has determined that amenity impacts from odour emissions may occur in exceptional circumstances, therefore the likelihood of the consequence occurring is rare. *Risk Rating:* The Delegated Officer has compared the consequence and likelihood ratings described above through the Emissions Matrix (Table 1) and determined that the overall rating of risk for odour emissions to be **low.**	

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		Regulatory Controls: The risk associated with odour has been assessed as low, therefore the Delegated Officer has not specified conditions relating to odour emissions in the Licence. The general provisions of the EP Act apply. Residual Risk *Consequence:* Slight *Likelihood:* Rare *Risk Rating:* Low	
General monitoring	Conditions 3.1.1-3.1.4 Condition 3.1.3 (removed)	The Delegated Officer has imposed general monitoring conditions, including the application of appropriate Australian Standards for sampling, sampling frequency and calibration of monitoring equipment. These conditions ensure that results of monitoring conducted as a requirement of this Licence and reported to DER in the AER for review are accurate and reliable. Guidance Statement *Setting Conditions* (DER, October 2015) requires conditions to be valid, enforceable and risk based. Following consideration of the requirements of this guidance statement, condition 3.1.3 has been removed from the Licence. Previous condition 3.1.3 specified: *"The Licensee shall record production or throughput data and any other process parameters relevant to any non-continuous or continuous monitoring undertaken."* This condition is not enforceable as the parameters required to be recorded as not specified.	Australian Standard AS/NZS 2031 Selection of containers and preservation of water samples for microbiological analysis Australian Standard AS/NZS 5667.1 *Water Quality – Sampling – Guidance of the Design of sampling programs, sampling techniques and the preservation and handling of samples* Australian Standard AS/NZS 5667.10 *Water Quality – Sampling – Guidance on sampling of*

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
			waste waters Australian Standard AS/NZS 5667.11 *Water Quality – Sampling – Guidance on sampling of groundwaters*
Monitoring of inputs and outputs	Condition 3.3.1	The Delegated Officer has imposed the requirement to monitor the volume of waste accepted to the landfill facilities on the premises.	N/A
Process monitoring	Condition 3.4.1	As described in the premises operation section of this decision table (Appendix B), monitoring requirements for the TSF have been included in this section. Treated wastewater from oily water separators and the Solomon Power Station is used on site for dust suppression. Requirements for the monitoring of this treated wastewater have been included in the Licence. DER's assessment and decision making with respect to the use of treated wastewater for dust suppression is detailed in Appendix D.	N/A
Ambient environmental quality monitoring	Condition 3.5.1	Ambient groundwater monitoring at the bulk fuel facility and TSF have been implemented via condition 3.5.1. At the time of this amendment, the Delegated Officer has included groundwater monitoring requirements for the landfill. Appendix B assesses the risk associated with the operation of the landfill and DER's decision making with respect to the requirement to monitor groundwater at the landfill.	Australian Standard AS/NZS 5667.1 *Water Quality – Sampling – Guidance of the Design of sampling programs, sampling techniques and the preservation and handling of samples* Australian Standard AS/NZS 5667.11 *Water*

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
			Quality – Sampling – Guidance on sampling of groundwaters
Information	Conditions 4.1.1-4.1.4 Condition 4.2.1 - 4.2.3 Condition 4.3.1	The Delegated Officer has imposed conditions relating to record keeping, AACR's, complaints management and maintaining records of landfill locations. The Delegated Officer has imposed conditions to require the submission of an AER; including a summary of results against previous monitoring results and Licence limits. The Delegated Officer has imposed condition 4.3.1 which specifies the notification requirements for the Licence, including breach of a licence limit and submitting compliance documentation following construction of infrastructure approved under amendments to Licence L8464/2010/2. At the time of this amendment, the requirement to submit a commissioning plan for the Dally Camp WWTP upgrade has been removed from condition 4.3.1, as the Licensee has complied with this notification requirement and submitted the plan to DER. The requirement to submit compliance documentation for the landfill and waste transfer station has also been removed as this was submitted to DER on 7 November 2016.	N/A
Licence Duration	N/A	At the time of the Licence renewal in October 2015 the Licence was extended for a period of 10 years, in accordance with the Guidance Statement Licence Duration (DER, May 2015).	DER Guidance Statement, 'Licence Duration', Revised May 2015

5 Advertisement and consultation table

Date	*Event*	*Comments received/Notes*	*How comments were taken into consideration*
07/09/2015	Licence renewal application advertised	N/A	N/A
08/10/2015	Proponent sent a copy of draft instrument	Comment regarding the approved production or design capacity for category 73.	Noted. Approved premises production or design capacity maintained at 9,200 m^3 to capture the bulk fuel storage facility and satellite fuel storage areas.
		Remove fugitive dust emissions as being an emission of concern from the premises description section.	Noted. Dust emissions, if not adequately managed, are a concern. FMG has demonstrated that adequate management has been implemented to minimise the impacts associated with dust emissions. The wording of this section has been changed to read 'main emissions' as opposed to 'main emissions of concern'.
		Table 1.3.2 Include the Firetail Waste Wood Disposal Area as a specified disposal location for untreated wood.	Table 1.3.2 updated in line with comments.
		Condition 1.3.7 This condition relating to the annual water balance for the TSF is of minimal value as there is no requirement to report the information.	Table 4.2.1 updated to include the requirement to report this information in the Annual Environmental Report.
		Table 1.3.5 Specify a limit of 7,000 m^3 for category 73 as the bulk fuel facility is the only facility	Limit set at 9,200 m^3 to include the bulk fuel facility and satellite fuel storage areas, as

Date	*Event*	*Comments received/Notes*	*How comments were taken into consideration*
		that meets the description of category 73. **Table 2.2.2** Remove the limits associated with the discharge of treated wastewater from the Kangi and Dally/Castle Camps WWTPs. FMG will develop appropriate limits which will be addressed in a subsequent Licence amendment application, on completion of the upgrades to the Dally WWTP.	category 73 applies to the storage of chemicals, in aggregate, which would include the bulk fuel storage facility and satellite storage facilities. Change implemented in line with the Licensee's request.
19/10/2015	Licence issue advertised	N/A	N/A
11/08/2016	Amendment to lift TSF embankment referred to Department of Mines and Petroleum (DMP)	Mining Proposal with appropriate geotechnical construction designs require approval from DMP before TSF lift can be constructed.	
12/01/2017	Licensee sent a copy of draft amended Licence	**Condition 1.2.1** Request that Condition 1.2.21 be amended such that the pipeline controls (telemetry, automatic cut outs or secondary containment) does not apply to the tailings return water pipeline, as: • The pipeline is located within active operational areas and there is minimal risk of water discharged from the pipeline reaching Kangeenarina Creek (the nearest sensitive receptor); • The tailings supernatant water is of reasonable quality; with the only potential impact which may result from a discharge being a minor	The Delegated Officer has considered the Licensee's comments and has determined that reasonable justification has been provided to remove the requirement for tailings return water pipelines to be subject to condition 1.2.1. Furthermore, the location of the pipeline in an active operational area will ensure that any leaks and/or ruptures are readily identified to allow for immediate response. Condition 1.2.1 has been updated in accordance with the Licensee's request.

Date	*Event*	*Comments received/Notes*	*How comments were taken into consideration*
		increase in salinity of the receiving environment (electrical conductivity of the supernatant water is approximately 1,200 µS/cm.	
		Condition 1.2.3 The Licensee requested confirmation that they would not be restricted to only store tyres in the locations identified in the map of indicative tyre storage locations included in Schedule 1.	The Delegated Officer has deemed it appropriate to remove the map of indicative tyre storage locations from Schedule 1 to allow alternative locations to be used, as required. The Delegated Officer notes that Condition 1.2.3 includes provisions relating to the storage of tyres which the Licensee will need to comply with, irrespective of the storage location. The Delegated Officers considers that the requirements (not more than 2,500 tyres stored at the premises at one time and at least 6 m between tyre stacks) are appropriate to manage the risks associated with tyre storage at the premises.
		Condition 1.2.8 Include 'steel' in the design and construction specifications for the tailings delivery pipeline infrastructure requirements.	The Delegated Officer has updated Condition 1.2.8 to also include steel. This change does not change the risk profile for the operation of the pipelines; which are otherwise high density polyethylene.
		Condition 1.2.11 The Licensee requested removal of the requirement to monitor Kangeenarina Creek pools downstream of the TSF and contingency stormwater/decant water	The Delegated Officer has considered the Licensee's request and deemed it reasonable to remove the ambient surface water quality monitoring requirements for

Date	*Event*	*Comments received/Notes*	*How comments were taken into consideration*
		discharge point. The Licensee has advised that: • The pools are located within the future Solomon mine pit area, and therefore approved for disturbance under MS862; • The Licensee has developed and implements the *Solomon Project Kangeenarina Pools Supplementation Plan – Northern Pools* (600SO-00018-RP-HY-0002) under Condition 11 of MS862, which includes surface water and groundwater monitoring requirements (quarterly hydrochemistry assessment).	the pools downstream of the contingency TSF decant/stormwater discharge point. The Delegated Officer notes the pools are subject to monitoring under MS862. The Decision Document has been updated to include the supplementary information provided by the Licensee.
07/04/2017	21 day consultation period correspondence sent to Licensee	The Licensee submitted correspondence to DER via email on 28 April 2017 providing comments on the draft Licence and the signed 21 day consultation period waiver form. The following comments were received from the Licensee: **Table 2.2.2** The Licensee requests that the emission limit for Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) be removed for emission point L3. The Licensee has advised that monitoring for total recoverable hydrocarbons (TRH) will sufficiently indicate whether discharged treated wastewater contains unacceptable concentrations of hydrocarbons. Further assessment of the	With respect to Table 2.2.2, 3.2.1 and 3.4.1, the Delegated Officer has considered the Licensee's comments and determined to remove the emission limit of BTEX from Table 2.2.2 and requirement to monitor for BTEX and PAC from Tables 3.2.1 and 3.4.1. The Delegated Officer considers that monitoring for TRH will sufficiently indicate whether discharged water contains

Date	*Event*	*Comments received/Notes*	*How comments were taken into consideration*
		discharge may then be undertaken as part of the Licensee's investigation to meet the notification requirements in condition 4.3.1. **Table 3.2.1** The Licensee requests that the requirement to monitor for BTEX and polycyclic aromatic hydrocarbons (PAC) be removed for emission points L3 and L4. As discussed above, monitoring of TRH will sufficiently identify unacceptable discharge water quality. **Table 3.4.1** The Licensee requests that the requirement to monitoring for BTEX and PAC be removed for emission points L3 and L4. As discussed above, monitoring of TRH will sufficiently identify unacceptable discharge water quality. **Table 4.3.1** Condition 4.3.1 requires the submission of an additional compliance document following the construction of the sludge press at the Kangi Camp WWTP. This sludge press has been installed, as described in the verification checklist (provided with the Licensee's response to the 21 day consultation period correspondence). Accordingly, the Licensee requests to amend Table 4.3.1 to remove the requirement relating to compliance for the Kangi Camp WWTP	unacceptable concentrations of hydrocarbons. If elevated concentrations are detected, further investigations can be conducted to determine the nature of contaminants in the discharge water. The Delegated Officer has considered the compliance documentation submitted for the Kangi Camp WWTP sludge handling press, and determined to remove the requirement relating to compliance for the Kangi Camp WWTP sludge handling press from Table 4.3.1.

Date	*Event*	*Comments received/Notes*	*How comments were taken into consideration*
		sludge press.	
09/06/2017	21 day consultation period correspondence sent to Licensee	Signed 21 day consultation period waiver form received 13 June 2017. The Licensee did not provide any comments on the proposed changes.	N/A

6 Risk Assessment

Note: This matrix is taken from the DER Guidance Statement Risk assessments (DER, November 2016)

Table 1: Emissions Risk 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

Appendix A

Premises Activities Overview

Ore processing facilities

Mining at the Project is conventional open pit method of drill and blast followed by load and haul. The Run of Mine (ROM) ore from each mining area is blended at a number of separate crushing hubs to ensure consistent mixing of ore and reduce ROM ore to 250 mm from a top lump size of 1800 mm. Once the ore is crushed it is transported to the either the Firetail or Kings OPFs via an overland conveyor, which are designed to produce approximately 25 Mtpa and 48 Mtpa of produce ore respectively.

The ore is processed further at the OPFs using a grinding and gravity separation method. The OPFs operate in a similar manner and comprise of wet scrubbers, secondary and tertiary crushers, desand plant, jig plant (Firetail OPF only) and associated screens and conveyors.

The Kings and Firetail permanent OPFs receives primary crushed ore from the crushing hub via overland conveyor systems for processing. The undersize fraction (<1 mm) is sent to the desand plant for removal of liberated gangue particles through gravity separation to produce an upgraded concentrate. The final concentrate from the desand plant is discharged onto the final product conveyor, while tailings are pumped to the TSF via the thickener.

A flocculant, Mangafloc 366, is added to the feed slurry entering into the thickener tank at the Firetail and Kings OPFs. Mangafloc 366 is non-toxic. Flocculated particles settle to the bottom and are pumped to TSF, while the clarified water overflows the top of the thickener and into the process water system for reuse within the OPFs.

Processed ore is transported by conveyor to the Rail Stockyard, where it is loaded on to trains and transported to FMG's Port Hedland Port facility, Anderson Point Materials Handling Facility, for export. The rail stockyard at the Project consists of four stockpile 'pods' of approximately 130,000 tonnes each, as well as two stackers, conveyors and a reclaimer.

The Licensee also operates the Direct Shipping Ore Processing Plant (DSOPP) at the Project, with a design capacity of 3.6 Mtpa. The DSOPP is comprised of a ROM stockpile, primary crusher, fixed rock breaker, tertiary cone crusher, product screening, product stockpile and oversize stockpiles.

Four mobile crushing facilities (MCF) are also operated at the Project as part of an additional ore program. In aggregate, these four facilities have a design capacity of 18.7 Mtpa. A Management Plan has been developed for the MCFs to manage potential impacts from the relocation and operation of the MCFs within the premises. Waste, dust, hydrocarbon, noise and stormwater controls are included in the plan.

Mine dewatering of the CID is required to access ore below the water table. Mine dewater is used on site for processing and dust suppression. There are no specified emission points from which mine dewater is discharged to the environment, however, an assessment of the risk of mine dewater used for dust suppression has been undertaken and is detailed in Appendix X – Premises Operation.

Tailings Storage Facility

Tailings from the wet processing undertaken at the Firetail and Kings OPFs is conveyed to the TSF via a 750 mm diameter carbon steel polyethylene pipeline, generally located along the overland conveyor route. Leak detection is provided in the form of flow meters at the pumps and prior to discharge into the TSF. Pressure indication is also provided with the flow meters, with the pressure and flow differentials/measurements used to indicate a potential leak.

Upon arrival at the TSF1, the tailings are approximately 50 % solids. Geochemical testing of tailing samples has been performed and results show that all samples contain <0.02 % sulphides and <0.06 % carbonates and are classified as non-acid forming.

Following the embankment lift, the valley-fill TSF will cover have a capacity of approximately 46.4 million cubic metres. The majority of the TSF area was mined prior to deposition of tailings which created a depression in the valley approximately 20 m deep. A layer of chert approximately 10-20 m below the surface was left in situ to act as a low permeability floor (estimated at 1×10^{-7} m/s) of the TSF.

The first lift of the TSF has been constructed of mine waste rock and seepage through the embankment has been minimised using design and operational controls, consisting of a filter/drain, collection network and collection pond. The filter/drain zone is 10m wide and is located 45 m from the toe of the embankment. Seepage is collected and conveyed to the downstream toe of the embankment through a network of solid pipework and routed to the seepage collection pond.

A gravity decant system has been installed to recover supernatant water from the TSF for reuse at the Kings OPF. The decant system consists of a decant tower, a decant pipeline and a return water storage pond. The decant pipeline extend to the return water storage pond which is located downstream of the embankment.

The Licensee has implemented a contingency discharge point from the TSF to Kangeenarina Creek to allow for the discharge of decant and rainfall during high rainfall events.

Groundwater monitoring is conducted at four locations around the TSF to determine if groundwater quality is being impacted by the operation of the TSF. Groundwater samples are tested for the following parameters:

- Water levels;
- Anions;
- Cations; and
- Dissolved metals.

Wastewater Treatment Plants

The Licensee operates two WWTPs at the Project to treat effluent produced from the site's two accommodation villages. The Castle/Dally Camp WWTP and Kangi Camp WWTP have a combined treatment capacity of 1,178 cubic metres per day (m^3/day). Treated wastewater from the plants is disposed of via irrigation to two separate irrigation areas, or used for dust suppression throughout the Project area.

The WWTPs operating under this licence are sequence batch reactor (SBR) treatment trains. The process follows the SBR methodology of wastewater treatment, comprising of balance tanks, sequence batch reactor treatment trains (anaerobic tanks, anoxic tanks, aeration tank and a classifier tank). Wastewater is treated to a High Exposure Risk Level (ERL) under Department of Health (DoH) guidelines at the Castle/Dally Camp and both Low ERL and High ERL at the Kangi Camp. The Castle/Dally Camp WWTP and Kangi Camp WWTP have treatment capacities of 512 m^3/day and 666 m^3/day, respectively.

Treated wastewater is pumped to the treated wastewater storage tanks from where it can be further treated in a water polishing unit to achieve a High ERL quality, for use in landscaping, dust suppression of process water. Low ERL treated wastewater is used for dust suppression, or directed to the designated irrigation areas. The Castle/Dally Camp WWTP and Kangi Camp WWTP irrigation areas are 12.5 ha and 16.3 ha in size, respectively. The irrigation areas are fenced with a 1.2 m high fence around the perimeter, to restrict access. Signs are fitted to all sides of the compounds.

The Licensee also has approval to construct a sludge press, which is anticipated for installation at the Kangi Camp WWTP. Installation of the press will require retrofitting one of the existing sludge tanks with a transfer pump to recirculate sludge equally through the sludge tanks. Sludge will be conveyed from the sludge tanks to the polymer preparation station comprising a 200 litre storage tank and dosing pump. The sludge will then be conveyed to the screw press, which will be located in an enclosed building to minimise odour emissions. The press is a sludge dewatering system.

As sludge enters the press, filtrate is drained and pressure is applied to the sludge to create a sludge cake. The filtrate discharged from the press is recirculated through the WWTP. Approximately 13.2 kL of filtrate will be recirculated through the WWTP per annum, which can be addressed within the current capacity of the plant and it is anticipated that it will not impact the discharge water quality. Approximately 26.8 m^3 of sludge cakes will be produced and require disposal per annum. The sludge cakes will be temporarily stored in a skip bin prior to disposal. The cakes meet the description of biosolids in the *Landfill Waste Classifications and Waste Definitions 1996* (as amended) and therefore suitable for disposal in Class I landfills.

Used tyre storage

The Licensee stores up to 2,500 tyres at the premises at any one time. The following measures will be implemented with respect to the storage of tyres:

- Used tyre stacks shall not exceed 100m^2 in area and 4m in height;
- Used tyres stacked on their side walls or if stored on treads, the area shall be baled with a securing device made of non-combustible material; and
- Used tyres shall not be stored closer than 6m from any other tyre stack.

Liquid Waste Acceptance

The Licensee accepts liquid waste from the Solomon Power Station, occupied by TEC Pipe Pty Ltd. This liquid waste comprises of treated wastewater from a reverse osmosis plant, oily water separator and cooling tower blowdown.

Treated wastewater is pumped from a wastewater storage tank at the Solomon Power Station via an underground pipeline to a wastewater storage tank located at FMG's stockyards. TWW is collected from this tank by water trucks and used for dust suppression on roads and stockpiles across the Project. Up to 110,000 tonnes of liquid waste per annum is accepted onto the premises.

Putrescible/Inert Landfills and Waste Transfer Station

The Licensee currently disposes of up to 14,000 tonnes per annum of waste at a number of disposal locations within the premises.

The disposal of untreated wood is restricted to the Solomon Landfill, Firetail North Waste Dump, Firetail Waste Wood Disposal Area and the Kings Waste Dump. Tyres and other rubber waste are disposed of in the Solomon Landfill (once constructed), Kings Pit, Kings Waste Dump, Firetail South Waste Dump, Firetail South Pit, Firetail North Pit, Trinity Waste Dump and Trinity Mine Pit.

On 2 June 2016 Licence L8464/2010/2 was amended and included conditions to allow for the construction of a new putrescible landfill at the Solomon Project. The original landfill approved under the Licence amendment was designed to accept up to 4,000 tonnes per annum of waste and was to have an operational life of approximately four years. Two trenches were proposed and were to be 30 m in width and 2 m in depth, with a combined total capacity of approximately 19,200 m^3.

On 7 November 2016 the Licensee submitted compliance documentation to DER for construction of the landfill. The following variations to the landfill design have been implemented and reported to DER via the compliance document:

- realignment of trenches and depth increased from 2 m to 10 m – preliminary soil testing indicated that a depth greater than 2 m would not be possible without blasting. During

installation of the surface water management infrastructure, it was identified that the soil would allow for a depth of 10 m without the need to blast;
- landfill capacity increased from 19,200 m^3 to 84,850 m^3 as a result of the increased trench depth; and
- landfill operational life increased from 4 years to 10 years.

The variations to the landfill design have been assessed as part of the risk assessment undertaken for the operation of the landfill specified in Appendix B.

There are three major waste streams produced at Solomon, including solid waste (Clean Fill, Type 1 and 2 Inert Waste, Putrescible Waste), recyclables and hazardous or controlled wastes.

Waste not meeting the requirements for a Class II landfill, as described in the *Landfill Waste Classification and Waste Definitions 1996*, is stored temporarily for collection and disposal off-site, with the exception of contaminated soil, which is disposed at FMG's on site soil bioremediation facility or removed offsite to a licensed facility for disposal.

The landfill is located within FMG's project area and is accessed by authorised personnel only. Trucks enter and tip waste near the tipping face and a dozer, excavator or compactor then push the waste up to the tipping face.

A stock proof fence has been installed at a distance of at least 10 m from the proposed trenches. Any waste that has been washed or blown away from the tipping face returned to the landfill at least monthly. No burning of waste occurs at the landfill and neither clinical waste nor asbestos is disposed of at the landfill.

A perimeter drainage channel has been constructed around the landfill and a drainage sump constructed to capture any potentially contaminated stormwater.

A firebreak has been installed to reduce the risk of bushfires impacting the landfill site, as well as reducing the risk of a fire within the landfill subsequently causing a bushfire. Fire extinguishers are maintained at the landfill at all times.

On completion of use, the landfill will be closed and rehabilitated in accordance with FMG's approved Solomon Mine Closure Plan, which is required by condition 14 of Ministerial Statement 862. Closure will include fully covering all waste with inert material and creating a safe, stable, non-polluting landform. Topsoil will then be spread over the area to encourage revegetation.

FMG is also proposing to construct a waste transfer station to allow separation and temporary storage of up to 6,000 tonnes per annum of waste and recyclable material generated by construction and operation of the project.

Hazardous wastes, recyclables and nonrecyclable waste streams are accepted at the waste transfer station for temporary storage prior to disposal or recycling. The waste transfer station inputs and outputs are described in Table 1.

Table 1. Waste transfer station inputs and outputs

Type		Approximate volumes of key wastes (tonnes/annum)	Approximate Input/output Volume (tonnes/annum)	Output Destination
Hazardous wastes:	Chemicals and hydrocarbons (including oily rags, batteries and waste oil), asbestos, medical waste, fluorescent lighting tubes.	Batteries: 60 Oil: 750	1,000	Licensed hazardous waste facility
Recyclables:	Paper, glass, plastic, scrap metal, wood, empty IBC (Intermediate bulk containers), fire extinguishers, HDPE liner, conveyor belts and waste rubber, empty ANFO bags.	Paper: 150 Plastic: 20 Scrap metal: 800 Wood: 1800 IBC: 15 HDPE: 60 Rubber: 550 ANFO bags: 50	4,000	Recycling and/or scrap metal facility
Non-recyclable waste streams	Putrescible waste and non-hazardous inert waste. Including some untreated wood, waste rubber, tyres.	Tyres: 800	1,000	Onsite landfill facility or in mined out pits or waste dumps.

The waste transfer station is located adjacent to the landfill. The area is compacted and a stock-proof fence has been installed. The facility includes maintenance, office and ablution blocks and a bale shed for the baling of waste. Within the waste transfer station, separate areas are demarcated for the different waste types, with each area labelled.

Storage areas for scrap metal, wood, conveyor belts, IBCs and smaller recyclable items are uncovered, while dispersible recyclable material (eg. paper, plastic) are enclosed.

Non-recyclable waste streams may be taken to the waste transfer stations for sorting and temporary storage after which waste suitable for disposal on site will be disposed either at the landfill or in mined out pits and waste dumps. Recyclable and hazardous (controlled) waste is collected from the waste transfer station for disposal off site as required. Controlled waste transport is conducted by a licensed controlled waste contractor.

Areas for the temporary storage of chemical and hydrocarbon waste materials, and hazardous waste, are lined with HDPE, or concrete with a permeability of 1 x 10^{-9} m/s or less, and are uncovered. The bunded area has a minimum capacity of 110 % of the largest container stored within it, or 25 % of the volume of all containers, whichever is the larger. Spill response equipment is in place to address any chemical or hydrocarbon spills which may occur in this area.

Asbestos is managed in accordance with the *Environmental Protection (Controlled Waste) Regulations 2004*. It will be temporarily stored at the Waste Transfer Station prior to disposal at a licensed disposal facility. It will be separated from other wastes and wrapped or contained in a manner that prevents asbestos fibres entering the atmosphere. Storage will either be within a waste skip bin with a lid, or an enclosed shipping container.

On completion of use, the waste transfer station will also be closed and rehabilitated in accordance with FMG's approved Solomon Mine Closure Plan, required by Condition 14 of Ministerial Statement 862.

<u>Bioremediation Facility</u>
The Licensee operates a bioremediation facility to treat hydrocarbon contaminated soils from within the premises. The bioremediation treatment cells are lined with high density polyethylene, with a secondary clay liner.

A log book is maintained to record date of deposition, material and approximate volume in cubic metres. The Licensee has also developed the Bioremediation Management Procedure (SO-PR-EN-0004) which outlines how soil is to be deposited, how maintenance of the cells is to be conducted, when the cell is to be remediated and the process for decommissioning of cells.

Bulk Storage of Chemicals

The Licensee currently operates a bulk fuel storage facility (BFSF) at the Project which comprises of two 3.25 million litre vertical diesel storage tanks, with a combined storage capacity of 6.5 million litres. This facility was approved under works approval W5192/2012/1. The key components of the BFSF include a rail offloading station, road tanker offloading station and the diesel tank storage area.

There are two oily water separators (OWS) located at the BFSF. TWW from these OWSs is discharged, as part of the site stormwater system, into a nearby drainage line. The OWSs have been designed to treat wastewater to achieve a total recoverable hydrocarbon (TRH) concentration of less than 5 mg/L. Monthly inspections of the systems are carried out to check for the presence of visible hydrocarbon sheen and to ensure that the systems are operating as per manufacturer's specifications.

The Licensee has implemented the following measures to manage hydrocarbon/chemical storage on the premises:

- the structural steel used to construct the tanks comply with requirements of AS/NZS 3678-250;
- diesel storage tanks, including pumps and pipe work, are located in a concrete bunded area designed to comply with requirements of AS1940:2004;
- the tanks are fitted with Radar level transmitters in the roof with alarms to indicate high level which shut down the offload pumps;
- the tanks contain back-up overflow pipes extending down the tank side to direct any excess diesel to flow into the concrete bund at ground level;
- each of the 12 train offloading arms have 'catch pans' under each rail car coupling and concrete bunding under the three train offloading pumps;
- all catch pans and concrete bunding are designed to have permeability of less than 10^{-9}m/s; and
- the catch pans and bunded areas are gravity feed through piping to the OWS to treat any stormwater runoff captured within the bunded area to achieve a discharge quality of <5ppm of total petroleum hydrocarbons.

FMG also operates a number of smaller fuel storage facilities at the Solomon Project which have a combined storage volume of 1,221 m^3. The additional fuel storage facilities have been designed to comply with AS1940:2004. All hydrocarbons are managed appropriately, including bunding and spill kits.

Fuel storage facilities are managed under the Solomon Project Dangerous Goods Site Licence and relevant dangerous goods legislation.

Appendix B - Premises Operation

Containment Infrastructure
The Licensee has infrastructure on site to contain potentially contaminated wash down water and stormwater runoff for treatment, or for holding prior to disposal. There is potential for waste to be discharged to the environment if overtopping of containment infrastructure was to occur, or if liners are breached.

Emission Description
Emission: Overflow of wastewater potentially contaminated with hydrocarbons and surfactants from the Heavy Machinery and Vehicle Wash-down Facility (HVWF) treatment ponds. Overflow of sumps or ponds used to store potentially contaminated stormwater. Breach of pond liners and/or containment infrastructure.

Impact: Soil contamination, impacts to surface water ecosystems, groundwater dependant ecosystems and terrestrial ecosystems from addition of hydrocarbons and surfactants. Potential impacts to the Millstream Water Reserve.

Controls: The Licensee has advised that the HMWF is located on a concrete slab with drainage directed to two pre-treatment ponds (one a sediment pond and the other a dirty water pond) prior to entering an oil water separator. These ponds are lined with 1.5mm High Density Polyethylene (HDPE) over a geofabric protective layer. The treated water is used for onsite dust suppression. A 300 mm freeboard is maintained.

The HMWF is located within the Central Facilities Workshop Yard. This catchment is surrounded with a diversion bund to divert clean stormwater away from the workshop area, whilst a collection swale/trench directs potentially contaminated stormwater to a sediment basin.

Risk Assessment
Consequence: The Delegated Officer has determined that low level onsite impacts and minimal offsite impacts at a local scale to sensitive receptors could occur as a result a discharge of potentially contaminated wastewater from the HVWF ponds to the environment. Therefore, the Delegated Officer considers the consequence to be minor.

Likelihood: The Delegated Officer has considered the operator controls (HDPE liner, 300 mm freeboard) and determined the consequence will not occur in most circumstances. Therefore, it is unlikely the consequence will occur.

Risk Rating: The Delegated Officer has compared the consequence and likelihood ratings described above through the Emissions Matrix (Table 1) and determined that the overall rating of risk for untreated wastewater emissions from the HMWF to be **medium.**

Regulatory Controls
The Delegated Officer has applied condition 1.2.2 which includes infrastructure requirements for the containment infrastructure, including liner and freeboard requirements, to prevent discharges to the environment occurring as a result of overtopping and/or liner breaches.

Residual Risk
Consequence: Minor
Likelihood: Unlikely
Risk Rating: Medium

Bioremediation Facility

Emission Description

Emission: Leachate/runoff from the bioremediation facility.

Impact: Contamination of surrounding land with hydrocarbons. Potential for migration to surface water drainage systems in times of high rainfall. Potential impacts to the Millstream Water Reserve.

Controls: The Licensee has advised the bioremediation treatment cells are lined with HDPE, with a secondary clay liner and a log book is maintained to record date of deposition, material and approximate volume in cubic metres. The Licensee has also developed the Bioremediation Management Procedure (SO-PR-EN-0004) which outlines how soil is to be deposited, how maintenance of the cells is to be conducted, when the cell is to be remediated and the process for decommissioning of cells.

Groundwater at the Project is approximately 50 m below ground level, minimising the likelihood of runoff from the facility accessing groundwater. Creeks in the area are ephemeral, generally flowing after high rainfall events.

Risk Assessment

Consequence: The Delegated Officer has considered the depth to groundwater (50 mbgl) and ephemeral nature of the creek systems in the area, and determined that minimal onsite impacts would occur to sensitive receptors as a result of leachate/runoff from the bioremediation facility. Therefore, the Delegated Officer considers the consequence to be slight.

Likelihood: The Delegated Officer has considered the operator controls (HDPE liner with secondary clay liner and management procedure) and determined the consequence will not occur in most circumstances. Therefore, it is unlikely the consequence will occur.

Risk Rating: The Delegated Officer has compared the consequence and likelihood ratings described above through the Emissions Matrix (Table 1) and determined that the overall rating of risk for leachate from the bioremediation facility to be **low.**

Regulatory Controls

The Delegated Officer notes the controls that the Licensee has put in place at the bioremediation facility (clay and HDPE liner, management procedure). The Delegated Officer considers that the depth to groundwater and the ephemeral nature of the creek lines will minimise the likelihood of leachate and/or runoff from impacting groundwater or surface water.

The Delegated Officer is not applying any regulatory controls on the Licence with respect to the management of the bioremediation facility as the risk to sensitive receptors has been assessed as low.

The Delegated Officer notes that discharges of waste may be subject to the *Environmental Protection (Unauthorised Discharges) Regulations 2004*, and the general provisions of the EP Act with respect to the causing of pollution and environmental harm apply.

Residual Risk

Consequence: Slight
Likelihood: Unlikely
Risk Rating: Low

Waste Management – Inert and Putrescible Landfills
Licence L8464/2010/1 was amended on 12 February 2015 to include Category 64 and include conditions allowing for the disposal of inert waste (tyres, conveyor belts, concrete) and untreated wood in mining voids and waste rock dumps.

On 2 June 2016, Licence L8464/2010/2 was amended to approve the construction of a new putrescible landfill and waste transfer station at the Solomon Mine. The Licensee submitted compliance documentation for the construction of the landfill and waste transfer station to DER on 7 November 2016. As previously noted, the Licensee reported that the trenches have been reorientated and the trench depth increased from 2 m to 10 m. As a result of the increased trench depth the capacity of the landfill has increased from 19,200 m^3 to 84,850 m^3, and operational life from 4 years to 10 years.

DER's assessment of the operation of the premises existing inert and proposed putrescible landfills is detailed below.

Emission Description - leachate
Emissions: Potential leachate generation from inert and putrescible landfills.

Impact: Contamination of soil and groundwater, impacts to ecosystems receiving groundwater discharge from addition of hydrocarbons, nutrients and heavy metals. Potential impacts to the Millstream Water Reserve.

Controls: The Licensee has advised that the maximum depth to groundwater within the vicinity of the site's putrescible landfill is approximately 50 mbgl; and the landfill is approximately 10 km from the groundwater bores used for potable water supply.

The Licensee restricts the type of waste that is accepted for burial at the in-pit and waste rock dump landfill locations. Only tyres, conveyor belts, concrete and untreated wood are allowed.
All wood loads will be visually checked to confirm that the wood is untreated prior to disposal. A branding on the wood indicates whether the packaging has been heat–treated or fumigated with methyl bromide, and hence this will be checked prior to disposal.

Only inert and putrescible waste is accepted at the putrescible landfill. Weekly covering of waste and appropriate stormwater management on site further reduces the risk of leachate from the landfill impacting on groundwater. A perimeter drainage channel will be constructed around the putrescible landfill and a drainage sump will capture any potentially contaminated stormwater. The Delegated Officer notes that the capacity and operational life of the landfill has increased significantly as a result of the increased trench depth.

The Licensee has installed monitoring bores upstream and downstream of the landfill and will monitor them to determine if there are any impacts to groundwater quality as a result of waste disposal. The sample results will be analysed and if there is a difference (>5%) between the results from each bore and the baseline samples, corrective actions will be undertaken. The potential sources of the elevated concentrations will be determined. If the landfill is confirmed as the source and no faults are identified, an investigation into the expected success of potential actions will be undertaken with actions implemented based on the findings.

Risk Assessment
Consequence: The Delegated Officer has considered the depth to groundwater (50 mbgl), ephemeral nature of the creek systems in the area, landfill capacity and operational life, and determined that low level onsite impacts and minimal offsite impacts at a local scale will occur to sensitive receptors as a

result of leachate from the landfill facility. Therefore, the Delegated Officer considers the consequence to be minor.

Likelihood: The Delegated Officer has considered the operator controls (weekly covering of waste, stormwater diversion and management) and determined that impacts to sensitive receptors will not occur in most circumstances. Therefore, the Delegated Officer has determined the likelihood to be unlikely.

Risk Rating: The Delegated Officer has compared the consequence and likelihood ratings described above through the Emissions Matrix (Table 1) and determined that the overall rating of risk for landfill leachate to be **medium.**

Regulatory Controls
The Delegated Officer considers that the risk of landfill leachate impacting sensitive receptors is acceptable, subject to regulatory control.

Condition 1.2.3 has been imposed and specifies requirements for the management of waste at the inert and putrescible landfills at the Solomon Project. The volume and types of waste is restricted to ensure that only that waste which has been assessed and approved for disposal is accepted at the landfills. Condition 1.2.5 specifies the landfill cover requirements, consistent with the controls proposed by the Licensee.

The Delegated Officer notes that groundwater at the putrescible landfill is approximately 50 m below ground level and the closest potable water groundwater bore is approximately 10 km from the landfill. However, the Delegated Officer notes that the landfill capacity and operating life has increased significantly due to the design changes. The Delegated Officer is amending condition 3.5.1 to include groundwater monitoring to identify leachate impacts, consistent with the controls proposed by the Licensee.

The premises, including the landfill facilities, will also be subject to future DER compliance inspections during which leachate management controls will be evaluated.

Residual Risk
Consequence: Minor
Likelihood: Unlikely
Risk Rating: Medium

Stormwater Management
Stormwater is managed across the site to prevent the contamination of stormwater; and to prevent the discharge of potentially contaminated and/or sediment laden stormwater into the environment.

Emission Description
Emissions: Potentially contaminated and sediment laden stormwater from the landfilling operations, waste transfer station, bioremediation facility, treated wastewater irrigation areas, work areas (ROM, OPFs, workshops) and fuel storage areas.

Impact: Contamination of surrounding land and surface water drainage systems. Potential impacts on ecology of surface water from the addition of nutrients, heavy metals and/or hydrocarbons. Increased turbidity of surface water and sedimentation impacting aquatic biota and ecosystems.

Potential impacts to the Millstream Water Reserve, a Priority 2 PDWSA.

Controls: The Licensee has provided information regarding the management of stormwater at the ore processing facilities, which is described below.

Surface water management at the sizing hubs, OPFs and rail stockyard, include the following:

- key infrastructure located above the 100 year floodplain and/or protection in a 1 in 100 year rainfall event;
- separation of clean and potentially contaminated stormwater using diversion measures;
- all potentially contaminated stormwater is directed to sedimentation basins or sediment traps prior to release; and
- diversion drain to the north-east of the stockyard capture clean stormwater and directs it around the stockyard.

The following stormwater and surface water management measures have been implemented at the DSOPP:

- perimeter drain and sediment traps located around the pit and stockpiles;
- rock lined drains to ensure excess runoff is directed to sediment traps;
- perimeter bunding (where practical) and internal drainage water from rainfall retained around ore stockpiles;
- internally draining pit with rainwater collected for dust suppression purposed; and
- runoff from stockpiles diverted to sediment trap.

The following management measures have been implemented at the MCFs to manage stormwater:

- potentially contaminated stormwater is contained and appropriately treated prior to disposal;
- the site has been graded to ensure that all stormwater, wash-down and spillage water run-off is directed to a collection and settling sump from where it is recycled for dust suppression purposes;
- MCFs are contained within an earthern perimeter bund; and
- run-off from stockpiles is diverted to the settling sump.

The Licensee has advised that a perimeter drainage channel will be constructed around the landfill and a drainage sump will be constructed to capture any potentially contaminated stormwater. This sump will be designed to prevent the discharge of stormwater from approximately a 1 in 20 year rainfall event. A preventative maintenance program will be initiated and involve weekly inspections, with daily inspections undertaken before anticipated significant rainfall events.

The landfill and waste transfer station will be located greater than 100 m from the nearest surface water feature and will be outside of the 1 in 100 year average return interval (ARI) flood plain. Surface water in the area consists of episodal drainage.

Hazardous materials will not be stored at the landfill. Hazardous waste storage at the waste transfer station will be lined with HDPE and stored in accordance with FMG's *Chemical and Hydrocarbon Management Plan* (100-PL-EN-0011). The waste transfer station will be inspected on a regular basis, and before anticipated significant rainfall events. If required to avoid overtopping, potentially contaminated stormwater from the bund will be collected and disposed at a suitably licensed facility.

Groundwater monitoring in the vicinity of the landfill and waste transfer station will be undertaken to identify impacts to groundwater as a result of operation of the facilities.

The Licensee has advised the following measures have been implemented at the fuel storage areas to minimise stormwater contamination from occurring:

- concrete bunding to capture any spills during refuelling of light vehicles at some facilities;
- drainage of oily water from the central facilities fuel storage area to a lined evaporation pond; and

- spill grates collect stormwater runoff from around the tanks. Grates are inspected daily and pumped out as required.

Hydrocarbon storage areas across the Project are appropriately bunded and potentially contaminated stormwater is diverted to OWS for treatment prior to discharge.

The Licensee has installed and maintains OWSs at the Bulk Fuel Facility, Rail Fuel Siding, Castle Camp Washdown Bay, Trinity Fuel Farm, Kings Fuel Farm, Firetail Fuel Farm and the Kings OPF facility to treat potentially contaminated stormwater prior to discharge.

The Licensee has developed and implements the *Surface Water Management Plan* (100-PL-EN-1015) at the Solomon Project, the objectives being:

- Maintain integrity of flow paths and water quantities to protect surface water dependent ecological systems;
- Minimise excessive turbidity and downstream sedimentation caused by erosion;
- Prevent and minimise impacts to surface water quality;
- Minimise impact of storm surge and flooding;
- Monitor and report sufficiently to demonstrate compliance and enable management to make informed decisions than minimise environmental impacts to surface water dependent ecological systems.

The Licensee has also developed Surface Water Monitoring Guidelines to support the implementation of the Surface Water Management Plan.

Risk Assessment

Consequence: The Delegated Officer has determined that low level offsite impacts at a local scale could occur to sensitive receptors as a result of stormwater runoff within and from the premises. The Delegated Officer notes the proximity of the Millstream Water Reserve to the Project and has identified the reserve as a sensitive receptor. Therefore, the Delegated Officer considers the consequence to be moderate.

Likelihood: The Delegated Officer has considered the operator controls (stormwater diversion, bunding, sediment basins) and determined that impacts to sensitive receptors will not occur in most circumstances. Therefore, the Delegated Officer has determined the likelihood to be unlikely.

Risk Rating: The Delegated Officer has compared the consequence and likelihood ratings described above through the Emissions Matrix (Table 1) and determined that the overall rating of risk stormwater runoff to be **medium.**

Regulatory Controls

The Delegated Officer considers that the risk of stormwater runoff impacting sensitive receptors is acceptable, subject to regulatory control. The Delegated Officer has imposed condition 1.2.11 which specifies the infrastructure to be maintained to ensure stormwater is appropriately managed. The requirements of this condition are consistent with the existing operator controls considered by the Delegated Officer in the risk assessment for stormwater.

Residual Risk

Consequence: Moderate
Likelihood: Unlikely
Risk Rating: Medium

TAILINGS STORAGE FACILITY

TSF Embankment Raise – Construction and Operation

Based on the current production forecasts, the existing TSF at the Solomon Mine is anticipated to reach capacity in late 2017. FMG Solomon proposes to increase the height of the TSF embankment to increase the total capacity of the TSF from 13.7 Mm^3 to 46.4 Mm^3. The maximum tailings tonnage that could be discharged per year will remain at approximately 23.5 (wet) million tonnes, with the nominated operational tonnage being 6 million tonnes per year.

The TSF raise will involve the construction of an engineered embankment rising above the existing crest elevation of 572 mRL to a maximum crest elevation of 605 mRL. The embankment raise will result in a maximum embankment height of approximately 67 m and allow for tailings storage for a further approximately 8 years. At full height the crest length will be approximately 1,100 m.

The embankment raise may be undertaken in a number of stages, and will be founded on waste rock fill constructed immediately upstream of the current embankment. The embankment will be constructed using compacted waste rock material similar to that used in the construction of the existing TSF embankment to a similar design specification.

The embankment will consist of a single zone with the existing internal filter drainage system for TSF remaining operational. An intermediate bench will be designed between the TSF raise and the existing TSF embankment to manage stormwater runoff on the downstream face by directing discharge away from the upper embankment to minimise erosion.

The TSF raise will be designed as a non-release facility (no spillway). The tailings will be delivered to the TSF via a tailings delivery pipeline from the Kings OPF. Tailings will be deposited from spigots or open ended pipes located along the upstream crest of the raised embankment.

Surface water will be decanted from the TSF using the existing gravity decant system and/or additional skid-mounted pumps. Decant water will be discharged to the existing return water storage pond and will be pumped to the OPF for re-use via the return water pipeline. The licence amendment application states that the existing decant system may be expanded through the installation of two additional decant towers and/or use of skid mounted pumps with floating intakes.

The primary objective of the TSF decant system is to ensure that the water level in the TSF is maintained within the design limits so that:

- The area of the pond is minimised to minimise losses through seepage and evaporation;
- Re-use of water for processing is maximised;
- Water does not pond up against the embankment during normal operations; and
- The pond level is below the level required to manage future storms.

The facility incorporates an emergency decant line to Kaangeenarina Creek, which will operate as a contingency only.

The TSF is located directly upstream of offices and workshops and mine access roads used by light vehicles, buses and trucks. In future mining plans, the open pit will also extend into the potential downstream breach-flow zone of the tailings dam. Therefore, in accordance with the *Code of Practice for Tailings Storage Facilities in Western Australia* (Department of Mines and Petroleum 2013), the raised TSF will be classified as a High Hazard Category 1 facility.

The Licensee has advised that the current groundwater monitoring bores will be utilised to monitor groundwater for seepage impacts. These bores will be effective until approximately 2020, after which time the level of the tailings will encroach on several of the monitoring bores. The Licensee has

advised that a licence amendment application will be submitted for approval to replace the effected bores.

FMG Solomon proposed to commence the raise of the TSF embankment in early 2017, with commissioning anticipated to commence in mid-2017.

The Licensee has advised that approximately 45,000 litres of treated wastewater from an Ultraspin OWS is discharged to the OPF thickener, which ultimately discharges to the TSF.

Normal operation

Emission Description

Emission: Seepage from the TSF migrating to groundwater. Tailings are a waste product from the gravity separation process conducted at the OPFs. The tailings will have been dosed with a flocculent at the OPFs to aid in the sedimentation of solids and upon arrival at the TSF the tailings are approximately 50% solids. The flocculent, Magnafloc 336, is non-toxic and will be added at the recommended dose of 50-200 grams per tonne, or 0.05-0.2 part per million (ppm).

Approximately 45,000 litres per month of treated water oily water is discharged to the TSF via the OPF thickener.

Impact: Potential impacts to groundwater quality and groundwater levels (mounding). Changes to groundwater quality could impact on ecosystems receiving groundwater in the area. Mounding may impact on local vegetation, it if results in the growth medium becoming water logged. Groundwater is approximately 10 metres below ground level (mbgl) at the location of the TSF.

Controls: The Licensee has advised that the various rock formations underlying the TSF have permeability in the range of 1 $x10^{-5}$ to $1x10^{-9}$ m/s. The base of the TSF is now covered by low permeability tailings which will minimise seepage.

Supernatant water is decanted to minimised ponding and losses through seepage.

The Licensee has prepared the *Solomon Iron Ore Project – Tailings Seepage Report* (FMG, 21 August 2015, SO-PR-EN-0111), which compares the quality of groundwater in monitoring bores downgradient of the pre-existing Solomon TSF in order to determine whether there is any appreciable impact to the receiving environment. The report concludes that the likelihood of acid or metalliferous drainage is low for tailings, based on geochemical static and short-term kinetic testing of three samples and characterisation of 33 tailings samples for acid potential.

This conclusion is based on the assumption that environmentally harmful mine drainage will only occur in the presence of sulphide minerals or the reaction products of sulfide oxidation, and that acid-base accounting and short-term leaching tests will adequately characterise the risks of metals and metalloids being leached from tailings materials.

The Delegated Officer notes that this assumption is not always valid as environmentally harmful concentrations of some metals and metalloids have the potential to be leached from mine wastes under circum-neutral pH conditions, even in the absence of sulfide minerals (MEND, 2004). Metals and metalloids that are at particular risk of being leached in such circumstances are antimony, arsenic, cadmium, chromium, cobalt, copper, iron, manganese, mercury, molybdenum, nickel, selenium, uranium and zinc (MEND, 2004). Many of these elements are present at elevated concentrations in the tailing material, and additionally, boron and strontium are present at elevated levels in tailings supernatant. This issue could be better characterised by conducting long-term and/or sequential leaching tests on the tailings material. The Delegated Officer notes that at this time, the risks associated with tailings leachate can be appropriately addressed by the TSF design and management measures.

A drainage system has been installed on the existing TSF and will continue to operate for the TSF raise. This system involves a filter/drain and collection network, and discharges to the return water dam at the base of the TSF. No seepage from the embankment has occurred, and is not anticipated under normal operating conditions due to the distance from the decant pond, which is located around 1 km from the embankment.

Modelling indicates that seepage rates downstream of the embankment will be unlikely to be sufficient to require installation of seepage recovery bores. During operation of the mine, drawdown of groundwater for mine pit dewatering mitigates any potential mounding due to seepage. If seepage exceeds the design prediction to the extent that an unacceptable water level rise occurs on the downstream side of the TSF, or water flows into the downstream mining area are excessive, seepage recovery bores will be installed.

With respect to the discharge of treated oily water, the Delegated Officer notes that the Ultraspin OWS is designed to reduce TRH in wastewater to less than 15 mg/L and that within the thickener treated wastewater will be diluted at a ratio of approximately 1:148.

The TSF is located approximately 5 km from the Millstream Public Drinking Water Source Area. Kangeenarina Creek is located 1.5 km downstream of the TSF.

The Delegated Officer notes that the TSF and embankment lift have been assessed by DMP pursuant to the *Mining Act 1978*.

Risk Assessment

Consequence: The Delegated Officer has considered the geochemical characterisation of the tailings and the tailings seepage report, and determined that low level offsite impacts at a local scale could occur to sensitive receptors as a result of TSF seepage. Therefore, the Delegated Officer considers the consequence to be moderate.

Likelihood: The Delegated Officer has considered the operator controls (drainage system, distance to the Millstream Public Drinking Water Source Area) and determined that impacts to sensitive receptors will not occur in most circumstances. Therefore, the Delegated Officer has determined the likelihood to be unlikely.

Risk Rating: The Delegated Officer has compared the consequence and likelihood ratings described above through the Emissions Matrix (Table 1) and determined that the overall rating of risk stormwater runoff to be **medium.**

Regulatory Controls:

Construction

The Delegated Officer has imposed conditions 1.2.8 and 1.2.9 to include construction requirements for the TSF embankment lift and require the operation of the TSF in accordance with the conditions of the Licence following submission of compliance documentation, required under condition 4.3.1.

Operation

The Delegated Officer considers that the risk of TSF seepage impacting sensitive receptors is acceptable, subject to regulatory control.

The Delegated Officer has imposed condition 1.2.7 which requires an annual water balance for the TSF to be undertaken.

The existing process monitoring requirements for the TSF required under condition 3.4.1 will also apply to the TSF following the embankment lift. These provisions relate to monitoring the volume and

mass deposited into the TSF, volumes of water recovered from the TSF measured from the TSF return line and gravity decant return line.

Groundwater monitoring requirements related to the TSF are required under condition 3.5.1 to determine if groundwater levels and water quality is being impacted as a result of seepage from the TSF. Quarterly monitoring of groundwater is required for major cations and anions, and metals, non-metals and metalloids. The Delegated Officer has determined to include additional downstream groundwater monitoring locations to ensure that potential leachate impacts are detected.

The annual water balance, process monitoring and the ambient groundwater monitoring results are reported to DER in the Annual Environmental Report (AER) for the Solomon Mine.

The AER reporting requirements specified under condition 4.2.1 have also been updated to require the comparison of groundwater monitoring results against the site specific trigger values that have been developed for the Solomon Mine, as described in the document *Life of Mine Geochemistry Programme – Site Specific Trigger Values* (45-SY-EN-0001).

Residual Risk
Consequence: Moderate
Likelihood: Unlikely
Risk Rating: Medium

Abnormal Operation/Emergency Situation
Emission Description
Emission: Release of tailings due to overtopping of the TSF or embankment breach.

The tailings will have been dosed with a flocculent at the OPFs to aid in the sedimentation of solids and upon arrival at the TSF the tailings are approximately 50% solids. The flocculent, Magnafloc 336, is non-toxic and will be added at the recommended dose of 50-200 grams per tonne, or 0.05-0.2 part per million (ppm).

Impact: Contamination of surrounding soil, impacts to surface water quality and groundwater. Vegetation stress/degradation if volume released is significant or exposure prolonged. Site facilities, including workshops, are located downstream of the TSF.

Controls: The TSF has been designed as a non-release facility, with sufficient capacity to accommodation at least a 1:100 year 72 hour event and maintain a 500 mm total freeboard, as required by the Department of Mines and Petroleum Guidelines. The TSF and TSF embankment lift have been assessed by DMP via the Mining Proposal.

If the maximum operating water level is reached, the OPF production and all production water inputs into the TSF will be halted to prevent overtopping. No emergency spillway is proposed from the raised TSF, however the existing emergency decant line to Kangeenarina Creek will remain in place for contingency discharge, if required.

Risk Assessment
Consequence: The Delegated Officer has considered the geochemical characterisation of the tailings and location of Kangeenarina Creek 1.5 km downstream, and determined that midlevel onsite impacts and low level offsite impacts at a local scale could occur to sensitive receptors as a result of loss of containment from overtopping or an embankment breach. Therefore, the Delegated Officer considers the consequence to be moderate.

Likelihood: The Delegated Officer has considered the operator controls (design to contain a 1:100 year 72 hour event and maintain a 500 mm freeboard) and determined that impacts to sensitive

receptors will probably not occur in most circumstances. Therefore, the Delegated Officer has determined the likelihood to be unlikely.

Risk Rating: The Delegated Officer has compared the consequence and likelihood ratings described above through the Emissions Matrix (Table 1) and determined that the overall rating of tailings discharge from loss of containment to be **medium.**

Regulatory Controls:
The Delegated Officer considers that the risk of tailings impacting sensitive receptors as a result of loss of containment is acceptable, subject to regulatory control.

The Delegated Officer has imposed condition 1.2.2, which specifies requirements relating to containment infrastructure at the premises, including the TSF. These requirements will also apply to the TSF following construction of the embankment lift, and include:

- maintenance of a 500 mm freeboard;
- provision of additional sufficient freeboard to minimise the likelihood of erosion of the embankments by wave action; and
- installation and maintenance of a seepage collection and recovery system.

The Delegated Officer considers these measures as appropriate to prevent overtopping from the TSF and erosion which could compromise the integrity of the embankment.

The Licensee is also required to comply with the following obligations outlined in the Mining Proposal, issued under the *Mining Act 1978*:

- implement the TSF1 Operation, Monitoring and Surveillance Manual;
- daily operator inspection and routine higher level inspections and audits;
- monitoring of water balance, including site rainfall and evaporation, tailings return water recovery volumes, seepage recovery volumes and volumes of tailings deposited; and
- an annual operational audit by an independent geotechnical or engineering specialist.

A revised Mining Proposal for the embankment lift has been submitted to DMP and is pending approval.

Residual Risk
Consequence: Moderate
Likelihood: Rare
Risk Rating: Medium

Abnormal Operation/Emergency Situation
Emission Description
Emission: Release of tailings due to pipeline rupture.

The tailings will have been dosed with a flocculent at the OPFs to aid in the sedimentation of solids and upon arrival at the TSF the tailings are approximately 50% solids. The flocculent, Magnafloc 336, is non-toxic and will be added at the recommended dose of 50-200 grams per tonne, or 0.05-0.2 part per million (ppm).

Impact: Contamination of surrounding soil, impacts to surface water quality and groundwater. Vegetation stress/degradation if volume released is significant or exposure prolonged.

Controls: The existing tailings delivery pipeline will be used from the King OPF. The tailings pipeline runs along the overland conveyor route and consists of a 750 mm diameter carbon steel polyethylene pipeline. Leak detection is provided in the form of flow meters at the pumps and prior to discharged

into the TSF. Pressure indication is also provided with the flow meters, with the pressure and flow differentials used to indicate a potential leak.

Risk Assessment

Consequence: The Delegated Officer has considered the geochemical characterisation of the tailings and location of Kangeenarina Creek 1.5 km downstream of the TSF, and determined that midlevel onsite impacts and low level offsite impacts at a local scale could occur to sensitive receptors as a result tailings discharging as a result of a pipeline rupture. Therefore, the Delegated Officer considers the consequence to be moderate.

Likelihood: The Delegated Officer has considered the operator controls (flow meters, pressure monitoring, pipe material) and determined that impacts to sensitive receptors will not occur in most circumstances. Therefore, the Delegated Officer has determined the likelihood to be unlikely.

Risk Rating: The Delegated Officer has compared the consequence and likelihood ratings described above through the Emissions Matrix (Table 1) and determined that the overall rating of tailings discharge from a pipeline rupture to be **medium.**

Regulatory Controls:

The Delegated Officer considers that the risk of tailings impacting sensitive receptors as a result of a pipeline rupture is acceptable, subject to regulatory control.

The Delegated Officer has imposed condition 1.2.1 which requires tailings pipelines to be equipped with either telemetry, automatic cutouts or secondary containment.

The Delegated Officer considers these measures as appropriate to prevent overtopping from the TSF and erosion which could compromise the integrity of the embankment.

The Licensee is also required to comply with the following obligations outlined in the Mining Proposal, issued under the *Mining Act 1978*:

- implement the TSF1 Operation, Monitoring and Surveillance Manual;
- daily operator inspection and routine higher level inspections and audits;
- monitoring of water balance, including site rainfall and evaporation, tailings return water recovery volumes, seepage recovery volumes and volumes of tailings deposited; and
- an annual operational audit by an independent geotechnical or engineering specialist.

A revised Mining Proposal for the embankment lift has been submitted to DMP and is pending approval.

Residual Risk

Consequence: Moderate
Likelihood: Rare
Risk Rating: Medium

Appendix C – Emissions to land including monitoring

WWTPS – OPERATIONS

Normal operation

Emission Description

Emission: Treated wastewater from the Castle/Dally Camp WWTP and Kangi WWTP discharged to the designated irrigation area, potentially with elevated concentrations of total nitrogen, total phosphorus, biochemical oxygen demand, total suspended solids and *E.Coli.*

Impact: Contamination of surrounding land and surface water drainage, potential for eutrophication of surface water due to elevated nutrients, ecosystem disruption and impacts to groundwater.

Controls: Monitoring of the WWTP will continue to be undertaken in accordance with the current requirements of the Solomon Mine operating Licence L8464/2010/1, to ensure that treated wastewater discharged to land is of acceptable quality.

There are no sensitive wetlands or drainage features in close proximity to the WWTPs irrigation areas. There are minor drainage lines throughout the area, with the closest approximately 170 m from the WWTP. However, these are ephemeral and only flow during significant storm events. The WWTP is located outside the 1 in 100 year floodplain. Groundwater is approximately 40-50 mbgl at the WWTPs.

Wastewater will continue to be treated to the low exposure risk level, as outlined in *Guideline for the Non-potable Uses of Recycled Water in Western Australia* (Department of Health, 2011).

Risk Assessment

Consequence: The Delegated Officer has considers that low level onsite impacts and minimal offsite impacts at a local scale could occur to sensitive receptors from irrigated treated wastewater. Therefore, the Delegated Officer considers the consequence to be minor.

Likelihood: The Delegated Officer has considered the location of the closest drainage line, distance to groundwater and location of the WWTP outside of the 1 in 100 year floodplain, and determined that impacts to sensitive receptors will not occur in most circumstances. Therefore, the Delegated Officer has determined the likelihood to be unlikely.

Risk Rating: The Delegated Officer has compared the consequence and likelihood ratings described above through the Emissions Matrix (Table 1) and determined that the overall rating of treated wastewater discharge to be **medium.**

Regulatory Controls

The Delegated Officer has imposed condition 1.2.3 which specifies a limit of 1,178 m^3/day for sewage treatment to ensure that the WWTPs operate within the design specifications.

Condition 1.2.4 specifies requirements that need to be met with respect to the irrigation of treated wastewater. These management measures include no irrigation generated runoff, spray drift or discharge beyond the designated irrigation areas, wastewater is evenly distributed over the irrigation area, no soil erosion occurs, irrigation does not occur on land that is waterlogged and a healthy vegetation cover is maintained.

Condition 2.2.1 includes the two irrigation areas as specified emission points to land. Condition 3.2.1 requires quarterly sampling of the treated wastewater. Condition 4.2.1 requires the Licensee to report

the monitoring results in the Annual Environmental Report and interpret results against the plant design specifications. This information is submitted annually to DER under the reporting requirements of the Licence.

The Delegated Officer considers these conditions will provide an appropriate level of regulatory control to minimise potential risks to sensitive ecosystems.

Residual Risk
Consequence: Minor
Likelihood: Unlikely
Risk Rating: Medium

Emergency operation
Emission Description
Emission: Overflow of untreated and/or treated effluent from the WWTP storage, treatment and sludge tanks

Impact: Contamination of surrounding land and surface water drainage, potential for eutrophication of surface water due to elevated nutrients and ecosystem disruption

Controls: High level audible and visual alarms will be installed on the SBR and balance tanks. To further reduce the risk of discharge of untreated wastewater to the environment, the WWTP tanks have the capacity to maintain one day freeboard.

There are no sensitive wetlands or drainage features in close proximity to the WWTPs. There are minor drainage lines throughout the area, with the closest approximately 170 m from the WWTP. However, these are ephemeral and only flow during significant storm events. The WWTP is located outside the 1 in 100 year floodplain. Groundwater is approximately 40-50 mbgl at the WWTPs.

Risk Assessment
Consequence: The Delegated Officer has considers that minimal onsite impacts would occur to sensitive receptors from overflow of effluent from the WWTP. Therefore, the Delegated Officer considers the consequence to be slight.

Likelihood: The Delegated Officer has considered the location of the closest drainage line, distance to groundwater and location of the WWTP outside of the 1 in 100 year floodplain, and determined that impacts to sensitive receptors would only occur in exceptional circumstances. Therefore, the Delegated Officer has determined the likelihood to be rare.

Risk Rating: The Delegated Officer has compared the consequence and likelihood ratings described above through the Emissions Matrix (Table 1) and determined that the overall rating for treated wastewater discharge from tank overflow to be **low.**

Regulatory Controls:
The Delegated Officer has removed the infrastructure requirements for the WWTPs tanks from condition 1.2.2 as the risk associated with this potential emission has been assessed as low.

Discharges of sewage may be subject to the provisions of the *Environmental Protection (Unauthorised Discharges) Regulations 2004.*

Residual Risk
Consequence: Slight
Likelihood: Rare

Risk Rating: Low

BULK FUEL FACILITY OWS

Emission Description
Emission: Discharge of potentially contaminated treated wastewater from the bulk fuel facility oily water separators.

Impact: Elevated concentrations of total recoverable hydrocarbons (TRH) in discharge could contaminate soil, impact surface water and groundwater quality; leading to ecosystem disruption.

Controls: The Licensee has advised there are two oily water separators (OWS) located at the BFSF. TWW from these OWSs is discharged, as part of the site stormwater system, into a nearby drainage line.

The OWSs have been designed to treat wastewater to achieve a total recoverable hydrocarbon (TRH) concentration of less than 5 mg/L. Monthly inspections of the systems are carried out to check for the presence of visible hydrocarbon sheen and to ensure that the systems are operating as per manufacturer's specifications.

The bulk fuel facility is located nearly 110 m from the nearest ephemeral surface water drainage line which eventually flows into Fortescue River.

Risk Assessment
Consequence: The Delegated Officer has considers that low level onsite impacts and minimal offsite impacts at a local scale could occur to sensitive receptors from the discharge of treated wastewater from the bulk fuel facility OWSs, due to the size of the fuel facility and potential for significant volumes of water to require treatment. Therefore, the Delegated Officer considers the consequence to be minor.

Likelihood: The Delegated Officer has considered the location of the closest drainage line, distance to groundwater, and determined that impacts to sensitive receptors would not occur in most circumstances. Therefore, the Delegated Officer has determined the likelihood to be unlikely.

Risk Rating: The Delegated Officer has compared the consequence and likelihood ratings described above through the Emissions Matrix (Table 1) and determined that the overall rating for treated wastewater discharged from the bulk fuel facility OWS to be **medium.**

Regulatory Controls:
The Delegated Officer has imposed condition 2.2.1 which specifies the bulk fuel facility OWS treated wastewater discharge as an emission point to land. Condition 2.2.2 has been imposed to specify a limit for TRH in discharge water. The Delegated Officer has also imposed monitoring requirements under condition 3.2.1.

Monitoring results will be reported to DER via the AER required under condition 4.2.1.

Residual Risk
Consequence: Minor
Likelihood: Unlikely
Risk Rating: Medium

SATELLITE FUEL FACILITIES OWSs

Emission Description

Emission: Discharge of treated wastewater from the satellite fuel facility and machinery/vehicle wash down facilities OWS with elevated concentrations of hydrocarbons.

Impact: Potential contamination of surrounding land, surface water drainage systems and groundwater, possible ecosystem disruption.

Controls: The OWS emission points are located within areas already disturbed for mining and supporting infrastructure. The discharged treated wastewater is contained within the Project footprint; following release it evaporates or infiltrates.

Discharge points are located at least 50 metres from the closest surface water drainage lines and conservation significant vegetation. Surface water drainage lines in the area are episodal, flowing following significant rainfall events.

Groundwater within the Project area is greater than 10 metres below ground level.

Potentially contaminated water undergoes treatment prior to discharge to achieve a TRH concentration of less than 15 mg/L.

Further to this, OWSs are maintained and regularly inspected by the Licensee to ensure they are functioning in accordance with manufacturer's specifications. The Licensee also undertakes regular monitoring of the water discharged to validate that the OWSs are effectively treating wastewater.

Monitoring results from the 2015 reporting period indicate that TRH concentration in treated water is of sufficient quality.

Risk Assessment

Consequence: The Delegated Officer has considered the location of the satellite fuel facilities in already disturbed mining areas and determined that minimal onsite impacts would occur to sensitive receptors from the discharge of treated wastewater from the satellite fuel facilities OWSs. Therefore, the Delegated Officer considers the consequence to be slight.

Likelihood: The Delegated Officer has considered the location of the closest drainage line, distance to groundwater and previous treated wastewater monitoring results, and determined that impacts to sensitive receptors would not occur in most circumstances. Therefore, the Delegated Officer has determined the likelihood to be unlikely.

Risk Rating: The Delegated Officer has compared the consequence and likelihood ratings described above through the Emissions Matrix (Table 1) and determined that the overall rating for treated wastewater discharged from the satellite fuel OWSs to be **low.**

Regulatory Controls:

The offence provisions relating to the causing of pollution and environmental harm outlined in Division 1, Part V of the *Environmental Protection Act 1986* apply, as does relevant subsidiary legislation including the *Environmental Protection (Unauthorised Discharges) Regulations 2004*.

The Solomon Project is also subject to routine compliance inspections by DER officers during which pollution control equipment, including OWSs and the associated emission points will be inspected. The Delegated Officer notes that no issues were identified by DER officers during the 2016 compliance inspection.

The Delegated Officer considers that sufficient operating controls have been implemented by the Licensee and the emission points are appropriately located away from drainage lines. Monitoring results from the 2015 reporting period indicate that TRH concentration in treated water is unlikely to impact on surface water and/or groundwater quality.

Condition 2.2.1 has been updated to remove the OWS treated wastewater emission points L5 (Rail Siding OWS), L7 (Castle Camp Washdown Bay OWS), L8 (Trinity Fuel Farm OWS), L9 (Kings Fuel Farm OWS), L10 (Firetail Fuel Farm OWS) and L11 (Kings OPF OWS). Condition 2.2.2, which specifies limits for discharges to land, has been updated to remove reference to the same emission points. The monitoring requirements for the OWS emissions to land have also been removed from Condition 3.2.1.

Residual Risk
Consequence: Slight
Likelihood: Unlikely
Risk Rating: Low

Appendix D – Process Monitoring

SOLOMON POWER STATION – LIQUID WASTE

On 30 April 2015 the Licence was amended to allow the Licensee to accept liquid waste from the Solomon Power Station, occupied by TEC Pipe Pty Ltd. This liquid waste comprises of treated wastewater (TWW) from a reverse osmosis plant, oil water separator and cooling tower blowdown.

TWW is pumped from a wastewater storage tank at the Solomon Power Station via an underground pipeline to a wastewater storage tank located at FMG's stockyards. TWW is collected from this tank by water trucks and used for dust suppression on roads and stockpiles across the Solomon Project.

The Licenses also utilises treated wastewater from the site's OWSs for use in dust suppression.

Normal operation
Emission Description
Emission: Discharge of potentially contaminated TWW to land

Impact: Potential contamination of surrounding land, surface water drainage systems and groundwater.

Controls: The Licensee monitors the quality of the TWW to ensure the concentration of total dissolved solids and total recoverable hydrocarbons are within acceptable levels. In the event that the quality requirements have not been met, the TWW from the Solomon Power Station will be diverted to the stockyard drainage pond, where it will be diluted until it meets the water quality requirements suitable for discharge.

Risk Assessment
Consequence: The Delegated Officer has considered the location of the creek lines within the premises and determined that low level onsite impacts and minimal offsite impacts at a local scale would occur to sensitive receptors from the discharge of treated wastewater from the Solomon Power Station for dust suppression. Therefore, the Delegated Officer considers the consequence to be minor.

Likelihood: The Delegated Officer has considered the operator controls (monitoring of water quality) and determined that impacts to sensitive receptors would not occur in most circumstances. Therefore, the Delegated Officer has determined the likelihood to be unlikely.

Risk Rating: The Delegated Officer has compared the consequence and likelihood ratings described above through the Emissions Matrix (Table 1) and determined that the overall rating for treated wastewater reused for dust suppression to be **medium.**

Regulatory Controls:
The Delegated Officer considers the risk to be acceptable, subject to appropriate regulatory control. Monitoring requirements have been included in Table 3.5.1 of the Licence, including limits for concentrations of total dissolved solids and total recoverable hydrocarbons in TWW discharged. The volume of TWW discharged at the Premises will also need to be recorded.

Residual Risk
Consequence: Minor
Likelihood: Unlikely
Risk Rating: Medium

Abnormal/Emergency situation

Emission Description

Emission: Potential uncontrolled discharge of TWW from the stockyard storage tanks.

Impact: Potential contamination of surrounding land and groundwater.

Controls: The Licensee will store the treated wastewater in an impermeable storage tank and maintain an operating vertical freeboard of 300mm.

Risk Assessment

Consequence: The Delegated Officer has determined that minimal onsite impacts would occur to sensitive receptors from the overflow of treated wastewater from the storage tanks. Therefore, the Delegated Officer considers the consequence to be slight.

Likelihood: The Delegated Officer has considered the operator controls (freeboard) and determined that impacts to sensitive receptors would not occur in most circumstances. Therefore, the Delegated Officer has determined the likelihood to be unlikely.

Risk Rating: The Delegated Officer has compared the consequence and likelihood ratings described above through the Emissions Matrix (Table 1) and determined that the overall rating for treated wastewater reused for dust suppression to be **rare.**

Regulatory Controls:

The Delegated Officer considers limited, short term impacts could occur to sensitive ecosystems as any overflow would be isolated to the immediate area of the tanks and water will be treated, and it is unlikely that such a consequence will occur. Noting this, the Delegated Officer has removed the treated wastewater storage tanks and specified infrastructure requirements from Table 1.2.1.

Residual Risk

Consequence: Slight
Likelihood: Unlikely
Risk Rating: Rare

TSF DECANT LINE – STORMWATER DISCHARGE TO KANGEENARINA CREEK

The Licensee has an emergency decant line in place at the TSF to allow for discharge of decant water to Kangeenarina Creek, as a contingency measure during high rainfall events. DER has assessed the contingency discharge of TSF decant water to Kangeenarina Creek, detailed below.

Emission description

Emission: Contingency discharge of TSF decant water/stormwater to Kangeenarina Creek during high rainfall events.

Impact: Deterioration of surface water quality and increased turbidity/downstream sedimentation leading to ecosystem disruption. Kangeenarina Creek contains several groundwater fed pools which could be effected. Erosion of creek bed at discharge point.

Controls: The TSF provides sufficient capacity that storm events will generally not result in overtopping of the embankment. The decant line is a contingency measure to allow for discharge of decant water to Kangeenarina Creek, if required.

A contingency bypass pipeline extends past the decant/seepage water storage pond to allow for stormwater from an extreme storm event to be released to Kangeenarina Creek. Rock armouring has been constructed and a stilling basin installed to dissipate the energy of the flow.

Geochemical characterisation of mine waste samples has identified that tailings supernatant produced by the OPFs can be assumed to be geochemically inert and not considered a contaminant risk for surface waters.

The pools immediately downstream of the TSF are contingency discharge point are located within the future Solomon mine pit area, and are therefore approved for disturbance under MS862. The Licensee has developed the *Solomon Project Kangeenarina Pools Supplementation Plan – Northern Pools* (600SO-00018-PR-HR-0002) to satisfy Condition 11 of MS862. This plan provides for protection of the northern pools of Kaangenarina Creek and requires surface water and groundwater monitoring (including quarterly hydrochemistry assessment) of the pools.

Risk Assessment

Consequence: The Delegated Officer has considered the geochemical characterisation of the tailings and supernatant water and determined that midlevel onsite impacts and low level offsite impacts at a local scale would occur to sensitive receptors from the discharge of TSF decant and stormwater to Kangeenarina Creek. It is also noted that discharge will only occur during and/or following significant rainfall events; effectively diluting the tailings liquor prior to discharge. Therefore, the Delegated Officer considers the consequence to be moderate.

Likelihood: The Delegated Officer has considered the operator controls (sediment and erosion control) and infrequent use of the contingency option, and determined that impacts to sensitive receptors would not occur in most circumstances. Therefore, the Delegated Officer has determined the likelihood to be unlikely.

Risk Rating: The Delegated Officer has compared the consequence and likelihood ratings described above through the Emissions Matrix (Table 1) and determined that the overall rating for the contingency discharge of decant water and stormwater from the TSF during high rainfall events to be **medium.**

Regulatory Controls:

The Delegated Officer considers the risk associated with the contingency discharge to Kangeenarina Creek to be acceptable, subject to appropriate regulatory control. Under condition 3.4.1, the Delegated Officer has specified monitoring requirements that need to be implemented when contingency discharge of decant water from the TSF is undertaken during high rainfall events. The results of this monitoring will be reported to DER via the AER, required under condition 4.2.1.

The Delegated Officer notes that the ambient water quality of the northern pools of Kangeenarina Creek are monitored under the *Solomon Project Kangeenarina Pools Supplementation Plan – Northern Pools,* developed and implemented under condition 11 of MS862. Noting this, conditions relating to the monitoring of the ambient surface water quality of Kangeenarina Creek have not been applied to the Licence.

The contingency discharge point will be inspected during DER compliance inspections to determine if erosion at the discharge point is occurring.

Residual Risk

Consequence: Moderate
Likelihood: Unlikely
Risk Rating: Medium

Appendix E – Fugitive Dust Emissions

Emission Description

Emission: Dust emissions are produced by the transport, processing, movement and storage of iron ore.

Impact: Deterioration of local air shed, including potential health impacts to residents. Dust emissions can be harmful to human health and the environment. Elevated total suspended particulates (TSP) can impact ambient environmental quality resulting in amenity impacts and can smother vegetation. Particulate matter that is less than 10 (PM_{10}) or 2.5 ($PM_{2.5}$) micrometres in diameter can be drawn deep into the lungs causing human health impacts. The chemical and physical properties of the particles, the size of the particles and the duration of exposure are all factors which may affect human health impacts.

Controls: The nearest sensitive human receptors to the fugitive dust emissions from the Solomon project are Karijini National Park (12 km away) and Hamersley Pastoral Station (25 km away).

The following measures are implemented at the Solomon Mine to minimise dust emissions:

- sprays or water trucks are used on run of mine stockpiles to control fugitive dust;
- dust suppression sprays have been fitted to crushers and conveyors;
- water fogging sprays on the Sizing Hubs;
- dry baghouse dust collection and ducting connected at all ore transfer points at the Firetail OPF;
- water sprays are used at transfer points;
- dust suppression sprays have been fitted to the screen to control fugitive dust emissions from product screening;
- crushed material stockpiles (fines <12mm) are sprayed (sprinklers and water trucks);
- in extreme conditions (high wind) the processing at the crushing facilities will cease until conditions improve;
- water is added to the ore during processing and the final product will contain a moisture content of 6 – 8 % moisture;
- a dust suppressant (e.g. Soiltac) is applied to the stockpiles to prevent windblown dust;
- dust emissions from the MCF crushed product stockpiles and feed stockpiles is minimised using water sprinklers and a water truck;
- dust suppression sprinklers are fitted to the MCFs to control dust from the grizzly, primary crusher screen, primary crusher, cone crusher and conveyors.

The Licensee has set the following objectives with respect to dust emissions during operation of the Solomon Project:

- that implementation of the Solomon Project does not lead to community complaints regarding dust emissions or their impacts; and
- the operations do not cause National Environmental Protection Management (NEPM) standards to be exceeded at the Solomon Project boundary.

The Licensee has implemented a dust monitoring program for the greater Solomon Project which includes the installation of at least 5 dust monitoring stations (and 1 background station) at varying locations around the Solomon Project to quantify the significance of dust emissions during operation and effectively monitor ambient dust concentrations. PM_{10} concentrations are monitored continuously from monitors located around the Solomon Project area whilst visible dust from the crushing facilities is monitored daily and as the opportunity arises.

FMG addressed dust management in the Public Environmental Review for the project, with proposed management including the implementation of a dust management plan. FMG has prepared an overarching dust management plan which applies across it's mine and rail sites and continues to implement this plan.

Each of FMG's tenements issued under the *Mining Act 1978* for the Solomon Project also include conditions related to dust management. Further to this, conditions of the tenements require that the construction and operation of the project, and measures to protect the environment, are carried out generally in accordance with the submitted Mining Proposals. Each of the submitted Mining Proposals for the Solomon Project has required dust management in accordance with the approved management plan.

Risk Assessment
Consequence: The Delegated Officer notes that the closest sensitive receptors are Hamersley Gorge and Hamersley Station located 13 km and 33 km from the premises respectively. The Delegated Officer the separation distance sufficient and has determined that minimal impacts to amenity will occur to these receptors at this distance, therefore the consequence is slight.

Likelihood: The Delegated Officer has determined that amenity impacts from dust emissions may occur in exceptional circumstances, therefore the likelihood of the consequence occurring is rare.

Risk Rating: The Delegated Officer has compared the consequence and likelihood ratings described above through the Emissions Matrix (Table 1) and determined that the overall rating of risk for dust emissions to be **low.**

Regulatory Controls:
The Delegated Officer notes that the Licensee has implemented a range of dust suppression measures across the Solomon mine to manage fugitive dust emissions to minimise environmental and human health impacts. In addition, a comprehensive dust monitoring network has been established by the Licensee to monitor ambient dust concentrations and visible dust from the crushing facilities is monitored daily.

The Delegated Officer also notes the regulation of dust from the project is also addressed under the mining tenement conditions. Dust emissions associated with the project have been assessed as a low risk and no dust complaints have been received to date.

No issues relating to dust emission were identified during the April 2016 DER compliance inspection.

The Solomon Mine will be subject to future DER inspections during which fugitive dust emissions and the effectiveness of existing dust mitigation measures will be assessed. If unreasonable dust emissions are identified, DER will consider the inclusion of appropriate conditions to regulate dust. The general provisions of the *Environmental Protection Act 1986* also apply.

Residual Risk
Consequence: Slight
Likelihood: Rare
Risk Rating: Low