Government of Western Australia
Department of Water and Environmental Regulation

Amendment Notice #3

Licence Number	L8621/2011/1
Licensee	Roy Hill Iron Ore Pty Ltd
ACN	123 722 038
Registered business address	5 Whitham Road PERTH AIRPORT WA 6105
Date of Amendment	17 November 2017
Prescribed Premises	Category 5 – Processing or beneficiation of metallic or non-metallic ore Category 6 – Mine dewatering Category 12 – Screening, etc. of material Category 54 – Sewage Facility Category 57 – Used tyre storage (general) Category 64 – Class II putrescible landfill site Category 73 – Bulk storage of chemicals, etc.
Premises	Roy Hill Iron Ore Mine M46/518 and M46/519 NEWMAN WA 6753

Amendment

The Chief Executive Officer (CEO) of the Department of Water and Environmental Regulation (DWER) has amended the above Licence in accordance with section 59 of the *Environmental Protection Act 1986* as set out in this Amendment Notice. This Amendment Notice constitutes written notice of the amendment in accordance with section 59B(9) of the EP Act.

Date signed 17 November 2017

Alana Kidd

Manager Licensing, Regulatory Services – Environment

an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Definitions and interpretation

Definitions

In this Amendment Notice, the terms in Table 1 have the meanings defined.

Table 1: Definitions

Term	Definition
ACN	Australian Company Number
Category/ Categories/ Cat.	categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department Administering the *Environmental Protection Act 1986* Locked Bag 33 Cloisters Square PERTH WA 6850 info-der@dwer.wa.gov.au
Decision Report	refers to this document
Delegated Officer	an officer under section 20 of the EP Act
Department	means the department established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V, Division 3 of the EP Act.
DSO	Direct Ship Ore
DWER	Department of Water and Environmental Regulation
EPA	Environmental Protection Authority
EP Act	*Environmental Protection Act 1986* (WA)
EP Regulations	*Environmental Protection Regulations 1987* (WA)
Existing Licence	The Licence issued under Part V, Division 3 of the EP Act and in force prior to the commencement of and during this Review
Licence Holder	Roy Hill Iron Ore Pty Ltd
mbgl	metres below ground level
MS	Ministerial Statement
mtpa	million tonnes per annum

Noise Regulations	*Environmental Protection (Noise) Regulations 1997* (WA)
OWS	Oil Water Separator System
PM_{10}	used to describe particulate matter that is smaller than 10 microns (µm) in diameter.
Prescribed Premises	has the same meaning given to that term under the EP Act.
Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report.
Risk Event	as described in *Guidance Statement: Risk Assessment*
ROM	Run of Mine (temporary ore storage area)
tph	tonnes per hour

Amendment Notice

This amendment is made pursuant to section 59 of the *Environmental Protection Act 1986* (EP Act) to amend the Licence L8621/2011/1 issued under the EP Act for a prescribed premises as set out below. This notice of amendment is given under section 59B(9) of the EP Act.

This notice is limited only to an amendment for construction and operation of a new diesel-fired power station, new in-pit tyre disposal area and additional ore crushing and screening facilities.

The following guidance statements have informed the decision made on this amendment:

- *Guidance Statement: Regulatory Principles (July 2015)*
- *Guidance Statement: Setting Conditions (October 2015)*
- *Guidance Statement: Environmental Siting (November 2016)*
- *Guidance Statement: Risk Assessments (February 2017)*

Amendment description

On 26 June 2017, Roy Hill Iron Ore Pty Ltd (the Licensee) submitted an Application (Roy Hill 2017a and 2017b) to the former Department of Environment Regulation (DER) to amend the Roy Hill Iron Ore Mine (Premises) Licence L8621/2011/1.

The Licensee applied to make the following changes:

1. Construction and operation of a new 45MW diesel-fired power station;
2. Construction and operation new in-pit tyre disposal areas;
3. Construction and operation of additional ore crushing and screening infrastructure; and
4. Use of the Accommodation Village Reverse Osmosis (RO) reject water for dust suppression.

Table 2 below outlines the proposed changes to the Licence.

Table 2: Proposed design changes

Category	Current design capacity	Proposed design capacity	Description of proposed amendment
52: Electric power generation	N/A.	45MW	Construction and operation of new 45MW diesel-fired power station
64: Class II putrescible landfill site	8,000 tonnes per annual period	8,000 tonnes per annual period	Construction and operation of two additional Tyre Disposal Locations (D101 and D301) within Delta Mine Pit. ROM 3 Tyre Disposal Area to remain until encapsulated by final ROM 3 pad construction.
5: processing or beneficiation of	65,000,000 tonnes per annual	65,000,000 tonnes per annual	Construction and operation of new Lump to Fines Crushing Facility,

metallic or non-metallic ore	period Existing infrastructure includes Crushing Stations 1, 2 and 3	period	Direct Ship Ore Screening Facility and three Crushing Plants (Jaw Crushers 1-3)

1. Construction and Operation of the Power Station

The power station to be constructed on the Premises will comprise 56 Caterpillar 3516B (XQ2000) diesel generators, each with a continuous gross rated output of 1.6MW. The maximum number of generators operating at any time will be 30 units, for a peak power demand of 45MW. The remaining units will be used for redundancy and maintenance rotation purposes.

The power station will be located in the Process Plant footprint (as shown in Attachment 1). Exhaust emissions from each generator will be via two 0.45m diameter stacks (total of 112 stacks) at a height of 2.9m above ground level at an exhaust velocity of 34.6m/s.

Each generator has a 4,731L double skinned diesel storage tank. Diesel supply for the power station will be provided by two 110,000L double skinned tanks. A 27,000L double skinned lube storage tank will also be constructed to store engine lubrication oil required for the generators. Waste oil storage will utilise 1,000L self bunded tanks.

Diesel fuel will be supplied to the power station via an existing underground diesel pipeline, which runs from the mine site Bulk Fuel Facility to the two power station diesel storage tanks. Diesel fuel can also be delivered by road tanker to a diesel unloading facility located just outside the power station boundary. Attachment 2 depicts the location of the power station relative to the underground pipeline and mine site Bulk Fuel Facility. Attachment 3 shows the layout of the power station.

2. In-pit Tyre Disposal areas

The Licensee has applied to add two in-pit tyre disposal areas to the Premise. These will be located within Delta Mine Pit (see Attachment 1).

ROM 3 is soon to be constructed as an operational Run of Mine processing area and tyres will be disposed and encapsulated within the ROM during the ROM3 construction period. Following completion of ROM 3 construction, the Tyre Storage Area and Landfill in this location will soon no longer be able to be accessed. As such, the two additional in-pit tyre disposal areas are required within the Delta Mine Pit.

The following management practices will be implemented when disposing of tyres at the in-pit tyre disposal areas at Delta Pit:

- Tyres to be placed/dumped on a levelled surface;
- Base of in-pit tyre disposal area will be at least 3m above the original groundwater level;
- Tyres will be stacked on their side walls and filled with backfill waste material;
- A minimum of 5m of suitable inert waste backfill cover will be placed on the top of the tyres, if the overlying surface is to be flat. A minimum 8m backfill cover will be placed on the top of the tyres, if the overlying surface is sloping;
- Tyres will be landfilled in batches separated from each other by at least 100mm of soil and each consisting of not more than 1000 whole tyres; and

- No tyres to be placed under any drainage lines or major proposed post mine infrastructure (roads etc.) and within 25m offset from any boundary.

Conditions are already imposed on the Existing Licence L8621/2011/1 specifying measures required to be implemented when disposing of used tyres on the Premises.

3. Additional Crushers and Screeners

The Licensee is applying to construct and operate an additional five ore processing facilities at the Premises; a Lump to Fines Crushing Facility to be constructed at the Process Plant, a Direct Ship Ore (DSO) Screening Facility at the ROM 2 area and three crushing plants (Jaw Crushers 1-3) located north of ROM 2. The operation of the additional crushers and screeners will not result in any change to the overall Category 5 ore processing capacity of 65mtpa. The additional crushing and screening facilities are proposed to manage the ultra-fine and extra hard ore that is currently being extracted from the Roy Hill mine. Attachment 1 shows the locations of the additional ore processing facilities to be installed at the Premises.

Process Plant Lump to Fine Crushing Facility

The Lump to Fines crushing facility has been incorporated into the Processing Plant and will process up to 3.4mtpa of lump material from the process plant by crushing the lump ore into fines material (<8mm).

The Lump to Fines Crushing Facility utilises High Pressure Grinding Roller technology and is enclosed to limit any potential dust during crushing operations. Ore transfer points are fitted with water sprayers to minimise dust during ore transfer. Dust emissions from stockpiles of crushed material will be managed using existing water cannons to reduce dust lift-off.

ROM 2 Direct Ship Ore (DSO) Screening Facility

The DSO Screening Facility is located within a former laydown area at ROM 2, adjacent to the Delta Mine Pit area. The DSO Facility screens ultrafine high iron ore content material within the ore body. The screened DSO material is transferred directly, via haul trucks, to the Process Plant area where it is blended into the lump or fine stockpiles. The anticipated output of the DSO Screening Facility is 2.5mpta, with a maximum design capacity of 4mpta.

The transfer points at the DSO screening facility contain water sprayers to minimise dust during ore transfer. Dust resulting from stockpiling of the DSO material will be managed using water sprayers and/or water carts.

Jaw Crushers 1-3

Three new crushing plants (collectively termed Jaw Crushers 1-3) will be installed and operated adjacent to the overland conveyor, north of ROM 2, to supplement the crushing of hard rock material from the two primary crushers located at ROM 2. The combined design capacity of the three crushing plants will be up to 9,000tph (3,000tph each). The crushed rock will be directly conveyed from the crushers onto the main conveyor of the process plant.

Each crushing plant consists of a jaw crusher, ROM bin, vibrating grizzly feeder, bypass chute, conveyor, control room with dust suppression systems including water sprays, and dust covers at transfer points.

Visual inspections will be performed to detect dust emissions from all of the crushing

plants and activate additional dust management as required.

4. Accommodation Village Reverse Osmosis (RO) Reject Water

As part of this Application, the Licensee has requested DWER approve the use of reject water from the Accommodation Village RO plant for dust suppression purposes. Reject water from the RO plant is currently being discharged to the Accommodation Village Wastewater Treatment Plant. The Licensee is proposing to redirect this RO reject water to turkey's nest dams for dust suppression use. The total dissolved solids (TDS) of the RO reject water will be less than 10,000mg/L.

The assessment and authorisation of saline water for dust suppression purposes is not included in this Part V (EP Act) assessment due to:

- The use of saline water for dust suppression at the Mine was approved by the EPA on 11 February 2016 under s45C of MS 824 and MS 829 (under Part IV of the EP Act); and
- The use of saline water for dust suppression was sought from the DMP under Mining Proposal C Rev 2 (Reg ID 59183) to satisfy tenement condition 18 of M46/518 and condition 16 of M46/519. The conditions state:

  '*Where saline water is used for dust suppression, all reasonable measures being taken to avoid any detrimental effects to surrounding vegetation and topsoil stockpiles, to the satisfaction of an Environmental Officer, DMP'*.

Part V of the EP Act does not consider the use of water for dust suppression as a primary activity under Schedule 1 of the EP Regulations. Furthermore, in accordance with *Guidance Statement: Setting Conditions* (DER 2015) licence conditions shall not unnecessarily duplicate requirements imposed on Licence Holders by other regulatory instruments. Therefore, the assessment of this aspect of RHIO's application is not deemed to be required.

Other approvals

The Licensee has provided the following information relating to other approvals as outlined in Table 3.

Table 3: Relevant approvals

Legislation	Number	Approval
Environmental Protection and Biodiversity Conservation Act 1999	EPBC No: 2008/4624	Notification of Referral Decision – Not a Controlled Action
Environmental Protection Act 1986	MS824 and MS829	MS824 (Stage 1) and MS829 (Stage 2)
Mining Act 1978	Mining Proposal Reg ID 32525	Mining Proposal Years 1 to 5 M46/518 and M46/519 - Part A (Reg ID 32525) – includes potential Power Station.
Rights in Water and Irrigation Act 1914	GWL155272(1), GWL155272(2), GWL155272(3), GWL155272(4), GWL155272(5), GWL158412(1), GWL158412(2), GWL158412(3), GWL158412(4), GWL158412(5),	Licence to Take Groundwater (s5C) licences

	GWL159658(2), GWL159658(3), GWL159658(4), GWL159658(5), GWL176004(1), GWL172197(1), GWL172642(1), GWL172642(2) and GWL179224(1).	

Amendment history

Table 4 provides the amendment history for L8621/2011/1

Table 4: Licence amendments

Instrument	Issued	Amendment
L8621/2011/1	22/03/2012	New Licence issued approving operation of category 85 (sewage facility)
	30/05/2013	Amendment to include category 89 (putrescible landfill)
	19/09/2013	Amendment to include category 12 (screening of material) and upgrade from category 85 to category 54 (sewage facility)
	8/5/2014	Amendment to incorporate expansion to the landfill (category 89)
	5/2/2015	Amendment to add category 57 (used tyre storage), increase category 64 landfill design capacity and excise land for a small sewage facility
	9/4/2015	Administrative amendment
	5/11/2015	Amendment to include the MSA sewage facility and update licence template
	7/4/2016	Amendment to include category 6 (dewatering) and 73 (bulk storage of chemicals), construction of northern recharge basin and southern and northern discharge locations to No-name Creek. Removal of Mankarlyikkakurra Exploration Camp.
	29/04/2016	Amendment by Notice to extend Licence expiry date to 25/03/2034
	24/11/2016	Amendment to include category 5 operations including ore processing plant and Tailings Storage Facility (TSF), additional sewage facility, landfill and dewatering recharge basins.
	13/1/2017	Amendment Notice 1 - approved operation of TSF evaporators to enhance water evaporation within TSF.
	16/11/2017	Amendment Notice 2 –approved changes to the design and construction of the Stage 2 raise of the TSF; addition of groundwater monitoring conditions around TSF, administrative changes.
	17/11/2017	Amendment Notice 3 (this notice) – approved operation of new power station, two in-pit tyre disposal areas and additional crushing/screening facilities.

Location and receptors

Table 5 below lists the relevant sensitive land uses in the vicinity of the Prescribed Premises which may be receptors relevant to the proposed amendment.

Table 5: Receptors and distance from activity boundary

Residential and sensitive premises	Distance from Prescribed Premises
Roy Hill Homestead	Approximately 19km south of the power station, 17km south of the in-pit tyre disposal areas and 16km south of the DSO screening plant and Jaw Crushers 1-3.
Chichester Metals Pty Ltd's Christmas Creek mining operation accommodation village	Approximately 30km to the west
Noreena Downs Station	Approximately 30km to the north east
Town of Nullagine	More than 60km to the north.

Table 6 below lists the relevant environmental receptors in the vicinity of the Prescribed Premises which may be receptors relevant to the proposed amendment. Specified Ecosystems are defined in the *Guidance Statement Environmental Siting* (DER 2016).

Table 6: Environmental receptors and distance from activity boundary

Environmental receptors	Distance from Prescribed Premises
Specified Ecosystems: Fortescue River and Marsh – Priority 1 ecological community, ANCA wetland and proposed Ramsar Area	The Fortescue River and Marsh are located more than 2km southwest of the Project infrastructure (at the nearest point in the south of the Premises boundary). The Kulbee Creek passes through the centre of the Premises, with the Kulkinbah Creek located to the southeast and No-Name Creek to the northwest. These ephemeral creeks flow in a southwest direction towards the Fortescue River and Marsh. The Kulbee, Kulkinbah and No-Name Creek catchments combined represent less than 0.5% of the Fortescue catchment. There are no permanent creeks, surface water pools or wetlands within the mine area.
Vegetation	Groundwater dependent and surface water vegetation communities have been identified within the boundaries of the Premises. No threatened or priority ecosystems have been identified. No DRF were located at the Premises.
Groundwater	Depth to groundwater is around 34mbgl at the power station and around 38mbgl at the in-pit tyre disposal area. Groundwater is of alkaline quality and generally brackish to saline. Groundwater flows are in a south-westerly direction.

Risk assessment

Table 7 below describes the Risk Events associated with the amendment consistent with the *Guidance Statement: Risk Assessments* (DER 2017). Table 7 identifies whether the emissions present a material risk to public health or the environment, requiring regulatory controls.

Table 7: Risk assessment for proposed amendments during construction and operation

Risk Event						Consequence rating	Likelihood rating	Risk	Reasoning
Source/Activities		**Potential emissions**	**Potential receptors**	**Potential pathway**	**Potential adverse impacts**				
Category 52 Electric power generation	Construction and operation of new 45MW diesel fired power station	**Dust:** during construction / installation of generator units	No nearby residences or other sensitive public receptors (closest residence is the Roy Hill Homestead located 19km south of the power station)	Air / wind dispersion	Potential amenity and public health impacts	N/A	N/A	N/A	No receptor present. In accordance with the *Guidance Statement: Risk Assessments (DER 2017),* mine site accommodation camps are not considered a potential receptor as protection of employees of the Licensee is provided for under other state legislation. The Delegated Officer considers 19km to be a sufficient separation distance for air emissions generated by power station, as such; regulatory controls are not required. The Licensee has an ongoing legislative requirement to comply with the Prescribed standard for noise emissions, as set out in regulation 7 of the Noise Regulations.
		Emissions to air: combustion gases including oxides of nitrogen (NOx) and sulfur (SOx), carbon monoxide (CO), volatile organic carbons (VOC's) and particulates (PM10) during operations							
		Noise: during operations							
		Spills or leaks of hydrocarbons (diesel, lubricants) **and other chemicals** (coolants etc.) associated with operation of power	The nearest sensitive environmental receptor to the power station is the Fortescue Marsh located	Overland flow into surface water features (rivers /	Soil contamination inhibiting vegetation growth and survival, and health impacts to fauna.	**Minor:** low level on site impacts	**Unlikely**: the risk event will probably not occur in most circumstances	**Medium**	Failure of the diesel pipeline or bulk storage / containment infrastructure could result in a release of hydrocarbons to land, causing contamination of soils and infiltration to groundwater. Hydrocarbons contain toxic substances including heavy metals, Monocyclic Aromatic Hydrocarbons (BTEX) and

		station generators	around 13km south. Depth to groundwater is 34mbgl	creeks) and infiltration to groundwater	Contamination of surface water bodies / groundwater with impacts to beneficial uses				Polycyclic Aromatic Compounds (PAH's). The Licensee's controls to reduce the risk of spills or leaks of hydrocarbons at the power station include: • The storage facilities (including diesel unloading facility) will be designed and constructed in accordance with Australian Standard (AS)1940:2004 - *The storage and handling of flammable and combustible liquids*; • Oils, including waste oil, will be stored within 1,000L self-bunded storage tanks within covered bunded waste oil and coolant areas; • Leaks and/or spills will be cleaned up immediately and hydrocarbon contaminated soil will be stored appropriately on site prior to being sent to the mine site bioremediation facility or offsite to licensed facilities for recycling or appropriate disposal; and • The diesel pipeline is a dual contained fuel pipe with 160/110mm outer diameter. The leak detection system for the pipeline includes primary leak detection pits that are located at regular intervals along the pipeline. A total of 24 leak detection pits have been installed along the 3.6km long diesel fuel pipeline. If the storage and containment infrastructure or pipelines were to

									fail of become compromised, then the Delegated Officer has determined that the impacts to soil and groundwater will result in mid-level onsite impacts. Therefore the Delegated Officer considers the consequence to be **moderate**. Based upon the Licensee's controls listed above, the Delegated Officer has determined that the likelihood of hydrocarbon containment failure or leaks / spills impacting on soil and groundwater will probably not occur in most circumstances. Therefore, the Delegated Officer considers the likelihood of the consequence occurring to be **unlikely**. The overall rating for the risk of impacts from spills or leaks of hydrocarbons is **medium**.
		Stormwater: potentially contaminated with hydrocarbons or sediment				**Moderate:** mid level on site impacts	**Unlikely:** the risk event will probably not occur in most circumstances	**Medium**	Contaminated stormwater may be generated during operation of the power station. Wastewater will also be produced during the operation of the power station as a result of engine washdown. Stormwater and washwater generated in these areas may contain contaminants such as hydrocarbons and sediment, which can contaminate soils, smother vegetation or infiltrate to groundwater. The Licensee has a number of controls to mitigate the risk of impacts from contaminated stormwater being discharged to the environment, including: • Surface water diversion structures will be constructed around the power station to divert uncontaminated

									stormwater around and away from these areas; • Stormwater collected from fuel transfer points and from within the bunded transfer modules at the power station will be collected and passed through an oily water separator system to recover hydrocarbon materials for disposal and to achieve a water quality of Total Recoverable Hydrocarbons (TRH) ≤15mg/L; • Treated wastewater from the oily water separation system will be tested at least quarterly when discharging, by a laboratory accredited by National Association of Testing Authorities (NATA) to ensure that TRH concentrations in the discharge water is ≤15mg/L; • Oil recovered through the oily water separator system is stored appropriately onsite prior to being sent offsite to licensed facilities for recycling or appropriate disposal; and • Oily water separation system will be maintained as per manufacturer's specifications. The Delegated Officer has had regard to the separation distance to sensitive receptors and the Licensees controls for reducing the risk of impacts from discharges of contaminated stormwater. If stormwater was to become contaminated and be discharged to the surrounding environment,

									then the Delegated Officer has determined that the impacts to soil and groundwater will result in low-level onsite impacts. Therefore the Delegated Officer considers the consequence to be **minor**. Based upon the Licensees controls listed above, the Delegated Officer has determined that the likelihood of impacts from contaminated stormwater discharges will probably not occur in most circumstances. Therefore, the Delegated Officer considers the likelihood of the consequence occurring to be **unlikely**. The overall rating for the risk of impacts from contaminated stormwater is **medium**.
Category 64 Class II landfill site	Construction and operation of new in-pit tyre disposal areas at Delta Mine Pit.	**Dust**: Generated from movement of vehicles within disposal areas; and during burial of tyres Groundwater contamination Black smoke from fire	No residences or other sensitive receptors in proximity (closest residence is 17km south of the in-pit tyre disposal areas)	Air / wind dispersion	Potential amenity and public health impacts	**Slight:** onsite impact minimal	**Rare:** the risk event may only occur in exceptional circumstances	**Low**	No receptor present. The Licensee will reduce dust by the application of water when backfilling the tyre disposal areas. The Delegated Officer considers that 17km is a sufficient separation distance such that impacts from dust will be negligible. Provisions of Section 49 of the *Environmental Protection Act 1986* are sufficient to regulate dust emissions during construction and operation of the in-pit tyre disposal areas. Note: Tyres are classed as Inert Waste Type 2 (DEC 2009) and as such there is no potential for leachate or odour emissions from this waste type.

Cat 5 Processing or beneficiation of metallic or non-metallic ore	Operation of additional crushing / screening infrastructure Operation of additional crushing / screening infrastructure	**Dust**: associated with operation of crushing / screening infrastructure	No nearby residences or other sensitive receptors (closest residence is 16km to the south of DSO screening plant) vegetation	Air: wind dispersion	Health and amenity impacts Potentially photosynthetic and respiratory functions of vegetation due to smothering	**Slight:** onsite impact minimal	**Rare:** the risk event may only occur in exceptional circumstances	**Low**	The Delegated Officer considers that impacts from dust generated during the construction and operation of the crushing and screening plants are not expected. The following management actions will be undertaken to minimise dust emissions during crushing operations: • Visual monitoring will be implemented and dust mitigation measures conducted as required; • the Dust Extinction Moisture (DEM) of lump and fines iron ore will maintained; • Water cannons and sprayers will be used to suppress dust from ore stockpiles; • Jaw Crushers 1-3 will be enclosed to limit dust emissions and will incorporate internal and external dust curtains, primary and secondary scrapers, wind guards and surge bins; • Water sprayers and dust collectors will be used at transfer points at all Crushers and the DSO Screening Facility; and • Existing operating procedures for the management of dust (RH Dust Management Procedure, OP-PRO-00180) will be incorporated into the crushing and screening activities. As a result of the isolated location of the Premises and the Licensees' controls to mitigate dust, the

Cat 5 Processing or beneficiation of metallic or non-metallic ore	Operation of additional crushing / screening								Delegated Officer considers the risk of dust emission impacting receptors to be negligible.
		Noise: during operations	No nearby residences or other sensitive receptors (closest residence is 16km to the south of DSO screening plant)	Air: wind dispersion	Health and amenity impacts	N/A	N/A	N/A	The Delegated Officer considers noise emissions are not expected to impact sensitive premises as the Premises is isolated with the nearest sensitive premises located 16km away. The Licensee has an ongoing legislative requirement to comply with the Prescribed standard for noise emissions, as set out in regulation 7 of the Noise Regulations.
		Stormwater: potentially contaminated with sediment	The nearest sensitive environmental receptor to the DSO Screening Plant is the Fortescue Marsh located around 10km south. Depth to groundwater is around 34mbgl	Overland flow into surface water features (rivers / creeks	Soil contamination inhibiting vegetation growth and survival, and health impacts to fauna. Contamination of surface water bodies	**Slight:** on site impact: minimal	**Unlikely:** the risk event will probably not occur in most circumstances	**Low**	Stormwater containing sediment may be generated during operation of the crushing / screening infrastructure. The Licensee has a number of controls to mitigate the risk of impacts from contaminated stormwater being discharged to the environment, including: • Surface water diversion structures will be constructed around the crushing areas to divert uncontaminated stormwater around and away from these areas; and • Stormwater generated during operation of additional crushers/screeners will be incorporated into the existing stormwater management processes implemented across the entire premises. Stormwater with potential for

Cat 5 Processing or beneficiation of metallic or non-metallic ore	infrastructure								sediment passes through sediment traps prior to being discharged to the environment. The Delegated Officer has had regard to the separation distance to sensitive receptors and the Licensee's controls for reducing the risk of impacts from discharges of contaminated stormwater. If stormwater was to become contaminated and be discharged to the surrounding environment, then the Delegated Officer has determined that the impacts to soil and groundwater will minimal. Therefore the Delegated Officer considers the consequence to be **slight**. Based upon the Licensees' controls listed above, the Delegated Officer has determined that the likelihood of impacts from contaminated stormwater discharges will probably not occur in most circumstances. Therefore, the Delegated Officer considers the likelihood of the consequence occurring to be **unlikely**. The overall rating for the risk of impacts from contaminated stormwater is **low**.

Decision

The Delegated Officer has determined that the key emissions associated with constructing and operating the power station, in-pit tyre disposal areas and additional crushing / screening facilities at the Premises include a potential for increased risk of contaminated stormwater discharges and spills / leaks of hydrocarbons. In accordance with DER's *Guidance Statement: Risk Assessments* (DER 2017) the Licensees' controls in relation to management of contaminated stormwater and potential spills or leaks of hydrocarbons will be conditioned as they lower the assessed likelihood of the risk event.

The Delegated Officer has amended the existing works specification condition in the Licence to include construction requirements for the new infrastructure, including pollution control measures at the power station such as self-bunded bulk fuel storage tanks and the oily water separator to treat contaminated stormwater. The Licence will also incorporate the approved discharge point for treated water from the oily water separator and a discharge limit for Total Recoverable Hydrocarbon (TRH) content in the discharge. Monitoring of TRH concentration in discharges is required to verify that the discharge limit is being complied with. A condition has also been added to limit the number of generators that can be operated at any one time to no more than 30, as per the Licensees' commitments. Conditions relating to disposal of used tyres are already included in the Existing Licence.

The Delegated Officer has considered DER's *Guidance Statement: Regulatory Principles* (DER 2015a), *Guidance Statement: Setting Conditions* (DER 2015b) and *Guidance Statement: Risk Assessment* (DER 2017) in granting this amendment, and does not consider that this amendment will impact the risk profile of the premises, which is currently considered as Low.

Licensee comments

The Licensee was provided with the draft Amendment Notice on 8 September 2017. Comments received from the Licensee have been considered by the Delegated Officer as shown in Appendix 2. Following the updates required, this amendment notice was redrafted and sent again on 16 November 2017 for 21 day review. No additional comments were received from the Licensee following provision of the draft for review.

Amendment

1. Condition 1.3.4, Table 1.3.2 of the licence is amended by the insertion of the bold text shown in underline below.

Table 1.3.2: Waste processing		
Waste type	**Process(es)**	**Process limits[12]**
Inert Waste Type 1 Putrescible Waste[3] Clean Fill	Receipt, handling and disposal of waste by landfilling	Disposal of waste by landfilling shall only take place within the Landfill, Landfill 2 and Delta 1 Pit Landfill shown on the Landfill Maps in Schedule 1. The separation distance between the base of the landfill and the highest groundwater level shall not be less than 3m. Disposal of waste shall not exceed 3000 tonnes. The size of the tipping face is kept to a minimum and not larger than 30m in length. Must meet the acceptance criteria for a Class II landfill[3]
Inert Waste Type 2[1]		Disposal of Inert Waste Type 2 shall only occur at the Landfill identified on the Landfill Area Maps in Schedule 1, ***with tyre disposal only occurring at In-pit Tyre Disposal areas (D101, D301) and ROM 3 Tyre Disposal Area***. Disposal of waste shall not exceed 5,000 tonnes per annual period and shall only include tyres, conveyors and HDPE pipe. Not more than 5,000 used tyres shall be stored at the Premises at any one time. Storage of used tyres in the Tyre Storage Area shown as the Landfill Area Map in Schedule 1 shall only occur in units not more than 100 tyres. Used tyres must be stacked on their side walls or if stored on treads, the area shall be baled with a securing device made of non-combustible material. A separation distance of 6m must be maintained between units.
Sewage	Biological, physical and chemical treatment.	Treatment of sewage waste at the Exploration Camp wastewater treatment plant shall be at or below the treatment capacity of 93.1 m^3/day
Sewage	Biological, physical and chemical treatment.	Treatment of sewage waste at the Accommodation village wastewater treatment plant shall be at or below the treatment capacity of 510 m^3/day

Note 1: Requirements for landfilling tyres are set out in Part 6 of the *Environmental Protection Regulations1987*.
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*.
Note 3: Defined in the Landfill Definitions.

2. Condition 1.3.14, Table 1.3.6 of the licence is amended by the insertion of the bold text shown in underline below.

1.3.14 The Licensee must not depart from the specifications in Table 1.3.6 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

(c) all other Conditions in this Licence are still satisfied.

Table 1.3.6:	**Works specifications**
Column 1	**Column 2**
Mine Power Station	*1.* ***Comprised of:*** • ***56 x Caterpillar 3516B (XQ2000) diesel generators;*** • ***2 x 110,000L double skinned diesel storage tanks;*** • ***28 x transformers in self-bunded modules;*** • ***1 x 27,000L self-bunded lube storage tank; and*** • ***1 x oil water separator system (OWS), designed to treat stormwater to less than 15mg/L TPH;*** *2.* ***Constructed as per Attachment 3 titled "Roy Hill Iron Ore Mine - Power Station Layout"; and*** *3.* ***Exhaust emissions from each generator via two 0.45m diameter stacks at a height of 2.9m above ground level at a velocity of 34.6m/s***
In-pit tyre disposal area	*1.* ***To be located within Delta Mine Pit as per Attachment 4 titled "Roy Hill Iron Ore Mine - In-pit Tyre Disposal Locations"; and*** *2.* ***Base of tyre disposal area to be at least 3m above original groundwater level***
Additional Ore Processing Facilities	*1.* ***Lump to Fines Crushing Facility, DSO Screening Facility and Jaw Crushers 1-3 to be constructed at locations depicted in Attachment 1 Premises Map;*** *2.* ***Lump to Fines Crushing Facility with design capacity of 3.4mtpa;*** *3.* ***Lump to Fines Crushing Facility to be enclosed to limit dust emissions during operations;*** *4.* ***DSO Screening Plant with design capacity of 4mtpa;*** *5.* ***Transfer points at Lump to Fines Crushing Facility, DSO Screening Facility and Jaw Crushers 1-3 are fitted with water sprayers to minimise dust during ore transfer; and*** *6.* ***Jaw Crushers 1-3 with combined design capacity of 9,000tph and fitted with internal and external dust curtains, primary and secondary scrapers, wind guards and surge bins***
Stage 2 TSF raise	1. Phased removal of relevant Cell (1 or 2) tailings delivery pipelines, decant pipework and associated infrastructure; 2. Phased bulk earthworks construction of embankment lifts of relevant Cell (1 or 2) including raising of decant structure, to a design level of 442mRL; 3. Re-installation of tailings delivery pipelines, decant pipework and associated infrastructure at relevant Cell prior to commencement of raise on subsequent Cell; and 4. Pipelines located around the top of the dam wall are to be constructed of P12 DN450 HDPE and pipelines constructed from the Booster Station to the inflow area on the dam wall, constructed of C12 DN450 Carbon Steel Pipe.

Landfill 2 (See Schedule 1: Maps)	The Licensee must ensure that the Landfill 2: 1. has a 1.8 metre security fence and gate erected around the perimeter of the landfill; 2. has appropriate signage which specifies what types of wastes are accepted at the landfill and where they are to be deposited; 3. is contained within the Premises boundary; 4. has a firebreak of 3 metres around the boundary of the landfill; 5. has a stormwater diversion levee north east of the landfill which is designed to prevent any stormwater from entering the landfill from outside; 6. a minimum distance of 3 metres is maintained between the base of each trench and the highest level of the water table aquifer; 7. is designed so all contaminated stormwater is retained within the landfill area; 8. has sufficient soil, which has been excavated from the creation of trenches at the landfill, stockpiled adjacent to the open trenches and enough to cover the tipping area at least twice; 9. has water used for dust suppression during excavation and backfilling of each trench; and 10. has two groundwater monitoring bores located hydraulically up and down gradient of the landfill, and baseline groundwater monitoring is conducted prior to disposal of any waste into the landfill.

3. The Licence is amended by the insertion of the following Conditions 1.3.19:

1.3.19 ***The Licensee shall operate the Power Station such that the maximum number of generators operating at any time will be no more than 30 generators.***

4. Condition 2.3.1, Table 2.3.1 of the licence is amended by the deletion of all text shown in strikethrough below and insertion of the bold text shown in underline below.

2.3.1 The Licensee shall ensure that where waste is emitted to land from the emission points in Table 2.3.1 and identified on the map of emission points in Schedule 1 it is done so in accordance with the conditions of this Licence.

Table 2.3.1: Emissions to land

Emission point reference and location on Map of emission points	**Description**	**Source including abatement**
Accommodation Village-Irrigation Area	Discharge from the Accommodation Village WWTP to the on-site irrigation area	Treated wastewater
Mine Services Area Irrigation Area-	Discharge from the Mine Services Area WWTP to the on-site irrigation area	
Mine Process Plant Irrigation area	Discharge from the Mine Process Plant WWTP to the on-site irrigation area	
OWS discharge location ***(at Bulk Fuel Facility)***	Discharge of treated water from the OWS at the Bulk Fuel Facility to the environment	Water that has been treated through the OWS to the environment via a headwall with rock protection

OWS discharge location (at Power Station as shown in Attachment 2)	***Discharge of treated water from the OWS at the Power Station to the Premises stormwater system that discharges to the environment***	***Water that has been treated through the OWS to the environment via a sediment trap***

5. Condition 2.3.2, Table 2.3.2 of the licence is amended by the insertion of the bold text shown in underline below.

2.3.2 The Licensee shall not cause or allow emissions to land greater than the limit listed in Table 2.3.2.

Table 2.3.2: Emission limits to land

Emission point reference	Parameter	Limit (including units)	Averaging period
OWS discharge location ***(at Bulk Fuel Facility)***	Total Recoverable Hydrocarbons	15 mg/L	Spot sample
OWS discharge location (at Power Station as shown in Map in Attachment 2)			

6. Condition 3.3.1, Table 3.3.1 of the licence is amended by the insertion of the bold text shown in underline below:

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 emissions to land

Emission point reference	Parameter	Units	Reference period	Frequency
Accommodation Village WWTP (Prior to discharge to the irrigation areas)	Cumulative Volume	m^3	Monthly	Continuous
	Biochemical Oxygen Demand	mg/L	Spot sample	Quarterly
	Total Suspended Solids	mg/L		
	pH[1]	pH units		
	Total Nitrogen	mg/L		
	Total Phosphorus	mg/L		
	E. coli	cfu/100 mL		
	Total Dissolved Solids	mg/L		
Mine Services Area WWTP (Prior to discharge to the irrigation areas)	Cumulative Volume	m^3	Monthly	Continuous
	Biochemical Oxygen Demand	mg/L	Spot sample	Quarterly
	Total Suspended Solids	mg/L		
	pH[1]	pH units		
	Total Nitrogen	mg/L		
	Total Phosphorus	mg/L		
	E. coli	cfu/100 mL		
Mine Process	Cumulative Volume	m^3	Monthly	Continuous

Plant WWTP (Prior to discharge to the irrigation area)	Biochemical Oxygen Demand	mg/L	Spot sample	Quarterly
	Total Suspended Solids	mg/L		
	pH[1]	pH units		
	Total Nitrogen	mg/L		
	Total Phosphorus	mg/L		
	E. coli	cfu/100 mL		
OWS discharge location ***(Bulk Fuel Facility)***	Total Recoverable Hydrocarbons	mg/L	Spot sample	Quarterly (unless there is no discharge during the quarter)
OWS discharge location (Power Station as shown in Attachment 2)				

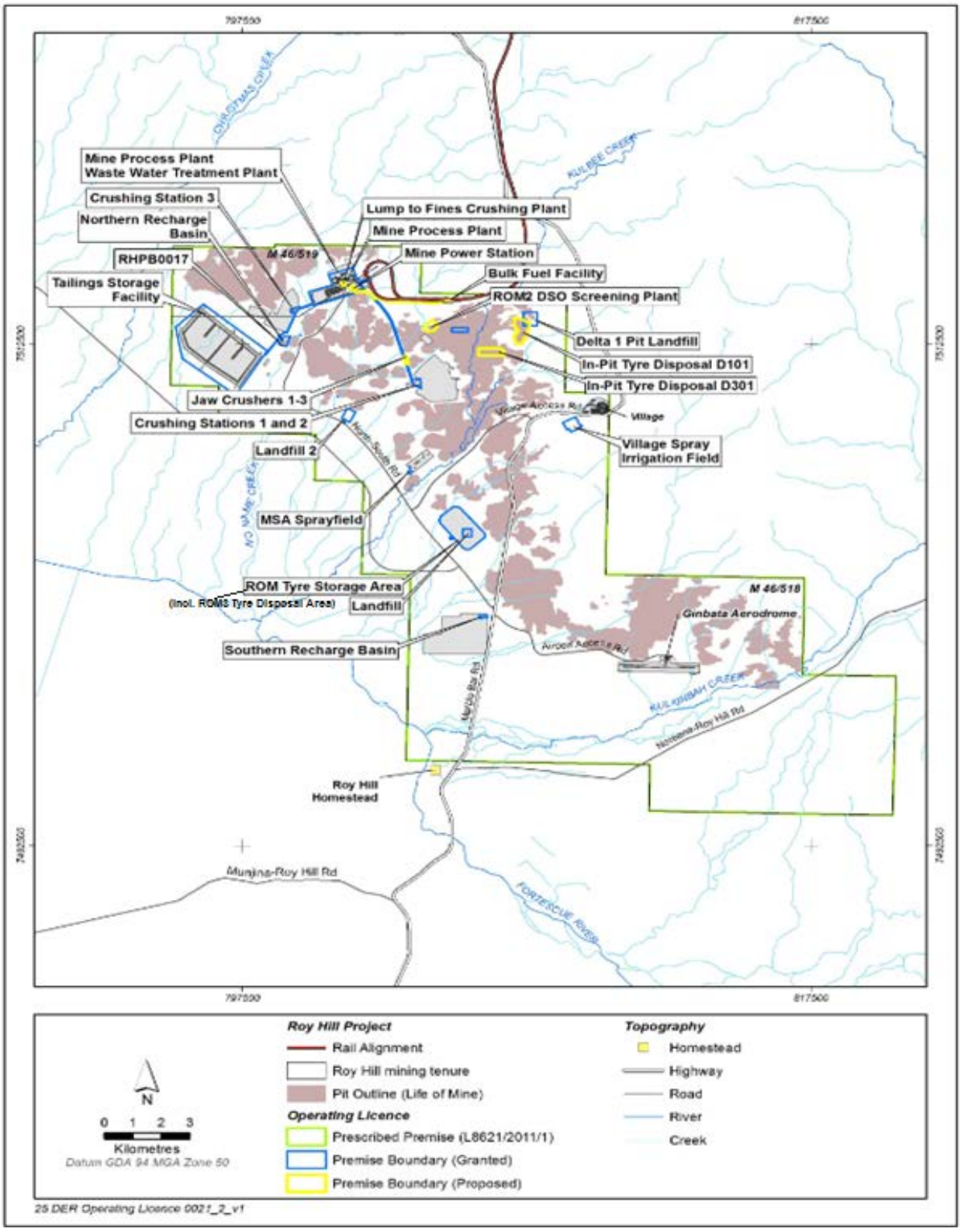
Note 1: In field non-NATA accredited analysis permitted.

Attachment 1

Premises map

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

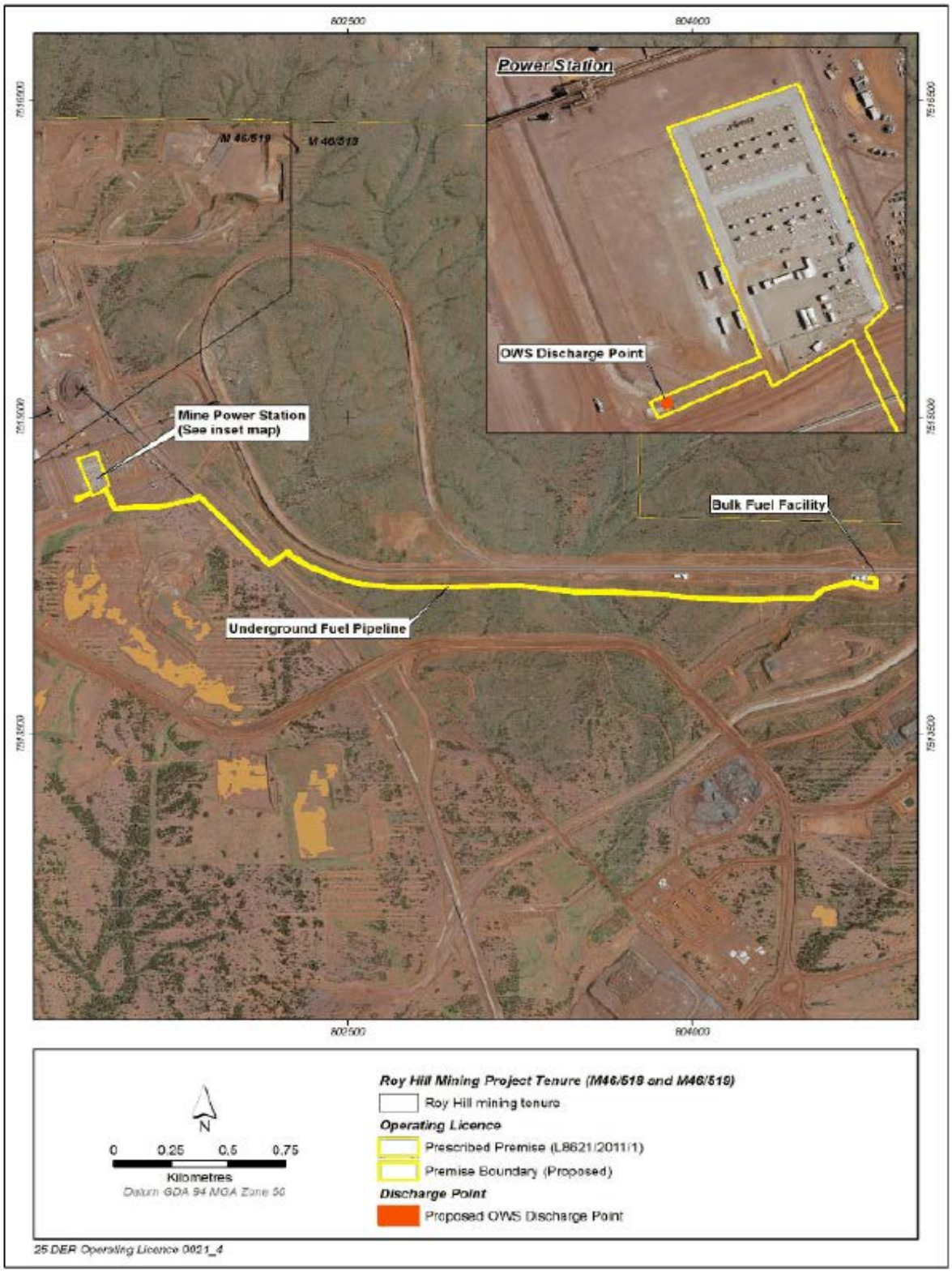
The locations of the Mine Power Station, In-pit tyre disposal areas (D101, D301), Lump to Fines Crushing Facility, DSO Screening Facility and Jaw Crushers 1-3, as defined in Table 1.3.6, are shown below.



Attachment 2

Roy Hill Iron Ore Mine – Power Station

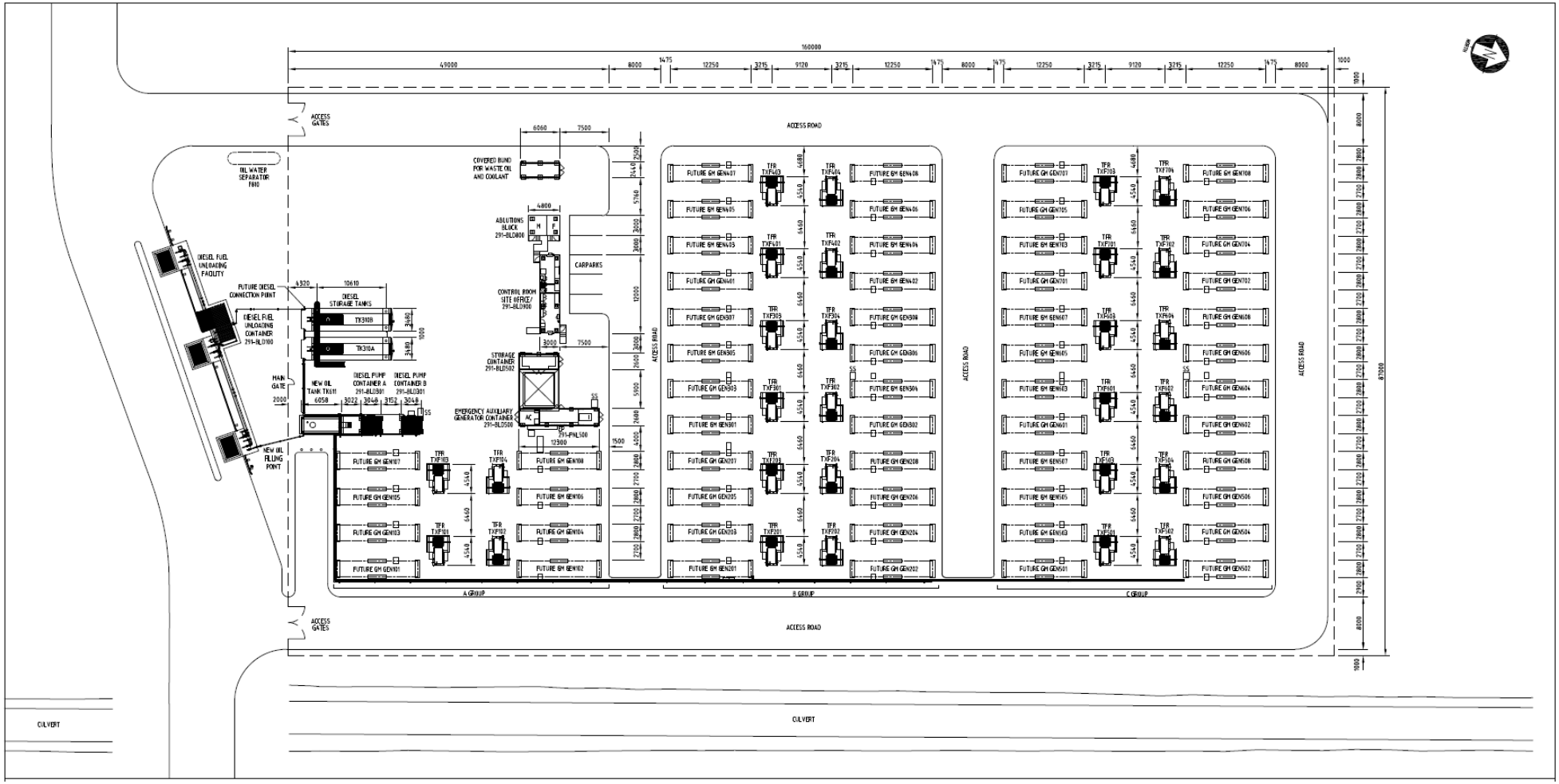
The location of the mine power station, underground fuel pipeline, bulk fuel facility and Oily Water Separator discharge point are shown below.



Attachment 3

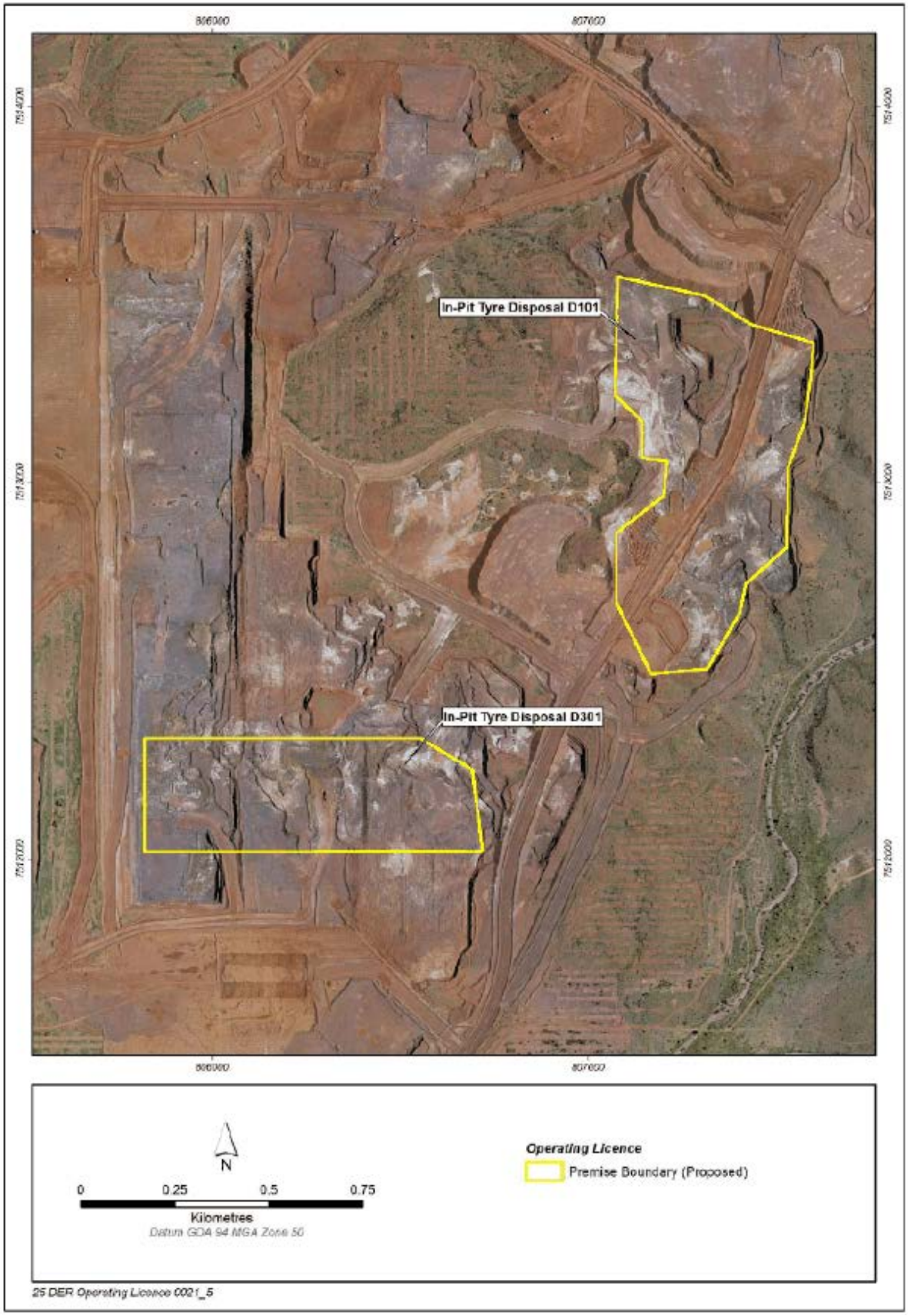
Roy Hill Iron Ore Mine – Power Station Layout

The layout of the Mine Power Station, including diesel and oil storage tanks, fuel unloading facility and Oily Water Separator, is shown below.



Attachment 4

Roy Hill Iron Ore Mine – location of In-pit tyre disposal areas



Appendix 1: Key documents

	Document title	In text ref	Availability
1	Licence L8621/2011/1 – Roy Hill Iron Ore Mine	L8621/2011/1	accessed at www.dwer.wa.gov.au
2	Ministerial Statements 824 and 829	MS 824 and MS 829	accessed at www.epa.wa.gov.au/
3	Application Form (Amendment): L8621/2011/1 - Roy Hill Iron Ore Pty Ltd, 26 June 2017	Roy Hill 2017a	DWER record A1476622
4	Application Supporting document: Mine Operating Licence Amendment – Mine Power Station, In-Pit Tyre Disposal Area and Additional Crushing/Screening Facilities. Roy Hill Iron Ore Pty Ltd, 23 June 2017.	Roy Hill 2017b	DWER record A1461845
5	Department of Environment and Conservation, 1996. *Landfill Waste Classification and Waste Definitions 1996* (As amended December 2009)	DEC 1996	accessed at http://www.wasteauthority.wa.gov.au/media/files/documents/landfill_waste_classification.pdf
6	DER, July 2015. *Guidance Statement: Regulatory principles.* Department of Environment Regulation, Perth.	DER 2015a	accessed at www.dwer.wa.gov.au
7	DER, October 2015. *Guidance Statement: Setting conditions.* Department of Environment Regulation, Perth.	DER 2015b	
8	DER, November 2016. *Guidance Statement: Environmental Siting (November 2016).* Department of Environment Regulation, Perth.	DER 2016	
9	DER, February 2017. *Guidance Statement: Risk Assessments*. Department of Environment Regulation, Perth.	DER 2017	

Appendix 2: Summary of Licence Holder comments

The Licence Holder was provided with the draft Amendment Notice on 8 September 2017 for review and comment. The Licence Holder responded on 22 September 2017.

Comments received	Environmental risk	DWER consideration of risk
'Since submission of the application, Roy Hill has identified the need to also dispose of tyres at the currently approved Tyre Disposal Area at ROM3, prior to Delta pit being ready. Tyres disposed at ROM3 will be encapsulated by the ROM'	Nil additional	Further risk assessment of tyre disposal at the ROM 3 Tyre Disposal Area is not required as the disposal of 'Inert Waste Type 2' (tyres, conveyor and HDPE pipe) was approved via amendment to L8621/2011/1 on 5/2/15. As part of the 5/2/15 amendment, RHIO applied to dispose of tyres, conveyor and HDPE pipe to landfill with projections being 5000 tonnes per annual period. Requirements for covering of tyres are specified in existing licence Table 1.3.3 and are also regulated by Part 6 of the *Environmental Protection Regulations 1987.* It is understood that the final landform of ROM 3 will soon be constructed such that the ROM will be available for use as a ROM pad. The tyres will be encapsulated within the final ROM landform.
RHIO suggested that Table 1.3.2 also be updated	Nil	The update to Table 1.3.2 comprises the disposal locations for tyres within the premises. Nil additional risk is anticipated by the clarification of the locations within the licence.
RHIO queried the inclusion of tyres within the In Pit Disposal areas having to occur on a level surface as '*the pit will be backfilled and tyres will be disposed through the life of the project'.*	Nil	The Delegated Officer has considered this comment and determined that the level of risk to the environment by the removal of Point '2' is low. The operational practicality of levelling the base of the mining pit prior to tyre disposal has also been taking into consideration and Point '2' has been removed.
RHIO considered the addition of a specific compliance documentation condition (as C 1.3.20) to be a duplication of an existing condition and requested removal.	Nil	The Delegated Officer has reviewed this request and agrees the compliance conditions within the original licence are applicable.

Comments received	Environmental risk	DWER consideration of risk
RHIO requested the removal of Reverse osmosis reject (brine) to the Turkeys Nest Dam for use in dust suppression as it is not considered a discharge to land and is deemed irrelevant to the irrigation area.	Nil	The Delegated Officer has reviewed this request and information surrounding saline water as a discharge to land from relevant Part IV approvals. Section 4 of this document also outlines justification for removal of the Turkey Nest description from Table 2.3.1 and considers the request reasonable.