Amendment Report

Application for Licence Amendment

Part V Division 3 of the *Environmental Protection Act 1986*

Licence Number	L8803/2013/1
Licence Holder	BHP Iron Ore Pty Ltd
ACN	008 700 981
File Number	2013/0003982-2~2
Premises	Yarnima Power Station Part of Mining Lease 244 NEWMAN WA 6753 As defined by the Premises map attached to the Amended Licence
Date of Report	28 February 2023
Proposed Decision	Revised licence granted

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1. Decision summary

Licence L8803/2013/1 is held by BHP Iron Ore Pty Ltd (Licence Holder) for the Yarnima Power Station (the Premises), located 2km north west of Newman.

This Amendment Report documents the assessment of potential risks to the environment and public health from proposed changes to the emissions and discharges during the construction and operation of the modified Premises. As a result of this assessment, Amended Licence L8803/2013/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this Amendment Report, the department has considered and given due regard to its Regulatory Framework and relevant policy documents which are available at https://dwer.wa.gov.au/regulatory-documents.

2.2 Premises overview

The Yarnima Power Station supplies power to the town of Newman and a number of existing mining operations and associated rail infrastructure owned by the Licence Holder within the Pilbara Region. Currently the Premises has a power generation capacity of 222MWe (maximum energy generation capacity rather than annualised throughput) and comprises of the following:

- Three Seimans SGT-800 Combined Cycle Gas Turbines (CCGTs);
- Three 1.7MW black start diesel generators installed on site (for starting the CCGTs after a power outage) and associated bulk diesel storage infrastructure;
- Temporary Power Station comprising of 24 Cummins QSK50 1.03 MW (de-rated capacity) diesel generators; and
- Four 0.963MW emergency backup diesel generators (Cummins KTA50) to supply power should one or more of the Cummins QSK50 engines fails.

The CCGTs have a combined generating capacity of 198MW and are normally operated on gas, although have the potential to operate on diesel should the supply of natural gas be interrupted. The CCGTs are fitted with dry low-NOx combustor technology to minimise the emissions of oxides of nitrogen (NOx). Each CCGT is paired with a Heat Recovery Steam Generator (HRSG) which does not burn fuel but supplies steam generated from waste combustion heat to two steam turbine generators (STG's).

The CCGTs are each fitted with two 30m high exhaust stacks, with one used for open cycle operations (emission points A1- A3) and the other used with HRSG (emission points A4 – A6). The CCGTs operate in closed cycle for majority of time with their exhaust coming out of the respective main stacks (A4 – A6). The open cycle operation is minimal and mainly required during start-up, HRSG purge, shutdown, commissioning after maintenance and very low load demand period.

Construction and operation of the Temporary Power Station (TPS) and emergency backup diesel generators was authorised under a licence amendment to provide temporary power supply during a period of extended maintenance of the main CCGTs. Operation of the TPS was limited under the Amended Licence to 400 hours per annual period.

On 21 January 2021 the Licence Holder submitted an audit report confirming that the 24 Cummins QSK50 diesel engines had been constructed in accordance with the requirements

specified in condition 1 of the existing licence.

2.3 Application summary

On 25 July 2022 the Licence Holder submitted an application to the department to amend Licence L8803/2013/1 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments are being sought:

- Increase the capacity of the existing Temporary Power Station (TPS) from 24MW to 35MW through the installation of an additional 11 Cummins QSK50 1.03MW (de-rated capacity) diesel generators;
- Install Selective Catalytic Reactor (SCR) systems on existing and new generators of the TPS (35 in total) for the purpose of reducing NOx emissions; and
- Remove the annual 400 hour limit on the operation of the existing diesel generators of the Temporary Power Station.

The Licence Holder has advised the TPS is intended to run during maintenance periods when two or more CCGTs are out of service and also provide backup generation during peak periods until other permanent power supply can be constructed (e.g. solar, battery and gas generation).

This amendment is limited only to changes to Category 52 activities from the Existing Licence. Table 1 below outlines the proposed changes to the existing Licence.

Table 1: Proposed design capacity changes

Category	Current design capacity	Proposed design capacity	Description of proposed amendment
52	222MWe	233MWe	Installation of additional 11 Cummins QSK50 (1.03MW) diesel engines.

2.4 Air emissions predictive modelling

The Licence Holder undertook predictive air emissions modelling to determine the impacts to ambient air quality during the operation of the Premises with the new diesel generators and installation of SCR technology. Due to the proximity of Newman Power Station, another source of combustion emissions, cumulative emissions from this site were included within the predictive emissions modelling submitted as part of the Licence amendment application.

The modelling assumes that two of the CCGTs are operational on natural gas with HRSG and all 35 Cummins QSK50 generators are operational with SCR technology installed. The Licence Holder considered this approach to be conservative noting that the TPS is only operational during shutdown periods of the CCGTs.

Source parameters used in the modelling for the Yarnima Power Station are shown in the Table 2.

Table 2: Modelled source parameters for the Yarnima Power Station

Parameter	Units	CCGT with HRSG (Units 1 and 2)	QSK50 generators
Stack height	m (agl)	30	3.5
Stack diameter	m	2.88	0.5
Temperature	°C	190	475

Parameter	Units	CCGT with HRSG (Units 1 and 2)	QSK50 generators
Volumetric flow rate	m^3/s	124	6.1
Exit velocity	m/s	19	31.2
NOx (NO_2 equivalent)	mg/Nm^3 (dry, 15% O_2)	70	-
	mg/Nm^3 (dry, 5% O_2)	-	180
	g/s	4.9	0.3
CO	g/s	-	0.2
SO_2	g/s	-	0.7
Particulates	g/s	-	0.03

Four locations within the Newman area were considered as sensitive receptors including the northern Newman boundary closest to the power station (R3) and the nearest residential premises (R4).

The model predicts ground level concentrations (GLC) of NOx, CO, SO_2 and particulates (PM_{10} and $PM_{2.5}$) and compares them against the relevant NEPM criteria. The air quality study considered cumulative emissions of NOx and particulates associated with the operation of the premises and the Newman Power Station. Background data for particulates was also considered due to availability of background data and high particulate loads associated with the natural environment and surrounding mining operations. Background concentrations of NOx are assumed to be minor however no data is available and therefore was not included in the assessment.

Results of modelling are shown in Table 3.

Table 3: Results of modelling showing the maximum GLC recorded at any receptor.

Pollutant	Averaging period	Maximum at receptor ($\mu g/m^3$)		Criteria ($\mu g/m^3$)[1]
		In isolation	Cumulative	
NO_2	1-hour	49.0	83.1	151
	1 year	0.43	1.08	28
CO	8-hour	60.1	-	10,300
SO_2	1-hour	64.8	-	262
	24-hour	6.4	-	52
Particulates (PM_{10})	24-hour	0.9	35.9	70[2]
	1 year	0.04	30.4	23
Particulates ($PM_{2.5}$)	24-hour	0.9	7.2	23
	1 year	0.04	4.64	7

Note 1: At 25°C and 1 atmosphere.

Note 2: Department of Health advised that a guideline value of $70\mu g/m^3$ (as opposed to the NEPM criteria of $50\mu g/m^3$) would be supported as an interim measure while review of Licences for Mt Whaleback and Eastern Ridge mines continues.

Particulates ($PM_{2.5}$ and PM_{10}) were modelled to exceed the annual NEPM criteria however is it noted that high background concentrations associated with natural dust levels and nearby mining operations are likely to cause the exceedance with the project in isolation only

contributing 0.04 µg/m^3 (<0.2% of the cumulative total). Broader airshed management issues relating to dust impacts are being addressed through the review of licences relating to the Mt Whaleback and Eastern Ridge mining operations.

The modelling study was reviewed by the department and it was concluded that the modelling generally meets the requirements of the *Air Quality Modelling Guidance Notes* (DoE 2006) and that the assumptions and conclusions of the modelling are reasonable. Some modelling limitations were identified however it was considered that these would be unlikely to change the outcome of the assessment.

It was noted that the modelling assessment considered cumulative impacts associated with NOx and particulates but only considered SO_2 and CO in isolation. Previous assessments for the Alinta Power Station undertaken by the department determined that SO_2 and CO concentrations were relatively insignificant in terms of potential environmental impact and that emissions of SO_2 and CO from electricity generation using natural gas does not present a risk to the environment and human health. Noting this, and that predicted GLC associated with the Yarnima Power Station operating in isolation are expected to be less than 30% of the NEPM criteria, the Delegated Officer determined that the modelling study submitted was sufficient for assessing the level of risk associated with emissions from the premises and that further modelling was not required.

2.5 Noise emissions predictive modelling

The Licence Holder engaged a consultant (Talis) to assess the potential noise impacts at 10 receptors (Figure 1) from the proposed Temporary Power Station expansion. The noise assessment considered noise impacts from the six scenarios below. Scenario 6 represents the operational case of the current proposal.

- Scenario 1: Operation of 3 CCGTs and HRSG only;
- Scenarios 2 & 3: Future expansions involving installation of gas generators (not relevant to this assessment);
- Scenario 4: Emergency operations (gas grid down involving operation of 2 existing CCGTs with HRSG and the Alinta Power Station);
- Scenario 5: Existing operations including 2 CCGTs with HRSG and 24 diesel generators; and
- Scenario 6: Proposed expansion including operation of 2 CCGTs with HRSG and 36 diesel generators.

Figure 1: Location of Yarnima Power Station and noise sensitive receptors.

When determining the relevant assigned noise levels for assessment, the consultant considered that the premises is a significant contributor to noise and applied a 5dB reduction. On this basis, the night-time assigned levels were determined to be 30dB(A).

Results show that without any additional noise controls in place, night-time assigned noise levels are exceeded under all scenarios. Scenario 6, which is relevant to this application, was predicted to exceed assigned levels by 12dB(A).

Table 4: Results of noise modelling for relevant scenarios without noise controls applied

Scenario	Operational equipment	Assigned level (dB(A))[1]	Max. predicted LA10 (Receptor) (dB(A))	Exceedance (dB(A))
Scenario 1	3 CCGTs with 2 HRSG only	30	31.5 (R2)	1.5
Scenario 4	Emergency (gas grid down)		32.2 (R1)	2.2
Scenario 5	Current operations (CCGTs + 24 diesel generators)		39.5 (R5)	9.5
Scenario 6	TPS expansion (CCGTS + 36 generators)		42.0 (R5)	12

The department conducted a review of the modelling study and confirmed that the assumptions and methods used in the assessment appear reasonable.

It was noted that the assessment assumed worst case noise emissions based on raw exhaust sound power levels for the generators (i.e. unsilenced exhausts). This method was used to

determine the level of mitigation required on the exhausts (i.e. type of silencers) to meet assigned levels and therefore results were considered to be worst case and not representative of realistic operations. The consultant recommended noise mitigation on generator exhausts and inlets limiting sound power levels to 99dB(A) to achieve an insertion loss of 11dB(A).

The Licence Holder advised that no silencers have been installed or are proposed on the existing or new generators, however, further information provided by the Licence Holder confirmed that the SCR units will reduce the sound power level of the exhausts to 94.2dB(A) and will therefore act as a silencer on the exhausts; sufficiently reducing noise below 99dB(A).

No noise controls have been installed or are proposed for the air inlets. The Delegated Officer notes that noise from the exhaust outlets generally dominates noise from these types of containerised gensets and that noise from the inlets is relatively insignificant. Noting this, the Delegated Officer considers that the required sound power level of <99dB(A) from the inlets is readily achievable and that no additional noise mitigation is required on the inlets.

Provided that the sound power level of the inlet is limited to 99dB(A), and noting the ability of the SCR technology to reduce noise from the exhausts, the Delegated Officer determined that the proposed TPS expansion will not significantly contribute to the overall noise emission levels from the premises.

Although the proposed expansion is not expected to significantly increase noise, it was noted that the modelling predicts that the premises is currently operating above the assigned levels. Results of modelling for Scenario 1 (i.e. current operations) show an exceedance of 1.5dB(A) above the assigned noise level (30dB). In its report, Talis recommended that noise control be applied to the existing operations although details were not specified noting that more information was required. Cladding and/or shielding was suggested as a possibility. The potential for existing operations to exceed the assigned noise levels was not addressed by the Applicant and no commitment to install noise controls on existing infrastructure made.

Key findings: The Delegated Officer has considered the noise assessment conducted by Talis, information provided by the Licence Holder, and advice provided by the Noise Regulation Branch and determined the following:

- Impacts from noise on receptors in Newman is a complex matter given the proximity of the town to a number of significant noise sources. Other noise sources contributing to noise impacts in Newman include the neighbouring Newman Power Station, BHP operated Mt Whaleback and Eastern Ridge mining operations and the associated iron ore railway line situated 1 km north of Newman, between the town and the premises.
- In order for the premises to comply with the Noise Regulations it must comply with a night-time assigned noise level of 30dB(A) at sensitive receptors.
- Modelling shows that existing operations are currently exceeding the assigned noise level of 30dB(A) by 1.5dB(A)), however it is noted that modelling predictions have not been validated with monitoring to date.
- Talis recognised the potential exceedance attributed to existing operations and recommended that noise controls be applied.
- No commitments have been made by the Applicant to implement noise reduction on existing infrastructure.
- With the proposed SCR installed, the Temporary Power Station is not expected to contribute significantly to noise from the premises, however, considering that existing operations are modelled to exceed assigned levels, the noise assessment does not adequately demonstrate that assigned noise levels will be achieved.
- Section 62(3) of the EP Act specifies that a condition is not to be inconsistent with an

approved policy or a prescribed standard (e.g. Noise Regulations).

- Validation of noise emissions was suggested to verify that existing operations are achieving assigned levels noting that results could also be used to calibrate the noise model for future expansions.

2.6 Part IV of the EP Act

The premises was constructed in two stages; Stage 1 being a single Siemens turbine and Stage 2 an additional two Siemens turbines. The Stage 2 expansion was referred under Part IV of the EP Act in 2011. The referral related to the operation of up to five gas turbines estimated to produce 1,280,000 tonnes of greenhouse gas emissions (carbon dioxide equivalent, tCO_2e). The EPA determined not to assess the proposal.

Scope 1 greenhouse gas emissions from the premises are reported under the *National Greenhouse and Energy Reporting (NGER) Act 2007*. Greenhouse gas emission for the 2021 period were reported to be 343,639 tCO_2e. The Temporary Power Station, comprising of 35 QSK50 diesel generators (24 existing and an additional 11 proposed in the current licence amendment application), is estimated to produce 14,226 tCO_2e per year based on an average run-time of each generator of 50 hours per month (600 hours per year).

Changes in policy have occurred relating to greenhouse gas emissions since the initial referral of the Yarnima Stage 2 in 2011, including the release of the Stage Government's Greenhouse Gas Emissions Policy for Major Projects (Major Projects GHG Policy). The Major Projects GHG Policy guides Government decision making under Part IV of the EP Act for new significant proposals that are designated large facilities under the Australian Government's Safeguard Mechanism (i.e. facilities with annual emissions of more than 100,000 tCO_2e).

The EPA has also since developed the *Environmental Guideline Factor: Greenhouse Gas Emissions* (EPA 2020), for the purposes of assessment of GHG emissions associated with proposals referred to the EPA. This EPA Guideline also identifies emissions exceeding 100,000 tCO_2e as generally warranting assessment.

Noting the above policy changes, the department sought input from EPA Services on whether the proposed Temporary Power Station expansion required referral under Part IV of the EP Act. The Delegated Officer received advice confirming that, under s38B(2) of the EP Act, a proposal cannot be referred to the EPA more than once. Given the size of the project originally referred under Part IV, the proposed increase in capacity and CO_2 emissions expected from the proposed expansion were not considered to be so different from the originally referred proposal so as to constitute a new proposal requiring referral.

The Delegated Officer noted that the premises is predicted to generate up to 14,226 tCO_2e per year of GHG emissions. The Delegated Officer did not further consider GHG emissions as they are beyond the current scope of the risk-based Regulatory Framework under Part V of the EP Act and below the 100,000 tCO_2e per year significance threshold specified in the EPA's *Environmental Guideline Factor: Greenhouse Gas Emissions*.

Future expansions

The Licence Holder has advised that the application relates to the first of three stages of upgrades planned at the premises. Stage 2 involves installation of additional short term emergency generators to support an extended shut down in 2023 and Stage 3 involves the installation of up to 10 x 10MW gas reciprocating engines. Both future stages will likely be subject to further applications under Part V of the EP Act with permanent expansions referred under Part IV of the EP Act.

3. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guidance Statement: Risk Assessments* (DER 2017).

To establish a Risk Event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises construction and operation which have been considered in this Amendment Report are detailed in Table 5 below. Table 5 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Table 5: Licence Holder controls

Emission	Sources	Potential pathways	Proposed controls
Noise	Operation of 11 Cummins QSK50 engines	Air/ wind dispersion	SCR technology installed to act as silencer. Each exhaust outlet is to be specified for a Sound Power Level (SWL) of <99 dB(A). Each inlet is to achieve a SWL of <99 dB(A).
Air emissions			Monitoring of emissions in accordance with existing licence conditions. New and existing Cummins QSK50 generators to be fitted with SCR technology for reduction of NOx emissions.
Hydrocarbons	Accidental release associated with loss of containment of primary of secondary infrastructure including bunds, pipes and valves,	Discharge to land and infiltration to soils and groundwater	Generators and transformers are situated with a self-contained bund to contain any hydrocarbon leaks. Fuel will be supplied from the existing diesel storage tanks on the premises.

3.1.2 Receptors

In accordance with the *Guidance Statement: Risk Assessment* (DER 2017), the Delegated Officer has excluded employees, visitors and contractors of the Licence Holder's from its assessment. Protection of these parties often involves different exposure risks and prevention strategies, and is provided for under other state legislation.

Table 6 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises *(Guidance Statement: Environmental Siting* (DER 2016)).

Table 6: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	**Distance from prescribed activity**
Newman town site	2km south east of the Premises
Environmental receptors	**Distance from prescribed activity**
Whaleback Creek	Ephemeral creek located approximately 200m south east of the Premises and is a main tributary of the Fortescue River
Newman Water Reserve Priority 1 Public Drinking Water Source Area (PDWSA) proclaimed under the *Country Areas Water Supply Act 1947*	The Premises is located within the Newman Water Reserve, a P1 PDWSA. Groundwater is located approximately 20m below ground level (bgl).
Hamersley – Fractured Rock Aquifer proclaimed under the *Rights in Water and Irrigation Act 1914*	

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guidance Statement: Risk Assessments* (DER 2017) for those emission sources which are proposed to change and takes into account potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the Licence Holder has proposed mitigation measures/controls (as detailed in Section 3.1), these have been considered when determining the final risk rating. Where the Delegated Officer considers the Licence Holder's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the licence as regulatory controls.

Additional regulatory controls may be imposed where the Licence Holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 7.

The Amended Licence L8803/2013/1 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises.

The conditions in the Amended Licence have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

Table 7. Risk assessment of potential emissions and discharges from the Premises during construction, commissioning and operation

Risk Event					Risk rating[1] C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions[2] of licence	Justification for additional regulatory controls
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence Holder's controls**				
Construction								
Installation of 11 Cummins QSK50 generators	Dust Noise	Air/windborne pathway causing impacts to health and amenity	Residential areas 2km south east	The Delegated Officer considers that construction works are very slight in scale, of very short duration and the distance between the construction activities and receptors are too great for any impacts to occur. No regulatory controls required. General provisions of the EP Act and Environmental Protection (Noise) Regulations 1997 apply.				
Commissioning / Operation (including time-limited-operations operations)								
Operation of 11 Cummins QSK50 generators	Air emissions (NOx, SO2, CO, particulates)	Air/windborne pathway causing impacts to health and amenity	Residential areas 2km south east	Refer to Section 3.1.1	C = Minor L = Unlikely **Medium Risk**	Y	Condition 1, 2, 3, 4, 5, **6**, 7, **12**, 13, **26**	Refer to section 5.
	Noise	Air/windborne pathway causing impacts to health and amenity	Residential areas 2km south east Alinta Power Station situated on western boundary	Refer to Section 3.1.1	C = Moderate L = Possible **Medium Risk**	N	Condition 1, 2, 3, 4, 5, **8, 9, 10 and 11**	Noise emissions from the expansion of the Temporary Power Station are not considered to significantly contribute to noise emissions from the premises and therefore in isolation are considered low risk. However, there is a risk that existing operations are exceeding assigned noise levels and hence an assigned Consequence rating of "Moderate" has been applied. Noise monitoring is required to verify that the premises complies with the Noise Regulations at the sensitive receptors and should monitoring indicate assigned noise levels are not being met, corrective action is required. Refer to sections 2.5 and 5 for further discussion.
	Accidental release: Loss of containment of primary or secondary infrastructure including liners,	Direct discharge, land overflow, contaminated stormwater runoff and/or infiltration	Soil, vegetation and ephemeral surface water creek 200m south of Premises. Infiltration and contamination of	Refer to Section 3.1.1	C = Moderate L = Rare **Low Risk**	Y	Condition1 and 12	Noted that no new fuel storage is proposed as diesel will be supplied from existing infrastructure. Risks associated with storage of diesel in existing storage facilities has not been reassessed.

Risk Event					Risk rating[1] C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions[2] of licence	Justification for additional regulatory controls
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence Holder's controls**				
	bunds, pipes and valves.		Priority 1 PDWSA (directly beneath the Premises) over time. Depth to groundwater is ~20m bgl.					

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guidance Statement: Risk Assessments* (DER 2017).

Note 2: Proposed Licence Holder's controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

4. Consultation

Table 8 provides a summary of the consultation undertaken by the department.

Table 8: Consultation

Consultation method	Comments received	Department response
Local Government Authority advised of proposal 30 August 2022	None provided	N/A
Other Stakeholders (i.e. Alinta Energy) advised of proposal 30 August 2022	None provided	N/A
Licence Holder was provided with the draft decision for comment on 15 November 2022.	The Licence Holder responded on 29 November 2022, with additional information provided to support the response on 30 January 2023. Comments are summarised in Appendix 1. A final draft of the revised conditions was provided to the Licence Holder on 17 February 2023 and accepted on 22 February 2023.	Refer to Appendix 1.

5. Decision

Based on the assessment in this decision report, the Delegated Officer has determined the proposal to install 11 new Cummins generators and remove the conditions limiting operations of the existing diesel generators will not pose an unacceptable risk to public health or the environment. This determination is based on the following:

- The licence holder proposes to install SCR technology on all existing diesel generators for the reduction in NOx emissions;
- The cumulative air quality assessment suggests that worst case NOx concentrations resulting from two CCGTs operating along with all Cummins generators fitted with SCR technology, will be 55% of the NEPM criteria;
- SCR installed on the proposed generators will mitigate noise from the generator exhausts; and
- Noise emissions from the proposed expansion of the Temporary Power Station are not expected to significantly contribute to existing noise emissions from the premises.

The Delegated Officer has allowed the amendment to remove the 400 hour limit on the TPS noting that the results of air quality modelling is based on the continuous operation of all TPS generators.

Infrastructure controls proposed by the applicant (i.e. installation of SCR technology) have been imposed on the Licence as they are considered critical to maintaining an acceptable level of risk. Additional regulatory controls relating to air quality and noise that have been determined by the Delegated Officer as necessary for mitigating risk are outlined below:

Air emissions monitoring during commissioning

Stack testing is required to verify model inputs used to predict impacts of emissions on the

local airshed. All diesel generators are required to undergo a single stack test during commissioning of the SCR technology to verify that the NOx control is performing as expected. The Delegated Officer notes that stack testing was performed on the existing diesel generators however this was conducted prior to SCR technology being installed and is not reflective of the upgraded emissions control. Therefore, further validation monitoring is required on all generators following the installation and commissioning of the SCR technology.

Maintaining SCR efficiency

Manufacturer specifications for the SCR units indicate that that the systems will achieve a NO_X concentration of 180mg/m^3 in exhaust gas during a guarantee period of 8,000 hours of operation or after 24 months from the day the exhaust gas first passes through the SCR unit. After this period, the Delegated Officer assumes that pollution control efficiency will decline. To ensure efficiency of the pollution controls is maintained, the Delegated Officer has imposed a condition on the Licence requiring that the SCR technology is replaced in accordance with these manufacturer recommendations to achieve a NOx concentration of 180mg/m^3. In making this determination, the Delegated Officer has considered that:

- previous air quality assessments for the premises without NOx controls in place indicated that exceedance of the NEPM criteria was possible;
- the previous Licence limited the hours of operation of the back up generators to reduce the risk of a NEPM exceedance occurring and that this limit has been removed from the Licence;
- additional diesel generators are being installed which, without effective NOx controls in place, could contribute further to potential exceedances of the NEPM; and
- NO_X reduction to levels used in model predictions is dependent on the effective operation of the SCR units.

Other amendments

The Delegated Officer notes that model inputs are based on the manufacturer specifications for the pollution control equipment which indicate that a NOx concentration of 180mg/m^3 is achievable at 5% O_2. To ensure that stack testing results can be compared to manufacturer specifications and verify model predictions, the O_2 reference conditions have been aligned accordingly and adjusted from 15% to 5%.

The Delegated Officer determined to remove the requirements to monitor particulates noting that the diesel generators do not contribute significantly to the cumulative dust loads (<0.2%).

Noise from existing operations

Noise impacts in Newman is complex matter due to competing cumulative noise sources contributing to noise at sensitive receptors. The Delegated Officer notes the possibility of baseline exceedances of the assigned noise levels associated with the operation of existing gas turbines, however, a review of the noise assessment submitted with the application concluded that with SCR installed, the proposed expansion to the Temporary Power Station is not likely to contribute significantly to noise. Considering this, in isolation, noise impacts from the proposed expansion are considered to be low risk. Noise monitoring is required to validate model predictions and verify that noise emissions from the premises are compliant with the prescribed noise levels noting the complexities of cumulative noise in the localised region. Conditions have been imposed on the licence requiring the licence holder to engage a person with suitable acoustic experience to undertake an assessment of noise emissions from the premises against the Noise Regulations and the most recent noise modelling. Should the results of the assessment indicate non-compliance with the assigned levels, a plan for implementing corrective action is to be developed.

6. Conclusion

Based on the assessment in this Amendment Report, the Delegated Officer has determined that a Amended Licence will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

References

1. Department of Environment Regulation (DER) 2016, *Guidance Statement: Environmental Siting*, Perth, Western Australia.
2. DER 2017, *Guidance Statement: Risk Assessments*, Perth, Western Australia.
3. DER 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
4. Department of Environment (DoE) 2006, *Air Quality Modelling Guidance Notes*, Perth Western Australia
5. Department of Water and Environmental Regulation 2022. *Notice of Amendment of Licence Reporting Requirements Section 59(2), Section 59(1)(A) and 59(1)(B)* Environmental Protection Act 1986 *Licensed Prescribed Premises*, Perth, Western Australia.

Appendix 1: Summary of Licence Holder's comments on risk assessment and draft conditions

Condition	Summary of Licence Holder's comment	Department's response
Comments received on		
Condition 1 (Table 1)	Remove requirement to install silencers on the diesel generators. The recommendation by Talis consultants was that installing silencers on the inlets and exhausts was one way to meet the assigned level of 30dB(A) in Newman, however, the SCR scrubbers will be installed on the exhausts, making silencers impractical. Draft Conditions 8, 9, 10 and require noise levels to be validated and managed, which would include the installation of appropriate noise mitigation where required.	The Licence Holder has provided further information regarding the noise reduction potential of the SCR technology in lieu of installing noise silencers. Information provided indicates that SCR technology will provide noise mitigation on exhausts and reduce the sound power level of noise from exhausts to 94.2dB(A); below the recommendation of 99dB(A). The department reviewed the technical information regarding the noise reduction performance of the SCR and determined it to be sound and reliable. As discussed in section 2.5, it is noted that no noise control is proposed for the generator inlet. Noise from the inlets is considered to be insignificant as noise from the generators is generally dominated by noise from exhausts. The Delegated Officer determined that the recommended sound power level of 99dB(A) for the inlets is readily achievable and therefore no additional noise control is required on the inlets. Noting the above the Delegated Officer considered that noise from the containerised generators has been satisfactorily addressed and that additional silencers are not required. The Licence Conditions have been updated to reflect information provided by the Licence Holder regarding the noise reduction potential of the SCR to ensure that the recommended sound power level will be achieved for the exhaust and inlets.
Condition 12 (Table 3)	Update the Infrastructure Location for the 35 x Cummins QSK50 back-up diesel generators from "A7 to A30" to "A7 to A41"	Updated.
Figures 1 and 2	Replace Figures 1 and 2 with the updated to the revised maps	Updated

Appendix 2: Application validation summary

SECTION 1: APPLICATION SUMMARY					
Application type					
Works approval	☐				
Licence	☐	Relevant works approval number:		None	☐
		Has the works approval been complied with?		Yes ☐ No ☐	
		Has time limited operations under the works approval demonstrated acceptable operations?		Yes ☐ No ☐ N/A ☐	
		Environmental Compliance Report / Critical Containment Infrastructure Report submitted?		Yes ☐ No ☐	
		Date Report received:			
Renewal	☐	Current licence number:			
Amendment to works approval	☐	Current works approval number:			
Amendment to licence	☒	Current licence number:	L8803/2013/1		
		Relevant works approval number:		N/A	☒
Registration	☐	Current works approval number:		None	☐
Date application received		25/7/2022			
Applicant and Premises details					
Applicant name/s (full legal name/s)		BHP Iron Ore Pty Ltd			
Premises name		Yarnima Power Station			
Premises location		Part of AML70/244 (coordinates specified in Licence)			
Local Government Authority		Shire of East Pilbara			
Application documents					
HPCM file reference number:		2013/003982-2~2			
Key application documents (additional to application form):		Application Form Supporting document including: • Air Quality Assessment • Environmental Noise Assessment			
Scope of application/assessment					

Summary of proposed activities or changes to existing operations.	Installation of an additional 11 1.03MWe Cummins QSK50 diesel generators, increasing the capacity of the temporary power station from 24MW to 35MW (total site generating capacity from 222MW to 233MW). Licence Holder also requested following amendment: • Removal of 400 hour limit on operation of diesel generators to allow generators to be run during peak demand periods and when CCGTs are offline for maintenance. • Inclusion of Selective Catalytic Reactor (SCR) system on all new and existing diesel generators to reduce NOx emissions.

Category number/s (activities that cause the premises to become prescribed premises)

Table 1: Prescribed premises categories

Prescribed premises category and description	Assessed production or design capacity	Proposed changes to the production or design capacity (amendments only)
Category 52: Electric power generator	222MW	233MW (increase of 11MW)
Category 73: Bulk storage of chemicals etc.	2,000m3	No change

Legislative context and other approvals

Has the applicant referred, or do they intend to refer, their proposal to the EPA under Part IV of the EP Act as a significant proposal?	Yes ☐ No ☒	Referral decision No: N/A Managed under Part V ☐ Assessed under Part IV ☐
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes ☐ No ☒	Ministerial statement No: EPA Report No:
Has the proposal been referred and/or assessed under the EPBC Act?	Yes ☐ No ☒	Reference No:
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes ☒ No ☐ Existing Licence	Certificate of title ☐ General lease ☐ Expiry: Mining lease / tenement ☐ Expiry: Other evidence ☐ Expiry:
Has the applicant obtained all relevant planning approvals?	Yes ☐ No ☐ N/A ☐	Approval: Expiry date: If N/A explain why?
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes ☒ No ☐	CPS No: 5617/5 Issued by DMIRS

Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes ☐ No ☒	Application reference No: N/A Licence/permit No: N/A
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes ☐ No ☒	Application reference No: Licence/permit No: Licence / permit not required.
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes ☐ No ☒	Name: N/A Type: Has Regulatory Services (Water) been consulted? Yes ☐ No ☐ N/A ☐ Regional office: No direct discharge
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes ☒ No ☐	Name: Newman Water Reserve Priority: P1 Are the proposed activities/ landuse compatible with the PDWSA (refer to WQPN 25)? Yes ☐ No ☐ N/A ☒ Existing premises – referral not required.
Is the Premises subject to any other Acts or subsidiary regulations (e.g. *Dangerous Goods Safety Act 2004, Environmental Protection (Controlled Waste) Regulations 2004, State Agreement Act xxxx*)	Yes ☒ No ☐	Iron Ore (Mount Newman) Agreement Act 1964
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes ☐ No ☒	
Is the Premises subject to any EPP requirements?	Yes ☐ No ☒	
Is the Premises a known or suspected contaminated site under the *Contaminated Sites Act 2003*?	Yes ☒ No ☐	Classification: Contamination – remediation required Date of classification: 10 Dec 2020