



Decision Document

Environmental Protection Act 1986, Part V

Proponent: BHP Billiton Iron Ore Pty Ltd

Licence: L8803/2013/1

Registered office: Level 1, City Square
Brookfield Place
125 St Georges Terrace
PERTH WA 6000

ACN: 008 700 981

Premises address: Yarnima Power Station
Part of AML70/244 within co-ordinates (MGA Zone 50): E777140
N7416161; E777446 N7415805; E777431 N7415791; E777410
N7415775; E777391 N7415763; E777370 N7415750; E777357
N7415741; E777349 N7415735; E777341 N7415729; E777244
N7415637; E777229 N7415623; E777206 N7415601; E777175
N7415569; E777156 N7415548; E777136 N7415524; E777114
N7415498; E776996 N7415634; E777062 N7415698; E777082
N7415711; E777134 N7415754; E777085 N7415813; E777022
N7415898; E777020 N7415932; E776967 N7415995; and E776953
N7416013, NEWMAN WA 6753

Issue date: Thursday, 27 February 2014

Commencement date: Monday, 3 March 2014

Expiry date: Saturday, 2 March 2019

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: Ty Matson
Licensing Officer

Decision Document authorised by: Jonathan Bailes
Delegated Officer



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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

Administrative details									
Application type	Works Approval <input type="checkbox"/> New Licence <input type="checkbox"/> Licence amendment <input checked="" type="checkbox"/> Works Approval amendment <input type="checkbox"/>								
Activities that cause the premises to become prescribed premises	<table border="1"> <thead> <tr> <th>Category number(s)</th> <th>Assessed design capacity</th> </tr> </thead> <tbody> <tr> <td>52</td> <td>198 MWe</td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </tbody> </table>	Category number(s)	Assessed design capacity	52	198 MWe				
	Category number(s)	Assessed design capacity							
	52	198 MWe							
Application verified	Date: N/A								
Application fee paid	Date: N/A								
Works Approval has been complied with	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>								
Compliance Certificate received	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>								
Commercial-in-confidence claim	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>								
Commercial-in-confidence claim outcome	N/A								
Is the proposal a Major Resource Project?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>								
Was the proposal referred to the Environmental Protection Authority (EPA) under Part IV of the <i>Environmental Protection Act 1986</i> ?	<table border="1"> <tbody> <tr> <td>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></td> <td> Referral decision No: N/A Managed under Part V <input checked="" type="checkbox"/> Assessed under Part IV <input type="checkbox"/> </td> </tr> </tbody> </table>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Referral decision No: N/A Managed under Part V <input checked="" type="checkbox"/> Assessed under Part IV <input type="checkbox"/>						
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Referral decision No: N/A Managed under Part V <input checked="" type="checkbox"/> Assessed under Part IV <input type="checkbox"/>								
Is the proposal subject to Ministerial Conditions?	<table border="1"> <tbody> <tr> <td>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></td> <td> Ministerial statement No: EPA Report No: </td> </tr> </tbody> </table>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Ministerial statement No: EPA Report No:						
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Ministerial statement No: EPA Report No:								
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the <i>Environmental Protection Act 1986</i>)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Department of Water consulted Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>								
Is the Premises within an Environmental Protection Policy (EPP) Area Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>									
Is the Premises subject to any EPP requirements? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>									



3 Executive summary of proposal and assessment

In order to meet the increased power demand for the expanding mining operations in the central Pilbara, BHP Billiton Iron Ore Pty Ltd (BHPBIO) operate the Yarnima Power Station (YPS). The YPS is located approximately 2.1 kilometres (km) north-west of the Newman townsite and adjacent to the existing Newman Power Station within mining tenement AML70/244. The nearest sensitive receptor is the town of Newman and BHPBIO's Mt Whaleback and Newman Hub operations, which are situated to the west-south-west within the same mining tenement.

The YPS was constructed in two main stages:

- Stage 1 was constructed under Works Approval W4952/2011/1 and consists of a 32 megawatt (MW) single open cycle Gas Turbine Generator (GTG3) power station and associated infrastructure. Fuel requirements of the turbine (SGT-800 Siemens) is approximately 9.3 terajoules (TJ) of natural gas per day, allowing a nominal output of 32 MW (based on full load operation at 30°C ambient temperature). The SGT-800 Siemens turbine is fitted with dry low nitrogen oxides (NO_x) combustors to reduce NO_x emissions in the gas turbine exhaust and minimise ground concentrations of NO_x; and
- Stage 2 was constructed under Works Approval W5194/2012/14 and includes the installation of an additional two GTGs (GTG1 and GTG2)) coupled with three Heat Recovery Steam Generators (HRSGs) supplying steam to two Steam Turbine Generators (STGs).

This Licence amendment is for the operation of Stage 2. The Licence template has also been updated to the current version. Blank conditions have been removed which has resulted in the condition numbers changing throughout the licence.

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
Point source emissions to air including monitoring	L2.2.1 – L2.2.2 L3.2.1 – L3.2.3	<p>All emission points have been added to the licence to include the 2 additional GTGs and the 3 HRSGs. No additional assessment has been carried out for emissions to air. Assessment of the emissions to air has been carried out under Works Approval W5194/2012/1 and Licence L8803/2013/1. Emissions were found to be acceptable. Emissions verification testing of the Stage 2 plant has been carried out and emissions were found to be comparable with those previously assessed. The emission limit specified in the licence and monitoring requirements have been applied to all emission points (noting that only the relevant monitoring point on each of the three generating trains will be sampled depending on the operating mode of the plant i.e. open or closed cycle).</p> <p>During the verification testing the locations of the sampling planes at GT1 Bypass Stack, GT1 Main Stack, GT3 Bypass Stack and GT3 Main stack were deemed 'non-ideal' due to their proximity to nearby sources of flow disturbance which have the potential for creating non-laminar flow and affecting the homogenous distribution of gaseous parameters. A subsequent assessment of the sampling planes for flow and stratification of gaseous components demonstrated that although the locations are 'non-ideal', the relevant criteria have been met to demonstrate laminar flow and non stratified gas distribution. The locations of the sampling plane are therefore considered suitable for both reference method testing and continuous emission monitoring system (CEMS) measurements. Accordingly the requirement for sampling positions to comply with Australian Standard AS4323.1 <i>Stationary Source Emissions Method 1: Selection of sampling positions</i> has been removed.</p> <p>Air emission modelling was based on 5 turbines operating with a NO_x limit of 70mg/m³. BHP has only installed 3 turbines. It is proposed that all 3 turbines will be run continuously for the next 12 months. This will result in some turbines operating on low load due to fluctuating demand from the power grid. Whilst operating on low load total mass air emission will be lower, however concentrations will be higher.</p>	<p>Stage 2 Commissioning Report (BHPBIO-LETTER-020892) dated 9 April 2015.</p> <p>Emissions Assessments report 1415-279 dated 21 July 2015.</p> <p>Further information dated 16 September 2015</p>



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<p>The turbines are unable to meet the initial operating NOx limit of 70mg/m³ when operating below 25MW. Above 25MW it is not expected that the NOx emissions will go over 70mg/m³ based on the manufacturers guaranteed performance data.</p> <p>The Licensee has provided updated assessment data that concluded that, at the worst case operating scenario of NOx emission of 140mg/m³ there would be no significant increase in risk and that ambient air quality at the nearest receptor would remain well below the assessment criteria. The NOx emission limit has been raised to 140mg/m³.</p>	
Noise	N/A	No additional assessment has been carried out for noise emissions. Noise monitoring has been conducted during the commissioning period to validate noise levels predicted in the original assessment. The results of the monitoring concluded that the modelled noise levels were higher than the actual levels; the gas turbines do not exhibit a tonal characteristic (which can be more noticeable/annoying to receptors); and the noise levels from the power station operating under normal conditions are compliant with the <i>Environmental Protection (Noise) Regulations 1997</i> at all receptor locations. No licence controls are considered necessary.	<p>Stage 2 Commissioning Report (BHPBIO-LETTER-020892) dated 9 April 2015.</p> <p><i>Environmental Protection (Noise) Regulations 1997</i></p>
Monitoring general	L3.1.2 L3.2.1	Periodic monitoring requirements have been changed from six monthly to annually in line with the requirement to calibrate the CEMS.	N/A
Improvements	N/A	Improvement requirements related to the commissioning of Stage 2 plant have been removed as all requirements have been completed.	<p>Stage 2 Commissioning Report (BHPBIO-LETTER-020892) dated 9 April 2015.</p>
Licence Duration	N/A	The licence duration has not been reassessed as a result of this amendment.	



5 Advertisement and consultation table

Date	Event	Comments received/Notes	How comments were taken into consideration
10/08/2015	Proponent sent a copy of draft instrument	Administrative changes requested, clarification of data reporting requirements, and emissions performance of engines when operating at low load.	Administrative changes made and conditions 3.2.1, 4.2.2 and 4.2.3 updated.
13/08/2015	Meeting with proponent to discuss draft instrument and application of 70mg/m ³ limit at low loads (<25MW).	Additional assessment information provided on 16/09/2015 (see decision table).	Limit in Table 2.2.2 increased from 70mg/m ³ to 140mg/m ³

6 Risk Assessment

Note: This matrix is taken from the DER Corporate Policy Statement No. 07 - Operational Risk Management

Table 1: Emissions Risk Matrix

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Severe
Almost Certain	Moderate	High	High	Extreme	Extreme
Likely	Moderate	Moderate	High	High	Extreme
Possible	Low	Moderate	Moderate	High	Extreme
Unlikely	Low	Moderate	Moderate	Moderate	High
Rare	Low	Low	Moderate	Moderate	High