



# Decision Document

## *Environmental Protection Act 1986, Part V*

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**Proponent:** BHP Billiton Nickel West Pty Ltd

**Licence:** L8437/2010/3

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**Registered office:** City Square 123 St. Georges Terrace  
PERTH WA 6000

**ACN:** 004 184 598

**Premises address:**

1. Kwinana Nickel Refinery  
Lot 5 on Plan 19088 Patterson Road  
KWINANA BEACH WA 6167
2. Baldivis Facility  
Lot 820 on Plan 77252 Millar Road  
BALDIVIS WA 6171

**Issue date:** Friday, 30 October 2015

**Commencement date:** Saturday, 31 October 2015

**Expiry date:** Monday, 30 October 2017

### **Decision**

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

Decision Document prepared by: Peter Knol  
Senior Licensing Officer

Decision Document authorised by: Lauren Trott  
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 checked="" type="checkbox"/> Licence amendment <input 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>31</td> <td>2701 tonnes of hydrogen sulfide gas per annum</td> </tr> <tr> <td>34</td> <td>5840 tonnes of hydrogen gas per annum</td> </tr> <tr> <td>44</td> <td>75,000 tonnes of nickel metal per annum</td> </tr> <tr> <td>67</td> <td>7,500 kilograms per hour</td> </tr> </tbody> </table>	Category number(s)	Assessed design capacity	31	2701 tonnes of hydrogen sulfide gas per annum	34	5840 tonnes of hydrogen gas per annum	44	75,000 tonnes of nickel metal per annum	67	7,500 kilograms per hour
	Category number(s)	Assessed design capacity									
	31	2701 tonnes of hydrogen sulfide gas per annum									
	34	5840 tonnes of hydrogen gas per annum									
44	75,000 tonnes of nickel metal per annum										
67	7,500 kilograms per hour										
Application verified	Date: 21 August 2015										
Application fee paid	Date: 08 September 2015										
Works Approval has been complied with	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>										
Compliance Certificate received	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>										
Commercial-in-confidence claim	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>										
Commercial-in-confidence claim outcome											
Is the proposal a Major Resource Project?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>										
Was the proposal referred to the Environmental Protection Authority (EPA) under Part IV of the <i>Environmental Protection Act 1986</i> ?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Referral decision No: Managed under Part V <input type="checkbox"/> Assessed under Part IV <input type="checkbox"/>										
Is the proposal subject to Ministerial Conditions?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Ministerial statement No: 377 EPA Report No: Ass# 903/ Bull#: 767										
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 type="checkbox"/>										
Is the Premises within an Environmental Protection Policy (EPP) Area <i>Environmental Protection (Kwinana) (Atmospheric Wastes) Policy 1999</i>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>										
Is the Premises subject to any EPP requirements? Subject to SO <sub>2</sub> and Particulates emissions and monitoring.	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>										



### **3 Executive summary of proposal and assessment**

BHP Billiton Nickel West Pty Ltd (Nickel West) owns and operates the Kwinana Nickel Refinery and Baldvis Facility (NKW) located approximately 35km South of Perth CBD, Western Australia. NKW processes nickel matte from Nickel West Kalgoorlie Smelter (NKS).

Operations commenced in 1970. The operation comprises:

- Refinery, Associated Plant (including hydrogen plant, hydrogen Sulphide plant, ammonium Sulphide plant, water treatment plant, boilers, storages), workshops and administration;
- Baldvis Facility (evaporation ponds and decommissioned Tailings Facilities).

In 2014 NKW produced approximately 63,739 tonnes of nickel briquette. Briquette product is trucked to Fremantle port to be sold on the London Metal Exchange (LME) or direct to customers. The 'Sheritt' refining process is used to produce nickel briquettes containing about 99.9% nickel.

The main emissions from the premises are to air, as heavy metals and as Ammonia, NO<sub>x</sub>, SO<sub>2</sub> and CO. The main sources are via bag house filters in the metals building, the Pre-Oxidation Furnace, the Sinter Furnace, Boilers 3 and 4, the Hydrogen Plant Stack, PSA Waste Gas Flare, the Tail Gas Scrubber, the Vent Gas Scrubber, the H<sub>2</sub>S Vent Gas Flare and the H<sub>2</sub>S Plant Flare.

Wastewater is treated on site and then pumped to the Baldvis Facility where it is evaporated.

This Decision Document has been prepared for the licence reissue. The licence conditions have not been converted to the current licence format as further review is required. The review process will occur in the next 2 years and as such only superfluous conditions have been removed. This Decision Document explains these changes.



## 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			
Licence section	Condition number L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
General conditions	-	Conditions 1 and 2 have been retained in this licence.	L8437/2010/2
Environmental Improvement Conditions		Previous conditions 3, 4 and 5 have been removed as the Licensee has complied with these improvement conditions (reports were submitted in 2011 and 2012).	L8437/2010/2
Emission To Air	L7 - L11	<p>Previous conditions 11 and 12 (and also Condition 26, Reporting of the target exceedances) have been removed as they were related to emission targets for the Tail Gas Scrubber, whereas there is also a limit on the licence. The target conditions have been removed as the limit sufficiently regulates these activities.</p> <p><u>Emission Description</u>  <i>Emission:</i> Ammonia emissions from the Tail Gas Scrubber  <i>Impact:</i> Modelling results that were assessed during the works approval, granted on 9 November 2012, indicated that sensitive receptors are unlikely to be impacted by ammonia emissions. After construction and operation of the Tail Gas Scrubber DER has not received any complaints regarding Ammonia emissions from the refinery.  <i>Controls:</i> The ammonia emissions are monitored via a CEMS and if emissions are approaching the limit the potential cause is investigated and resolved. Licensee conducts regular inspections and maintenance of the Tail Gas Scrubber to ensure its correct operation.</p> <p><u>Risk Assessment</u>  <i>Consequence:</i> Minor  <i>Likelihood:</i> Unlikely</p>	L8437/2010/2  W5255/2012/1



<b>DECISION TABLE</b>			
<b>Licence section</b>	<b>Condition number L= Licence</b>	<b>Justification (including risk description &amp; decision methodology where relevant)</b>	<b>Reference documents</b>
		<p><i>Risk Rating: Moderate</i></p> <p><u>Regulatory Controls</u> The Licence includes continuous monitoring and reporting conditions. The limit in the licence is sufficient to ensure no unreasonable impact on sensitive receptors.</p> <p><u>Residual Risk</u> <i>Consequence: Minor</i> <i>Likelihood: Unlikely</i> <i>Risk Rating: Moderate</i></p> <p>Licensee requested to amend the step change reporting condition to only report the step change events that were caused by a bag failure. As there was insufficient information to assess the consequences of this change this request has not been fulfilled. This condition will be assessed further in the future licence review proposed to occur in the next 2 years.</p>	
<b>Ambient Monitoring of Hydrogen Sulfide</b>	L12 and L13	Licensee requested to amend the alarm level of the ambient Hydrogen Sulfide monitors to align with the operations limit for site alarm of 20ppm. Currently the licence states 10ppm. As the requested amendment is not supported with sufficient supporting information to allow for an environmental risk assessment of this change, this amendment request has not been progressed. This condition will be reassessed in the future licence review proposed to occur in the next 2 years.	
<b>Waste Gas Flare</b>		Licensee requested amendment to previous condition 20 which is in relation to the importation of gas. The Licensee no longer imports hydrogen on a regular basis, however the activity is still required rare occasions. Given that the importation of hydrogen can occur and these licence conditions do not interfere with ongoing operation of the premises, the conditions have not been removed, rather they have been identified as requiring review during the future licence review.	
<b>Waste Minimisation/</b>		Previous conditions 25(a) and 25(b) were regulating bunding requirements for dangerous goods. Licensee holds a dangerous goods licence that relates to the	General Provisions of the



DECISION TABLE			
Licence section	Condition number L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
Removal / Storage		management of dangerous goods. Any discharge of chemicals are adequately regulated by general provisions of the Act or the <i>Environmental Protection (Unauthorised discharges) Regulations 2004</i> . Therefore these conditions have not been transferred to this licence reissue.	Act <i>Environmental Protection (Unauthorised discharges) Regulations 2004</i>
Fugitive emissions		<p>Previous Licence condition 42 was included in the licence to require the Licensee to install a new sprinkler system at the Baldivis Facility. This sprinkler system has been installed and as such this condition is now superfluous and has been removed.</p> <p>Conditions 22 and 23 have not been retained in the new licence.</p> <p><u>Emission Description</u>  <i>Emission:</i> Fugitive dust emissions from stockpiles  <i>Impact:</i> Nuisance impact on neighboring industrial properties (immediately adjacent). Unlikely to have any impact on residents as the nearest residents are 1.8km to the South of the refinery and about 700m to the South of the Baldivis Facility.  <i>Controls:</i> The proponent uses dust management strategies including potable water sprinklers to ensure no dust will leave the site.</p> <p><u>Risk Assessment</u>  <i>Consequence:</i> Minor  <i>Likelihood:</i> Unlikely  <i>Risk Rating:</i> Moderate</p> <p><u>Regulatory Controls</u>            Dust emissions are adequately regulated by the general provisions of the Act and as such no specific dust conditions will be included in the licence.</p> <p><u>Residual Risk</u>  <i>Consequence:</i> Minor  <i>Likelihood:</i> Unlikely</p>	<p>Guidance Statement Setting Conditions (October 2015)</p> <p>General Provisions of the Act</p> <p><i>Environmental Protection (Unauthorised discharges) Regulations 2004</i></p>



DECISION TABLE			
Licence section	Condition number L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<p><i>Risk Rating: Moderate</i></p> <p><u>Emission Description</u> <i>Emission:</i> Odour emissions from the refinery or the Baldivis facility. <i>Impact:</i> Nuisance impact on neighboring industrial properties (immediately adjacent). Unlikely to have any impact on residents as the nearest residents are 1.8km to the South of the refinery and about 700m to the South of the Baldivis Facility. <i>Controls:</i> None specified</p> <p><u>Risk Assessment</u> <i>Consequence:</i> Minor <i>Likelihood:</i> Unlikely <i>Risk Rating:</i> Moderate</p> <p><u>Regulatory Controls</u> Odour emissions are adequately regulated by the general provisions of the Act and as such no specific odour conditions will be included in the licence.</p> <p><u>Residual Risk</u> <i>Consequence:</i> Minor <i>Likelihood:</i> Unlikely <i>Risk Rating:</i> Moderate</p>	
<b>Licence Duration</b>		As the licence has been issued in the old format, the licence duration is for 2 years.	





## 5 Advertisement and consultation table

Date	Event	Comments received/Notes	How comments were taken into consideration
14/09/2015	Application advertised in West Australian (or other relevant newspaper)	No comments received	NA
13/10/2015	Proponent sent a copy of draft instrument	16/10/2015	Comments partially granted.



## 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