Government of Western Australia
Department of Environment Regulation

Amendment Notice 1

Licence Number	L4612/1989/11
Licence Holder	BHP Billiton Nickel West Pty Ltd
ACN	004 184 598
Registered business address	125 St Georges Terrace PERTH WA 6000
Date of amendment	15 December 2016
Prescribed Premises	Category 5 – Processing or beneficiation of metallic or non-metallic ore Category 6 – Mine dewatering Category 57 – Used tyre storage Category 64 – Class II putrescible landfill Category 85 – Sewage facility
Premises	Leinster Nickel Operation LEINSTER, WA

Amendment

The Chief Executive Officer (CEO) of the Department of Environment Regulation (DER) has amended the above licence in accordance with section 59 of the *Environmental Protection Act 1986* as set out in this Amendment Notice.

Date signed: 15 December 2016

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Tim Gentle

Manager Licensing (Resources Industries)

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

Amendment Notice

This notice is issued under section 59 of the *Environmental Protection Act* 1986 (EP Act) to amend the licence 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.

Amendment Description

The Licensee (BHPB Nickel West Pty Ltd) submitted an application to amend Licence L4612/1989/11 on 21 August 2016, to install and operate a new replacement wastewater treatment plant (WWTP) of a capacity of 40m^3/day.

The existing WWTP holding tank failed in March 2016 and a temporary holding tank installed as a result also failed in July 2016. An additional holding tank has been installed pending approval to replace the existing WWTP (this amendment).

Currently Licence L4612/1898/11 allows for a sewage plant of capacity of 44m^3/day under category 85. The proposed replacement WWTP is within the authorised 44m^3/day capacity.

Approximately 30m^3 of waste effluent is discharged to a fenced area of rehabilitated land, a historical tailings deposit.

The Licensee has also asked whether a new putrescible landfill requires an amendment to the Licence so as to authorise its construction and use. Category 64, authorising class II landfilling, is already on the Licence and conditions for the management of solid waste prescribed as conditions S2 – S5.

Further advice received 9 December 2016 (during the original 21 day consultation period) from the applicant indicated that the WWTP had already been constructed and commissioned in September 2016 (BHPB Nickel West 2016c). It appears there was a misunderstanding as to the licensing requirements with replacement of works approvals with licence amendments. Given DER was in the process of approving the construction of the WWTP, the conditions in this amendment notice have been altered to require submission of the construction documents. The construction ahead of the approval has been recorded as a non-compliance.

In addition, the Licensee has requested removal of the monitoring requirement for RRDB03, as the pumping equipment had been removed from the bore and the water is too deep to sample without it. Results from RRDB02 will be utilised as an analogue for RRDB03.

Decision

No changes to the Licence are required in order to authorise the construction and operation of the new putrescible landfill. Existing conditions S2 – S5 and the inclusion of category 64 on the Licence provide adequate regulatory controls.

Condition W6(a) has been modified to remove the sampling requirement for RRDB03.

Following is the risk assessment in regard to the proposal to replace the WWTP.

Location, environmental siting and potential receptors

Table 1 below lists the relevant human receptors in the vicinity of the WWTP and WWTP irrigation area.

Residential and Sensitive Premises	Distance from TSF
Leinster town site	9km (to the south–west)
11 mile (potable) borefield	5 km
Application of draft Guidance Statement: Separation distance	*Meets separation distance requirements*

No sensitive surface water or environmental receptors are located within the vicinity of the proposed WWTP (refer to Figure 1 for the location of the WWTP in relation to the Leinster Nickel Operation). Note DER does not assess health/amenity impacts to workers as it is considered it is addressed by other legislation.

Figure 1: Location of WWTP and irrigation area (the WWTP is to the south of the Processing Plant)

Risk Assessment Methodology

The risk assessment following utilises the risk rating matrix as shown in Table 2, recently updated in accord with DER's *Guidance Statement: Risk Assessments (November 2016).* The risk criteria used in the matrix below is further defined in Table 3.

Table 2: Risk Rating Matrix

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

Table 3: Risk criteria definitions (taken from DER's *Guidance Statement: Risk Assessments)*

Consequence		
The following criteria will be used to determine the consequences of a risk event occurring:		
	Environment	**Public Health* and Amenity (such as air and water quality, noise, and odour)**
Severe	• **on-site impacts**: catastrophic • **off-site impacts local scale**: high level or above • **off-site impacts wider scale:** mid level or above • Mid to long term or permanent impact to an area of high conservation value or special significance^ • Specific Consequence Criteria (for environment) are significantly exceeded	• Loss of life • **Adverse health effects:** high level or ongoing medical treatment • Specific Consequence Criteria (for public health) are significantly exceeded • **Local scale impacts:** permanent loss of amenity
Major	• **on-site impacts**: high level • **off-site impacts local scale**: mid level • **off-site impacts wider scale**: low level • Short term impact to an area of high conservation value or special significance^ • Specific Consequence Criteria (for environment) are exceeded	• **Adverse health effects:** mid level or frequent medical treatment • Specific Consequence Criteria (for public health) are exceeded • **Local scale impacts**: high level impact to amenity
Moderate	• **on-site impacts**: mid level • **off-site impacts local scale**: low level • **off-site impacts wider scale**: minimal • Specific Consequence Criteria (for environment) are at risk of not being met	• **Adverse health effects:** low level or occasional medical treatment • Specific Consequence Criteria (for public health) are at risk of not being met • **Local scale impacts:** mid level impact to amenity
Minor	• **on-site impacts**: low level • **off-site impacts local scale**: minimal • **off-site impacts wider scale**: not detectable • Specific Consequence Criteria (for environment) likely to be met	• Specific Consequence Criteria (for public health) are likely to be met • **Local scale impacts:** low level impact to amenity
Slight	• **on-site impact**: minimal • Specific Consequence Criteria (for environment) met	• **Local scale**: minimal impacts to amenity • Specific Consequence Criteria (for public health) criteria met

Likelihood	
The following criteria will be used to determine the likelihood of the risk event occurring.	
Almost Certain	The risk event is expected to occur in most circumstances
Likely	The risk event will probably occur in most circumstances
Possible	The risk event could occur at some time
Unlikely	The risk event will probably not occur in most circumstances.
Rare	The risk event may only occur in exceptional circumstances

^ Determination of areas of high conservation value or special significance should be informed by the *Guidance Statement: Environmental Siting*

* In applying public health criteria, DER may have regard to the Department of Health's, *Health Risk Assessment (Scoping) Guidelines*

"on-site" means within the prescribed premises boundary

Risk Assessment

Table 4: Risk assessment for construction and operation of the WWTP.

			Potential Emissions	Potential Receptors	Potential Pathway	Potential Impacts	Material Risk	Reasoning
Source	**Category 85: WWTP**	Construction of WWTP	Dust: Release of particulate matter from construction activities	Human receptors: • Leinster town	Air: Transport through air then transfer through respiratory system	Human health impacts – respiratory illness	No	The distance to human receptors to be too great for health impacts to occur. In addition, construction activities will be of short-term duration.
			Noise and vibration: Associated with construction activities	Human receptors: • Leinster town	Air or other physical medium: Vibration of particles	Human health/amenity impacts	No	The distance to human receptors to be too great for health/amenity impacts to occur.

		Operation of WWTP	Effluent (Excess Nutrients) Discharge	Native vegetation outside the irrigation area	Overflow or flooding of the irrigation area; overland discharge inundating vegetation	Vegetation death or poor health	Yes	The irrigation area is managed according to existing condition W18(c) which requires compliance with the DoW Water Quality Protection Note 22 (WQPN 22). The irrigation area is deep ripped to reduce runoff. Pooling of water Estimate of discharge effluent quality has been given as: • E coli < 1000cfu/100ml • Biochemical oxygen demand < 20mg/L • Suspended Solids <30mg/L • pH 6.5 – 8.5 • Total Nitrogen as N <10mg/L • Total Phosphorus as P <6mg/L (BHPB Nickel West 2016b). This discharge quality compares well with the following 1997 recommendations for expected effluent quality following secondary wastewater treatment: Biochemical Oxygen Demand (mg/L): 20-30 Total Suspended Solids (mg/L):25-40 Total Nitrogen (mg/L): 20-50 Total Phosphorus (mg/L):6-12 E.coli (org/100 mL):10^5-10^6 (ANZECC 1997) Existing condition W18(a) requires compliance with the Department of Water's *Water Quality Protection Note 22 : Irrigation with nutrient-rich wastewater*. This provides an effective control to ensure that potential waterlogging or runoff is prevented. W18 (b) and (c) further state that ponding pooling should not occur and that overspray should not fall outside the discharge area in strong wind events. The Delegated Officer considers the consequence of vegetation impacts as ***Minor*** and likelihood as***Unlikely***. The risk is consequently rated as ***Medium***. Accordingly the Delegated Officer recommends retaining conditions W18 (a) (b) and (c) on the Licence.

		Effluent (Excess Nutrients) Discharge	Native vegetation outside the irrigation area	Vegetation inundation from pipeline failure	Vegetation death or poor health	Yes	A failure of the pipeline may release effluent to native vegetation, causing poor health or death due to the release of excessive nutrients. The Licensee has proposed to install a flow meter on this pipeline to monitor flow. The consequence of this event is rated ***Minor*** and the likelihood is considered ***Possible***. The Delegated Officer considers the risk to be ***Medium***. A condition will be placed on the Licence to ensure the Licensee constructs the WWTP and pipeline with the flowmeter to detect loss of flow.
		Leachate form Irrigated Effluent Discharge	Groundwater	Land: Infiltration through soil profile to groundwater		No	The irrigation area is a rehabilitated historical tailings area. Hydraulic conductivity in this area is likely to be in the order of 1×10^{-8} to 1×10^{-9} m/s. Groundwater is estimated to be approximately 40 m below ground level at the irrigation area (BHPB 2016b). Given this, the likelihood passage of leachate through the soil profile is ***rare.*** The receiving groundwater at the Premises is saline and acidic to neutral (pH 5.2 -7.2) there is no consequence of the discharge and hence there is no risk.

			Odour	Human receptors: Leinster town	Air	Human health impacts/amenity impacts	No	Leinster town is located 9km to the south. The distance to human receptors to be too great for health/amenity impacts to occur. Minor odour emissions are expected to only impact in the immediate vicinity of the WWTP. The biochemical oxygen demand in the new WWTP effluent is forecast to be less than 20 mg/L, less than the value of 150 mg/L at which the WQPN22 recommends chemical or biological stabilisation method prior to irrigation Regular maintenance and inspections will occur, thereby reducing the likelihood of odour emissions. Existing condition W21 prescribes that the WWTP is operated and maintained to prevent leakage and conduct sludge removal so as to reduce the risk on the integrity of the treatment system. The Delegated Officer considers that there is no risk to human receptors from odour emissions.

Amendment History

Instrument	Issued	Amendment
L4612/1989/11	12/12/2013	Amendment to authorise dewatering from Rocky's Reward Open Pit to Harmony Open Pit and a Turkey's Nest
L4612/1989/11	21/05/2015	Amendment to authorise operation of a pipeline to discharge tailings supernatant from the TSF to Harmony Open Pit.
L4612/1989/11	17/12/2015	Amendment to authorise operation of a new dewatering bore at Rocky's Reward Open Pit and construction and operation of a new pipeline from the dewatering bore to Harmony Open Pit.
L4612/1989/11	29/04/2016	The Licence duration extended from 18 October 2018 to 18 October 2030 by Amendment Notice.
L4612/1989/11	15/12/2016	Amendment Notice 1 to authorise construction and operation of a replacement waste water treatment plant.

Amendment

1. The licence is amended by the insertion of the following condition W18 (d):

W18 (d) The Licensee shall ensure that each item of infrastructure or equipment specified in column 1 of Table 5 is designed and constructed in accordance with the requirements specified in column 2 of Table 5.

Table 5: Infrastructure or equipment requirements (design and construction)

Column 1	***Column 2***
Infrastructure	***Requirements (design and construction)***
Mobile Activated Sludge unit, capacity of 40m^3/day	*Aeration and Chlorine Contact Tanks enclosed in 12 m container*
	Extreme event overflow from Chlorine Contact Tank to existing spoon drain
	Sample point installed on the outside of the Chlorine Contact Tank
1 balance tank of 15kL volume	*None*
1 x Polyaluminium chloride tank	*Tank to be bunded*
1 x Sodium Hypochlorite tank	*Tank to be bunded*
1 waste activated sludge tank of 15kL volume	*Level controls to be installed on tank*
Effluent discharge pipeline from WWTP to irrigation area	*Install a flow meter to monitoring of pipeline discharges*

2. The licence is amended by the insertion of condition W18 (e):

W18 (e) The Licensee must not depart from the requirements specified in Table 1 except:

(a) where such departures are minor in nature and do not materially change or affect the infrastructure; or

(b) where such departure improves the functionality of the infrastructure and does not increase the risks to public health, public amenity or the environment.

If condition W18(e) applies, then the Licensee must provide the CEO with a list of departures which are certified as complying with condition W18 (d).

3. The licence is amended by the insertion of condition W18 (f):

W18 (f) The Licensee shall submit a construction compliance document to the CEO by 6 January 2017 indicating construction in accord with the condition W18(d).

4. The licence is amended by the insertion of condition W18 (g):

W18 (g) The Licensee must ensure the construction compliance document:

(a) is certified by a suitably qualified professional engineer or builder stating that each item of infrastructure specified in Table 1 has been constructed in accordance with the conditions of the licence with no material defects; and

(b) be signed by a person authorised to represent the licensee and contain the printed name and position of that person within the company.

5. The licence is amended by the removal of the Annual Audit Compliance Report template in Attachment 7.

6. Condition G2 of the licence is amended by the deletion of the text shown in strikethrough below and the insertion of the red text shown in underline below

~~*The Licensee shall by **31 October in each year**, provide to the CEO an Annual Audit Compliance Report in the form of Attachment 7 to this licence, signed and certified in the manner required by Section C of the form, indicating the extent to which the licensee has complied with the conditions of this Licence, and any previous Licence issued under Part V of the Act for the premises, during the period beginning 1 August the previous year and ending on 31 July in that year.*~~

*The Licensee must submit to the CEO an Annual Audit Compliance Report by **31 October in each year** indicating the extent to which the licensee has complied with the conditions in this licence for the Annual Period.*

7. The licence is amended by the insertion of the definitions below:

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

*'**Annual Period'** means the period dated from 1 August in the previous year and ending on 31 July in the following year.*

8. Condition W6(a) of the licence is amended by the deletion of the text shown in strikethrough below:

GROUNDWATER MONITORING PROGRAM

W6(a) The licensee shall undertake the monitoring in Table 4 according to the specifications in that table.

Table 1 NLN groundwater monitoring bore sampling regime

Monitoring site	***Frequency***	***Parameters***
All recovery bores (as shown in Attachments 4, 5 and 6)	*Monthly*	*Cumulative flow meter reading, date of meter reading, bore status.*
TSF2 *- MB60, MB61 and MB62 *** *- MB63, MB64, MB65 and MB66 ****	*Monthly*	*SWL*
TSF2 *- MB60, MB61 and MB62 *** *- MB63, MB64, MB65 and MB66 ****	*March, June, September and December*	*pH[#], arsenic, nickel, chromium, copper, selenium, total dissolved solids (TDS)[#] and electrical conductivity profile[#]*
Rocky's Reward Bores (south of Harmony Pit as shown on Attachment 8) *~~RRDB03~~ RRDB02*	*Annual*	*pH[#], arsenic, nickel, chromium, copper, selenium, electrical conductivity[#] and total dissolved solids (TDS)[#]*
TSF 2 *MB01, MB04, MB05, MB07, MB39, MB40, MB41, MB42, MB43, MB54, LNOPB02, LWB039* *TSF 3 – Cell A, B, C, D* *MB23, MB24, MB25, MB26, MB27, MB28, MB29, MB30, MB31, MB32, MB33, MB44, MB45, MB46, MB47, MB49, MB50, LRC610, LRC611, LRC614, LRC616, LRC617,* *TSF 3 – Cell E* *MB48, MB53, MB55, MB56, MB57, MB58, MB59* *Evaporation Ponds* *EPMB01, EPMB01, EPMB02A, EPMB05B, EPMB06A, EPMB07A, EPMB08A, EPMB09, EPMB10, EPMB11, EPMB12, EPMB14, EPMB15A, EPMB16A, EPMB17A, EPMB18A, EPMB19A, EPMB20A, EPMB21A*	*March, June, September and December*	*Standing water level (SWL) noting whether the recovery bore was on or off at the time of measurement.*
TSF2 *MB06*, MB39, MB42, MB54, LNOPB02, LWB039* *TSF3 – Cell A, B, C, D* *MB31, MB44, MB45, MB47, MB49, MB50, LRC610, LRC611, LRC614, LRC616, RB01*, RB02*.* *TSF3 – Cell E* *MB48, MB53, MB56, MB58, MB59* *Evaporation ponds* *EPMB01, EPMB02A, EPMB06A, EPMB07A, EPMB08A, EPMB09, EPMB12, EPMB14, EPMB15A, EPMB16A, EPMB17A, EPMB18A, EPMB19A, EPMB20A, EPMB21A, EPRB02**	*Annually*	*nickel and TDS[#]*
TSF3 *MB31, LRC614*	*Annually*	*electrical conductivity profile*

**Recovery bore. (**) Shallow bores slotted from 6 metres. (***) Deep bores slotted from 12 metres.*

Appendix 1: Key Documents/References

	Document Title	Availability
1	DER (2015) *Guidance Statement: Regulatory Principles.*	https://www.der.wa.gov.au
2	DER (2015) *Guidance Statement: Setting conditions*	
3	DER (2016) *Guidance Statement: Licence duration*	
4	DER (2016) *Guidance Statement: Licensing and works approvals*	
5	DER (2016) *Guidance Statement: Risk Assessments*	
5	BHPB Nickel West (2016a) *Licence Amendment Application*, dated 18 August 2016	DER document record: A1163545
6	BHPB Nickel West (2016b) Additional information received from J Mtezo BHPB Nickel West, 13 September 2016	DER document record: A1163544
7	Australia and New Zealand Environment and Conservation Council (1997) *National Water Quality Management Strategy: Australian Guidelines for Sewerage Systems – Effluent Management*	www.agriculture.gov.au/.../sewerage-systems-effluent-man-paper11.pdf
8	Department of Water (2008) *Water Quality Protection Note #22 Irrigation with nutrient-rich wastewater*, July 2008	http://www.water.wa.gov.au/publication-search?queries_title_query=&queries_subject_query=&queries_seriesname_query=water+quality+protection+note&queries_all_query=&search_page_5702_submit_button=Submit
9	DER notification of proposed amendment dated 25 November 2016	DER document record: A1332354
10	BHPB Nickel West (2016c) BHPB NiW comments on draft 21 day amendment notice, from R Nixon BHPB Nickel West, dated 9 December 2016	DER document record: A1339747