



# Amendment Notice 1

**Licence Number** L8653/2012/2

**Licence Holder** BHP Billiton Nickel West Pty Ltd

**ACN** 004 184 598

**File Number:** 2012/003930

**Premises**  
Kalgoorlie Nickel Smelter  
Celebration Road  
KALGOORLIE WA 6430

Lot 100 on Deposited Plan 212288  
Certificate of Title Volume 1670 Folio 313

**Date of Amendment** 14 August 2017

## 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: 14 August 2017

**Caron Goodbourn**

**A/Manager Licensing (Process Industries)**

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

## Amendment Notice

This amendment is made pursuant to section 59B9 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.

BHP Billiton Nickel West Pty Ltd (the Licence Holder) applied for Category 39 chemical or oil recycling and Category 61 liquid waste facility. The amendment is limited to the inclusion of a single new category at the premises: that is Category 39 chemical or oil recycling, as both categories allow for the receipt and treatment of liquid waste oil sourced from the premises and from other locations. No material change to other aspects of the original Licence relating to Category 44 smelting or refining, Category 31: chemical manufacturing, Category 52: electric power generation and Category 87: fuel-burning have been requested by the Licence Holder.

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: Decision Making (November 2016)*
- *Guidance Statement: Risk Assessment (November 2016)*
- *Guidance Statement: Environmental Siting (November 2016)*

## Amendment description

The Licence Holder lodged an application to amend Licence L8653/2012/2 for the Kalgoorlie Nickel Smelter (KNS) on 25 May 2017. Appendix 1 contains a list of the documents that form the application.

The Licence Holder has applied to make the following changes to the Licence:

1. Installation of an oil recycling plant and associated infrastructure;
2. Authorisation to receive waste oil from other premises;
3. Processing of waste oil to create a Dehydrated Fuel Oil (DFO); and
4. During commissioning test the DFO waste and if suitable, dispose of it in the furnace (via combustion).

The smelter furnace at KNS uses DFO as a supplementary fuel source within the furnace to heat the nickel concentrate. DFO is created from the recycling and treatment of waste mineral oil. Currently the site engages a third party contractor to collect and dispose of waste oil generated from site operations and then purchases readymade DFO back onto the site for use in the furnace reaction chamber. Through this amendment, the Licence Holder intends generate approximately 50% of DFO required for the smelter furnace from waste oil generated at the site.

This amendment application seeks approval to operate as an oil recycling facility (see Table 2 below) and allows the importation of waste oil produced on other sites onto the premises for treatment in the DFO plant. Additional waste oil will be sourced from external sources to meet the 100% of the sites DFO furnace requirements. The waste oil may be obtained from other BHP Billiton owned sites or from third parties enabling KNS to reduce, if not cease the purchased of readymade DFO from third parties.

The Licence Holder has advised that up to 800 tonnes per of sludge waste will be generated as a by-product from the amount of waste oil required to be processed in order to meet the sites annual DFO requirements.

Table 2 below outlines the proposed changes to the Licence.

**Table 1: Proposed changes**

Category	Current throughput	Proposed throughput capacity	Description of proposed amendment
39	Prior to this amendment the Licence Holder was not authorised to undertake chemical or oil recycling	A total volume of 20,000 tonnes per year of waste oil will be processed on site.  The waste oil will be sourced from the premises and off-site locations.	The DFO plant will have a design capacity to treat 6,500L/hr of waste oil. The plant will generate approximately 1000 tonnes of sludge waste and 19,000 tonnes per year of DFO.

Currently coke, coal, natural gas and DFO are injected into the smelting bed furnace to assist with the generation and maintenance of high temperatures within the furnace chamber. During commissioning of the plant, the Licence Holder is proposing to trial the combustion of the waste sludge for use as an additional fuel source in the furnace. The suitability of the sludge as a fuel within the combustion chamber will depend on the concentration of water within the by-product. The sludge is intended to be absorbed onto the sand flux that is used to separate the slag from the matte within the furnace combustion chamber. The sludge will only be suitable for the furnace if it the absorbed sludge contains no free water and if the chemical composition of the sludge waste does not adversely affect the flux forming a slag. If the sludge is not suitable for combustion, it will be periodically removed by a controlled waste contractor for disposal to an appropriate licensed waste facility.

A typical analysis of DFO, waste oil and sludge waste is provided in the application form. The analysis of DFO sludge waste indicates that, in addition to water concentration, the main difference between the three products is the concentration of sulphur and calcium as shown in Table 3 below). The acid plant stack at the KNS is fitted with a reverse jet scrubber and two halide cleaning towers, an electrostatic precipitator to capture particulates. The cleaned exhaust air then is passed through an acid plant which recovers sulphur dioxide to produce saleable sulphuric acid.

**Table 2: Comparison of DFO, waste oil and sludge waste**

	Sulphur content (ppm)	Calcium (ppm)	Water %v/v
<b>DFO</b>	10,000 (max)	100 (max)	0.5 (max)
<b>Waste Oil</b>	2,911	1581	>10
<b>Sludge Waste</b>	7,157	1339	>10

*Source: Adapted from Appendices 1, 2 and 3 (BHP Billiton, 2017)*

Through this amendment the Licence Holder will install and operate a self-contained, skid mounted waste oil processing unit (DFO) at the premises as shown in Figure 1 below. The unit will be housed within a sea container.



**Figure 1: Photo of skid mounted DFO plant**

Source: Figure 3 (BHP Billiton, 2017)

The amendment involves enabling the refurbishment of an existing 5,000kL tank that was previously used to contain waste oil, for the storage of waste oil prior to treatment. The waste oil tank will be placed within a bund adjacent to the current DFO loading station. Waste oil will then be processed in the DFO plant, with wastes stored within a skid mounted, self-bunded ISOtainer. The DFO will be stored within the existing DFO tank until required for use in the furnace. The amendment also required the installation of pipelines pumps and shut off valves. The waste oil tank, the pipelines, and the bunds will be compliant with AS1940 for *the storage and handling of combustible and flammable liquids*. A flow diagram of the process is indicated in Figure 2 below.



**Figure 2: The DFO treatment process** .....Source: Figure 5 (BHP Billiton, 2017)

The Delegated Officers assessment of the application has had specific regard to:

- potential impacts to soil, vegetation, surface water and groundwater;
- the containment infrastructure for the waste oil, the DFO plant, pipelines, pumps and the storage of waste sludge generated at the site; and
- air emissions from the burning of sludge waste in furnace.

## Other approvals

The key regulatory control over the KNS comes from the *Nickel Refinery (Western Mining Corporation Limited) Agreement Act 1968* and as such, is not subject to a Mining Proposal (*Mining Act 1978*).

The premises had not been subject to an assessment under Part IV of the EP Act. The current Amendment Notice under Part V of the EP Act, allows for the processing of waste mineral oil sourced from other industrial operations. The Licence Holder is required to be registered under the Environmental Protection (Controlled Waste) Regulations 2004 as a controlled waste facility to allow for the receipt of controlled waste.

The Licence Holder has advised that initially the premises will limit the volumes of waste oil processed on site to that which is generated on site. Prior to receiving waste oil from other locations, the Licence Holder has provided an undertaking to register the site as a waste facility for DWER's Controlled Waste Tracking System.

## Consultation

The application was referred to the City of Kalgoorlie Boulder for comment on 1 August 2017 for comment. On 10 August 2017 DWER received comments relating to road safety regarding the potential increase of vehicles travelling to and from the premises. These concerns are not able to be considered by DWER in the current risk assessment and they do not directly relate to emissions and discharges to the environment.

## Licence Holder's comments

The Licence Holder was provided with the draft Amendment Notice on 11 August 2017. Comments received from the Licence Holder have been considered by the Delegated Officer as shown in Appendix 2.

## Amendment history

Table 4 provides the amendment history for L8653/2012/2.

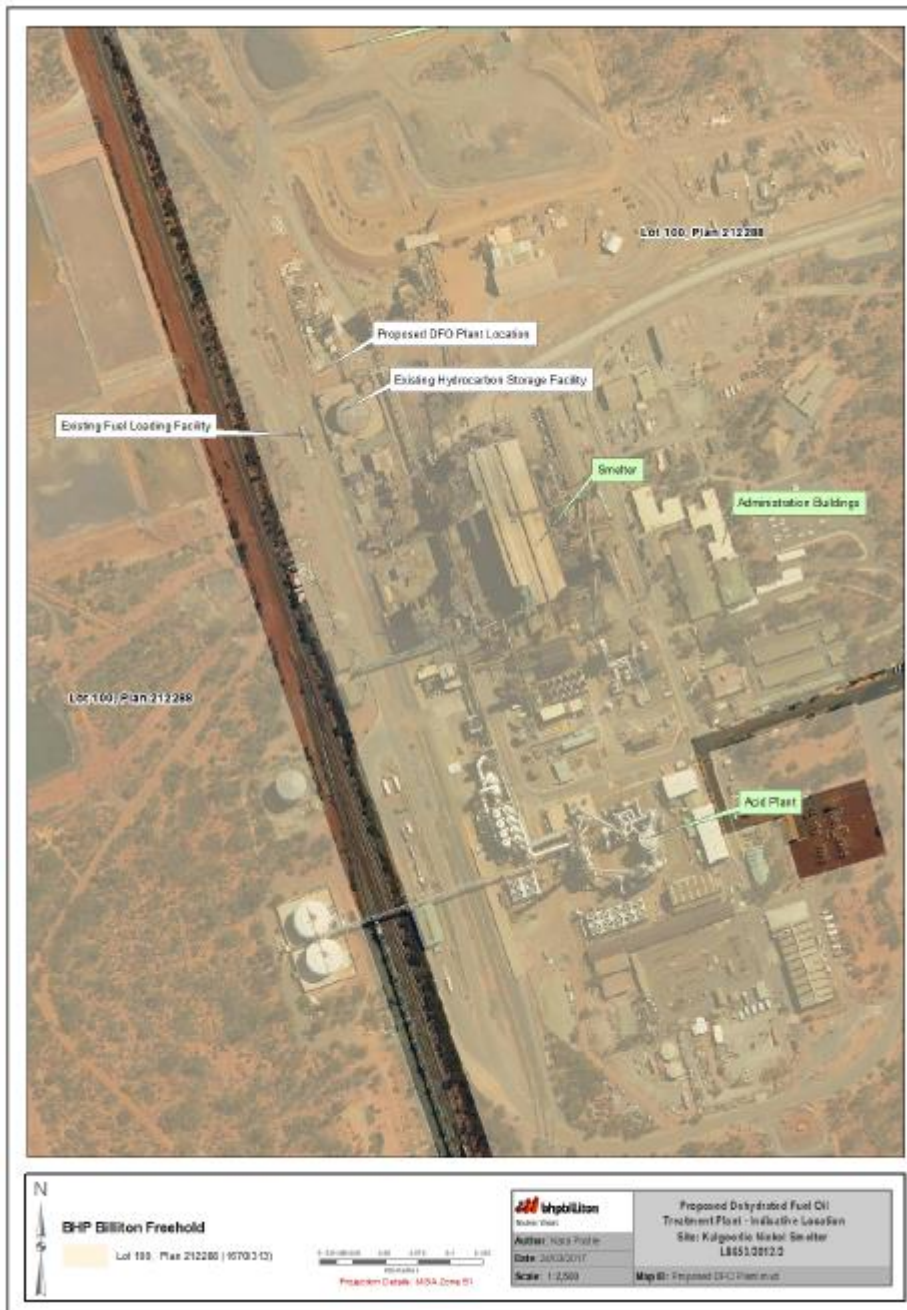
**Table 3:** Licence amendments

Instrument	Issued	Amendment
L8653/2012/1	11/06/2012	New Licence issued due to lapse of fee payment period (L6598/1973/14).
L8653/2012/1	24/01/2013	Licence amended to include changes to air emissions monitoring, reporting, bunding and gypsum management conditions.
L8653/2012/1	12/06/2014	Licence amended 12 June 2014 as the Licence number contained a typographical error.
L8653/2012/2	11/06/2015	Licence reissued and amended to allow for changes to management of gypsum in accordance with completed under W5740/2014/1, allowing direct disposal into ferro-arsenate pond. Administrative amendments also made.
L8653/2012/2	29/04/2016	Licence amended to extend duration
L8653/2012/2	14/08/2017	Amendment Notice 1- to allow the receipt and processing of up to 20,000t/pa of waste oil to produce DFO for the smelter furnace.



## Location and receptors

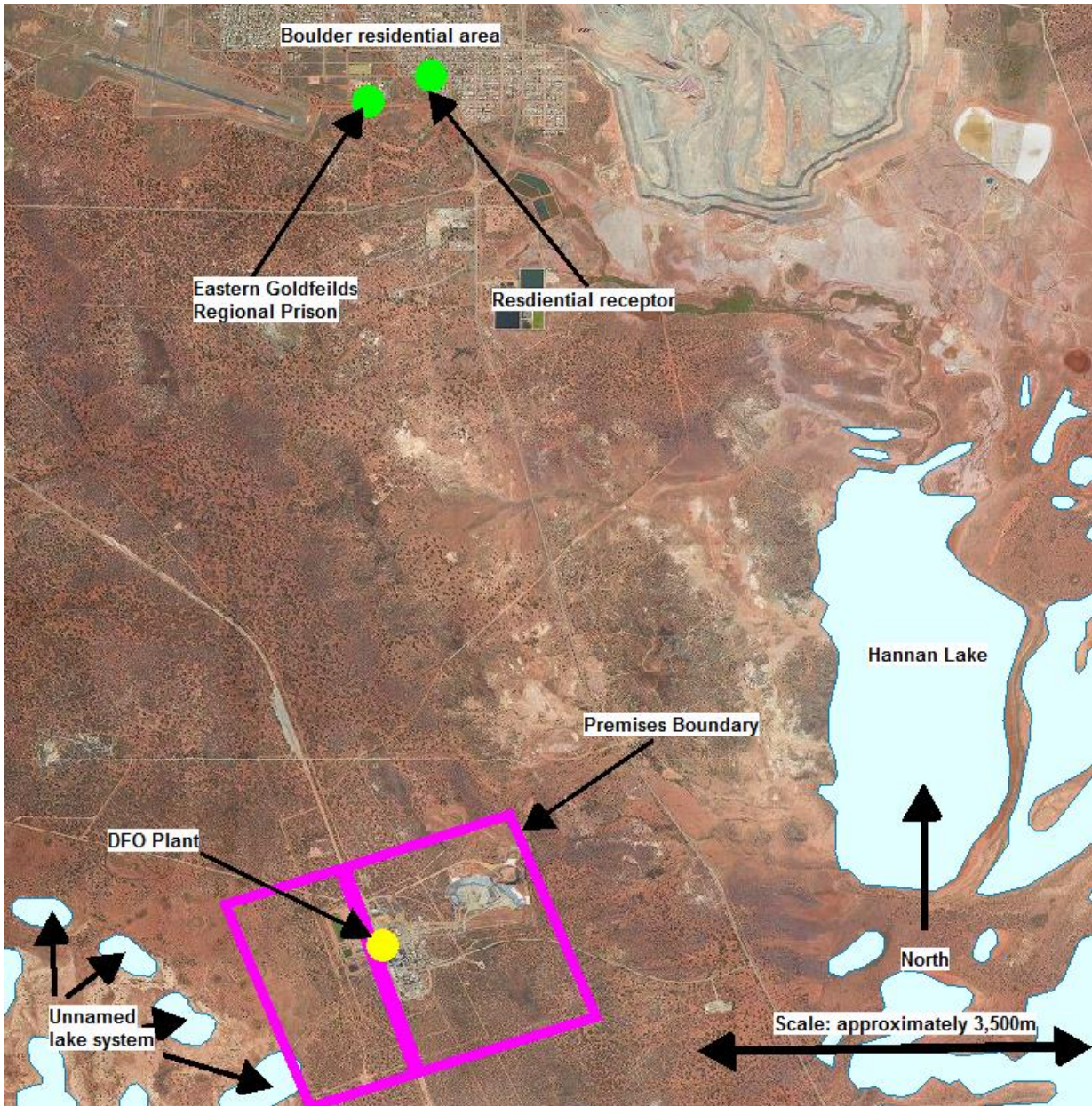
The location proposed for the DFO plant is shown in Figure 3 within the KNS premises.



**Figure 3: The proposed location of the DFO plant**

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 4: Receptors and distance from activity boundary**

Residential and sensitive premises	Distance from Prescribed Premises
Boudler Residential Area	The closes single dwelling is on Vivian Street Boulder and is approximately 8km north of the premises boundary.
Karrawang Community	The Karrawang Community is approximately 13.6km west of the premises
Eastern Goldfeilds Regional Prison (EGRP)	The EGRP is approximately 7.8km north of the premises. A 400 bed facility six beds of which have the potential to accommodate mothers with children.

Table 6 below lists the relevant environmental receptors in the vicinity of the Prescribed Premises which may be receptors relevant to the proposed amendment.

**Table 5: Environmental receptors and distance from activity boundary**

Environmental receptors	Distance from Prescribed Premises
Threatened/ Priority Flora	Priority 3 flora has been recorded 3.7Km NW of the premises boundary
Threatened Priority Fauna	Critically endangered fauna has been caught or trapped at two locations approximately 6.4km west of the premises boundary.
Hydrography WA 250K- surface water polygons (GA2015)	<p>There are two wetlands systems within proximity of the premises including Hannan Lake approximately 2.6km east of the premises</p> <p>A scattering of small lake associated with White Lake lie west of the premises with the boundary of one small wetland area intersecting with the western boundary.</p>

## Risk assessment

Tables 7 and 8 below describe the Risk Events associated with the amendment consistent with the *Guidance Statement: Risk Assessments*. Both tables identify whether the emissions present a material risk to public health or the environment, requiring regulatory controls.



**Table 6: Risk assessment for proposed amendments during construction**

Risk Event					Consequence rating	Likelihood rating	Risk	Reasoning	
Source/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts					
<b>Cat 39</b> Chemical or oil recycling	Installation of self-contained DFO plant and associated infrastructure including pipework and pumps	<b>Noise:</b> associated with vehicle movements	Closest place of residence is the EGRP 7.8km north of the premises boundary	<b>Air:</b> transport and dispersion	Potential amenity impacts	Slight	Rare	Low	The separation distance between the construction area and nearby residential dwellings is sufficiently large enough for there to be minimal to no impacts.  The Noise Regulations apply.

**Table 7: Risk assessment for proposed amendments during operation**

Risk Event					Consequence rating	Likelihood rating	Risk	Reasoning	
Source/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts					
Cat 39 Chemical or oil recycling	Receiveal, transfer and storage of waste oil, transfer and storage of DFO	<b>Oil, sludge and wastewater:</b> spills and leaks through pipeline and pump failures	<b>Soil:</b> infiltration through soil profile to groundwater potentially impacting on vegetation root growth within spill impact area. Stormwater contaminated by oil may be conveyed through surface drains to	Land: direct discharge to land and infiltration to groundwater	Soil contamination inhibiting vegetation growth	Minor	Possible	Medium	The storage and transfer of waste oil and DFO will be undertaken on hardstand areas, using pipelines, tanks and bunds compliant with AS1940.  Existing Licence Conditions W5(ii) and W7(b) apply.  No further assessment
	Filtration and cleaning of waste oil	<b>Odour:</b> from heating of waste oil	<b>Residential receptor:</b> nearest place of residence is the EGRP 7.8km north of the premises boundary	Air dispersion	Potential amenity impacts	Slight	Rare	Low	Large separation distance resulting in minimal to no impacts  No further assessment
		<b>Oil, sludge and wastewater:</b> spills and leaks through pipeline and pump failures	<b>Soil:</b> infiltration through soil profile to groundwater potentially impacting on vegetation root growth within spill impact area	Land: direct discharge to land and infiltration to groundwater	Soil contamination inhibiting vegetation growth	Minor	Possible	Medium	The storage and transfer of sludge waste will be undertaken on hardstand areas, using pipelines, tanks and bunds compliant with AS1940.  Existing Licence Conditions W5(ii) and W7(b) apply.  No further assessment

		<b>Noise:</b> from operation of DFO plant and pumping infrastructure	<b>Residential receptor:</b> nearest place of residence is the EGRP 7.8km north of the premises boundary	Air dispersion	Potential amenity impacts	Slight	Rare	Low	Large separation distance resulting in minimal to no impacts  No further assessment
	Burning of DFO oil	<b>Air emissions:</b> associated with effluent treatment and disposal	<b>Residential receptor:</b> nearest place of residence is the EGRP 7.8km north of the premises boundary	Air dispersion	Potential odour, particulate, SO <sub>2</sub> , CO, NO <sub>x</sub> , VOC and trace elements	Slight	Rare	Low	Large separation distance resulting in minimal to no impacts. Proponent controls include scrubbers and SO <sub>2</sub> recovery plant. No change to current emissions.  No further assessment
	Burning of sludge waste	<b>Air emissions:</b> associated with burning of solid waste	<b>receptor:</b> nearest place of residence is the EGRP 7.8km north of the premises boundary	Air dispersion	Potential odour, particulate, SO <sub>2</sub> , CO, NO <sub>x</sub> , VOC and trace elements	Slight	Rare	Low	Large separation distance resulting in minimal to no impacts  Existing Licence conditions A1, A3, A4 and A5 apply.  Conditions D6, D7, D8 and D9 are included requiring submission of commissioning test results should the Licence Holder proceed with the burning of sludge wastes to validate air emissions are within acceptable range.  No further assessment

## Decision

Delegated Officer has considered the information contained within the application and determined that the key emissions associated with the proposed construction and installation of the DFO plant is noise emissions. The noise emissions during construction works are not expected to substantially increase as a result of the construction of the DFO plant and due to the distance of sensitive receptors, no regulatory controls will be applied.

During operation, the increase in emissions from the current amendment will not result in a material increase in emissions from the premises due to the design and construction standards of the DFO plant and associated infrastructure which is specified in the application to prevent, control and mitigate impacts to the environment. Conditions D1, D2, D3 and D4 will be added to the Licence requiring the Licence Holder to undertake and demonstrate that construction works have been undertaken in accordance with the infrastructure requirements specified in the application.

The Delegated Officer has considered the appropriateness of existing regulatory controls within the Licence and determined that the existing conditions are suitable for the management of key emissions during the risks associated operation of the DFO plant.

Specifically, the impact that is most likely to occur is one of oil, sludge and wastewater discharge to the environment through pipeline faults, leaks and ruptures which are considered **possible**. However the consequence of such discharges occurring is considered as **minor** as it will result in low level impacts on a local scale. The Delegated Officer considers the overall risk through pipeline faults, leaks and ruptures to be **medium** and suitable for regulatory control. Existing condition W5(ii) is suitable for the managing the risk of stormwater contaminated by hydrocarbons from hardstand areas by requiring it to be diverted for treatment, disposal or reuse. Existing condition W7(b) is assessed as suitable to manage the recovery of leaks and spills both inside and outside secondary containment compounds.

The Delegated Officer has made a determination to approve the current amendment on the basis of the types of controlled waste being accepted and processed on site, as detailed in the current application. As the processing of other types of waste have not been included in the application or the risks associated with their use assessed, Condition D5 will be included on the Licence limiting the types of waste which are permitted to be received on the site for input into the DFO plant.

In the Application the Licence Holder has requested approval to dispose of the sludge waste created from the DFO process if it is suitable for use as a fuel source, within the combustion chamber of the furnace. At the time of granting this amendment, the Delegated Officer considers the burning of up to 1000 tonnes per annum of oily sludge is likely to be acceptable as the emissions profile is not expected to vary significantly to the current fuel sources (coal, coke, DFO and natural gas). In addition all furnace gases are scrubbed then passed through an acid plant to recover sulphur dioxide gases prior to being discharge to the environment. The Delegated Officer has included commissioning conditions D6 on the Licence to require the Licence Holder to undertake an analysis of the sludge waste prior to combustion in the furnace to ensure it meets the specifications provided in the application form. Conditions D7, D8 and D9 require stack testing results to be undertaken during commissioning of sludge waste combustion within the furnace reaction chamber, and for these results to be submitted to DWER to validate that there will be no material change to air emissions as a result of this practice.

In summary, the amendment is approved subject to construction conditions and commissioning conditions as detailed below.



## Amendment

1. Definitions of the Licence is amended by the insertion of the text below:

“Annual period” means the 12 month period beginning on the 1 January and ending on the 31 December in that year.

“AS1692” means the most recent version and relevant part of AS1692-2006: Steel tanks for flammable and combustible liquids;

“AS1940” means the most recent version and relevant part of AS1940-2004: The storage and handling of flammable and combustible liquids;

“Commissioning” means the process of operation and testing that verifies the works and all relevant systems, plant, machinery and equipment have been installed and are performing in accordance with the design specification set out in the Licence amendment application dated 25 May 2017;

2. The Licence is amended by the insertion of the following Condition D1:

D1 The Licence Holder must install and undertake the Works for the infrastructure and equipment:

- (a) specified in Column 1;
- (b) to the requirements specified in Column 2;

of Table 3 below.

**Table 3: Infrastructure and equipment requirements table**

Column 1	Column 2
Infrastructure/ Equipment	Requirements (design and construction)
Waste oil tank	<ul style="list-style-type: none"> <li>• Capacity of 5,000kL</li> <li>• Compliant with AS 1940 and AS1692</li> <li>• Located inside AS 1940 compliant bund</li> </ul>
DFO plant	<ul style="list-style-type: none"> <li>• Contained within a self-bunded enclosed sea container</li> <li>• Compliant with AS 1940 and AS1692</li> <li>• Located on a concrete hard stand</li> </ul>
ISOtainer sludge tank	<ul style="list-style-type: none"> <li>• Capacity of 800kL</li> <li>• Located on a concrete hardstand area</li> <li>• Self-bunded unit complaint with AS1940 and AS1692</li> </ul>
Pipelines and pumps	<ul style="list-style-type: none"> <li>• Piping joints and connections to be located in hardstand, bunded or self bunded areas</li> <li>• Compliant with AS1940</li> </ul>

3. The Licence is amended by the insertion of the following Condition D2:

D2 The Works Approval Holder must not depart from the requirements specified in Column 2 of Table 3 except:

- (a) where such departure does not increase risks to public health, public amenity or the environment; and
- (b) all other Conditions in this Licence are still satisfied.

4. The Licence is amended by the insertion of the following Condition D3:

D3 Subject to Condition D1, within 30 days of the completion of the Works specified in Column 1 of Table 3, the Licence Holder must provide to the CEO certification from a suitably qualified professional confirming each item of infrastructure or component of infrastructure specified in Column 1 of Table 3 has been constructed with no material defects and to the requirements specified in Column 2.

5. The Licence is amended by the insertion of the following Condition D4:

D4 Where a departure from the requirements specified in Condition D1, Column 2 of Table 3 occurs and is of a type allowed by Condition D2, the Licence Holder must provide to the CEO a description of, and explanation for, the departure along with the certification required by Condition D3.

6. The Licence is amended by the insertion of the following Condition D5:

- D5 The Licence Holder must only accept waste at the Premises if:
- (a) it is of a type specified in Column 1 of Table 4; and
  - (b) it meets any specification or quantity limit specified in Column 2 of Table 4.

**Table 4: Liquid wastes permitted to be received at the premises**

	Column 1		Column 2
	<b>Liquid wastes</b>		
1	Waste mineral oils unfit for their intended purpose	Controlled waste type: J100	Combined total of no more than 20,000 tonnes per Annual Period
2	Waste oil and water mixtures or emulsions, and hydrocarbons and water mixtures or emulsions	Controlled waste type: J120	

7. The Licence is amended by the insertion of the following Condition D6:

D6 The Licence Holder must undertake the monitoring specified in Table 5 during the commissioning period prior to the combustion of sludge waste in the smelter furnace.

**Table 5: Sludge waste monitoring table**

Column 1	Column 2	Column 3	Column 4	Column 5
Monitoring location	Parameter	Units	Frequency	Method
Sludge waste generated from the Dehydrated Fuel Oil plant	water	%v/v	Once during commissioning	AS4482.1
	sulphur	mg/kg		
	metals including: arsenic, beryllium, cadmium, chromium (hexavalent), lead, mercury, nickel, selenium, silver, aluminum, barium, boron, cobalt, copper, manganese, vanadium and zinc	mg/kg		

8. The Licence is amended by the insertion of the following Condition D7:

D7 The Licence Holder shall undertake a stack emission monitoring event as specified by Condition A3 of this Licence, when commissioning the combustion of sludge waste in the smelter Furnace.

9. The Licence is amended by the insertion of the following Condition D8:

D8 The Licence Holder shall submit to the CEO report for the combustion of sludge waste to the CEO within 30 days of the sludge waste combustion commissioning event.

10. The Licence is amended by the insertion of the following Condition D9:

D9 The Licence Holder shall ensure the report referred to in Condition D8 includes;

- (a) a summary of the monitoring results recorded under conditions D6 and D7.;
- (b) a list of any original monitoring reports submitted to the License Holder from third parties for the commissioning works;
- (c) a review of performance against Condition A5(a); and
- (d) where they have not been met, measures proposed to meet the design specification and/or works approval conditions, together with timescales for implementing the proposed measures.

## Appendix 1: Key documents

	Document title	In text ref	Availability
1	AS1692-2006: Steel tanks for flammable and combustible liquids	AS1962	accessed at: <a href="http://www.standards.org.au">http://www.standards.org.au</a>
2	AS1940-2004: The storage and handling of flammable and combustible liquids	AS1940	
3	AS 4482.1-1997: Guide to the investigation and sampling of sites with potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds	AS 4482.1	
4	Licence L8653/2012/2 – Kalgoorlie Nickel Smelter	L8653/2012/2	accessed at <a href="http://www.dwer.wa.gov.au">www.dwer.wa.gov.au</a>
5	BHP Billiton Dehydrated Fuel Oil Plant Nickel West Kalgoorlie Smelter DER Licence L8653/2012/1. Amendment Application Attachments 3A, 4, 5, 6, 7 & 9	BHP Billiton, 2017	DWER records (A124233)
6	July 2015. <i>Guidance Statement: Regulatory principles.</i>		accessed at <a href="http://www.dwer.wa.gov.au">www.dwer.wa.gov.au</a>
7	October 2015. <i>Guidance Statement: Setting conditions.</i>		
8	November 2016. <i>Guidance Statement: Risk Assessments.</i>		
9	November 2016. <i>Guidance Statement: Decision Making.</i>		



## Appendix 2: Summary of Licence Holder comments

The Licence Holder was provided with the draft Amendment Notice on 11 August 2017 for review and comment. The following comments were provided.

Condition	Summary of Licence Holder comment	DWER response
NA	The Licensee requested the approved production design capacity be altered from 16,800kL per annum to 20,000 tonnes per annum	Noted and amended as the mass density of the waste oils may be greater than a kilogram per litre of oil and this will not change the amounts stored on site at any one time.
NA	Reference to the main stack on page 3 as a release point for emissions from the furnace was identified as an error. It should state the acid plant stack	This changed has been noted and the text amended accordingly.