Government of Western Australia
Department of Environment Regulation

LICENCE FOR PRESCRIBED PREMISES

Environmental Protection Act 1986

LICENCE NUMBER: 5533/1976/11 **FILE NUMBER:** 2011/005902

LICENSEE AND OCCUPIER OF PREMISES
BHP Billiton Nickel West Pty Ltd
125 St Georges Terrace
PERTH WA 6000
ACN: 004 184 598

NAME AND LOCATION OF PREMISES
Kambalda Nickel Concentrator, Durkin Road
Mining Tenements ML15/149, ML15/150, lease agreement over part of Lot 13 on DP49832-K173678L, easement over part of Lot 13 on DP49832-K173679E, and lease agreement over portion of M26/317
KAMBALDA WA 6442
(As depicted in Attachment 1)

PRESCRIBED PREMISES CATEGORY
Schedule 1 of the Environmental Protection Regulations 1987

Category Number	Description	Capacity
5	Processing or beneficiation of metallic or non-metallic ore	50,000 tonnes or more per year

CONDITIONS OF LICENCE
Subject to the conditions of licence set out in the attached pages.

Date signed: 15 July 2016

Jonathan Bailes
Manager Licensing (Process Industries)

Officer delegated under Section 20
of the Environmental Protection Act 1986

Date of Amendment: 15 July 2016

CONDITIONS OF LICENCE

Environmental Protection Act 1986

DEFINITIONS

In these conditions of licence, unless inconsistent with the text or subject matter:

"the Act" means the *Environmental Protection Act 1986;*

"annual period" means the inclusive period from 1 October until 30 September in the following year;

"**ANZECC and ARMCANZ 2000 Guidelines**" means the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000).

"AS/NZS 5667.1:1998"means the most recent version and relevant part of AS/NZS 5667;

"averaging period" means the time over which a limit or target is measured or a monitoring result is obtained;

"CEO" means Chief Executive Officer of the Department of Environment Regulation;

"CEO" for the purpose of Correspondence means:

Chief Executive Officer
Department Administering the Environmental Protection Act 1986
Locked Bag 33
CLOISTERS SQUARE WA 6850
Email: info@der.wa.gov.au

"environmentally hazardous material" means material (either solid or liquid raw materials, materials in the process of manufacture, manufactured products, products used in the manufacturing process, by-products and waste) which if discharged into the environment from or within the premises may cause pollution or environmental harm.

"HDPE" means high-density polyethylene;

"licence" means this licence numbered L5533/1976/11 and issued under the *Environmental Protection Act 1986;*

"licensee" means the person or organisation named as Licensee on page 1 of the licence;

"limit" in relation to an atmospheric discharge means regulatory requirement not to be breached;

"mg/m^3" means milligrammes per cubic metre, expressed dry at 0 degrees Celsius and 1.0 atmospheric pressure (101.325 kilopascals);

"NATA" means National Association of Testing Authorities;

"premises" means the area defined in the premises map in Schedule 1 and listed as the premises address on page 1 of the licence;

"SWL" means standing water level;

"TSF" means an engineered containment pond or dam used to store tailings;

"waste" has the meaning defined in the *Environmental Protection Act 1986*; and

"usual working day" means 0800 – 1700 hours, Monday to Friday excluding public holidays in Western Australia.

AIR POLLUTION CONTROL CONDITIONS

STACK SAMPLING PORTS, PLATFORMS ACCESS WAYS

1. The licensee shall maintain emissions sampling ports on the following concentrate dryer discharge points:
   (i) spray drier scrubber stack units 1, 2 and 3;
   (ii) ports: SD1TW7 for unit 1;
   SD2TW8 for unit 2; and
   SD3TW9 for unit 3.

ATMOSPHERIC MONITORING

2. The licensee shall undertake, on a three-monthly basis, sampling from nominated dryer stack sampling ports for the purpose of measuring concentrations of emissions listed in condition 3.

ATMOSPHERIC DISCHARGE LIMITS

3. The licensee shall ensure that under normal operation, discharge from the concentrate dryer stacks does not exceed the values specified in Table 1 below:

Table 1

Discharge parameter	Discharge limit
Particulates	250mg/m^3
Total of antimony, arsenic, cadmium, lead, vanadium and related compounds	10mg/m^3
Nickel and related compounds	20mg/m^3 expressed as Ni
Cadmium and related compounds	3mg/m^3 expressed as Cd

Note: All results expressed dry at 0 degrees Celsius and 101.325 kilopascals.

4. The testing referred to in condition 3 shall be conducted so that the source testing in any 'relevant period' is conducted at least six weeks before and after the testing in any other relevant period, where the definition of relevant period means each of the three calendar month periods commencing on 1 January, 1 April, 1 July and 1 October in each year.

DUST - MAINTENANCE OF COLLECTION AND CONTROL SYSTEMS

5. The licensee shall operate and maintain water sprays at the feed point to the primary crusher and at all transfer points from the conveyor to sizing screens as necessary to minimise the generation of visible dust.

6. The licensee shall maintain all installed dust collection or dust control systems including:
   (i) coverings on conveyors, transfer points, and discharge points;
   (ii) skirtings; and
   (iii) dust filters.

WATER POLLUTION CONTROL CONDITIONS

STORMWATER DIVERSION AWAY FROM WASTE MANAGEMENT AREAS

7. The licensee shall divert stormwater run-off away from areas adjacent to waste management facilities to minimise the threat of accidental loss of stored matter due to flooding or erosion.

8. CRUSHING AREA – STORMWATER AND RUN-OFF CONTROL
The licensee shall ensure the premises are drained such that wastewater is retained on the premises. Water run-off from the crushing area shall be directed to a nominated catchment dam.

VEHICLE WASHDOWN AREAS

9. The licensee shall ensure vehicle washdown areas are equipped with fuel/oil traps and provisions to ensure detergent or solvent-contaminated waters are not discharged to the environment.

INSTALLATION OF DRAINAGE BELOW WASTE STORAGE DAM

10. The licensee shall, where practical, install and maintain a perimeter drain immediately downstream of the external toe of the tailings storage facility, which shall be used to collect and recover any liquid matter resulting from seepage or breach of the embankments.

TAILINGS STORAGE VISUAL INSPECTIONS

11. The licensee shall undertake visual inspections of the operational tailings storage facility (TSF) during operational periods, when tailings are deposited into the TSF at least once every six hours and once per day when tailings are not deposited into the TSF. As a minimum the following shall be inspected:
    (i) tailings delivery lines;
    (ii) return water lines;
    (iii) tailings deposition;
    (iv) ponding on the surface of the TSF;
    (v) internal embankment freeboard; and
    (vi) the external walls of the TSF.

12. The licensee shall ensure a log book is kept for all visual inspections as per condition 11. The log book shall be signed by the person undertaking the inspection and shall indicate any deviations or problems noted from the usual operational observations.

13. The licensee shall ensure the log book is retained in the plant control room and is made available to an inspector on request.

FREEBOARD

14. The licensee shall maintain a minimum top of embankment freeboard of 300mm within all storage facilities containing saline, alkaline or cyanide constituents to accommodate extreme rainfall events and prevent overtopping. This condition includes, but is not limited to tailings dams, return water dams, process water dams and raw water dams.

PIPELINE BUNDING

15. The licensee shall ensure that all pipelines containing saline, alkaline or cyanide constituents are either buried or sited within appropriately bunded facilities. Tailings delivery lines, elevated pipelines within the plant area, and return water lines are exempt from this condition, provided they are managed in such a manner as to prevent spillage's from pipeline breaks, operational error or other mishaps from entering into areas of undisturbed land.

16. The licensee shall ensure that where pipelines are bunded, the bunds are adequately constructed and maintained to ensure that spills do not enter undisturbed land.

17. The licensee shall ensure that all pipelines with secondary containment measures are adequately constructed and maintained to ensure spills do not enter undisturbed land.

18. The licensee shall ensure that catch pits are sited at appropriate low points along the pipeline route to enable the containment of spills.

PIPELINE FLOW MONITORING

19. The licensee shall monitor and maintain all installed telemetry systems and pressure sensors fitted along pipelines to ensure detection of leaks or failures.

HAZARDOUS CHEMICAL STORAGE

20. The licensee shall immediately recover, or remove and dispose of spills of environmentally hazardous materials outside an engineered containment system.

SUSPENDED SOLIDS REMOVAL

21. The licensee shall ensure that primary and secondary settling basins are maintained at least at each point of discharge such that there is sufficient retention time within the basin to maximise removal of suspended solids prior to discharge to Lake Lefroy.

DISCHARGE TO LAND

22. The Licensee shall ensure that wastewater from the vehicle washdown areas is not discharged to the leach drain unless the wastewater meets the limits specified in Table 2:

Table 2

Emission Point reference	**Parameter**	**Limit (including units)**	**Averaging period**
Wash down bay areas SME & LV as shown in Attachment 3	pH	Within the range 5.5 to 8.5	Spot sample
	Surfactants	5mg/L	
	Total recoverable hydrocarbons	5mg/L	
	BTEX	10µg/L	

WATER MONITORING PROGRAMME

23. The licensee shall, at the frequencies stated in column two, take a measurement of standing water levels (SWL) and take representative water samples from the monitoring sites referred to in column 1 as depicted in Table 3 and have them analysed for the parameters to be measured in column 3.

Table 3

COLUMN 1	**COLUMN 2**	**COLUMN 3**
Monitoring Sites and Location on Attachments 5 and 6	**Sampling frequency**	**Parameters to be measured**
KD5105A,KD5106A, KD6160, KD6159	Annually	Standing Water Level (SWL)[1] pH Total dissolved solids (TDS) Electrical conductivity (EC) Chromium (Cr) Iron (Fe) Copper (Cu) Nickel (Ni) Zinc (Zn) Arsenic (As)
KD5272, KD5267	Annually	SWL
KD5271, KD5273, KD5268, KD6159A, KD6031A, KD5270, KD5247A, KD5248, KD5249, KD5250, KD5251, KD5252, KD5253	Bi-Annually Annually	SWL pH, TDS, EC, Cr, Fe, Cu, Ni, Zn and As
Surface Location 1, Process Water Dam[2]	Annually	pH, TDS, EC, Cr, Fe, Cu, Ni, Zn and As
Stormwater Catchment Dam[3] discharge	Daily during each overflow event	pH, TDS, EC, Cr, Fe, Cu, Ni, Zn and As

Note1: SWL shall be determined prior to collection of other water samples.

Note 2: Named the Cons 2 Dam in previous licence versions.

Note 3: Named the Process Water Dam in previous licence versions.

24. The licensee shall collect all water samples in accordance with the Australian/New Zealand Standard 5667.

25. The licensee shall submit all water samples to a laboratory with current NATA accreditation for the analysis specified in column 3 of Table 3.

WORKS

REFRACTORY WASTE DISPOSAL

26. The licensee shall dispose refractory waste to the Tailings Storage Facility Cell 3B, (location as marked in Attachment 4) and in accord with the document in Table 4 below.

Table 4

Construction requirements documentation	Parts	Date of Document
Licence Amendment – NKC Refractory Material Disposal - Supporting Information	All	24 February 2015

27. The licensee shall submit a compliance document to the CEO, within four weeks of the completion of the works in Table 4.

28. The compliance document shall:
    (a) certify that the works were completed in accordance with condition 26 of this Licence;
    (b) be signed by a person authorised to represent the licensee and contain the printed name and position of that person within the company.

WATER MANAGEMENT IMPROVEMENTS

29. The licensee shall undertake works to improve the management of stormwater and process water on site in accordance with the documents in Table 5 below.

Table 5

Construction requirements documentation	Parts	Date of Document
Licence Amendment- Application Form	All	27 April 2016
Email Correspondence from Jambo Mtezo: L5533/1976/11 Licence Amendment Additional Information	All	18 May 2016

30. The licensee shall submit a compliance document to the CEO, within four weeks of the completion of the works in Table 5.

31. The compliance document shall:
    (a) certify that the works were completed in accordance with condition 29 of this Licence;
    (b) be signed by a person authorised to represent the licensee and contain the printed name and position of that person within the company.

32. The Licensee shall ensure that the works specified in Table 5 are complete by 31 August 2016.

33. The Licensee shall submit to the CEO by 31 October 2016 a Stormwater Discharge Management Plan (SWDMP).

34. The Licensee shall ensure the SWDMP required in Condition 33 shall include but not be limited to;
    (a) A desktop review or survey of regional water quality within the Lake Lefroy catchment;
    (b) A desktop review or survey of sediment quality within Lake Lefroy from:
        i. baseline or low impact areas; and
        ii. areas impacted by stormwater discharges from the premises;
    (c) A desktop review or survey to identify:
        i. environmental receptors within the Lake Lefroy catchment, which are downstream of the premises likely to be impacted by the discharge of stormwater from the premises; and
        ii. contaminants of concern in water discharged from the premises;
    (e) For each substance identified in part (c)ii above, the identification of appropriate water quality guidelines or trigger values using the toxicity assessment methodology specified in the ANZECC and ARMCANZ 2000 Guidelines; and
    (f) for each substance identified in part (c)ii above, identification of appropriate sediment quality guidelines or trigger values using the toxicity assessment methodology specified in the ANZECC and ARMCANZ 2000 Guidelines.

REPORTING

ANNUAL ENVIRONMENTAL REPORT

35. The licensee shall prepare an Annual Environmental Report containing the monitoring data and other collected data required by any condition of this licence by 28 February each year. This report shall cover the previous 12 month period from 1 January to 31 December. One copy of this report shall be provided to the CEO.

LICENCE LIMIT EXCEEDANCE REPORTING

36. The licensee shall advise the CEO in writing no later than 5pm of the next usual working day of becoming aware of an exceedance of any measurement which indicates that any discharge limit specified in these conditions of the licence has been exceeded.

37. The written advice required by condition 36 shall include:
    (i) the date, time and probable reason for the exceedance;
    (ii) an estimate of the period over which the limit was or is likely to be exceeded; and
    (iii) an estimate of the extent of the discharge over that period and an indication of known or potential environmental impacts.

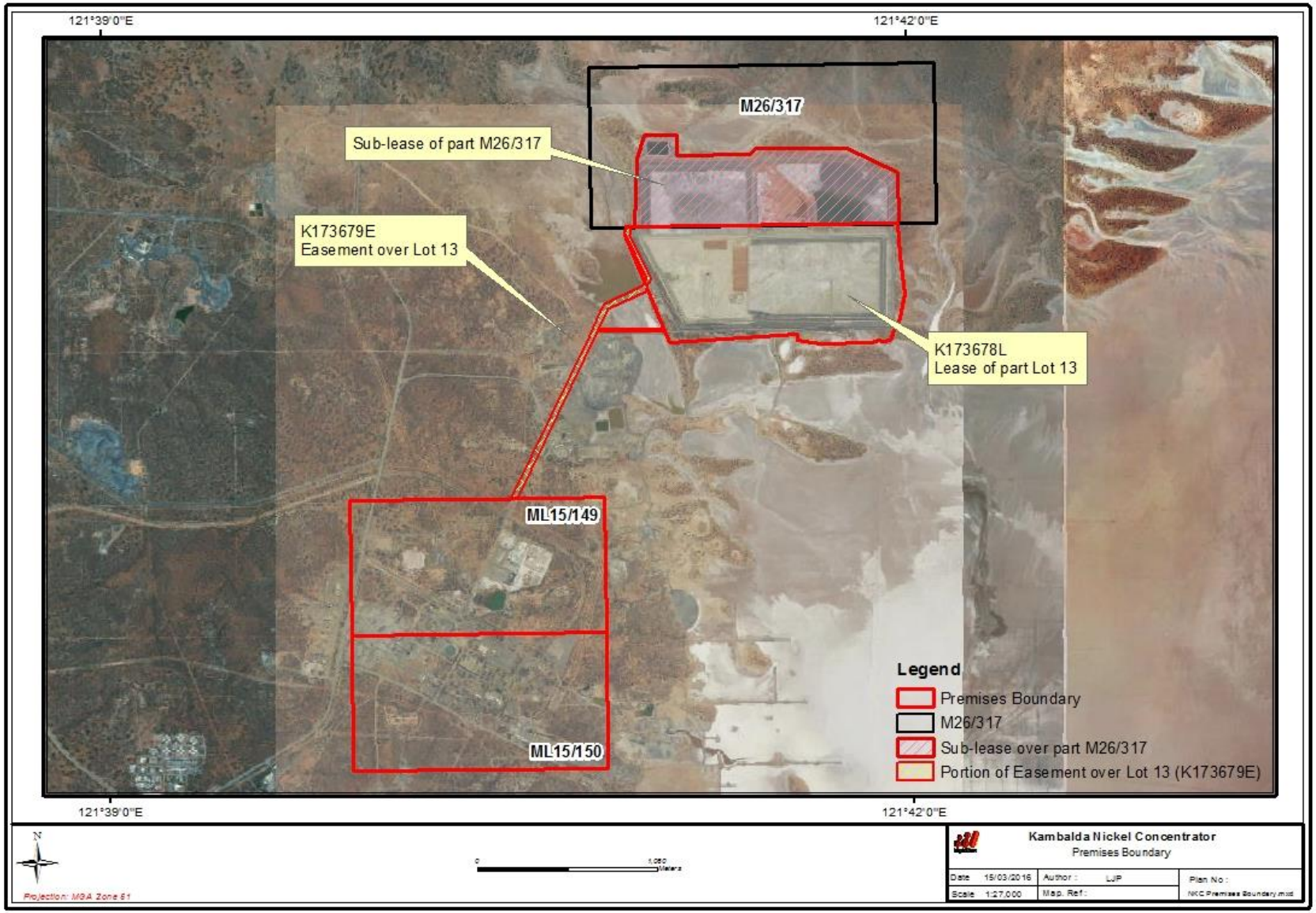
38. The licensee shall provide a full report (unless otherwise approved by the CEO) on its investigations into any exceedance reported under condition 36 within 14 days of that exceedance, and it shall include, but not be limited to:
    (i) the date, time and reason for the exceedance;
    (ii) the period over which the exceedance occurred;
    (iii) the extent of the discharge over that period and potential or known environmental consequences;
    (iv) corrective action taken or planned to mitigate adverse environmental consequences; and
    (v) corrective action taken or planned to prevent a recurrence of the exceedance.

ANNUAL AUDIT COMPLIANCE REPORT

39. The licensee shall by 28 February in each year, provide to the CEO an Annual Audit Compliance Report in the form in 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 January the previous year and ending on 31 December in that year.

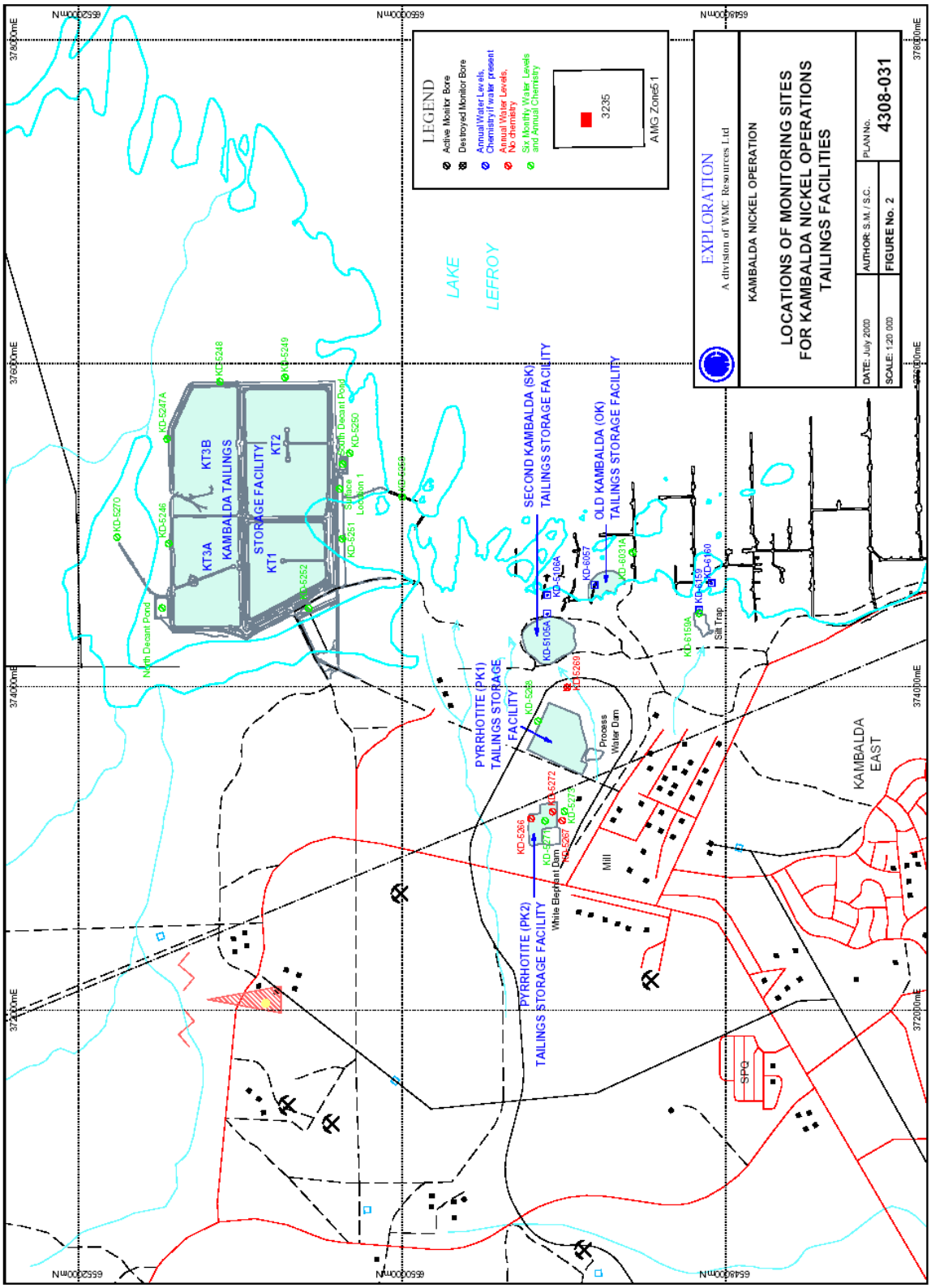
ATTACHMENT 1 – KAMBALDA NICKEL CONCENTRATOR MINING TENEMENTS AND PREMISES BOUNDARY

LICENCE NUMBER: 5533/1976/11 **FILE NUMBER:** 2011/005902



ATTACHMENT 2 – LOCATIONS OF STORAGE FACILITIES

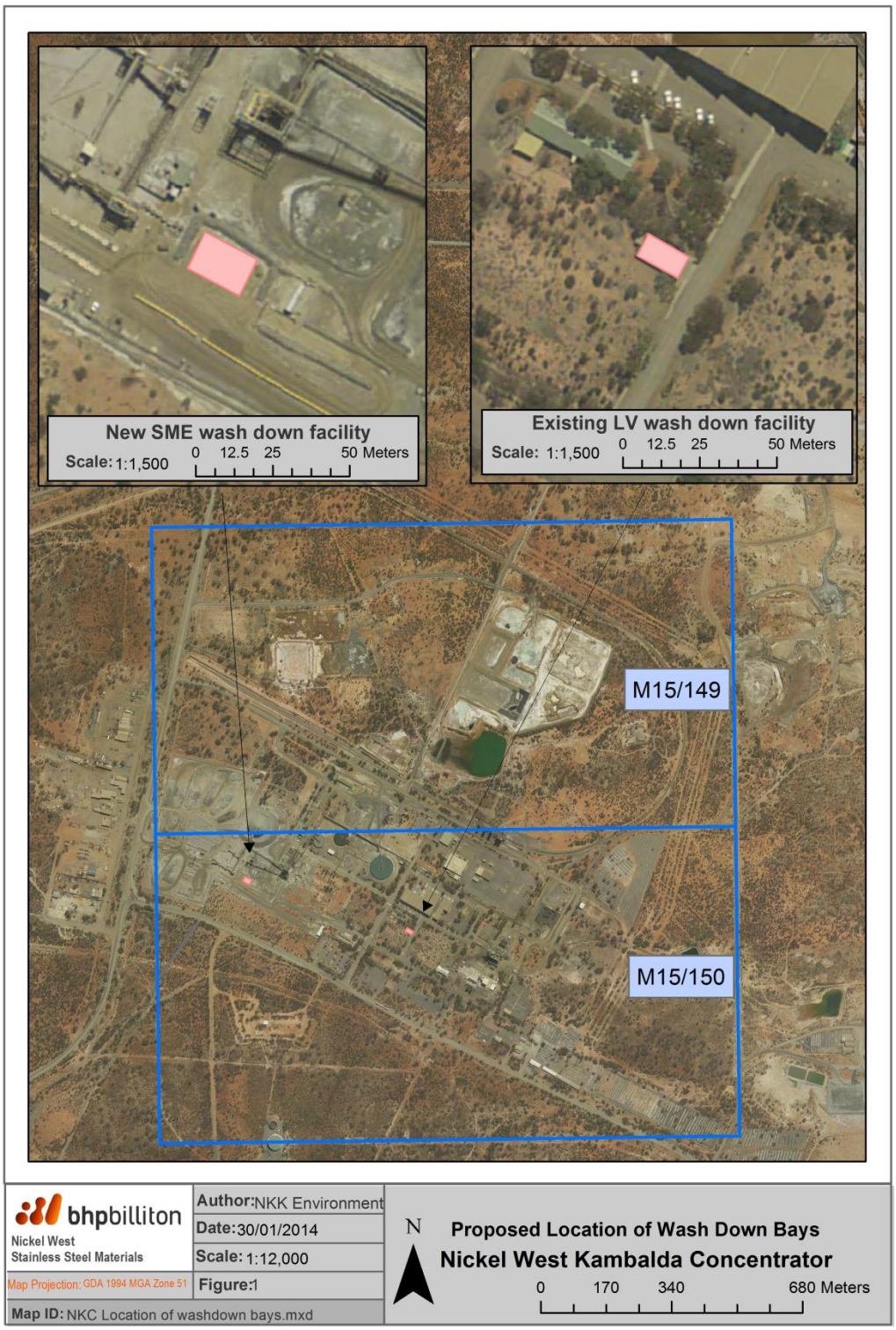
LICENCE NUMBER: 5533/1976/11 **FILE NUMBER:** 2011/005902



ATTACHMENT 3 – LOCATIONS OF VEHICLE WASH DOWN BAYS

LICENCE NUMBER: 5533/1976/11 **FILE NUMBER:** 2011/005902

The SME and LV Wash down bay areas are depicted in the following map in pink:




Discharge Location For Refractory Waste
bhpbilliton
Nickel West
Aluminium and Nickel
Author: J Mezzo
Date: 04/05/2015
Scale: 1:4,185
Map ID: Information_DER_Furnace_Brick_Disposal.mxd
Discharge Location
Decant Turret Wall
Discharge Location
TSF 3B
TSF 3A
N


Process Water Dam
(previously Cons Dam 2)
Stormwater Catchment Dam
(previously Process Water Dam)
bhpbilliton
Nickel West
Aluminium and Nickel
Author: James Nixon
Date: 27/06/2016
Scale: 1:7,853
Projection Details: MGA Zone 51
Figure No:
Map ID: xxxx.mxd
N
Nickel West Kambalda Concentrator (NKC)
Nickel West BHP Billiton Pty Ltd
0
0.25
Kilometres
Application
Granted


N
Legend
Other
Monitor (single piezo)
Piezometer
Production
Exploration
Borehole
Stock
Monitor (dual piezo)
Production (unequipped)
Drain
Surface Location 1
KD5252
KD5251
KD5253
KD5250
KD5249
KD5248
KD5247A
KD5270
Kilometres
Projection Details: MGA Zone 51
bhpbilliton
Nickel West
Aluminium and Nickel
Author: James Nixon
Date: 11/7/16
Scale: 1:8,622
Nickel West Kambalda Concentrator (NKC)
Site Monitoring Locations - TSF
Map ID: xxxx.mxd

SECTION A

LICENCE DETAILS

Licence number:	Licence file number:
Company name: Trading as:	ACN:
Reporting period: _____ to _____	

STATEMENT OF COMPLIANCE WITH LICENCE CONDITIONS

1. Were all conditions of licence complied with within the reporting period? (please tick the appropriate box)

Yes ☐Please proceed to section C

No ☐Please proceed to section B

Each page must be initialed by the person(s) who signs section C of this Annual Audit Compliance Report

INITIAL:_____

SECTION B: DETAILS OF NON-COMPLIANCE WITH LICENCE CONDITION.

Please use a separate page for each licence condition that was not complied with.

a) Licence condition not complied with?	
b) Date(s) when the non-compliance occurred, if applicable?	
c) Was this non-compliance reported to DER?	
☐ Yes ☐ Reported to DER verbally Date _____ ☐ Reported to DER in writing Date _____	☐ No
d) Has DER taken, or finalised any action in relation to the non-compliance?	
e) Summary of particulars of non-compliance, and what was the environmental impact?	
f) If relevant, the precise location where the non-compliance occurred (attach map or diagram)	
g) Cause of non-compliance	
h) Action taken or that will be taken to mitigate any adverse effects of the non-compliance	
i) Action taken or that will be taken to prevent recurrence of the non-compliance	

Each page must be initialed by the person(s) who signs section C of this annual audit compliance report

INITIAL:_____

SECTION C
SIGNATURE AND CERTIFICATION

This Annual Audit Compliance Report may only be signed by a person(s) with legal authority to sign it. The ways in which the Annual Audit Compliance Report must be signed and certified and the people who may sign the statement, are set out below.

Please tick the box next to the category that describes how this Annual Audit Compliance Report is being signed. If you are uncertain about who is entitled to sign or which category to tick, please contact the licensing officer for your premises.

If the licence holder is		**The Annual Audit Compliance Report must be signed and certified:**
an individual	□	by the individual licence holder, or
	□	by a person approved in writing by the Chief Executive Officer of the Department of Environment Regulation to sign on the licensee's behalf.
A firm or other unincorporated company	□	by the principal executive officer of the licensee; or
	□	by a person with authority to sign on the licensee's behalf who is approved in writing by the Chief Executive Officer of the Department of Environment Regulation.
A corporation	□	by affixing the common seal of the licensee in accordance with the Corporations Act 2001; or
	□	by two directors of the licensee; or
	□	by a director and a company secretary of the licensee, or
	□	if the licensee is a proprietary company that has a sole director who is also the sole company secretary – by that director, or
	□	by the principal executive officer of the licensee; or
	□	by a person with authority to sign on the licensee's behalf who is approved in writing by the Chief Executive Officer of the Department of Environment Regulation.
A public authority (other than a local government)	□	by the principal executive officer of the licensee; or
	□	by a person with authority to sign on the licensee's behalf who is approved in writing by the Chief Executive Officer of the Department of Environment Regulation.
a local government	□	by the chief executive officer of the licensee; or
	□	by affixing the seal of the local government.

It is an offence under section 112 of the *Environmental Protection Act 1986* for a person to give information on this form that to their knowledge is false or misleading in a material particular. There is a maximum penalty of $50,000 for an individual or body corporate.

I/We declare that the information in this annual audit compliance report is correct and not false or misleading in a material particular.

SIGNATURE: _____ SIGNATURE: _____

NAME:(printed) _____ NAME:(printed) _____

POSITION: _____ POSITION: _____

DATE: _____/_____/_____ DATE: _____/_____/_____

SEAL (if signing under seal)

Government of Western Australia
Department of Environment Regulation

Decision Document

Environmental Protection Act 1986, Part V

Proponent: BHP Billiton Nickel West Pty Ltd

Licence: L5533/1976/11

Registered office:	125 St Georges Tce PERTH WA 6000
ACN:	004 184 598
Premises address:	Kambalda Nickel Concentrator Durkin Road Mining Tenements ML15/149, ML15/150, lease agreement over part of Lot 13 on DP49832-K173678L, easement over part of Lot 13 on DP49832-K173679E and lease agreement over portion of M26/317 KAMBALDA WA 6442
Issue date:	Thursday, 03 October 2013
Commencement date:	Saturday, 05 October 2013
Expiry date:	Thursday, 04 October 2018

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 and legal requirements and that the Licence and its conditions will ensure that an appropriate level of environmental protection is provided.

Decision Document prepared by:	Cristina Angel Licensing Officer
Decision Document authorised by:	Jonathan Bailes Delegated Officer

Contents

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 ☐ New Licence ☐ Licence amendment ☒ Works Approval amendment ☐	
Activities that cause the premises to become prescribed premises	**Category number(s)**	**Assessed design capacity**
	5	50,000 tonnes or more per year
Application verified Application fee paid	Date: N/A Date:	
Works Approval has been complied with Compliance Certificate received	Yes☐ No☐ N/A☒ Yes☐ No☐ N/A☒	
Commercial-in-confidence claim	Yes☐ No☐	
Commercial-in-confidence claim outcome		
Is the proposal a Major Resource Project?	Yes☐ No☒	
Was the proposal referred to the Environmental Protection Authority (EPA) under Part IV of the *Environmental Protection Act 1986*?	Yes☐ No☒	Referral decision No: Managed under Part V ☐ Assessed under Part IV ☐
Is the proposal subject to Ministerial Conditions?	Yes☐ No☐	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 *Environmental Protection Act 1986*)?	Yes☐ No☒ Department of Water consulted Yes ☐ No ☒	
Is the Premises within an Environmental Protection Policy (EPP) Area Yes☐ No☒		
Is the Premises subject to any EPP requirements? Yes☐ No☒		

3 Executive summary of proposal and assessment

BHP Billiton Nickel West Pty Ltd operate the Kambalda Nickel Concentrator (KNC) located 1.5km east of Kambalda, approximately 60km south of Kalgoorlie. Nickel ore is supplied to the KNC premises from third-party mines in the Kambalda Widgiemootha area. The site produces 35,000 to 40,000 tonnes of nickel-in-concentrate per year with an average 12-15% of nickel from approximately 1.4 million tonnes of ore that contains 2 to 3% nickel. The nickel concentrate is then sent via rail to the Kalgoorlie Nickel Smelter where nickel-in–matte is produced with an average nickel concentration of approximately 68% nickel.

The premises is situated in an arid region of Australia and the long-term rainfall for the area is approximately 265mm with average monthly rainfall ranging from 14-30mm. Between late December and March, the area can be subject to sub-tropical depressions or decaying cyclones from the north which can cause intense periods of high rainfall and flooding. These storm events can generate large volumes of stormwater runoff over short periods of time. The premises is also situated on the western edge of Lake Lefroy, a salt lake which rarely contains water. The lake bed lies at 289mAHD and the catchment for the lake includes land up to 380mAHD and extends to include the KNC premises and land approximately 2km west of the site boundary.

At the KNC premises clean stormwater (water diverted around the premises), dirty stormwater (stormwater from within the premises), and process return water from the tailing storage facility all collect in the same water storage facility, the Return Water Dam (RWD). Built in the 1970's, the RWD is unlined and was constructed using compacted clay core overlain by gravel. The capacity of the dam is not adequate to contain process water and stormwater from the total catchment area of 160ha during high rainfall storm events. Between 2010 and 2015, there were a number of overflow events from the RWD. During 2016 KNC developed and submitted a Corrective Action Plan (CAP) to address the issue of water from the RWD overflowing to the environment. The CAP provides a number of recommendations, and this Licence amendment is sought by the Licensee to implement these changes and alter the management of stormwater and process water at the premises.

The proposed changes include diverting stormwater around the premises through the creation of a stormwater diversion channel along the northern boundary of the premises. This will reduce the stormwater catchment area from 160Ha to 56Ha. Stormwater from this area will no longer drain into the premises and instead will drain towards Lake Lefroy.

Return water from the Tailings Storage Facilities (TSFs) will no longer be stored in the unlined RWD and will be directed towards an existing lined dam, the 'Cons 2 Dam'. The 'Cons 2 Dam' was previously used to impound wet concentrate during 2008 when the Kalgoorlie Nickel Smelter was shut down for maintenance for an extended period. However, since 2010 it has remained unused. The capacity of this dam is 15,000$m^{3,}$ and it is not designed to overflow. Surplus process water will no longer be diverted to the RWD and will be directed to the 'Cons 2 Dam'. The existing RWD will remain as a stormwater runoff dam for the 56ha hardstand processing plant area. On this basis, it still has the ability to receive contaminated runoff.

Other changes to this Licence include the removal of the salinity limit for discharge water into the leach drain for wash down water from the Surface Mobile Equipment (SME) wash down facility and the Light Vehicle (LV) wash down facility. An amendment to the premises boundary to include land which contains return water lines and tailings deposit lines is also included. This land is owned by Independence Group, and the Licensee has legal access via an easement. Water monitoring 'Surface Location 1' has also been amended to remove the requirement to monitor Standing Water Level (SWL) as this location is a seepage recovery pond not a groundwater bore. Additional administrative changes have also been made to reflect changes implemented within DER.

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**
Definitions	NA	Definitions have been updated to remove the reference to terminology associated with deleted conditions and to reflect administrative changes implemented within DER. A definition for HDPE has been included as this term is used in the Licence and is not clearly defined within the licence. A definition for the ANZECC and ARMCANZ 2000 Guidelines is also provided.	
Dust – General Requirement	5 & 7(iii)	Management of fugitive dust from the premises has not significantly changed since the previous licence was issued. However, in accordance with administrative changes implemented within DER, the generic fugitive dust condition has been removed from the licence. <u>Emission description</u> *Emission*: Fugitive dust emissions generated during operation from vehicle movements, cleared areas, stockpiles, conveyors, crushing activities, and the TSFs. Dust will contain soluble nickel and other metals which are toxic at high concentrations. Construction activities including earthworks have the potential to generate dust. *Impact*: Dust and nickel emissions can be harmful to human health and the environment. Elevated total suspended particulates (TSP) can impact on vegetation by smothering and through abrasion. Particulate matter less than 10 microns in diameter can be inhaled deep into the lungs creating human health impacts. Nickel is required by many organisms. However, it is known to be highly toxic once a threshold value is reached. As Lake Lefroy is usually dry and hypersaline when it contains water, it is unlikely that nickel compounds will impact on biota.	*Environmental Protection Act 1986* *Environmental Protection (Unauthorised Discharges) Regulations 2004*

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		Controls: Use of water carts, sprinklers on conveyors, stockpiles and crushing equipment, and ongoing supervision by site personnel with the early identification of any potential dust issues. The deposition method of tailings discharge using a spigot at irregular intervals and locations across the TSF, which assist in reducing dust generation during operation of the TSFs. Crusting on the surface of the TSFs occurs naturally following drying of the tailings and serves to reduce fugitive emissions. Risk Assessment *Consequence*: Minor *Likelihood:* Possible *Risk Rating:* Moderate Regulatory Controls Conditions 6 and 7 require the Licensee to undertake dust suppression activities on the nickel concentrate conveyors, transfer points, discharge points, and crushers. General provisions of the *Environmental Protection Act 1986* and the *Environmental Protection (Unauthorised Discharges) Regulations 2004* also apply. On this basis, generic licence condition 5 and part of licence condition 7(iii) have been removed. Residual Risk *Consequence*: Moderate *Likelihood:* Unlikely *Risk Rating:* Moderate	
Hazardous Chemical Storage	21 & 23	Condition 21 from the previous licence version has been removed from the licence in accordance with administrative changes implemented within DER. It is the occupier's responsibility to ensure that they comply with the relevant legislative requirements for secondary activities such as the storage and handling of environmentally hazardous materials. Condition 23 of the previous licence has been removed from the licence as the discharge of compounds or solutions of cyanide, chromium, cadmium, lead, arsenic, mercury, nickel, zinc or copper to the environment is prohibited by regulation	DER website at: www.der..wa.gov.au Section 72 of the *Environmental Protection Act 1986*

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		3 of the *Environmental Protection (Unauthorised Discharge) Regulations 2004*. Furthermore, the Licensee is required to report any incident which has caused, is causing, or may cause pollution under section 72 of the *Environmental Protection Act 1986*.	*Environmental Protection (Unauthorised Discharge) Regulations 2004*
Discharge to Land	25	Licence condition 25 has been amended to remove the requirement for discharge water to land to meet a salinity limit of 1800µS/cm. During commissioning of the wash equipment, it was determined that ambient groundwater salinity levels are in excess of this value. Emission description *Emission*: Treated wastewater from vehicle wash areas discharged to land via leach drains in an already disturbed area. *Impact*: Treated wastewater will be highly saline but less saline than ambient groundwater levels. The salinity poses a risk to soil quality and will impact on the ability of vegetation root growth within the discharge impact zone over the long term. *Controls*: The leach drains are located in disturbed, designated areas away from vegetation. It is unlikely revegetation will be established in these areas. Risk Assessment *Consequence*: Insignificant *Likelihood*: Possible *Risk rating*: Low Regulatory Controls No limit is considered necessary for salinity levels in the wastewater discharge to land. The Licensee is not required to continue to monitor salinity in the leach drain discharge. Residual Risk *Consequence*: Insignificant	

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		Likelihood: Possible *Risk rating*: Low	
Water Monitoring programme	26	Licence condition 26 has been amended to remove the requirement to monitor surface water location for SWL at "Surface Location Attachment 1". Surface Location Attachment 1 is a tailings seepage recovery pond and not a bore, and is therefore not suitable for measuring SWL. Water collected in this pond is generated from any seepage or incidental runoff from the TSF walls and pumped back into the TSF. Table 3 has been updated to remove the requirement to measure SWL at this location.	
Works-Water Management Improvement	32 - 37	Refer to Appendix A for DER's risk assessment of the proposed change to premises operation.	

5 Advertisement and consultation table

Date	Event	Comments received/Notes	How comments were taken into consideration
24 June 2016	Proponent sent a copy of draft instrument	_	_
13 July 2016	The Licensee submitted comments on the proposed amendments	The Licensee provided various editorial comments. Suggested minor changes to the wording of condition 24 and condition 36 were recommended.	Editorial comments were accepted, including the inclusion of new maps to clarify the premises boundary, the location of the new water management dams, and to show monitoring locations. Conditions 24 and 36 have been updated.

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

Appendix A

Works - Water Management Improvement

Historic water management practices at the premises have not been adequate to contain contaminated water during high rainfall storm events. Significant volumes of stormwater runoff flow are generated from the 160ha catchment area, both inside and outside the premises boundary that currently feed into the RWD. The RWD is an unlined dam and has a capacity of 13,722m^3. The RWD is also the repository for contaminated tailings return water and process water. Between 2010 and 2015 there were eight overflow events from the RWD following high rainfall, which discharged to the Lake Lefroy catchment. As demonstrated by the data contained in Table 1 below, the capacity of the RWD is insufficient to contain the volume of water it receives and is currently likely to overflow every 1 in 2 Average Recurrence Interval (ARI), 72-hour rainfall event, which is estimated to generate 18,000m^3 of runoff. The Licensee is proposing to improve this situation by creating a diversion channel outside of the premises boundary to restrict the stormwater catchment area flowing into the RWD to approximately 56ha. The predicted volumes of stormwater generated from this smaller catchment area are significantly reduced but indicate overflow from the RWD is still possible to occur approximately every five years. This does not consider water that may already be contained within the RWD, including tailings and process return water.

Table 1: Proposed Storm-Water Runoff

ARI	Current stormwater runoff (m^3)	Proposed Stormwater runoff (m^3)
1:1	8400	7700
1:2	18000	12000
1:5	35100	19000
1:10	50000	25000
1:20	70000	34000
1:50	89800	42000
1:100	120000	54000

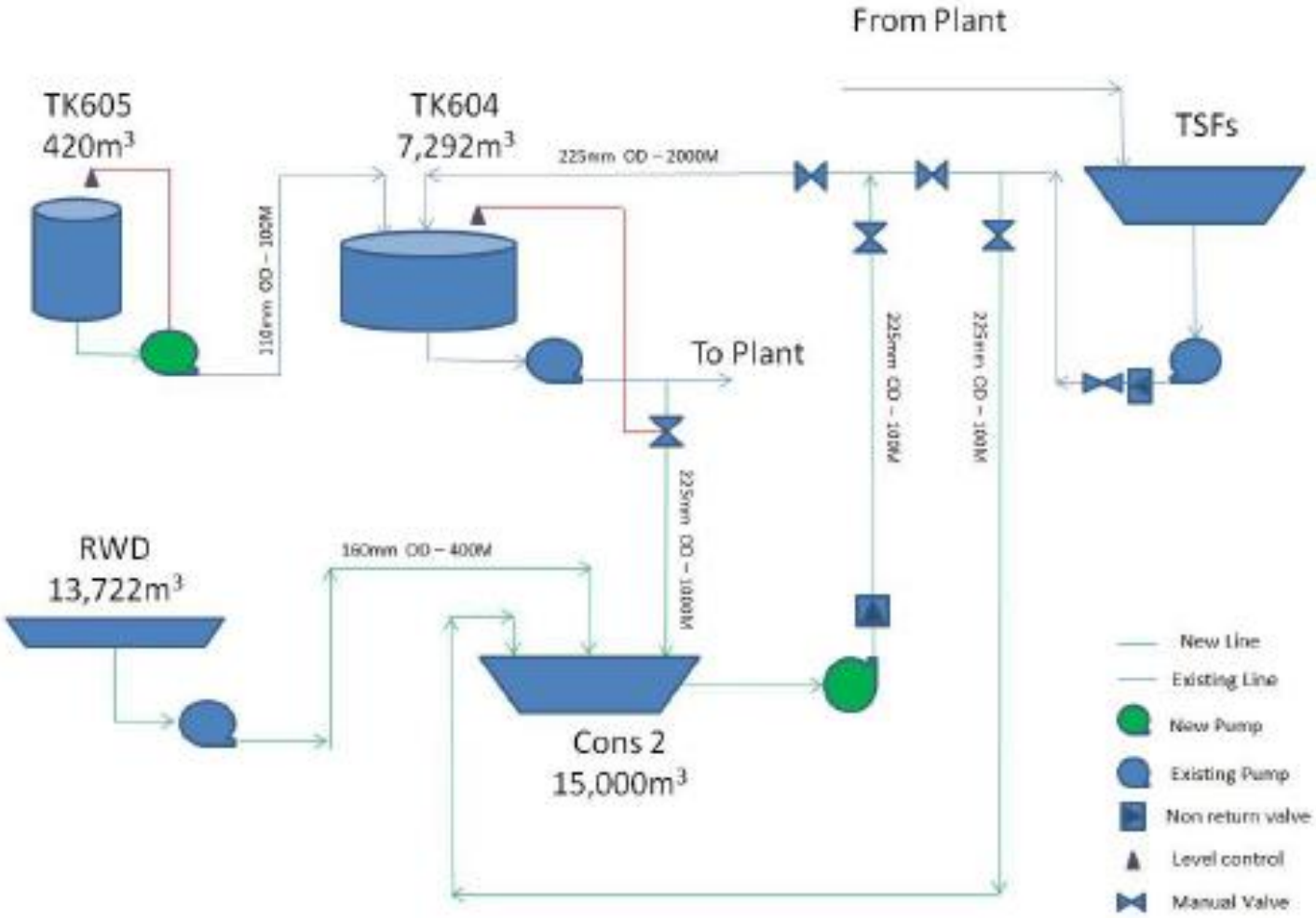
To improve the containment capacity of water at the site, a currently unused dam, the Cons 2 Dam, has been identified as a suitable storage facility for containing contaminated process and tailings return water. The Licensee is proposing to direct any excess process water, and tailings return water to this HDPE lined dam. The Cons 2 Dam has a capacity of 15,000m^3 and will be used so that uncontrolled stormwater runoff will not be diverted into it. This dam will be able to receive excess water from the RWD during future storm events. This will significantly improve the quality of the water stored in the RWD, should it overflow following a high rainfall storm event.

The Licensee proposes to make infrastructure changes to enable the Cons 2 Dam to become operational for the management of water. These are:

- Diversion of the tailing return water pipeline from the current RWD into the Cons 2 Dam;
- Repurpose of the existing RWD pump, to pump water from the RWD into the Cons 2 Dam;
- Installation of a new pump at the Cons 2 Dam to direct process water from the Cons 2 Dam to the concentrator for re-use.

Excess process water currently overflows from tank TK605 to the RWD. Overflow will now be diverted to a process water tank (TK604) which then feeds into the Cons 2 Dam. The proposed works involve the installation of pumps, valves and process water and tailings return lines. A schematic of the proposed changes is provided in Figure 1.

Figure 1: NKC Revised Return Water Management Operating Strategy



The Licensee intends to manage stormwater generated from significant rainfall events by maintaining a capacity of 8500m^3 within the RWD and by pumping up to 12,000m^3 of water from the Cons 2 Dam back into the process. On this basis, the Licensee expects to be able to store approximately 20,500m^3 of potentially contaminated stormwater at any one time between the Cons 2 Dam and the RWD. On the basis of the information provided in this application, the RWD is expected to overflow to the Lake Lefroy catchment area approximately once every five years. The quality of the water is expected to be significantly improved as it will not consist solely of process or tailings return water. The risk of any residual contamination from the overflow of the RWD will be addressed by requiring the company to develop appropriate discharge criteria through the development of a Stormwater Discharge Management Plan.

Stormwater Discharge Management Plan

Emission: Discharge of process water and tailings return water to the environment due to overtopping of the Cons 2 dam, failure of the Cons 2 Dam walls, and seepage through the base of the dam. Discharge of contaminated water from the RWD to the environment.
Impact: Contamination of surrounding land and infiltration of contaminated water into groundwater. Runoff contaminated with metals entering Lake Lefroy through surface and groundwater flow. Potential long-term bioavailability of chemical contaminants to organisms within Lake Lefroy. The discharge of contaminated water leaving the premises may be conveyed over time to Lake Lefroy, which is a salt lake environment with seasonal wet and dry periods. The total load of contaminants received by the Lake is considered an appropriate factor to consider, as some of the metal and metalloid products may remain in a biologically available form for an extended period of time, potentially impacting organisms that inhabit the lake environment.
Controls: Existing management measures include the HDPE lining of the Cons 2 Dam, the containment infrastructure of the TK604 and TK605 tanks, the visual inspections of tailings and return water delivery lines one to three times daily depending on site operations, the maintenance of a minimum 300mm freeboard on storage facilities containing contaminated materials, and the bunding and secondary containment of pipelines and transfer lines, including catch pits at low points. System telemetry is also used to monitor pressure along pipelines to help detect leaks and failures.

Risk Assessment
Consequence: Major
Likelihood: Possible
Risk rating: High

Regulatory Controls:
Condition 34 requires the Licensee to submit a compliance document post completion of the water management improvement works to verify that the works were completed in accordance with the amendment application supporting information.

Condition 35 has been added to the Licence to ensure that the current RWD is converted to a dedicated stormwater storage dam decreasing the likelihood of discharge of contaminated water to the Lake Lefroy catchment area. The completion of these works by 31 August 2016 will enable the risk of future overflow events to the environment to be reduced prior to the commencement of the peak rainfall event season of the summer of 2016/2017.

Condition 36 has been included in the Licence requiring the submission of a Stormwater Discharge Management Plan (SWDMP) by 31 October 2016, prior to the onset of the high rainfall season. The site, as it is currently configured, may not be able to contain the discharge of potentially contaminated stormwater from the site during rainfall events greater than 1 in 5 ARI 72-hour events. The last significant discharge event occurred in 2015. A sediment toxicity assessment is also required to ensure that guideline values are developed that provide an appropriate level of protection of any sensitive receptors that inhabit the lake.

Condition 37 specifies the requirements for the development of site-specific discharge criteria for contaminants based on background concentrations and measures of protection for biological receptors within Lake Lefroy, based on the toxicity assessment methodology contained within the ANZECC and ARMCANZ 2000 Guidelines.

Risk Assessment
Consequence: Major
Likelihood: Possible
Risk rating: High