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Application for Licence Amendment

Part V Division 3 of the Environmental Protection Act 1986

Licence Number	L4513/1969/18
Licence Holder	BHP Iron Ore Pty Ltd
ACN	008 700 981
File Number	DER2013/00183
Premises	BHP Port Operations, Port Hedland
	1 Wilson Street
	PORT HEDLAND WA 6721
	Legal description –
	Nelson Point Lease LGEI123403, Goldsworthy Rail Lease LGE J998591, Finucane Island Loop LGE I126342, Finucane Island Lease LGE J998595, PACE Wharf Lease K693809L, Utah Jild Lease K693814L, Harriet Point Lease K693808, Nelson Point Wharf Lease LGE I123400, Under Harbour Tunnel Lease K693815L, Finucane Island Substation Lease LGE G946533
	As defined by the coordinates in Schedule 1 of the Revised Licence
Date of Report	29 August 2024
Decision	Revised licence granted

MANAGER, PROCESS INDUSTRIES

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

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1. Decision summary

Licence L4513/1969/18 is held by BHP Iron Ore Pty Ltd (Licence Holder) for the BHP Port Operations, Port Hedland (the Premises), located at 1 Wilson Street, Port Hedland WA 6721.

This Amendment Report documents the assessment of potential risks to the environment and public health from proposed changes to the emissions and discharges during the construction and operation of the Premises. As a result of this assessment, Revised Licence L4513/1969/18 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this Amendment Report, the department has considered and given due regard to its Regulatory Framework and relevant policy documents which are available at https://dwer.wa.gov.au/regulatory-documents.

2.2 Application summary

On 10 June 2024, the Licence Holder submitted an application to the department to amend Licence L4513/1969/18 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments are being sought:

- Addition of category 62 solid waste for a requested throughput of 42,000 tonnes per annual period to support the construction and operation of a solid waste handling area;
- Construction and operation of a water treatment plant (including additional infrastructure such as Turkey's nest dam and pipelines); and
- Addition of a new treated water discharge point into Lagoon 1.

No changes to the aspects of the existing Licence relating to Category 5, 35, 58, 61 and 73 have been requested by the Licence Holder.

Under Table 7, Schedule 2 of the Licence, the Licence Holder has approval to construct a new car dumper (CD6) which will require dewatering due to the depth of the excavation. The location of CD6 is at the site of a former oil/water separator system, and as part of the proposed new infrastructure construction works, the Licence Holder has identified that remediation of potentially contaminated groundwater and soil is necessary to be undertaken prior to the main construction works. The location for proposed new infrastructure is detailed in Figure 1.

The Licence Holder has advised that this remediation work is scheduled to take approximately 30 weeks to complete, with the water treatment component expected to be undertaken over a 15-week period.

The activities associated with the remediation of groundwater and soil are detailed in sections 2.3 and 2.5 respectively.

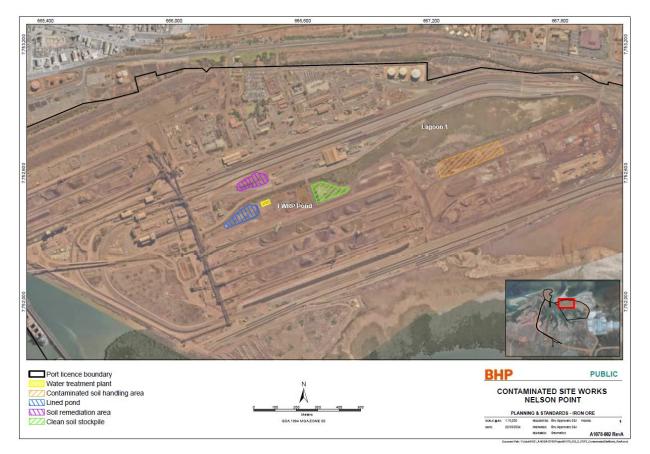


Figure 1: Location of proposed infrastructure

2.3 Site investigation under the *Contaminated Sites Act 2003*.

A detailed site investigation (ERM, 2023), conducted in accordance with the *Contaminated Sites Act 2003* assessed the soil and groundwater quality within both the Upper and Lower aquifers in the vicinity of the proposed works.

This investigation determined the presence of contaminants in the soils (that included Total Petroleum hydrocarbons (TPH), low levels of PFAS, chlorobenzenes and PAHs/metals) in the groundwater (that included TPH, benzene, chlorobenzenes and low levels of PFAS) from historic activity at the premises.

2.4 Water treatment

As noted above, dewatering of groundwater is required to enable excavation of soil for the construction of CD6. This will involve the abstraction of groundwater, storage in a Turkey's nest dam prior to treatment at a Water Treatment Plant. Following treatment to an acceptable output quality, the water will be discharged to the environment into an existing settlement basin at the premises. The water treatment process is detailed in the sections below.

2.4.1 Site hydrogeology

The area of interest is underlain by two aquifers which are separated by mangrove muds of several meters in thickness. Previous investigations have indicated that the site groundwater levels are generally between 2 and 3 meters below ground level (mbgl). The hydraulic conductivities of the upper and lower aquifers are 0.3 to 16 m/day and 3 to 6 m/day respectively. As part of the water treatment plan, the Licence Holder has indicated that abstraction of groundwater will occur in both aquifers

2.4.2 Abstraction and storage of potentially contaminated groundwater

To support construction, water will be abstracted from six pumping bores installed to a depth of 45 m to facilitate removal of potentially contaminated groundwater in and around the historical oily wastewater pond and oily water separator, and seven pumping bores installed to a depth of approximately 17 m to facilitate removal of the potentially contaminated groundwater around the locomotive overhaul workshop area. The Licence Holder has advised the abstraction of groundwater will be conducted in accordance with the *Rights in Water and Irrigation Act 1914* as discussed further in section 2.7.

Pipelines

The Licence Holder has proposed that the pipelines to be constructed between the abstraction bores, the Turkey's nest dam and the Water Treatment Plant will be made from polyethylene (PN) with a pressure rating of PN16 or better allowing the pipes to withstand pressure up to 16 bar. The pipelines will be installed above the ground to allow for routine visual inspection for any potential pipeline leakage or failures.

Oily water separator

The abstracted water will be processed through an Oily water separator (OWS) prior to disposal into the lined storage facility. The OWS and waste (Light Non-Aqueous Phase Liquid) storage tank will be constructed on a liner with bunding directing any spills to the Turkey's nest dam. Liquid waste will be disposed offsite to appropriate licensed facility.

Turkey's nest dam

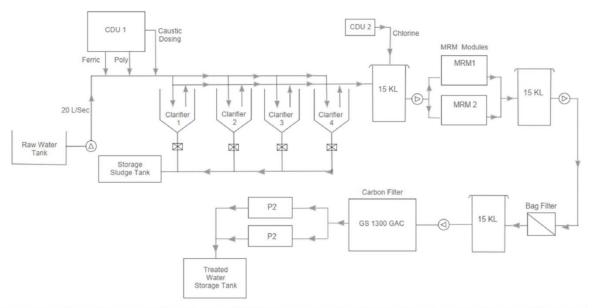
The Licence Holder will construct a lined Turkey's nest dam to store the abstracted water prior to treatment through the Water Treatment Plant. The dam is proposed to have a capacity of 6,000 kiloliters (kL) with an approximate footprint of 6,000 m^2 (which will include all the containment systems). If abstraction volumes are higher than the maximum estimated volume, contingency measures such as reducing dewatering rates will be implemented. The retention time for the abstracted water is expected to range between 70 and 170 hours.

The suspended solids that are deposited in the dam will be left to settle out, and following remediation works, the solids will be tested and any materials that do not meet the beneficial reuse criteria will be temporarily stored on site at the contaminated soil handling area. The beneficial reuse criteria were determined as part of the remediation action plan with considerations of existing human health and ecological based criteria (NEPM, 2013). The criteria are based on the premise that reuse will only occur as backfill into the excavation formed during the works. Once dry, this soil will undergo testing and classification to determine whether reuse is possible, or if the material is required to be transported to a licensed offsite facility.

2.4.3 Water Treatment Plant

After storage in the Turkey's nest dam, the water will be transferred to a Water Treatment Plant (WTP) to treat the water to a quality that is appropriate for discharge into environment. The proposed treatment process will involve a combination of pre-treatment with clarifier and/or media filters to remove suspended solids, and adsorption and/or ion-exchange media design to treat for PFAS, hydrocarbons and other chemicals of concern. The indicative process of water treatment is detailed in Figure 2.

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Notes: CDU = Chemical dosing unit (pre-treatment); MRM = Metals removal module (adsorption/ ion exchange); GAC = Granular activated carbon (adsorption); P2 = Water polishing unit (cartridge filter).

Figure 2: Process of water treatment plant

The footprint area of the WTP will be 800 m^2 and will be constructed on a lined and bunded pad of an area approximately 1,300 m^2 .

The WTP will involve the following infrastructure / equipment:

- 1 x Raw Water Tank;
- 4 x Clarifiers;
- 1 x Storage Sludge Tank;
- 2 x 15 kL storage tanks;
- 2 x MRM (metals removal module) for removal of excess iron;
- 1 x Bag Filter;
- 4 x Granular Activated Carbon (GAC) Filter; and
- 2 x 50kL Treated Water Storage Tanks.

Operation

The Licence Holder has advised that approximately 56,000 to 81,000 kL of water will need to be abstracted. These quantities were calculated based on a groundwater model for the upper aquifer to estimate dewatering rates and volumes, groundwater level drawdown, potential mobilization of contamination from the other remediation areas and layout and design of dewatering system. This model was run off different ground water level scenarios (expected and maximum) and excavation methodologies. The proposed sequential construction methodology will result in a proposed estimated 81,000 kL, however the Licence Holder did note that should the dewatering of the entire excavation be required at once, the volume of dewatering will be higher, and that up to 200,000 kL may need to be treated depending on the hydrogeology of the area. The WTP will be capable of treating 20 L/s.

Following the treatment of the water, if it meets the quality to be discharged, this will occur through a central overflow drain at the proposed L7 discharge point or redirected to be used as process water via the existing Fresh Water Recovery Plant. The Licence Holder has advised that the water treatment will be designed to achieve specific discharge criteria, as reviewed by a DWER-accredited auditor in the water treatment plan.

Prior to discharge to land, the Licence Holder has proposed a commissioning phase to ensure that the WTP is working to the correct specifications. During this phase the treated water will be recirculated into the Turkey's nest dam until the quality output can demonstrate the effectiveness of the WTP.

This is the same for any backwash water (process of reversing the flow of water through the system) from clarification and/or media filtration processes which will be directed to the Turkey's nest dam for re-treatment.

Waste sludge from the operation of the WTP will be dried in bags prior to disposal to offsite licensed facility. The sludge drying area will be located within the main bunded WTP area and additionally bunded, lined and drainage directed to the Turkey's nest dam.

Discharge to land

As noted above, other than possible reuse as process water, the treated water will be discharged to the environment from the WTP to Lagoon 1 by an overflow pipe. Lagoon 1 is a artificial structure located northeast of the site with an estimated surface area of 190,000 m² and receives runoff from much of the premises and acts as a settlement basin. Most of the water entering the lagoon evaporates or infiltrates into the ground.

Lagoon 1 has an approximate capacity of 220,000 kL before the water level reaches the overflow pipe into Lagoon 2, which the Licence Holder has advised has only been observed following significant storm events. Lagoon 2 is connected to the surrounding tidal environment and mangroves.

It is expected that treated water discharge in Lagoon 1 will either infiltrate at an approximate rate of 0.1 m/d or evaporate at an approximate pan evaporation rate of 8 mm/d over the duration of water treatment/discharge.

Lagoon 2 is approximately 1.8 km northeast of the proposed works with an estimated surface area of 67,000 m². It does not have any retention capacity and is perennial and connected to the tidal flats via an underground pipe and therefore, tidally affected.

<u>Monitoring</u>

The Licence Holder has advised that to ensure the WTP is functioning sufficiently, laboratory testing will be undertaken weekly, whilst field water samples and monitoring will occur daily at the L7 discharge location during active discharge. The proposed monitoring is shown in Table 1.

Location	Monitoring parameters	Frequency	Period
Discharge location (L7)	 Flow meter reading (rate and volume) Electrical conductivity pH Total titratable acidity Total alkalinity Dissolved oxygen Redox potential 	Daily	During operation
Discharge location (L7)	 TRH PFOS PFOS + PFHxS PFOA 	Weekly	During operation
Receiving environment locations (Lagoon 1a, Lagoon 1b and Lagoon 2)	 Flow meter reading (rate and volume) Electrical conductivity pH Total titratable acidity Total alkalinity Dissolved oxygen Redox potential TRH PFOS PFOS + PFHxS PFOA 	Fortnightly	1 month before remediation works begins to 1 month after the remediation program ends.
Lagoon 1b	Water level	Hourly using a logger	Throughout remediation program.

Table 1: Proposed monitoring

To manage the higher risk associated with discharge into Lagoon 2, the Licence Holder has proposed that if the water level in Lagoon 1 rises to 0.15 m below the overflow point to Lagoon 2, water sampling frequency will be increased, and the Licence Holder will look to reduce treated water discharge where possible

The Licence Holder has proposed that a two-tier treated water discharge criteria will be implemented, which consists of a "trigger for action" and "threshold limit". The water quality parameters and values associated with these actions are listed in Table 2.

Table 2: Groundwater quality and treatment discharge criteria

Analyte	Maximum concentration at	Lagoon 1 background	LOR	Treated water discharge criteria		
	remediation site	concentration		Trigger for action	Threshold limit	
Physical stressors	and visual criteria					
Total Iron (mg/L)	0.77	0.41	0.05	0.3	1	
Turbidity (NTU)			5	10	20	
Sheen				No visible sheen at discharge point discharge point point		
Hydrocarbons and	l chlorobenzenes (n	ng/L)				
TRH C6-C10 fraction minus BTEX	2.19	<0.02	0.02	0.02	0.45	
TRH >C10-C16 fraction minus	3.47	-	0.1	0.1	0.45	

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naphthalene							
TRH >C16-C34 fraction	7.89	-	0.1		0.45		
TRH >C34-C40 fraction	2.14	-	0.1	0.1	0.45		
Benzene	17.9	<0.005	0.001	0.001	0.07		
Naphthalene	0.183	-	0.005	0.005	0.07		
Chlorobenzene	1.65	<0.005	0.005	0.005	0.055		
1,2- dichlorobenzene	0.038	<0.005	0.005	0.005	0.16		
1,3- dichlorobenzene	0.012	<0.005	0.005	0.005	0.26		
1,4- dichlorobenzene	0.034	<0.005	0.005	0.005	0.06		
Per-and poly-fluor	Per-and poly-fluoroalkyl substances (PFAS) (ug/L)						
PFOS	19.5	0.02	0.002	0.002	0.02		
PFOS + PFHxS	25.6	0.05	0.002	0.002	0.05		
PFOA	0.74	0.02	0.005	0.005	0.02		

The Licence Holder has advised that the proposed threshold levels of PFAS emissions were based on current measured levels found in the receiving environment (Lagoon 1) as well as being set below the Default Guideline Value of 95% species protection, which applies to slightly to moderately disturbed systems (HEPA, 2020). The Licence Holder considers this value to be appropriate, considering that Lagoon 1 is an artificial structure and already acts as a settling pond for process water and has been heavily disturbed. The Licence Holder suggests that it is appropriate for this level of species protection to be applied to Lagoon 1, Lagoon 2 and surrounding estuarine and harbour environment.

The proposed actions associated with the trigger limit exceedances are to increase laboratory testing to three times per week, review of WTP system and change out of the filtration media for the relevant treatment component (for which parameter is exceeded). A threshold limit exceedance will result in immediate ceasing of discharge until the issues are rectified, with the water to be recirculated to the Turkey's nest dam until the sample results demonstrate it is below threshold limits.

2.5 Nelson Point Contaminated Soil Handling Area

The Licence Holder is proposing to construct a soil handling area that will hold excavated soil prior to testing.

The proposed construction footprint is $8,010 \text{ m}^2$ (including containment controls and a runoff collection pond) with a cumulative soil storage volume of $9,530 \text{ m}^3$. The area will be constructed with a liner and boundary windrows to capture stormwater, leachate from damp soil and washwater from the contaminated soil handling area which will all run into the runoff collection pond. Water from this pond will be pumped back to the Turkey's nest dam. The pumps will be installed with high and low level switches to turn pump on and off and will be operated as required.

The approximate volumes of soil to be excavated is 42,000 tonnes, with the estimated volumes of waste (contaminated) soil is approximated to be 23,000 tonnes.

Once the excavated soil is stored at the area, it will be sampled and tested to determine the waste classification. Soils deemed to be contaminated will be excavated and transported offsite to licensed landfills. Soils will be sampled and tested in accordance with the *Landfill Waste Classification and Waste Definitions 1996* to determine classification.

2.6 Contaminated Sites Act 2003

The delegated officer sought out advice from the department's Contaminated Sites (CS) branch during the assessment to review the scope of the application. They have provided the comments below:

- CS is aware of the proposed construction of a new car dumper as part of the site's infrastructure upgrade. It is understood that contaminated soil and groundwater will be remediated before construction (of car dumper) begins;
- CS has confirmed that all matters related to soil and groundwater contamination at the site are being managed under the provisions of the *Contaminated Sites Act 2003*;
- A contaminated sites auditor oversees the investigation and remediation works at the site;
- CS has confirmed with the Licence Holder that the detailed site investigation, remediation
 action plan and water treatment plant have been review by the auditor. A voluntary auditor's
 report will be submitted to the department upon completion of the remediation works;
- Based on the information provided, CS confirms that constructing facilities such as pads, ponds or lagoons to support the remediation of contaminated soil and groundwater is consistent with the provision of the CS Act.

2.7 Rights in Water and Irrigation 1914

The Licence Holder holds a 5C licence GWL210272(1) permitted to abstract up to a total of 230,000 kL across historical oily wastewater lagoon and oily water separator, locomotive overhaul workshop and NP07 areas, which intersects the Pilbara Coastal Saline Aquifer.

3. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guideline: Risk assessments* (DWER 2020).

To establish a Risk Event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises construction and operation which have been considered in this Amendment Report are detailed in Table 3 below. Table 3 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Emission	Sources	Potential pathways	Proposed controls			
Construction						
Dust	Earthworks and construction: • Water Treatment Plant;	Air / windborne pathway	 Construction material will be sprayed with water as required. <u>Existing conditions:</u> Dust monitoring and management actions; 			
Noise	 Turkey's nest dam; and Contaminated soil handling area. 		Trucks operations limited to day shift.			
Operation						
Contaminated Stormwater	Transporting water from abstraction bores to Turkey's nest dam and to WTP;	Pipeline failure	 Constructed with polyethylene (PN) pipes with pressure rating of PN 16 or better; Constructed above ground with routine visual inspections of integrity. 			
	 Storage of potentially contaminated water in Turkey's nest dam; 	 Seepage through Turkey's nest dam; Overtopping of dam; 	 Liner with hydraulic conductivity no greater than 5x10⁻¹¹m/s; and Operated with a freeboard of 500 mm 			
	Treatment of potentially contaminated water in WTP; and	Spills and leaks	Will be constructed on impermeable pad containing a liner and bunding to act as secondary containment.			
Treated contaminated water	Disposal of treated water into unlined pond (Lagoon 1 into Lagoon 2 – connectivity to environment).	Direct discharge into unlined pond.	 Monitoring conducted to confirm WTP performance against trigger levels (daily field monitoring and weekly water sampling for lab analysis from the pipeline from the WTP (post-treatment) to the drain where water flows in Lagoon 1. If sampling shows an exceedance of a trigger levels, then a two-tier management response will be implemented; 			
			 Monitoring and sampling undertaken at Lagoon 1; Water levels of Lagoon 1 monitored using telemetric water level logger; 			
			 In the case of an overflow risk (into Lagoon 2), the water quality sampling frequency will be increased and ability to reduce treated water discharge into Lagoon 1 will be investigated (e.g. reduce the discharge rate). 			
Dust	Storage / handling of contaminated soil	Air/windborne pathway	 Stockpiled material will be sprayed with water as required; Stockpiles will be less than 3 m high; Trucks departing the premises will cover loads of dust materials; Premises speed limits to minimise wheel generated dust will be enforced; Water will be applied to unsealed haul roads as required to minimise generated dust; Remediation works will be managed in accordance 			
			 with existing licence conditions: <u>Existing controls / conditions:</u> Condition 23: dust monitoring; Condition 24: dust trigger criteria Conditions 25-28: trigger management actions 			

Table 3: Licence Holder controls

Emission	Sources	Potential pathways	Proposed controls
(Contaminated) sediment laden		Surface run-off; and	 Excavated material will be stored on an lined pad with conductivity no greater than 5x10⁻¹¹m/s;
stormwater		 Infiltration of contaminated water 	 Drainage will be captured and directed to lined Turkey's nest dam and run through the water treatment plant;
			 Windrows surrounding the contaminated soil handling area will direct stockpile drainage to a lined basin reducing the risk of entering the environment;
			 Routine samples will be conducted on the stockpiled material in line with the landfill waste classification to ensure potentially contaminated soil is appropriately managed; and
Contamination manageme			Contamination management:
			 Equipment will be washed as required to remove contaminated material before leaving the premises; and
			Decontamination procedures will be implemented on vehicle hardstand areas to prevent re-contamination.
Odour	Storage / handling of contaminated soil	Air/windborne pathway	 Stockpiled material identified as odorous will be covered with geotextile, plastic or mulch to reduce emissions;
			 Odorous stockpiles will be removed from the premises as soon as possible following confirmation of testing results; and
			Waste material will be transported directly to a facility licensed to receive that class of waste.

3.1.2 Receptors

In accordance with the *Guideline: Risk assessments* (DWER 2020), the Delegated Officer has excluded employees, visitors and contractors of the Licence Holder's from its assessment. Protection of these parties often involves different exposure risks and prevention strategies, and is provided for under other state legislation.

Table 4 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises (*Guideline: Environmental siting* (DWER 2020)).

Table 4: Sensitive human and environmental receptors and distance from prescribed	
activity	

Human receptors	Distance from prescribed activity
Town of Port Hedland	Located directly north of the prescribed premises and proposed activities. Closest residences are approximately 200 m north of the premises boundary.
Environmental receptors	Distance from prescribed activity
Environmentally sensitive area 7275 (DWER 2023)	Approximately 1 km north of the premises boundary Distance of proposed activities to this PDWSA is sufficient to inform that the project activity impacts are not foreseeable and therefore is not considered further in the risk assessment.
Groundwater	 Groundwater levels dependent on cyclonic events; pH generally neutral to slightly alkaline; low dissolved oxygen (DO) and oxidation reduction potential (ORP); and

	 Electrical conductivity (EC) ranged widely from 1731 μS/cm (brackish) to 35,100 μS/cm (saline);
Surface water Tidal estuarine lagoons flowing into the Indian ocean.	Within prescribed premises boundary.
Acid sulfate soils	Located within prescribed premises – "ASS are unlikely to be disturbed".
	Limited testing (ERM, 2023) indicated that soil to the depths of planned remediation works should be fill material that is unaffected by acid sulfate soils.
	The Licence Holder has advised that the testing will be undertaken in accordance with "Identification and investigation of acid sulfate soils and acidic landscapes (DWER, 2015)".
Threatened and/or priority flora	Within prescribed premises:
	 Gomphrena pusillia (P2); Gymanthera cunninghamii (P3);
	Vegetation surrounding proposed remediation area are:
	 Samphire B. Scattered Avicennia marina shrubs over a low open Tecticorniahalocnemoides subsp. Tenuis, Tecticornia halocnemoides and Trianthema turgidifolia shrubland; and Mangroves. A high closed Rhizophora stylosa and Avicennia marina shrubland.
Threatened and/or priority fauna	Conservation significance recorded in / close to Lagoon 1:
	 Caspian Tern (Sterna caspia) – Migratory; Eastern Osprey (Pandion haliaetus) – Migratory; Grey-tailed Tattler (Tringa brevipes) – P4; and Wood Sandpiper (Tringa glareola) – Migratory.
Aboriginal heritage sites	Works are located within the DPLH boundary for Place ID 11943 – actual site is located > 400 m to the north.
Registered Aboriginal site (Place ID 11943) this site is the 'dithered' boundary for the Nelson Point Protected Area (Place ID 1008)	The Licence Holder has advised that they have conducted consultation with the Kariyarra Traditional Owners through the Kariyarra Aboriginal Corporation PBC prior to the beginning of the works under the scope of this licence amendment.
PDWSA	Approximately 35 km to the southwest of the prescribed premises.
Priority 1 Yule River Water Reserve	Distance of proposed activities to PDWSA is sufficient to inform that project activity impacts are not foreseeable.
	The PDWSA is not considered to be impacted during operations and therefore is not considered in the risk assessment .

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for those emission sources which are proposed to change and takes into account potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the Licence Holder has proposed mitigation measures/controls (as detailed in Section 3.1), these have been considered when determining the final risk rating. Where the Delegated Officer considers the Licence Holder's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the licence as regulatory controls.

Additional regulatory controls may be imposed where the Licence Holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 5.

The Revised Licence L4513/1969/18 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises i.e. water treatment and soil handling.

The conditions in the Revised Licence have been determined in accordance with Guidance Statement: Setting Conditions (DER 2015).

Table 5. Risk assessment of potential emissions and discharges from the Premises during construction and operation

Risk Event					Risk rating ¹	Licence		
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls	C = consequence L = likelihood	Holder's controls sufficient?	Conditions ² of licence	Ju
Construction								
Earthworks and construction: • Water Treatment Plant; • Turkey' nest dam; and • Contaminated soil	Dust	Pathway: air / windborne pathway Impact: Smothering vegetation	Nearby vegetation	Refer to section 3.1.1	C = Slight L = Unlikely Low Risk	Y	Condition 12 [Table 10]: construction requirements – dust suppression <u>Condition 17: ceasing all</u> earth moving and	In addition to th
		Pathway: air / windborne pathway Impact: to human health and amenities	Town of Port Hedland	Refer to section 3.1.1	C = Minor L = Possible Medium Risk	Ν	<u>construction activities</u> Condition 26: Dust monitoring Conditions 27-32: Dust triggers and management actions	construction ac regulatory con during scenari with the require
handling area.	Noise				C = Slight	Y	V	The delegated will not be signi sufficient.
		Pathway: air / windborne pathway Impact: adverse impacts to nearby fauna	Migratory birds	Refer to section 3.1.1	L = Rare Low Risk	Y N/A	N/A	It is noted that t also apply.
Operation								
Storage of potentially contaminated water in		Pathway: seepage through Turkey's nest dam Impact: contamination of groundwater	Groundwater Nearby Surface water receptors (used by migratory fauna)	Refer to section 3.1.1	C = Minor L = Unlikely Medium Risk	Y	Condition 12 [Table 10]: construction requirements - liner	The delegated proposed speci adequate in ma Proposed contr been conditione
Contaminated Water in Turkey's nest dam	Potentially contaminated	Pathway: over topping of Turkey's nest dam Impact: contamination of nearby vegetation and surface water		Refer to section 3.1.1	C = Moderate L = Unlikely Medium Risk	Ν	Condition 18 [Table 14]: operational requirements to operate with a freeboard <u>and</u> <u>daily inspections</u>	The delegated of dam with a free require the dai maintained.
Transporting water from abstraction bores to Turkey's nest dam and to WTP	ing water from hores to Pathway: pipeline failure (us		Refer to section 3.1.1	C = Moderate L = Unlikely Medium Risk	Ν	Condition 12 [Table 10]: construction requirements – material <u>and addition of</u> <u>pressure sensors for</u> <u>automatic leak detection</u> Condition 18 [Table 14]: operational requirements – visual integrity inspection	The delegated of Holder are not so necessary to provide the additional automatic leak within the licer	

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e documented and justified in Table 5. nd soil handling.

Justification for additional regulatory controls the proposed control for dust suppression during activities, the delegated officer will include an additional control to cease earth moving and construction works arios set in existing condition 17 to maintain consistency irements of the licence. ed officer considers that noise emissions during construction gnificant and that the Licence Holder's proposed controls are at the Environmental Protection (Noise) Regulations 1997 ed officer considers that the installation of a liner to the ecifications (hydraulic conductivity no greater than 5 x 10⁻¹¹) is managing risk of seepage of potentially contaminated water. ntrols relating to the construction of the Turkey's nest have oned within the licence. ed officer will condition the proposed controls to operate the reeboard. An additional regulatory control will be added to daily inspection of the freeboard (during use) to be ed officer considers that the controls proposed by the Licence ot sufficient and that additional regulatory controls are prevent the impacts from pipeline failure. nal regulatory control to include pressure sensors for eak detection in the pipelines have been conditioned cence.

Risk Event					Risk rating ¹	Licence		
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls	C = consequence L = likelihood	Holder's controls sufficient?	Conditions ² of licence	Jus
Treatment of potentially contaminated water at WTP		Pathway: Spills and leaks Impact: contamination of nearby vegetation and surface water		Refer to section 3.1.1	C = Moderate L = Unlikely Medium Risk	Y	Condition 12 [Table 10]: construction requirement for bunding	The delegated o requirements wil managing and c
Disposal of treated water into unlined pond (connectivity to environment) Lagoon 1 overflows into Lagoon 2		Pathway: Direct discharge into unlined pond Impact: contamination of groundwater and nearby environment	Groundwater Mangrove and tidal flats environment	Refer to section 3.1.1	C = Moderate L = Unlikely Medium Risk	Y	Condition 35 [Table 6]: discharge monitoring Condition 37: cease discharge during limit exceedances	The delegated o Holder for daily r and that the prop warning system. trigger values an the threshold lim meet the intent o The delegated o water quality at t 2.
Storage of contaminated soil	Dust	Pathway: air / windborne pathway Impact: to health and amenities of sensitive receptors and smothering of nearby vegetation	Nearby vegetation Town of Port Hedland	Refer to section 3.1.1	C = Moderate L = Unlikely Medium Risk	Y	Condition 18 [Table 14]: operational requirements – dust management	The delegated o from stockpiles b suppression on s The delegated o conjunction with actions / triggers will be a short-te on-going dust er Due to these fac additional regula
	Leachate	Pathway: Seepage through handling area and runoff collection pond	Groundwater Nearby Surface water receptors (used by migratory fauna)	Refer to section 3.1.1	C = Minor L = Unlikely Medium Risk	Y	Condition 18 [Table 14]: bunding, lining and contaminated stormwater infrastructure and lining of runoff collection pond	The delegated o handling area to report to a lined back into the Tur
	(contaminated) sediment laden stormwater	Pathway: overtopping of runoff collection pond and surface run off Impact: adverse impact to nearby environment	Nearby vegetation Mangrove and tidal flats environment	Refer to section 3.1.1	C = Minor L = Unlikely Medium Risk	N	Condition 18 [Table 14]: operational requirement for the inspection of the pond	The delegated of for the stormwar confirm it has a freeboard. The also been inclu
	Odour	Pathway: air / windborne pathway Impact: to amenities of sensitive receptors	Town of Port Hedland	Refer to section 3.1.1	C = Minor L = Rare Low Risk	Y	Condition 18 [Table 14]: operational requirements – covering requirements	The delegated o condition to cove sufficient to man

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the Guideline: Risk assessments (DWER 2020).

Note 2: Proposed Licence Holder's controls are depicted by standard text. Bold and underline text depicts additional regulatory controls imposed by department.

ustification for additional regulatory controls

d officer has considered that the lining and bunding will act as secondary containment and be sufficient in d containing risk of emissions.

d officer considers that controls proposed by the Licence ly monitoring and weekly laboratory analysis are sufficient proposed trigger actions will be sufficient to act as an early em. The delegated officer has determined that the proposed and actions will not be conditioned in the licence, however limits and requirements to stop discharge will adequately nt of the control and manage risks to the environment.

d officer has also conditioned the proposed control to monitor at three surface water locations within Lagoon 1 and Lagoon

d officer has conditioned the requirements to manage dust as by minimizing the height to 3 m and the use of dust on stockpiles.

d officer has considered that these proposed controls in rith existing conditions (for dust monitoring and management ers) are sufficient in managing the risk. It is noted that this t-term proposal (approximately 30 weeks) and therefore no t emissions are expected.

factors, the delegated officer has not conditioned any ulatory controls.

d officer has conditioned the proposed controls for the to be lined with windrows/bunding and, surface run off to ed collection pond. Water from this pond will be pumped Turkey's nest dam.

ed officer has included an additional regulatory control water collection pond to be inspected twice daily to s adequate capacity and operated with a 500 mm he requirement to have standby back up pumps have cluded.

d officer has conditioned the Licence Holder's proposed over the stockpiles to control odour. This is considered hanage odour emissions to nearby human receptors.

4. Consultation

Table 6 provides a summary of the consultation undertaken by the department.

Table 6: Consultation

Consultation method	Comments received	Department response 1. The department notes that pest management is not within the scope of the department's assessment. The department suggests that the LGA contact the Licence Holder regarding measures regarding pest matters. The department considers that the controls to manage odour, and the treatment of water will manage some of the concerns surrounding pest management;		
Local Government Authority (Town of Port Hedland) advised of proposal 26 June 2024.	 Town of Port Hedland provided comments on 17 July 2024: The Town of Port Hedland does not object the proposal but has made the following comments and queries: 1. Requests for the Licence Holder's Mosquito Management Plan for treated uncovered water discharge points, in particular Lagoon 1; 2. Requests for the Licence Holder's Remediation Action Plan and Water Treatment Plan together with the Voluntary auditor's Report; 			
	 According to supporting documents, following the remediation works which will take approximately 30 weeks, all infrastructure will be removed and decommissioned: Will there be any demolition works as part of this process? Details on how and where the infrastructure will be disposed of; According to the supporting documents, "waste generated from the Water Treatment Plant will be either dry pallets of filters (approximately 15 pallets per 10,000 kL of treated water) or approximately 35 tonnes per fortnight of waste this waste will be contained and transported to an offsite licensed waste disposal facility. According to supporting documents, the solid materials that do not meet reuse criteria will be temporary stored onsite at the contaminated soil handling area until suitably dry to enable transport to an offsite licensed facility as solid waste: Please confirm the location of the offsite licensed maste disposal facility. 	 The department recommends that the LGA contact the Licence Holder directly regarding those documents; The department notes that demolition works are not considered within the scope of this assessment. Notwithstanding, the general provisions of the EP Act are relevant for all activities on the premises (including demolition), to extent that these activities are not to cause environmental harm or pollution, and that any wastes generated to be removed to an appropriately authorised facility; Conditions on the Licence have been updated to require the disposal of wastes offsite to an appropriately authorised waste facility. It is the responsibility of the Licence Holder to ensure that the wastes facility determined to accept the waste is authorised. See comment above. 		
Registered Aboriginal Corporation (Kariyarra Aboriginal Corporation) advise of proposal 26 June 2024.	None received.	N/A.		
Licence Holder was provided with draft amendment on 12 August 2024.	The Licence Holder provided comments on 23 August 2024. Refer to Appendix 1 for response to comments.	The Licence Holder provided comments on 23 August 2024. Refer to Appendix 1 for response to comments.		

5. Conclusion

Based on the assessment in this Amendment Report, the Delegated Officer has determined that a Revised Licence will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

5.1 Summary of amendments

Table 7 provides a summary of the proposed amendments and will act as record of implemented changes. All proposed changes have been incorporated into the Revised Licence as part of the amendment process.

Condition no.	Proposed amendments		
N/A – Throughout licence	Condition numbering, table numbering and referencing has been updated with the addition of conditions and tables.		
Cover page	Updates to: Remove the duplication of 'ACN'; Addition of Category 62; and New Premises name (for administrative reasons only). 		
New Condition 12	New condition for the additional infrastructure and equipment.		
New condition 13	New condition for the submission of Environmental Compliance Report for the infrastructure constructed under new condition 12.		
New condition 14	New condition for the requirements of the Environmental Compliance Report required by new condition 13.		
Figure 1	Updated Figure1 to show the additional discharge location.		
Figure 11	New Figure to show the location of the proposed site remediation infrastructure.		
Figure 12	New Figure to show the location of monitoring locations within Lagoon 1 and Lagoon 2.		
Figure 13	New Figure to show indicative location of pipelines to carry untreated water through water treatment process.		
Condition 35, Table 6	 Updates to: Addition of new monitoring location L7 with the suite of parameters; and Addition of three monitoring locations within Lagoon 1 and Lagoon 2. 		
New Condition 37	Addition of condition that states the Licence Holder must cease discharge from the WTP to the environment (through L7) if the parameters do not meet the criteria specified in Table 6 and can only begin discharge once the water quality parameters can be confirmed to be below the specified limits in Table 6.		
New Table 10	Construction and installation requirements for the new infrastructure / equipment under the scope of this amendment.		
Schedule 3, Table 11	Addition of new category 62.		
Schedule, Table 12	 Addition of new infrastructure and equipment: line item 16: Contaminate soil handling area; and line item 17: Water treatment plant 		
Schedule 4, Table 14	 Addition of new infrastructure and corresponding operational requirements: line item 8: Water treatment pipelines; line item 9: Turkey's nest dam; line item 10: Water Treatment Plant; line item 11: Nelson Point Water Treatment Plan (discharge point L7); and line item 12: Contaminated soil handling area. 		

Table 7: Summary of licence amendments

References

- 1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
- 2. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
- 3. DWER 2020, Guideline: Risk Assessments, Perth, Western Australia.
- 4. Environmental Resources Management Australia Pty Ltd (ERM) 2023, *BHP Nelson Point New Car Dumper 6, Car Dumper 8, Stockyard X*, Sydney, Australia.
- 5. Heads of the Environmental Protection Authorities (HEPA) 2020, *PFAS National Environmental Management Plan (NEPM) Version 2.0*.
- 6. NEPM (2013), National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013, volume 2, Schedule B1.

Appendix 1: Summary of Licence Holder's comments on risk assessment and draft conditions

Condition	Summary of Licence Holder's comment	Department's response
Condition 35, Table 6, Column 2, Row 21	The Licence Holder is requesting to remove the parameter for flow meter reading (rate and volume) at the three Lagoon locations as these are stagnant water monitoring points, not discharge points and therefore no flow reading can be taken.	The department has approved this change noting that the Licence Holder has proposed to monitor the level of Lagoon 1 and react accordingly.
Condition 35, Table 6, Column 1, Row 2	The Licence Holder request to include a footnote to Column 1 Row 2 to read 'monitoring not required when the sampling point is dry or water is unsafe distance from the sampling location'.	Noted, the department has accepted the requested changes by the Licence Holder.
	This is because the sampling locations in Lagoon 1 and Lagoon 2 are frequently dry and hence unable to be sampled.	
	This note will also specify the minimum and maximum time between fortnightly testing – 'no less than 7 days and no more than 14 days between samples'.	
Condition 35, Table 6, Column 1, Row 2	The Licence Holder confirms that the proposed monitoring location labelled 'lagoon 1a' is the same as the existing discharge location 'L6' and therefore has provided up an updated image to show the location of these monitoring locations.	Noted, the necessary changes have been made to be consistent with this.
Condition 37	The Licence Holder request to insert a new condition that states 'In the even that emissions have ceased as a result of Condition 37, the Licence Holder must demonstrate water quality meets limits below Column 2 of Table 6 of Condition 35 before resuming discharge at the L7 discharge point' to specify when discharge of treated water can resume.	The department accepts the input of this specification and has amended wording of condition 37.
Figure 12	Licence Holder requests to update this figure to new one provided that accurately reflects location of monitoring points and requests that the naming of these points be updated to avoid duplication of names and maintain consistency with nomenclature.	Noted, the figure has been updated and references to monitoring locations corrected.

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Condition	Summary of Licence Holder's comment	Department's response
Table 10, Row 5, Column 3 (b)	The Licence Holder has provided comments on the additional regulatory control imposed that requires 'secondary containment (bunding) with a capacity to maintain the volume between inspections'. The maximum rate of dewatering is expected to be between 20 and 30L/s. At 20L/s secondary containment will need to be able to contain 1,700 kL over a 24-hour period. Installing secondary containment that has capacity to retain that volume of water is considered practically unworkable. Instead, the Licence Holder is proposing to include an automatic leak detection system using pressure sensors that will alert the requirement to shut off the dewatering system.	The department has noted comments made regarding the feasibility of secondary containment and has considered that the alternative control is sufficient to manage the risks associated with pipeline rupture.
Table 12, Row 9, Column 5	Error with formatting in draft that inputted figure.	Noted, and corrections made.
AR section 2.4.3	 Licence Holder requests to make the following corrections: The capacity of lagoon 1 is approximate and the text should reflect this; The current approximate pan evaporation rate is 8mm/d. 	Noted, and corrections made.
AR References	Reference 4 should specify Car Dumper 7 not Car Dumper 8.	Noted, and correction made.

Appendix 2: Application validation summary

SECTION 1: APPLICATION SUMMARY					
Application type					
Amendment to licence	Current licence number: L4513/1969/18				
Date application received	10 June 2024				
Applicant and Premises details					
Applicant name/s (full legal name/s)	BHP Iron Ore Pty Ltd (008 700 981) Mount Newman Joint Venture				
Premises name	BHP Iron Ore Port Hedland Operations Nelson Point and Finucane Island (as per current licence) In the application form: BHP Port Operations, Port Hedland				
Premises location	BHP Port Operations 1 Wilson Street PORT HEDLAND WA 6721 No change from the original prescribed premises.				
Local Government Authority	Town of Port Hedland				
Application documents	·				
HPCM file reference number:					
Key application documents (additional to application form):	 Attach 2 – premises, facilities and location map Shows location of: water treatment plant, contaminated soil handling area, lined pond, soil remediation area and clean soil stockpile; Attach 2B – updated figure to show location of new discharge point (L7); Attach 3C – design drawings for: Turkey's nest dam, water treatment plant footprint, bores and pipeline routes; Attach 2D – design of contaminated soil handling area; Attach 2E – prescribed premises map coordinates; 				
Scope of application/assessment					
Summary of proposed activities or changes to existing operations.	es or changes to As per section 2.2 of this Amendment Report.				

		ed production or capacity		Proposed changes to the production or design capacity (amendments only)
Category 5: processing or beneficiation of metallic or non-metallic ore 155 millio period			per annual	
Category 54: sewage facility	260.9 cub	pic metres	per day	
Category 58: bulk material loading or 330 millio period			per annual	
Category 61: liquid waste facility	8,000 ton	nes per a	nnual period	
Category 62: solid waste depot				42,000 tonnes per annual period "new category to allow for a contaminated soil handling area from which stockpiled soil will be appropriately managed".
Category 73: bulk storage of chemicals etc.	63,336 aggregate		metres in	
gislative context and other approvals				
Has the applicant referred, or do they intend to refer, their proposal to the EPA under Part IV of the EP Act as a significant proposal?			No 🗆	Assessed under Part IV ⊠
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?			No 🗆	Ministerial statement No: 1070 EPA Report No: 1608
Has the proposal been referred and/or assessed under the EPBC Act?			No 🛛	
Has the applicant demonstrated occupancy (proof of occupier status)?			No 🗆	No change to prescribed premises.
Has the applicant obtained all relevant planning approvals?			No 🗆	Iron Ore (Mount Newman) Agreement Act 1964
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?			No 🗆	CPS No: NVCP 7009/3 No clearing is proposed.
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?			No 🖂	No licence required.
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?			No 🗆	Application reference No: 061395 Licenses approved 24 May 2024.
				Name: Pilbara Groundwater Area/Surface Water Area Type: Proclaimed Groundwater Area/Surface Water Area
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?			No 🗆	Has Regulatory Services (Water) been consulted?
				Yes □ No □ N/A ⊠ Regional office: Northwest

Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes 🗆 No 🛛	Name: N/A Priority: N/A Are the proposed activities/ landuse compatible with the PDWSA (refer to <u>WQPN</u> <u>25</u>)? Yes □ No □ N/A ⊠
Is the Premises subject to any other Acts or subsidiary regulations	Yes 🛛 No 🗆	Rights in Water and Irrigation Act 1914 Contaminated Sites Act 2003
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes 🗆 No 🖂	
Is the Premises subject to any EPP requirements?	Yes 🗆 No 🛛	
Is the Premises a known or suspected contaminated site under the <i>Contaminated Sites Act 2003</i> ?	Yes 🗆 No 🗆	