Government of Western Australia
Department of Water and Environmental Regulation

Amendment Report

Application for Licence Amendment

Part V Division 3 of the *Environmental Protection Act 1986*

Licence Number	L7851/2002/6
Licence Holder	BHP Iron Ore Pty Ltd
ACN	008 700 981
File Number	DER2013/000925-1
Premises	Mining Area C Project Legal description – Mining Tenement ML281SA NEWMAN WA 6753 As defined by the coordinates in Schedule 1 of the Revised Licence
Date of Report	12 December 2024
Proposed Decision	Revised licence granted

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SENIOR ENVIRONMENTAL OFFICER, RESOURCE INDUSTRIES
INDUSTRY REGULATION (STATE-WIDE DELIVERY)
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

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1 Decision summary

Licence L7851/2002/6 is held by BHP Iron Ore Pty Ltd (BHP) (Licence Holder) for the Mining Area C Project (the Premises), located at Mining Tenement ML281SA.

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 operation of the Premises. As a result of this assessment, Revised Licence L7851/2002/6 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 25 June 2024, the Licence Holder submitted an application to the department to amend Licence L7851/2002/6 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments are being sought:

Category 6 - Mine dewatering:

- Make the Packsaddle Infiltration Ponds L8, L9 and L10 permanent discharge points and extend the trial for discharge at Points L4 and L5 to 30 June 2026, as these have not been constructed; and
- Remove Discharge Point L17 from Table 14 of the licence as this point was removed in previous licence amendment from 15 March 2021.

Category 63 - Class I inert landfill site:

- Construction of a new inert landfill adjacent to existing Putrescible Landfill Location 2; and
- Remove two inert landfills.

Category 89 - Putrescible landfill:

- Remove the restrictions on trench numbers for Putrescible Landfill Locations 1 and 2 to allow for flexibility in design and replace with maximum dimensions for any one cell in these locations;
- Expansion of the Putrescible Landfill at Location 2 to the north and west; and
- Removal of four putrescible landfills:
  - MAC Rail Loop – landfill has been closed;
  - E Deposit – landfill has been closed;
  - West of the MAC Rail Loop – landfill has been closed; and
  - South Flank – landfill is not required and has not been used.

2.2.1 Category 6 - Mine dewatering - Packsaddle Infiltration Trial – risk assessment

The Packsaddle Infiltration Ponds are ponds with a dimension of 80 meters (m) wide by 500 m long by 0.5 m deep (Figure 1). These ponds were constructed to infiltrate some of the

dewatering water, which was estimated to have an infiltration rate of 250 millimetres per day (mm/day).

Figure 1: Packsaddle Infiltration Ponds

The first Packsaddle Infiltration Ponds trial was approved in licence amendment 29 September 2016 to allow excess mine dewatering water to infiltrate. This trial did not perform as suspected as water was not readily infiltrating.

A second amendment was approved on 07 November 2019, to allow a trial for the overtopping of the Packsaddle Infiltration Ponds via discharge points.

The Packsaddle Infiltration Trial is allowed until 31 December 2024 and consists of:

- 10,950,000 tonnes per Annual Period (discharged to the Packsaddle Infiltration Ponds); and
- 16,425,000 tonnes per Annual Period to Packsaddle discharge Points A (L4) and B (L5).

The Packsaddle infiltration trial surplus scheme weekly discharge volumes can be observed in Figure 2.

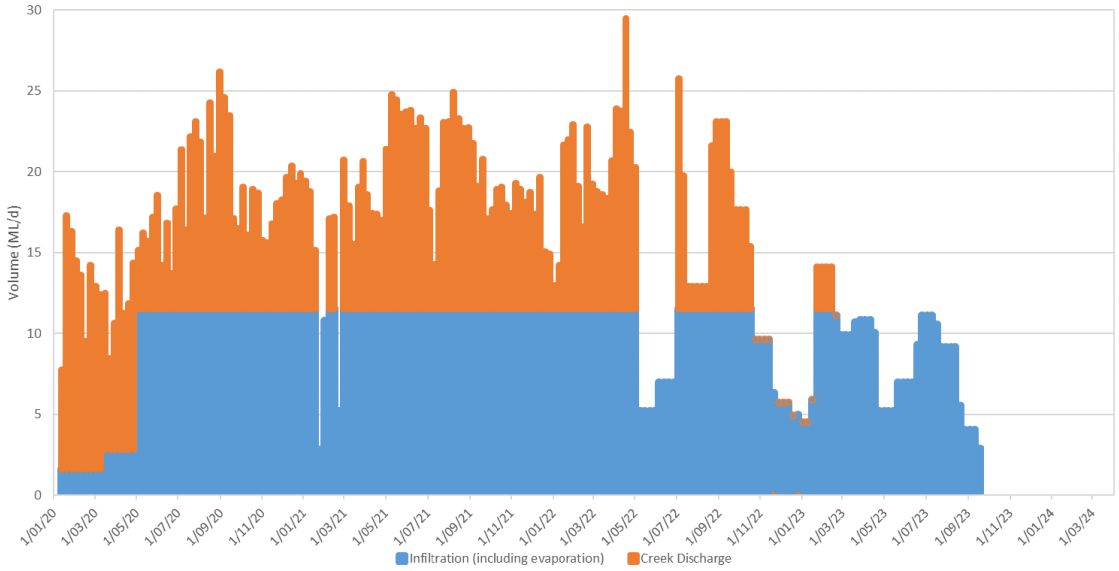

Figure 2: Discharge volumes split into pond infiltration and estimated creek discharge (overtopping) (BHP 2024)

Vegetation health monitoring

The impact on vegetation health is monitored under the licence conditions, where BHP must monitor vegetation health biannually, aiming to assess the impact of the surplus water discharge. Baseline monitoring was developed in 2019 using field and remote sensing data. The results presented in this section are from Astron 2024, which summarised the trial findings.

Monitoring design

The monitoring covers 41 sites in the Runaway Valley survey area. The monitoring design include sites within the inner section and outer section from the projected wetting zone, and reference sites which are outside of the projected wetting zone (Figure 3).

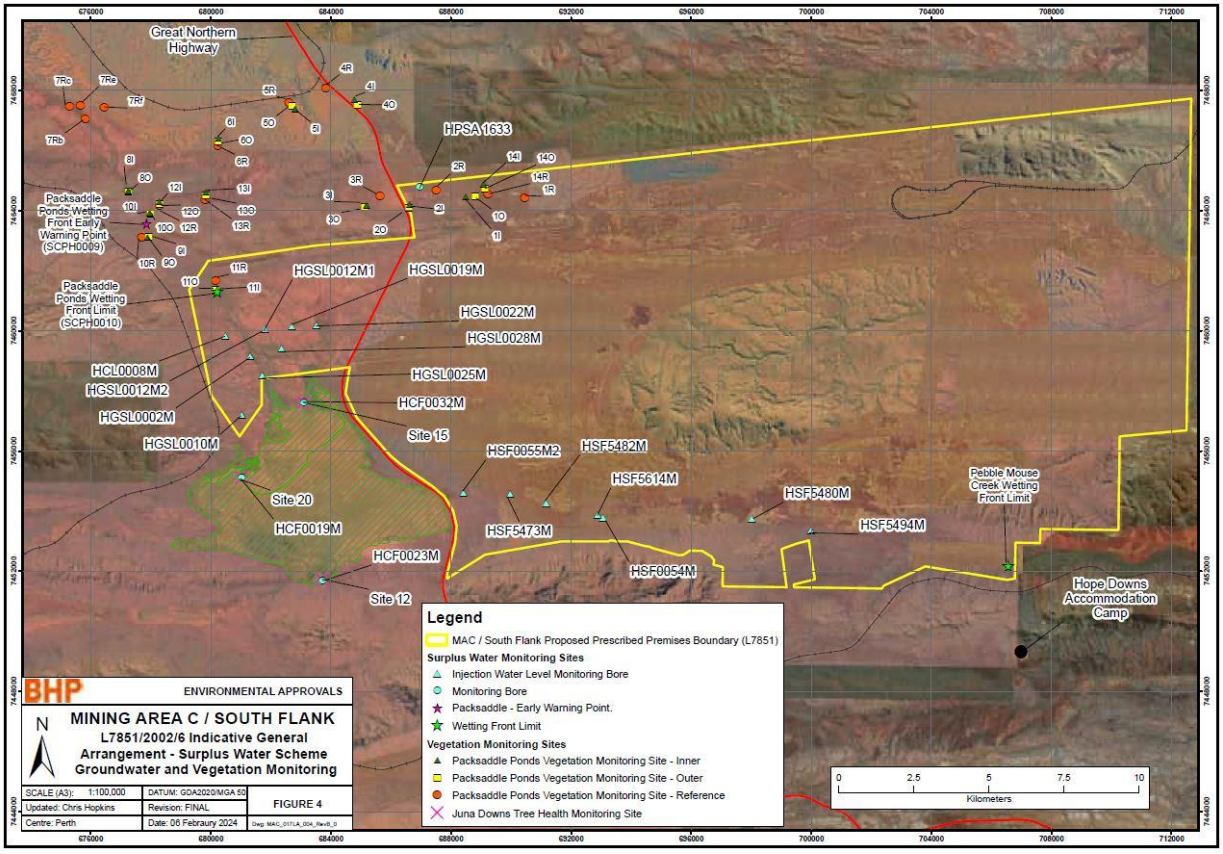

Figure 3: Arrangement – Surplus water scheme groundwater and vegetation monitoring

The sampling design included eight representative trees which are measured for visual health per site. These trees correspond to keystone species *Acacia aneura* (mulga), *Corymbia deserticola*, *Corymbia hamersleyana*, *Eucalyptus camaldulensis*, *Eucalyptus victrix*, and *Eucalyptus xerothermica*.

Additionally, a 20 metre transect was established to monitor keystone species regeneration and weed species richness and cover, where the general site condition is also assessed.

Finally, remote sensing assessment of vegetation condition was conducted using WorldView and Sentinel-2 satellite imagery.

Monitoring results

Monitoring results summary for the Packsaddle Infiltration Ponds trial is provided below:

Survey results

Overall vegetation condition was rated between Very Poor and Excellent at the monitoring sites.

Surface water has been seen in potential impact site 14I, where the site has been inundated

and dominated by Typha sp. (typically aquatic or semi-aquatic native perennial species).

Tree health has declined when compared with baseline period, which has been attributed to waterlogging caused by discharge. In this site five sample trees have died. The surface water and subsequent changes in vegetation were first noticed in June 2020.

New growing plants (regeneration) of key species was present in most of locations but has been declining since the baseline.

Weeds have been recorded at 11 of the 41 sites.

Remote sensing results

The remote sensing results showed changes in mean Modified Soil-Adjusted Vegetation Index (MSAVI), where this index shows the proportion of bare soil and vegetation.

All vegetation has shown increase including *A. aneura* and groundwater dependent vegetation, risk zones (Low and Medium), and reference areas (North-west and Buffer). Nevertheless, there are small clusters showing a vegetation reduction in areas close to the Packsaddle infiltration ponds, which is attributed to reduced surface water after a decrease in discharge.

Mean MSAVI change of tree segments was positive in all zones since baseline for the post-wet season period, except for zone South 2 which was slightly negative.

The April 2024 mean MSAVI values in all zones were not below the baseline MSAVI 1st percentile.

Groundwater and superficial water quality

The licence has superficial and groundwater monitoring conditions, BHP provided the monitoring results (BHP 2024). The superficial monitoring points provided were L8, L9 and L10. The water discharged in the Packsaddle trial is sources from the E Deposit Turkeys Nest, where the discharge water quality is measured. These locations can be found in Figure 4.

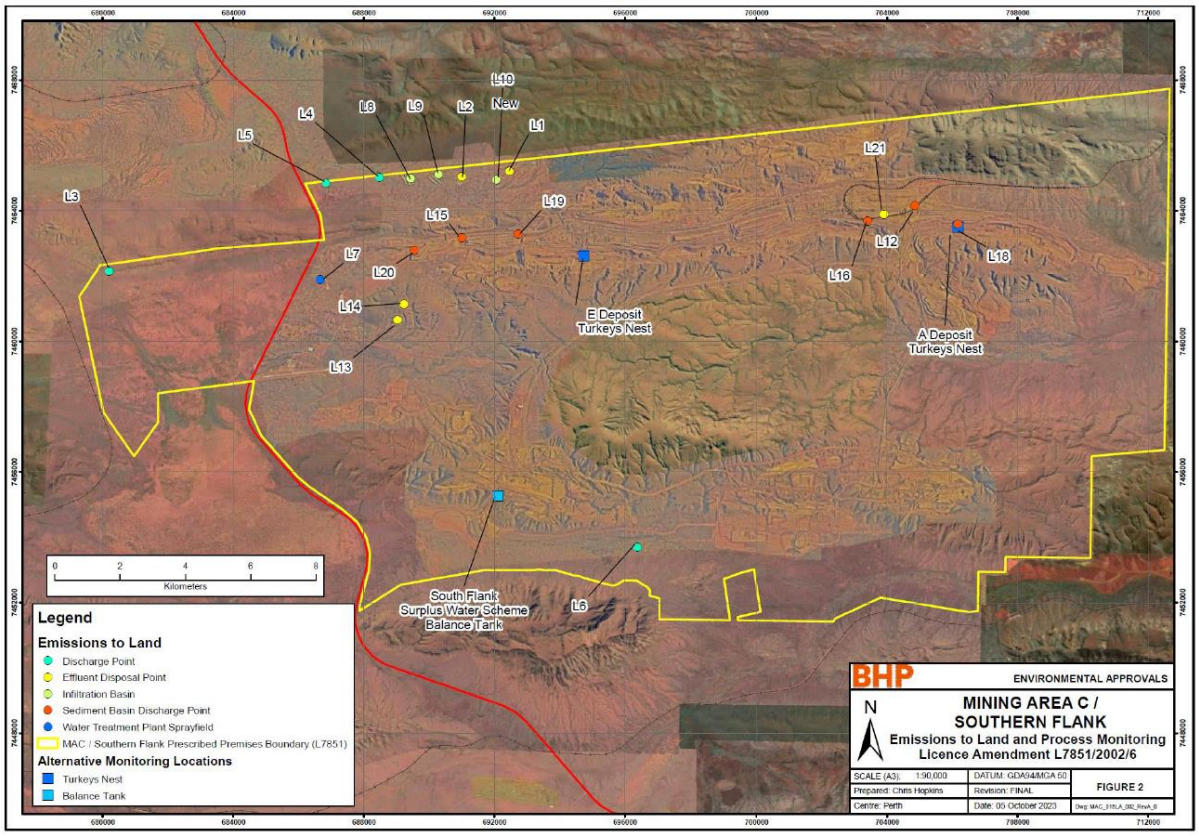

Figure 4: Emissions to Land and Process Monitoring.

The receiving aquifer pH ranged between 7 – 7.5, where the discharge water has a higher pH between 8 – 8.5 (Figure 5).

The electroconductivity (EC) in the receiving aquifer has increase since 2016, with 330 µS/cm to close to 500 µS/cm in 2024, where the EC discharge average 640 µS/cm across all discharge points (Figure 5).

Total dissolved solid (TDS) from the received aquifer is less than 300mg/L before commencement of discharge, where the discharge water has an average of 380mg/L TDS. BHP confirm that the groundwater has gradually increased thought the trial (Figure 5).

Sulphate was higher concentrations in discharge water with a value of 40mg/L where the received aquifer has a value of 18 mg/L (Figure 5).

Sodium, magnesium, chloride, and calcium have all shown similar trends.

Barium concentrations are higher in the receiving aquifer, with concentrations remaining steady through time.

Boron and potassium concentrations are similar in both aquifers.

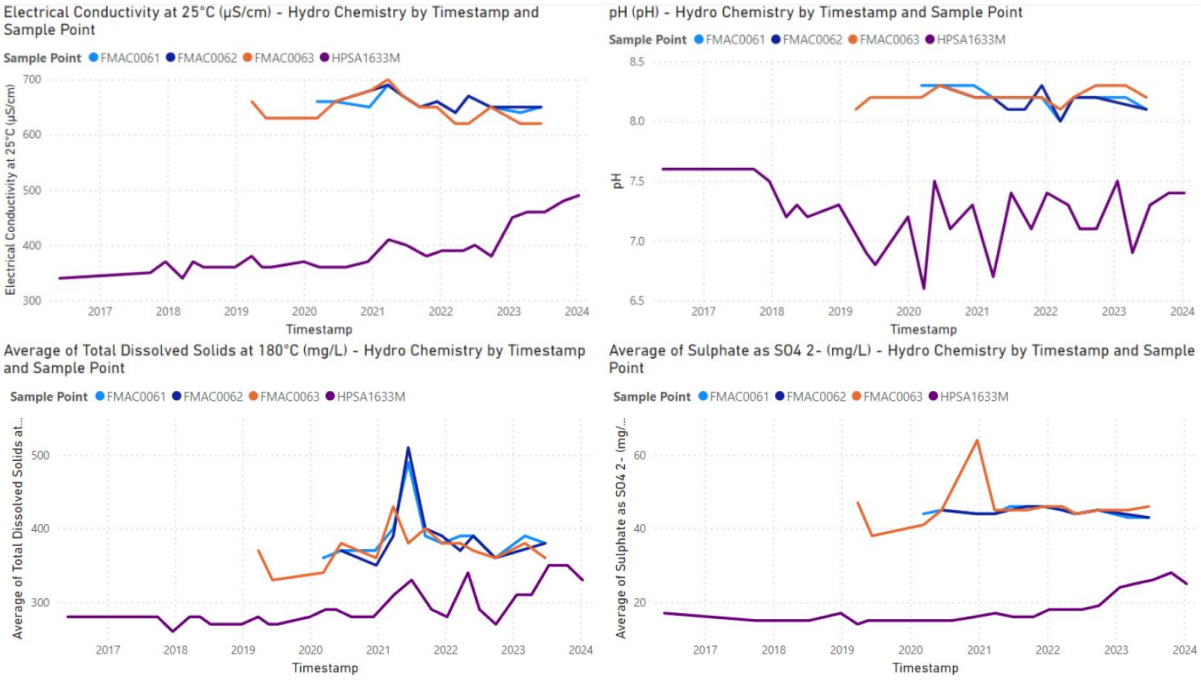

Figure 5: Top: Electrical conductivity and pH of the discharge water (FMAC0061, 62, 63; in licence reference points L8, L9, L10) and the receiving aquifer (HPSA1633M). Bottom: Total dissolved solids and Sulphate as SO_4.

2.3 Part IV of the EP Act

Category 6 – Mine dewatering - Packsaddle Infiltration Trial

The proposal "*Mining Area C - Southern Flank Project*" was referred and assessed by EPA (Report 1610, 2017), and Ministerial Statement 1072 (MS 1072) was granted.

Part of that proposal includes discharging mine dewatering to the environment to allow for mining below the water table. The dewatering methods used are Western Sediment Basin, Central Sediment Basin, Juna Downs, South Flank Managed Aquifer Recharge (MAR), Pebble Mouse Creek and Packsaddle Infiltration Trial.

MS 1072 required to the licence holder to submit a Water Management Plan to the department to achieve the following:

(1) no reduction in the extent of each of the following components of the Coolibah-Lignum Flats Priority Ecological Community occurrence on the Coondewanna Flats:

(a) Coolibah woodlands over lignum over swamp wandiree, or

(b) Coolibah and mulga woodland over lignum and tussock grasses on clay plains, attributable to the Revised Proposal.

(2) no reduction in the extent of the Weeli Wolli Spring occurrence of the Weeli Wolli Spring Priority Ecological Community attributable to the Revised Proposal.

(3) no reduction in the extent of the Ben's Oasis occurrence of the Weeli Wolli Spring Priority Ecological Community attributable to the Revised Proposal.

The surplus water management is to be managed by Part V licence, where is a set of conditions to regulate the maximum discharge for reinjection, discharge in specific areas of the premises and for the Packsaddle Infiltration Trial.

This amendment application includes the application to make permanent the Packsaddle Infiltration Trial discharge points L8, L9 and L10. The Licence Holder provided the results from the vegetation monitoring which was carried under the licence conditions. The risk assessment for the amendment includes the evaluation of the monitoring results that are presented on section 3.3.1.

EPA advice

The department consulted to the Environmental Protection Authority (EPA) regarding the proposed amendment to make permanent discharge points L8, L9 and L10.

The EPA noted that the environmental impacts associated specifically with the Packsaddle Infiltration Ponds were not previously assessed in depth by the EPA, as they considered that the proposal was unlikely to significantly impact overall surface water regimes.

It is noted that these discharge points are unlikely to impact Coondewanna Flats, Weeli Wolli Spring TEC or Ben's Oasis. Nevertheless, in the area around these discharge points, the hydrological regime and vegetation has been altered since the discharge started, but it is unlikely that will be additional negative impact that has not been assessed.

BHP would need to submit a request to amend the proposal if the monitoring data shows different impact to the previously assessed under MS 1072. Additionally, in the case that the effects are negative then BHP should stop discharge and implement remediation actions. As vegetation is likely to become dependent from the discharge, EPA recommended that the monitoring program continues and the actions for response/remediation should be developed to reduce potential negative impacts.

EPA expects that the Central Pilbara Water Resource Management Plan (CPWRMP) will need to be revised in the future to refine the management actions and management targets for the proposal once information regarding mine closure, including cessation of dewatering, at Hope Downs 1 (Rio Tinto) is known.

The CPWRMP does not include specific monitoring or management of environmental values immediate to the discharge points. The closest environmental value that may be impacted, and is required to be protected by MS 1072, is the Coondewanna Flats PEC extent specifically.

2.3.1 DWER vegetation monitoring review

Environmental Water Planning (EWP) advice

Internal advice was sought with the EWP regarding the vegetation monitoring results for the Packsaddle Infiltration Trial.

Monitoring of vegetation health and wetting front during the existing trial has identified that disposal of surplus dewater from infiltration pond discharge points L8, L9 and L10 hasn't impacted on significant receptors including Coondewanna Flats, with impacts localised to the drainage lines in proximity to the discharge points.

EWP does not have any concerns with vegetation monitoring results however recommend that updates to the Licence amendment supporting documentation are made prior to the discharge points being made permanent to ensure impacts to drainage line vegetation and priority flora of Coondewanna Flats are managed. Recommended amendments include:

- Update the environmental risk assessment to consider risk to vegetation of discharge drainage lines and priority flora of Coondewanna Flats as separate risk events; and
- Clarify how management of discharge to alternate between the northern and southern creeklines will be implemented.

Based on the consultation to EPA and EWP, the department agrees to make permanent discharge points L8, L9 and L10.

The department agrees to extend the trial for discharge point L4 and L5 as they have not been constructed.

2.3.2 Category 63 - Class I inert landfill site

The licence holder requested the following amendments to category 63:

- Construct a new inert landfill facility for the disposal of inert waste generated from the mining operations. This facility will be located next to the Putrescible Landfill Location 2 (Figure 7 in licence). This facility will have a footprint of 700m x 500m and a trench maximum design within the footprint with dimensions of 500m long, 25m wide and 2.5m deep;
- This facility will be managed under the licence conditions 1 to 9, 12, 27 and 37, to control risk associated with windblown waste; and
- Remove the existing inert landfill location at South Flank, as this facility was not used and is now part of the South Flank pits.

The department considers that the requested changed to Category 63 are low risk with the current controls in the licence.

2.3.3 Category 89 - Putrescible landfill

The licence holder requested the following amendments to:

- Remove the restriction on trench maximum number for Putrescible Landfill Locations 1 and 2 to allow for flexibility in design and replace with maximum dimensions for any cell in these locations;
- The proposed landfill dimensions were added to the licence;
- Allow expansion of the Putrescible Landfill at Location 2 to the north and west; and
- To remove four putrescible landfills:

- MAC Rail Loop – landfill has been closed;
- E Deposit – landfill has been closed;
- west of the MAC Rail Loop – landfill has been closed; and
- at South Flank – landfill is not required and has not been used.

The department considers that the requested amendments have a low risk with the proposed controls.

2.3.4 Other amendments

The Licence Holder requested to remove emission point L17 (Central Sediment Basin discharge point of excess mine dewater) as this was removed under licence amendment on 18 November 2021. This point was removed because BHP added several discharge points as there was uncertainty regarding where these points will need to be added, and lately they identified that will not need that discharge point as they found an alternative location.

The department removed the emission point in this amendment.

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 operation which have been considered in this Amendment Report are detailed in Table 1 below. Table 1 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Table 1: Licence Holder controls

Emission	Sources	Potential pathways	Proposed controls
Construction (Category 63 and 89)			
Dust	Vehicle movements, earthworks etc.	Air/windborne pathway	Dust control on unsealed roads will be managed via the use of water carts are required.
Noise		Air/windborne pathway	No controls proposed.
Operation			
Category 6 – Mine dewatering			
Mine dewatering water	Operation of Packsaddle Infiltration	Direct discharges via overtopping of the Packsaddle	To protect the Coondewanna Flats Threatened Ecological Communities (PEC):

Emission	Sources	Potential pathways	Proposed controls
	permanent points Extension of trial for discharge point L4 and L5	Infiltration Ponds resulting in scouring, erosion, inundation of vegetation and weeds	Stablished Wetting Front Limit will prevent potential impact on the Coondewanna Flats PEC. Crest gauges fitted with telemetry have been installed at two points along the drainage line located north west of Coondewanna Flats. The first crest gauge acts as an early warning trigger that shows when water is moving towards Coondewanna Flats but is 7 km away from the PEC. When water is detected at this location the discharge will be stopped or moved to the alternate drainage line. A second crest gauge is located 3.75 km upstream of the PEC boundary and is used to confirm that the water hasn't moved the Coondewanna PEC.
		Vegetation (drainage line) loss due vegetation becoming dependent on surface discharge when discharge ceases	To protect local vegetation: Vegetation of the drainage lines is monitored and evaluated to identify any plant stress along the discharge flow path. Should vegetation begin to show significant signs of water stress: 1. Discharge will be changed to the alternative drainage line; 2. Discharge cycles will be reduced in weekly increments to establish a duration that causes low stress. Longer drying periods may also be utilised to determine the effects of an uneven wetting/drying cycle. 3. Points L4 and L5 had been located such that water can be directed to the alternate routes depending on which point is used.
		Increase in groundwater levels and development of a groundwater mound, degradation of receiving aquifer groundwater quality impacting on beneficial uses of the aquifer, vegetation degradation and	The licence has groundwater monitoring bores which monitor groundwater level, Total dissolved solids, and metals and other parameters. This is monitored under condition 29. The bore have a trigger value of 13mbgl and a limit of 8mbgl. Additionally, the water discharged in the Packsaddle Infiltration trial

Emission	Sources	Potential pathways	Proposed controls
		impacts	area is sourced from the E deposit Turkey Nest which water quality is monitored under the licence conditions.
Category 63 - Class I inert landfill site			
Dust	Operation of new landfill	Air/windborne pathway	Dust control on unsealed roads will be managed via the use of water carts are required.
Windblown rubbish			The facility will be managed in accordance with the existing landfill facilities (Conditions 1 to 9, 12, 27 and 37). These conditions will adequately manage potential risks associated with windblown waste from the new facility.
Category 89 - Putrescible landfill			
Direct discharge and leachate	Contaminated stormwater	Via soil and groundwater Groundwater and soil contamination	The proposed putrescible landfill will be managed in the same way as the existing putrescible landfill facilities (Conditions 1 to 9, 12, 27 and 37). Windrows will be maintained along the landfill boundaries to direct stormwater away from the trenches, with perimeter fencing maintained around active landfill trenches.
Dust	Operation of new landfill	Air/windborne pathway	Water carts in unsealed roads. Dust monitoring in place including Mulla Mulla Village dust monitor, dust monitor 1 and 2.
Odour	Putrescible	Air/windborne pathway	Waste will be covered in accordance with the existing putrescible landfill facilities (Condition 5). There are no residential receptors within 2km from premises.
Windblown rubbish	Loose waste that is uncovered and becomes windblown	Loose waste that is uncovered and becomes windblown	The facility will be managed in accordance with the existing landfill facilities (Conditions 1 to 9, 12, 27 and 37).
Stormwater runoff from trenches/Contaminated stormwater	Operation landfill	Overland run-off	Windrows will be maintained along landfill to direct stormwater away from trenches.

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 2 below provides a summary of potential 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 2: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	**Distance from prescribed activity**
Great Northern Highway (visibility issues to traffic)	Within premises boundary
Environmental receptors	**Distance from prescribed activity**
Threatened ecological communities: -Coolibah - Lignum Flats: sub type 2: Coolibah woodlands over lignum (Duma florulenta) over swamp wanderrie (Lake Robinson) Coolibah - Lignum Flats: sub type 1: Coolibah and mulga woodland over lignum and tussock grasses on clay plains (Coondewanna and Wanamunna flats and Mt Bruce Flats)	- Within premises boundary, in area of reinjection bore. - 1.3 km west from discharge points, closest one is discharge points L7 - Coondewanna Flats and Wanna Munna Flats managed under MS 1072
Priority Flora species:	Under Biodiversity Conservation Act, 2016 (BC Act) within premises boundary: *Acacia bromilowiana*: Priority 4; *Aristida jerichoensis var. subspinulifera*: Priority 3; *Aristida lazaridis*: Priority 2; *Eremophila magnifica subsp magnifica*: Priority 4; *Grevillea saxicola*: Priority 3; *Nicotiana umbratica*: Priority 3; *Rhagodia sp. Hamersley*: Priority 3; *Rostellularia adscendens var latifolia*: Priority 3; *Sida sp.* Barlee Range: Priority 3; *Themeda sp. Hamersley Station* (M.E. Trudgen 11431): Priority 3; and *Triodia sp*. Mt Ella (M.E. Trudgen 12739): Priority 3. The expanded area for category 89 has some vegetation that will be required to be cleared. All clearing activities will be undertaken in

	accordance with Ministerial Statement 1072 (BHP 2024a).
Significant fauna species	*Anilios ganei*, (Pilbara Flat-headed Blind-snake): DPaW - **Priority 1**; *Apus pacificus* (Fork-tailed Swift): EPBC Act and BC Act - **Migratory**; *Dasyurus hallucatus* (Northern Quoll): EPBC Act and BC Act - **Endangered**; *Falco hypoleucos* (Grey Falcon) EPBC Act and BC Act - **Vulnerable**; *Falco peregrinus* (Peregrine Falcon): BC Act - **Other specially protected fauna**; *Liasis olivaceus subsp barroni* (Pilbara Olive Python): EPBC Act and BC Act - **Vulnerable**; *Macroderma gigas* (Ghost Bat): EPBC Act and BC Act - **Vulnerable**; *Pseudomys chapmani* (Western Pebble-mound Mouse): DPaW - **Priority 4**; *Rhinonicteris aurantia* (Pilbara Leaf-nosed Bat): EPBC Act and BC Act - **Vulnerable**; and *Underwoodisaurus seorsus* (Pilbara Barking Gecko): DPaW - **Priority 2**.
Stygofauna	Seven species of stygofauna have been recorded in the mounding area although six of these are known or considered to have ranges extending beyond the expected disturbance (Bennelongia 2019). The remaining species, the syncarid *Bathynella sp*. 2 (South Flank), is known from a single hole (SF3016R) east of the Project Area but within the mounding area. This occurrence of this species outside the mounding area cannot be confirmed based on current data. (Source: Supporting documents amendment)
Troglofauna	No restricted troglofauna species have been recorded within or adjacent to the Juna Downs MAR scheme (Bennelongia, 2013). *Prethopalpus sp*. B15: recorded 1.2 km west of the western most extent of the Project mounding; *Prethopalpus julianneae*: recorded 2.2 km west of the western most extent of the Project mounding; *nrAndricophiloscia sp*. B16: recorded 2.1 km east of the eastern most extent of the Project mounding; Parajapyidae 'DPL024': recorded 3.4 km east of the eastern most extent of the Project mounding. (Source: Supporting documents amendment)
Groundwater	Hamersley – Fractured Rock Aquifer. The groundwater level is approximately 70 mbgl at licence monitoring bore HPSA1633M (near to the Packsaddle Infiltration Ponds area for points L4, L5, L8, L9, L10). The groundwater level is approximately 29 mbgl at Location 2 Putrescible Landfill Expansion location and near to the proposed new inert landfill.
Surface water	Several unnamed perennial watercourses flow across the Prescribed Premises.

	Putrescible Landfill Expansion - non perennial drainage line is approximately 100 m south.
Aboriginal Cultural Heritage Register	Approximately 158 sites within the premises boundary, including rock shelters and modified trees

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 3.

The Revised Licence L7851/2002/6 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises i.e. dewatering activities.

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

Table 3. Risk assessment of potential emissions and discharges from the Premises during construction and operation

Risk Event					**Risk rating[1]** **C = consequence** **L = likelihood**	**Licence Holder's controls sufficient?**	**Conditions[2] of licence**	**Justification for additional regulatory controls**
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence Holder's controls**				
Construction								
Category 63 – new inert landfill	Dust	Air/windborne pathway causing decreased visibility in the highway	Great Northern Highway (more than 2 km away)	Refer to Section 3.1	C = Slight L = Possible **Low Risk**	Y	N/A	N/A
Category 89 – expansion landfill at Location 2 to the north and west	Dust	Air/windborne pathway causing decreased visibility in the highway	Great Northern Highway (more than 2 km away)	Refer to Section 3.1	C = Slight L = Possible **Low Risk**	Y	N/A	N/A
	Noise	Air/windborne pathway causing disturbance to wildlife	Fauna including Ghost Bat, Pilbara Leaf-nosed Bat.	No control proposed	C = Slight L = Possible **Low Risk**	Y	N/A	N/A

Risk Event					Risk rating[1] C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions[2] of licence	Justification for additional regulatory controls
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence Holder's controls**				
			The closest bat cave is 3km north west of this location.					
Operation								
Category 6 – Mine dewatering								
Operation of Packsaddle Infiltration permanent points	Mine dewatering water	Priority flora (Coondewanna Flats) ecosystems: Direct discharges via overtopping of the Packsaddle Infiltration Ponds resulting in scouring, erosion, inundation of vegetation and weeds	Vegetation including but not limited to *Corymbia hamersleyana*, *Acacia aptaneura*, *Rhagodia sp*, *Corymbia hamersleyana*, *Eucalyptus victrix*, *Eucalyptus camaldulensis*, *Corymbia deserticola*.	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y	Condition 21, Table 12 Emission limits to land requires wetting front limit Condition 31, Table 19 Monitoring of Packsaddle Infiltration Ponds Vegetation Monitoring Program requires Vegetation Monitoring Program and triggers	N/A
		Impacts to vegetation in the discharge drainage lines: Direct discharge causing changes in root system as plants become dependent in higher water regime. Deeper roots may be not able to function in	Vegetation including but not limited to *Corymbia hamersleyana*, *Acacia aptaneura*, *Rhagodia sp*, *Corymbia hamersleyana*, *Eucalyptus victrix*, *Eucalyptus camaldulensis*, *Corymbia*	Refer to Section 3.1	C = Moderate L = Possible **Medium Risk**	N	Condition 1, Table 1, maximum volume discharge. Condition 21 and 26, limit of wetting front. Condition 31, Table 19 Monitoring of Packsaddle Infiltration Ponds Vegetation Monitoring Program requires Vegetation Monitoring Program and triggers	N/A

Risk Event					Risk rating[1] C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions[2] of licence	Justification for additional regulatory controls
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence Holder's controls**				
		post flood environment, causing plants mortality	*deserticola*.					
		Increase in groundwater levels and development of a groundwater mound, degradation of receiving aquifer groundwater quality impacting on beneficial uses of the aquifer, vegetation impacts	Groundwater Vegetation including but not limited to *Corymbia hamersleyana*, *Acacia aptaneura*, *Rhagodia sp*, *Corymbia hamersleyana*, *Eucalyptus victrix*, *Eucalyptus camaldulensis*, *Corymbia deserticola*.	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y	Condition 25, Table 13 Monitoring of point source emissions to groundwater requires groundwater level monitoring Condition 26, Table 14 Monitoring of emissions to land requires quality monitoring Condition 28, Table 16 Ambient groundwater limits requires groundwater depth limit Condition 29, Table 17 Monitoring of ambient groundwater quality requires ambient groundwater	N/A
Operation (Category 63 - Class I inert landfill site)								
Category 63 – new inert landfill	Dust	Air/windborne pathway causing: Impacts ecosystem health smothering of vegetation Decreased visibility in the highway	Vegetation Great Northern Highway	Refer to Section 3.1	C = Slight L = Possible **Low Risk**	Y	N/A	N/A
	Windblown waste	Air/windborne pathway causing	Native Vegetation	Refer to	C = Slight	Y	Condition 7 - Landfill cover	N/A

Risk Event					Risk rating[1] C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions[2] of licence	Justification for additional regulatory controls
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence Holder's controls**				
		impacts to ecosystem health	Local fauna	Section 3.1	L = Possible **Low Risk**		requirements Condition 9 – Requirement to maintain windblown waste within tipping area Condition 12 - Perimeter fencing	
Operation (Category 89 - Putrescible landfill)								
Category 89 – expansion landfill at Location 2 to the north and west	Direct discharge and leachate	Seepage to groundwater changing groundwater quality	Groundwater (groundwater level is approximately 29 mbgl)	Refer to Section 3.1	C = Slight L = Rare **Low Risk**	Y	N/A	N/A
	Dust	Air/windborne pathway causing impacts to ecosystem health	Vegetation Great Northern Highway	Refer to Section 3.1	C = Slight L = Possible **Low Risk**	Y	N/A	N/A
	Odour	Air/windborne pathway	There are no residential receptors within 2km from premises.	Refer to Section 3.1	C = Slight L = Rare **Low Risk**	Y	N/A	N/A
	Windblown waste	Air/windborne pathway causing impacts to ecosystem health	Native Vegetation Local fauna	Refer to Section 3.1	C = Slight L = Possible **Low Risk**	Y	Condition 7, Table 5 Cover requirements requires landfill cover requirements Condition 9 requires maintenance of windblown waste within tipping area Condition 12, Table 7 Infrastructure to be constructed requires perimeter fencing	N/A

Risk Event					Risk rating[1] C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions[2] of licence	Justification for additional regulatory controls
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence Holder's controls**				
	Stormwater runoff from trenches/Contaminated stormwater	Overland run-off Causing contamination / ecosystem impacts	Native Vegetation Non perennial drainage line at approximately 100 m south	Refer to Section 3.1	C = Minor L = Unlikely **Medium Risk**	Y	Condition 2, Table 2 Infrastructure and equipment requirements requires windrows to be maintained to deviate stormwater Condition 12, Table 7 Infrastructure to be constructed requires landfill construction design where windrows are maintained along landfill boundaries to direct stormwater away from the trenches	N/A

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.

4 Consultation

Table 4 provides a summary of the consultation undertaken by the department.

Table 4: Consultation

Consultation method	Comments received	Department response
Environmental Protection Authority was provided the application documents on 29 August 2024	Advice can be found in Section 2.3	Noted
Environmental Water Planning was provided the application documents on 16 October 2024	Advice can be found in Section 2.3.1	Noted
Licence Holder was provided with draft amendment on 02 December 2024	Licence Holder replied on 05 December 2024 Refer to Appendix 1	Licence Holder replied on 05 December 2024 Refer to Appendix 1

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 5 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.

Table 5: Summary of licence amendments

Condition no.	Proposed amendments
Licence history	Current amendment added.
1 – Table 1	Reference to Packsaddle Infiltration Trial updated to Packsaddle Infiltration Project, adding reference to trial for discharge Points A (L4) and B (L5).
2 – Table 2	Infrastructure location updated for Conveyor MC314, System D, C50K Biomax WWTP and Irrigation Area, Landfills, South Flank MAR Scheme and Discharge Point A and B. Addition of a new Inert landfill. Specification of two putrescible landfills and modification of previous condition referring to the amount of landfill trenches, to a general design indication.
11 – Table 6	Specification of the Packsaddle Infiltration Ponds trial for discharge points L4 and L5. Removal of trial reference for Packsaddle Infiltration Ponds overtopping L8, L9 and

	L10. Treated Oily Water Ponds requirement changed by removing the HDPE lined requirement. Hydrocarbon remediation cell added.
12 – Table 7	Construction specification for Inert Landfill and the two new putrescible landfill.
18 – Table 9	Note 2 added regarding alternative sampling in case that a monitoring bore is unable to be sampled
25 – Table 13	Note 3 added regarding alternative sampling in case that a monitoring bore is unable to be sampled. Note 4 added to clarify that water quality monitoring parameters are for dissolved ions.
26 – Table 14	Removal of emission point L17. Note 2 added to clarify that water quality monitoring parameters are for dissolved ions.
29 – Table 17	Note 3 added to clarify that water quality monitoring parameters are for dissolved ions. Chlorine changed to Chloride.
31 – Table 19	Monitoring vegetation program extended from 31 December 2024 to 30 June 2026.
33	Condition corrected by deleting extra numeration.
38 – Table 22	Outcomes of the Packsaddle Infiltration Ponds Overtopping trial updated to reflect that L4 and L5 are still under trial.
Schedule 1	Figures updated and reorganised.

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. BHP Iron Ore Pty Ltd (BHP) 2024a, MAC Licence Amendment June 2024 Supporting document, Perth, Western Australia (A2291160 – Application and Supporting Documentation).
5. Astron 2024*, Runaway Valley Vegetation Monitoring Program Annual Report - Version 2* – Report reference 2400-001-23-EOSR-1RevA_240628 (REF: DWERDT988205).
6. Environmental Protection Agency (EPA) 2024 - Memorandum - EPAS Response to Part V_MAC L7851_2002_6 (REF: DWERDT1021346).
7. Environmental Water Planning 2024 – Memorandum - L7851 BHP Mining Area C Packsaddle Infiltration Ponds Discharge Points Vegetation Monitoring (REF: DWERDT1021350).
8. BHP Iron Ore Pty Ltd (BHP) 2024b, RE: PROPOSED AMENDMENT TO LICENCE L7851/2002/6 - APPLICATION#APP-0026051 05/12/2024, Perth, Western Australia (A2330084 – reply to 21 days comments).
9. BHP Iron Ore Pty Ltd (BHP) 2024c, RE: PROPOSED AMENDMENT TO LICENCE L7851/2002/6 - APPLICATION#APP-0026051 09/12/2024, Perth, Western Australia (DWERDT1047829 – reply to comments in 21 days letter).

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

Condition	Summary of Licence Holder's comment (BHP 2024b and BHP 2024c)	Department's response
Schedule 1	To update maps with figures provided	The department agreed with most of proposed changes. The department has maintained the premises boundary where all infrastructure appears for reference.
NA	Monitoring bore HCL0008M is damaged, Licence Holder requested to add note to monitor groundwater using associated rejection bore.	The department changed accordingly.
NA	Licence Holder requested changes in Tables 13, 14 and 17 to specify that the water quality monitoring parameters are for "dissolved ions.	The department changed accordingly.
11 - Table 6	Licence Holder requested changes in construction requirement for Treated Oily Water Ponds, to remove the HDPE lining, as they could use other alternatives. Licence Holder requested to add Hydrocarbon remediation cells to the condition.	The department changed accordingly.
NA	The department asked why alternating discharge between north and south drainage lines has not been occurring? Licence Holder confirmed that the discharge between the north and south drainage has not been occurring because there has been insufficient discharge to reach the point where the pathways diverge.	Noted.
NA	The department asked how management of discharge to alternate between the northern and southern creek lines will be implemented? The Licence Holder clarified that the water discharge can be managed by alternating the route, depending on which point is used.	Noted.
NA	The department requested to the Licence Holder to provide Mine Closure Plan (MCP) for mine dewatering discharge detailing how vegetation impacts will be minimised. The Licence Holder said that the Central Pilbara Water Resource Management Plan associated with the scheme, details how these impacts are managed. The impact from ponds is seen as minor and restricted and	Noted.

Condition	Summary of Licence Holder's comment (BHP 2024b and BHP 2024c)	Department's response
	were not included in the MCP. They will review the results from the trial from L4 and L5 and then they will update the MCP.	
NA	The department requested information regarding the distance from known bat caves and proposed controls. The Licence Holder stated that the closest bat cave is 3km north west of this location. They did not propose additional controls as there are active mining operations between the landfill and the caves so landfill construction noise should not cause any significant additional noise issues.	Noted and information added to Table 3.
NA	The department requested further controls for the Packsaddle Ponds. The Licence Holder has stated that there are there are no significant impacts associated with this scheme operating at 30 ML/day and the potential wetting front of this facility and, therefore, BHP does not propose to introduce any further controls beyond the current controls being: • limit to volume discharged (Condition 1); • Wetting front limits (Condition 21 and 26); • Limit of on groundwater mounding at HPSA1633 (Condition 28); and • Vegetation health monitoring (Condition 31).	Noted and information added to Table 3.