Government of Western Australia
Department of Water and Environmental Regulation

Amendment Notice #1

Licence Number	L5415/1988/9
Licence Holder	BHP Billiton Iron Ore Pty Ltd
ACN	008 700 981
File Number:	DER2013/000900
Premises	Wheelarra Hill (Jimblebar) Iron Ore Mine Tenements L52/109, L52/163, I126948, AM70/266 and ML244SA NEWMAN WA 6753 as depicted in Schedule 1
Date of Amendment	**27/08/2018**

Amendment

The Chief Executive Officer (CEO) of the Department of Water and Environmental Regulation (DWER) has amended the above Licence in accordance with section 59 of the *Environmental Protection Act 1986* (EP Act) as set out in this Amendment Notice. This Amendment Notice constitutes written notice of the amendment in accordance with section 59B(9) of the EP Act.

Date signed: 27 August 2018

Alana Kidd

Manager, Resource Industries

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

Definitions and interpretation

Definitions

In this Amendment Notice, the terms in Table 1 have the meanings defined.

Table 1: Definitions

Term	Definition
AACR	Annual Audit Compliance Report
ACN	Australian Company Number
AER	Annual Environment Report
Amendment Notice	refers to this document
Category/ Categories/ Cat.	categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department Administering the *Environmental Protection Act 1986* Locked Bag 33 Cloisters Square PERTH WA 6850 info@dwer.wa.gov.au
CS Act	*Contaminated Sites Act 2003* (WA)
Delegated Officer	an officer under section 20 of the EP Act
Department	means the department established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V, Division 3 of the EP Act.
DWER	Department of Water and Environmental Regulation
EPA	Environmental Protection Authority
EP Act	*Environmental Protection Act 1986* (WA)
EP Regulations	*Environmental Protection Regulations 1987* (WA)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
Existing Licence	The Licence issued under Part V, Division 3 of the EP Act and in force prior to the commencement of and during this Review

GL GL/a	Gigalitres Gigalitres per annum
Licence Holder Licensee	BHP Billiton Iron Ore Pty Ltd
MAR	Managed Aquifer Recharge
m^3	cubic metres
ML	Megalitres
Minister	the Minister responsible for the EP Act and associated regulations
MS	Ministerial Statement
mtpa	million tonnes per annum
NEPM	National Environmental Protection Measure
Noise Regulations	*Environmental Protection (Noise) Regulations 1997* (WA)
Occupier	has the same meaning given to that term under the EP Act.
Prescribed Premises	has the same meaning given to that term under the EP Act.
Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report
RSS	Rising Stage Sampler – used for sampling of suspended sediments during periods of intermittent stream flow
Risk Event	as described in *Guidance Statement: Risk Assessment*
UDR	*Environmental Protection (Unauthorised Discharges) Regulations 2004* (WA)

Amendment Notice

This amendment is made pursuant to section 59 of the *Environmental Protection Act 1986* (EP Act) to amend the L5415/1988/9 issued under the EP Act for a prescribed premises as set out below. This notice of amendment is given under section 59B(9) of the EP Act.

This notice is limited only to an amendment of Categories 5, 6, 64 and 73 plus amendment of specific monitoring locations and minor administrative changes.

The following guidance statements have informed the decision made on this amendment*:*

- *Guidance Statement: Regulatory Principles (July 2015)*
- *Guidance Statement: Setting Conditions (October 2015)*
- *Guidance Statement: Land Use Planning (February 2017)*
- *Guidance Statement: Licence Duration (August 2016)*
- *Guidance Statement: Decision Making (February 2017)*
- *Guidance Statement: Risk Assessment (February 2017)*
- *Guidance Statement: Environmental Siting (November 2016)*

Amendment description

On 1 November 2017, the Licence Holder submitted an application to amend the Wheelarra Hill (Jimblebar) Iron Ore Mine licence L5415/1988/9. The Licence Holder applied for the following changes:

- Increase Category 6 throughput to 37.735 gigalitres per annum (GL/a) to allow for:
    - the disposal of an additional 6.935 GL/a of surplus water from the Wheelarra Hill (Jimblebar) mining operations to Ophthalmia Dam as detailed in works approval W6042/2017/1; and
    - the disposal of an additional 7.3 GL/a of surplus water associated with the construction of up to six additional reinjection bores at Orebody 18.
- Increasing Category 64 capacity to 15,000 tonnes per annual period to allow for the:
    - disposal of conveyer belts to a rubber dump; and
    - operation of the Wheelarra Inert landfill (as detailed in Works Approval 5638/2014/1).
- Increase Category 73 volume to 5,000m^3; to allow flexibility in hydrocarbon storage within the boundary of L5415/1988/96.
- Remove all monitoring requirements for Jimblebar Managed Aquifer Recharge (MAR) groundwater monitoring bore HSJ0169 and replace with groundwater monitoring bore SJ0571RM.
- Remove existing rising stage sampler locations JBSW003, JBSW006, JBSW007 and JBSW008 and replace them with two new rising stage sampler locations JBSW009 and JBSW010.
- Three administrative changes to the licence:
    - Increase the volume of nutrient rich water in Table 1.2.4 from 400,000 L to 4,000,000 L to correct an administrative error that had been identified by the Licence Holder from a previous licence amendment.
    - Update Table 1.2.6 to remove completed construction requirements (as advised

by DWER during May 2017 inspection); and

- Replace the L2 reference to L1 in Table 4.2.1 to correct a reference error.

On 23 November 2017, the Licence Holder submitted a request to include an additional amendment to L5415/1988/9. This change is as follows:

- Inclusion of a third rising stage sampler location, JBSW011, which is designed to pick up any high sediment levels leaving site from the Orebody 31 discharge point.

On 3 January 2018, the Licence Holder submitted an application to include an additional amendment to L5415/1988/9. This change is as follows:

- Increase the Jimblebar (Wheelarra Hill) Category 5 premises design capacity by 7 Mtpa to 65 Mtpa (this will take the Licence to a full new design capacity of 82Mtpa as the licence includes Jimblebar and Orebodies [OB's] 17, 18 and 31).

On 20 March 2018, the Licence Holder advised that they wished for rising stage sampler JBSW003 to remain at its current licensed location (within Copper Creek) as it is:

- Approximately 250m upstream of the discharge point to Copper Creek;
- Accessible following wet weather events; and
- Sufficiently upstream to provide a background reading prior to the discharge point.

An updated Figure 2 which includes JBSW003 was also provided at this time.

This Amendment Notice is a combined assessment for all the amendments outlined above as applied for by the Licence Holder on 1 November 2017, 23 November 2017 and 3 January 2018.

Table 2 below outlines the proposed changes to the Licence categories.

Table 2: Proposed throughput capacity changes

Category	Current throughput capacity	Proposed throughput capacity	Description of proposed amendment
5 Processing or beneficiation of metallic or non-metallic ore	75 million tonnes per annual period. Comprising: • Jimblebar [Wheelarra Hill] throughput of 58Mtpa; and • OB 18 'operations' (comprising OB's 17, 18 and 31) throughput of 17 Mtpa.	82 million tonnes per annual period. Comprising: • Jimblebar [Wheelarra Hill] throughput of 65Mtpa; and • OB 18 'operations' (comprising OB's 17, 18 and 31) throughput of 17 Mtpa.	BHP is proposing to undertake works at the Jimblebar (Wheelarra Hill) mining operations which will increase the Jimblebar (Wheelarra Hill) design capacity by 7 Mtpa to 65 Mtpa. No change to throughput is proposed for OB 18 'operations'.
6 Mine dewatering	23.5 G/L per annual period. Comprising: • 5.11 G/L reinjected via the Orebody 18 and Jimblebar reinjection bores; • 2.19 G/L discharged to Jimblebar Creek and/or Copper Creeks; and • 16.2 G/L discharged to Ophthalmia Dam.	37.735 G/L per annual period. Comprising: • 12.41 G/L reinjected via the Orebody 18 and Jimblebar reinjection bores; • 2.19 G/L discharged to Jimblebar Creek and/or Copper Creeks; and • 23.135 G/L to Ophthalmia Dam.	Increase Category 6 to 37.735 G/L per annum (GL/a) to allow for: • the disposal of an additional 6.935 GL/a of surplus water from the Wheelarra Hill (Jimblebar) mining operations to Ophthalmia Dam as detailed in works approval W6042/2017/1; and • the disposal of an additional 7.3 GL/a of surplus water associated with the construction of up to six additional reinjection bores at OB 18
54 Sewage facility	120 cubic metres per day	120 cubic metres per day	No change
64 Class II putrescible landfill site	1,580 tonnes per annual period	15,000 tonnes per annual period	Increasing Category 64 to 15,000 tonnes per annual period to allow for the: • disposal of conveyer belts to rubber dump; and • operation of the Wheelarra Inert landfill (as detailed in Works Approval 5638/2014/1)
73 Bulk storage of chemicals, etc	4,000 cubic metres (m^3) in aggregate	5,000 m^3 in aggregate	Increase Category 73 to 5,000m^3; to allow flexibility in hydrocarbon storage within the boundary of L5415/1988/96

Category 5 – Increase in Ore Processing

The Licence Holder is seeking to increase the Premises Category 5 production limit by 7 Mtpa to a new limit of 82 Mtpa in total. A breakdown of the throughputs within the Premises, relevant to the Category 5 facilities is provided in Table 2. The Licence Holder is proposing to undertake some minor works at the Jimblebar (Wheelarra Hill) processing areas which will increase the operations design capacity by 7 Mtpa (58 Mtpa to 65 Mtpa).

The minor works will involve:

- installation of a larger fines product conveyor belt at the existing Ore Handling Plant;
- Installation of a modified gearbox for product screen feed conveyor at existing Ore

Handling Plant; and
- Adjustment to process controls systems to increase throughput of existing overland conveyor.

The Licence Holder has stated within their application that *'The Jimblebar (Wheelarra Hill) Environmental Protection Statement (EPS) assessed the dust and noise impacts associated with Jimblebar (Wheelarra Hill) mining operations up to a processing rate of 75 Mtpa. The EPS was approved via Ministerial Statement (MS) 857 on 18 February 2011 and combined with MS 683 and MS 809 approves a total production rate of 75 Mtpa. The proposed increase in processing capacity from 58 to 65 Mtpa will not result in potential dust and noise impacts beyond those assessed and approved under MS 875'*.

Category 6 - Increase in surplus mine water discharge

Mine dewatering within the Premises is required to access below the water table ore. In aggregate, Licence L5415/1988/9 currently allows a maximum of 23.5 GL/a of mine dewater to be discharged to the environment via the emission points specified on the Licence.

A breakdown of the throughputs within the Premises, relevant to the Category 6 discharge capacities is provided in Table 2.The Licence Holder is seeking to increase the Category 6 discharge limit by 14.235 G/L to new limit of 37.735 G/L per annual period.

Surplus dewater from Orebody 31 to Ophthalmia Dam pipeline
BHP has constructed a new pipeline to connect the Jimblebar mining operations to Orebody 31 Ophthalmia Dam pipeline. The Licence Holder holds Works Approval (W6042/2017/1) to construct the new pipeline (9km in length), which was granted on the 21 August 2017. This pipeline will allow for an additional 6.935 GL/a of surplus water to be disposed of to the existing Ophthalmia Dam discharge point. Construction of the pipeline has been completed and compliance documents submitted to DWER on 25 July 2018. Discharge point and location of pipeline are shown in Figure 1.

Any potential impacts associated with the disposal of surplus water from Jimblebar mining operations to Ophthalmia Dam will be managed in accordance with the *Eastern Pilbara Water Resources Management Plan* (BHPa 2017) which has been approved under MS 857 and MS1021.

See section 'Part IV of the EP Act' for an explanation as to what was assessed under MS 857 and MS1021.

Expansion of Orebody 18 Managed Aquifer Recharge (MAR) system
The Licence Holder is proposing to expand the existing Orebody 18 MAR system to provide flexibility in managing surplus water from Orebody 18 and Orebody 31 mining areas. The Orebody 18 MAR system currently consists of two bores, each bore with a maximum injection capacity of 2 Mega Litres (ML)/day. The proposed expanded Orebody 18 will consist of up to eight reinjection bores (two existing (HMG0054P and HMG0056P) and six new bores. The location of two of the new reinjection bores (HMG0051P and HMG0052P) are shown in Figure 1. The remaining four bores (OB18MAR05, OB18MAR06, OB18MAR07 and OB18MAR08) are yet to be established but will be constructed in the zone for new reinjection bores shown in Figure 1.

Disposal of surplus water will continue via injection into the Basement Rock Aquifers associated with the Paraburdoo and Bee Gorge Members of the Wittenoom Formation. Currently the existing bores have the capacity to operate at 2 ML/day (0.73 GL/a) however with the proposed expansion of the scheme, each of the eight bores will have an individual capacity to operate at 3 ML/day (1.095 GL/a). The dewatering water will first be used to supply the existing turkeys nest at Orebody 18, which will be the primary fill-point for water carts operating in this area.

Water will be delivered through surface laid polyethylene pipelines before being injected. Bores will be fitted with for-purpose designed reinjection headworks, including a telemetry flow meter, pressure sustaining valve and butterfly valve to control flow. A typical arrangement for the headworks of an injection bore is provided in Figure 2.

The location of the Orebody 18 MAR scheme has been the site of a supply borefield for the duration of the operation of Orebody 18, with high resolution abstraction and water level data available for at least six years (at the time of this amendment). As a result of this, the Licence Holders understanding of the aquifers response to sustained levels of abstraction is high. It is expected that the water to be injected will be of similar or better quality to that in the receiving aquifer and that the aquifer will respond to reinjection in a manner similar to abstraction.

The Licence Holder has developed triggers for groundwater levels and electrical conductivity and proposes management actions in response to trigger exceedances (Table 3).

Table 3: Trigger levels and Mitigation measures for the Orebody 18 MAR scheme

Trigger Criteria	Action and Mitigation Measures	Monitoring
Groundwater level reaches 20 m below ground level in either one of the two trigger bores.	Review of the monitoring data to establish likely cause and implement remedial actions, if appropriate.	Daily monitoring of groundwater level, and injection water turbidity, EC and pH. Sample for full hydrochemistry suite. Revert to standard monitoring once issue resolved.
Groundwater level reaches 15 m below ground level in either one of the two trigger bores.	Cease injection in proximal injection bore, report to regulators within a week, review monitoring data and recommend subsequent actions to DWER.	Daily monitoring of groundwater level. Commence vegetation monitoring in vicinity of event. Revert to standard monitoring once issue resolved.
Groundwater level reaches 10 m below ground level in either one of the two trigger bores.	Automatic injection cut-off at injection well. Review bore performance data. In the event of failure of the shut-off mechanism, cease injection until mechanism repaired.	Daily monitoring of groundwater level. Revert to standard monitoring once issue resolved.
Groundwater EC exceeds 4,500 µS/cm	Cease injection in vicinity of event and report to regulators within a week. Commence studies to identify cause and recommend subsequent mitigation actions to DoW and DER. Reinjection only to continue with DoW and DER approval of proposed mitigation actions.	Continue standard monitoring of relevant parameters

Ambient groundwater quality is also currently analysed by the Licence Holder for a suite of parameters and compared to site specific trigger values (Table 4), which will continue with the expanded MAR scheme.

Table 4: Trigger values for Monitoring Bore Water Quality (from Golder, 2013)

Water Quality Parameter	Default A/A 95% Trigger Value	20th Percentile Trigger Value	80th Percentile Trigger Value	Recommended Trigger Value
pH	6.5-8.0[a]	7.1	7.5	6.5-8.0
EC	90-900[a]	2200	2658	90-2658
NO_3	0.7[b]	-	5.9	5.9
Total P	0.01[a]	-	-	0.01
Ag	0.00005	-	-	0.00005
Al	0.055[c]	-	-	0.055
As	0.013[d]	-	-	0.013
B	0.37[e]	-	0.48	0.48
Ba	ID	-	0.018	0.018
Be	0.00013[j,k]	-	-	0.00013
Cd	0.0002	-	-	0.0002
Co	0.0028[j]	-	-	0.0028
Cr	0.001[e,f]	-	0.005	0.005
Cu	0.0014	-	0.005	0.005
Fe	0.3[g]	-	0.09	0.3
Hg	0.0006[h,i]	-	-	0.0006
Mo	0.034[j]	-	-	0.034
Mn	1.9[e]	-	0.32	1.9
Ni	0.011	-	0.005	0.011
Pb	0.0034	-	-	0.0034
Sb	0.009[j,k]	-	-	0.009
Se	0.011[j,l]	-	-	0.011
Sn	0.003[j,m]	-	-	0.003
Sr	ID		0.65	0.65
Ti	ID		-	ID
V	0.006[j,k]		-	0.006
Zn	0.008[e]	-	0.032	0.032

Note: Highlighted cells identify source of recommended trigger value

[a] default trigger values for physical and chemical stressors for tropical Australia for slightly disturbed ecosystems

[b] figure protects against toxicity and does not relate to eutrophication issues

[c] pH > 6.5

[d] as arsenic V (0.013 mg/L); as arsenic III (0.024 mg/L)

[e] figure may not protect key test species from chronic toxicity

[f] as Cr (VI)

[g] 95% interim guideline value

[h] as inorganic mercury

[i] chemicals for which possible bioaccumulation and secondary poisoning effects should also be considered

[j] low reliability trigger value for freshwater

[k] indicative interim working level

[l] total selenium

[m] inorganic tin

ID = Insufficient data to derive a reliable trigger value

Commissioning of MAR bores

Commissioning of the new MAR bores will involve running the system at less than the planned operational levels to equalize the system, calibrate all of the equipment then at incremental injection rates to determine how the infrastructure and the receiving aquifer handles the pressure of the system. Commissioning of each individual bore is expected to take up to 2 months.

Each injection bore will have the following monitored daily for first two weeks, then weekly for first three months, and then monthly subject to review:

- Water level;
- Cumulative volume; and
- Flow rate.

The following parameters will be monitored at the monitoring bores:

- Water level – weekly for first month, then monthly;
- Field EC, pH and TDS – monthly; and
- Standard Hydrochemistry Suite (e.g. Total Suspended Solids, Al, As, B, Ba, $CaCO_3$, Cd, Ca, Cl, Cr, Cu, F, Fe, Pb, Mg, Mn, Hg, Mo, Ni, NO_3, K, Se, SiO_2, Na, SO_4, Zn) – quarterly.

Should the Trigger Criteria detailed in Table 3 be reached at any point during commissioning the relevant actions, mitigation measures and monitoring will be undertaken as detailed in Table 3.

Jimblebar MAR groundwater monitoring

The Licence Holder currently monitors the impact of the MAR scheme and mining activities via 16 groundwater monitoring bores. The Licence Holder is proposing to remove the MAR groundwater monitoring bore HSJ0169M and replace it with groundwater monitoring bore SJ0571RM. The Licence Holder has advised in their Application that construction issues with HSJ0169M means the bore contains high levels of sediment which skews water quality results making the Total Suspended Solids (TSS) results unrepresentative. The sediment has also damaged sampling pumps which makes it difficult to obtain water quality samples. The Licence Holder has stated that bore HSJ0169M is located on the other side of a hydrological boundary making it unlikely that sampling of the bore will detect potential water quality changes as a result of injection activities. Water levels in HSJ0169M are also approximately 15m lower than the nearest piezometer to the MAR bore JBGW0435RM. None of the other piezometers close to HSJ0169M have shown a response to MAR and instead are demonstrating a response to dewatering activities being conducted to the west. The Licence Holder is therefore proposing to remove HSJ0169M and replace it with bore SJ0571RM (located southeast on the MAR side of the hydrological boundary) as it is more likely to capture data indicating mounding and will therefore be more representative of potential hydrochemistry changes in the area.

The Licence Holder would also like to include three existing monitoring bores (HMG0058M, HMG0103M and HMG0111M1) into the monitoring regime for the Orebody 18 MAR scheme to ensure any changes to the groundwater quality as a result of the expansion are captured.

Changes to rising stage sampler locations

Currently the Licence Holder discharges mine dewater (up to 2.19 GL/a) to Jimblebar and/or Copper Creeks which cross through the Premises. This discharge is monitored along the creeks via rising stage samplers located both upstream and downstream of the discharge location. The Licence Holder is seeking to remove three existing rising stage sampler locations (JBSW006, JBSW007 and JBSW008) and replace them with three new rising stage sampler locations (JBSW009, JBSW010 and JBSW011). The three samplers to be removed are in locations which

are difficult to access in a timely manner during wet conditions resulting in the samples being void (based on laboratory holding times). The proposed new locations allow for vehicle access and water collection during periods of creek flow. The location of the new sample locations are shown in Figure 3.

Category 64 – increase in throughput

The Licence Holder is seeking to increase the approved throughput for Category 64 from 1580 tonnes to a total of 15,000 tonnes per annual period. This increase is required to accommodate;

- The once off disposal of approximately 5000 tonnes of waste associated with the disposal of infrastructure within the Jimblebar operations; and
- The ongoing disposal of approximately 8420 tonnes of waste conveyor rubber per annum.

This proposed increase is required for a once off disposal of approximately 5,000 tonnes of waste associated with the decommissioning and disposal of four old infrastructure areas (buildings and machinery) at Wheelarra 4 within the Jimblebar operations. Construction of two inert landfills will be required to cater for this waste. The construction of these two landfills was approved under works approval W5638/2014/1 (which was amended 12 May 2017). Each landfill consist of a single cell and is expected to be in operation for several years before being covered to become waste rock dumps.

The waste types to be disposed of will comprise of inert wastes such as scrap metal, bricks, rubber, concrete, glass, plastics, wire and foam etc. Management of wastes generated at the Premises will be in accordance with existing licence conditions and the BHPBIO Mining Operations Waste Management Program. Asbestos-containing waste will be managed in accordance with section 4.3.3 of the Jimblebar Hub Environment Management Plan (BHPBIO, 2011). Both inert landfills (Wheelarra Hill Inert Landfill 1 and Wheelarra Hill Inert Landfill 2) are shown in Figure 1.

The proposed increase in Category 64 throughput is also to allow for an increase in the disposal of waste conveyor rubber, generated during routine upgrades of the conveyor to overburden storage areas. It is expected that approximately 8420 tonnes of conveyor rubber will be disposed of per annum.

Category 73 – Increase in throughput

Currently approximately 3,984 m^3 of hydrocarbons are stored on the Premises, less than the approved Licence storage capacity of 4,000m^3. The proposed increase in hydrocarbon storage to 5000 m^3 (a 1000m^3 increase to the approved throughput) will cover existing hydrocarbon storage on site and makes allowance should additional volumes require storage. No works are associated with this increase. The Licence Holder will manage the construction and storage of the additional hydrocarbons on site in accordance with the relevant Dangerous Goods Licence(s) that are current for this operation.

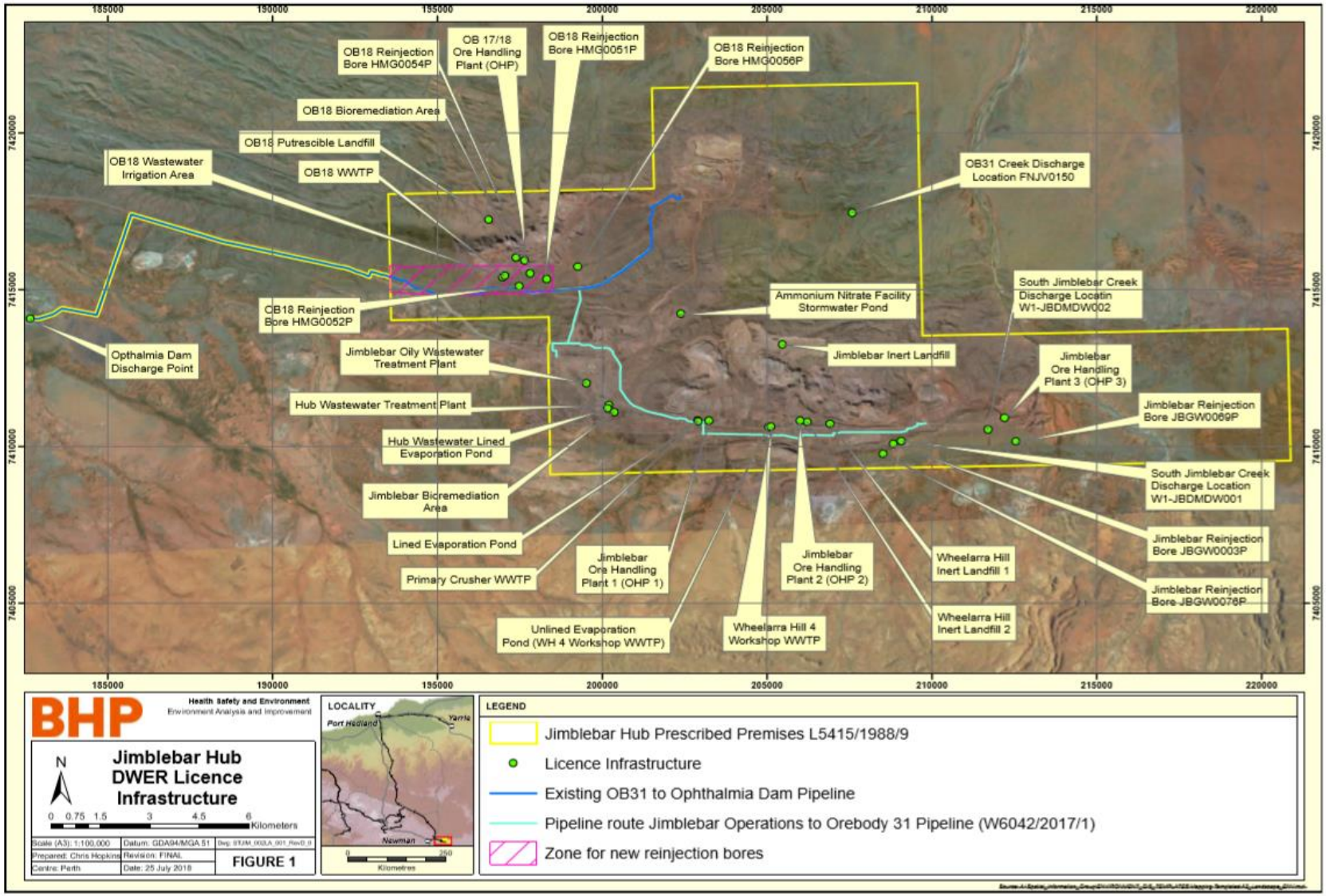


Figure 1: Site layout with location of Opthalmia Dam Discharge point.

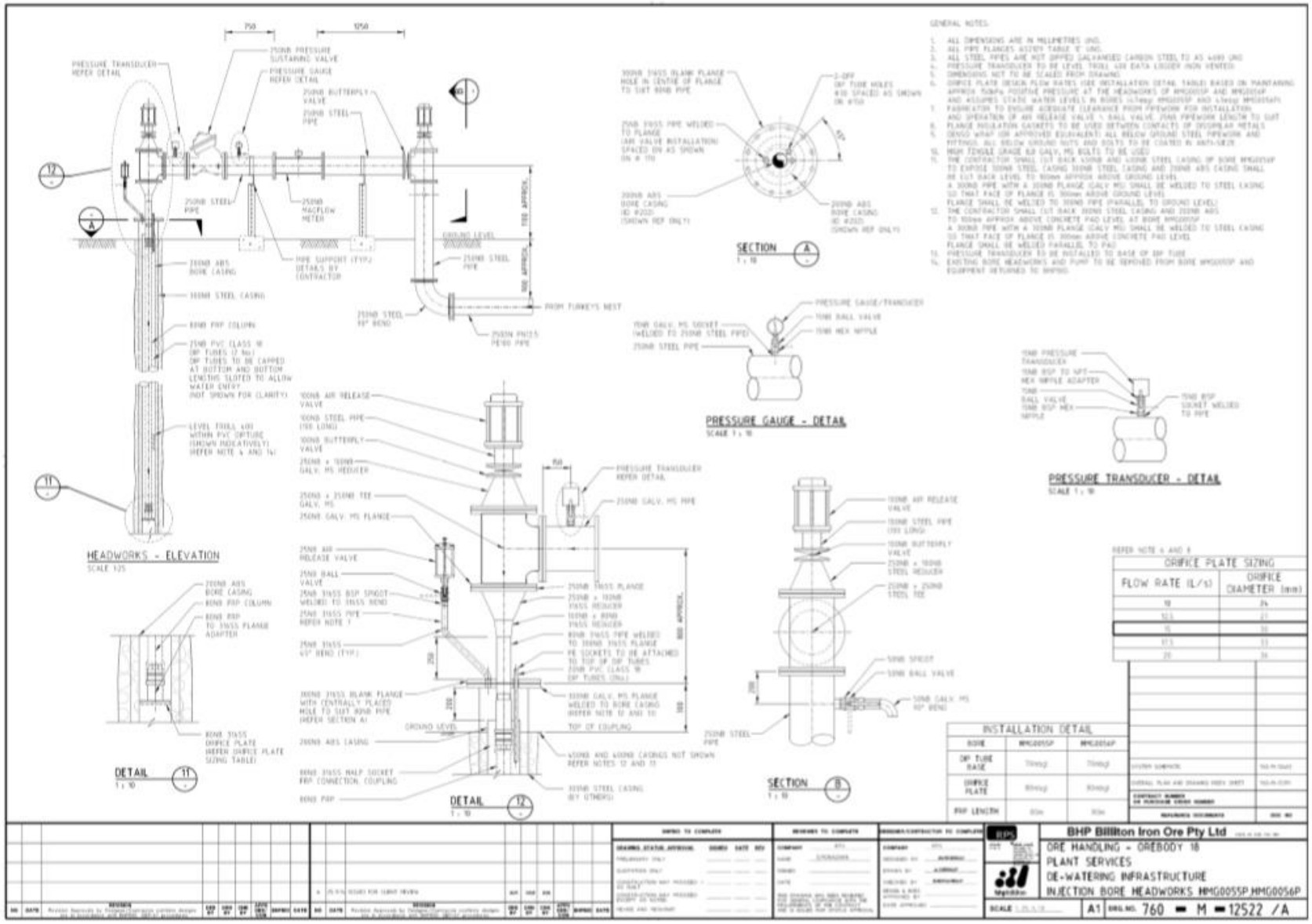


Figure 2: Typical reinjection bore arrangement

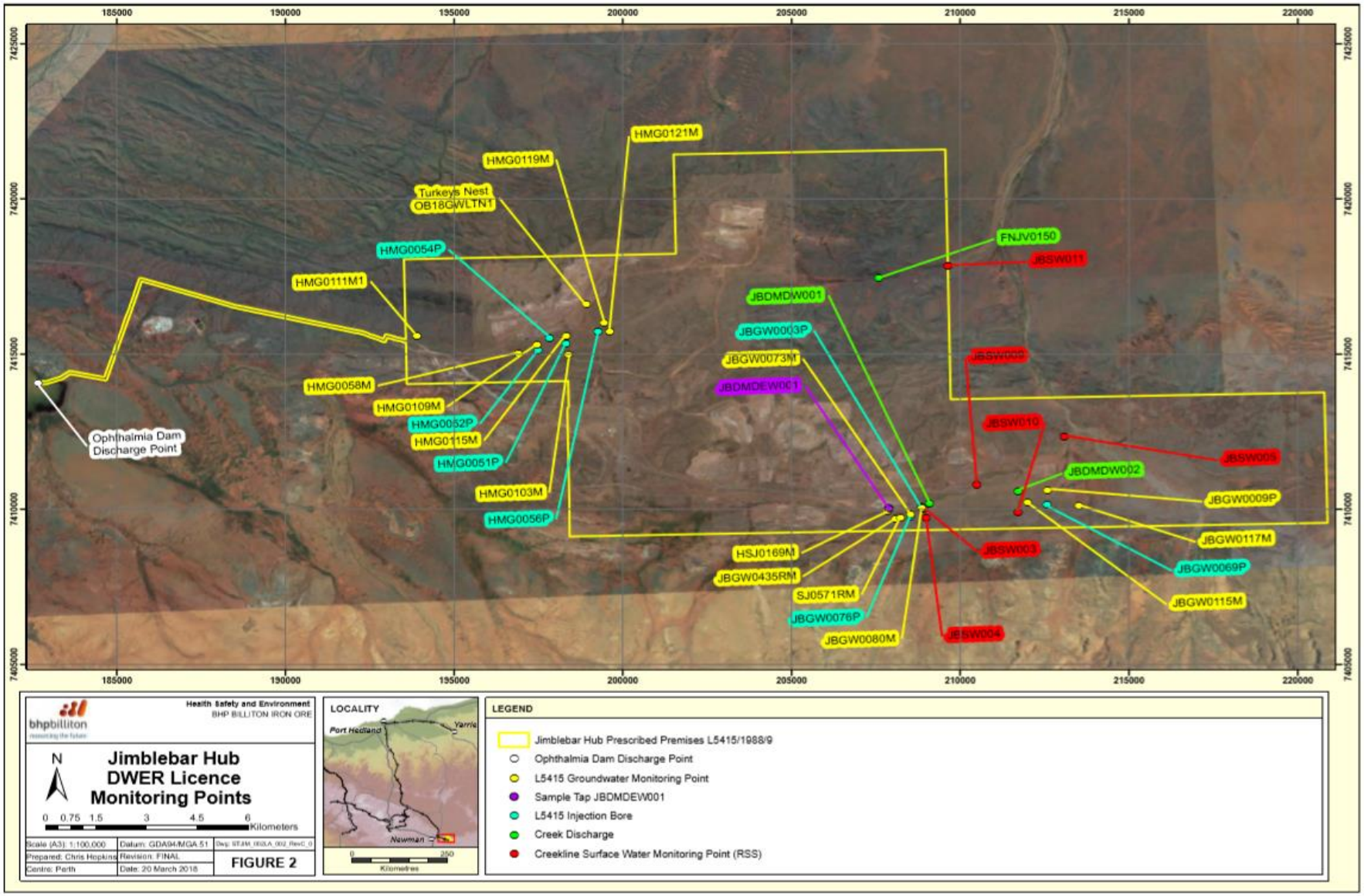


Figure 3 : Location of new rising stage sampler locations

Other approvals

The Licence Holder has provided the following information relating to other approvals as outlined in Table 5.

Table 5: Relevant approvals

Legislation	Number	Approval
Iron Ore (McCamey's Monster) Authorization Agreement Act 1972	Mining Lease M266SA	Authorise the execution of an agreement relating to the exploration for and the development and treatment of iron ore and for incidental and other purposes
Rights in Water and Irrigation Act 1914 (RIWI Act)	Groundwater Well Licence (GWL)158795(8) (Expires 13 July 2026)	Taking of water for dust suppressions for earthworks and construction purposes, general campsite purposes, mineral ore processing and other mining purposes, potable water supply purposes and reinjection of groundwater
Part IV of the EP Act (WA)	Statement Number 385 (issued 23 May 1995)	Jimblebar Iron Ore Mine Rationalization and Expansion
	Statement Number 439	Development of Orebody 18
	Statement Number 683 (issued August 2005, supersedes conditions of MS 385)	Wheelarra Hill Iron Ore Mine extension life of mine proposal
	Statement Number 809 (issued October 2009)	Wheelarra Hill mine modification increase mining rate from 12 mtpa to 45 mtpa, additional clearing, increase water supply, construction of a new rail spur and loop and train load out facilities.
	Statement Number 857 (issued 18 February 2011)	Jimblebar Iron Ore Project - extend existing Wheelarra Hill open pits, develop the South Jimblebar and Hashimoto deposits, increase ore processing to 75 million tonnes per annum, discharge of up to 45 ML/d of excess mine dewater from Jimblebar deposit to Ophthalmia Dam
	Statement Number 1021 (issued 12 November 2015)	Development of Orebody 31, including the discharge of surplus mine dewater to Ophthalmia Dam and Jimblebar Creek. (Note: no ore processing throughput [amount] was approved in this MS.

Part IV of the EP Act

As detailed in Table 3 above, a number of proposals for the Wheelarra Hill (Jimblebar) Iron Ore Mine have been assessed under Part IV of the EP Act, resulting in MS approval. The Ministerial Statements that relate to this Amendment Notice are MS 809, MS 857 and MS 1021.

MS 809 approved the development of the Wheelarra Hill mine modification to increase ore processing from 12 mtpa to 45 mtpa. The statement also allows for additional clearing, increase water supply and the construction of a new rail spur and loop and train load out facilities.

MS 857 approved the development of the Jimblebar Iron Ore Project; to expand the Wheelarra Hill Iron Ore Project and increase ore processing capacity from 45 mtpa to 75 mtpa. The proposal involved an extension to the Wheelarra Hill open pits and overburden storage areas, and the mining (above and below water table) of the South Jimblebar and Hashimoto deposits. The proposal approved under MS 857 included the construction and operation of a 45 mega litre per day (ML/day) capacity pipeline to convey excess dewatering discharge to Ophthalmia Dam.

MS 1021 approved the development of the Orebody 31 Iron Ore Mine in November 2015. Approximately 70% of Orebody 31 is located below the water table. A summary of the EPA's assessment of Orebody 31 has been included in this Amendment Notice as surplus water management options approved under MS 1021 include discharge of excess mine dewater to Ophthalmia Dam, and it is the Orebody 31 mine dewater pipeline to Ophthalmia Dam that the new pipelines from the Jimblebar operations have been connected to.

Report of the EPA Report 1371, October 2010

In its assessment of the Jimblebar Iron Ore Project, the EPA undertook a detailed evaluation of the following factors: Flora and vegetation, Fauna, Groundwater, Surface water and Mine closure and rehabilitation. The Report and Recommendations of EPA (EPA Report 1371) were released to the Minister for Environment (Minister) on 13 October 2010. Relevant to this Licence amendment, EPA's assessment:

- considered that excess water from the dewatering operations is expected to be discharged into Ophthalmia Dam for a period of 10 years and at a peak discharge of up to 45 ML/day;
- noted that an assessment to identify the potential impacts of the proposed excess water discharge on vegetation at Ophthalmia Dam and downstream of the dam was undertaken;
- acknowledged that that proposed discharge would not increase the maximum inundation level of the dam and so would not affect vegetation outside of the existing maximum inundation level;
- noted that the mine dewater discharge to Ophthalmia Dam would likely result in slightly raised water levels of approximately 0.5 m and increase the salinity in the dam and downstream of the dam due to seepage to groundwater and overflow;
- noted the increase in average water levels would result in the loss of vegetation below the maximum inundation level due to waterlogging and seepage volumes from the dam to the downstream aquifer are likely to increase by 10% to 25% due to increase water levels at Ophthalmia Dam;
- noted the water stored in the dam would be diluted by rainfall and river flows; and salinity in overflow water reduced by dilution of floodwater through the system. Phreatophytic flora in the study area is likely to use water from the groundwater aquifer, which is twice the predicted salinity of the water in the dam during discharge;
- considered that excess water discharge to Ophthalmia Dam would not have a significant impact on flora and vegetation;
- noted the location of the Ethel Gorge Aquifer Stygobiont Community TEC above and below the Ophthalmia Dam. The EPA acknowledged that excess water discharge would cause a minor increase in the salinity of the groundwater in the Ophthalmia floodplain, however noted that the Regional Subterranean Fauna Survey suggests that a higher number of stygofauna were found in bores that were more saline. Therefore, the EPA considered that excess water discharge into the dam would not significantly affect subterranean fauna; and

- noted that the stratification of Ophthalmia Dam is unlikely due to the frequent flushing of the dam and its shallow nature.

In relation to EPA Bulletin 1371, Ministerial Statement MS 857, granting approval for the project to be implemented, was signed by the Minister on 18 February 2011.

Ministerial Statement 857

MS 857 was issued in February 2011 and imposes the following conditions relevant to this amendment:

5-1 The proponent shall implement the proposal in accordance with the Significant Species Management Plan provided as Appendix C of Jimblebar Iron Ore Project Environmental Protection Statement (BHP Billiton, 2010) or subsequent revisions approved by the CEO. The objective of this Significant Species Management Plan is to minimise adverse impacts to conservation significant species and communities.

8-1 The proponent shall monitor the Ethel Gorge Aquifer Stygobiont Community TEC from prior to implementation until 12 months after completion of discharge into the Ophthalmia Dam. This monitoring program shall be designed and carried out to the requirements of the CEO on advice of the Department of Environment and Conservation and include:

1. Monitoring of groundwater levels and chemistry, including ionic balance;

2. Monitoring of stygofauna species richness; and

3. Interpretation of the results in relation to influences on stygofauna and their habitat.

9-1 The proponent shall ensure that the excess water discharge from the Jimblebar Iron Ore Project does not cause algal blooms or stratification in the Ophthalmia Dam as a result of increased salinity.

It is noted that MS 857 approves the disposal of up to 45 ML/day of surplus mine dewater from the Jimblebar mining operations to Ophthalmia Dam. The requirements of Condition 8-1 and Condition 9-1 of MS 857 are addressed in and managed by the *Eastern Pilbara Water Resource Management Plan* (BHP, 2017a); which includes hydrological and ecological thresholds to manage potential impacts to the Ethel Gorge TEC.

Report of the EPA Report 1559, September 2015

In its assessment of the Orebody 31 Iron Ore Project, the EPA undertook a detailed evaluation of the following factors:

(a) Flora and vegetation – direct impacts from clearing of flora and vegetation, and potential indirect impacts (particularly dust);

(b) Hydrological processes – potential impacts to riparian flora and vegetation from discharge of up to 4 GL of surplus mine dewater over three months per year into Jimblebar Creek;

(c) Inland waters environmental quality – potential impacts to water quality in the Ethel Gorge TEC through salinity increases from discharge of surplus water to Ophthalmia Dam;

(d) Rehabilitation and decommissioning (integrating factor) – potential impacts to water quality from oxidation and potentially acid forming material from excavation; and

(e) Offsets (integrating factor) – to counterbalance the significant residual impacts to native vegetation in ‘good to excellent’ condition.

Whilst this proposal relates to the impacts associated with the discharge of mine dewater from Orebody 31, a summary of EPA’s assessment of the potential impacts to the Ethel Gorge TEC from discharge to Ophthalmia Dam is included below as it provides context to

the current mine dewater management at the Premises. EPA's assessment:

- acknowledged water from Ophthalmia Dam and surrounding infiltration ponds has been found to infiltrate into the groundwater systems that feed the Ethel Gorge TEC;
- noted that a salt and water balance study identified that salinity has the potential to increase in the Ethel Gorge TEC from the discharge of water into Ophthalmia Dam and surrounding infiltration ponds if not managed properly;
- noted that the infiltration of high salinity water into the Ethel Gorge TEC has the potential to reduce the diversity of stygofauna; and
- acknowledged the mitigation measures proposed by the Licence Holder to address impacts, including the development of a water catchment scale management strategy to manage and minimise salinity increases in the Ethel Gorge TEC, and a management strategy for surplus mine dewater to minimise the requirement to discharge.

Ministerial Statement (MS) 1021, granting approval for the project to be implemented was signed by the Minister on 12 November 2015.

Ministerial Statement 1021

MS 1021 was issued 12 November 2015, and with respect to the management of impacts from mine dewater discharge to Ophthalmia Dam, imposes the following conditions:

8-1 The proponent shall manage the discharge of surplus mine dewater from the Orebody 31 Iron Ore Mine in a manner that minimises impacts to the Ethel Gorge Threatened Ecological Community.

8-2 Prior to discharge of surplus mine dewater, the proponent shall prepare a Plan in consultation with the Department of Parks and Wildlife and the Department of Water to the satisfaction of the CEO, to demonstrate that condition 8-1 has been met. The Plan shall include:

(1) descriptions of reference sites, including physical attributes, geographic locations and details of the baseline condition of what is to be monitored; rationale for the location of the sites;

(2) descriptions of the biological and physical environmental indicators to be monitored;

(3) monitoring methodologies that will be implemented to measure the physical and biological indicators;

(4) criteria that will trigger the implementation of management actions; and

(5) trigger management actions to be implemented in the event that the trigger criteria required by condition 8-2(4) have been reached.

8-3 After receiving notice in writing from the CEO that the plan satisfies the requirements of condition 8-2, the proponent shall:

(1) implement the requirements of the Plan specified by condition 9-2; and

(2) continue to implement requirements of the Plan until the CEO has confirmed by notice in writing that it has demonstrated that the objective in condition 8-1 is being and will continue to be met and therefore implementation of the Plan is no longer required.

8-4 In the event that the monitoring specified in the Plan indicates that the trigger criteria specified in the Plan has been exceeded, the proponent shall:

(1) immediately implement the trigger management actions specified in the Plan and continue implementation of those actions until the trigger criteria are not exceeded or until the CEO has confirmed by notice in writing that is has been demonstrated that the objective in condition 8-1 is being and will continue to be met and implementation of

the trigger management actions is no longer required;

(2) investigate to determine the likely cause of the trigger criteria being exceeded and to identify any additional trigger management actions required to prevent the trigger criteria being exceeded in the future; and

(3) provide a report to the CEO within 30 days of an event, referred to in condition 8-4, occurring. The report shall include:

(a) details of trigger management actions implemented; and

(b) the findings of the investigation required by condition 8-4(2).

The requirements of condition 8 of MS1021 are also met by the *Eastern Pilbara Water Resource Management Plan* (BHP, 2017a).

Amendment history

Table 6 provides the amendment history for L5415/1988/9.

Table 6: Premises amendments since 2000.

Instrument	Issued	Amendment
L5415/1988/1	17/11/2000	First licence noted in the Industry Licensing System.
L5415/1988/2	17/11/2001	Licence reissue.
L5415/1988/3	17/11/2002	Licence reissue.
L5415/1988/4	17/11/2003	Licence reissue.
L5415/1988/5	17/11/2004	Licence reissue.
L5415/1988/6	17/11/2006	Licence reissue.
L5415/1988/7	17/11/2007	Licence reissue.
W4722/2010/1	2/09/2010	Works approval for a new landfill and bioremediation facility.
L5415/1988/8	17/11/2010	Licence reissue.
W4655/2010/1	13/01/2011	Works approval granted for construction of new ore handling infrastructure to increase the capacity of the mine from 15 Mtpa to 45 Mtpa of iron ore. The expansion involved the construction of new process infrastructure including a primary crusher, conveyor systems, a coarse ore stockpile, a new ore handling plant, a product stockyard, a train load out facility and a rail loop. Additional supporting infrastructure included WWTPs, bulk chemical storage facilities and associated infrastructure.
W5224/2012/1	7/11/2012	Works approval granted for the Managed Aquifer Recharge (MAR) Project that involved the abstraction of groundwater for the purposes of mining followed by reinjection of this water into injection bores. There were two stages assessed: • Stage 3a: Injection of approximately 2 ML/day into one of two existing production bores over a period of two to six months. The bores will be retrofitted with headworks appropriate for injection, monitoring and purging. Stage 3a of the trial will guide the planning and design of Stage 3b. • Stage 3b: Injection of approximately 10 ML/day into various combinations of existing retrofitted production bores and new

		purpose built injection bores.
W5277/2012/1	6/12/2012	Works approval granted for three movable crushers at the premises to supplement ore production through crushing and screening of existing waste stockpile material.
L5415/1988/8	30/05/2013	Licence amendment to: • Add in a category 54 WWTP with the capacity to treat a maximum of 102.5 cubic metres per day (m3/day) Another WWTP onsite processes 8 m^3/day (total capacity of both plants is 110.5 m^3/day); • Remove conditions (conditions 4, 5 and 6 of the previous licence) relating to the Enviroburner as it no longer present onsite. This was picked up during the inspection conducted by Inspection and Compliance Branch in 2012; • Rename sampling locations for the hydrodynamic trial; • Implement operation of Stage 3a of the hydrodynamic trial; and • Include category 73 for two 1.4 megalitre (ML) vertical cylindrical diesel storage tanks and associated infrastructure.
L5415/1988/8	23/01/2014	Licence amendment to: • Increase category 5 from 15 Mtpa to 51 Mtpa – addition of 6 Mtpa constructed under W5277/2012/1 and 30 Mtpa constructed under W4655/2010/1; • Implement operation of Stage 3b of the hydrodynamic trial – injection of approximately 2 ML/day into one existing production bore (JBGW0076P); • Include groundwater monitoring bores associated with Stage 3b; and • Rename bores associated with Stages 2 and 3a of the hydrodynamic trial.
L5415/1988/8	11/06/2015	Licence amendment to: • Realign the prescribed premises boundary to include Orebody 18 operations (licensed under L8044/1987/2) and the ANSF; • Approve the disposal of wastewater from the ANSF to the Jimblebar Bioremediation Facility; • Include a third re-injection bore as part of the Managed Aquifer Recharge (MAR) trial; and • Amend the groundwater monitoring requirements.
L5415/1988/9	5/11/2015	Licence renewal and update to template version 2.9
L5415/1988/9	21/04/2016	Licence amendment to: • Assess the construction and operation of the Orebody 31 dewatering discharge point to Ophthalmia Dam and discharge of up to 16.2 GLpa; • Increase category 6 to include Orebody 18 and Orebody 31 (total 23.5 GLpa discharged via reinjection and discharge to Jimblebar and Copper Creeks and Ophthalmia Dam); • Realign the prescribed premises boundary to include the Orebody 31 deposit; • Consolidate discharge monitoring locations, amend creekline surface water monitoring, including Orebody 18 MAR monitoring requirements and remove requirement to monitor riparian vegetation; and • Remove conditions which duplicate regulation under Part IV of the EP Act.
L5415/1988/9	13/10/2016	Licence amendment to: • Include an additional discharge point to a tributary of Jimblebar Creek; • Amend the Orebody 18 and South Jimblebar MAR programs;

		• Update conditions relating to sewage monitoring; • Update the prescribed premises address; and • Remove conditions that were not valid, enforceable and/or risk based
L5415/1988/9	27/08/2018	Amendment Notice 1 (this amendment) to: • Increase the Jimblebar (Wheelarra Hill) Category 5 premises design capacity by 7 Mtpa to 65 Mtpa, thereby taking the Licence to a full new design capacity of 82Mtpa; • Increase Category 6 throughput to 37.735 GL/a; • Increase Category 64 to 15,000 tonnes per annual period; • Increase Category 73 to 5,000m^3; • Removal of monitoring requirements for MAR monitoring bore HSJ0169 and replacement with monitoring bore SJ0571RM; • Removal of rising stage sampler locations JBSW006, JBSW007 and JBSW008 and replacement with three new rising stage sampler locations JBSW009, JBSW010 and JBSW011; and • Administrative changes to the licence, comprising: o Increasing the volume of nutrient rich water in Table 1.2.4 from 400,000 L to 4,000,000 to correct an administrative error; o Update Table 1.2.6 to remove completed construction requirements; and o Replace the reference to L2 to L1 in Table 4.2.1 of the Licence.

Location and receptors

Table 7 below lists the relevant sensitive land uses in the vicinity of the Prescribed Premises which may be receptors relevant to the proposed amendment.

Table 7: Receptors and distance from activity boundary

Residential and sensitive premises	Distance from Prescribed Premises
Sylvania Pastoral Station	18 km to the southwest
Newman township	Newman township 35 km to the west

Table 8 lists the environmental receptors in the vicinity of the Prescribed Premises which are receptors identified to be relevant to the proposed amendment.

Table 8: Environmental receptors and distance from activity boundary

Environmental receptors	Distance from Prescribed Premises
Ethel Gorge Stygobiont Threatened Ecological Community (TEC)	The Ethel Gorge Aquifer Stygobiont TEC is located in Ethel Gorge, directly downstream of the Ophthalmia Dam mine dewater discharge point. Ethel Gorge is formed where the Fortescue River flows through the Ophthalmia Range in a northerly direction
Threatened/Priority Fauna	Nine significant fauna species listed under the *Environmental Protection and Biodiversity Conservation Act 1999*, the *Wildlife Conservation Act 1950* or listed as Priority Fauna species by the Department of Biodiversity, Conservation and Attractions have been identified within the Premises.
Fortescue Marsh (Priority Ecological Community and listed on the Directory of Important Wetlands of Australia as a wetland of national significance)	Approximately 80 km downstream of Ophthalmia Dam.
Public Drinking Water Source Areas (PDWSA): Newman Water Reserve (Priority 1)	The Ophthalmia Dam discharge point is located within the Newman Water Reserve PDWSA. The Ophthalmia Dam was created in 1981 to capture surface water runoff for release to replenish the downstream alluvial and calcrete aquifers, which in turn support the Ophthalmia Borefield; used to supply potable water to Newman and raw water to mining operations in the area.
Surface water Fortescue River: Directly downstream from the prescribed premises Ophthalmia Dam discharge point. Non-perennial watercourses	The Premises is located in the upper portion of the Fortescue River catchment which drains to the Fortescue Marsh. The Fortescue Marsh is a Priority Ecological Community and listed on the Directory of Important Wetlands of Australia as a wetland of national significance. Two non-perennial watercourses (Shovelanna Creek and Jimblebar Creek) and numerous unnamed non-perennial watercourses flow across the Premises. The majority of the Premises is drained by Jimblebar Creek, which has its headwaters approximately 20km to the south and drains in a northerly direction towards Fortescue River and Fortescue Marsh. The main channel of the Jimblebar Creek passes to the east of the south Jimblebar deposit. Copper Creek is a tributary of Jimblebar Creek which drains the broad valley between the southern flanks of Wheelarra Hill and the northern side of the South Jimblebar deposit (EPA Report 2010). Streamflow in the project area directly correlates to rainfall, with the majority of streamflow occurring during and immediately after each wet season. The known surface water bodies in the vicinity of the Project are Ophthalmia Dam, on the Fortescue River (27km to the west of the project area) and Innawally Pool within Jimblebar Creek (Note – this pool does not receive run-off flow from any of the mining or Prescribed activities within the Premises boundary).
Groundwater	Regional groundwater level is approximately 50 m below ground level. Water quality is generally of fresh quality (TDS 900 mg/L to 1,500 mg/L). The main use of water is for mining and mine dewatering from iron ore mines.

Risk assessment

Tables 9 and 10 below describe the Risk Events associated with the amendment consistent with the *Guidance Statement: Risk Assessments*. Both tables identify whether the emissions present a material risk to public health or the environment, requiring regulatory controls.

Table 9: Risk assessment for proposed amendments during construction

Risk Event						Consequence rating	Likelihood rating	Risk	Reasoning
Source/Activities		**Potential emissions**	**Potential receptors**	**Potential pathway**	**Potential adverse impacts**				
Category 6 - Dewatering	Construction, mobilization and positioning of infrastructure associated with the new MAR reinjection bores and pipework	Dust: associated with earthworks and vehicle movement	Sylvania Pastoral Station – 18km to the southwest	Air: Transport through air	Human health impacts – respiratory illness Smothering and the potential to be deposited on vegetation which may prevent photosynthesis and plant respiration	N/A	N/A	N/A	Minimal dust is expected to be generated during construction of the MAR infrastructure. The distance to residential receptors is considered to be too great for dust impacts from construction to occur. It is considered that a pathway for dust emissions to residential receptors does not exist. Any potential dust emissions can be regulated by section 49 of the EP Act
		Noise: associated with earthworks and vehicle movement	Sylvania Pastoral Station – 18km to the southwest	Air: Transport through air	Human health impacts	N/A	N/A	N/A	The distance to residential receptors is considered to be too great for noise impacts from construction of the MAR infrastructure to occur. It is considered that a pathway for noise emissions to residential receptors does not exist. The provisions of the *Environmental Protection (Noise) Regulations 1997* are applicable.
	Purging of MAR reinjection bores and pipework	Discharge to surface water	Surface water (Three non-perennial watercourses (Copper Creek, Shovelanna Creek and Jimblebar Creek) and numerous unnamed non-perennial	Direct discharge	Sediment entering waterways resulting in adverse impacts on aquatic organisms and/ or impacts to riparian vegetation.	Slight	Unlikely	**Low**	The proposed reinjection bores are not located close to drainage lines or creeks. If purging of the bores is required during bore establishment, water will be discharged into a turkeys nest. As a contingency (if turkeys nest is not available) water will be discharge into a sump to reduce sedimentation or discharged to natural drainage lines

			watercourses flow across the Premises).						with the aid of a lay-flat hose. The Licence Holder will manage flows to ensure the structural integrity of the turkeys nest/ sediment sump to ensure that there are no breaches of containment walls, leading to downstream sedimentation impacts.
Category 5 – Ore Processing	Installation of conveyor belt and modified gearbox for product screen feed conveyor at Jimblebar (Wheelarra Hill) mining operations	Noise: associated with installation works	Sylvania Pastoral Station – 18km to the southwest	Air: Transport through air	Human health impacts	Slight	Unlikely	**Low**	The minor construction works at the Jimblebar (Wheelarra Hill) mining operations Category 5 infrastructure, comprises: • Installation of a larger fines product conveyor belt at the existing Ore Handling Plant; • Installation of a modified gearbox for product screen feed conveyor at existing Ore Handling Plant; and • Adjustment to process controls systems to increase throughput. The distance to residential receptors is approximately 18km. Works will occur on an operating mine site (with lots of other noise sources). Despite the cumulative nature of the noise generation during the construction of the Category 5 infrastructure, minimal offsite impact is anticipated. The consequence is therefore slight with a likelihood of unlikely. As a result the risk rating is determined to be **low**. The provisions of the *Environmental Protection (Noise) Regulations 1997* are applicable.
-	Installation of three new rising stage sampler locations	Discharge to surface water/ generation of sedimentation	Surface water courses	Overland flow	Sediment entering waterways resulting in adverse	N/A	N/A	N/A	Minimal disruption to the creek bed is expected to be generated during installation of the new rising stage sampling infrastructure.

	JBSW009, JBSW010 and JBSW011				impacts on aquatic organisms and/ or impacts to riparian vegetation.				The generation of any sedimentation potentially created during construction is considered to be localized and minimal in relation to sedimentation that would occur during natural creek flow. Therefore, no risk to the environment has been determined for this activity.

Table 10: Risk assessment for proposed amendments during commissioning and operation

Risk Event						Consequence rating	Likelihood rating	Risk	Reasoning
Source/Activities		**Potential emissions**	**Potential receptors**	**Potential pathway**	**Potential adverse impacts**				
Category 6 – Dewatering Discharge to Ophthalmia Dam	Discharge of excess mine dewater to surface water (Ophthalmia Dam).	Discharge to surface water	Riparian ecosystem	Direct Discharge (at pipeline discharge point)	Disruption of normal ecosystem function	N/A	N/A	N/A	Outside of scope: regulated under Part IV of the EP Act. The Licence Holder has developed the *Eastern Pilbara Water Resource Management Plan* (EPWRMP) to satisfy the requirements of MS 857. The EPWRMP manages impacts to the Ethel Gorge TEC and includes early warning triggers to provide a point at which water management options must be considered and implemented to avoid potential impacts to the TEC. Primary hydrological thresholds have been established to manage the potential impacts to the Stygofauna community habitat and are set to maintain hydrological conditions (water levels and salinity) in the Ethel Gorge aquifer within acceptable historical ranges. As well as these thresholds, site specific criteria based on ANZECC (2000) have been established for a range of water quality parameters in Ethel Gorge aquifer. These are included in the *Ophthalmia Borefield Groundwater Operating Strategy* to support the 5C
			Phreatophytic vegetation	Groundwater	Changes to groundwater salinity and quality impacting health and survival of deep rooted groundwater dependent vegetation.	N/A	N/A	N/A	
			Ethel Gorge Stygobiont Community (subterranean fauna) TEC		Changes to groundwater salinity and quality impacting health and survival of fauna.	N/A	N/A	N/A	
			Newman Water Reserve (PDWSA) (Priority 1)		Health impacts resulting from the deterioration of water quality making is unsuitable for potable reuse	N/A	N/A	N/A	

									abstraction licence and are reported annually to the Department of Water (now DWER) through the annual aquifer review process. A secondary ecological threshold has been established to manage the potential impacts to the riparian tree health as a result of rising groundwater level in the Ethel Gorge aquifer and the permanent inundation of the rooting zone. Monitoring and management zones have been established within the Ethel Gorge TEC area and monitoring zone thresholds have been developed to allow for adaptive management of Ethel Gorge. The management of potential impacts to the potable water supply and protection objectives can be achieved through the objectives, thresholds and management triggers for Ethel Gorge, described above. The Delegated Officer has reviewed the relevant EPA reports and Ministerial Statements and finds that the management of the impacts associated with the discharge of surplus mine dewater to Ophthalmia Dam are comprehensively regulated by conditions imposed under MS 857 and MS 1021, issued pursuant to Part IV of the EP Act. Additional regulatory controls are not required on this Licence,
Category 6 **–** *Dewatering Discharge to Jimblebar Creek*	Removal of four existing rising stage sampler locations within Jimblebar	N/A	N/A	N/A	N/A	N/A	N/A	N/A	The Licence Holder is seeking to remove three existing RSS locations, (JBSW006, JBSW007 and JBSW08) and replace them with three new RSS locations (JBSW009, JBSW010 and JBSW0011) (see figure 3). The location of the three

	creek and replacing with three new rising stage sample locations.								existing RSS locations are hard to access during wet conditions resulting in water samples from the samplers being void based on lab holding times. The location of the new RSS - JBSW009 and JBSW010 will allow for vehicle access and water collection during creek flowing periods and will supply the necessary data to ensure that any potential changes in water chemistry are identified. The location of new sampler JBSW0011 will allow for any high sediment levels leaving the Orebody 31 discharge point to be captured (this information was not previously captured prior to this amendment). The Delegated Officer has considered the locations of the new RSS locations and has deemed them appropriate to capture an adequate data set during stream flow events. The sampler locations that were removed were all upstream of the discharge points. Two rising stage sampler locations still remain upstream of the fist discharge point JBDMDW001 (Copper creek) allowing for background water quality to be measured.
Category 6 – Operation of 6 new reinjection bores (in addition to the 2 existing reinjection bores)	An increase in surplus water from dewatering reinjected into the Basement Rock Aquifers associated with the Paraburdoo and Bee Gorge Members of the Wittenoom Formation.	Discharge to groundwater	Vegetation	Reinjection to groundwater from Brockman Iron Formation	Increase in groundwater levels and development of a groundwater mound resulting in vegetation death and impact on troglofauna habitat.	Minor	Unlikely	Medium	The Licence Holder has been undertaking dewatering activities at Orebody 18 for at least six years. The location of Orebody 18 MAR scheme has also been the site of a supply bore-field for the duration of the operation of Orebody 18. Therefore the Licence Holder has reported a high understanding of the aquifers operational characteristics in the vicinity. Depth to groundwater is on average 50 mbgl and has a slightly eastward flow-gradient. Groundwater movement is generally consistent with surface water flow along the strike of the valley.

									Groundwater from both aquifers is brackish with Total Dissolved Solids (TDS) ranging from 1,300 to 2,200 mg/L. Generally groundwater quality from the Brockman Iron Formation is considered to be of better quality than the receiving aquifer – Wittenoom Formation (as it is characterised as dolomite). The Licence Holder has stated that based on the level of draw down as a result of current abstraction, the expected mounding from reinjection will be localized and minimal. The water table in the Orebody 18 area is on average 50 mbgl which, during periods of peak injection rates, could be expected to mound by up to 20 m in monitoring bores (with the impacted area between 500m and 1km from injection bores). This is unlikely to intersect any surface water systems or vegetation root systems. There are no groundwater dependent vegetation systems in the known area of mounding impact. Current injection activities are only occurring at reinjection bore HMG0056P. The closest monitoring bores surrounding HMG0056P (HMG0115M, HMG0119M and HMG0121M) have not shown significant increase in groundwater levels since injection commenced (less than 0.34m) as demonstrated in the latest data presented in the Licence Holders 2017 annual environmental report (AER). Groundwater mounding as a result of the reinjection may impact on troglofauna habitat. A subterranean fauna survey found that troglofauna recorded in the location of the Orebody MAR scheme are not exclusive to the area and have

									been identified at adjacent regional sites (Bennelongia, 2013). The Licence Holder has stated that mounding that does occur will be localised to within 500m to 1km of the injection bores. The Licence Holder currently monitors groundwater levels and ambient water quality in the vicinity of the existing reinjection bores to monitor their impact. This will continue for the expanded MAR scheme. The Licence Holder has developed trigger levels for groundwater levels and electrical conductivity and proposes management actions in response to trigger exceedances. The Delegated Officer has considered the potential for increases in groundwater levels and the development of a groundwater mound from reinjection and has determined that there will be low level off-sit impacts on a local scale. Therefore the Delegated Officer considers the consequence to be Minor. The likelihood of this risk even occurring is considered to be unlikely due to the Licence Holders proposed controls. The risk rating for this event is therefore **medium**.
Category 6 – Dewatering Operation and commissioning of 6 new reinjection bores (in addition to the 2 existing reinjection	An increase in surplus water from dewatering reinjected into the Basement Rock Aquifers associated with the Paraburdoo and Bee Gorge Members of the Wittenoom Formation.	Discharge to groundwater	Subterranean fauna	Reinjection to groundwater from Brockman Iron Formation	Degradation of receiving aquifer groundwater quality due to mixing of water and contamination of recharge causing impacts to subterranean fauna	Minor	Unlikely	**Medium**	There is the potential for low level, localised impact to subterranean fauna as a result of the expanded MAR scheme at Orebody 18. A number of troglofauna species have been recorded at Orebody 18, with some recorded only from the Orebody 18 mine area. These species are considered to be troglobitic (restricted to below-ground dispersal). However when the geology and pattern of mineralisation in the area is compared with the known ranges and distributions of troglofauna species, it appears highly

bores)									likely that these restricted species are likely to be more widespread than just the Orebody 18 area. (Bennelongia, 2013). The Licence Holder currently undertakes a monitoring program to determine if the quality of reinjection water is of suitable quality. This program will be expanded to include the 6 new reinjection bores. The Licence Holder has established site specific water quality trigger values (Golder, 2013) for injected water quality. Reinjection water will be sampled from the turkey's nest and if found to exceed these values, reinjection will temporarily cease while an investigation into the matter is completed. During such events, abstraction from the dewatering bores will be reduced, or if necessary ceased, to ensure that abstracted water does not exceed the site usage and storage capacity. Ambient groundwater quality is also analyzed for a suite of parameters and compared to the same site specific trigger values (existing condition 3.5.1). The licence Holder has stated that an investigation into any excceedence of these site specific trigger values will occur. The trigger values have been developed based on baseline monitoring undertaken at the receiving aquifer and the subsequent assessment by Golder Associates Pty Ltd (Golder) in 2013. These trigger values are concentrations that, if exceeded, would indicate a potential environmental problem, and consequently should trigger a management process. This is in accordance with accordance with the Australian and New Zealand

									Environment and Conservation Council (ANZECC) and Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ), Water quality and level triggers and contingency actions are outlined within Tables 3 and 4. The potential for impact to subterranean fauna from reinjection has been considered and it has been determined that there will be low level offsite impacts on a local scale. Therefore the Delegated Officer considers the consequence to be Minor. The likelihood of this risk even occurring is considered to be unlikely due to the Licence Holders proposed controls. The risk rating for this event is therefore **medium**.
Category 6 – Operation of 6 new reinjection bores (in addition to the 2 existing reinjection bores)	Removal and replacement of groundwater monitoring bores.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	The Licence Holder currently monitors the impact of the MAR scheme and mining activities via 16 groundwater monitoring bores. The Licence Holder is proposing to remove the MAR groundwater monitoring bore HSJ0169 and replace it with groundwater monitoring bore SJ0571RM. The Licence Holder has advised in their Application that construction issues with HSJ0169M means the bore contains high levels of sediment which skews water quality results making the Total Suspended Solids (TSS) results unrepresentative. In addition: • the location of HSJ0169M makes it unlikely to detect potential chemistry changes resulting from injection as it is located on the other side of the hydrological

									boundary; and • Water levels in this piezometer are approximately 15m lower than the nearest piezometer showing mounding due to MAR (JBGW0435RM). None of the other piezometers close to HSJ0169M have shown a response to MAR and instead are responding to dewatering to the west. • To provide a more appropriate groundwater monitoring regime it is proposed that: HSJ0169M is removed as a monitoring point. Bore SJ0571RM located to the southeast on the MAR side of the boundary is used as a replacement hydrochemistry monitoring point. SJ0571RM is better suited as it responds to mounding and will be more representative of potential hydrochemistry changes in the area. Monitoring bores HMG0058M, HMG0103M and HMG0111M1 are included as part of the monitoring regime for the Orebody 18 MAR. The Delegated Officer has considered the above changes and has deemed them to be appropriate, not warranting further risk assessment.
Category 64 – Landfill Operation of the Wheelara Hill Inert Landfills 1 and 2	Machinery and vehicle movement	Dust	Sylvania Pastoral Station ~ 18km to the west of Premises	Air: Transport through air	Human health impacts – respiratory illness	N/A	N/A	N/A	Minimal dust is expected to be generated during operation of the landfill. The distance to residential receptors is considered to be too great for dust impacts from operation of the landfill to occur. The Delegated Officer considers that a pathway for dust emissions does not exist.

									Any potential dust emissions can be regulated by section 49 of the EP Act
	Machinery and vehicle movement	Noise	Sylvania Pastoral Station ~ 18km to the west of Premises	Air: Transport through air	Human health impacts - amenity	N/A	N/A	N/A	The distance to residential receptors is considered to be too great for noise impacts from operation of the landfill to occur. The Delegated Officer considers that a pathway for noise emissions does not exist. The provisions of the *Environmental Protection (Noise) Regulations 1997* are applicable.
	Contaminated storm water associated with contact with deposited waste Leachate from deposited waste	Contaminated storm water or leachate	Two non-perennial watercourses (Shovelanna Creek and Jimblebar Creek) and numerous unnamed non-perennial watercourses flow across the Premises. Groundwater (50mbgl)	Overland flow and seepage into soil	Contaminate surface water Contaminate groundwater	N/A	N/A	N/A	The closest named surface water feature is Jimblebar Creek which is approximately 1.5km from the proposed landfill sites. Contaminated storm water is not expected to have an impact at this distance. Inert Type 2 waste consists of non-biodegradable materials and therefore is not expected to contribute to any potential leachate coming from the inert landfills. Therefore, impact to groundwater (which is 50mbgl) will be negligible. The Delegated Officer considers that a pathway for contaminated stormwater or leachate does not exist and therefore no additional regulatory controls are required. Management of wastes generated at Jimblebar will be in accordance with existing licence conditions and the BHPBIO Mining Operations Waste Management Program. Asbestos containing waste will be managed in accordance with section 4.3.3 of the Jimblebar Hub Environment Management Plan.

Category 73 (Increase in approved throughput from 3984 m^3 to 5000 m^3/yr***)***	Storage, dispense and spill of hydrocarbons	Hydrocarbons	Two non-perennial watercourses (Shovelanna Creek and Jimblebar Creek) and numerous unnamed non-perennial watercourses flow across the Premises. Groundwater (50mbgl)	Land: seepage of hydrocarbons	Adverse impacts to health and contamination of soil, and water	Slight	Unlikely	**Low**	No works will be required for this increase in throughput. The increase will cover existing hydrocarbon storage at the site and make allowances should additional storage be required. The bulk storage and management of other hydrocarbons will be conducted in accordance with the Licence Holders Dangerous Goods Licence. Storage of bulk chemical and hydrocarbons will be in accordance with AS1940. The management commitments and existing license requirements are deemed appropriate to manage the risk of hydrocarbon storage and spills on the environment. As such the Delegated Officer considers the onsite impact of increasing the approved throughput for category 73 to be minimal, resulting in a consequence of slight and a likelihood of unlikely. Therefore the rating for this risk event has been deemed to be **low.**
Category 5 – increase in throughput	Operation of modified Wheelarra Hill mining ore handling plant (increase in throughput by 7 Mtpa)	Dust	Sylvania Pastoral Station – 18km to the west	Air: Transport through air	Human health impacts – respiratory illness	Minor	Unlikely	**Medium**	BHP is proposing to undertake some minor works at the Jimblebar (Wheelarra Hill) mining operations which will increase the Jimblebar (Wheelarra Hill) operations design capacity by 7 Mtpa (58 Mtpa to 65 Mtpa bringing the total covered in licence to 8). The existing site dust management measures onsite include; • Crusher transfer points are enclosed and fitted with water sprays. • Water tankers are used to apply water to sites within areas of operation which have the potential to generate dust, including unsealed roads, haul roads and construction areas.

									• Areas of exposed soil (land disturbance) are minimised. • Dust suppression equipment is maintained in efficient operating condition. • Disturbed areas are rehabilitated as they become available. • Routine maintenance and housekeeping practices are employed to ensure that waste materials in or around the premises do not accumulate and lead to the generation of unacceptable airborne dust. • Open areas such as lay-down and machinery maintenance areas will be packed with lump or gravel material to reduce potential wind erosion. • Chemical suppressants will be used for general site dust suppression where practicable. • Dust extraction equipment will be regularly maintained. • Major traffic thoroughfares will be sealed and kerbing or bunding will be installed to discourage offroad passage where practicable. Vehicle traffic will preferably be directed along routes that are regularly maintained and sprayed with dust suppressants. • Speed limits will be enforced to minimise dust emissions. • Site personnel will be required to undergo training and be made aware of their responsibility to reduce and report excessive dust emissions

									The Licence Holder has stated within their application that '*The Jimblebar (Wheelarra Hill) Environmental Protection Statement (EPS) assessed the dust and noise impacts associated with Jimblebar (Wheelarra Hill) mining operations up to a processing rate of 75 Mtpa. The EPS was approved via Ministerial Statement (MS) 857 on 18 February 2011 and combined with MS 683 and MS 809 approves a total production rate of 75 Mtpa at the Wheelarra Hill mining operations. The proposed increase in processing capacity from 58 to 65 Mtpa at the Wheelarra Hill mining oerations (increasing total production rate on the licence from 75 Mtpa to 82 Mtpa) will not result in potential dust and noise impacts beyond those assessed and approved under MS 875*'. The Delegated Officer has considered the existing licence conditions and the current Licence Holder controls and has deemed them appropriate to manage the increase in dust emissions associated with the increase in Category 5 throughput. The Delegated Officer notes that MS 857, 683 and 809 approves a total production rate of 75 Mtpa. No additional regulatory controls are required to mitigate the risk of dust impacts on sensitive receptors.
		Noise	Sylvania Pastoral Station – 18km to the west	Air: Transport through air	Human health impacts - amenity	Minor	Unlikely	**Medium**	The distance to the nearest residential receptor is 18 km (Sylvania Homestead). Noise modelling carried out by SVT Engineering consultants in 2009 (for submission to the EPA) indicates that the increase to processing rate of 75 Mtpa at the Jimblebar hub (Wheelarra Hill mine) will not produce noise

									emissions that will exceed relevant criteria (*Environmental Protection (Noise) Regulations 1997*) at the nearest sensitive receptor. The Licence Holder has stated within their application that '*The Jimblebar (Wheelarra Hill) Environmental Protection Statement (EPS) assessed the dust and noise impacts associated with Jimblebar (Wheelarra Hill) mining operations up to a processing rate of 75 Mtpa. The EPS was approved via Ministerial Statement (MS) 857 on 18 February 2011 and combined with MS 683 and MS 809 approves a total production rate of 75 Mtpa at the Wheelarra Hill mining operations. The proposed increase in processing capacity from 58 to 65 Mtpa will not result in potential noise impacts beyond those assessed and approved under MS 875'.* The Delegated Officer has considered the existing licence conditions and the current licence holder's controls and has deemed them appropriate to manage the increase in noise emissions associated with the increase in Category 5 throughput. The Delegated Officer notes that MS 857, 683 and 809 approves a total production rate of 75 Mtpa. No additional regulatory controls are required to mitigate the risk of noise impacts on sensitive receptors.

Decision

New pipeline allowing dewatering discharge to Ophthalmia Dam

The Licence Holder has current obligations under Part IV of the EP Act (MS 857) to manage impacts associated with the disposal of surplus water from Jimblebar mining operations to the Ophthalmia Dam. The Licence Holder has developed the *Eastern Pilbara Water Resource Management Plan* (EPWRMP) to satisfy the requirements of MS 857. The EPWRMP manages impacts to the Ethel Gorge TEC (located at Opthalmia Dam) and includes early warning triggers to provide a point at which water management options must be considered and implemented to avoid potential impacts to the TEC.

Based on the application supporting documentation, the Delegated Officer has determined that the operation of the new pipeline to connect the Jimblebar mining operations to Orebody 31 Ophthalmia Dam pipeline (W6042/2017/1) will not result in emissions which are unacceptable to public health or the environment.

Existing licence conditions 1.2.10 has been update for Category 6 to include the increase in surplus water being discharged to Opthalmia Dam. Condition 2.1.1 has been updated to reflect the additional discharge of surplus mine water from the Jimblebar Mining Operations to the Ophthalmia Dam.

No additional conditions are required to manage the impact of this discharge as impacts are being managed under MS 857.

Expansion of Orebody 18 MAR project

The Delegated Officer has determined the key emissions associated with the construction and operation of the expanded Orebody 18 MAR project to be discharges to groundwater. Based on the application supporting documentation, the Delegated Officer has determined that the MAR project presents a medium risk to the environment. Existing licence conditions have been modified to control this risk.

The Licence Holder has committed to constructing the expanded Orebody 18 MAR scheme to the specifications provided in BHP, 2017. Conditions 1.2.11 and 1.2.12 have been amended to include the specific design and construction specifications for the expanded Orebody 18 MAR scheme and to allow the commissioning of each bore for a period of 7 months. Condition 4.1.2 requires the Licence Holder to submit a compliance document to DWER once the bores have been constructed and a commissioning report within one month of the completion of commissioning.

Condition 1.2.10 has been updated to reflect the increase in surplus water being reinjected. Conditions 2.3.1 has been updated to include the eight new reinjection bores as emission points to groundwater. Condition 3.3.1 has been updated to include the eight new reinjection bores to ensure monthly and quarterly monitoring of the discharge to groundwater occurs.

Condition 4.2.1 has been updated to ensure ambient groundwater results are compared against the established trigger values specified within the document *"Site specific trigger values – Orebody 18', Project No. 137646012-003-M-Rev0*" (Golder Associates, 2 July 2013). This change has been made as there was no reference in the license to what these trigger values were and where they originated.

Ambient groundwater monitoring

The Licence Holder has requested; the removal of groundwater monitoring bore HSJ0169 and its replacement with monitoring bore SJ0571RM and the inclusion of three additional monitoring bores (HMG0058M, HMG0103M and HMG0111M1) to the MAR monitoring regime.

The Delegated Officer has determined that these changes are acceptable and condition 3.5.1 has been updated to reflect this.

Changes to rising stage sampler locations

The Licence Holder is proposing to remove three existing RSS locations, (JBSW006, JBSW007 and JBSW08) and replace them with three new RSS locations (JBSW009, JBSW010 and JBSW0011) (see Figure 3). The location of the three existing RSS locations have been difficult for the Licence Holder to access during wet conditions resulting in water samples from the samplers being void based on lab holding times. The location of the new RSS - JBSW009 and JBSW010 will allow for better vehicle access and water collection during creek flowing periods and will supply the necessary data to ensure that any potential changes in water chemistry are identified. The location of new sampler JBSW0011 will allow for any high sediment levels leaving the Orebody 31 discharge point to be captured (this was not previously captured before).

The Delegated Officer has considered the locations of the new RSS locations and has deemed them appropriate to capture relevant data. Condition 3.5.1 Table 3.5.2 has been updated to reflect this.

Category 5 throughput increase

The Delegated officer has determined the key emissions associated with the construction and operation of the modified Wheelarra Hill mining ore handling plant (increase in throughput by 7 Mtpa) is dust and noise. Based on the application supporting documentation, the Delegated Officer has determined that the modification and operation of the modified processing plant presents a medium risk to the environment.

The Licence Holder has stated within their application that *'The Jimblebar (Wheelarra Hill) Environmental Protection Statement (EPS) assessed the dust and noise impacts associated with Jimblebar (Wheelarra Hill) mining operations up to a processing rate of 75 Mtpa. The EPS was approved via Ministerial Statement (MS) 857 on 18 February 2011 and combined with MS 683 and MS 809 approves a total production rate of 75 Mtpa at the Wheelarra Hill mining operations. The proposed increase in processing capacity from 58 to 65 Mtpa at the Wheelarra Hill mining operations (increasing total production rate on the licence from 75 Mtpa to 82 Mtpa) will not result in potential dust and noise impacts beyond those assessed and approved under MS 875'*. Condition 1.2.10 has been updated to include the increase in Category 5 throughput from 75 Mtpa to 82 Mtpa. The Delegated Officer considers no other new conditions are required, based on the proponent controls and distance to nearest sensitive receptor.

Category 64 – throughput increase

The Delegated Officer has determined the key emissions associated with the increase in Category 64 approved throughput (due to construction of two new inert landfills and the need to dispose of waste conveyor rubber) are dust, noise and contaminated stormwater or leachate. Based on the application supporting documentation, the Delegated Officer has determined that the increased in approved throughput presents no risk to the environment as no pathway to sensitive receptors exist.

Condition 1.2.1 has been updated to include the increase in throughput from 8,420 tonnes to 15,000 tonnes of waste per annual period. No other conditions are required to be modified.

Category 73 – storage allowance increase

The Delegated Officer has determined the key emissions associated with the increase in Category 73 approved throughput are spills or leaks of hydrocarbons. Based on the application supporting documentation, the Delegated Officer has determined that the increased in approved throughput/ storage allowance presents a low risk to the environment.

Condition 1.2.5 has been updated to include the increase in throughput from 3984 m^3 to 5000 m^3 per annual period. No other conditions are required to be modified.

Other administrative changes

The Delegated Officer has considered the following administrative changes / corrections and has deemed them acceptable:

- Increase the volume of nutrient rich water in Table 1.2.4 from 400,000 L to 4,000,000 L to correct an administrative error made during a previous revision of the Licence.
- Update Table 1.2.6 to remove completed construction requirements (as advised by DWER during May 2017 inspection).
- Replace the reference to L2 to L1 in Table 4.2.1 to correct a reference error.

Licence Holder's comments

The Licence Holder was provided with the draft Amendment Notice on 3 August 2018. Comments received from the Licence Holder have been considered by the Delegated Officer as shown in Appendix 2.

Amendment

1. Condition 1.2.1 of the Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the bold text shown in underline below:

1.2.1 The Licensee shall only accept waste on to the Premises if:
(a) it is of a type listed in Table 1.2.1;
(b) the quantity accepted is below any quantity limit listed in Table 1.2.1; and
(c) it meets any specification listed in Table 1.2.1.

Table 1.2.1: Waste acceptance		
Waste Type	**Quantity limit**	**Specification [1]**
Inert Waste Type 1	~~8420~~ **15,000** tonnes per annual period	None specified
Inert Waste Type 2		
Putrescible Waste		
Clean Fill		
Sewage	120 m^3/day~~[2]~~	Accepted through sewer inflow(s) only

Note 1: Additional requirements for the acceptance of controlled waste (including asbestos and tyres) are set out in the Environmental Protection (Controlled Waste) Regulations 2004.
~~Note 2: Quantity limit measured as volume of treated wastewater discharged to designated irrigation areas.~~

2. Condition 1.2.9 of the Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the bold text shown in underline below:

1.2.9 The Licensee shall ensure that waste material is only stored and/or treated within vessels or compounds listed in Table 1.2.4 and identified in Schedule 1 in accordance with the requirements specified within Table 1.2.4.

Table 1.2.4 Containment Infrastructure		
Storage vessel or compound	**Material**	**Requirements**
Evaporation pond 1	102 m^3/day of effluent from the Hub WWTP	• 1.5 mm HDPE lined evaporation pond to

		achieve a permeability of $<10^{-9}$ m/s; and • minimum vertical freeboard of 300 mm
Evaporation pond 2	5 m^3/day of effluent from the Primary Crusher WWTP	• 1.5 mm HDPE lined evaporation pond to achieve a permeability of $<10^{-9}$ m/s; and • minimum vertical freeboard of 300 mm
Orebody 18 and Jimblebar bioremediation treatment cells	Hydrocarbon contaminated soil and nutrient rich wastewater from the Ammonium Nitrate Facility	• 1.5 mm HDPE lined evaporation pond to achieve a permeability of <10-9 m/s; • any contaminated runoff from the treatment cells is contained; • a maximum of ~~400,000~~ **4,000,000** litres of nutrient rich wastewater per annum may be discharged into the cells; and • the discharge of nutrient rich wastewater is managed to ensure pooling is minimised

3. Condition 1.2.10 of the Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the bold text shown in underline below:

1.2.10 The Licensee shall ensure the limits specified in Table 1.2.5 are not exceeded

Table 1.2.5 Production or design capacity limits

Category	Category description	Premises production or design capacity limit
5	Processing or benefication of metallic or non-metallic ore	~~75~~ **82**,000,000 tonnes of ore per annual period
6	Mine dewatering	~~South Jimblebar and Orebody 18~~ ~~5.11 gigalitres per annual period reinjection~~ ~~South Jimblebar~~ ~~2.19 gigalitres per annual period to Jimblebar and Copper Creeks~~ ~~Orebody 31~~ ~~16.2 gigalitres per annual period to Ophthalmia Dam2 and tributary of Jimblebar Creek~~ **37.735 gigalitres per annual period:** • **12.41 gigalitres reinjected;** • **2.19 gigalitres discharged to Jimblebar Creek and Copper Creek; and** • **23.135 gigalitres discharged to Ophthalmia Dam** •
73	Bulk storage of chemicals, etc	~~4,000~~ **5,000** cubic metres in aggregate

Note 1: *Environmental Protection Regulations 1987*, Schedule 1.
Note 2: Limit applicable upon submission of compliance documentation required under condition 4.3.1

4. Condition 1.2.11 of the Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the bold text shown in underline below:

~~1.2.11 The Licensee shall construct the Orebody 18 MAR Project and the Orebody 31 mine dewatering infrastructure and discharge point to Ophthalmia Dam, in accordance with the documentation detailed in Table 1.2.6.~~

~~Table 1.2.6: Construction Requirements[1]~~			
~~Project description~~	~~Document~~	~~Parts~~	~~Date of Document~~
~~Orebody 18 MAR Project~~	~~Works Approval Application Form~~	~~All~~	~~2 February 2015~~
	~~Orebody 18 Managed Aquifer Recharge Project, Supporting Documentation for Works Approval, February 2015, BHP Billiton Iron Ore Pty Ltd.~~	~~All, including Drawings and Appendices~~	~~2 February 2015~~
	~~Email correspondence: Works Approval W5808 – Orebody 18 – MAR trial, from Chris Hopkins BHP Billiton Iron Ore, 26 March 2015.~~	~~All, including attachments~~	~~26 March 2015~~
	~~Email correspondence: Works Approval W5808 – Orebody 18 – MAR trial, from Chris Hopkins BHP Billiton Iron Ore, 13 April 2015.~~	~~All, including attachments~~	~~13 April 2015~~
	~~Email correspondence: Works Approval W5808 – Orebody 18 – MAR trial, from Chris Hopkins BHP Billiton Iron Ore, 28 April 2015.~~	~~All, including attachments~~	~~28 April 2015~~
	~~Application form:works approval/licence - Amendment~~	~~All, including Appendices~~	~~15 February 2016~~
	~~Supporting Documentation – DER Licence Amendment Wheelarra Hill (Jimblebar) L5415/1988/9~~	~~All, including Appendices~~	~~11 August 2016~~
~~Orebody 31 dewatering and discharge to Ophthalmia Dam~~	~~Email correspondence: Jimblebar Licence Amendment, from Mark Alchin BHP Billiton Iron Ore Pty Ltd, 21 March 2016~~	~~All, including attachments~~	~~21 March 2016~~
	~~Application form: Works approval/licence~~	~~All~~	~~22 February 2016~~
	~~Supporting documentation – DER Licence Amendment Wheelarra Hill (Jimblebar) L5415/1988/9~~	~~All, including drawings and appendices~~	~~December 2016~~

1.2.11 **The Licence Holder must install and undertake the Works for the infrastructure and equipment:**
(a) specified in Column 1;
(b) to the requirements specified in Column 2; and
(c) at the location specified in Column 3 of Table 1.2.6.

Table 1.2.6 Works specifications		
Column 1	**Column 2**	**Column 3**
Infrastructure / Equipment	**Requirements (design and construction)**	**Site plan reference**
Orebody 18 MAR project		
6 new reinjection bores for the Orebody 18 MAR project	**Construction of injection bores with flow meters installed;** • **HMG0051P and HMG0052P as per**	**HMG0051P, HMG0052P, OB18MAR05, OB18MAR06, OB18MAR07 and OB18MAR08 in 'DWER Licence Infrastructure' map**

	location on Site plan in Schedule 1; • **OB18MAR05, OB18MAR06, OB18MAR07 and OB18MAR08 located within the red area demarcated 'Zone for new reinjection bores' as per Site plan ('DWER Licence Infrastructure') in Schedule 1.**	
Water conveyance	**Pipelines constructed using ±3500m of ±DN 200.** **Borefield pipework to tee off existing 710DN pipeline from Orebody 31 to Ophthalmia Dam to the injection bore headworks**	**Existing pipeline from Orebody 31 to Ophthalmia Dam in 'DWER Licence Infrastructure' map**
Jimblebar (Wheelarra Hill) mining operations		
Wheelarra Hill processing plant works	**Installation of a larger fines product conveyor belt at the existing Ore Handling Plant** **Installation of a modified gearbox for product screen feed conveyor at existing Ore Handling Plant; and** **Adjustment to process controls systems to increase throughput.**	- **Jimblebar Ore Handling Plant 1 (OHP) in 'DWER Licence Infrastructure' map.**

5. Condition 1.2.12 of the Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the bold text shown in underline below:

1.2.12 The Licensee shall commission each Orebody 18 MAR Project reinjection bore for a period not exceeding 7 months, in accordance with ~~Appendix 1 – "Compliance Report Project Characteristics and Commitments Confirmation of Orebody 18 Managed Aquifer Recharge Project", Supporting Documentation for Works Approval, February 2015, BHP Billiton Iron Ore Pty Ltd.~~ **Jimblebar L5415/1988/9 Licence Amendment Supporting Documentation (Including information relating to Attachments 1 to 10) November 2017.**

6. Condition 2.2.1 of the Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the bold text shown in underline below:

2.2.1 The Licensee shall ensure that where waste is emitted to surface water from the emission points in Table 2.2.1 and identified on the map of emission points in Schedule 1 it is done so in accordance with the conditions of this licence.

Table 2.2.1: Emission points to surface water		
Emission point reference on Map of emission points	**Description**	**Source including abatement**
Discharge Points JBDMDW001 JBDMDW002	Discharge to creek line	Water from dewatering South Jimblebar
Ophthalmia Dam Discharge Point	Discharge to Ophthalmia Dam	Water from dewatering of Orebody 31 **and Jimblebar Mining Operations**
FNJV0150 – Orebody 31 Creek discharge	Contingency discharge to creek line (tributary of Jimblebar Creek) during high rainfall, maintenance and/or emergency events	Water from dewatering of Orebody 31

7. Condition 2.3.1 of the Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the bold text shown in underline below:

2.3.1 The Licensee shall ensure that where waste is emitted to groundwater from the emission points in Table 2.3.1 and identified on the map of emission points in Schedule 1 it is done so in accordance with the conditions of this licence.

Table 2.3.1: Emission points to groundwater		
Emission point reference on Map of emission points	**Description**	**Source including abatement**
Jimblebar reinjection bores JBGW0069P JBGW0076P JBGW0003P	Direct injection below ground	Water from dewatering
Orebody 18 reinjection bores: **HMG0051P** **HMG0052P** HMG0054P HMG0056P **OB18MAR05** **OB18MAR06** **OB18MAR07** **OB18MAR08**		

8. Condition 3.3.1 of the Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the bold text shown in underline below:

3.3.1 The Licensee shall undertake the monitoring in Table 3.3.1 according to the specifications in that table.

Table 3.3.1: Monitoring of point source emissions to groundwater

Emission point reference	Parameter	Units	Frequency
Jimblebar JBGW0076P JBGW0003P JBGW0069P Orebody 18 **HMG0051P** **HMG0052P** HMG0054P HMG0056P **OB18MAR05** **OB18MAR06** **OB18MAR07** **OB18MAR08**	Water Level	mbgl	Monthly (when reinjecting)
	Cumulative Volume	kL	
	Flow rate	L/s	
Jimblebar JBDMDEW001 (Main pipeline sample point) Orebody 18 **HMG0051P** **HMG0052P** HMG0054P HMG0056P **OB18MAR05** **OB18MAR06** **OB18MAR07** **OB18MAR08**	Electrical Conductivity	µS/cm	Quarterly (when reinjecting)
	pH[1], Total Dissolved Solids, Total Suspended Solids, Al, As, B, Ba, $CaCO_3$, Cd, Ca, Cl, Cr, Cu, F, Fe, Pb, Mg, Mn, Hg, Mo, Ni, NO_3, K, Se, SiO_2, Na, SO_4, Zn, HCO_3, Alkalinity	mg/L	

Note 1: pH in-field non NATA accredited analysis permitted

9. Condition 3.5.1 of the Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the bold text shown in underline below:

3.5.1 The Licensee shall undertake the monitoring in Tables 3.5.1 and 3.5.2 according to the specifications in those tables.

Table 3.5.1: Monitoring of ambient groundwater quality				
Monitoring point reference and location	**Parameter**	**Units**	**Averaging period**	**Frequency**
JBGW0073M **SJ0571RM** ~~HSJ0169M~~ JBGW0080M JBGW0117M JBGW0009P JBGW0435RM HMG0109M HMG0115M HMG0119M HMG0121M **HMG0058M** **HMG0103M** **HMG0111M1**	Standing water level	mbgl	Spot sample	Monthly
~~HSJ0169M~~ **SJ0571RM** JBGW0080M JBGW0009P JBGW0115M HMG0109M HMG0115M HMG0119M HMG0121M **HMG0058M** **HMG0103M** **HMG0111M1**	Electrical Conductivity	µS/cm	Spot sample	Quarterly
	pH[1]	pH units		
	Total Dissolved Solids	mg/L		
~~HSJ0169M~~ **SJ0571RM** JBGW0115M JBGW0009P HMG0109M HMG0115M HMG0119M HMG0121M **HMG0058M** **HMG0103M** **HMG0111M1**	Total Suspended Solids, Al, As, B, Ba, $CaCO_3$, Cd, Ca, Cl, Cr, Cu, F, Fe, Pb, Mg, Mn, Hg, Mo, Ni, NO_3, K, Se, SiO_2, Na, SO_4, Zn	mg/L	Spot sample	Quarterly

Note 1: pH in-field non NATA accredited analysis permitted

Table 3.5.2: Monitoring of creek line sites				
Monitoring point reference and location	**Parameter**	**Units**	**Averaging period**	**Frequency**
Monitoring Sites Copper Creek downstream (JBSW003) Jimblebar Creek upstream (JBSW004) **Jimblebar Creek upstream (JBSW0010)** Jimblebar Creek downstream (JBSW005) **Jimblebar Creek downstream (JBSW009)** **Orebody 31 discharge downstream (JBSW011)** ~~Copper Creek upstream (JBSW006)~~ ~~Copper Creek upstream (JBSW007)~~ ~~Innawally Pool (JBSW008)~~	pH[1]	pH units	Spot sample	~~Quarterly~~ When flowing
	Total Dissolved Solids, Total Suspended Solids, Al, As, B, Ba, $CaCO_3$, Cd, Ca, Cl, Cr, Cu, F, Fe, Pb, Mg, Mn, Hg, Mo, Ni, NO_3, K, Se, SiO_2, Na, SO_4, Zn	mg/L		

Note 1: pH in-field non NATA accredited analysis permitted

10. Condition 4.2.1 of the Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the bold text shown in underline below:

4.2.1 The Licensee shall submit to the CEO an Annual Environmental Report by the 1 October each year. The report shall contain the information listed in Table 4.2.1 in the format or form specified in that table.

Table 4.2.1: Annual Environmental Report

Condition or table (if relevant)	Parameter	Format or form[1]
-	Summary of any failure or malfunction of any pollution control equipment and any environmental incidents that have occurred during the annual period and any action taken	None specified
Table 1.2.1	Waste acceptance	None specified
Table 1.2.2	Location of tyre disposal sites and number of tyres disposed at each site during the annual period	None specified
Table 1.2.5	Production or design capacity data and limit exceedances	None specified
Table 2.2.1	Volume of water discharged via each emission point	None specified
Table 2.3.1	Volume of water reinjected via each emission point	None specified
Table 2.4.2 and 3.6.1	Limit exceedances along with a summary on the corrective actions for any exceedances of these limits	None specified
Table 3.2.1	Surface water emission monitoring results and a comparison of results against established trigger values. Details of investigations conducted, including outcomes, environmental impacts and remedial actions, in relation to trigger exceedances and a discussion of any trends identified	None specified
Table 3.3.1	Point source emissions to groundwater monitoring results and a comparison of results against established trigger values. Details of investigations conducted, including outcomes, environmental impacts and remedial actions, in relation to trigger exceedances and a discussion of any trends identified	None specified
Table 3.4.1	Emissions to land monitoring results (WWTP) and comparison of results against the manufacturers specifications	None specified
Table 3.5.1	Ambient groundwater monitoring results and a comparison of results against established trigger values **specified in the document "Site specific trigger values – Orebody 18', Project No. 137646012-003-M-Rev0 (Golder Associates, 2 July 2013)**.. Details of investigations conducted, including outcomes, environmental impacts and remedial actions, in relation to trigger exceedances and a discussion of any trends identified	None specified
Table 3.5.2	~~Creek line~~ **Surface water** monitoring results and a comparison of results against established trigger values. Details of investigations conducted, including outcomes, environmental impacts and remedial actions, in relation to trigger exceedances and a discussion of any trends identified.	None specified
Table 3.6.1	Process monitoring results from emission point ~~L2~~ **L1** (water reused for dust suppression)	None specified
4.1.2	Compliance	AACR
4.1.3	Complaints summary	None specified

Note 1: Forms are in Schedule 2.

11. Condition 4.3.1 of the Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the bold text shown in underline below:

4.3.1 The Licensee shall ensure that the parameters listed in Table 4.3.1 are notified to the CEO in accordance with the notification requirements of the table.

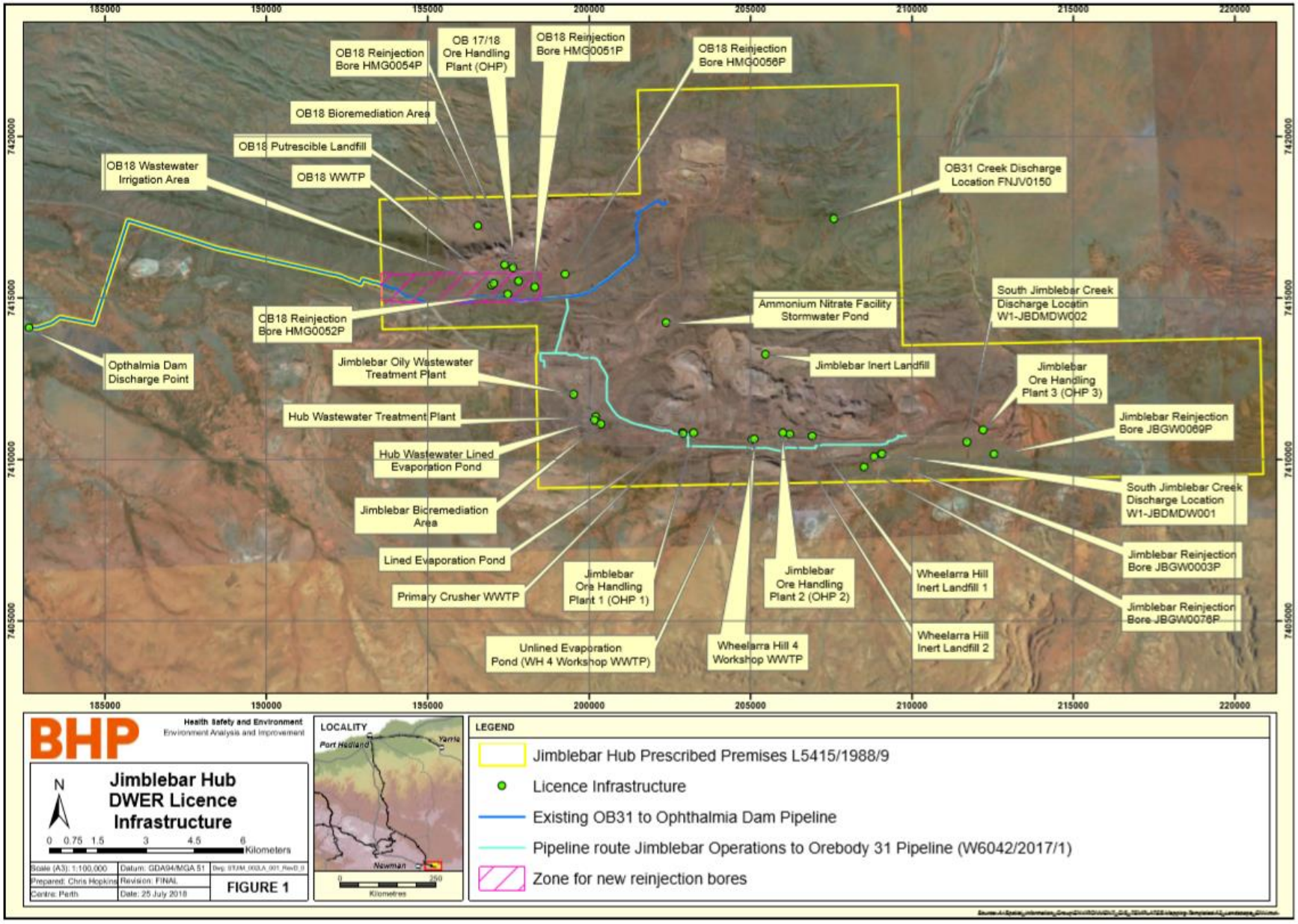
Table 4.3.1: Notification requirements

Condition or table (if relevant)	Parameter	Notification requirement[1]	Format or form[2]
1.2.12	The Licensee shall submit to the CEO a commissioning report for the Orebody 18 Managed Aquifer Recharge Project. The report shall include: (a) a summary of the monitoring results recorded during commissioning; (b) a list of any original monitoring reports submitted to the Licensee from third parties for the commissioning period; (c) a summary of the environmental performance of the Managed Aquifer Recharge Project as installed, against the design specifications set out in Table 1.3.6; and (d) where they have not been met, measures proposed to meet the design specification, together with timescales for implementing the proposed measures.	Within one month of the completion of commissioning.	None specified
1.2.11	The Licensee shall submit a compliance document to the CEO, following construction of the Orebody 18 MAR Project reinjection bores. The compliance document shall: a) certify that the works were constructed in accordance with the documents specified in Table 1.3.6; and b) be signed by a person authorised to represent the Licensee and contain the printed name and position of that person within the company	Within 7 days of the completion of construction	None specified
~~1.2.11~~	~~The Licensee shall submit a compliance document to the CEO, following construction of the Orebody 31 dewatering infrastructure and Ophthalmia Dam discharge point. The compliance document shall:~~ ~~c) certify that the works were constructed in accordance with the documents specified in Table 1.3.6; and~~ ~~d) be signed by a person authorised to represent the Licensee and contain the printed name and position of that person within the company~~	~~Within 7 days of the completion of construction~~	~~None specified~~
	Breach of any limit specified in the Licence	Part A: As soon as practicable but no later than 5pm of the next usual working day. Part B: As soon as	N1

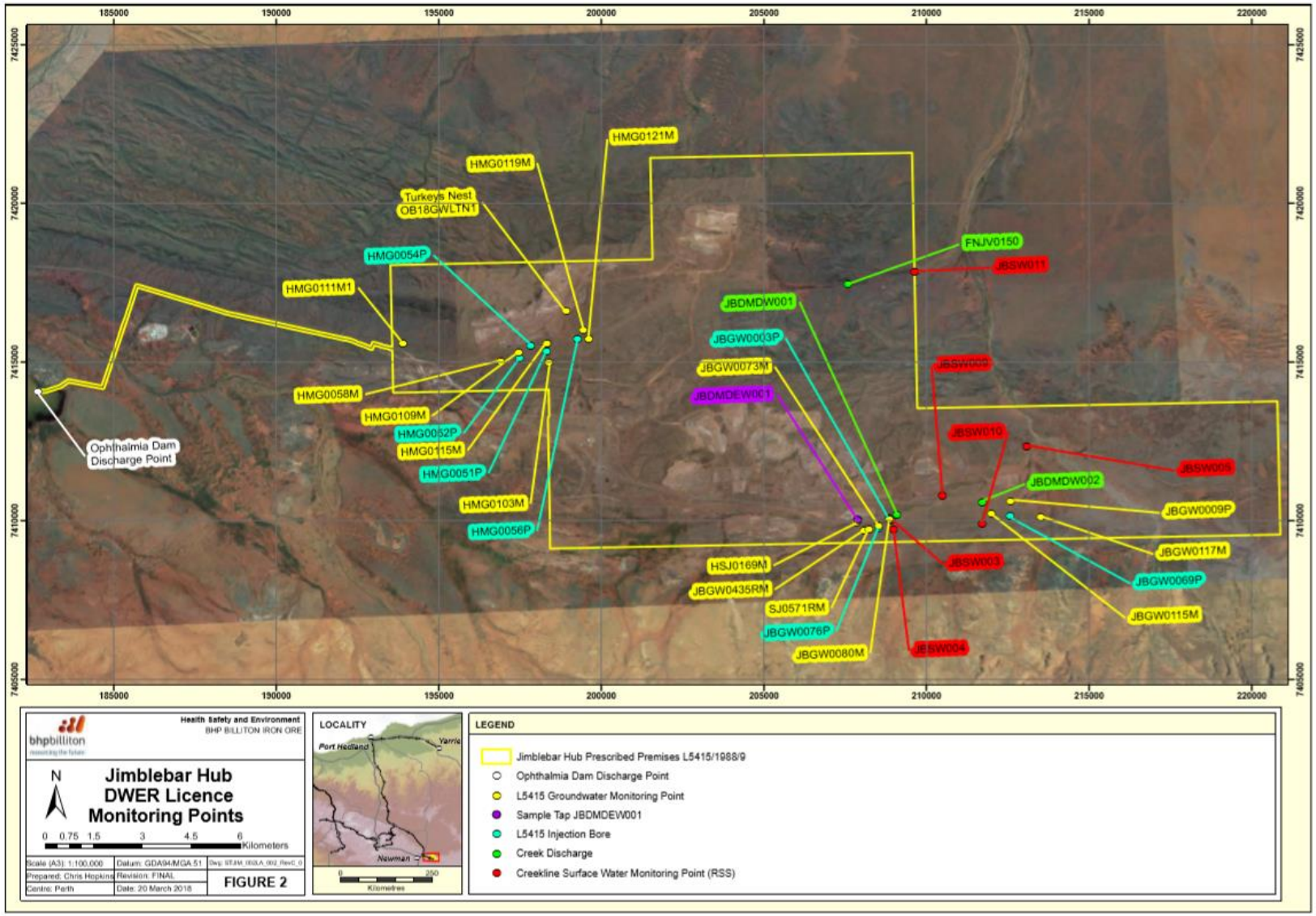
		practicable	
3.1.4	Calibration report	As soon as practicable.	None specified
	Copies of original monitoring reports submitted to the ~~Licensee~~ **Licence Holder** by third parties	Within 14 days of the CEOs request	As received by the Licensee from third parties

Note 1: Notification requirement in the licence shall not negate the requirement to comply with s72 of the Act.
Note 2: Forms are in Schedule 2.

12. The Premises map located in Schedule 1 has been deleted and replaced with the map 'DWER Licence Infrastructure' shown below.



13. The Map of emission points and monitoring locations located in Schedule 1 has been deleted and replaced with the map shown below.



Appendix 1: Key documents

	Document title	In text ref	Availability
1	Licence L5415/1988/9	L4432/1989/14	accessed at www.dwer.wa.gov.au
2	Works Approval W6042/2017/1	W4520/2009/1	
3	Ministerial Statement 857	MS 857	
4	Ministerial Statement 1021	MS 1021	
5	Technical Memorandum – Site-specific Trigger Values, Orebody 18, Golder Associates, 2 July 2013	Golder, 2013	Provided by applicant
6	Application to Amend the Jimblebar Hub Environmental Licence L5415/1988/9, Licence Amendment Supporting Documentation (including Information relating to Attachments 1 to 10, BHP, November 2017	BHP, 2017	DWER records (A1574945)
7	Eastern Pilbara Water Resource Management Plan, BHP Billiton internal Management Plan (EPWRMP), 2017.	BHP, 2017a	DWER records (A1656170)
8	Environmental impact assessment for troglofauna at Orebody 18 hub. Prepared for BHP Billiton Iron Ore Pty Ltd.	Bennelongia, 2004	Provided by applicant
9	EPA Report 1371, October 2010 (Wheelarra Hill open pit extension and development of South Jimblebar and Hashimoto deposits, and to increase the ore processing capacity to 75 mtpa)	EPA Report 2010	http://www.epa.wa.gov.au/sites/default/files/EPA_Report/Report%201371%20Jimblebar%20EPS%20181010.pdf

Appendix 2: Summary of Licence Holder comments

The Licence Holder was provided with the draft Amendment Notice on 3 August 2018 for review and comment. The Licence Holder responded on 8 August 2018 with the following comments were received on the draft Amendment Notice.

Condition	Summary of Licence Holder comment (A1709842)	DWER response
-	Minor comments on spelling errors and numbering in decision report.	Errors have been corrected.
4.2.1	*The DWER has applied the Site specific trigger values – Orebody 18', Project No. 137646012-003-M-Rev0 (Golder Associates, 2 July 2013) to discharge to surface water. These targets are for reinjection monitoring bores only, not surface water monitoring sites (as per Table 4 of the Decision Report). The current surface water site specific trigger values have been provided below (Table 3). These were established in the 2012 licence amendment. They are based on the background levels plus one standard deviation and remain appropriate to manage potential impacts to surface water.*	This was mistakenly applied to the discharge to surface water at Ophalmia dam. Reference to the Golder report has been removed from the licence in regards to surface water discharge. It does not change the risk rating determined by DWER as this discharge is regulated under MS857.

Condition	Summary of Licence Holder comment (A1709842)	DWER response
	Table 3: Discharge Parameters and Targets	

Column 1 Parameter	Column 2 Target level
pH	6 to 9
TDS	3000 mg/L
TSS	2155 mg/L
Al	2 mg/L
As	0.03 mg/L
B	2.7 mg/L
Ba	0.42 mg/L
$CaCO_3$	560 mg/L
Cd	0.01 mg/L
Ca	217 mg/L
Cl	964 mg/L
Cr	6 mg/L
Cu	0.1 mg/L
F	1.6 mg/L
Fe	7 mg/L
Pb	0.006 mg/L
Mg	175 mg/L
Mn	3 mg/L
Hg	0.002 mg/L
Mo	0.02 mg/L
Ni	0.04 mg/L
NO_3	88 mg/L
K	87 mg/L
Se	0.01 mg/L
SiO_2	103 mg/L
Na	613 mg/L
SO_4	517 mg/L
Zn	10 mg/L